EVALUATING THE EFFECTIVENESS OF INTERNATIONAL PORTFOLIO DIVERSIFICATION IN MITIGATING RISK AND ENHANCING RETURNS

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Abstract

This study presents an in-depth Empirical and Theoretical investigation into the effectiveness of International portfolio Diversification (IPD) in reducing investment risks while enhancing returns in an increasingly interconnected and volatile global financial environment. Based on the foundational principles of Modern Portfolio Theory (MPT), Capital Asset Pricing Model (CAPM), and International CAPM (ICAPM), The study critically examines the risk-return trade-offs associated with cross-border investment strategies. The primary aim is to assess whether allocating assets across international markets, particularly developed, emerging, and standalone economies, offers superior performance compared to domestic-only portfolios. The study employs a robust dataset comprising 30 MSCI-classified stock markets over a five-year period (2017–2022), analyzing monthly returns, volatility, and the degree of international diversification. Using the k-means clustering algorithm and silhouette analysis, multiple cluster models (two, three, four, and five clusters) are developed to categorize markets based on their return, risk, and international diversification levels. Findings indicate that developed markets, characterized by higher levels of international diversification, consistently offer better risk-adjusted returns and lower portfolio volatility than emerging and standalone markets. However, the results also highlight that diversification benefits are not evenly distributed and are influenced by macroeconomic variables such as exchange rate fluctuations, political risk, and the degree of market integration. The study also explores the implications of home bias, investor psychology, and financial

behavior on diversification outcomes, emphasizing the need for active portfolio management and strategic asset allocation tailored to global market dynamics. Overall, this study contributes to academic literature and investment practice by offering a comprehensive framework to evaluate and optimize international portfolios. It provides actionable insights for investors, portfolio managers, policymakers, and financial institutions seeking to navigate global markets effectively. The findings underscore the necessity for continuous monitoring, risk assessment, and adaptive strategies to achieve sustainable investment performance in a world of evolving financial interdependence and uncertainty.
Key Words: International Portfolio Diversification, Risk Mitigation, Return Enhancement, Global Financial Markets, Asset Allocation, Market Integration.

INTRODUCTION

The issue of international portfolio diversification has become one of the most valuable practical strategies of contemporary finance, which strives to reduce risk and maximize returns by finding a certain method of distribution of investments in various international markets. This school of thought is premised on the fact that there may be imperfect correlation among the assets across countries such that the asset prices do not behave in unison (Manasseh et al., 2019). A combination of these assets can potentially decrease the overall volatile nature of the portfolio of an investor as compared to investment in any one market (Briand et al., 2009). International diversification has become very attractive with the rising level of globalization, meltdown of more barriers to cross-border investments and the expanding access of foreign markets to both large and small investors. Nevertheless, the success of international diversification does not come without complications and difficulties as it is dependent on many factors such as the fluctuation of exchange rates, political risks, the differences in the regulation and the extent of market integration (Kroencke & Schindler, 2012). Moreover, empirical indications of the benefits of global diversification have been contradictory,

with some reports documenting modest levels of risk-adjusted incremental returns, whereas others indicate that returns have failed to enhance with time owing to ever-rising global market correlations. Thus, optimal assessment of the international portfolio diversification is possible only with a close consideration of its possible upside and the limitations it implies along with the market circumstances and investment approaches that can play the most significant role in determining the effectiveness of this strategy in a particular situation (Choueifaty, 2008). It is imperative to say that although international diversification has the possibility of lowering the volatility of a portfolio, there is no guarantee of increased returns or the absolute prevention of losses (Chiou & Boasson, 2015). The debate regarding the actual status of international diversification continues and requires constant research and redeveloping of investment plans to accommodate the dynamic of the global financial situation even more so in light of the growth of interdependent financial markets (Chiou, 2007).

Significance of the Study

The results of this study are of significant value to a vast number of groups, included in the world financial environment. To individual investors, the paper will provide advice on how to build a well-diversified international portfolio of investments, which suit the risk profile and investment goals. To institutional investors, e.g. pension funds and endowments, the results are beneficial in the management of vast international portfolios and fulfillment of their long-term financial commitments.

Research Objectives

This study aims at accomplishing several important research tasks that would help in filling the gap in international portfolio diversification.

- To evaluate and compare the historical performance of international portfolios versus domestic portfolios, focusing on risk-adjusted returns and volatility reduction.

- To identify and analyze the key determinants influencing the effectiveness of international diversification.
- To examine the impact of various asset allocation strategies (e.g., active vs. passive management) on international portfolio performance.
- To assess the diversification benefits and associated risks of investing in emerging markets compared to developed markets.

Purpose of the Study

This research is aimed, in the first place, at the well-grounded and thorough analysis of the efficiency of international portfolio diversification. The findings of the study will help fill in the space between theory and practice and provide practical recommendations to investors and portfolios managers who strive to optimize portfolios and to manage risk in the global environment. Moreover, this study hopes to enlarge the body of academia related to international finance by bringing new insights to profitability and risk of diversification in a more integrated international market. Finally, the role of the study is to contribute to the development of the knowledge in the sphere of international portfolio diversification and to give the investors and the portfolio managers a chance to make better decisions and obtain better investment results. Interestingly, the study focuses on the solid reasons behind the phenomena and establish the connection between the foreign ownership and firm performance, adding factors such as international diversification and competitive environment.

