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High-Volume Return Premium on the Warsaw Stock Exchange: evidence, drivers, and strategy design

1. Introduction

Research on financial markets has long focused on understanding the dynamics of stock prices and the factors that drive their fluctuations. Prices reflect investors' expectations regarding firms' future performance, and these expectations evolve as new information arrives. While the Efficient Market Hypothesis (EMH) suggests that trading volume merely reflects the process of price discovery without influencing future returns, a growing body of empirical evidence challenges this view. In particular, several studies indicate that trading volume may contain independent information about investor sentiment, disagreement, or attention, which can translate into predictable return patterns.

One of the most influential findings in this context is the High-Volume Return Premium (HVRP) documented by Gervais et al. (Gervais et al. 2001). They demonstrated that stocks experiencing unusually high relative trading volumes tend to have abnormally positive returns in subsequent days, while unusually low volumes predict weaker performance. This phenomenon highlights the informational role of volume and suggests that market participants do not immediately and fully incorporate trading shocks into prices. Subsequent research has extended this evidence across different markets, but results for emerging European markets remain scarce and inconclusive.

This study investigates whether the HVRP effect exists on the Warsaw Stock Exchange (WSE) and whether it can be systematically exploited through realistic,

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long-only investment strategies. Building on prior work, we test whether extreme trading volume predicts short-term returns and explore how this relationship varies with firm characteristics and trading conditions. Specifically, the paper examines how the strength and persistence of the HVRP depend on firm size, stock price level, and the duration of the holding period. It also compares results obtained under alternative reference windows used to define extreme volume and benchmarks strategy performance against the WIG index. Finally, the study analyses the time variation in trading intensity – measured as the frequency of high-volume events – to assess whether volume shocks reflect broader shifts in market sentiment or liquidity.

The contribution of this paper is threefold. First, it provides the most comprehensive test of the HVRP in Poland to date, extending beyond earlier evidence limited to event-study or monthly asset-pricing approaches (Gurgul, Wójtowicz 2009; Wójtowicz 2017). Second, it introduces an implementable strategy design tailored to local market frictions, focusing on long-only rules and daily signals. Third, it highlights the role of firm-specific heterogeneity and trading intensity in shaping the persistence of the volume premium, thereby offering new insights into behavioural explanations of price anomalies in emerging markets.

By documenting the presence and characteristics of the HVRP on the WSE, this research contributes to both the academic literature and practical investment perspectives. For scholars, it extends the debate on whether behavioural and informational mechanisms identified in developed markets translate to less mature environments. For practitioners, it demonstrates that volume-based strategies can provide a source of systematic excess returns, though their effectiveness depends strongly on market segmentation and trading conditions.

The results show that the HVRP is a short-lived phenomenon, strongest over one-day horizons, and influenced by both firm-level and market-wide factors. Mid-sized and low-priced firms generate the highest raw returns, while large firms deliver superior risk-adjusted performance. The findings demonstrate that volume-based anomalies persist in an emerging market setting, offering new insights into behavioural price formation and practical implications for investors constrained by short-selling limitations.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature on the informational role of trading volume. Section 3 describes the dataset and methodology used to construct and evaluate the strategies. Section 4 presents the empirical results, including the analysis of firm size, stock price level, holding periods, reference windows, and comparisons with the WIG index. Section 5 concludes the paper, summarising key findings and their implications for both theory and practice.

2. Literature overview

Trading volume is one of the key variables in financial markets, offering valuable insights into investor behaviour, market sentiment, and liquidity. It supports the interpretation of price dynamics, volatility patterns, and even asset valuation. Beyond its descriptive utility, volume has significant predictive potential, especially when analysed in relation to price movements and volatility.

One of the foundational studies on the role of trading volume in market dynamics was by Copeland, who introduced the Sequential Information Arrival Hypothesis (SIAH) (Copeland 1976). According to this hypothesis, information reaches market participants sequentially: first to informed investors, whose actions signal this information to others (uninformed or noise traders). This process creates observable lead-lag relationships between prices, trading volume, and volatility. Blume et al. and Suominen developed this perspective further, suggesting that uninformed traders often interpret volume as a signal of private information, meaning that shifts in trading activity may directly influence prices rather than merely accompany them (Blume et al. 1994, Suominen 2001).

A broad empirical literature has examined how trading activity relates to future returns, volatility, and investor sentiment. Lee and Swaminathan showed that volume helps predict price continuation and reversal patterns in U.S. equities (Lee, Swaminathan 2000). Llorente et al. linked trading activity to information asymmetry and return dynamics (Llorente et al. 2002). More recently, studies such as Atmaz and Basak, Bajzik, Floros and Salvador, Sukpitak and Hengpunya documented how volume interacts with volatility, disagreement, and investor attention across different markets (Atmaz, Basak 2018; Bajzik 2021; Floros, Salvador 2016; Sukpitak, Hengpunya 2016).

Gervais et al. conducted a seminal study that differs from traditional approaches using trading volume as a proxy for liquidity or investor disagreement (Gervais et al. 2021). Instead, they focused on relative trading volume – defined as the ratio of trading activity in a given period compared to a reference period of the previous 50 trading days. They showed that relative changes in trading volume, rather than volume levels themselves, contain valuable predictive power for future stock returns, laying a foundation for strategies that exploit temporary shifts in investor attention and trading intensity. Based on data from the New York Stock Exchange, they demonstrated that extremely high relative trading volume is systematically followed by significantly higher stock returns, while extremely low relative volume precedes unusually low returns. This phenomenon, termed the High-Volume Return Premium (HVRP), is robust to other commonly considered explanatory variables such as liquidity, price level, or dividend and earnings announcements.

The HVRP has been linked to several behavioural and informational mechanisms. A key explanation offered by Gervais et al. builds on Miller's visibility hypothesis (Gervais et al. 2001; Miller 1977). It posits that when investors have heterogeneous beliefs and face short-selling constraints, stockholders tend to overvalue the assets they already hold and are reluctant to sell, creating supply frictions. A sudden surge in trading volume, interpreted as a positive volume shock, draws investor attention to the stock, increasing recognition and demand. The imbalance between constrained supply and increased demand results in a temporary price increase, leading to excess future returns.

Another theoretical support for the HVRP is Merton's investor recognition hypothesis, further extended by Zheng and Shen (Merton 1987; Zheng, Shen 2020). According to this view, higher trading volume signals greater visibility and awareness of a stock among market participants. As more investors become aware of the stock and include it in their portfolios, the stock experiences a recognition-driven repricing, contributing to the observed return premium. These frameworks emphasize the role of investor attention, information diffusion, and market frictions in explaining why abnormal returns often follow unusually high trading activity.

The HVRP has been tested across many markets, often with mixed results. In China, studies such as Wang et al., Wang and Cheng and Zhou found evidence of the premium, though its magnitude varied with market conditions (Wang et al. 2017; Wang, Cheng 2004; Zhou 2010). Huang et al. analysed several Asian markets, while Tang et al. and Gordon and Wu documented the effect in Australia, showing it is particularly strong for large-cap firms (Gordon, Wu 2018; Huang et al. 2011; Tang et al. 2013). Israeli et al. provided a novel angle by linking volume shocks not only to pricing but also to real corporate investment, suggesting that HVRP-like dynamics may reduce firms' cost of capital (Israeli et al. 2022). On a cross-country scale, Kaniel et al. analysed 41 stock markets and found that the premium is consistently present in developed economies, while evidence for emerging markets was inconclusive due to limited data availability (Kaniel et al. 2012).

