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**THE EVALUATION OF HIGH-DIVIDEND
STRATEGIES IN GLOBAL MARKETS**

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Relevance of the dissertation research

The issue of investment efficiency in financial markets is one of the most important and discussed in financial science. Investors seek to make a profit that would be higher than the market average in the long term, but there is still no clear answer to the question of the possibility of such an investment. In such circumstances, investors often choose conservative strategies: for example, investing in index portfolios, which guarantees only an average return on the market, but frees them from unsystematic risks.

In recent years, many strategies have been proposed that can potentially increase the return on passive investing. Such strategies are based on various effects: P/E effect, P/B effect, small firm effect, calendar effects. Such effects are called market anomalies, because they allow one to get a different return than would be observed in accordance with their efficient market hypothesis.

At the end of the twentieth century, American economists John Slatter and Michael O'Higgins proposed an investment strategy that involves selecting stocks based on just one indicator — the dividend yield. They proved that shares of companies whose dividend yields were higher than the market average often showed more growth than other stocks. Based on these findings, they proposed a strategy called 'Dogs of the Dow'. This strategy involves investing annually in 10 stocks in the Dow Jones index that have shown the highest dividend yield over the past year, and investing occurs at the end of the year. The securities are held in the portfolio for exactly one year, after which a new portfolio is formed based on the latest data on the dividend yield. The results showed that this strategy allowed getting a return above market averages. Over the next few years, high-dividend strategies were tested both in the US market and in the markets of developing and developed countries, and both the classic strategy and its various modifications were tested.

This strategy has some similarities with strategies for investing in undervalued stocks (value investing). The difference is that high-dividend strategies are based on the idea that a high dividend is a attribute of a company's health, but do not involve investing in undervalued stocks.

The higher returns of portfolios consisting of stocks with high dividend yields are most often explained by the fact that, firstly, companies aim to maintain dividend payments at a stable level, avoiding large increases or decreases in dividends, and secondly, it is assumed that company's managers have greater information about the company's prospects compared to investors. This allows us to consider a high dividend yield as a signal that the company has growth potential.

The results of testing high-dividend strategies obtained in the reviewed studies show that there is no consensus on the effectiveness of high-dividend strategies in the literature. In addition, there is still no paper that would test the effectiveness of a high-dividend strategy over long time intervals and with the participation of a large number of national indices.

Since the introduction of the idea of investing in stocks with high dividend yields in the work of O'Higgins and Downs J. (1991), this type of strategy has been repeatedly modified. Thus, in the work of L. Praser and J. Webb (2001), a shift of the reference month was proposed, that is, the use of different months for the construction and rebalancing of the portfolio. In the work of Kai R. (2014), a general comparison of the behavior of stocks with high and low dividend yields was made. A number of authors have analyzed the dependence of results on the number of shares in a high-dividend portfolio, for example: Lial R., Da Silva A., Austin M. (2000), Aistov A.V., Kuzmichev K. E. (2011), Galperin M. A., Teplova T. V. (2011), Dubova E., Volodin S., Borenko I. (2019)

In the dissertation study, various existing approaches to the study of the effectiveness of investing in high-dividend stocks were combined, and, in addition, they were applied to the widest possible sample, which was not done in previous works. In addition, new approaches to the construction of high-dividend portfolios

were proposed, and factors affecting the effectiveness of investing in stocks with high dividend yields were identified.

The high practical value of high-dividend strategies is also confirmed by the presence of a large number of funds based on the idea of investing in stocks with a high dividend yield. The analysis of several such funds operating on the Russian and foreign markets, given in the dissertation study, showed that their use for building funds without modifications and a clear methodology does not allow getting a profit higher than the market, and therefore further study and evaluation of various types of strategies remain relevant.

Degree of development of the scientific problem in the literature

The total information field consists of more than 80 scientific papers and publications from 1991 to 2023. On the one hand, their geographical coverage is quite wide and includes the markets of both developed and developing countries. On the other hand, the works are mainly devoted to one market, while the most interesting is the comparative analysis of the effectiveness of high-dividend strategies in different markets.

