6.2 Fundamental Analysis

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Consider the following raison d’être for the security analyst The security analysts develops and applies standards of safety by which we can conclude whether a given bond or preferred stock may be termed sound enough to justify purchase for investment. These standards relate primarily to [the company’s] past average earnings, but they are also concerned with capital structure, working capital, asset values, and other matters (Graham 2003, p. 281) Benjamin Graham can be rightly considered as a founding father of Fundamental Analysis, and elaborating further from his investment policy, summarized in the previous quotation, a fundamental analyst is someone who should strive to determine a security’s value by focusing on the economic fundamentals that affect a company’s actual business and its future prospects, such as its revenue growth, its profits and debts, and other business indicators, as opposed to just analyzing its price movements in the stock market. In the next sections we study the core elements and methods of investment of Fundamental Analysis.

# 6.2.1 Fundamental Analysis Basic Principles

Those applying Fundamental Analysis in their investments (aka fundamental investors), act according to three basic principles inherited from Benjamin Graham and David Dodd’s approach to investment (Graham and Dodd 1934; Graham 2003):

1. The market price of a stock does not fully reflect its “real” value. The real value of a stock is intrinsic to the value of the issuing company, termed the intrinsic value.
2. The market price and the intrinsic value of a stock often diverge, but in the long run will align to each other.
3. Shares of a stock should be bought with a “margin of safety”. This means to buy a stock when its market price is significantly below its intrinsic value (ideally, about a factor of one-half).

# 6.2.2 Business Indicators

There are three basic financial statements that a company publishes on a quarterly or annual basis, that serve as different sources for estimating the intrinsic value of its stock. These are:

The balance sheet. • The income statement. • The cash flow statement. The balance sheet gives a snapshot of a company’s assets, liabilities and shareholders’ equity at a particular point in time. The assets refer to resources own by the company, and are grouped into current assets (cash, marketable securities and inventories, and in general anything that can be quickly converted to cash), and fixed assets(properties, equipment, and any tangible valuable asset, not easily converted to cash). The liabilities are basically the unpaid bills, also grouped into two categories: current, for short termed bills, and non-current, for bills with no payment deadline or time negotiable. The shareholders (or ownership) equity is cash contributed to the company by the owner’s or shareholders. The figures in this financial statement have to balance according to the equation: All Assets = All Liabilities + Shareholder equity

This shows the amount of debt incurred and owner’s money used to finance the assets. A fundamental measure that can be extracted from this information is the company’s book value (BV): the cash that would be obtained by selling all assets free of liabilities; that is, the result of subtracting liabilities from assets. By comparing this quantity with shareholders’ equity, investors can estimate their benefits or losses if the company were to be liquidated. The income statement provides information on the company’s revenues and expenses, during an specific period (usually quarterly or yearly). The revenue is basically the amount of money received from sales in the given period. The expenses are divided into: production costs (cost of revenue), operational costs (for marketing, administration, or any non-recurring event), loan interests and taxes, and depreciation (the lost of value of fixed assets used in production). From these figures one gets the company’s net income over the period, computed as: Net Income = Revenues − All Expenses However, for a more accurate measure of how profitable is the company, financial analysts look at the income without deducting the payments for loan interests and taxes. This is the EBIT, or earnings before interests and taxes, given by EBIT = Revenues − (production + operational + depretiation) Put another way, Net Income = EBIT − (loan interests + taxes). The cash flow statement represents a record of a company’s cash inflows and outflows over a period of time. These flows of cash are reported from the investing, operating and financing activities of the company. The main purpose of this financial statement is to report the company’s liquidity and solvency, and provides a measure of the ability of the company to change cash flows to meet future expenses.

# 6.2.3 Value Indicators

What do we do with all the business’ financial data? We use it to compute financial ratios to gauge the value of a stock and, by and large, the value of the company behind. Let us begin reviewing some common fundamental ratios to value a stock with respect to the business.

