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Portfolio Asset Allocation Decisions: A Meta-Analysis

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Abstract: Portfolio asset allocation decisions are not passive as mention in the modern portfolio theory, because many factors that can influence it. The purpose of this study is to explain the portfolio asset allocation decisions based on the results of previous research studies by using a meta-analysis approach. The meta-analysis was carried out from a systematic review of the literature review. This study uses secondary data gathered from the various reputable journal by using 14 relevance research that has been published for the period of 2005 – 2019. The result explains that various empirical evidence of many studies on portfolio asset allocation decisions systematically can provide an overview of research trends and types of research conducted by researchers. Most of the studies are quantitative research, use a more behavioral approach, and provide new insights related to factors that can influence investors in making portfolio asset allocation decisions.

Keywords: portfolio theory; asset allocation; meta-analysis

Introduction

Portfolio theory brings up that investors can reduce investment risk by investing their funds in various assets. In building a portfolio set, an investor is required to choose the composition of a risky portfolio and decide how much assets will be allocated to the risky portfolio, then the rest will be allocated to risk-free assets. Portfolio asset allocation to risky assets is very depend on an investor's risk profile (risk-averse, risk-neutral, risk lover) because the composition will be different for each of investor. The purpose of asset allocation in a portfolio is to balance the risk and the rate of return of investors by measuring the percentage of the trade-off between risk and return of each asset in an investment portfolio that is formed under the risk tolerance, objectives and investment period of investors (Yu, 2008).

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An investor may allocate funds in a portfolio to various types of assets, such as stocks, mutual funds, bonds, derivatives, various money market instruments, and others. The stock market and mutual funds are often regarded as high-risk assets and are more volatile when compared to bonds and money market instruments (Mahdzan, et al., 2017). Most investors are likely to avoid risk (risk-averse), unless the risky investment can provide a greater rate of return than risk-free assets (Giannetti and Koskinen, 2010; Van Rooij et al., 2011). Risk-averse investors only consider risk-free assets or the prospect of speculation with positive risk premiums, investors will reject investment portfolios in the form of fair games or worse than those preferred by risk lover investors (Bodie, Kane, & Marcus, 2014). Modern portfolio theory was initiated by Markowitz (1959), then expanded by Sharpe (1964); Lintner (1965); Mossin (1968) who is proposed a method for arranging an optimal and economically rational asset allocation decision for investors who only pay attention to the mean and returns variance on their portfolio for one period. A similar opinion was explained earlier by Tobin (1958). This theory stipulates that an investor must choose a portfolio that will repose in the efficient frontier (efficient frontier) which is the optimal combination of risk assets that provide the highest expected return for the lowest risk or variant.

Modern portfolio theory also illustrates that an investor will expect a maximum level of utility if he/she chooses an asset allocation that shares the highest expected return for a certain level of risk according to his/her preference for return and risk (Sundali, Stone & Guerrero, 2012). The assumption is that the objectives of the investor are explained by the expected utility function. This assumption has normative implications for optimal portfolios with two prominent results namely; (1) portfolio separation theorem which explains that all investors will choose well-diversified risk portfolios and choose the total optimal portfolio between risk portfolios and risk-free assets suitable with investor risk tolerance, (2) an investor has to hold several investments in an optimal portfolio risk as long as he/she has positive risk premium expectations (Baker & Nofsinger, 2010).

The unusual strength of modern portfolio theory (Markowitz's, 1959) is the conspicuousness and simplicity of the advice offered to the investors. Rational investors only need to determine their tolerance for risk, then build a portfolio consisting of a combination risky and non-risk assets with the assumption is the investors' tolerance of risk remains stable and the basic characteristics of assets also remain stabile, investors do not need to change their asset allocation strategy from one period to the next period, which means that investors shall and continue with the same asset allocation strategy from year to year (Sundali, Stone & Guerrero, 2012). The concept of modern portfolio theory will point investors to have an investment allocation strategy automatically because it is always the same from year to year. But what Markowitz said in his modern portfolio theory contrasts with the empirical evidence that shows investors behave passively. Several studies in the financial market have found that investors tend to overreact to the past market performance by increasing the allocation of risk assets when the market has increased and reduced the allocation of risk assets when the market is declining, that can reduce overall portfolio performance (De Bondt and Thaler, 1985; Barberis et al., 1998; Odean, 1998). Other research also shows there is the difference of individual portfolio deviation from normative principles in the modern portfolio theory (Blume and Friend, 1975; Kelly, 1995; Polkovnichenko, 2005; Calvet, Campbell, and Sodini, 2007). Other studies also show that asset allocation decisions in the portfolios are not fully diversified which can be caused by a

lack of financial assets knowledge and lack of competence in allocating assets to the financial instruments (Rooij et al., 2011; Mouna and Jarboui, 2015). It also can be caused by personal values that guide a person's financial behavior (Agyemang and Ansong, 2016).

The decision of portfolio assets allocation is not passive in the reality as explained by Markowitz's modern portfolio theory. There are many factors that influence the asset allocation decision that has been studied by a number of previous researchers. The purpose of this study is to explain the portfolio asset allocation decisions based on the results of previous research studies using a meta-analysis approach.

