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Exploring the Under and Overvalued Stocks of 30 Listed Companies Using Dupont Model Analysis: A Conceptual Paper

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Abstract
Purpose: To explore whether DuPont analysis capable to predict under- or overvalued stocks.
Design/methodology/approach: Panel data analysis
Research limitations/implications: The research will establish a new paradigm of stock valuation.
Practical implications: The research will practically assist analysts/fund managers/investors to use DuPont analysis to identify under or overvalued stocks of 30 biggest companies listed on Bursa Malaysia.
Originality/value: Previous research focuses more on the impact of firms' financial ratios on stock value with no emphasization given whether the stocks are under or overvalued. This research meanwhile will focus on how and what components of DuPont lead to under or overvalued stock prices.

Keywords: Under and overvalued stocks, Dupont Analysis, Bursa Malaysia,

Introduction

Understanding the firm value is an important task, and often difficult to quickly and accurately ascertain. Market capitalization is a fast and easy method for estimating a company's value by extrapolating what the market or investors think the value of listed companies. Using market capitalization to show the size of a company is important because company size is a basic determinant of various characteristics in which investors are interested on.

However, market capitalization tends to ignore the fundamental financial value of the firms. It is purely valued by the market force via supply and demand of the shares. Other popular methodology of valuation that factor in the firms' financial position is book value.

Book value is originated from the accounting practice of recording asset value where it is being derived from the original historical cost in the books. While the book value of an asset may static over time by accounting measurements, the book value of a firm cumulatively can grow from the accumulation of earnings generated through the use of assets. Since a firm's book value represents the shareholding worth, comparing book value with market price of the shares can serve as an effective valuation technique when trying to decide whether shares or firms are fairly priced. Book value per share can be calculated as equation below:

BV= Total Common Stockholders' Equity- Preferred Stocks /Number of shares outstanding

In short, the book value of a company is the difference between that company's total assets and total liabilities. It reflects the total value of a firm's assets that shareholders of that company would receive if the company were to be liquidated or it tells investors how much a firm is worth if it ceased operating today, sold all its assets and paid off all its debts. BV is usually used to compare against firm's market price to determine whether a stock is under or overvalued. A stock with PBV> 1 is said to be overvalued and vice versa.

Literature Review

Price Earning (PE) ratio and Price to Book Value (PBV) benchmark valuation methods are the best definition of the comparable firms based on industry membership combined with return on equity (C.S. Agnes Cheng &Ray McNamara,2000). When the firm's value is unknown, the combined PE and PBV valuation approach is the best among all the valuation approaches. A two-stage stock valuation model derived from the PBV- Return on Equity (ROE) approach is as an effective tool for a broad variety of valuations, including the explanation of current prices and the prediction of future return differences (Jarrod W. Wilcox and Thomas K. Philips, 2005). Statistical tests such as Cox-Pesaran, Davidson-MacKinnon and Mizon Richard tests were used together for statistical assessment of the relation between the PE ratio and stock price (Radim Gottwald,2012).

Currently, the analysts calculate an industry-average price-to-earnings ratio and multiply it by a company's earnings to establish a "fair" value of a firm. Comparing with the industry average, however, overlooks the fact that some companies, even within the same industry, can have drastically different expected growth rates, returns on invested capital, and capital structures. Even when companies with identical prospects are compared, the P/E ratio itself is subject to problems, since net income commingles operating and non-operating items (Harlan Platt, Sebahattin Demirkan and Marjorie Platt, 2010).

As to date, there are a number of journals published and specifically discussed the factors influencing PBV ratio but limited journals explicitly break out the PBV, whether the stocks under- or overvalued. And, none of the research had so far determined how much were the stocks undervalued (discount) or overvalued (premium) to its book value and what contributes to the deepness of the discount stocks and what causes the stocks trade at premium. Most of the research discussed the impact of PB on stock returns. Furthermore, there are also limited studies have been carried out to identify and recognize the contribution of DuPont analysis towards firm's value with the presence of controlling shareholders as moderator.

DuPont Analysis

DuPont model is a common tool for measuring the drivers of profitability. It is a ratio-based analysis allowing analysts to observe the interactions among the important variables in the profit chain. The name comes from the DuPont company that began using this formula in the 1920s. DuPont explosives salesman Donaldson Brown invented the formula in an internal efficiency report in 1912. As characterized by Blumenthal (1998), the DuPont model is a useful framework for visualizing financial information and is a good tool for assisting managers in understanding how operating, financing, and investment decisions impact financial performance.

