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THE EFFECTIVENESS OF HARRY BROWN'S PORTFOLIO STRATEGY ON THE POLISH CAPITAL MARKET

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Purpose: The theoretical aim of the article is to present the portfolio construction according to Harry Brown's strategy and its modification adapted to the capital market in Poland. The empirical goal is to answer the question whether it is possible to build a profitable Harry Brown portfolio using the available assets of the capital market in Poland in the third decade of the 21st century.

Design/methodology/approach: The goal was achieved by using selected quantitative methods, including portfolio methods and Harry Brown's strategy.

Findings: A portfolio constructed according to Harry Brown's strategy gives poor results (low or negative rates of return) in the analyzed period.

Research limitations/implications: You can build a portfolio based on Polish assets. However, domestic securities should not constitute the majority of a well-diversified and long-term portfolio built with the future in mind. In the analyzed period, the rates of return on passive investments were negative in most cases. The economic recession in the period under review has a negative impact on investment results.

Practical implications: Portfolio diversification according to Harry Brown reduces investment risk due to changes in the economic situation.

Social implications: The proper selection of assets for the portfolio affects the investment result, thus the well-being of society in the case of individual and collective investments, and the financial results of the company. It is an important element of the functioning of entities in a market economy.

Originality/value: The article presents the application of Harry Brown's method in the third decade of the 21st century on the Polish capital market, taking into account selected values. The effectiveness of the investment was examined.

Keywords: long-term investing, portfolio method, Markowitz model, Harry Brown method, geographical diversification of investment risk.

Category of the paper: research paper.

1. Introduction

Investing in finance is a process that involves the current commitment of funds in order to obtain profits later. When investing, you should define your strategy and investment goal and diversify your investments appropriately to minimize the risk of losses. The construction of an effective and profitable investment portfolio is an art that involves the involvement of knowledge, science and experience (Begg et al., 2007; Dorosz, 2014; Głuch, 2020; Partridge, 2022; Petzel, 2021; Stewart, 2019; Taylor, 2009; Wojewoda, 2023).

The theoretical aim of the article is to present the portfolio construction according to Harry Brown's strategy and its modification adapted to the capital market in Poland. The empirical goal is to answer the question whether it is possible to build a profitable Harry Brown portfolio using the available assets of the capital market in Poland in the third decade of the 21st century.

In terms of how to invest money in Poland, low-interest financial products dominate, such as bank deposits, savings accounts and investment funds (Mastalerz-Kodzis; 2014, 2015, 2016). But this is slowly changing. Every year, a Polish investor has more and more investment options, so the choice is becoming more and more difficult. The third decade of the 21st century is a very specific and difficult period, because the market is still feeling the effects of the Covid-19 pandemic and reacting to the armed conflict in eastern Poland. So how will Harry Brown's assumedly stable portfolio behave during this period? Can we expect significant financial benefits from investing in accordance with Brown's guidelines?

2. Research methodology

2.1. Harry Markowitz's classic portfolio theory

Portfolio theory is a theory of decision-making under risk, based on the diversification technique. It was published by Harry Markowitz in the article Portfolio Selection in the Journal of Finance. According to the theory, a rational person making a choice should invest capital in accordance with his or her preferences so as to either minimize the variance (the basic measure of risk) at a given expected rate of return, or maximize the rate of return at a given variance (Markowitz, 1952).

The model proposed by Markowitz was groundbreaking, not only from the perspective of investment theory, but also because of its importance for the analysis of choice under risk conditions. It was the first choice model to explicitly introduce a risk parameter and also allude to a trade-off between risk and return. Markowitz denied that the only goal when constructing a portfolio is to maximize the rate of return, because as it increases, the risk increases. Using the portfolio model, you can calculate the most favorable proportion of these two factors.