In developed markets, the effectiveness of high-dividend strategies was investigated by Slatter J. (1988), O'Higgins M. (1991), Filbeck G., Visscher S. (2003), McQueen G., Shields K., Thorley S. R. (1997), Domian D.L. , Loutonb D. A., Mossman C. E. (1998), Hirschey M. (2000), Prather L. J., Webb G. L. (2001), Gwlym Ap. O., Seaton J., Thomas S. (2005), Bruce L. C., Bhabra G. S. (2006), Kapoor R., Suryavanshi S. (2006), Alles L. et al. (2008), Fin L., Sheng Y. (2008), Brzeszczyński J. et al. (2008), Rine I., Vahamaa S. (2011), Yang H. et al. (2013), Frisö D. (2016), Kim D. (2019).

In emerging markets, the effectiveness of high-dividend strategies was investigated by Leal R., Da Silva A., Austin M. (2000), Sahu C. (2001), Brzeszczyński J., Gaidka J. (2007), Kirkulak B., Kurt G. (2010), Prather L., Topuz J., Uzmanolglu C. (2010), Wang C. et al. (2011), Ekaputra A., Sukarno S. (2012), Tissayakorn K. (2013), Soomro N., Haroon M. A. (2015), Pandey N. (2017).

In the Russian market, this issue was studied by Aistov A. V., Kuzmichev K. E. (2011), Galperin M. A., Teplova T. V. (2011), Dubova E., Volodin S., Borenko I. (2019), Nikolashina N. N. (2019), Melnikova M. et al. (2020).

The goal of the study is to evaluate the effectiveness of investment strategies using shares with a high dividend yield.

To achieve this goal, the following **tasks were formulated**:

1. Determine the presence of excess return on high-dividend portfolios compared to the index.
2. Evaluate the effectiveness of high-dividend strategies using indicators that take portfolio risk into account.
3. Consider various modifications of classic high-dividend portfolios, including those using non-standard basic indicators.
4. Evaluate the expediency of applying filters in the construction of high-dividend portfolios.
5. Perform testing of high-dividend portfolios over the maximum possible time horizon.
6. Assess the attractiveness of investments in shares with high dividend yield from foreign investors, for this purpose, evaluate the profitability and efficiency of high-dividend portfolios both in national currencies and in the single currency.

Structure of the dissertation research

The dissertation consists of an introduction, three chapters, a conclusion, and a list of references. The main text of the dissertation research is presented on 162 pages, it contains 35 tables and 74 figures. The list of references includes 95 names.

Information base and methodological basis of the study

The dissertation paper uses information from the Bloomberg, Thomson Reuters, Yahoo Finance, and Investing.com databases.

The total sample used in the dissertation study was more than 50 stock indices and more than 7,000 public companies from various countries and economies.

The practical part presented in the dissertation research consists of four independent studies.

1. Evaluating the effectiveness of high-dividend strategies in the US market
2. Evaluating the effectiveness of high-dividend strategies in APEC markets
3. Evaluating the effectiveness of high-dividend strategies based on an extended sample of indexes
4. Cross-country analysis of the effectiveness of high-dividend strategies

In each of the studies, a standard methodology for building high-dividend portfolios was used: stocks with the highest dividend yield were selected from the index on a monthly basis, a high-dividend portfolio was formed from a certain number of shares, and then its dynamics was tracked over a pre-selected time period (usually 1 year). After that, the portfolio was rebalanced. Further, the profitability and efficiency of the formed portfolios were evaluated for the entire study period, after which these indicators were compared with the performance of the entire market (stock index). As a result, the main hypothesis about higher profitability and effectiveness of high-dividend strategies compared to the market was tested, and additional hypotheses related to changes in the performance of high-dividend portfolios depending on the approach used and hypotheses related to factors affecting the effectiveness of high-dividend strategies were considered. In addition, the presented studies had some special features.

Thus, in the study conducted on the basis of the Dow Jones index, in addition to the annual dividend yield used as an indicator in the vast majority of studies, the indicator of indicative dividend yield was used, which is calculated as the ratio of

the last dividend paid by the company to the share price in annual terms. In most cases, this indicator is not equal to the annual dividend yield, calculated as the ratio of the amount of dividends paid to the share price. In addition, an attempt was made to use as an indicator not the absolute value of the dividend yield, but its growth for 1, 6 and 12 months. The study also used Filters based on EBITDA, Net profit, and Debt per share indicators. This choice is due to the fact that these indicators can confirm the validity of a high dividend yield or its growth. Accordingly, portfolios were considered that consist only of those stocks whose high dividend yield is confirmed by the growth of the first two indicators and the lack of growth of the third indicator. Taxes and transaction costs were not taken into account in this study, and dividends were capitalized annually. It is assumed that investing in high-dividend stocks can be effective only in cases where a high dividend yield is confirmed by real results of the company's activities.

