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THE BUYBACK ANOMALY IN THE POLISH CAPITAL MARKET

Introduction

A buyback is a transaction in which a company repurchases its own stocks either on the open market or in a fixed-price tender offer. A number of studies carried out in the US data found positive long-term excess returns following buybacks¹. The persistence of the buyback anomaly on the US market has been recently confirmed in an extensive study by Peyer and Vermaelen².

The aim of this paper is to verify if a similar phenomenon can be observed on the Polish market. We focus on long-term abnormal returns following buybacks and ask if mimicking the buyback strategy on the Polish market (i.e. buying stocks after repurchase announcements) brings excess profits for investors.

In section 2 we describe our sample and explain the research methodology. In section 3 we present our findings. In section 4, having confirmed the existence of the buyback anomaly also on the Polish stock market, we discuss its potential sources and present various interpretation of this evidence.

We conclude by pointing out the major differences between our observations and those documented in the US market. We also indicate potential areas for further research in this area.

Data and Research Design

We investigated the issue of post-buyback returns in the Polish market based on all stock repurchases between 1998 and 2008. Information about announcement dates and other details came from the Warsaw Stock Exchange (WSE) and various data bases (Notoria,

¹ L.Y. Dann: *Common stock repurchases: An analysis of returns to bondholders and stockholders*, "Journal of Financial Economics 9", 1981, pp. 113–138; J. Lakonishok, T. Vermaelen: *Anomalous price behavior around repurchases tender offers*, "Journal of Finance 45", 1990, pp. 455–477; D. Ikenberry, J. Lakonishok, T. Vermaelen: *Market underreaction to open market share repurchases*, "Journal of Financial Economics 39", 1995, pp. 181–208.

² U. Peyer, T. Vermaelen: *The nature and persistence of buyback anomalies*, unpublished working paper, INSEAD, Fontainebleau, France 2005.

Bankier, Money.pl, and Parkiet). Returns were computed based on the WSE price dataset and were corrected for effects of dividends, splits, and offering rights.

Although initially we analyzed all the stock repurchase programs, a considerable number of events were excluded from the final sample. The exclusions encompassed stock repurchases resulting from stock-based employee compensation programs, redemptions of preferred stocks, repurchases from a single significant stockholder, buybacks of the National Investment Funds, mergers and acquisitions, and repurchases announced before an IPO. The final sample was composed of 45 announcements of stock repurchases from the period September 1998 – May 2008.

We conducted the event study twofold. Firstly, we began with the average cumulative abnormal returns (ACAR) approach. Secondly, we used the calendar-time portfolio method, which we believe to be more appropriate for long-horizon event studies.

Stock repurchases seem to have a pretty long-term impact on securities prices, so we examined returns for a full three calendar years (1095 days) after the buyback resolution was adopted (or shorter period if data was not available). The pre-event estimation period encompassed also the three years before the resolution date.

Although ACAR is not the most reliable basis for statistical inferences in long term event-studies, it provided us with some indication as to the outperformance of stocks in the post-buyback periods. We began by calculating abnormal returns (ARs) for each day within the three years after buyback resolutions. The daily AR was calculated as:

$$AR_{it} = R_{it} - R_{E(i,t)}, \quad (1)$$

where R_{it} denotes stock i return on day t , and $R_{E(i,t)}$ is stock i expected return on day t .

The econometric literature offers a wide range of expected return models, which additionally in recent years significantly gained in sophistication. Interesting reviews could be found, for instance in the research of Campbell, Lo and MacKinlay, MacKinlay or Kothari and Warner³. We decided to use two different models: market-adjusted model and CAPM.

The first one was a variation of a classical market model⁴.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \quad (2)$$

$$E(\varepsilon_{it0}) = 0, \quad \text{var}(\varepsilon_{it0}) = \sigma_{\varepsilon^2}$$

where R_{it} and R_{mt} are the period- t returns on security and the market portfolio, ε_{it} is the zero mean disturbance term and α_i , β_i and σ_{ε^2} are the parameters of the market model.

³ J.Y. Campbell, A.W. Lo, A.C. MacKinlay: *The Econometrics of Financial Markets*, Princeton University Press, USA, 1996; A.C. MacKinlay, *Event Studies in Economics and Finance*, "Journal of Economic Literature" 1997, vol. 35, no. 1, pp. 13–39; S. Kothari, J. Warner: *Econometrics of Event Studies*, [in:] *Handbook of Empirical Corporate Finance*, eds. Espen Eckbo, Elsevier-North-Holland, Amsterdam 2006.

⁴ A.C. MacKinlay, *op.cit.*, pp. 13–39.