In the context of the Warsaw Stock Exchange (WSE), research remains relatively scarce. Gurgul and Wójtowicz used an event-study methodology and confirmed that unusually high trading volume was followed by positive short-term abnormal returns (Gurgul, Wójtowicz 2009). Wójtowicz expanded the analysis with an asset-pricing framework, showing that the HVRP is robust at the monthly horizon and not explained by common risk factors such as size, value, momentum, or liquidity (Wójtowicz 2017). However, both studies focused on documenting the anomaly itself rather than its practical exploitability. Evidence from other Central European markets, such as the Vienna Stock Exchange (VSE), indicates that the HVRP may exist but is more fragile and sensitive to weighting methodology and significant only for equally-weighted returns. (Wójtowicz 2017).

Despite these contributions, emerging markets such as Poland remain understudied. Structural factors – such as lower liquidity, greater retail investor dominance, and different regulatory environments – may significantly alter the volume-return relationship. While preliminary evidence from Gurgul and Wójtowicz supports the HVRP existence in Poland, no study has yet explored how this effect varies across firm sizes, sectors, or market conditions (Gurgul, Wójtowicz 2009; Wójtowicz 2017). This gap limits the practical applicability of HVRP-based strategies for local investors and raises important questions about the generalizability of behavioural asset pricing theories – such as SIAH and the investor recognition hypothesis – in less efficient and less mature markets. This study addresses these gaps by providing new empirical evidence on the nature of the HVRP on the Warsaw Stock Exchange. Special attention is paid to short-term trading behaviour, firm-level heterogeneity, and the influence of market segmentation.

3. Dataset and methodology

The main objective of this study is to examine whether trading volume can serve as a predictor of future stock returns and to test for the existence of the High-Volume Return Premium (HVRP) on the Warsaw Stock Exchange (WSE). The dataset, sourced from the EquityRT database, covers daily prices, trading volumes, and market capitalisations for all stocks listed on both the main WSE market and NewConnect between January 2002 and April 2023. All figures are expressed in U.S. dollars and adjusted for corporate actions such as stock splits and dividends. The one-month U.S. Treasury bill rate is used as a proxy for the risk-free rate.

To evaluate the impact of unusually high trading activity on future returns, we construct an investment strategy based on trading volume. For each stock and trading day, we calculate the relative trading volume (RVOL) as the ratio of the current day's trading volume to the maximum volume observed over the preceding 20 trading days. A relative volume greater than one indicates that the stock is experiencing a surge in investor attention compared with recent history. Such stocks are classified as high-volume on that day.

Importantly, only stocks with complete data for the entire reference window, specifically, those that exhibited trading activity on each day within that period, are included in the analysis. This filtering step ensures that infrequently traded stocks, for which the definition of relative volume may be distorted and unreliable, are excluded. As a result, the analysis focuses on liquid, actively traded stocks, thereby reducing noise and enhancing the robustness of the results. To further ensure data quality, additional filters are applied: all stocks with a nominal share price below USD 0.25 on a given day are excluded to avoid issues related to penny stocks. Additionally, we remove all stocks of firms with a market capitalisation lower than USD 1 million.

Following the framework of Gervais et al., the strategy consists of buying high-volume stocks and holding them for either one day or five days before selling (Gervais et al. 2001). Since portfolios are formed daily, a 5-day holding period implies five overlapping portfolios – those formed one, two, up to five days earlier. The daily portfolio return is thus defined as the average return of all active positions held on that day. In addition to the baseline specification, we examine several extensions of the strategy to assess robustness and parameter sensitivity. Specifically, we test two alternative reference windows (20 and 50 trading days) used to define abnormal volume, and two holding periods (one day and five days). We also construct both equally-weighted and capitalisation-weighted portfolios to analyse whether results depend on firm size and liquidity concentration.

To benchmark performance, we compare the returns of the HVRP-based strategies against the WIG index, evaluating excess returns, Sharpe ratios, Jensen's alpha, and Treynor ratios. Finally, we analyse the monthly intensity of volume signals – measured as the number of occurrences of extreme trading volume per month – to investigate whether the frequency of such signals correlates with broader market dynamics.

The investment strategy described above, which selects stocks based on short-term changes in trading activity and holds them briefly, aligns with the broader HVRP framework but also introduces several key methodological distinctions compared to dominant approaches in academic research. First and foremost, our approach relies on a short reference window (20 trading days) to compute relative trading volume. This enables the strategy to detect extreme short-term increases in investor attention, which may reflect news events, speculation, or sudden shifts in sentiment. Unlike Gervais et al., who formed portfolios every 50 days using static reference windows, our method updates daily (Gervais et al. 2001).

Second, our strategy employs very short holding periods (one or five days) and constructs daily portfolios based on rolling signals. This setup aims to capture short-lived return patterns following abnormal trading activity, which may be driven by behavioural overreactions or liquidity effects. Most prior studies, including Zhou and Wang et al., analyse effects over several weeks or months, assuming slower price adjustments (Wang et al. 2017; Zhou 2010).

Third, our filtering approach excludes stocks lacking continuous trading data over the reference window. This eliminates illiquid or infrequently traded stocks, ensuring that the relative volume measure is well-defined and not distorted by artificial volume jumps due to sporadic trading. This is particularly important in emerging markets, where thinly traded stocks can introduce considerable noise. In contrast, many studies (such as Gordon, Wu 2018) include a broader universe of stocks, often applying liquidity filters post hoc. Only a few papers (such as Wójtowicz 2017) explicitly emphasize liquidity constraints in markets like Warsaw and Vienna.

Additionally, a key distinguishing feature of the methodology employed in this paper is its exclusive reliance on long positions. The investment strategy consists solely of taking long positions in high-volume stocks, without a corresponding short position in low-volume stocks. This contrasts with many previous studies (e.g., Gervais et al. 2001; Kaniel et al. 2012), where the HVRP is typically examined using a long–short strategy and measured as the return spread between high- and low-volume portfolios. The decision to focus exclusively on long positions is particularly relevant in the context of the Warsaw Stock Exchange — an emerging market characterized by significant constraints on short selling. In practice, establishing short positions in low-volume stocks (typically highly illiquid and of limited investor interest) is extremely difficult due to regulatory restrictions and a general lack of borrowable shares. Therefore, a long-only strategy more accurately reflects the practical limitations faced by investors in such markets and enhances the real-world applicability of the study's findings.

4. Empirical results

In this section, we present and evaluate the key empirical findings of our study. The primary objective is to assess how sudden increases in trading volume affect future returns and whether this phenomenon, the High-Volume Return Premium (HVRP), can be utilized to construct profitable trading strategies. The second objective is to assess how various factors, including company size (market capitalisation) and stock price level, affect the performance of volume-based trading strategies.

