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# *Investment Attractiveness of Polish Emerging Markets Funds in the Context of Global Political and Economic Turbulence*

ABSTRACT

This article examines the investment attractiveness of Polish investment funds with a focus on emerging markets, particularly in the context of escalating global political and economic turbulence. The study analyzes funds operating within the Polish financial market whose investment strategies entail substantial exposure to emerging market economies. The article outlines the macroeconomic and geopolitical factors influencing the behaviour of these markets and provides a review of key investment performance metrics. A comparative analysis of selected funds is conducted over a period characterized by heightened volatility, driven in part by the COVID-19 pandemic, the war in Ukraine, and trade tensions among major global powers. The findings indicate that, despite elevated risk and market instability, certain Polish emerging markets funds exhibit relative resilience and potential for generating positive returns, particularly over a long-term investment horizon. The insights derived from this analysis may inform the investment decisions of both individual and institutional investors navigating an environment of increasing global uncertainty.

*KEYWORDS: emerging markets; investment funds; capital markets*

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## INTRODUCTION

Emerging markets are typically defined as countries or economies transitioning between developing and developed market status. They are characterized by dynamic economic growth, increasing industrialization, structural reforms, and growing integration into global financial markets. In some definitions, emerging markets are described as economies undergoing intensive transformation, yet not sufficiently advanced to be classified as highly developed. Certain analyses highlight that these economies are evolving from agriculture and raw-material industries toward sectors based on technology, knowledge, and innovation. These countries are marked not only by rapid economic expansion but also by significant social development and high levels of investment. Capital markets in these economies play a crucial role in supporting growth by attracting foreign capital and strategic investors.

Economists generally agree that emerging markets offer considerable growth potential and opportunities for above-average returns. However, investments in these countries are associated with higher risks, stemming from political instability, weak institutional frameworks, and vulnerability to external economic shocks. In the context of global uncertainties, careful selection, diversification, and thorough analysis of local conditions are essential for investors.

Capital markets in emerging economies are instrumental in financing growth, attracting foreign investment, and supporting local enterprises. Their development, market capitalization, and investment appeal vary widely – from major exchanges that play pivotal roles in the global economy, such as the Shanghai Stock Exchange, the exchanges in Hong Kong and Shenzhen, and India's Bombay Stock Exchange, to smaller regional markets that primarily rely on domestic capital and attract fewer international investors, such as Bursa Malaysia, Bolsa Mexicana de Valores, and the Ho Chi Minh Stock Exchange.

The third decade of the twenty-first century has introduced unprecedented challenges and events that have significantly influenced investor sentiment and behavior. Amid rising global threats – including armed conflicts, energy crises, the COVID-19 pandemic, and climate change – investors and businesses increasingly seek alternatives to traditional developed markets. Emerging markets offer both opportunities and risks, representing a growing and essential component of the global economic landscape. They provide substantial growth potential, risk diversification, and new investment opportunities. Nonetheless, success in these markets requires a measured, well-informed approach and a clear understanding of the associated challenges. Emerging markets do not replace developed economies but complement them within an increasingly uncertain global environment. The period of 2020–2023 adopted in this study for analyzing the performance of investment funds is justified by the intense economic, political, and social transformations that resulted in numerous turbulences across global markets. Such economic fluctuations typically create the need to seek alternative forms of investment and capital protection. This article is an attempt to address these challenges.

## 1. LITERATURE REVIEW

The literature on emerging markets is relatively rich and diverse. It usually refers to various aspects of their functioning, ranging from economic to political, as well as more localized issues related to social or cultural matters. Undoubtedly, a key role in the literature review is played by the categorization of information, starting from the pace of economic growth in selected countries, through the structure of their economies and the level of development of capital markets, up to political issues related to the stability of state structures and the freedom of conducting business and investment activities. The issue of risk is always crucial in the analysis of emerging markets. From the perspective of economic analysts, comprehensive macroeconomic reports undoubtedly play a very important role in assessing the economic situation. Examples of such reports include: *Emerging Markets: Prospects and Challenges* (IMF, 2022), *Emerging Markets Outlook* (Bensafi, 2025), *Business Insights on Emerging Markets* (OECD, 2024).

In a broader assessment of global economic trends in key emerging markets, particularly in BRICS countries[1], comprehensive statistical data plays an important role. Such data is provided in publications like the *BRICS Joint Statistical Publication 2024* (BRICS, 2024), which are published annually following the economic meetings of this bloc of states. The latest such forum took place in Russia in 2024.[2]

Undoubtedly, a key role in assessing the situation in selected markets from the investors' perspective is played by reports on the business environment, including capital market institutions and financial infrastructure. Examples of such studies include the *BRICS Investment Report* (United Nations, 2023) or academic works such as *Doing Business in Emerging Market Economies* (Ashford, 2021). Among the important, comprehensive, annual publications on emerging markets, we can also include Cornell University's *Emerging Market Multinationals Report* (CU, 2025), which presents the most up-to-date trends in these markets in macroeconomic, business, and investment aspects. In the analysis of opportunities and threats in emerging markets, detailed reports on various forms of risk also play an important role. An example here is *The Global Risks Report 2023* (World Economic Forum, 2023).