We employed the WIG (the broadest WSE stock market index) as the proxy for our market portfolio. The actual model we used was a market-adjusted return model. The market adjusted model is a restricted market model with α_i constrained to be zero and β_i constrained to be one. The restrictions were dictated by limited time-series data availability, which in many cases make it impossible to reliably assess the model parameters. As such misestimations may lead to serious distortions of expected returns in the long term; we decided to drop the market model in favor of the market-adjusted model. The model's specifications are as follows:

$$R_{it} = R_{mt} \quad (3)$$

The other model we employed was Capital Asset Pricing Model⁵. The expected return under CAPM is expressed as:

$$R_{it} = \beta_i(R_{mt} - R_{ft}) + R_{ft}, \quad (4)$$

where R_{ft} is return on risk-free asset on day t , which in our case was a reference rate of the National Bank of Poland.

The widespread Achilles heel of CAPM model in long-horizon studies is beta instability documented by many authors⁶. Financial literature offer various ways of correcting this weakness, among which the most efficient seems to be Blume's adjustment⁷. Blume's adjustment corrects betas for their mean reversion tendency:

$$\beta_{adj} = 0,67 \times \beta_{raw} + 0,33, \quad (5)$$

where β_{adj} is the beta after Blume's adjustment⁸, and β_{raw} is the raw beta before the adjustment.

The raw betas were estimated using OLS regression based on the three year estimation period. It is worth to note, that although we employed adjusted-market model and CAPM, we are aware that there are other more sophisticated and reliable models available, as for

⁵ W.F. Sharpe: *The Sharpe Ratio*, "The Journal of Portfolio Management" 1994, vol. 49, pp. 49–58; J. Lintner: *The Valuation of Risky Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets*, "Review of Economics and Statistics" 1965, vol. 47, no. 1, pp. 13–37.

⁶ R.H. Levy: *On the Short-term Stationarity of Beta Forecasts*, "Financial Analysts Journal", November/December 1971, pp. 55–62; S. Chen, A. Keown: *Risk decomposition and portfolio diversification when Beta is nonstationary: A note*, "Journal of Finance" 1981, no. 36, pp. 941–947. M.L. Mitchell, E. Stafford: *Managerial decisions and long-term stock price performance*, "Journal of Business" 2000, no 3, pp. 287–329.

⁷ S. Gray, J. Hall, J. Bowman, T. Brailsford, R. Faff, B. Officer: *The performance of alternative techniques for estimating equity betas of Australian firms*, Report prepared for the Energy Networks Association, 2005, [online] www.ena.asn.au/udocs/ena_051705_165248.pdf.

⁸ M.E. Blume: *On the Assessment of Risk*, "Journal of Finance", March 1971, pp. 1–10.

example the three-factor model by Fama and French⁹ or the four-factor model by Carhart¹⁰. Nonetheless, due to a lack of data they are not applicable to the Polish market.

After computing daily ARs based on expected return models, we proceeded with time-series aggregation, so as to obtain cumulative abnormal returns (CARs):

$$CAR_t = \sum_{i=1}^T AR_{it} \quad (6)$$

and then we averaged CARs cross-sectionally for all the stocks in the sample, in order to obtain average cumulative abnormal returns (ACARs):

$$ACAR = \sum_{i=1}^N CAR_i \quad (7)$$

When we computed ACARs, we decided to split the full 1998–2008 sample into two subsamples: 1998–2003 (15 buybacks) and 2004–2008 (30 buybacks). The reason for this division was the change of taxation law in Poland on the 1 January 2004. In the pre-2004 period only the dividends were taxable while capital gains were tax-free for individual investors. In other words – buyback could be used as a tax-free alternative to dividends. However, in later years both dividends and capital gains were taxable with the same tax rate.

Our zero hypothesis that ACARs are not significantly different from zero is confronted with an alternative hypothesis that ACARs actually differ from zero. We verify our hypothesis with parametric (t-statistic and t-Student distribution) and non-parametric tests (z-statistic from a bootstrap procedure).

The second event-study approach we used was a calendar-time portfolio method. The calendar-time portfolio approach for detecting long-run abnormal returns was introduced by Jaffe¹¹ and Mandelker¹², and then strongly recommended by Fama¹³. This method is regarded as appropriate for long-term event studies because it minimizes the issue of parameters instability over time. It also mimics investor's perspective. We constructed three types of portfolios with 1-, 2- and 3-year holding periods respectively. In other words, the buyback stocks were included in the portfolios the next day after the company stockholders had adopted the repurchase resolution, and excluded after 1, 2 or 3 years. The portfolio returns were calculated as equal-weighted average returns of all the stocks included. If there were less than at least 3 different buyback stocks available at a given day, then we used WIG return as a proxy for average market return. To draw statistical inferences, we compounded daily returns to yield monthly returns, and computed excess returns by subtracting cumu-

⁹ E. Fama, K. French: *Common risk factors in the returns on stocks and bonds*, "Journal of Financial Economics" 1993, no. 3, pp. 3–56.

¹⁰ M. Carhart: *On persistence in mutual fund performance*, "Journal of Finance" 1997, no. 52, pp. 57–82.

¹¹ J.F. Jaffe: *Special Information and Insider Trading*, "Journal of Business" 1974, vol. 47, pp. 410–428.