We conduct this analysis using both equally-weighted and capitalisation-weighted portfolios to capture potential differences in outcomes stemming from the High-Volume Return Premium (HVRP) across small-cap and large-cap stocks.

Although the analysed portfolios are rebalanced on a daily basis, we evaluate their performance using monthly returns. This approach allows, among other things, for meaningful comparisons with findings from studies on other asset pricing anomalies, which are typically examined using monthly data.

4.1. Firm size

Firm size, proxied by market capitalisation, often plays a crucial role in shaping investor attention and, as a result, the effectiveness of volume-based trading strategies. The higher visibility and greater liquidity of large firms may amplify the return effects of trading volume shocks. Previous research has shown that the High-Volume Return Premium may not be uniform across firms of different sizes.

For example, Tang et al. found that in the Australian stock market, the HVRP was significantly stronger for large-cap firms, particularly those in the top deciles of capitalisation, while it was largely absent for small-cap firms (Tang et al. 2013). Conversely, Wójtowicz reported that on Poland's NewConnect market, which is characterized by smaller and less liquid firms, the HVRP was only statistically significant under equally-weighted portfolios (Wójtowicz 2017). This suggests that the capitalisation structure of the market influences whether volume anomalies can be profitably exploited, with small firms potentially requiring different assumptions or portfolio construction methods due to their higher volatility and trading frictions. Despite these findings, there remains limited research on how trading volume interacts with firm size in emerging markets. For instance, Kaniel et al. concluded that while the HVRP is robust in developed economies, it is less evident in emerging markets, potentially due to smaller sample sizes, limited data, or institutional constraints (Kaniel et al. 2012). Importantly, they emphasized that capitalisation effects should not be overlooked when interpreting cross-country anomalies in trading behaviour.

To analyse how firm size impacts the HVRP on the WSE, we consider two complementary approaches. In the first, we examine the HVRP for firms whose market capitalisation exceeds one of three thresholds: 1, 10, and 50 million USD. In the second, we analyse the HVRP separately within market capitalisation quintiles. Each quintile represents 20% of firms, sorted from smallest (quintile 1) to largest (quintile 5). This dual approach allows us to investigate whether the HVRP varies systematically with firm size and whether capitalisation acts as a moderating factor in the relationship between abnormal trading volume and subsequent returns. By exploring this dimension, we aim to provide more granular insights into the nature of volume-based signals on the WSE and assess whether investors should tailor their strategies according to firm size. This analysis also contributes to addressing a notable gap in the literature regarding the applicability of HVRP theories in emerging markets compared to developed ones.

Table 1

The impact of firm size on the High-Volume Return Premium

Minimum market capitalisation (million USD)	Average return [%]	Standard deviation [%]	Sharpe ratio	Average monthly trades
Panel A: equally-weighted portfolios				
1	5.53	12.10	0.45	319
10	5.80	11.08	0.52	292
50	5.77	12.00	0.48	263

Table 1 cont.

Panel B: capitalisation-weighted portfolios				
1	4.35	10.37	0.41	319
10	4.33	10.35	0.41	292
50	4.14	10.62	0.38	263

Note: This table presents the results of the High-Volume Return Premium (HVRP) strategy on the Warsaw Stock Exchange for the period from January 2002 to April 2023. The analysis examines how the performance of the strategy varies depending on the minimum market capitalisation threshold applied when selecting stocks for the portfolio. Each row corresponds to a portfolio that includes only firms with a market capitalisation above the specified threshold (in million USD). For each portfolio, the table reports the average monthly return, the standard deviation of monthly returns, the monthly Sharpe ratio, and the average number of trades executed per month based on the strategy. Panel A presents results for equally-weighted portfolios, panel B shows results for capitalisation-weighted portfolios. All average monthly returns are statistically significant at the 1% level, as confirmed by the Newey–West test

The results in Table 1 show that equally-weighted portfolios exhibit relatively high and significant average monthly returns across all thresholds. Notably, increasing the minimum capitalisation from 1 million USD to 10 million USD leads to an improvement in the Sharpe ratio from 0.45 to 0.52. This enhancement is driven by both a moderate rise in average returns (from 5.53% to 5.80%) and a reduction in return volatility (from 12.10% to 11.08%). However, when the threshold is raised further to 50 million USD, the Sharpe ratio declines slightly to 0.48. This suggests that while excluding the very smallest and potentially most volatile or illiquid firms can enhance performance, excluding too many small and mid-sized firms may reduce portfolio diversification and overall return potential.

Capitalisation-weighted portfolios present a different pattern. These portfolios show consistently lower average returns compared to their equally-weighted counterparts, and the returns decline gradually as the minimum capitalisation increases. The monthly Sharpe ratio remains stable at 0.41 between the 1 million USD and 10 million USD thresholds but decreases to 0.38 at the 50 million USD level. This indicates that the exclusion of smaller companies has a limited effect on the risk profile of capitalisation-weighted strategies but may reduce expected returns and, consequently, risk-adjusted performance.

The results demonstrate the importance of minimum size filters in the analysis of the HVRP. Equally-weighted portfolios benefit significantly from the inclusion of smaller firms, although removing the very smallest firms can improve risk-adjusted returns. Conversely, capitalisation-weighted portfolios – naturally biased toward larger firms – are less sensitive to such exclusions, though their performance also deteriorates when a substantial portion of the smaller-cap

universe is omitted. Overall, a moderate minimum capitalisation threshold (e.g., 10 million USD) appears to strike an optimal balance between return and risk, particularly for equally-weighted strategies.

Table 2

The High-Volume Return Premium in capitalisation quintiles

Size quintile	Average return [%]	Standard deviation [%]	Sharpe ratio	Average monthly trades
Panel A: equally-weighted portfolios				
1 (small)	7.23	25.09	0.28	72
2	8.18	22.74	0.36	64
3	9.19	19.81	0.46	65
4	7.75	16.80	0.46	64
5 (big)	7.25	13.89	0.52	73
Panel B: capitalisation-weighted portfolios				
1 (small)	7.04	24.85	0.28	72
2	8.04	22.28	0.36	64
3	9.02	18.91	0.47	65
4	7.41	16.24	0.45	64
5 (big)	6.09	12.91	0.47	73

Note: This table presents the results of the High-Volume Return Premium (HVRP) strategy on the Warsaw Stock Exchange over the period from January 2002 to April 2023, with stocks grouped into quintiles based on market capitalisation. Firms are sorted into five equally-sized groups, ranging from the smallest companies (1st quintile) to the largest companies (5th quintile). The HVRP strategy is applied independently within each capitalisation group. For each quintile portfolio, the table reports the average monthly return, the standard deviation of monthly returns, the Sharpe ratio, and the average number of trades executed per month. Panel A displays results for equally-weighted portfolios, panel B shows results for capitalisation-weighted portfolios. All average monthly returns are statistically significant at the 1% level, as confirmed by the Newey–West test

Differences in the HVRP between groups become much clearer, especially when the analysis is conducted by dividing companies into capitalization quintiles, making it easier to identify the best-performing segments (see Table 2). Interestingly, the highest average returns are not achieved by companies at the extremes of capitalisation (either the smallest or the largest), but rather by those in the middle quintiles. These mid-sized companies deliver monthly returns exceeding 9%, outperforming their smaller and larger counterparts.