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[1] The BRICS group was formed in the 2000s to enhance cooperation among major emerging economies. In 2017, China proposed the concept of "BRICS Plus" to expand partnerships beyond the core five members – Saudi Arabia, United Arab Emirates (UAE), Iran, Egypt, Ethiopia

[2] See Source [11].

As mentioned earlier, emerging markets are countries with rapidly developing economies that have not yet reached the status of highly developed nations but are playing an increasingly important role in the global economy. Stock indices related to these countries reflect their economic situation, political stability, and the development of individual sectors. The most important among them include the MSCI Emerging Markets Index, FTSE Emerging Index, S&P Emerging BMI, and Dow Jones Emerging Markets Index.

The first of these, the MSCI Emerging Markets Index, covers 24 large and mid-sized countries classified as emerging markets. It consists of 1.203 companies, representing approximately 85% of the free float–adjusted market capitalization in each country.[3]

The FTSE Emerging Index includes 22 countries, with the largest weights assigned to China, India, Taiwan, Brazil, and South Africa. The FTSE Emerging Index provides investors with a comprehensive way to measure the performance of the most liquid large- and mid-cap companies from emerging markets. The FTSE Emerging Markets indices are part of the FTSE Global Equity Index Series (GEIS), which covers large- and mid-cap securities from developed and secondary emerging markets, classified according to a transparent country-classification process developed by FTSE.[4]

The S&P Emerging BMI (Broad Market Index) is a broad emerging markets index developed by S&P Dow Jones Indices. It includes all emerging market companies listed in the S&P Global BMI that have a minimum adjusted market capitalization of USD 100 million and meet liquidity requirements based on 6- and 12-month trading activity. The index is segmented by country/

[3] Source [1].

[4] Source [2].

region, size (large, mid, and small cap), style (value and growth), and GICS (sectors / industry groups).[5]

When discussing the broad spectrum of literature on emerging markets, it is impossible not to mention the numerous academic publications. Scholars' interests cover a wide range of aspects concerning the functioning of this group of countries, from economic and political issues to social, cultural, and civilizational dimensions. Undoubtedly, the 21st century is the era of emerging markets, a period of their steadily increasing importance in the global economy. Examples of the most up-to-date studies include publications such as *Emerging Markets Equity 2025: Quality as the Path to Growth* (Blair, 2025).

## 2. METHODOLOGY

The most commonly used method for evaluating the performance of investment funds in terms of returns and risk is analysis based on single-factor measures. Performance assessment is typically conducted using rankings, where a fund's position reflects the value of the efficiency measures applied. High positions indicate above-average performance, middle positions represent average performance, and low positions signify poor performance. A key limitation of using rankings is that fund performance is assessed only in relation to other funds or market portfolios. However, this method offers several advantages (Miziołek & Trzebiński, 2017):

- the ability to choose an appropriate performance measure depending on the distribution of fund and market portfolio returns;
- the use of a primary measure in combination with auxiliary measures;

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[5] Source [3].

- the possibility to apply different types of risk (total or systematic) and different approaches to risk, for example, understanding risk as potential loss from the investor's perspective.

Considering these factors, evaluating the performance of investment funds essentially involves determining the type and level of risk associated with the funds' asset allocation, as well as the returns achieved, and comparing them to a given market portfolio. Efficiency measures are employed to identify the best, average, and worst-performing funds. When using this method, it is important to consider the reference point (benchmark), which need not be a model portfolio; for instance, it could be zero. In some cases, the best-performing fund may simply be the one that incurred the smallest loss within the sample.

Fund performance can also be assessed from the perspective of fund managers' skills. In this approach, creating rankings is unnecessary. The sample of funds can be divided into two groups: one consisting of funds whose managers achieved positive (above-zero) returns, and the other consisting of funds whose managers recorded negative (below-zero) returns. These two approaches to evaluating fund performance are not identical. The first method indirectly evaluates the results of fund managers' activities, whereas the second assesses the managers' skills themselves. Only by combining these approaches can a comprehensive evaluation of investment fund performance be achieved. Historical data allows analysts to determine how long managers were able to maintain positive returns and whether they can anticipate market changes to exploit opportunities for increasing the value of managed assets.

Measures of investment fund performance have been continuously developed for over 50 years. They are traditionally divided into two main groups: classical measures and modern measures. Classical measures are derived from fundamental capital asset pricing models, such as the Capital Asset Pricing Model (CAPM)[6] and the Arbitrage Pricing Theory (APT).[7] The most commonly used classical measures include the Sharpe ratio, the Treynor ratio, and Jensen's single-factor alpha. These indicators share a reliance on the assumption of normally distributed returns and a symmetrical approach to risk.