The second important element contained in Markowitz's theory is related to the concept of diversification and its impact on the expected rate of return and portfolio risk. Markowitz's theory shows that there are a large number of securities portfolios with an assumed income rate, but only one of them offers minimal risk. Similarly, there are a large number of portfolios with an assumed level of risk, but only one has the maximum expected rate of return for this amount of risk.

Therefore, an important term in Markowitz's theory is the so-called an efficient portfolio, i.e. one for which there is no other portfolio with the same expected rate of return and lower risk, and one for which there is no other portfolio with the same risk and a higher expected rate of return. According to Markowitz, the preference of a rational investor is to choose an efficient portfolio. First, using past data can be problematic. The use of the Markowitz method involves the need to estimate future rates of return and standard deviations based on past data. However, there is no guarantee that past data will prove to be accurate for the future. Secondly, the Markowitz method is very sensitive to even small changes in the initial conditions, i.e. to the choice of the period from which the historical data used in the analyzes come from. Sometimes it is enough to shift the period from which the analyzed data comes by a few days to obtain a significantly different portfolio composition.

2.2. Harry Brown's passive strategy and its modifications

2.2.1. Classic Harry Brown model - historical outline

Harry Browne was a financial advisor in the United States in the 20th century. He was looking for an investing style that would be sustainable in the long term. He was developing a strategy based on stability (Browne, 1999; Rowland, Lawson, 2012). This is how he created the Harry Browne Permanent Portfolio. Browne's portfolio was supposed to be a universal portfolio, so it would provide satisfactory results in all market conditions and regardless of the phase of the business cycle. The idea was to divide the portfolio into four equal parts invested in shares, bonds, gold and cash (i.e. bank deposits or treasury bills). The essence of the concept was to accept market rates of return with low transaction costs and moderate risk (understood as relatively low variability of rates of return).

2.2.2. Assumptions of the Harry Brown model

When analyzing the mathematical and statistical forms of investment models, careful attention should be paid to the assumptions regarding the possibility of their application in economic practice. Sometimes, for example, it is necessary to take into account the distributions of return rates of series or analytical forms of trend functions and their adjustment to empirical data. An important feature of investment strategies are the assumptions regarding their matching. Harry Brown's strategy can be used regardless of the economic situation, regardless of the distribution of rates of return of individual portfolio securities. This is a positive feature, it does not limit the application possibilities either to the basis of models or geographically.

2.2.3. The form of the investment model

According to Brown, this concept is a simple and effective investment method for long-term investments. A portfolio that provides satisfactory results in all market conditions and regardless of the phase of the business cycle. The idea was to divide the portfolio into four equal parts invested in:

- Stocks - the ultimate exponent of prosperity, a time when the standard of living is rising, the economy is growing, business is booming, unemployment is falling, interest rates are low, the financial system is healthy, and credit is easy.
- Long-term bonds - protection against years of deflation. When prices fall and real interest rates are negative, an economic depression can result. But when interest rates fall, bond prices rise, and this effect increases the longer the bond matures.
- Cash - credit expansion slows and the amount of money in circulation shrinks, leaving people and companies with less cash on hand than they expected, which usually leads to an economic recession. Many assets are liquidated, which lowers their price, but the cash portion of the portfolio allows you to reduce overall losses and buy assets at low prices.
- Gold - defense against inflation and currency crises. The amount of money in circulation is greater than the amount needed to purchase available products, so their prices rise. In the face of the loss of value of paper money, gold has an unchangeable value.

What is the philosophy behind this investment strategy? Harry Browne's idea is about preserving the economy. His goal was simple: to create an investment portfolio that would respond well to all economic scenarios. The economy changes in a cyclical way, and depending on what phase of the cycle we are in, one type of financial asset will perform better than another. The idea is to achieve safety and profitability goals at every point in the economic cycle.

Browne therefore includes in his permanent portfolio four types of assets that correspond to the four phases of the economic cycle that he has identified. There is no need for predictability or economic knowledge: it works in any situation. Harry Browne Permanent Portfolio allows you to hedge against any economic scenario.