While PBV, PE, Enterprise Value (EV) and market capitalization analyses the fundamental value and market sentiment and speculation, DuPont analysis emphasizes on recognizing the financial indicators that contributing to ROE (its breakdown) before it affects the value the shares or in short, it is to analyses how efficient the company manages the shareholders' equity in generating profits.

DuPont analysis has been used has on explaining dividend policy from the use of information technology (IT) and company's superior performance (Dehning & Stratopoulos, 2002) as well as investigating financial performance in furniture industry. (Burja & Mărginean, 2014)

DuPont is a framework for analyzing fundamental performance by decomposing different drivers of return on equity (ROE). The decomposition of ROE allows investors to focus on the key metrics of financial performance individually to identify strengths and weaknesses. There are three major financial metrics that drive return on equity (ROE): operating efficiency, asset use efficiency and financial leverage. Operating efficiency is represented by net profit margin

or net income divided by total sales or revenue. Asset use efficiency meanwhile measured by the asset turnover ratio while leverage is measured by the equity multiplier, which is equal to average assets divided by average equity. Mathematically, it can be described as per equation below:

Theoretical Framework

$$\text{DuPont Analysis} = \text{Net Profit Margin} \times AT \times EM$$

Where
Net Profit Margin = Net Income/Revenue
AT =Sales/Average total sales
EM =Average Total Assets/Avg Total Equity

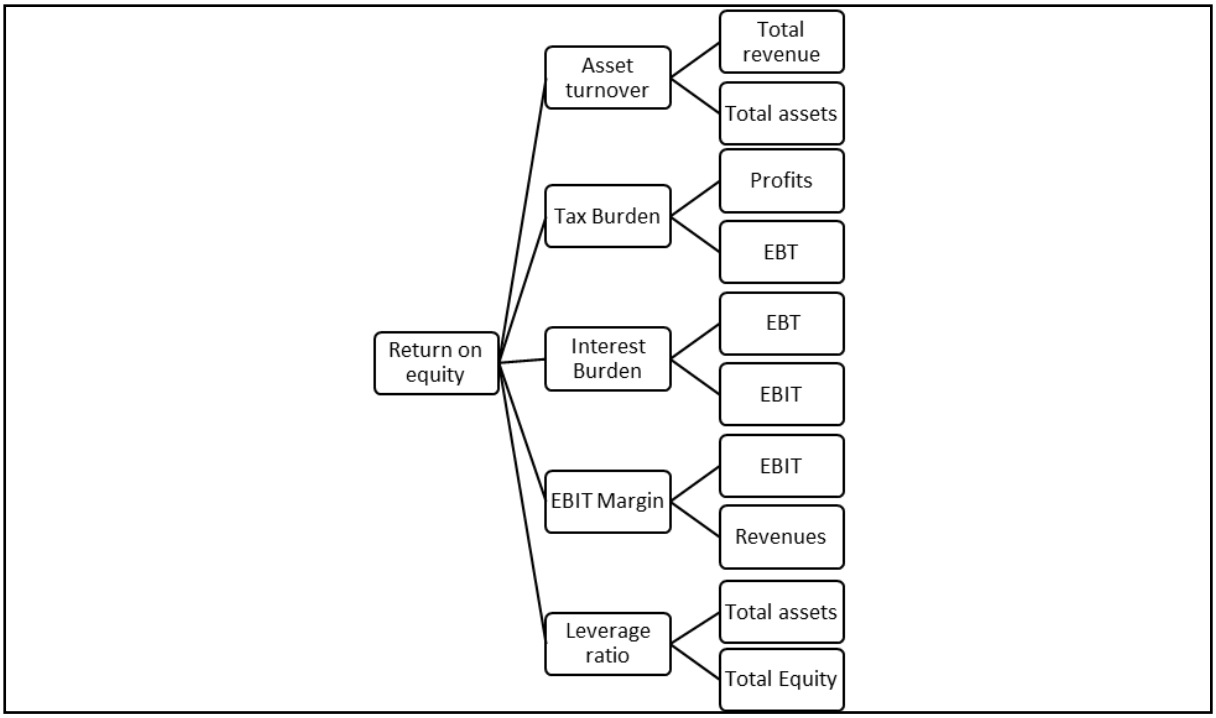

Figure 1: DuPont Components

Methodology

This research employs big data analysis where approximately 10 years of daily stock prices of 30 firms listed on Bursa Malaysia will be analyzed. The data will then be classified into three groups name undervalued, overvalued and fairly valued. The classified data will later be grouped into industry sectors. Form here, we can determine which sector under/over/fairly valued most.