With the development of financial markets, particularly the rapid growth of emerging markets, the limitations of classical performance measures have become apparent. Emerging markets tend to exhibit higher volatility and lower informational efficiency, meaning traditional analytical tools may not fully capture actual investment conditions. In response, modern performance measures have been introduced over the past decades. These measures do not require assumptions about the normality of return distributions and allow for asymmetric treatment of risk.

## 3. POLISH EMERGING MARKETS FUNDS IN THE CONTEXT OF GLOBAL POLITICAL AND ECONOMIC TURBULENCE

Emerging markets funds are investment entities that allocate capital primarily to equities, bonds, or other financial instruments of companies and institutions operating in developing markets.

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[6] The Capital Asset Pricing Model (CAPM) is a financial model used to determine the expected return on an investment based on its systematic risk (also known as market risk). The Capital Asset Pricing Model (CAPM) helps investors assess whether stocks are fairly valued, taking into account risk and the time value of money. If the expected return on an asset (based on CAPM) is higher than the actual return, the asset may be overvalued.

[7] The Arbitrage Pricing Theory (APT) is an alternative to the Capital Asset Pricing Model (CAPM) in estimating the expected return on a financial instrument. It was developed by Stephen Ross in the 1970s and is based on the assumption that investment returns can be predicted by using the relationship between a number of macroeconomic factors and the sensitivity (beta coefficients) of assets to those factors.

Polish funds investing in emerging markets are financial instruments that focus primarily on countries such as India, Brazil, China, Mexico, Indonesia, and South Africa. The most well-known of these include: PKO Akcji Rynków Wschodzących (PKO Parasolowy FIO), Investor Rynków Wschodzących (Investors TFI), and Pekao Akcji Rynków Wschodzących (Pekao TFI).

As previously noted, investment activities in emerging markets are characterized both by the potential for above-average returns and exposure to various forms of risk. The most common types include economic, political and regulatory, currency, and legal risks. The intensity of these risks varies across markets and often influences investment decisions.

One of the questions addressed in this publication is to what extent rapidly growing emerging markets – with high population growth rates but simultaneously facing long lists of economic and social challenges – can serve as an alternative to well-developed and stable capital markets in highly developed countries. These developed markets are characterized, on the one hand, by high levels of safety and predictability, but on the other hand, by very high competitiveness and often low profitability.

It should be noted that these considerations are situated within the context of numerous global economic disruptions and turbulence, such as armed conflicts, pandemics, and, particularly in the last decade, supply shocks that bring high volatility and unpredictability to capital markets. In this context, the question of whether emerging markets – with their high growth dynamics – can serve as an alternative to stable, secure markets in highly developed countries becomes highly relevant.

To address this question, this publication analyzes ten Polish investment funds, a brief description of which is provided in the table below.

Table1. Brief description, category and geographical scope of selected funds.

| No. | Name | Category and Brief Description | Geographic Scope |
|---|---|---|---|
| 1 | PEKAO Emerging Markets Equity | This fund primarily invests in equities of companies from emerging markets. It is characterized by high investment risk and volatility, making it suitable for long-term investors who accept potential fluctuations in the value of their investments. | Asia: China, India, Indonesia, Thailand, Philippines, Vietnam<br>Latin America: Brazil, Mexico, Chile, Colombia<br>Eastern Europe: Poland, Turkey, Hungary, Czech Republic,<br>Africa: South Africa, Nigeria, Egypt<br>Middle East: UAE, Saudi Arabia, Qatar |
| 2 | PEKAO Dynamic Allocation | This fund actively adjusts its portfolio structure according to market conditions. It combines investments in equities and bonds, aiming to achieve returns while managing risk. Suitable for investors seeking a flexible approach to a volatile market | Poland, United States |
| 3 | PKO Global Bond | Invests mainly in global government and corporate bonds, providing broad diversification. The fund has a low-risk profile and actively manages the portfolio without a benchmark. | North America: USA, Canada<br>Europe: both Eurozone and non-Eurozone countries (e.g., Poland, UK), Asia: Japan, China<br>Emerging Markets: Brazil, India, Turkey |
| 4 | PKO Ecology and Social Responsibility | Characterized by high risk and volatility, intended for investors accepting significant fluctuations in investment value and planning a long-term horizon (minimum 5 years). Actively managed without a benchmark, with strong consideration of ESG criteria. | USA,Western Europe, Japan |