Research Questions

This study will address several key research questions to evaluate the effectiveness of international portfolio diversification.
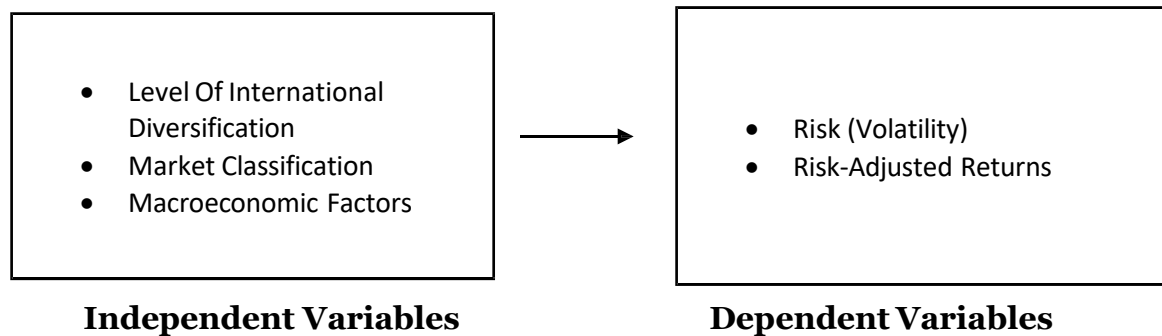
1   How does the performance of internationally diversified portfolios compare to domestic-only portfolios in terms of return enhancement and volatility reduction over different market cycles?

ƶ   What are the key factors that influence the effectiveness of international diversification, such as market integration, exchange rate fluctuations, and political risk?

3   How do different asset allocation strategies impact the performance of international portfolios, and what is the optimal mix of assets for achieving diversification benefits?

4   What are the diversification benefits of investing in emerging markets compared to developed markets, and what are the unique risks and opportunities associated with each?

CONCEPTUAL FRAMEWORK

This study is grounded in the principles of Modern Portfolio Theory (MPT) and the Capital Asset Pricing Model (CAPM) and seeks to evaluate how international portfolio diversification (IPD) affects investment performance in terms of risk and return. The central dependent variables in this research are portfolio risk (volatility) and risk-adjusted returns, which are key indicators of investment performance. These outcomes are influenced by several independent variables, including the level of international diversification (measured by home bias reduction), market classification (developed, emerging, or standalone), exchange rate volatility, market integration, and political risk. The conceptual framework proposes that higher international diversification—particularly across less correlated markets—should lead to lower overall portfolio risk and potentially higher risk-adjusted returns. Additionally, the framework integrates behavioral and structural factors such as asset allocation strategy (active vs. passive) and investor preferences, which moderate the relationship between diversification and performance. The model assumes that while international diversification is generally beneficial, its effectiveness varies significantly based on global market dynamics and macroeconomic shocks. Therefore, the framework highlights the interplay between global financial structures and investor decisions, offering a

comprehensive view of how diversification strategies operate in an increasingly interconnected investment landscape.

Independent Variables	Dependent Variables
• Level Of International Diversification • Market Classification • Macroeconomic Factors	→ • Risk (Volatility) • Risk-Adjusted Returns

LITERATURE REVIEW

The international portfolio diversification literature is large and many decades old, as more time passed around the increasing interest in global investments and the rise of integration in financial markets. In this chapter, the existing literature which has been done on the issue of international diversification of portfolio is exhaustively reviewed in terms of the theoretical formation, the empirical results and challenges in the field of study (Ramanujam & Varadarajan, 1989). The discussions have looked at the advantages of international diversification, the aspects that determine its efficiency and the problems involved in managing international portfolios.

The theoretical foundations of international portfolio diversification are rooted in the principles of modern portfolio theory, which was pioneered by Harry Markowitz in the 1950s. Markowitz demonstrated that investors could reduce portfolio risk by diversifying across different asset classes and securities (Lhabitant, 2017). His work provided a framework for constructing efficient portfolios that maximize expected return for a given level of risk (Chhabra, 2006). The concept of diversification is based on the idea that different assets have different risk-return profiles and that by combining assets with low correlations, investors can reduce the overall volatility of their portfolios. Sharpe and Lintner further developed Markowitz's work by introducing the Capital Asset Pricing Model, which provides a framework for determining the expected return on an asset based on its systematic risk,

measured by beta (Domínguez, 2022). The CAPM assumes that investors are rational and risk-averse and that they hold well-diversified portfolios. Alternatively, the Arbitrage Pricing Theory, developed by Ross, expands upon the CAPM by allowing for a multifactorial determination of asset pricing, thus acknowledging that various macroeconomic and firm-specific variables can systematically influence asset returns (ElBannan, 2014). These models assume efficient markets, where prices reflect all available information, but in reality, market inefficiencies and behavioral biases can affect portfolio diversification decisions. It is important to note that the asset pricing theory is a positive theory which attempts to hypothesize how the investors behave rather than how they should behave by estimating the expected return of a portfolio constructed based on mean-variance analysis (Perera & Ediriwickrama, 2020).