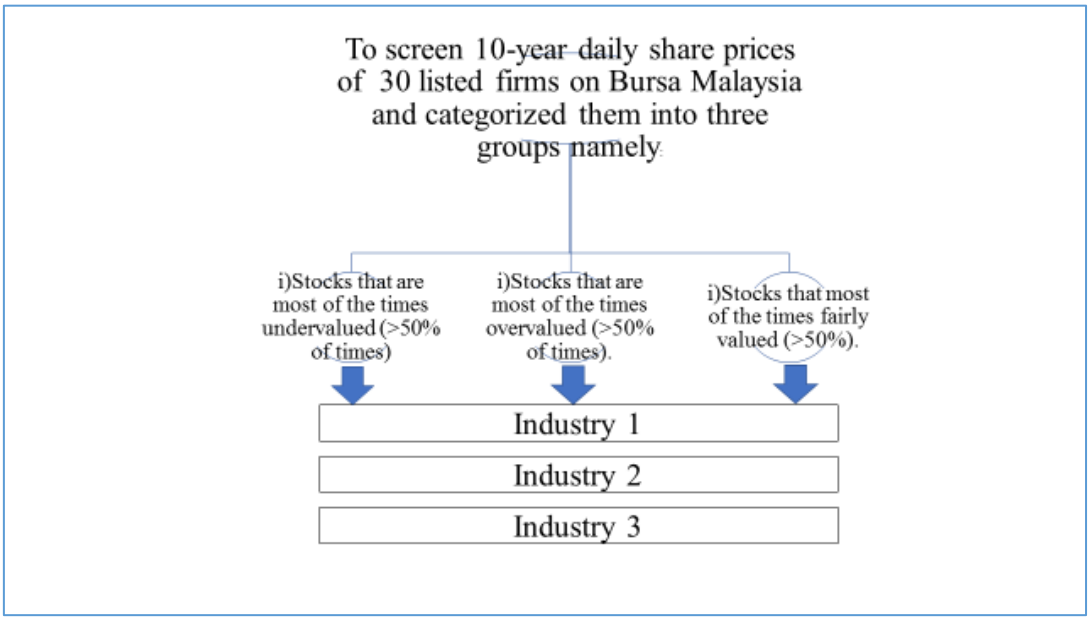

Figure 2: Data Classification Process

After sorting out all the data, we will apply DuPont analysis framework to determine the factors that contribute most to the value of the stocks or firms. The processes can be translated as required into Figure 3 below.

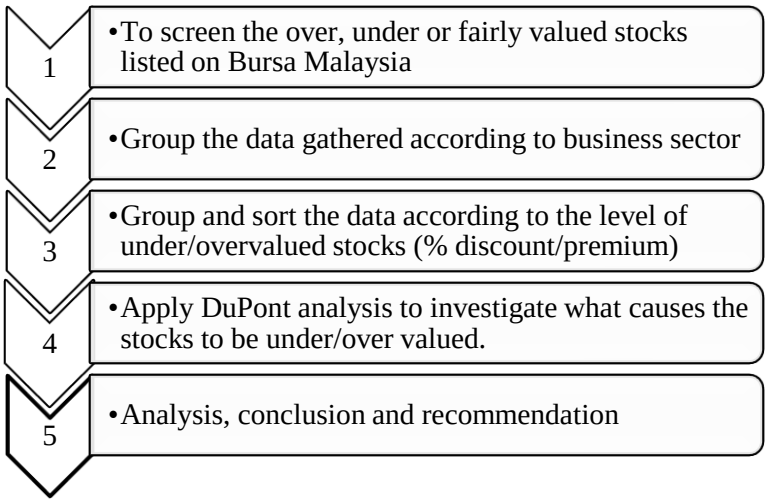

Figure 3: Data Screening and Research Process

Meanwhile, the research flow is shown in Figure 4 below.