| | | | |
|---|---|---|---|
| 5 | PKO Pension Protection 2020 | Designed for investors seeking stable, low-variability returns and capital protection. Currently focuses mainly on bonds and other safe debt instruments, minimizing equity exposure | Poland, Romania |
| 6 | PKO Amber | Fund investing primarily in government and corporate bonds, offering stability and low volatility. It has a low-risk profile, suitable for investors seeking safe investment solutions. | USA, Europe |
| 7 | PKO Diamond | Invests in diversified financial instruments such as investment funds, government and corporate bonds, and structured products. Investments aim for long-term capital growth while maintaining high security and flexibility. | Western Europe, Japan, and other OECD countries |
| 8 | NN (L) Emerging Markets Enhanced Equity | .Equity fund focused on emerging markets with high growth potential. Selects companies with solid fundamentals and in line with ESG principles. The fund aims to outperform traditional indices while managing risk through diversification | Asia, Latin America, Caribbean, North America, Europe, Africa |
| 9 | Investor Emerging Markets Equit | Maintains significant direct and indirect exposure (minimum 70% of assets) to the equity markets of countries included in the MSCI Emerging Markets Index by investing in shares and other equity securities of companies listed in developing markets. | Brazil, India, China |
| 10 | Skarbiec Growth Companies Fund (Emerging Markets Focus) | Invests 66% of assets in growth companies, including both Polish and foreign firms. The majority of the portfolio consists of shares of foreign companies. | USA, Ireland, Switzerland, Singapore, Netherlands |

*Note*. Source: [5], [6], [7], [8], [9], [10].

These funds, although they differ significantly in terms of their investment strategies and market preferences, all, to a greater or lesser extent, invest in emerging markets. Therefore, it can be assumed that their investment policies involve substantial exposure to developing countries in the broadest sense of the term. An analysis of the outcomes of their investment activities is discussed in the next section of the publication.

The selection of investment funds for this analysis was based on several key criteria that capture the diversity of investment strategies used by Polish investment fund companies (TFIs) and their approaches to emerging markets.

**1. Geographical Criterion**

The selected funds cover a wide geographical scope – from those focused primarily on emerging markets (e.g., *PEKAO Emerging Markets Equity*, *NN (L) Emerging Markets Enhanced Equity*) to global funds with partial exposure to developing countries (e.g., *PKO Global Bond*, *PKO Ecology and Social Responsibility*). This diversity allows for a comparison of investment approaches across regions with varying levels of economic development and risk.

**2. Investment Strategy Criterion**

The selection includes funds with different investment strategies – from aggressive equity funds focused on capital growth to conservative bond funds with a low-risk profile. This enables an assessment of how different management models (active vs. balanced) affect investment performance under volatile market conditions.

**3. Risk Profile and Investment Horizon Criterion**

The analysis considers funds with varying levels of risk – from low-risk (*PKO Amber*) to high-risk (*PEKAO Emerging Markets Equity*) funds. This allows for comparison of the stability and resilience of different investment strategies in the face of global economic and political turbulence.

**4. Institutional and Market Significance Criterion**

The funds selected are managed by the largest and most reputable Polish investment fund companies (*PKO TFI, Pekao TFI, NN Investment Partners,* and *Investors TFI*). This ensures access to reliable data, regulatory compliance, and the ability to compare results based on uniform reporting standards.

The purpose of selecting these funds was to present a cross-sectional view of Polish investment instruments with exposure to emerging markets – both direct and indirect, through global funds. This approach highlights how different strategies respond to global challenges such as inflation, currency fluctuations, and armed conflicts. The diversity of the sample enables a comprehensive analysis of the effectiveness and resilience of Polish funds in an unstable economic environment.(Ajadi, 2024) Thus, the selected funds represent a comprehensive and representative overview of the Polish investment market focused on emerging economies, providing valuable insights for investors seeking alternatives to traditional, stable capital markets

## 4. DISCUSSION OF RESEARCH AND PRESENTATION OF RESULTS

The subject of the research is the analysis of the performance of emerging markets investment funds, covering the years 2020–2024. The MSCI Emerging Markets Index was adopted as the benchmark, recognized as a reliable reference for this market segment. The performance of ten selected investment funds was compared against this index to assess their effectiveness (Zamojska, 2012). The objective of the study is to evaluate the efficiency of Polish investment funds operating in emerging markets in terms of their investment attractiveness under conditions of multiple threats and turbulence in the global economy (Maścibrodzka, 2021). Four mutually complementary performance measures were applied in the analysis (Jamróz, 2013):

- Rate of Return (Rp**)** – the fund's direct return rate,
- Excess Return (ER) – the return surplus relative to the benchmark,
- Modigliani Measure (M2) – the risk-adjusted return,
- Information Ratio (IR) – the ratio of excess return to the specific risk undertaken.