Besides changes in average returns, we observe a monotonic pattern in standard deviation: portfolio volatility decreases with increasing capitalisation. The interaction between these two patterns leads to a monotonic increase in the Sharpe ratio, which increases steadily from quintile 1 (0.28) to quintile 5 (0.52), indicating improved risk-adjusted performance in larger-cap stocks.

In capitalisation-weighted portfolios, the pattern is broadly similar. Returns of the relative volume-based strategy again peak in the mid-cap quintiles, particularly the third quintile (9.02%), and Sharpe ratios increase from 0.28 (smallest firms) to 0.47 (largest firms). However, the highest Sharpe ratio is not limited to the largest companies – quintile 3 also shows strong risk-adjusted performance (0.47), mirroring the equally-weighted results.

The number of trades across the capitalisation quintiles is similar. This indicates that the number of companies experiencing a surge in trading volume (i.e., those with high relative volume values) is evenly distributed across firms of different sizes. No particular size group dominates in this regard.

These findings indicate that the HVRP performs best, in terms of raw returns, among mid-sized companies (quintiles 2 and 3), while the highest risk-adjusted returns (Sharpe ratios) are observed in the largest-cap stocks (quintile 5). Smaller firms generate high returns but are accompanied by significantly higher volatility, leading to lower Sharpe ratios. The results underscore the importance of firm size in determining both the effectiveness and efficiency of investment strategies. While mid-cap stocks may offer the most attractive return potential, large-cap stocks deliver more stable and consistent performance when adjusted for risk. These dynamics should be considered when constructing portfolios, particularly in balancing return objectives with turnover constraints and implementation costs.

4.2. Stock price level

In this section, we investigate whether the level of stock prices influences the HVRP. Lower-priced stocks – while not necessarily small in market capitalisation, but often associated with lower liquidity or higher volatility – tend to behave differently from higher-priced ones and may be more prone to speculative trading. Han and Zhang, analysing the Chinese stock market, emphasised that low-priced and high-turnover stocks often reflect noise trading and sentiment-driven fluctuations, rather than informed trading (Han, Zhang 2024). This observation aligns with the broader literature indicating that low-priced stocks are more likely to attract speculative retail investors and may deviate from fundamentals more frequently than higher-priced stocks.

As in the case of capitalisation, we consider two approaches: one based on minimum price thresholds, and another based on price quintiles. To exclude lower-priced stocks, we apply the following price thresholds: 0.25 USD, 1.00 USD, and 4.80 USD. These thresholds were chosen based on quantiles from the distribution of stock prices on the Warsaw Stock Exchange (WSE). The results of this analysis are summarised in tables 3 and 4.

The results demonstrate a clear decline in both raw and risk-adjusted returns as the minimum stock price increases. The highest average monthly return (5.53%) and Sharpe ratio (0.45) are observed when the threshold is set at 0.25 USD, indicating that low-priced stocks significantly contribute to the performance of the HVRP. However, increasing the threshold to 1 USD reduces both return and Sharpe ratio, and setting it at 4.80 USD leads to a substantial drop in average return (3.47%) and the lowest risk-adjusted performance (Sharpe ratio of 0.26). This suggests that excluding lower-priced stocks may result in the loss of high-return opportunities, even if those stocks are more volatile or less liquid. A similar trend is observed in capitalisation-weighted portfolios.

Table 3

The impact of stock price level on the High-Volume Return Premium

Minimum stock price (USD)	Average return [%]	Standard deviation [%]	Sharpe ratio	Average monthly trades
Panel A: Equally-weighted portfolios				
0.25	5.53	12.10	0.45	319
1.00	4.79	11.80	0.40	237
4.80	3.47	12.80	0.26	111
Panel B: Capitalisation-weighted portfolios				
0.25	4.35	10.37	0.41	319
1.00	4.19	11.22	0.37	237
4.80	3.41	11.99	0.28	111

Note: This table presents the results of the High-Volume Return Premium (HVRP) strategy on the Warsaw Stock Exchange from January 2002 to April 2023, analysing the effect of imposing minimum stock price thresholds. Each row corresponds to a portfolio that includes only stocks priced above the specified minimum level (in USD). For each portfolio, the table reports the average monthly return, the standard deviation of monthly returns, the Sharpe ratio, and the average number of trades executed per month. Panel A presents results for equally-weighted portfolios; panel B shows results for capitalisation-weighted portfolios. All average monthly returns are statistically significant at the 1% level, as confirmed by the Newey–West test

Table 4

The High-Volume Return Premium in stock price quintiles

Price quintile	Average return [%]	Standard deviation [%]	Sharpe ratio	Average monthly trades
Panel A: Equally-weighted portfolios				
1 (low-priced)	17.98	37.27	0.48	46
2	9.37	24.85	0.37	63
3	8.71	18.63	0.46	76
4	7.81	17.28	0.45	77
5 (high-priced)	4.29	16.47	0.26	83
Panel B: Capitalisation-weighted portfolios				
1 (low-priced)	15.64	35.20	0.44	46
2	8.97	21.67	0.41	63
3	8.19	18.11	0.45	76
4	7.58	15.23	0.49	77
5 (high-priced)	3.98	13.45	0.29	83

Note: This table presents the results of the HVRP strategy applied to stocks listed on the Warsaw Stock Exchange from January 2002 to April 2023. Stocks are sorted into five quintiles based on nominal price, from the lowest (1st quintile) to the highest (5th quintile). The strategy is implemented independently within each quintile. The table shows the average monthly return, the standard deviation, the Sharpe ratio, and average monthly trades. Panel A shows equally-weighted portfolios; panel B presents capitalisation-weighted portfolios. All average monthly returns are statistically significant at the 1% level, as confirmed by the Newey–West test.

These findings indicate that imposing a minimum stock price threshold may inadvertently reduce the HVRP and the effectiveness of a volume-based investment strategy. While excluding very low-priced stocks may be motivated by concerns about liquidity, transaction costs, or speculative behaviour, doing so significantly lowers both the return potential and the risk-adjusted performance of portfolios, especially in equally-weighted constructions. The consistent decline in Sharpe ratios across both weighting schemes as the price filter becomes more restrictive suggests that lower-priced stocks play an important role in enhancing the efficiency of the HVRP. As such, investors should carefully consider the trade-off between perceived quality or liquidity and the loss of return opportunities when applying stock price filters.

Similarly to capitalisation, constructing portfolios based on stock price quintiles provides valuable new insights. Not only did this approach clarify differences between groups, but it also revealed a distinct pattern in the HVRP.

The results show a clear inverse relationship between stock price and the HVRP. The lowest-priced quintile delivers the highest average return (17.98%) and the highest Sharpe ratio (0.48), despite also exhibiting the highest volatility. Performance declines consistently across higher price quintiles, with the most expensive stocks yielding the lowest return (4.29%) and Sharpe ratio (0.26). Interestingly, the number of trades increases steadily from the lowest to the highest price quintile, suggesting greater signal activity and trade frequency among higher-priced stocks – despite their weaker performance. A similar trend is observed in capitalisation-weighted portfolios.