Methods

This research type is applied research (applied research) with a meta-analysis approach. The data used in this study are secondary data taken from 14 related research that has been published since 2005 until 2019 by a number of reputable journals. Meta-analysis is a statistical technique for combining the results of 2 or more similar studies in order to obtain a quantitative data mix (Anwar, 2005). The meta-analysis was carried out from a systematic review of the literature review.

The literature review of portfolio asset allocation decisions as a theoretical and practical study has helped in systematically evaluating a contribution from the literature (Ginsberg and Venkatraman, 1985). A systematic review uses explicit algorithms to conduct searches and carry out critical assessments of existing literature. Systematic, transparent, and reproducible procedures to improve the quality of the literature review process and its results (Tranfield et al., 2003). This method still has a number of limitations, including the difficulty of synthesizing data from various scientific disciplines, inadequate book representation, and a large amount of material to be reviewed (Pittaway et al., 2004). However, this methodology can handle the complexity of the portfolio asset allocation decisions field.

The systematic review starts from the traditional narrative review with a comprehensive search process (Tranfield et al., 2003) by searching a number of relevant journals using the keyword "asset allocation" in the financial field. The next step is to select empirical journals relevant to the topic of portfolio asset allocation decisions raised in this paper.

Findings

This study focus on the results of empirical research conducted by a number of previous researchers who will provide a summary of empirical findings of portfolio asset allocation decisions other than modern portfolio theory proposed by Markowitz (1959) which will prove that investors' portfolio asset decisions are not passive, but influenced by a number of factors both of behavioral and non-behavioral factors.

A number of empirical studies concerning the portfolio assets allocation decision that have been published in a number of journals, such as Journal of Financial Management of Property and Construction, Managerial Finance, International Journal of Islamic and Middle Eastern Finance and Management, China Finance Review International, Pacific Accounting Review, Studies in Economics and Finance, Asian Review of Accounting, Investment Management and Financial Innovations, and others.

The portfolio assets allocation decisions have been explained by Markowitz with his modern portfolio theory mention that the investor wealth allocation decisions to various assets are determined by the trade-off between expected return and the risk of assets in the portfolio. This theory is getting a lot of resistance from a number of researchers who state that the portfolio assets allocation decisions are influenced by various factors. It continues to grow rapidly until now.

Research performed by Camilleri, Tahir and Wang (2005) attempt to use international diversification besides local assets (Australia) to determine portfolios optimal asset allocation by using index futures contracts in five countries namely Australia, United States, United Kingdom, Hong Kong, and Japan during the period of January 1, 1990, to December 31, 2020. This research result showed that the optimal assets allocation is if an international diversification carried out at the same time can reduce risk with better returns compared to the portfolios with the same weight on local assets. The more international assets added to the portfolio, then the less of portfolio risk.

Research on portfolio asset allocation decisions is quite diverse, some are experimental and some are quantitative, but what dominates from several relevant empirical of literature that has been successfully collected from 2005 - 2013 is quantitative research. For more details can be seen in table 1 below:

Table 1. **Literature Review of Portfolio Asset Allocation Decisions**

Author	Number of Publications	Year	Types of research
Sundali, et al.	1	2012	Experiment
Mahdzan, et al.	1	2017	Quantitative
Hin, et al.	1	2010	Quantitative
Yang & Zhong	1	2013	Quantitative
Puopolo	1	2016	Quantitative
Zhang	2	2011, 2014	Quantitative
Nisani	1	2018	Quantitative
Camilleri, et al.	1	2005	Quantitative
Mikhaylov, et al.	1	2019	Quantitative
Aren & Aydemir	1	2015	Quantitative
Duasa & Yusof	1	2013	Quantitative
Abreu & Mendes	1	2010	Quantitative
Pyles, et al.	1	2016	Quantitative
Total	14	42.86% published in 2015 and above	92,86% is quantitative research

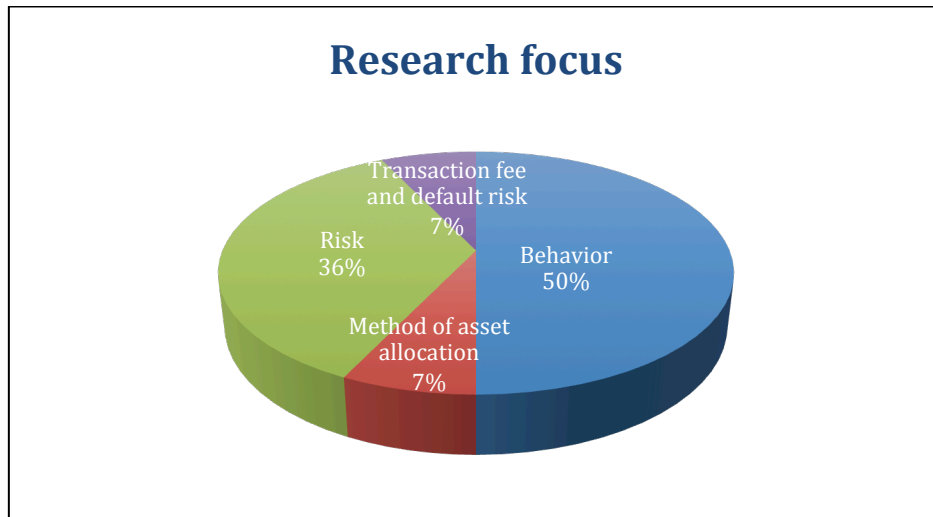Source: Various international journals of financial management