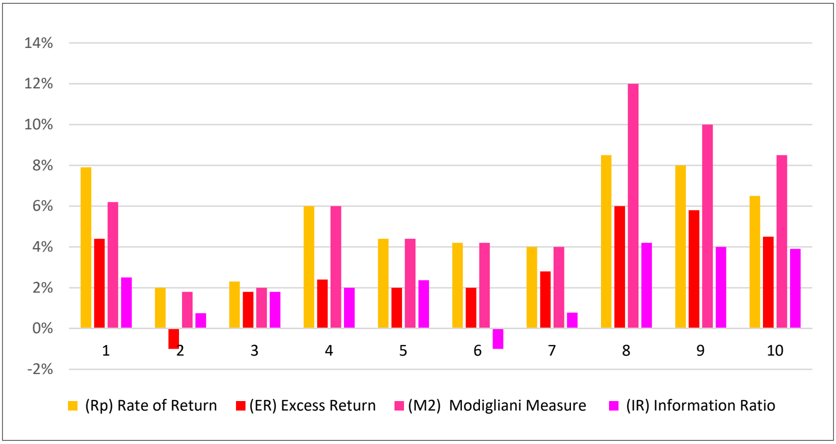
The selection of these four measures was intended to provide a comprehensive and multidimensional assessment of fund performance (Filip, 2016). Each measure delivers important insights regarding different aspects of the fund's operations:

- Rp (Rate of Return) allows for the evaluation of the absolute financial result of the fund, regardless of risk level or market reference (Fajecka, 2020).
- ER (Excess Return) enables the assessment of added value relative to the benchmark, answering the question of whether the fund outperformed the reference index (Skrodzka, 2014).
- M2 (Modigliani Measure) adjusts results for risk level, allowing for a reliable comparison of funds with varying volatility, assuming equal market risk.
- IR (Information Ratio) provides information on the efficiency of fund management relative to specific risk, which is particularly important in the analysis of markets with elevated inefficiency (Maścibrodzka, 2021).

The results obtained for each of the analyzed measures are presented in Figures 1–5. Values of individual measures exceeding the benchmark level were highlighted, enabling the identification of funds that are effective relative to the reference index. Funds were classified as effective if they achieved a positive result exceeding the reference value in at least one measure, such as Rate of Return (Rp), Excess Return (ER), Modigliani

Measure (M2), or Information Ratio (IR) (Jajuga & Jajuga, 2015). Other funds that did not exceed the benchmark level in any measure were classified as ineffective. The measures presented in Figure 1 allow for a comprehensive and reliable evaluation of investment fund performance. They combine perspectives on achieved returns, market relation, and quality of risk management, providing a solid foundation for drawing accurate and practical investment conclusions.

Figure 1. Performance measures of emerging markets investment funds in 2020.




*Note*. Own elaboration based on data from [12].

Legend: 1 – PEKAO Emerging Markets Equity; 2 – PEKAO Dynamic Allocation; 3 – PKO Global Bond; 4 – PKO Ecology and Social Responsibility; 5 – PKO Pension Protection 2020; 6 – PKO Amber; 7 – PKO Diamond; 8 – NN (L) Emerging Markets Enhanced Equity; 9 – Investor Emerging Markets Equit; 10 – Skarbiec Growth Companies Fund (Emerging Markets Focus).

Based on the above chart, it can be observed that in terms of the M2 measure (Modigliani Measure), the NN EM Enhanced Equity fund stands out, achieving the highest result, exceeding 12%. This indicates that, when adjusted for risk, this fund generated the highest return among the analyzed emerging market funds.

High M2 values were also recorded for the Investor Emerging Markets Equity and Skarbiec Growth Companies funds, with results around 10%, confirming their relatively favorable risk-return relationship.

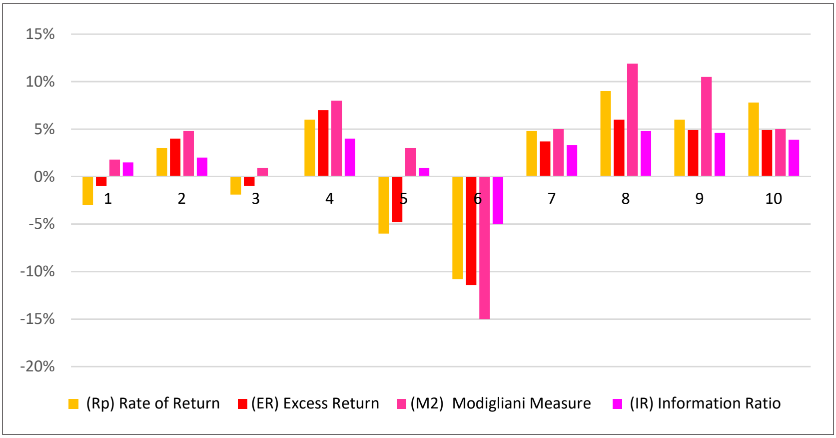
The IR (Information Ratio) for most funds remains at a low level; however, a few funds achieved better results in this regard. The highest IR values were noted for NN EM Enhanced Equity, Investor Emerging Markets Equity, Skarbiec Growth Companies, and PKO Emerging Markets Equity, although these values still do not indicate a significant advantage over the benchmark.