Harry Browne advised building a Permanent Portfolio through index funds to achieve this diversification. Index funds try to replicate the index, so they are not actively managed (on the contrary, they are passively managed funds) and are characterized by lower costs (which translates directly into higher rates of return). It is well diversified because it combines assets from four different classes. Moreover, it does not require excessive analysis or active management. Therefore, a strategy is constructed that offers stability and security for the investor's assets.

Therefore, you do not need extensive knowledge of economics to build this long-term strategy. It is simply a matter of being exposed to the four phases of the economic cycle (because it is difficult to predict when one phase will end and the next will begin). For this purpose, the proportions corresponding to the four classes of assets that make up the investment

portfolio should be maintained. But what happens when markets oscillate and some assets gain in value while others lose value?

2.2.4. Model modifications

Proportions between values change over time and periodic rebalancing is necessary. Harry Browne recommended that those assets which were above 35% and those likely to fall below 15% should be adjusted until they were restored to their proper weight within the overall basket (25%). This is simply a case of selling winning assets and buying those that have lost value (at more attractive prices). Harry Browne Permanent Portfolio is a long-term investment strategy. Harry Browne is one of the key authors within the so-called passive investing or passive management. In the strategies he proposes, his use of gold and cash stands out from the rest because he invests in physical gold as a safe asset - a topic that generates a lot of discussion in the world of wealth management. Its main goal is to protect savings, regardless of the state of the economy and financial markets.

2.3. Comparison of assumptions for using the Markowitz and Brown methods

So how can Markowitz's model be compared to Harry Brown's strategy? The Markowitz model, well known in the literature, is an optimization model. Most often, risk is minimized at a fixed rate of return on the portfolio. It may happen that a given security that was taken into account will not be included in the portfolio. Brown's model assumes constant shares of individual assets in the portfolio, which is to ensure its stability in various, unpredictable states of the economy. You can see a completely different approach to portfolio construction here. There are many research works on Markowitz portfolios applied to the Polish capital market, as well as many works on optimal investment strategies using less popular investment methods (Mastalerz-Kodzis, 2014, 2015, 2016; Mastalerz-Kodzis, Pośpiech, 2015; Pośpiech, Mastalerz-Kodzis, 2015). However, there are few publications on Harry Brown's strategy regarding the specificity of the Polish market. Therefore, it was decided to analyze this strategy.

3. Research results on the Harry Brown model on the Polish capital market

3.1. Theoretical form of the Harry Brown's models using in the work

Let x_i denote the share of the i-th asset in the investment portfolio. Harry Browne suggested that the shares of individual securities should not exceed the range of 15-35%. The first asset is shares, the second is long-term bonds, the third is cash (currencies), and the fourth is gold. Let us consider the following models (Table 1) taking into account the share of individual securities in the portfolio.

Table 1.
Share of individual securities in portfolios

Value/Model	1	2	3	4	5	6	7	8	9	10
Shares	25%	15%	25%	25%	25%	15%	35%	35%	15%	35%
Long-term bonds	25%	25%	15%	25%	25%	15%	35%	15%	35%	15%
Cash	25%	25%	25%	15%	35%	35%	15%	35%	15%	15%
Gold	25%	35%	35%	35%	15%	35%	15%	15%	35%	35%

Source: own assumptions, original models.

3.2. Selection of the research sample, research period, course of research

The research covers the period 01/2022-06/2023. The aim of the research is to check the rate of return on portfolios in specific time periods. Investment periods of six months, one year and one and a half years were considered.

The following were taken into account: the WIG20 index (reflecting the performance of shares), the TBSP index ETF (representing Polish treasury bonds), gold bars (prices in PLN according to the National Bank of Poland) and foreign currencies (the exchange rate of the US dollar against the Polish currency).

The effectiveness of portfolios was analyzed using the annual rate of return. Securities were purchased at the beginning of the analyzed periods and sold after a specified period of time (0.5 year, 1 year, 1.5 year).

