Investor Sentiment, Risk Factors and Asset Pricing: Evidence from Malaysia

Gunathilaka, Ambagahawatte Gedara Chandana

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Investor Sentiment, Risk Factors and Asset Pricing:
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Gunathilaka, Ambagahawatte Gedara Chandana

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DECLARATION

Name : Ambagahawatte Gedara Chandana GUNATHILAKA

Matric Number : 13010125

I declare that this Ph.D thesis is my original work except for quotations and citations which have been referenced and properly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Ambagahawatte Gedara Chandana GUNATHILAKA

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ABSTRACT

This study examines pricing implications of aggregate investor sentiment risk for equity returns, in presence of other market wide risk factors. Effects of Size, Book-to-Market, Illiquidity, Momentum, Human capital, and systematic risk of Capital Assets Pricing Model (CAPM) are analyzed using 72 risk-mimicking portfolios under applications of both time series and panel methods for 14 years up to 2013. It devises a unique seven-variable (7-V) index in capturing the investor sentiment risk based up on the methodology of Baker and Wurgler (2007). Risk factors and test portfolios construction follows Fama French approach. Time series and panel dynamic models are tested in a multifactor APT setting. CAPM poorly performs in explaining average stock returns. An asset’s exposure to size, value, momentum, and illiquidity characteristics subordinates CAPM’s explanatory power. Results demonstrate the significance of choice of sentiment-adjusted pricing in Malaysia. The 7-V index shows its efficiency in capturing Malaysian sentiment and power of explaining stock returns by improving efficiency of multifactor pricing models significantly. Evidence leans at describing the investor sentiment as a source of systemic risk. Negative Illiquidity factor indicates significance followed by Size and Value factors. Size and Value effects are significant in pricing models, and Fama-French (1993) model together with investor sentiment risk factor achieves a substantial pricing efficiency. Results indicate a subsuming power of illiquidity over size and value factors. Results reveal the existence of illiquidity discount. Size and value effects explain illiquid than liquid stocks, and signify importance of liquidity adjustment in explaining returns in cross section. Human capital is negatively associated to returns in cross section, however, but is an insignificant risk factor in pricing equity in Malaysia. Evidence dismisses application of a risk factor to the effect of momentum anomaly. Momentum trading
strategy is profitable in short to intermediate horizons, yet momentum risk factor is unable to improve the efficiency of pricing models. The study proposes choice of a five-factor pricing model, an augmented Fama-French three-factor model with sentiment risk and illiquidity. This 5-Factor Model is apparently persuasive for investments and related decisions in Malaysia. These results may provide investors, managers, and policy makers with concrete empirical evidence on impact of market sentiment, and other risk factors’ exposure of stock returns. On one hand, it highlights role of investor sentiment in investment management and related decisions and draws attention of corporate finance decision makers for behavioural finance. On the other hand, draws attention of policy makers on capital market administration, especially controlling misallocation of resources and bubbles.

**Keywords:** Investor sentiment, risk factors, pricing, Malaysia
Sentimen Pelabur, Faktor-Faktor Risiko, dan Penentuan Harga Aset: Bukti Dari Malaysia

ABSTRAK


Kata kunci: Sentimen pelabur, faktor risiko, harga, Malaysia.
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<td>Advance/Decline Ratio</td>
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<td>APT</td>
<td>Arbitrage Pricing Theory</td>
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<td>BME</td>
<td>Book to Market Equity</td>
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<td>Capital Assets Pricing Model</td>
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CHAPTER 1

INTRODUCTION

1.1 Preamble

Providing an overview to the thesis, this chapter discusses background to asset pricing puzzle and the role of investor sentiment. It presents the statement of research problem, specific research questions, hypothesis, and objectives of the study. Additionally, this chapter briefs overall research method, and identifies the significance and contribution of the study. The chapter identifies the need of empirical evidence on asset pricing and provides an insight in to the research performed.

1.2 Background of the study

The behaviour of market prices of assets is essentially a key element of decision-making process of not only for investment and finance managers, but also for many day-to-day decisions of most people. The choice on how to save, deposits or real estate investments, is dependent on an individual’s assessment on risk and return associated with available choices. Estimations of return possibility and level of risk, the required return, are often the essential, but difficult-to-assess ingredients for investment decisions. These investments include financial securities like stocks, bonds and treasury securities or savings in form of cash, bank deposits, or real estate property investments. Therefore, such return estimations necessarily involve and are not different from pricing of these assets. Nevertheless, a perfect measure of required return ‘how much of a return the investment should generate’ is not available.
Accordingly, ‘asset pricing’ has become an active area of research in financial economics over decades. The resultant empirical evidence however, contradicts with central explanations of mainstream asset pricing models available such as Capital Asset Pricing Model (Sharpe, 1964), Intertemporal Capital Asset Pricing Model (Merton, 1973), and dividend discount models. Among many, a potential reason acclaimed for the inconsistency is ‘investor heterogeneity’ and irrationality rather than rationality in decisions of market participants.