In terms of the Rate of Return (Rp), the top-performing funds were NN EM Enhanced Equity (approx. 9%), Investor Emerging Markets Equity (approx. 8%), and PKO Emerging Markets Equity (approx. 8%). These were the only funds with results exceeding 7%, suggesting their strong performance during the analyzed period.

The Excess Return (ER), which shows returns above the risk-free rate, was positive only for selected funds, including PKO Emerging Markets Equity, NN EM Enhanced Equity, Investor Emerging Markets Equity, and Skarbiec Growth Companies. The remaining funds had ER values close to zero or negative, indicating that their results did not surpass simple capital investments.

In summary, it should be emphasized that NN EM Enhanced Equity achieved the best efficiency results in terms of both M2 and Rp, confirming its dominant position on the chart. Relatively strong performance was also observed for Investor Emerging Markets Equity, PKO Emerging Markets Equity, and Skarbiec Growth Companies, which demonstrated high M2 and Rp indicators. Most other funds were unable to generate satisfactory results relative to the risk taken. A very similar situation was observed in 2021, as presented in the chart below.

Figure 2. Efficiency measures of emerging market investment funds in 2021.




*Note*. Own elaboration based on data from [12].

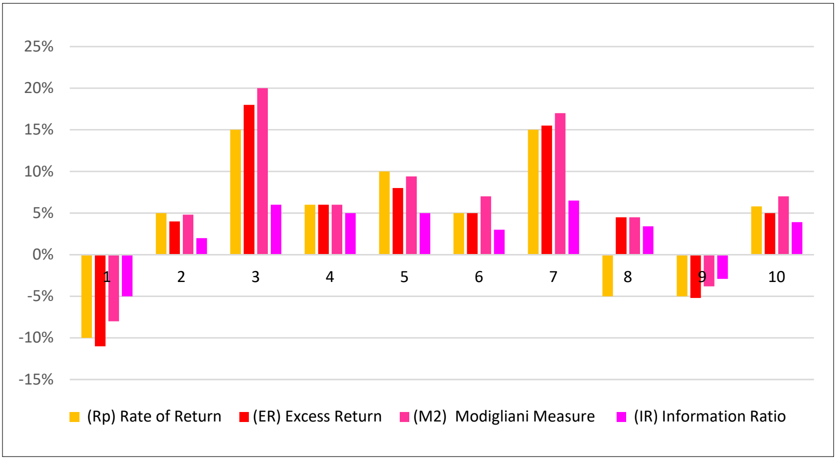
Legend: 1 – PEKAO Emerging Markets Equity; 2 – PEKAO Dynamic Allocation; 3 – PKO Global Bond; 4 – PKO Ecology and Social Responsibility; 5 – PKO Pension Protection 2020; 6 – PKO Amber; 7 – PKO Diamond; 8 – NN (L) Emerging Markets Enhanced Equity; 9 – Investor Emerging Markets Equit; 10 – Skarbiec Growth Companies Fund (Emerging Markets Focus).

Based on the efficiency indicators M2 and ER, the most efficient fund among those analyzed is PKO Ecology and Social Responsibility, which achieves the highest values for these measures. This means that the fund not only generates the highest excess return over the risk-free rate (ER) but also best compensates investors for the risk taken (M2), making it the leader in terms of efficiency. High efficiency is also shown by the funds NN EM Enhanced Equity, Investor Emerging Markets Equity, and Skarbiec Growth Companies, which achieve solid M2 and ER values. The funds PEKAO Dynamic Allocation, PKO Diamond, and PKO Pension Protection 2020 reach moderate efficiency measure values, indicating average results relative to risk.

In contrast, PKO Emerging Markets Equity and PKO Global Bonds display low or negative M2 and IR values, reflecting inefficient risk management. The weakest performer is PKO Amber, whose efficiency indicators are clearly negative, meaning that the fund not only generates losses but does so with very inefficient risk use.

Significant variability can be observed in 2022 (Chart 3).

Figure 3. Efficiency measures of emerging markets investment funds in 2022.




*Note*. Own elaboration based on data from [12].