Investors can be better informed when making decisions about how to diversify their portfolios if they have a solid understanding of the theoretical underpinnings of international diversification. The Markowitz Model serves as a foundation for comparing different investment portfolios and providing recommendations to investors regarding their investment decisions (Mangram, 2013). A portfolio's risk may be reduced by investing in combinations of assets that are not entirely positively linked (Zhi-jian, 2023). Based on this risk-return relationship, some researchers developed a model for how this relationship would be established in a financial market in equilibrium (Essingone & Diallo, 2022).

However, CAPM is predicated on several assumptions that have been challenged in the extant literature, including the assumption of homogeneous expectations among investors and the absence of market frictions such as transaction costs and taxes (Wu, 2022). Despite these limitations, the CAPM remains a widely used tool for estimating the cost of equity capital and evaluating portfolio performance (Fama & French, 2004; Wu, 2022). It posits a direct linear relationship between systematic risk and expected return,

providing a foundational basis for understanding risk-adjusted performance metrics (Pamane & Vikpossi, 2014). The CAPM's simplicity and intuitive appeal have contributed to its widespread adoption in both academic and professional settings (Fama & French, 2004). However, the practical application of the CAPM, especially in strategic management contexts, requires caution due to the model's restrictive assumptions and empirical limitations (Oviatt, 1989). While the CAPM provides a baseline for understanding risk and return, empirical evidence suggests that it may not fully explain the cross-sectional variation in asset returns (Galagedera, 2007). Despite these criticisms, the CAPM remains a cornerstone of modern finance, providing a benchmark for evaluating investment performance and understanding the relationship between risk and return (Sattar & Jannatunnesa, 2017) (Dawson, 2014).

Empirical studies have consistently demonstrated the potential for international diversification to reduce portfolio risk. By investing in assets across different countries, investors can reduce their exposure to country-specific risks, such as political instability, economic shocks, and currency fluctuations. Research has shown that the benefits of international diversification are particularly pronounced when correlations between asset returns in different countries are low (Dawson, 2014). However, correlations between markets tend to increase during periods of global financial crisis, which diminishes the benefits of diversification. International diversification's effectiveness in reducing risk depends on several elements, including market integration, exchange rate volatility, and investment horizon. The degree of market integration affects how returns correlate between different countries; more integrated markets have higher correlations, which lowers the possibility of diversification. Exchange rate volatility is a key consideration because changes in exchange rates can have a substantial impact on the returns of international investments. Furthermore, the benefits of international diversification tend to be greater over longer investment horizons, as short-

term market fluctuations are averaged out over time. While international diversification provides various benefits, it also has its own challenges, such as increased transaction costs, information asymmetry, and regulatory obstacles. Furthermore, investors may experience difficulties as a result of cultural differences and language barriers, which have an impact on their capacity to assess investment opportunities and oversee their portfolios efficiently.

Diversification benefits are more pronounced when economic conditions vary across nations, allowing investors to take advantage of growth opportunities in various markets. When domestic Sharpe ratios are lower, investors gain more from international diversification, particularly through risk reduction (Mukherji & Jeong, 2020). It's important to remember that complete diversification may not always be advantageous, and an arbitrarily low level of diversification may be the best option (Wagner, 2009). Investors can further enhance the advantages of diversification by utilizing strategies for currency hedging. Active currency management strategies can help to mitigate the negative impact of exchange rate fluctuations on portfolio returns.

Research indicates that banks engaging in international syndicated loan portfolios maintain a higher loan supply during banking crises in borrower countries (Doerr & Schaz, 2017). Positive loan supply effects lead to increased firm investment and job growth, with diversified banks remaining stable due to their ability to raise additional funds during periods of distress (Doerr & Schaz, 2021). Banks can diversify by expanding beyond traditional lending activities into a variety of noninterest revenue sources (Li et al., 2021). Although the majority of regulators throughout the world promote diversification to lower bank risk, it may actually make banks more financially unstable or raise the possibility of financial market meltdown when unusual events like financial crises take place (Kim et al., 2019),(Simoens & Vennet, 2021).

Global financial crises, such as the 2008 financial crisis and the COVID-19 pandemic, can trigger widespread market contagion, causing correlations to

spike and diversification benefits to evaporate temporarily (Aisen & Veiga, 2012). The interconnectedness of global markets means that shocks in one region can quickly spread to others, undermining the protective effects of diversification. During crises, investors often engage in flight-to-safety behavior, selling assets in riskier markets and flocking to safe-haven assets, which further increases correlations and reduces diversification benefits.

The impact of diversification on earnings management is less pronounced during crises, indicating that the benefits of diversification may be muted during periods of significant market turmoil (Tran et al., 2019). Diversification can be seen as a means to build capabilities and resilience in the face of supply chain disruptions (Lin et al., 2021). Banks with higher asset quality can achieve higher returns through diversification into non-traditional activities, but diversification may hurt banks with lower asset quality if these activities are riskier and offer lower returns. The success of international portfolio diversification is influenced by various factors, including the selection of asset classes, the choice of markets, and the timing of investments. Incorporating diverse asset classes, such as real estate, commodities, and alternative investments, can further enhance diversification benefits. Strategic asset allocation, which involves adjusting the portfolio based on market conditions and economic outlook, is crucial for maximizing the benefits of international portfolio diversification (Narayan et al., 2022). Diversification may reduce a bank's risk, and bank independency can help prevent bank failures in Europe (Mili et al., 2019). International portfolio diversification remains a critical strategy for mitigating risks and enhancing returns, requiring careful consideration of market dynamics, risk management techniques, and strategic asset allocation.