In the study based on APEC markets, high-dividend portfolios were compiled for each of the indices, containing from 1 to 20 stocks with the highest dividend yield with equal weights, as well as a portfolio that includes all stocks that paid dividends in the last year. After that, the profitability of each portfolio for the next year was calculated, the beta coefficients of the portfolios were determined, as well as the risk/return indicators: the Sharp ratio and the Sortino ratio, for which the sample was checked for compliance with its normal distribution. To calculate the yield, we used prices that included dividend payments, i.e. the yield in all cases was full. To assess the impact of various factors on the profitability of high-dividend portfolios, a regression model was constructed, where the explained variable is the difference between the profitability of a high-dividend portfolio and the profitability of a stock index for a certain period. This variable reflects the effectiveness of the proposed high-dividend strategy based on stock market data. The following explanatory variables were used: year of portfolio operation— to understand whether the effectiveness of the strategy weakens over time, as the market efficiency hypothesis states; reference month of stock portfolio construction — to test the presence of a calendar anomaly; number of shares in the portfolio — to determine

the optimal number of shares in the portfolio; ratio of the number of shares on which dividends were paid to the total number of shares in the index — to understand how the presence of a large number of shares on which dividends are paid affects the profitability of high-dividend companies. Finally, the last indicators used are: the classification of the economy as developed or developing according to the World Bank classification — to identify in which markets (developed or developing) the anomaly under study is more significant, and the growth rate of the stock index during the portfolio period.

The study was conducted on an extended sample of indices (38 indices from 32 countries) and used the following methodology. At the first stage, the annual dividend yield of all stocks included in each of the indices under consideration was calculated for each of the months included in the research period. It is worth noting that in this case we are not talking about the generally accepted indicator of dividend yield, but about the annual dividend yield based on the current price. In other words, all the company's dividends paid in the last year are summed up, after which the amount received is divided by the share price at the end of the month (and not by the cut-off price). This change allows, firstly, to use each month of the year as a reference month, and secondly, to react more sensitively to price changes, which directly correlates with the theory of high-dividend strategies. At the second stage, portfolios containing from 1 to 20 shares with the highest dividend yield are compiled, as well as the portfolio containing all shares on which dividends were paid in the last year; the profitability of these portfolios, their beta coefficients, Sharpe and Sortino ratios are calculated. These risk/return indicators are traditionally used to evaluate the performance of all types of portfolios, including high-dividend portfolios, so it was decided to use them in this paper as well. After that, the data was aggregated and the portfolio performance was evaluated. At the third stage, an econometric model is constructed, the purpose of which is to determine the significance and degree of influence of certain factors on the profitability of high-dividend portfolios. The difference between the portfolio and index returns for the same period is used as the explained variable. Explanatory variables can be roughly

divided into two groups: those that are traditionally used in works devoted to high-dividend strategies, and others that were used in such works for the first time. The first group of variables includes: the number of shares in the portfolio, the year of operation of the portfolio, the reference month, and the classification of the country / economy as developed according to the World Bank classification. Variables used for the first time include: market growth over the portfolio period; ratio of the number of shares in the portfolio to the total number of shares in the index; ratio of the number of shares on which dividends are paid to the total number of shares in the index.