The above data shows that from the 14 empirical studies collected, the majority (42.86%) were published in 2015 and above, and 92.86% were quantitative studies. This condition indicates that to prove various factors that influence portfolio asset allocation decisions, investors prefer to use a quantitative approach compared with experimental and qualitative research. The main focus of the research as mentioned in table 1 above is tends to the investor's behavior that affects their portfolio asset allocation decisions which reach 50%, then focus on risk at 35.71%. For more details can be seen in table 2 and figure 2 below:

Table 2. **Research Focus on Literature Review of Portfolio Asset Allocation Decisions**

Research Focus	Number of Publications	Percentage
Behavior	7	50.00
Method of asset allocation	1	7.14
Risk	5	35.71
Transaction fee and default risk	1	7.14
Total	14	100.00

Source: Various international journals of financial management

Figure 1. **Research Focus on Literature Review of Portfolio Asset Allocation Decisions**

Source: Various international journals of financial management

Research conducted by Sundali, et al. (2012) is experimentally and found that portfolio asset allocation decisions are strongly influenced by the performance of the previous year's assets. Furthermore, research performed by Mahdzan, et al. (2017), still related to the investor's behavior shows that the level of religiosity does not affect the portfolio asset allocation decision, but the dimension of religiosity (virtue and obligation) influences the allocation of risk assets in the portfolio. Other findings indicate that risk tolerance, income, and education level have a positive effect on the fund's allocation of risky assets in the portfolio.

Hin, et al. (2010) explained alternative methods of modern portfolio theory, that is fuzzy tactical asset allocation (FTAA) for international asset allocation and direct real estate investment, the results show that FTAA model enhances Markowitz's modern portfolio asset allocation theory through more intuitive decision making in direct international investment and real estate. Furthermore, Yang and Zhong (2013) state that during the 20 years of their testing period (1992 - 2011) found that assets allocation in the three indexes used: equity, fixed income and dynamic commodities and strong risk-free assets against variations in capital market expectations and outperform asset allocation in the model formed and on traditional assets. While Mikhaylov, et al. (2019) also tried to do an asset allocation study on equity, fixed income, & cryptocurrency and found that investors with high risks have low incomes also young age, but older investors tend to look for low-risk investments.

Hin, et al. (2010) has explained alternative methods of modern portfolio theory that is fuzzy tactical asset allocation (FTAA) for international asset allocation and direct real estate investment, the results show that FTAA model enhances Markowitz's modern portfolio asset. Paupolo 2016 found that default risk and transaction costs affect investor asset allocation decisions. Duasa & Yusof (2013); Pyles, et al. (2016) found that risk tolerance and education level influence the portfolio asset allocation decisions. Zhang conducted a study in 2011 and found that investors pursued returns when choosing investment funds in their initial choice and during the subsequent allocation of fund transfers, then in 2014, he found that financial advisors influenced the decisions of individual investor asset allocations. Furthermore, Abreu & Mendes (2010) also tried to use the level of education and financial knowledge of investors' factors and found that the level of education and financial knowledge had a positive effect on the diversification of investors' portfolio assets.

Nisani (2018) tried to make a portfolio selection by using the riskiness index, and the results showed that this method can reduce individual risk on financial assets in the portfolio. Aren & Aydemir (2015) test the factors that influence individual investment choices and found that age, marital status, and social criteria do not make a difference in all alternative investment choices.

Conclusion

The literature review provides a comprehensive view of the latest developments in empirical research regarding portfolio asset allocation decisions. The purpose of this study is to explain the portfolio asset allocation decisions based on the results of previous research studies by using a meta-analysis approach. The meta-analysis approach used to explain various empirical evidence of many studies on portfolio asset allocation decisions systematically can provide an overview of research trends and types of research conducted by researchers. Most of the studies are quantitative research and use a more behavioral approach. The findings from the 14 journals used in this study are also diverse and provide new insights to us about what factors can influence investors in making portfolio asset allocation decisions where most investors are risk-averse.

This research result shows that there is a change in investor behavior patterns from automatic strategic investment allocation mention by Markowitz (1959) to behave passively, in fact, tend to overreact to the past market performance by increasing the allocation of risk assets when the market has increased and reduced the allocation of risk assets when the market has decreased. Refer to the above literature we argue that there has been a change in the paradigm of investor asset allocation behavior from traditional perspective who assume that investors are always rational to become irrational. Furthermore, others studies indicate that portfolios asset allocation decisions are not fully diversified which can be caused by lack of knowledge about financial assets and lack of competence in allocating assets to financial instruments, also personal values that guide investor financial behavior. Overall, this study show that portfolio asset allocation decisions still has potential for future research and it's important to explore.

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