In addition to traditional international portfolio diversification, several alternative strategies can further enhance risk-adjusted returns (Hazar et al., 2019). One such strategy is diversification through alternative investments, such as hedge funds, private equity, and real estate, which can offer unique

risk-return profiles and low correlations with traditional asset classes. Another strategy is factor-based investing, which involves targeting specific risk factors, such as value, momentum, and quality, that have historically generated excess returns (Estes, 2016). Currency hedging is another critical aspect of international portfolio diversification, as exchange rate fluctuations can significantly impact returns.

Actively managing currency exposure can reduce volatility and enhance risk-adjusted returns. The effectiveness of diversification strategies can be evaluated using various risk measures, such as Sharpe ratio, Treynor ratio, and Jensen's alpha. Moreover, incorporating tail risk hedging strategies, such as purchasing options or using dynamic hedging techniques, can protect the portfolio against extreme market events (Alqahtani et al., 2020).

These measures provide insights into the portfolio's risk-return profile and help investors make informed decisions. The evolution of risk diversification illustrates that a well-diversified portfolio should include at least 30 stocks for borrowing investors and 40 stocks for lending investors, contradicting the notion that hundreds of stocks are required (Woerheide & Persson, 1992). Diversified portfolios, coupled with the utilization of the Sharpe ratio, offer a means to enhance returns while mitigating risk (Chengyang, 2024). Another approach to diversification is risk parity, which seeks to balance the risk contribution from different asset classes (Qian, 2011). This can be achieved by allocating capital to asset classes based on their volatility, rather than their market capitalization. In contrast to standard portfolio diversification theory, some investors may choose to invest in a small number of stocks due to risk control, especially when wealth is low. Alternative diversification strategies can further enhance risk-adjusted returns, but it is essential to carefully evaluate their suitability and implement them effectively.

METHODOLOGY

Hypothesis

H$_1$: International diversification of portfolios of those investors in developed markets is superior to the investors in emerging markets.

H$_2$: Investor who has greater international diversification, is better off in terms of Return & risk compare to Investor with Domestic Diversification.

Model

Cluster analysis method was applied to develop the model. Several reasons why the cluster method was selected be attributed to nature and the specificity of the data along with the benefits of the cluster analysis. Cluster analysis is one of the categories of the methods of classification analysis. It enables us to partition a sample of observations into various subsets or groups such that observations within a group are close enough to one another. The primary merit of a cluster analysis is that the observations can be assigned to multiple variables of any type, and the number of needed clusters can be calculated in accordance with the objectives of research. Cluster analysis comes in various sorts. This model however uses the k-means clustering algorithm. K-means aim at clustering similar observations together into a cluster with the maximum number of clusters represented by k whose value is given by the number of clusters.

Sample Size

Thirty markets have been picked to analyze, including Great Britain; France; Germany; USA; Japan; Norway; Canada; Hong Kong; Ireland; Italy; Netherlands; Spain; Thailand; Turkey; Poland; Indonesia; Korea; India; Argentina; Austria; Denmark; Belgium; Sweden; Egypt; Brazil; Switzerland; Greece; Hungary; Mexico; and Malaysia. The model was developed in the MSCI market classification. The model consists of the following categories of markets: 17 MSCI Developed Markets (UK, France, Germany, USA, Japan, Norway, Canada, Hong Kong, Ireland, Italy, Netherlands, Spain, Austria, Denmark, Belgium, Sweden, Switzerland); 12 MSCI Emerging Markets

(Thailand, Turkey, Poland, Indonesia, Korea, India, Egypt, Brazil, Greece, Hungary, Mexico, Malaysia); 1 MSCI Standalone Market (Argentina). The level of gross index absolute monthly returns in the local currency U.S. dollars is raw data involving 30 stock markets. The standard is on stock size (large- and mid-cap stocks).

Time Period

The information is pro 5 years (June 30, 2017, to June 30, 2022). This information formed the foundation on which the percentages of returns and risk were to be calculated on a monthly basis so as to get the market portfolios of each market being considered.

Variables

The key message underlying the model is to outline each market in three attributes (variables) like rate of returns, Rate of risk and the intensity of international diversification.

Data on the level of international diversification has been computed based on home bias studies of Bose, MacDonald, and Tsoukas (2015), Boermans, Cooper, Sercu, and Vanpee (2022). Specifically, the selection of the markets where the study was implemented was determined by the home bias statistics availability.