In the final study conducted on the widest possible sample of indices (49 indices from 44 countries and economies), the following basic indicators for building a portfolio were taken: annual dividend yield, 12-month dividend yield growth in percentage points, and 12-month dividend yield growth as a percentage. The reference months in the study were all 12 months of the year, i.e. portfolios are built on a monthly basis. The portfolio rebalancing period range was also extended. So, each portfolio worked for 6, 12 and 18 months. This is done to see if this indicator affects the final performance. High-dividend portfolios traditionally consist of a different number of stocks. So, we considered: portfolios of 1-15 shares; a portfolio containing all shares on which dividends were paid for the last year; as well as a portfolio of all shares on which no dividends were paid. Shares are included in the portfolio in equal shares. The paper considers transaction costs in the amount of 0.1 % of the transaction volume. Transaction costs for the market portfolio (index) were not considered, since investment in the index is most often made by purchasing the corresponding ETF, and their commissions differ significantly from market to market. The Sharpe ratio was calculated for all portfolios and indices, so that it was possible to assess not only the profitability of the respective portfolios, but also their effectiveness, taking into account risk. This will also allow one to use another explanatory variable in the models — the difference between the Sharpe ratio of the portfolio and the index. All the above indicators are also estimated for portfolios

calculated in US dollars in order to assess the attractiveness of investments in high-dividend strategies from foreign investors.

The scientific novelty of the study is as follows:

1. A comparative evaluation of the effectiveness of high-dividend strategies with indicators of indicative profitability, as well as with various indicators of growth of dividend yield as basic ones, was carried out. In previous studies, only simple dividend yield and percentage dividend yield growth were used as a basic indicator.

2. The effectiveness of high-dividend strategies was evaluated using all twelve months of the year as reference months (months in which the portfolio was rebalanced). Previously, only two months of the year were used as reference months.

3. The study was conducted on the basis of a record number of markets and, accordingly, the maximum number of stock indices. The authors of earlier studies considered the effectiveness of high-dividend strategies in no more than seven markets. Thus, the object of the dissertation research is the most extended among similar works on the topic under consideration. In addition, for some of the markets examined, high-dividend strategies have not been previously tested.

4. The time horizon of the dissertation research is 20 years. Similar time horizons were used in other studies only when testing classic high-dividend strategies in individual markets without applying various modifications.

5. New significant factors influencing the profitability and effectiveness of high-dividend strategies were identified. The impact of various modifications of high-dividend strategies, as well as macroeconomic indicators on the result of the market under consideration, was estimated.

6. It was proved that it is possible to increase the profitability and efficiency of high-dividend strategies by using filters based on the financial performance of companies. The proposed filters have not previously been used in works on similar topics.

7. The stability of the high-dividend anomaly over time was assessed, and its gradual disappearance in developed markets for the period from 2000 to 2021 was shown. This is likely due to improved efficiency of markets. This conclusion has not been made before for a wide sample of indices.

8. Calculations of the effectiveness of high-dividend strategies were made not only in national currencies, but also in the single currency (US dollar) to assess the attractiveness of investing in high-dividend stocks from foreign investors. Previously, this idea was used only to evaluate individual markets.

9. It was shown that despite the fact that, on average, the high-dividend anomaly has almost exhausted itself by now, there are markets where high-dividend stocks continue to show profitability and efficiency above the average market indicators. In addition, applying the proposed modifications, as well as considering the identified factors that affect the profitability and effectiveness of high-dividend strategies, one can continue to get higher returns even in those markets where classic high-dividend portfolios are no longer relevant.

The theoretical significance of the study lies in the development of new modifications of already known high-dividend strategies, as well as in the creation of new types of high-dividend strategies, and evaluating their effectiveness in a large number of markets, including those where testing of high-dividend strategies has not been previously conducted. The results obtained can be used to create training courses for students of financial specializations.

The practical significance of the study is related to the possibility of using its results in making investment decisions in both developed and emerging markets using investment strategies based on stocks with high dividend yields. In particular, we have identified factors that influence the results of investing in stocks with high dividend yields, as well as patterns inherent in portfolios of high-dividend stocks.

As a result of the dissertation research, the author made the following conclusions.

The study conducted in the US market (based on the Dow Jones index) showed that standard high-dividend portfolios based on the amount of annual dividend yield are no longer fully effective: the Sharp ratio values show that the increased profitability of such portfolios is offset by increased risk on them. In addition, using the indicative dividend yield indicator as the base indicator instead of the annual dividend yield can significantly improve the investment results. On the other hand, despite the better return rates of such portfolios compared to the market and portfolios based on annual dividend yield, the higher degree of risk on them does not allow us to recommend all such portfolios for investment. Finally, the use of filters allows one to increase the profitability and efficiency of high-dividend investments. And using the Net profit filter can improve investment results in most cases, and the filter based on the lack of growth in the Debt per share indicator showed a positive result for all types of portfolios. This statement is true for both profitability and efficiency based on the Sharpe ratio.