Earnings per Share : is the portion of the company’s profit allocated to each outstanding share of its stock, for a given period of time (which by default is the last twelve months). Calculated as:

where is the net income perceived in the period of time is the total amount of dividends on preferred stock, and is the weighted average number of shares outstanding for the period considered. Thus, represent that portion of the profits that a company could use to pay dividends to common stockholders or to reinvest in itself. A positive is an indication of a profitable company. Price to Earnings or : is the ratio of a company’s current share price with respect to its earnings per share for the trailing twelve months (the period by default). Formally, if is the price per share of a company’s stock at time is the twelve months time period ending at , then the price to earnings at time is

This is the most used factor by financial specialists.6 It gives a measure of the multiple amount per euro of earnings that an investor pays for a share of the company. In this regard, it is useful to compare the values of two stocks in the same industry. For example, if the P/E of the shares of bank A is lower than the shares of bank B, and the remaining fundamentals for both banks are quite similar, then the shares of A are the better deal. Benjamin Graham recommends as a reasonable P/E for a value stock an amount that is 20% below the multiplicative

inverse of the current high grade bond rate (Graham 2003, p. 350). If quantities are given in percentage terms this can be expressed mathematically by AAbond where AAbond equals a AA corporate bond yield. For example, if the one year yield of a AA-rated corporate bond (or high-grade corporate bond index) is of , then a good P/E for a stock (that is, for the stock to be considered of some value) is . The makes sense for a company with positive earnings. If then financial analysts give a value of 0 or NA (Not Applicable) to the P/E. Price to Book : is the ratio of a company’s current share price with respect to the company’s book value per share. In mathematical terms, the price to book at time is

where is the most recent quarter’s book value of the company for each outstanding share, calculated as (number of outstanding shares) (Assets - Liabilities)/(number of outstanding shares), and is the price of a share at time . Note that this is the same as (market capitalization) / (book value)

and that is why is also known as the Market to Book ratio (M/B). We have seen that for a financially well-balanced company, its book value represents the shareholders equity; hence, a P/B close to 1 means a fair price for the share since it is close to its “price in books”. A P/B much higher than 1 means that market investors are overvaluing the company by paying for its stocks more than the price in reference to the company’s value. Conversely, a low P/B (lower than 1 ) means that the market is undervaluing the company, and either the stock is a bargain with respect to its book value or has been oversold for reasons extrinsic to the company and perceived by the market.

Regarding the value assessment of business, the most commonly used measurements factors are organized into four groups pertaining to the following attributes: financial performance, the efficient use of resources, financial leverage, and liquidity.

Performance measures: We seek to know, How well is the company doing? How profitable it is? Besides the raw Net Income and EBIT, there are also the following metrics.

Return on equity : (net income)/(shareholder’s equity) It measures a company’s profitability by revealing how much profit it generates with the money shareholders have invested. Note that for a company that pays dividend only for common stock, this measure becomes Equity, which is the most frequent used form. Many analysts use this to estimate the long term dividend growth rate: the parameter in the perpetual growth DCF model for computing present value (Chap. 1, Eq. (1.120)). The estimation is done with the equation , which expresses the dividend growth rate as the ratio of reinvesment after payment of dividends per share’s earnings multiply by the factor of return on equity. Return on capital C): (net income after-tax interest)/(total capital) The total capital is the sum of shareholder’s equity and long-term debt. Thus, the ROC measures the proportion of return obtained from investing the money borrowed or owned. It is also useful for calculating the economic value added (EVA) for a company, which is the profit obtained after deducting all costs, including the expected return on all the company’s securities (known as cost of capital). This is the case, since

Return on assets : (net income after-tax interest)/(total assets) The proportion of the return obtained from operations financed with the company’s total liabilities plus shareholder’s equity (i.e. its total assets).