1.2.1 Role of Investor Sentiment

Pricing of assets are also significant at macroeconomic viewpoint because it influences the consumption and investment in physical assets like property, plant and equipments. Under the hypothesis that there are fully rational participants in the market (Fama, 1976), an asset’s price is often should continue at its fundamental value. Price is a function of future cash flows and expected return. However, reported market failures like sub-prime crisis in the United States, economic bubbles, and crashes indicate a mispricing issue then existed. On one hand, economic crisis and collapses are the possible consequences of mispricing in asset markets. On the other hand, if the markets are often mispriced, the rational expectations hypothesis collapses. As long as investors are rational and markets are perfect, there can be less possibility of mispricing (Hirshleifer, 2001) and the prices should stay at equilibrium. Fama (1998) discusses the argument that overreactions to past information could be a prediction of a behavioural finance alternative to market efficiency. It supports the argument on psychological mechanisms in explaining the price deviations from fundamental values. However, Fama (1998) also mentions that anomalies literature has not accepted such an alternative.
The behavioural biasness limits arbitrage opportunities (Brown & Cliff, 2005) in the market and creates a sentiment risk. Baker and Wurgler (2007) describe this condition in the language of modern behavioural finance as ‘limits to arbitrage’. Biasness makes irrational speculations and induces demand shifts generating sentiment risk (Mahakud, 2012). It happens because not all the investors can hold the same opinion about the ‘correct’ fundamental price due to inherent behavioural biasness. This interpretation challenges fully rational investor hypothesis and market efficiency, and supports the view that there is a role of investor sentiment in asset pricing.

Investor psychology biasness (Kahneman & Tversky, 1979) and limited arbitrage in determining stock prices (Shleifer & Vishny, 1997; Brown & Cliff, 2005; Finter et al., 2011; Mahakud, 2012) are the two fundamental arguments in behavioural asset pricing. The first uses cognitive bias in individual investor psychology to explain how individual investors under or over react to past returns or fundamentals (Daniel et al., 1998) and this is a ‘bottom-up’ approach (Baker & Wurgler, 2007). In this approach, individual investor psychology, such as overconfidence, representativeness, and conservatism, explains how individual investors under-react or over-react to past returns or fundamentals. Conversely, the ‘top-bottom’ approach uses market indicators to capture the impact of sentiment, and is a reduced form of aggregate investor sentiment to trace its impact on aggregate market and individual stocks return (Baker & Wurgler, 2007). Current study therefore, takes a top-down approach, and it follows the limited arbitrage argument.
1.2.2 Unpredictability

Stock markets play a key role in market economies. They channel savings of so-called ‘surplus units’ to businesses who need capital for their investments in projects. The firms borrow capital from the market to finance their investment projects. These investments generate returns and make rewards for the investors. Therefore, efficiency of market would create growth opportunities in an economy. The efficient market hypothesis (Fama, 1976) holds that, equilibrium prices prevail in markets incorporating all relevant information due to competition. An implication of this hypothesis is that simple strategies cannot outperform stock markets. The efficiency in the market has different dimensions, efficiency in its operations, and informational efficiency. Efficient wealth allocation is a primary characteristic of an efficient capital market. Furthermore, market participants should have equal opportunities, this happens through best estimates of true value of assets. Investors, who believe that the markets are inefficient, seek abnormal returns by market timing and are prepared to bear additional risk. According to Fama (1976), the founder of the efficient market theory, an efficient capital market is a market that is efficient in processing information. In an efficient market, prices “fully reflect” available information and thus successive price changes are independent. These prices are adjusted to new information showing consecutive price independence which is defined as ‘Random Walk’; one of the conditions required for random walk is that the time series of returns should show non-stationary characteristics at level (i.e., contain a unit root) (Gahlot & Datta, 2012).

EMH consists of three types of market efficiency. The first is the Weak Form efficiency, the information set that the market index reflects only the history of prices or returns themselves. The second, Semi-Strong Form efficiency, explains that the information set includes the most
information known to all market participants. The third is *Strong Form* efficiency, the information set includes all information known to any market participant. EMH argues that competition among investors makes the returns for information commensurate with the cost of such information. Hence, prices should correctly reflect all relevant information if costs are zero. If investors could expect that the prices will rise tomorrow, they all buy today pushing the price upward today adjusting to reflect today’s information. Due to this news-adjustment process in the market, short-run returns are unpredictable in an efficient market.

1.2.3 Predictability

Shiller (1981) shows that although stock prices are responsive to new information in the market, and there are other reasons that affect prices. Shiller (1981) interprets this excessive volatility arguing that it has roots to investor sentiment. Following this argument, later empirical findings on sentiment impact (Black, 1986; Lee, Shleifer & Thaler, 1991; Brown & Cliff, 2004, 2005; Baker & Wurgler, 2006, 2007) have created a serious challenge to the EMH. Thus, identification of sentiment based predictable variation in returns is a considerable debate in modern financial economics (Brown et al., 2005).

However, Fama (1998) disagrees with these challenges, accordingly market efficiency survives the challenge from the literature on long-term return anomalies. He observes that these reported anomalies are due to methodology issues, and most long-term return anomalies tend to disappear with reasonable changes in techniques. Nevertheless, continuous evidence on anomalies across the markets has diverted the research attention further. The link between *asset valuation and investor sentiment* has been of interest for large number of recent studies, they focus on investor heterogeneity in contrast to the ‘homo-economicus’ assumption in