TABLE 1: THE AVERAGE MONTHLY LEVELS OF RETURN AND RISK, AND LEVEL OF INTERNATIONAL DIVERSIFICATION FOR 30 MSCI MARKETS (2017–2022)

S.No	Country	Return, %	Risk, %	Level of international diversification, %
1	Argentina	0.12	13.91	**13.47**
2	Austria	0.26	8.77	**57.23**
3	Belgium	-0.25	6.25	**48.17**
4	Brazil	0.69	10.69	**2.60**
5	Canada	0.77	5.65	**44.00**
6	Denmark	1.02	4.61	**42.78**

7	Egypt	-0.52	7.00	1.07
8	France	0.49	5.78	33.82
9	Germany	0.01	6.04	30.63
10	Greece	-0.41	9.24	9.49
11	Hong Kong	0.31	4.90	22.40
12	Hungary	-0.04	8.67	17.57
13	India	0.80	6.28	2.08
14	Indonesia	0.28	6.82	0.57
15	Ireland	0.04	5.94	65.86
16	Italy	0.34	7.09	45.43
17	Japan	0.26	4.05	21.35
18	Korea	0.20	6.65	7.18
19	Malaysia	-0.14	4.15	3.62
20	Mexico	0.29	7.68	1.90
21	Netherlands	0.67	5.48	66.53
22	Norway	0.84	6.49	54.65
23	Poland	-0.45	8.66	3.43
24	Spain	-0.09	6.60	14.61
25	Sweden	0.37	5.99	43.54
26	Switzerland	0.64	4.06	42.70
27	Thailand	0.26	6.69	1.67
28	Turkey	-0.75	10.42	0.43
29	UK	0.31	5.01	43.52
30	**USA**	**1.01**	**4.98**	**28.00**

Notes:

1. Figures calculated by using data from the MSCI indices (MSCI, 2022).

2. Yield and risk levels are calculated as monthly averages using the mean and standard deviation, respectively.
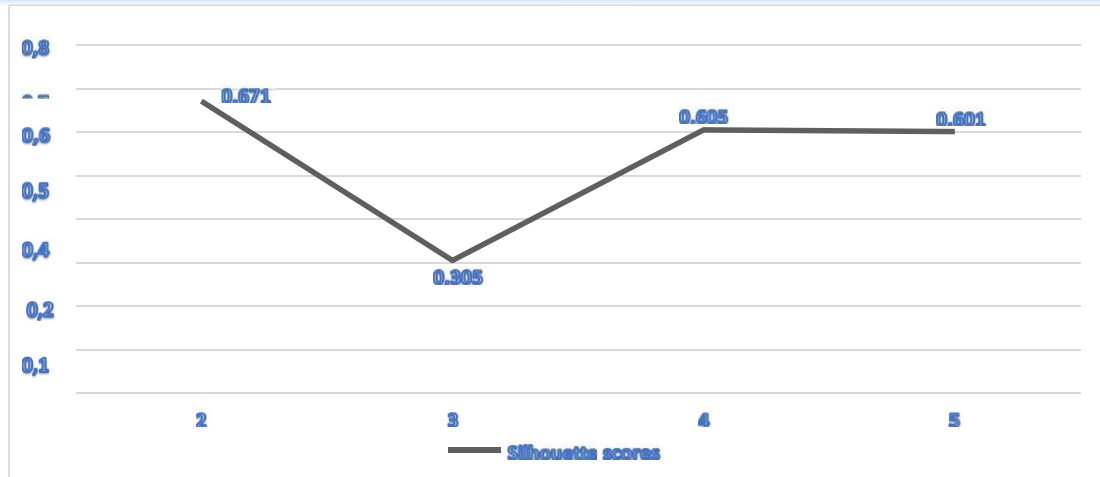
FIGURE 1. DEVELOPMENT OF THE SILHOUETTE SCORES FOR DIFFERENT CLUSTERS

The model is designed for two, three, four, and five clusters. The silhouette estimation method is used to determine the most optimal number of clusters. The results of the evolution of the silhouette estimates show that the model with two clusters has the highest level of accuracy. The lowest score is attributed to the three-cluster model. Nevertheless, the four- and five- cluster models also have quite high performance in comparison with the two-cluster model. Therefore, this article analyzes three models: two-, four-, and five-cluster models.

RESULTS AND DISCUSSIONS

The two-cluster model has two categories of markets. The group of 14 markets will represent the first group, and the group of 16 markets will be the second group. The first one includes Great Britain, France, Germany, the United States, Norway, Canada, Ireland, Netherlands, Austria, Denmark, Belgium, Sweden, and Switzerland and Italy is the centre item in the cluster. The second cluster has Japan, Hong Kong, Spain, Thailand, Turkey, Poland, Indonesia, India, and Argentina, Egypt, Brazil, Greece, Hungary, Mexico, Malaysia, with Korea being the point of focus in the cluster. Clearly, markets in the MSCI developed markets category only are covered by the first group. In spite of the fact that the second has covering generally MSCI Emerging Markets, it incorporates three consumers falling in

developed markets category. It seems that Japan, Hong Kong and Spain should be included in the second group as the level of international diversification is quite low (21.35; 22.40; 14.61, accordingly). Nevertheless, this inclusion might be faulty as other two factors are not present (e.g. the risk level of these markets hints that they should be referred to the first category). The average rate of return on the first cluster is much higher in comparison with the second (0.47% to 0.05%). The mean risk-rate in the first cluster is relatively less than second cluster (5.87 %) and (7.65 %). Mean is also much higher in the first cluster (46.20 percent as opposed to 7.72 percent) when it comes to international level of diversification. We can draw conclusions can be drawn based on the fact that in the first group of markets there is a greater efficiency and better built portfolios of developed markets. Besides, investors in the first group select better globally diversified portfolios. The four-cluster model categorizes markets into four. The 8 developed markets or the first cluster include Great Britain, France, Canada, Italy, Denmark, Belgium, Switzerland and Sweden which is the center of the cluster.