Efficiency measures: These measures are answers to the question: Is the company allocating resources efficiently? Asset turnover: (sales)/(total assets at start of year) A profit ratio of the amount of sales for each euro invested in resources. Inventory turnover: (costs of assets sold)/(inventory at start of year) A factor of how rapidly a company turns inventories into cash. A low value (e.g.  ) means poor sales and excess of inventory. Profit margin: (net income)/(sales) The proportion of sales that actually turn into profits. Leverage measures: with this class of indicators we want to determine the level of debt. Debt ratio: (total liabilities)/(total assets) A high ratio means a high leveraged company. Times-interest-earned ratio: EBIT/(interest payments) A factor of coverage of interest obligations by earnings. Values below 2 may indicate lack of money to pay interests. Cash-coverage ratio: (EBIT + depretiation)/(interest payments) A factor of coverage of interest obligations by all the operating cash. Liquidity measures: What’s the company’s capability of changing the flow of cash? (e.g., converting assets into cash, paying short term bills)

Working capital: (current assets) - (current liabilities) This is the most basic measure of a company’s liquidity; it gives the amount of cash that the company can have immediately. Working-capital to assets: (working capital)/(total assets) The proportion of all resources that represent working capital. Current ratio: (current assets)/(current liabilities) A value shows liquidity problems, a negative working capital.

# 6.2.4 Value Investing

How to use the value indicators to construct a set of criteria for good stock selection? Different value investing professionals have his or her own particular combination of financial ratios, selected from the ones listed in the previous section, or others drawn from their own research and experience, to make a selection of potentially profitable 6.2 Fundamental Analysis 203 stocks. But all, more or less, will coincide to some extend with Graham’s own set of guiding principles for acquiring value stock. So let us review Graham’s fundamental investment policies (updated to today’s market conditions) from (Graham 2003, Chap. 14): (1) Adequate size of the enterprise. The recommendation is to exclude companies with low revenues. Graham advises to consider companies with more than $100 million of annual sales. But that was back in 1973, so to adjust that lower bound to our times, compound that basic amount with a reasonable yearly interest rate, say 7%, for the number of years from that date to today, to get 100(1+0.07)40 = 1497.45, that is $1.5 billions in revenues. (2) Strong financial condition. The company’s current assets should be at least twice current liabilities (a 2-to-1 current ratio), and must have a positive working capital. (3) Earnings stability. The company should have positive earnings in each of the past ten years. (4) Dividend record. Uninterrupted payments of dividends for at least the past 20 years. (5) Earnings growth. An increase of 33% on the last three-years average of earnings per share (EPS), with respect to the three-years average EPS of a decade ago. This really amounts to a 3% average annual increase, which is not a very hard test to pass. (6) Moderate P/E ratio. Graham recommends a P/E in between 10 and 15 (or for a precise quantity apply Eq. (6.10)). (7) Moderate price-to-book ratio. The price-to-book ratio should be no more than 1.5. (8) The last two tests can be combined, as we shall explain, if it is the case that the P/E ratio is in the lower bound (and possibly below) or the price-to-book ratio is slightly above 1.5. The combined P/E and P/B test suggested by Graham, consists on calculating the product of the P/E times the P/B ratio, and this should not exceed 22.5 (this figure corresponds to 15 times earnings and 1.5 times book value). This alternative admits stocks selling at, for example, 9 times earnings

and times book value. Note that equating the combined ratio with the upper bound of we get , from where one obtains the Graham number

an estimate of the price of a stock under the value test by Graham. Any stock that passes the tests (1)-(5) and with a market price below the value calculated by Eq. (6.11) is considered a buying opportunity by Graham’s criteria.

By the end of 1970 the DJIA passed Graham’s test (1)-(7), but only five individual stocks from this market passed the test: American Can, ATT, Anaconda, Swift,

and Woolworth, and this group performed better than the index.8 This reinforces the advantages of diversification: a large and well diversified portfolio has greater chance of being conservative and profitable; on the other hand, stock picking with a conservative criteria which primes intrinsic value, may optimize the portfolio in size and profits. Doing a likewise screening and valuation of 4700 NYSE and NASDAQ stocks in 2013 gives also a very small amount of issues meeting Graham’s test.9 There are several internet sites that perform stock market valuation based on Graham’s criteria, or other combination of indicators established by some of his notable disciples.10 Alternative the reader can build his or her own stock screener and fundamental valuation in R, using the tools exhibited in R Example 6.2.