Overall, the strategy based on high-volume stocks performs most effectively among low-priced stocks, generating substantially higher returns and Sharpe ratios compared to higher-priced stocks. While volatility is also higher in the lower-price segment, the premium more than compensates for the added risk. The findings suggest that nominally cheaper stocks may exhibit more pronounced inefficiencies or mispricing that the strategy successfully exploits. Conversely, the declining performance in high-priced quintiles – despite increased trading activity – indicates that price level is a meaningful cross-sectional factor in determining the profitability of volume-based return signals.

4.3. Holding period

In this part of the analysis, we examine how the duration of the holding period affects the HVRP. Specifically, we construct two categories of strategies: one with a 1-day holding period, where positions are closed the day after signal generation, and another with a 5-day holding period, where positions are held for a full trading week. The aim of introducing a longer holding window is to capture potentially more persistent investment behaviour and to test whether the effects of abnormal trading volume on returns extend beyond the very short term. By doing so, we assess whether the HVRP effect remains significant over several days or if it is limited to immediate, short-lived price movements, as suggested in earlier studies. For example, Gervais et al. (2001) examined daily returns in the immediate aftermath of unusually high relative trading volume and documented significantly higher returns over short horizons, especially within one day. This suggests that the market reaction to volume shocks is rapid and often short-lived. Similarly, Gurgul and Wójtowicz confirmed a short-term effect, with statistically significant positive abnormal returns appearing primarily within the few days after very intense trading activity (Gurgul, Wójtowicz 2009).

Table 5

The High-Volume Return Premium for various holding periods

Holding period	Average return [%]	Standard deviation [%]	Sharpe ratio
Panel A: Equally-weighted portfolios			
one day	5.53	12.10	0.45
five days	2.87	9.81	0.29
Panel B: Capitalisation-weighted portfolios			
one day	4.35	10.37	0.41
five days	2.71	9.28	0.28

Note: This table presents the results of the HVRP strategy on the Warsaw Stock Exchange from January 2002 to April 2023, evaluated for two different holding periods: one day and five days. Panel A shows results for equally-weighted portfolios, while panel B presents results for capitalisation-weighted portfolios

The results in Table 5 clearly indicate that the 1-day holding period delivers superior performance significantly outperforming the 5-day variant in both absolute and risk-adjusted terms. Although the longer holding period reduces volatility (from 12.10% to 9.81%), the decrease in return is proportionally greater, resulting in a marked decline in the Sharpe ratio. The same pattern holds for capitalisation-weighted portfolios: the 5-day holding period results in lower returns (2.71%) and reduced risk-adjusted performance (Sharpe ratio of 0.28).

These findings suggest that the effectiveness of the strategy declines with longer holding periods, implying that the HVRP is most pronounced in the very short term. The majority of the return premium appears to be captured shortly after the occurrence of unusually high trading activity, indicating that the HVRP is short-lived and likely driven by temporary mispricing or behavioural overreactions. Extending the holding period dilutes this effect and leads to lower efficiency. For both equally-weighted and capitalisation-weighted portfolios, the 1-day holding period consistently outperforms the 5-day variant, both in terms of raw returns and Sharpe ratios.

4.4. Trading intensity

In this section, we examine whether the monthly intensity of transactions implied by extremely high trading activity can provide investors with valuable insights – either by signalling favourable trading opportunities or by reflecting underlying changes in overall market conditions. Specifically, we analyse how

the monthly number of transactions behaves relative to the state of the market and whether it contains predictive content. To do this, we consider the number of transactions per month generated by the high-volume return strategy, applying a minimum stock price of 0.25 USD, a minimum capitalisation of 1 million USD, and a 1-day holding period.

Figure 1 shows a rapid increase in the number of companies experiencing high-volume trading days between 2002 and 2010. This surge likely reflects the broader development of the Warsaw Stock Exchange (WSE). Notably, 2007 was a milestone year, with 81 new listings, including companies from 12 foreign countries. In the same year, the WSE also launched the NewConnect market for small and medium-sized enterprises.

After 2011, the average number of transactions per month stabilises. However, around April 2020, a notable spike in extreme trading activity occurs. A similar peak is observed at the end of 2022. These fluctuations are most likely linked to major global events that significantly impacted the WSE. In particular, the onset of the COVID-19 pandemic and the beginning of the Russian invasion of Ukraine appear to have triggered heightened trading intensity across many companies. The period from 2020 to 2024 is also characterized by greater volatility in the monthly number of transactions under the volume-based strategy, especially when compared to the relatively stable phase between 2017 and 2020.

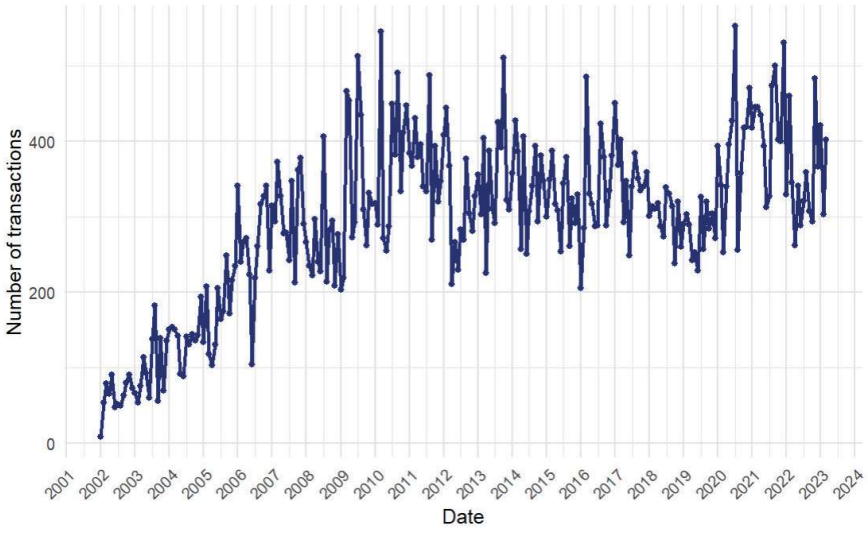


Figure 1. Monthly number of trades
generated by the High-Volume Return Premium strategy

These findings suggest that the intensity of trading activity, as captured by the number of companies experiencing abnormal volume, is not constant over time and appears to be influenced by macroeconomic shocks. The sharp increases observed during global crises highlight its potential as a proxy for market sentiment and systemic stress. Therefore, the monthly intensity of transactions may indeed serve as a useful indicator for investors – not only by signalling heightened trading opportunities but also by reflecting broader shifts in market conditions.

4.5. Benchmark comparison

In this section, we compare the performance of the HVRP strategies against the WIG index – the main index of the WSE representing the performance of almost all stocks listed on the main market of the WSE. First of all, in Table 6, we summarise basic performance indicators of the WIG index.

Table 6

Performance of the WIG index

Average return [%]	Standard deviation [%]	Sharpe ratio	*t*-statistics
0.81	8.85	0.09	0.83

Note: This table reports the performance statistics of the WIG index over the period from January 2002 to April 2023. The table shows the average monthly return, the standard deviation of monthly returns, the Sharpe ratio, and the corresponding *t*-statistic for mean excess return.