The study based on 19 APEC markets showed that the average return on high-dividend portfolios in 17 of the 19 APEC economies exceeds the average market return for the study period. These conclusions were also valid for comparing the effectiveness of strategies by year: out of 16 years of portfolio operation, only 3 years were less profitable for high-dividend portfolios than the market portfolio. Hence, we can conclude that the anomaly associated with the dividend effect remains significant in most APEC stock markets. At the same time, the hypothesis that high-dividend strategies show the greatest excess in crisis years and in the year of economic and stock market recovery is once again confirmed. When comparing high-dividend portfolios with the index, it turned out that all portfolios showed abnormal returns. Among all high-dividend portfolios, portfolios that included 2 or 3 stocks showed the highest returns. An important conclusion is that the dividend portfolio, consisting of all the shares on which dividends were paid, also showed a yield significantly higher than the market. A comparison of the results in different

types of markets showed that abnormal returns are higher in emerging markets than in developed ones. This may be due to a higher degree of efficiency of developed markets — anomalies in them disappear faster.

The study conducted on an extended sample of indices showed that for the vast majority of indices (more than 85%), high-dividend portfolios show higher returns than market (index) portfolios. On average, the difference in the average annual yield is about 3 percentage points, or 27%. These conclusions are also valid for the breakdown by year: in most of the years under review, the average return on high-dividend strategies was higher than the return on the corresponding indices.

The lowest return is shown by a portfolio of one stock; portfolios of more stocks showed higher returns. At the same time, all portfolios considered, including that consisting of all shares on which dividends were paid, showed a higher profit than index portfolios. In addition, when looking at developing and developed countries separately, it turned out that negative results for a portfolio of one share are typical only for developing countries. Based on the data obtained, we can conclude that the first hypothesis was only partially confirmed: in terms of lower returns on portfolios with a small number of stocks, this hypothesis is valid only for emerging markets, and despite the lower returns on portfolios with a large number of stocks compared to other portfolios, their returns still remain above market average.

Regression analysis showed that over time, the difference between the profitability of high-dividend and market portfolios decreases, that is, high-dividend strategies reduce their effectiveness. These results are consistent with the conclusions drawn by other authors. Based on the fact that the increased profitability of high-dividend portfolios is a market anomaly, it should decrease or disappear over time, which is observed in the example of other market anomalies. Thus, the second hypothesis was fully confirmed.

Portfolios that are formed on the basis of dividend yield in the first months of the year turned out to be more profitable than those with the reference month close to the end of the year. That is, the hypothesis about the significance of the influence

of the reference month on the level of portfolio profitability is confirmed. This is due to the faster response of portfolios with a biased reference month to new dividend payments compared to portfolios based on the classic 'Dogs of the Dow' strategy, according to which December is chosen exclusively as the reference month.

Regression analysis showed that an increase in the share of dividend-paying shares in the total number of shares in the index negatively affects the additional profitability of high-dividend portfolios, and an increase in the number of shares in the portfolio in relation to the total number of shares in the index significantly negatively affects the abnormal profitability of high-dividend portfolios only in developing countries. The results obtained are new, as these factors have never been considered before in studies devoted to high-dividend strategies.

As for the differences between developed and developing countries, in the first type of countries, an increase in the number of shares in the portfolio leads to a decrease in the difference in returns between high-dividend portfolios and the index, while a market growth of 10% leads to an increase in the difference by 1 percentage point. In developing countries, the opposite situation is observed: it is preferable to use portfolios based on a larger number of shares, and the growth of the market leads to a drop in the additional profitability of high-dividend portfolios. In general, the anomalous yield in developed countries is 0.56 percentage points lower than in developing countries, which confirms the hypothesis of a faster disappearance of the high-dividend anomaly in the markets of developed countries.

In general, the results showed that out of 38 indices analyzed, only in 5 cases high-dividend portfolios showed lower returns than the market portfolio during the study period (2003-2019). The results suggest that the high-dividend anomaly continues to exist, and stocks with high dividend yields can be used to increase the profitability of investment portfolios.