TABLE 2: STATISTICS FOR CENTROIDS OF CLUSTERS OF THE TWO-CLUSTER MODEL

Cluster	Return, %	Risk, %	Level of international diversification, %	Sum of weights	Within-cluster variance
1	0.47	5.87	46.20	14	137.41
2	0.05	7.65	7.72	16	66.45

Notes:

1. Figures calculated by using data from the MSCI indices (MSCI, 2022).

TABLE 3: DESCRIPTIVE RESULTS FOR THE TWO-CLUSTER MODEL

Cluster	1		2	
Number of objects by cluster	14	UK, France, Germany, USA, Norway, Canada,	16	Japan, Hong Kong, Spain, Thailand,
Intra-cluster	137.41		66.45	

dispersion		Ireland, Italy,		Turkey, Poland,
Minimum distance to the centroid	1.45	Netherlands, Austria, Denmark, Belgium,	1.14	Indonesia, Korea, India, Argentina,
Average distance to the centroid	8.93	Sweden, Switzerland	7.08	Egypt, Brazil, Greece, Hungary, Mexico,
Maximum distance the to centroid	20.33		14.94	Malaysia
Central object		Italy		Korea

The five markets are developed with one market (Hungary) still developing. This is attributable to the fact that, Hungary is an emerging market with the greatest amount of exposure to foreign countries. The third cluster brings 4 markets which are Norway, Ireland, the Netherlands and Austria located at the core of the cluster. The four markets are well-established and are optimally internationalized. The fourth cluster includes 12 emerging markets: Thailand, Turkey, Indonesia, Korea, India, Argentina, Egypt, Brazil, Greece, Mexico, Malaysia and Poland which is the center of the cluster. The rate of return and the lowest level of risk in the four clusters belong to the first cluster. The fourth cluster has the lowest level of rate of returns and highest level of risk compared to the four clusters. The first however is not the forefront in international diversification. It is the third cluster with the greatest degree of international diversification and relatively good rates of returns. It is necessary to add that the market portfolios of the first cluster are characterized by the most advantageous risk and returns measures, yet still the investor's favor to invest nearly 43 percent of the portfolio all over the world. This is also attributable by the fact that the investors in developed markets choose to invest in assets in developed markets. Conversely, the second cluster which is characterized by majority of developed markets, has a low level of international diversification. This is so primarily because the popular portfolio diversification stocks of the international market are national to the first cluster of markets. The best stocks have to be those of

multinational companies and this is found, besides the United States, in Germany and Japan. Consequently, market national investors do not have any reasons to combat internationally. Simultaneously, there is a third cluster, and it combines developed markets, and it enjoys the utmost international diversification. This cluster operates on the basis of two reasons. Ireland and Netherlands are famous worldwide financial centres and are famed with having the best offshore financial services. The intensity of international diversification afforded by offshore investment funds is very high because offshore centers give the nature of financial centers. International diversification is so great in Norway and Austria since there is no full or complete presence of multinational firms in their home stock markets, and therefore, it does not have all the bases of investment. It can also be concluded that lower returns and low market portfolio risk are typically associated with a low international diversification (i.e., lower than 5%). It must also be mentioned that in spite of the fact that the level of silhouette index is a bit lower than the index of the 2-cluster model, the 4-cluster model results in the study in more complex findings.

TABLE 4: STATISTICS FOR CLUSTER CENTROIDS OF THE FOUR-CLUSTER MODEL

Cluster	Return, %	Risk, %	Level of international diversification, %	Sum of weights	Within-cluster variance
1	0.46	5.56	43.00	8	18.02
2	0.24	5.87	22.43	6	39.70
3	0.45	6.67	61.07	4	38.51
4	0.03	8.18	3.96	12	23.18

Notes:

1. Figures calculated by using data from the MSCI indices (MSCI, 2022.

The five cluster model separates markets into five clusters. The number of markets that form the first cluster amounts to 7 i.e. the UK, Italy, Denmark,

Belgium, Sweden, Switzerland and Canada which also happens to be the centre of the cluster. The second cluster is composed of 5 markets France, Germany, Japan, Hong Kong and the United States that is the central object of the cluster. The third cluster involves 4 markets, namely Norway, Ireland, and the Netherland, and the object around which the group is clustering is Austria. It needs to be mentioned that the third cluster of the three-cluster model is a complete overlap of the third cluster of the 4-clusters model. The fourth cluster unites Spain, Argentina, Greece and Hungary and Spain is the central object of the cluster. Clusters five has 10 markets and it consists of Thailand, Turkey, Poland, Indonesia, Korea, India, Egypt, Brazil, Malaysia and Mexico as the central site. The rate of return is the highest in the first cluster.