3.3. Results of empirical analyses on the Polish capital market

Table 2 shows the effectiveness of the investment strategy over specific periods of time, measured by the annual rate of return. The six-month, one-year and one-and-a-half-year investment periods were analyzed successively.

Table 2.
Annual portfolio returns

Investment period/ mathematical model	1	2	3	4	5	6	7	8	9	10
01.22-06.22	-0,132	-0,055	-0,069	-0,129	-0,134	**0,005**	-1,444	-0,148	-0,115	-0,143
07.22-12.22	-0,065	-0,083	-0,044	-0,066	-0,065	-0,061	-0,862	-0,026	-0,105	-0,026
01.23-06.23	0,005	-0,026	-0,007	**0,010**	-0,001	-0,043	**0,137**	**0,018**	-0,009	**0,029**
01.22-12.22	-0,089	-0,058	-0,049	-0,088	-0,09	-0,019	-1,047	-0,082	-0,097	-0,08
07.22-06.23	-0,008	-0,035	-0,002	-0,003	-0,013	-0,034	-0,294	**0,020**	-0,036	**0,030**
01.22-06.23	-0,053	-0,041	-0,029	-0,049	-0,057	-0,022	-0,63	-0,046	-0,06	-0,037

Source: own study based on data taken from: www.bankier.pl, www.gpw.pl, www.mennica.com.pl, www. nbp.pl.

3.4. Conclusions

Harry Brown's model worked well and gave good results on the American market, during economic stagnation or growth. As shown in the study, however, the European capital market is not safe in times of crisis and unstable geopolitical situation. They can generate even negative annual rates of return.

The Polish capital market operates and is dependent on foreign markets. Taking into account the process of globalization and the question one may ask, to what extent should the portfolio be diversified geographically? How much capital can I invest in Poland so that the portfolio as a whole is resistant to domestic turmoil? One quarter of this problem is solved by gold, which is a global asset. It is also relatively easy to diversify the cash part by investing it in different currencies (USD, CHF, EUR, GBP). ETFs provide exposure to global stock and bond markets. Polish ETFs only complement a diversified portfolio and allow you to use your information advantage over foreign investors on the domestic market.

In the models analyzed in the article using data from the Polish capital market annual rates of return on investments turned out to be very low or even negative. This proves the low effectiveness of the examined investment strategy in the analyzed period. However, it should be remembered that the study area experienced the social, economic and financial effects of the Covid-19 pandemic, and the Russian-Ukrainian conflict also took place.

Moreover, in the analyzed period, significant inflation was recorded in Poland. After taking it into account, the portfolio's effectiveness will be even lower.

So how can we protect ourselves against the unfavorable phenomenon of financial crises, economic turmoil or inflation? This question is difficult to answer. Certainly, passive investing does not generate significant profits, it allows you to "wait out" a difficult period without generating very large losses.

In subsequent research, the author will focus on searching for more effective investment strategies on the Polish capital market, not necessarily based on shares, bonds, precious metals and currencies. It seems that alternative investments can be helpful during significant changes in the economy and may prove profitable in a rapidly changing economic reality. However, it should be remembered that when investing in alternative securities there is also a high risk, do not forget about portfolio diversification.

To conclude, Harry Brown's strategy, which was safe on the American market, turned out to be ineffective on the Polish capital market in times of major changes and crises. This may serve as a warning to investors who rely on conclusions drawn from research on foreign capital markets.

4. Summary

Searching for effective and low-risk ways of investing is important and timely, especially in the period of significant changes currently taking place in the world.

The portfolio constructed based on Harry Brown's strategy turned out to be a portfolio with low or negative rates of return in the analyzed period. However, it should be emphasized that the examined time period was very specific, both in Poland and in the world. The effects of the

coronavirus pandemic and the Russia-Ukraine conflict negatively affect both global economies and their capital markets. There is a very high risk of failure or even bankruptcy of business and investment activities. Therefore, the search for safe investments in the long term is a current and important problem in the economy, it is an important and necessary element of an efficient and effective management process.