The study conducted on the widest possible sample of indices (49 indices from different countries and economies) confirmed the hypothesis that the high-dividend anomaly weakens over time, and this statement is true for both developed and emerging markets. The hypothesis that the high-dividend anomaly is weaker in

developed markets than in developing ones has been confirmed. This effect manifests itself both in terms of profitability and in terms of the effectiveness of high-dividend portfolios in assessing the Sharpe ratio. In addition, an important conclusion is drawn about the need for reasonable diversification of high-dividend portfolios, since, on the one hand, the profitability and efficiency of portfolios increases with an increase in the number of shares in the portfolio; on the other hand, portfolios consisting of all shares on which dividends were paid perform somewhat worse.

Finally, portfolios consisting of shares on which no dividends were paid, as well as those formed on the basis of indicators of growth in dividend yield, showed lower results compared to classic high-dividend portfolios, and therefore cannot be recommended for investment. At the same time, the hypothesis of a significant change in the results of calculations in the single currency was not confirmed.

In general, the results of the dissertation research indicate that high-dividend strategies, on the one hand, do on average allow one to get a higher return than the market, but, on the other hand, as a rule, this return is compensated by the higher volatility of such portfolios, and therefore high-dividend strategies cannot be considered effective. In addition, we can talk about the disappearance of the high-dividend anomaly in the markets of most countries and economies. Nevertheless, using the results associated with the influence of various factors on the profitability and effectiveness of high-dividend strategies, as well as the proposed modifications of high-dividend strategies, it is possible to form portfolios that can potentially show high performance.

The main provisions submitted for defense:

1. The market anomaly associated with the possibility of obtaining increased returns when investing in stocks with high dividend yields has not completely disappeared for now.

2. In some cases, the increased return on portfolios built on the basis of high-dividend strategies is offset by increased risk on them, whereby not all high-dividend strategies are more effective than indices.

3. The use of modifications of high-dividend strategies, including the use of indicative dividend yield or growth indicators of dividend yield, allows one to get a higher return compared to classical strategies, even considering risk indicators.

4. During the study period, from 2000 to 2019, the difference between the returns on high-dividend portfolios and market portfolios decreases, that is, the effect of the high-dividend anomaly gradually decreases.

5. The profitability and effectiveness of high-dividend strategies in various markets is influenced by many factors, including: the number of shares in the index; whether the market is classified as developed or developing; the share of companies that pay dividends in the index; the average dividend yield of companies in the index; and the growth or fall of the market during the portfolio period.

List of publications on the topic of the dissertation

Publications in peer-reviewed scientific journals:

1. Stolyarov A. I., Sorokin I. A. Evaluation of the effectiveness of high-dividend strategies in the American market // Bulletin of the Moscow University. Series 6. Economics. – 2019. – No.3. – P. 78-91.

2. Sorokin I.A. Evaluation of the effectiveness of high-dividend strategies in world markets. // Bulletin of the Moscow University. Series 6: Economics. – 2020, – No. 3. – P. 106-125.

3. Stolyarov A.I., Sorokin I.A. Evaluation of the effectiveness of high-dividend strategies in the markets of the economies of the Asia-Pacific Economic Cooperation // Bulletin of the Saint Petersburg State University. Economics. – 2021. – Vol. 37. – No. 1. – P. 166-186.

4. Volodin S.N., Sorokin I.A. Construction of high-dividend portfolios in the Russian stock market. // *Corporate Finance Management*. – 2014. – No.6. – P. 382-390.

5. Sorokin I.A. Evaluating the effectiveness of high-dividend strategies in various markets. // *Business. Education. Law*. – 2019. – No. 1. – P. 335-344.

Materials of publications 1-3 were used in the dissertation research.

Testing of research results

The results of the dissertation were tested at the following events:

1. IXX April International Scientific Conference on Economic and Social Development, HSE, 2018 Report: "Evaluation of the effectiveness of high-dividend strategies in the American market".

2. XX April International Scientific Conference on Economic and Social Development, HSE, 2019 Report: "Comparison of the effectiveness of high-dividend strategies in developed and emerging markets".

3. FinFair Moscow Exchange Conference, 2019 Report: "High-dividend strategies for private investors".

4. International Scientific Conference "V Efimov Readings", 2021 Report: "Evaluation of the effectiveness of high-dividend strategies in global markets".

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