The WIG index delivered an average monthly return of 0.81% over the sample period, with a standard deviation of 8.85%, resulting in a Sharpe ratio of just 0.09. The corresponding *t*-statistic suggests that the excess return is not statistically significant at conventional confidence levels. Compared to the HVRP strategies analysed in Table 1 and 3, the WIG index shows substantially lower risk-adjusted returns, highlighting the potential value added by applying volume-based signals in portfolio construction on the WSE.

Further evidence supporting this observation is provided by the analysis of excess return characteristics, as well as Jensen's alpha and the Treynor ratio calculated for selected HVRP-based strategies.

The results in Table 7 indicate that HVRP-based strategies generate strong and statistically significant excess returns, particularly in equally-weighted portfolios. Across all equally-weighted portfolios, Jensen's alphas range

from 7.25% to 7.31% and are statistically significant at the 1% level, providing robust evidence of outperformance relative to market risk as measured by the CAPM. The corresponding Treynor ratios, between 8.35% and 8.77%, suggest that these strategies deliver high returns per unit of systematic risk.

Capitalisation-weighted portfolios also show positive and significant alphas, although at lower levels: between 4.63% and 5.09%. Treynor ratios for these portfolios are also lower (5.85% to 7.71%), indicating slightly reduced efficiency in converting market risk into excess return as portfolio construction shifts toward larger, more liquid firms.

Table 7

Risk-adjusted performance metrics of HVRP-based strategies

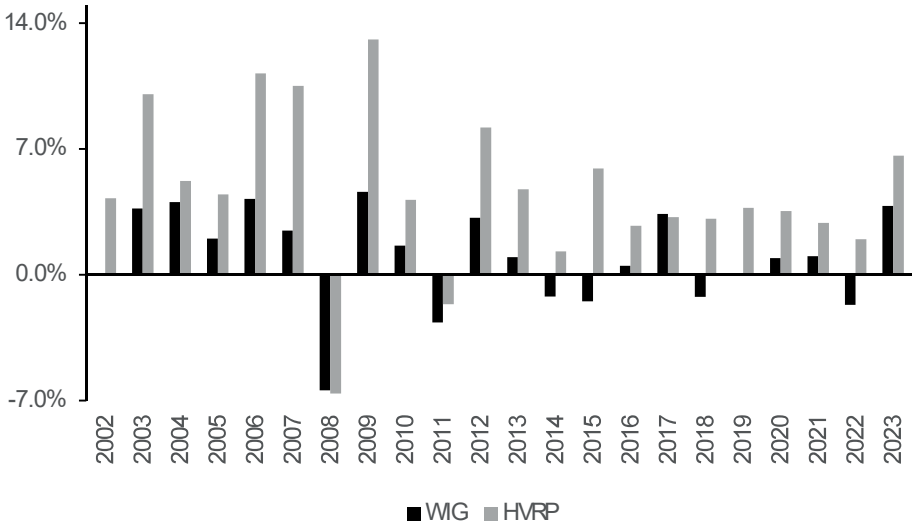
Minimum market capitalisation (million USD)	Average return [%]	Standard deviation [%]	Jensen's alpha	Treynor ratio
Panel A: equally-weighted portfolios				
1	4.72	15.45	7.25%	8.77%
10	4.99	15.42	7.26%	8.64%
50	4.96	14.94	7.31%	8.35%
Panel B: capitalisation-weighted portfolios				
1	3.54	14.43	5.09%	7.71%
10	3.52	14.24	5.03%	6.65%
50	3.33	13.98	4.63%	5.85%

Note: This table presents the risk-adjusted performance of strategies based on the HVRP on the WSE between January 2002 and April 2023. Each row corresponds to a portfolio that includes only firms with market capitalisations above the specified threshold (in million USD). The reported metrics include the average monthly excess return, the standard deviation of monthly excess returns, Jensen's alpha (estimated based on the CAPM), and the Treynor ratio. Panel A shows results for equally-weighted portfolios, while panel B reports outcomes for capitalisation-weighted portfolios

Overall, the consistently significant Jensen's alphas underscore the robustness of the HVRP effect. The results suggest that the strategy is more effective when applied to smaller firms and with equal weighting, possibly due to stronger behavioural or liquidity-driven mispricing among small-cap stocks following volume shocks. Nevertheless, it is worth noting that the results for large firms also remain very strong, with HVRP-based strategies delivering statistically significant excess returns even in capitalisation-weighted portfolios, which are more heavily tilted toward larger and more liquid companies.

To gain further insight into the dynamics of the HVRP strategy relative to the market, it is useful to examine how their average monthly returns evolved over time. Presenting the results year by year allows us to compare the behaviour of both the WIG index and the strategy under varying market conditions – during periods of growth, stability, and crisis. This perspective sheds light on whether the HVRP effect remains consistent across different phases of the market cycle or whether its strength is conditional on broader market environments.

The comparison of average monthly returns of the WIG index and the HVRP-based strategy across 2002–2023 presented in Figure 2 reveals several important patterns. First, the HVRP strategy consistently outperforms the benchmark in the vast majority of years. Particularly strong excess returns are observed in expansionary periods, when volume signals seem to have captured momentum and investor attention effects especially well. Similar, although somewhat smaller, advantages appear in post-crisis and moderately growing years such as 2012 (8.2% vs. 3.2%) and 2023 (6.6% vs. 3.8%).



Note: The HVRP-based strategy is constructed with a minimum stock price of 0.25 USD, a minimum market capitalisation of 1 million USD, a 1-day holding period, and capitalisation-weighted returns

Figure 2. Average monthly returns of the WIG index and the HVRP-based strategy by year

In downturns, the results are more mixed. During the global financial crisis of 2008, both the WIG index and the HVRP strategy posted negative average returns, with the latter performing slightly worse (–6.6% vs. –6.4%). By contrast, in 2011, marked by the euro area debt crisis, the HVRP strategy reduced losses relative to the benchmark (–1.6% vs. –2.7%). It is worth noting that the HVRP strategy considered only relative volume spikes, without conditioning on the concurrent direction of price changes. As a result, the strategy could include stocks that were heavily sold off during crises, such as in 2008. Incorporating price dynamics alongside volume signals might have helped to filter out distressed stocks and potentially improve performance in downturns. These differences suggest that the effectiveness of volume-based signals during crises may depend on the nature of the shock and its impact on liquidity and trading behaviour.

In stable or less dynamic market phases, the HVRP-based strategy still generally generated higher returns than the index, although the difference was smaller. This indicates that even in relatively calm markets, relative volume contains exploitable information that translates into a modest but consistent return premium.

Table 8 presents the average monthly returns of the HVRP-based strategy and the WIG index over the period 2002–2023, together with the average number of transactions (number of occurrences of extreme relative volume values). Several notable patterns emerge from these data. First, the HVRP strategy generally outperforms the WIG index in all months, reflecting the ability of volume-based signals to generate positive excess returns. Particularly strong and statistically significant performance is observed from February to April and in September. In these months, both average returns and the frequency of extreme volume events are relatively high, which appears to enhance the profitability of the strategy.