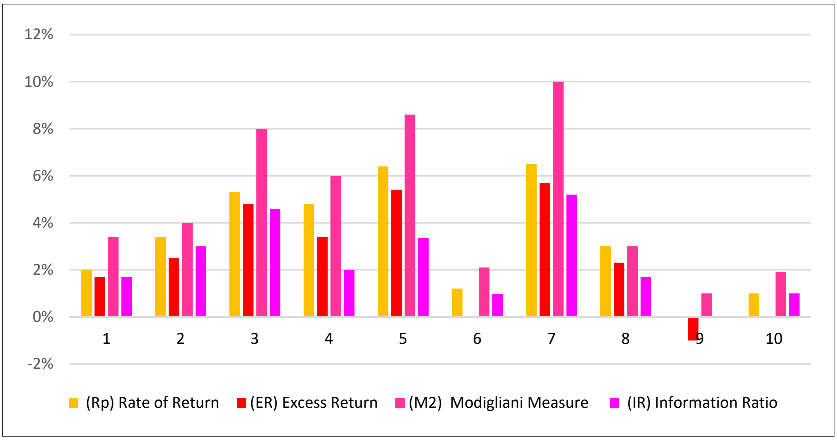
Legend: 1 – PEKAO Emerging Markets Equity; 2 – PEKAO Dynamic Allocation; 3 – PKO Global Bond; 4 – PKO Ecology and Social Responsibility; 5 – PKO Pension Protection 2020; 6 – PKO Amber; 7 – PKO Diamond; 8 – NN (L) Emerging Markets Enhanced Equity; 9 – Investor Emerging Markets Equit; 10 – Skarbiec Growth Companies Fund (Emerging Markets Focus).

Based on the data from the chart, the most efficient fund is clearly NN (L) Emerging Markets Enhanced Equity, which achieves the highest values across all analyzed measures: Rate of Return (Rp), Excess Return (ER), Modigliani Measure (M2), and Information Ratio (IR). This fund demonstrates a very favorable risk-return relationship and a clear advantage over the benchmark.

The second position is held by PKO Ecology and Social Responsibility, which also achieves high values across all four measures. Its Rp, ER, and M2 are significantly above the reference level, and its IR remains at a stable, positive level. This fund stands out not only for its high efficiency but also for balancing risk and return, making it one of the most competitive in the analyzed group.

Closing the top three is Skarbiec Growth Companies, whose positive values across all efficiency measures indicate stable results, although they are not as distinguished from the leaders. Investor Emerging Markets Equity, PKO Amber, and PKO Global Bonds achieve very similar results, reflecting weak efficiency for these funds. Funds with low efficiency include: PKO Pension Protection 2020 PKO Emerging Markets Equity These funds recorded negative values in nearly all analyzed measures, indicating poor performance and inefficient portfolio management relative to the benchmark. The results for 2023 are presented in Chart 4.

Figure 4. Efficiency measures of emerging markets investment funds in 2023.




*Note*. Own elaboration based on data from [12].

Legend: 1 – PEKAO Emerging Markets Equity; 2 – PEKAO Dynamic Allocation; 3 – PKO Global Bond; 4 – PKO Ecology and Social Responsibility; 5 – PKO Pension Protection

2020; 6 – PKO Amber; 7 – PKO Diamond; 8 – NN (L) Emerging Markets Enhanced Equity; 9 – Investor Emerging Markets Equit; 10 – Skarbiec Growth Companies Fund (Emerging Markets Focus).

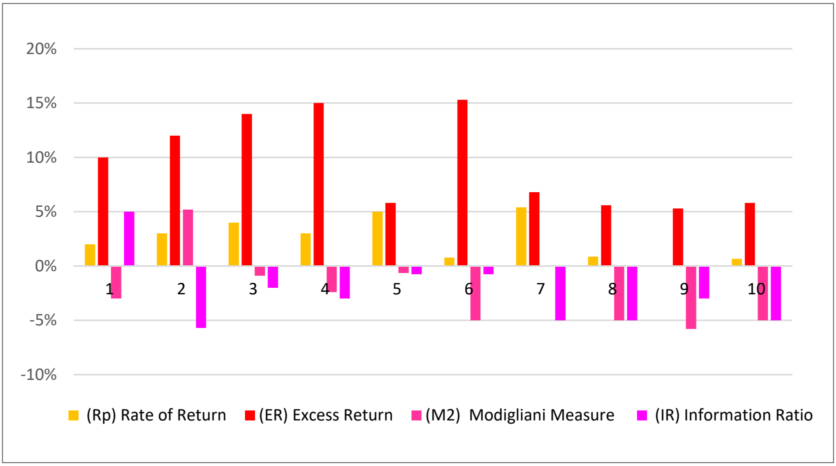
In 2023, the clear leader in efficiency was PKO Ecology and Social Responsibility, which achieved the highest values across all analyzed measures: Rate of Return (Rp), Excess Return (ER), Modigliani Measure (M2), and Information Ratio (IR). This indicated that the fund not only generated high nominal returns but did so with efficient risk management, as confirmed by its top M2 and IR values.

NN Emerging Markets Enhanced Equity and Skarbiec Growth Companies were also in the top tier, showing solid Rp and ER values along with high M2 and IR indicators, though they did not surpass the leader. Funds such as PEKAO Dynamic Allocation and PKO Diamond achieved average values across all measures, indicating moderate efficiency. Conversely, PKO Amber, PKO Emerging Markets Equity, PKO Pension Protection 2020, and PKO Global Bonds ranked at the bottom, with low or even negative Rp, ER, M2, and IR values, reflecting a poor risk-return relationship.