TABLE 5: DESCRIPTIVE RESULTS OF THE FOUR-CLUSTER MODEL

Cluster	1	2	3	4
Number of objects by clusters	8	6	4	12
Intra-cluster dispersion	18.02	39.7	38.51	23.18
Minimum distance to the centroid	0.70	0.98	4.38	0.86
Average distance to the centroid	2.81	5.08	5.32	3.91
Maximum distance to the centroid	9.18	8.21	6.43	11.10
Markets	UK, Canada, Italy, Denmark, Belgium, Sweden,	France, Germany, USA, Hong Kong, Spain,	Norway, Ireland, Netherlands, Austria	Thailand, Turkey, Poland, Indonesia, Korea, India,

	Switzerland	Hungary		Argentina, Egypt, Brazil, Greece, Mexico, Malaysia
Central object	Sweden	Hong Kong	Austria	Poland

Notes:

1. Figures calculated by using data from the MSCI indices (MSCI, 2022). Nonetheless, the second cluster carries the least risk and the third cluster bears the highest number of international diversifications. In addition, fourth and fifth clusters experience low returns rate and highest risk rates with low international diversification levels. The cluster one seems to be the most ideal regarding the three variables. The second cluster is also fairly efficient as far as its risk and returns are concerned which, though they are not very high, they are quite good compared to the other clusters. The 3-cluster model presents the highest degree of international diversity however, the degree of risk is not optimal but the rate of returns is high as it is in 4 cluster model. According to the 5-cluster model, one can make a conclusion about the fact that a relatively little level of the rate of returning and a high rate of risk can be provided by the percentage of the level of international diversification that does not exceed the mark of 15 percent. But the question is why there is a high prevailing difference of 17 between the first and the second cluster even though both the economic distribution and depth of financial markets are the same.

TABLE 6: STATISTICS FOR CLUSTER CENTROIDS OF THE FIVE-CLUSTER MODEL

Cluster	Return, %	Risk, %	Level of international diversification, %	Sum of weights	Intra-cluster dispersion
1	0.46	5.52	44.31	7	4.97
2	0.42	5.15	27.24	5	29.13
3	0.45	6.67	61.07	4	38.51
4	-0.11	9.61	13.79	4	20.76
5	0.07	7.50	2.46	10	8.06

Notes:

1. Figures calculated by using data from the MSCI indices (MSCI, 2022).

TABLE 7: DESCRIPTIVE RESULTS OF THE FOUR-CLUSTER MODEL

Cluster	1	2	3	4	5
Number of objects by clusters	7	5	4	4	10
Intra-cluster dispersion	4.97	29.13	38.51	20.76	8.06
Minimum distance to the centroid	0.46	0.98	4.38	3.12	0.62
Average distance to the centroid	1.75	4.39	5.32	3.92	2.37
Maximum distance to the centroid	4.00	6.61	6.43	4.32	4.80
Markets	UK, Canada, Italy, Denmark, Belgium,	France, Germany, USA, Japan,	Norway, Ireland, Netherlands, Austria	Spain, Argentina, Greece, Hungary	Thailand, Turkey, Poland, Indonesia, Korea,

	Sweden, Switzerland	Hong Kong			India, Egypt, Brazil, Mexico, Malaysia
Central object	Canada	USA	Austria	Spain	Mexico

Notes:

1. Figures calculated using data from the MSCI indices (MSCI, 2022).

The all three distributions of cluster difference analysis were undertaken as below. Although this is the case, the two- cluster model has the best coefficient of silhouette and most optimum allocation of the market in the clusters but its results are most predictable and as such, it just goes with the grain of wisdom. However, more interesting findings to discuss further are the models with an increased number of clusters. The international diversification is often superior within the developed markets and it may differ according to the markets, as well as, better risk-reward ratio. . The markets with investors less prone to high levels of international diversification (below 5 percent in case of 4 cluster model and below 15 percent in case of 5 cluster model) are known to be inferior in returns as well as in high order of risk ratio. These markets are literally part of the MSCI emerging markets category. This has resulted in the fact that such markets require further integration in the global financial markets where more opportunities in portfolio diversification can be exploited. Second, countries that have a strong degree of internationalization of the markets, or in other words, Norway, Ireland, the Netherlands, and Austria because of several factors, including the offshore financial factor and insufficient possibilities in national stock markets. Besides this, in many of the mature markets investors desire to diversify their portfolios around the world, whereas their domestic stock markets present good risk-return ratio. Yet there are advanced markets which are native to different multinational organizations, and, as a result, the

investors in the said markets are inclined to invest an increased capital in national stock market.. At the same time, there is a large difference in the levels of international diversification between some clusters, and this result requires further discussion. It is also important to note that the simultaneous efficient operation of a national stock market and a high level of international diversification can only occur if international diversification occurs between units of the same cluster or units of clusters with similar risk and return ratios. The high rate of internalization and liberalization of financial markets has led to global financial integration and the emergence of transfer mechanisms. The crisis events of recent years throughout the global economy have tended to shift from one market to another. Quite similar risk and return ratios in developed market clusters suggest that developed markets are interdependent, while the significant differences between developed and emerging market clusters demonstrate the potential gap between these markets.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study had out a critical analysis of international portfolio diversification (IPD) as a strategic instrument towards reduction of risk and earning improvement with respect to global financial markets. The study established that the main assertion of the IPD, which is investing in assets, having less than perfect correlations across countries, is a highly worthwhile premise, particularly in minimizing the unsystematic risk, and producing long-term investment returns that are more consistent. The results confirm the belief that an international portfolio with a high degree of diversification will be less volatile and show better risk-adjusted returns that a domestic portfolio that is highly concentrated. Nonetheless, the study also revealed a number of issues that make the theoretical advantages not easy to realize practically, particularly during the times of increased globalization and economic turmoil. It has been one of the key points of this research to come to conclusion that the international diversification benefits do not apply equally across all the

markets and depends much on factors like level of markets development, political and currency risks and the home bias investor behavior.