Table 8

Average monthly returns of the WIG index and the HVRP-based strategy by month

Month	WIG [%]	HVRP [%]	Average monthly trades	Permutation test p-value
Jan	-0.5	2.8	333	0.019
Feb	-0.9	5.5	325	0.000
Mar	1.0	5.9	352	0.002
Apr	4.1	7.9	302	0.013
May	-0.6	2.4	288	0.063

Table 8 cont.

Jun	-0.8	0.3	268	0.234
Jul	4.4	7.4	322	0.070
Aug	0.0	4.9	334	0.013
Sep	-1.2	4.7	329	0.001
Oct	1.5	4.5	322	0.090
Nov	0.8	4.1	328	0.081
Dec	3.0	4.6	340	0.194

Note: The HVRP-based strategy is constructed with a minimum stock price of 0.25 USD, a minimum market capitalisation of 1 million USD, a 1-day holding period, and capitalisation-weighted returns. The last column reports p-values from one-sided permutation tests with the alternative hypothesis that HVRP-based strategy outperforms the WIG index

The weakest performance of the volume-based strategy occurs in June (0.3%), although even in this case the return remains higher than that of the market as a whole (–0.8%). Importantly, the difference of the results for June is insignificant (p = 0.234), and this month also records one of the lowest average numbers of extreme volume-based transactions, suggesting that the strategy's effectiveness relies heavily on the frequency of volume spikes. Similarly, May and July show weaker significance despite positive excess returns, while results in October and November fall into a borderline range. By contrast, results for January and August confirm significant excess returns despite moderate trading activity, underlining the robustness of the premium across different seasonal conditions.

The results in Table 8 suggest that the profitability of volume-based strategies is not uniform across the year but instead varies systematically with the intensity of market activity and seasonality in trading behaviour.

4.6. Length of the reference period

Another important design choice in the construction of the HVRP strategy concerns the length of the reference period used to calculate abnormal trading volume. In the original framework of Gervais et al., a 50-day reference window was applied, but subsequent studies have suggested that shorter horizons may provide timelier signals, albeit at the cost of higher noise (Gervais et al. 2001). In particular, shorter periods may better capture rapid changes in trading intensity and investor attention, while longer periods smooth out fluctuations but run the risk of diluting the informational content of abnormal volume.

Table 9

The impact of the length of the reference period on the High-Volume Return Premium

Reference period	Average return [%]	Standard deviation [%]	Sharpe ratio	Average monthly trades
Panel A: Equally-weighted portfolios				
20	5.53	12.10	0.45	319
30	5.38	13.85	0.38	210
50	5.25	15.96	0.32	121
Panel B: Capitalisation-weighted portfolios				
20	4.35	10.37	0.41	319
30	4.63	11.69	0.39	210
50	5.18	14.35	0.35	121

Note: This table reports the results of the High-Volume Return Premium (HVRP) strategy on the Warsaw Stock Exchange from January 2002 to April 2023, analysing the effect of different lengths of the reference period. Each row corresponds to a portfolio constructed on extreme relative trading volume, defined using data from the specified number of previous trading days. For each portfolio, the table reports the average monthly return, the standard deviation of monthly returns, the Sharpe ratio, and the average number of trades executed per month. Panel A shows results for equally-weighted portfolios, while panel B presents capitalisation-weighted portfolios. All average monthly returns are statistically significant at the 1% level, as confirmed by the Newey–West test

The findings in Table 9 indicate that shorter reference periods generally enhance the efficiency of the strategy. For equally-weighted portfolios, the 20-day window delivers the highest average monthly return (5.53%) and Sharpe ratio (0.45), while performance gradually declines with longer horizons, reaching 5.25% and 0.32 respectively at 50 days. In capitalisation-weighted portfolios, the pattern is broadly consistent but somewhat weaker. Returns are lowest for the 20-day horizon (4.35%) but increase with longer reference periods, reaching 5.18% for the 50-day window. However, standard deviations increase, leading to the decrease in Sharpe ratios, from 0.41 for 20 days to 0.35 at 50 days, indicating that risk-adjusted performance remains superior with shorter horizons.

Extending the reference period implies that the strategy increasingly relies on more extreme relative volume values. This is reflected in the steadily declining number of average monthly trades as the reference window lengthens, suggesting that volume signals become rarer but stronger. Such extreme shocks in trading activity are more likely to be associated with large swings in investor sentiment or attention, which in turn generate return patterns of greater amplitude. This mechanism likely explains why the standard deviation of returns rises with longer reference periods, even though the number of trading opportunities decreases.

5. Conclusions

This study set out to re-examine the existence of the High-Volume Return Premium (HVRP) on the Warsaw Stock Exchange (WSE) and to identify practical strategies for exploiting this anomaly. To this end, several portfolio strategies were constructed and evaluated based on their average returns, risk characteristics, and overall performance.

The analysis confirmed the presence of the HVRP in the short term, with strategies consistently generating significantly positive excess returns. Notably, this effect was observed across firms of various sizes, including both small- and large-cap stocks – contrary to many known anomalies that are typically confined to the small-cap segment.

The study also explored how firm-specific characteristics (such as market capitalisation, stock price level, and holding period) affect the performance of HVRP-based strategies. Shorter holding periods, especially one-day strategies, yielded the highest returns and Sharpe ratios, emphasising the short-lived nature of the HVRP in the Polish market. However, the performance of the strategy varied across market regimes, indicating the importance of market timing, liquidity conditions, and behavioural factors in determining effectiveness.

Further insights emerged from the analysis of firm size and stock price levels. The highest returns were observed for mid-cap companies, while among price groups, the lowest-priced stocks delivered the strongest HVRP effects, albeit with higher volatility. This suggests that investor attention and speculative trading may be more intense in the lower price segment, leading to short-lived price pressures following abnormal trading activity. In contrast, large-cap and high-priced stocks exhibited more moderate yet more stable excess returns, consistent with their higher liquidity and greater institutional participation. Moreover, strategies based on dynamic, cross-sectional measures (such as daily volume quantiles) consistently outperformed those using static thresholds (e.g., fixed capitalisation cut-offs), likely due to their better adaptability to changing market structures.

Nevertheless, this research has certain limitations. Although the HVRP appears statistically significant, its real-world applicability may be constrained by liquidity conditions and execution risk, particularly for strategies involving smaller firms or sudden surges in trading activity. Additionally, the analysed strategies involve high trading frequency, and this study did not account for transaction costs, bid-ask spreads, or slippage – all of which could materially reduce actual profitability.

In conclusion, the High-Volume Return Premium appears to be a robust and exploitable anomaly on the WSE, particularly over short investment horizons and when using adaptive, cross-sectional portfolio construction methods.

However, successful implementation in practice would require careful consideration of trading frictions, liquidity constraints, and market conditions. Transaction costs, bid–ask spreads, and market impact could substantially erode realised returns, especially for smaller and less liquid stocks. Future research could extend this analysis by explicitly incorporating trading costs and assessing the net profitability of HVRP-based strategies under realistic implementation constraints.