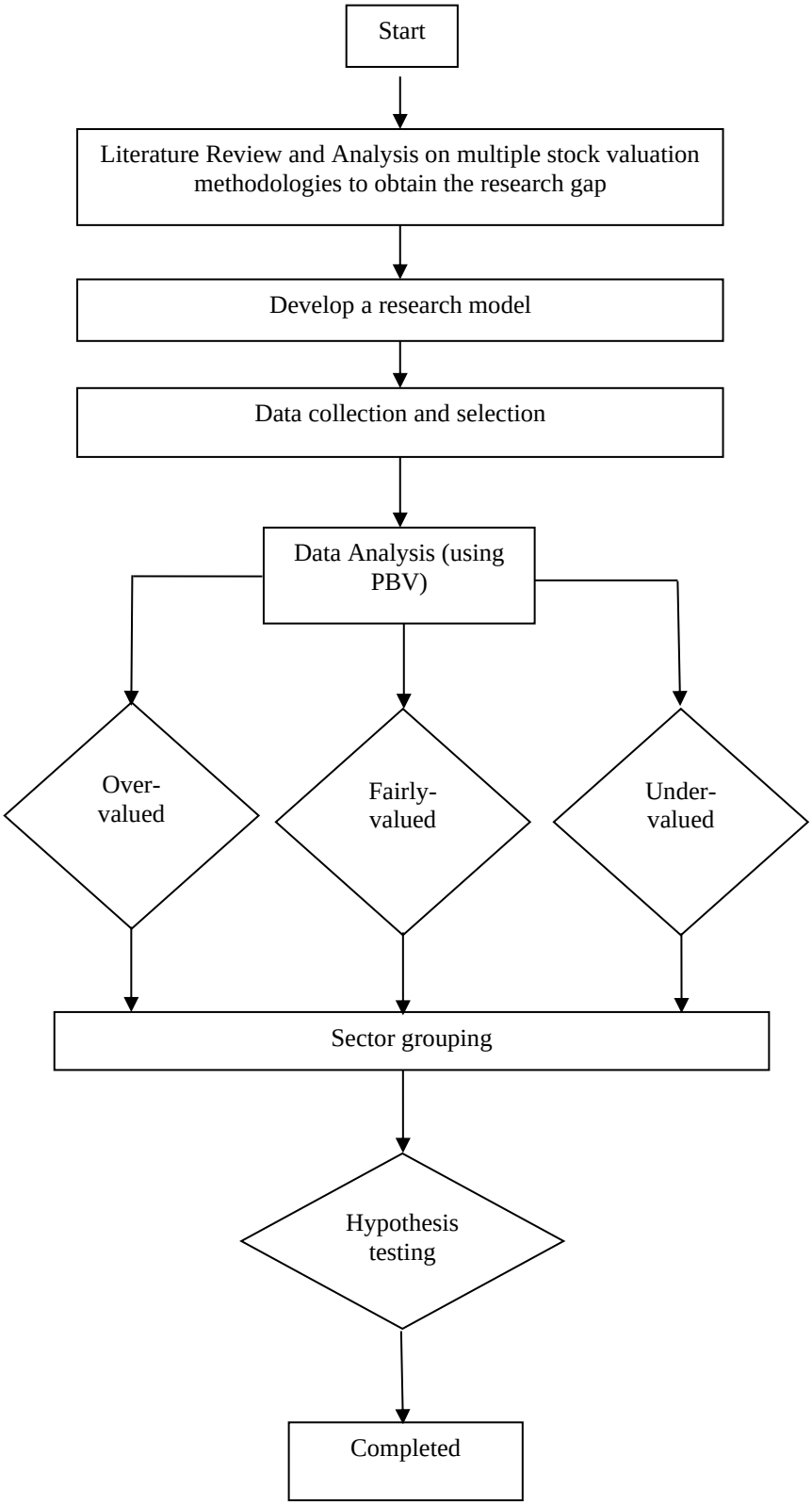

Figure 4: Research Flow

Discussion and Conclusion

This research will create a remarkable change from the perspective of analysts, fund managers and investors. It helps to provide a list of under or overvalued stocks and what have caused it to disequilibrium. Application of DuPont analysis will identify early indicators where the direction and performance of the stocks can be fundamentally predicted ahead of many other valuation methodologies. In addition, this research will reveal what components of ROE that will have a strong influence over the stock prices.

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