The chart presenting the 2023 fund results clearly shows the significant disparities in management efficiency between the best and weakest funds. The bars representing PKO Ecology and Social Responsibility stand out sharply, both in terms of M2 and IR. Looking ahead to 2024, which was also analyzed in this article, it is difficult to predict whether the leaders will maintain their positions (Chart 5).

In 2024, the leader in nominal investment performance, measured by Expected Return and Risk Premium, remained PKO Ecology and Social Responsibility. This fund achieved the highest values for these indicators, meaning it generated the greatest return above the risk-free rate while maintaining a relatively high but controlled level of risk. However, the chart clearly shows that despite high profits, the Modigliani Measure (M2) remains close

Figure 5. Efficiency measures of emerging markets investment funds in 2024.

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to zero, suggesting that its risk-adjusted efficiency (relative to the market portfolio) is not as impressive as in previous years. Additionally, the fund's Information Ratio (IR) is not the highest, indicating that although it generates profits, they are not achieved through perfect risk management—there are more deviations and fluctuations relative to the benchmark.

NN Emerging Markets Enhanced Equity and Skarbiec Growth Companies also remain among the top performers, showing high Expected Return and Risk Premium values. However, their M2 and IR metrics are not the highest, indicating that despite solid profits, risk management is not optimal. An interesting observation concerns Skarbiec Growth Companies, which achieves an Expected Return close to the leader, but its M2 and IR are higher than NN Emerging Markets, suggesting that it manages risk more effectively.

Funds such as Investor Emerging Markets Equity, PEKAO Dynamic Allocation, and PKO Diamond display moderate efficiency. While their Expected Return and Risk Premium are satisfactory, low M2 and IR values indicate that a relatively large portion of the risk taken does not directly translate into additional investor gains. This means that although these funds can generate returns, their performance is more dependent on market fluctuations and less stable.

The weakest performers were PKO Amber, PKO Global Bonds, and PKO Pension Protection 2020. Although they show some positive Expected Return, their M2 and IR indicators remain clearly negative. This indicates that these funds generate returns lower than the market portfolio when accounting for risk, reflecting inefficient use of investment potential. Investors in these funds take on relatively high risk that is not adequately compensated with higher returns (Source [4]), and the results are largely random relative to the benchmark.

In summary, in 2024 the fund market gained momentum, but it is clear that nominal returns (Expected Return) alone do not guarantee high efficiency. Key measures such as the Modigliani Measure (M2) and Information Ratio (IR) are crucial in showing which funds truly manage risk professionally(Nastarowicz, 2016). This raises the question of whether high Expected Return funds will improve risk management quality in future periods, making their high profits less random and more consistent. The author notes the need for further analysis over a longer research period.

## 5. SUMMARY AND CONCLUSIONS

The analysis of the efficiency of Polish emerging markets investment funds from 2020 to 2024 reveals significant variation in performance, driven by both macroeconomic and microeconomic factors. During this period, the global economy faced numerous challenges: the COVID-19 pandemic, the war in Ukraine, the energy crisis, high inflation, and the restrictive monetary policies of major central banks (FED, ECB). These factors contributed to increased market volatility, capital outflows from emerging markets, and reduced global liquidity.

At the same time, the success of individual funds depended on microeconomic aspects of portfolio management: accurate asset selection, flexible investment strategies, and effective risk management. Funds that could respond appropriately to changing market conditions demonstrated higher efficiency, measured not only by returns but also by risk-adjusted performance metrics ($M^2$, IR, Rp, ER). Among the analyzed funds, ALFA SFIO (2) stood out, achieving the highest results in every year, regardless of market conditions. Other notable funds include PKO Akcji Polskich Plus, PKO Ecology and Social Responsibility, and PKP Employee Ownership Fund, which displayed strong efficiency, particularly during periods of relative market stability (2021, 2023).

Conversely, defensive funds such as PKO Global Bonds and PKO Pension Protection 2020 were unable to effectively protect capital or generate attractive returns, confirming that even low-risk funds can disappoint investors under unstable conditions.

From the perspective of individual investors, the analysis confirms that emerging markets funds can be attractive investment instruments, but only with a conscious approach to risk. High profit potential comes with significant volatility, making these funds suitable primarily for aggressive investors. Defensive funds, while less profitable, offered greater stability during global turbulence.

For investors considering exposure to emerging markets, it is crucial to monitor global macroeconomic trends, particularly Fed policy, USD exchange rates, and geopolitical tensions. Fund selection should be based not only on historical performance but also on the quality of management, strategy flexibility, and the ability to adapt to a dynamically changing environment. Diversification is recommended, combining EM funds as growth-oriented additions with defensive instruments to secure part of the portfolio. Investors with lower risk tolerance should consider mixed strategies or funds with active risk management.

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