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References

[1] Atmaz, A. and Basak, S. (2018) 'Belief dispersion in the stock market', *Journal of Finance*, vol. 73, pp. 1225–1279, https://doi.org/10.1111/jofi.12618.

[2] Bajzik, J. (2021) 'Trading volume and stock returns: A meta-analysis', *International Review of Financial Analysis*, vol. 78, 101923, https://doi.org/10.1016/j.irfa.2021.101923.

[3] Blume, L., Easley, D. and O'Hara, M. (1994) 'Market statistics and technical analysis: The role of volume', *The Journal of Finance*, vol. 49(1), pp. 153–181, https://doi.org/10.2307/2329139.

[4] Carhart, M.M. (1997) 'On persistence in mutual fund performance', *The Journal of Finance*, vol. 52(1), pp. 57–82, https://doi.org/10.2307/2329556.

[5] Copeland, T.E. (1976) 'A model of asset trading under the assumption of sequential information arrival', *The Journal of Finance*, vol. 31(4), pp. 1149–1168, https://doi.org/10.2307/2326280.

[6] Floros, C. and Salvador, E. (2016) 'Volatility, trading volume and open interest in futures markets', *International Journal of Managerial Finance*, vol. 12(5), pp. 629–653, https://doi.org/10.1108/IJMF-04-2015-0071.

[7] Gervais, S., Kaniel, R. and Mingelgrin, D. (2001) 'The High-Volume Return Premium', *The Journal of Finance*, vol. 56, pp. 877–919, [Online], Available: https://www.jstor.org/stable/222536?seq=7 [8 Oct 2025].

[8] Gordon, N. and Wu, Q. (2018) 'The High-Volume Return Premium and changes in investor recognition', *Pacific-Basin Finance Journal*, vol. 51, pp. 121–136, [Online], Available: file:///C:/Users/biuro/Downloads/ssrn-2396293.pdf [8 Oct 2025].

[9] Gurgul, H. and Wójtowicz, T. (2009) 'High-Volume Return Premium: an event study approach', *Statistics in Transition*, vol. 10(1), pp. 129–151, https://doi.org/10.59170/stattrans-2009-009.
[10] Han, C. and Zhang, W. (2024) 'Trading volume, anomaly returns and noise trader risk in China', *Pacific-Basin Finance Journal*, vol. 84, 102281, https://doi.org/10.1016/j.pacfin.2024.102281.
[11] Huang, Z., Heian, J.B. and Zhang, T. (2011) 'Differences of opinion, overconfidence, and the high volume premium', *Journal of Financial Research*, vol. 34(1), pp. 1–25, https://doi.org/10.1111/j.1475-6803.2010.01283.x.
[12] Israeli, D., Kaniel, R. and Sridharan, S.A. (2022) 'The real side of the high-volume return premium', *Management Science*, vol. 68(2), pp. 1426–1449, https://doi.org/10.1287/mnsc.2020.3886.
[13] Kaniel, R., Ozoguz, A. and Starks, L. (2012) 'The High-Volume Return Premium: cross-country evidence', *Journal of Financial Economics*, vol. 103(2), pp. 255–279, https://doi.org/10.1016/j.jfineco.2011.08.012.
[14] Lee, B.S. and Rui, O.M. (2002) 'The dynamic relationship between stock returns and trading volume: Domestic and cross-country evidence', *Journal of Banking and Finance*, vol. 26, pp. 51–78.
[15] Lee, C.M.C. and Swaminathan, B. (2000) 'Price momentum and trading volume', *The Journal of Finance*, vol. 55(5), pp. 2017–2069, [Online], Available: https://www.jstor.org/stable/222483 [8 Oct 2025].
[16] Llorente, G., Michaely, R., Saar, G. and Wang, J. (2002) 'Dynamic volume-return relation of individual stock', *The Review of Financial Studies*, vol. 15, pp. 1005–1047.
[17] Merton, R.C. (1987) 'A simple model of capital market equilibrium with incomplete information', *The Journal of Finance*, vol. 42(3), pp. 483-510.
[18] Miller, E.M. (1977) 'Risk, uncertainty, and divergence of opinion', *The Journal of Finance*, vol. 32(4), pp. 1151–1168, [Online], Available: file:///C:/Users/biuro/Downloads/ssrn-239405-1.pdf [8 Oct 2025].
[19] Suominen, M. (2001) 'Trading volume and information revelation in stock markets', *Journal of Financial and Quantitative Analysis*, vol. 36, pp. 545–565, https://doi.org/10.2307/2676224.
[20] Sukpitak, J. and Hengpunya, V. (2016) 'The influence of trading volume on market efficiency: The DCCA approach', *Physica A: Statistical Mechanics and its Applications*, vol. 458, pp. 259–265, https://doi.org/10.1016/j.physa.2016.03.080.
[21] Tang, T., Zou, L. and Li, J. (2013) 'The High-Volume Return Premium: evidence from the Australian equity market', *Journal of Accounting and Finance*, vol. 13(5), pp. 74–93, [Online], Available: http://www.na-businesspress.com/JAF/ZouL_Web13_5_.pdf [8 Oct 2025].

[22] Wang, C.Y. and Cheng, N.S. (2004) 'Extreme volumes and expected stock returns: Evidence from China's stock market', *Pacific-Basin Finance Journal*, vol. 12(5), pp. 577–597, https://doi.org/10.1016/j.pacfin.2004.04.002.
[23] Wang, P., Wen, Y. and Singh, H. (2017) 'The High-Volume Return Premium: Does it exist in the Chinese stock market?', *Pacific-Basin Finance Journal*, vol. 46, pp. 323–336, https://doi.org/10.1016/j.pacfin.2017.10.003.
[24] Wójtowicz, T. (2017) 'High-Volume Return Premium on the stock markets in Warsaw and Vienna', *Bank i Kredyt – Bank and Credit*, vol. 48(4), pp. 375–402, [Online], Available: file:///C:/Users/biuro/Downloads/BIK_04_2017_02.pdf [8 Oct 2025].
[25] Zheng, X. and Shen, D. (2020) 'The High-Volume Return Premium: Does it really exist in the Chinese stock market?', *Asia-Pacific Financial Markets*, vol. 27, pp. 213–230, https://doi.org/10.1007/s10690-019-09290-4.
[26] Zhou, Z.G. (2010) 'The High-Volume Return Premium: Evidence from the Chinese stock market', *Review of Quantitative Finance and Accounting*, vol. 35(3), pp. 295–313, https://doi.org/10.1007/s11156-008-0092-9.

Summary

This paper investigates the High-Volume Return Premium (HVRP) on the Warsaw Stock Exchange from 2002 to 2023. Building on prior research, it tests whether an unusually high trading volume predicts short-term return anomalies. Using daily data and long-only strategies based on relative trading volume, the study confirms the existence of the HVRP, with the strongest effects observed over one-day horizons, particularly for mid-cap and low-priced stocks. The premium weakens with longer holding periods and lower trading activity. These findings indicate that trading volume carries predictive information in an emerging market context and that volume-based signals can generate exploitable short-term return patterns. However, practical constraints such as transaction costs may limit the real-world profitability of such strategies.

JEL codes: G11, G12, G14

Keywords: *trading volume, emerging markets, trading strategy*

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