Perhaps constructing a portfolio with a different asset structure or one based on other components from other investment areas would provide better results. The next stage of the analysis will be the search for investment strategies that are resistant to changes in the economic situation, because Harry Brown's idea of constructing such a portfolio certainly deserves the attention of investors avoiding excessive risk. The author also plans to analyze the profitability of alternative investments in both economically stable situations and in times of economic, political and financial crises.

References

1. *Bankier*. Retrieved from http://www. bankier.pl, 20.07.2023.
2. Begg, D., Dornbusch, R., Fischer, S. (2007). *Makroekonomia*. PWE.
3. Browne, H. (1999). *Fail-Safe Investing: Lifelong Financial Security in 30 Minutes*. New York: Harry Browne. St. Martin's Press.
4. Dorosz, A. (ed.) (2014). *Wpływ globalnego kryzysu finansowego na działalność wybranych sfer gospodarki.* Warszawa: Akademia Finansów i Biznesu Vistula.
5. *Giełda Papierów Wartościowych w Warszawie*. Retrieved from: http://www.gpw.pl, 20.07.2023.
6. Głuch, C. (ed.) (2020). *Biblia Inwestowania.* Expertia.
7. Markowitz, H.M. (1952). Portfolio Selection. *Journal of Finance, 7*, pp. 77-91.
8. Mastalerz-Kodzis, A. (2016). Risk analysis of foreign currency bank loans offered on the Polish Capital Market. In: M. Culik (ed.), *Managing and Modelling of Financial Risks* (pp. 563-571). 8th International Scientific Conference, Proceedings Part II.
9. Mastalerz-Kodzis, A. (2014). Optymalne strategie inwestycyjne - podejście fundamentalne. *Zeszyty Naukowe. Organizacja i Zarządzanie, z. 68,* pp. 221-22.
10. Mastalerz-Kodzis, A. (2015). Efektywność indywidualnych i zbiorowych strategii inwestycyjnych stosowanych na polskim rynku kapitałowym. In: J. Mika, M. Miśkiewicz-Nawrocka (eds.), *Metody i modele analiz ilościowych w ekonomii i zarządzaniu. Part 7* (pp. 9-21). Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach.
11. Mastalerz-Kodzis, A., Pośpiech, E. (2015). Zastosowanie modeli ilościowych w konstruowaniu strategii inwestycyjnych. *Zeszyty Naukowe Organizacja i Zarządzanie, No. 86,* pp. 325-335.

12. *Mennica Polska*. Retrieved from: http://www.mennica.com.pl, 20.07.2023.
13. *Narodowy Bank Polski*. Retrieved from: http://www. nbp.pl, 20.07.2023.
14. Partridge, M. (2022). *Investing Explained. The Accessible Guide to Building an Investment Portfolio.* Kogan Page Ltd.
15. Petzel, T.E. (2021). *Modern Portfolio Management: Moving Beyond Modern Portfolio Theory.* John Wiley & Sons.
16. Pośpiech, E., Mastalerz-Kodzis, A. (2015). Wybór metody wielokryterialnej do wspomagania decyzji inwestycyjnych. *Zeszyty Naukowe Organizacja i Zarządzanie, No. 86,* pp. 379-388.
17. Rowland, C., Lawson, J.M. (2012). *The Permanent Portfolio: Harry Browne's Long-Term Investment Strategy*. Wiley.
18. Stewart, S., Piros, Ch.D. Heisler, J. (2019). *Professional Portfolio Management*. John Wiley & Sons Inc.
19. Taylor, M., Mankiw, G. (2009). *Makroeknomia*. Warszawa, :PWE.
20. Wojewoda, P. (2023) *Podręcznik pasywnego inwestowania. Jak racjonalnie pomnażać majątek.* Onepress.