The research has presented evidence that markets with a greater degree of international diversification based on MSCI classification, e.g. Ireland, the Netherlands, and Norway have a more desirable return-risk profile through the implementation of the k-means cluster analysis on 30 markets rated by MSCI. Comparison In contrast, the emerging markets although availing high growth potential are ridden with low level of diversification, high risks and more prone to economic and political upheavals. The study also discovered that in a situation characterized by market turbulence, the global assets have been found to be strongly correlated, thus temporarily reducing the advantage of diversification and thus requiring more advanced portfolio management mechanisms like currency hedging and dynamic asset allocation.

Additionally, the findings emphasize the applicability of the behavioral finance in international investment choices. The phenomenon of home bias is not going away anytime soon and the result is that a great number of investors will be under-exploiting the potential of global diversification. This is especially high in the developing economies where there is low financial literacy level, poor regulatory framework, and unestablished capital markets admonishing international exposure.

Recommendations

The study findings provide recommendations that are put forward at various detail levels to improve the realistic application of international portfolio diversification to the investors, institutional managers and policymakers. As the study shows, it is clear that developed markets (especially the North America and Western Europe) show better standing in terms of risk-adjusted returns as well as in terms of greater international diversification. Hence, these markets are highly recommended to the investors in their portfolio allocation. In addition to being less volatile these developed economies enjoy a higher level of financial openness and stable macroeconomic environment,

which collectively influence them towards long-term investment strategy. Nonetheless, though the developed markets form a good basis in constructing portfolio, no one should ignore the emerging markets. The study indicates that the new markets, less international, and more volatile as they are, have greater growth potential and might generate considerable returns provided they are approached with caution. Investors are therefore encouraged to view such markets as risky assets with high returns as part of their portfolios as strategic but not fundamental investments. Investors can use selective exposure, active monitoring and protective measures like country specific hedging strategies in order to cope with the increased risks of the emerging markets impacting the existence of the emergent markets as a consequence of the political instability, movement in the currency value and regulatory uncertainty. More to this, the study highlights the necessity of dynamic rebalancing of portfolios with time. Since market correlations constantly change, particularly when the financial market is struck by the signs of financial crises or global economic shocks, the constant approach to investing might fail. One thing that investors should do is an adaptive asset allocation strategy, where they change the structures of the portfolios according to new market trends, macro-economic factors, and geo-political events. The Sharpe ratio, Treynor ratio and Jensen alpha are tools that need to be applied frequently to help determine whether there is a risk-adjusted performance or not; also whether reallocation ought to be made.. Additionally, one of the prominent challenges identified in the study is the exposure to foreign exchange risk. Since currency volatility can significantly undermine the returns of international investments, it is recommended that investors incorporate currency hedging into their strategies. Hedging tools like forward contracts, options, and currency overlay strategies can help preserve the value of international portfolios and mitigate the negative impacts of exchange rate movements.

The third important suggestion applies to the very approach to portfolio construction. Cluster analysis and specifically the classification tool k-means

clustering used in analysis have been a good technique to cluster the market in above-mentioned respects of risk, returns, and potential dynamics of the diversification. The analysts and investors are advised to apply the same quantitative models in their decision-making procedures. The models are useful in objectively finding the best combinations in the market with low intra-group correlations, thus giving maximum diversification advantages. Moreover, a long-standing anomaly of home bias, in which investors overweight on domestic investments, should be rectified with strong investor education. The role of financial institutions, academic institutions and regulatory bodies working in collusion should be to educate the investors on the benefits of global exposure and to also equip them with the necessary tools to make a more confident decision on the foreign markets. Having conquered this behavioral bias, one will be able to allocate their capital more satisfactorily and perform portfolios better. Differentiated strategies should also be applied by the institutional and individual investors based on their individual risk profiles and the capacities to which they can invest. Institutional investors that are large with respect to the overall investor basis like pension funds and endowments should invest in broad international plans which incorporate various asset classes and employ techniques of risk management more advanced to them. Individual, or retail investors, in turn, might be more convenient to get access to international diversification via globally diversified mutual funds, or exchange-traded funds (ETFs) with professional management and built-in geographic dispersion. Also, on the other end of the policy, regulators can be of a central role in enacting international portfolio diversification. The policymakers can improve the effectiveness and appeal of international investment by diminishing the scope of capital controls and other financial regulation harmonizing the financial regulation, and enhancing transparency in emerging and frontier markets. Finally, it is highly important to further study more diversification techniques and risk management instruments. These are investigating factor-based

investing, adding to an existing portfolio with competing sources of value, like real estate or commodities, and using more advanced forms of tail-hunting. The implementation of performance attribution systems is also recommended to monitor which specific markets, asset classes, or strategies contribute most to portfolio risk or return. These systems will enable investors to refine their strategies in real time and respond proactively to global financial shifts. Overall, by adopting these integrated and forward-looking recommendations, investors and financial managers can harness the full potential of international portfolio diversification while navigating its inherent complexities and evolving global dynamics.

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