¹² G. Mandelker: *Risk and Return: The Case of Merging Firms*, "Journal of Financial Economics" 1974, no. 1, pp. 303–335.

¹³ E. Fama: *Market efficiency, long-term returns, and behavioral finance*, "Journal of Financial Economics" 1998, no. 49, pp. 283–306.

lated monthly risk-free rates. The buyback portfolio excess returns were finally regressed on market portfolio excess returns, accordingly to the CAPM equation¹⁴:

$$R_{pt} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{pt}, \tag{8}$$

where R_{pt} , R_{mt} and R_{ft} are monthly calendar portfolio, market portfolio and risk-free returns, and α_i and β_i are regression parameters. The α_i intercept measures the average monthly abnormal return (so called Jensen-alpha). In this case, our zero hypothesis is that the alpha intercept is not statistically different from zero, and the alternative hypothesis states that it is actually different from zero. We test our hypothesis employing both parametric and non-parametric tests, similar to the ACARs approach presented earlier.

Results

Table 1 presents post-buyback ACARs according to the market-adjusted model. Focusing on the full sample, we observe that stocks on average outperformed the market during the first year after the buyback by about 9%. Next, after reaching their climax in the second year, stocks on average were losing their value relative to the market, and eventually underperformed the market by about 19% by the end of the third year.

Table 1

Average cumulative abnormal returns following stock repurchase resolutions according to an index-adjusted model, 1998–2008

Post-event period	6 months (182 days)	12 months (365 days)	18 months (547 days)	24 months (730 days)	30 months (912 days)	36 months (1095 days)
<i>Subsample 1: 1998-2003</i>						
ACAR	-0,37%	-11,97%	-14,40%	-19,10%	-45,27%	-28,99%
<i>t-stat</i> _{par}	-0,07	-1,03	-0,91	-1,02	-1,83	-1,07
<i>z-stat</i> _{non par}	-0,06	-1,06	-1,01	-1,06	-1,91	-1,1
<i>Subsample 2: 2004-2008</i>						
ACAR	2,88%	19,55%	19,76%	10,23%	2,16%	-3,54%
<i>t-stat</i> _{par}	0,41	2,41*	1,99	0,79	0,1	-0,18
<i>z-stat</i> _{non par}	0,37	2,48*	2,08*	1,06	0,18	-0,31
<i>Difference between subsamples 2 and 1</i>						
ACAR	3,26%	31,52%	34,16%	29,32%	47,43%	25,45%
<i>t-stat</i> _{par}	0,31	2,23*	1,92	1,31	1,38	0,68
<i>z-stat</i> _{non par}	0,36	2,13*	1,9	1,46	1,76*	0,94
<i>Full sample: 1998-2008</i>						
ACAR	1,80%	9,05%	7,56%	-3,52%	-25,20%	-18,81%
<i>t-stat</i> _{par}	0,36	1,3	0,86	-0,31	-1,45	-1,04
<i>z-stat</i> _{non par}	-1,13	1,23	1,65	0,71	-0,14	0,72

* Significantly different than zero at 5% level. ** Significantly different than zero at 1% level.

Source: own computations.

¹⁴ A.J. Ziobrowski, P. Cheng, J.W. Boyd, B.J. Ziobrowski: *Abnormal Returns from the Common Stock Investments of the U.S. Senate*, “Journal of Financial and Quantitative Analysis” 2004, vol. 39, no. 4, [online] <http://www.thenationalbusinessassociation.com/content/JFQA-394-Ziobrowski-Proofs.pdf> [2011-02-13].

Interesting conclusions may be drawn from the analysis of pre-2004 and post-2004 subsamples. It appears that buyback stocks did significantly worse in the early years than in the later period. In the pre-2004 sample, buyback stocks on average underperformed the market in the whole observation period, and the ACARs exceeded -45% . In the post-2004 sample, buyback stocks on average greatly outperformed the market within the first year when the ACARs reached almost 20% . However this outperformance was reversed starting from the second half of the second year till the end of the third year.

The poor performance of the buyback stocks in the early subsample may be explained by the fact that before 2004 income from share repurchases was tax free while income from dividends was taxable for individual investors. This was a great incentive to repurchase stocks rather than pay out dividends. The potential undervaluation of stocks at the time of buyback clearly had nothing to do with it in this case.

The results of ACARs analysis with the use of the CAPM are depicted in Table 2. They generally follow the same pattern as in the cases when the market-adjusted model was applied.

Table 2

Average cumulative abnormal returns following stock repurchase resolutions according to CAPM, 1998–2008

Post-event period	6 months (182 days)	12 months (365 days)	18 months (547 days)	24 months (730 days)	30 months (912 days)	36 months (1095 days)
<i>Subsample 1: 1998-2003</i>						
ACAR	-2,84%	-12,28%	-15,93%	-18,75%	-40,42%	-20,55%
<i>t-stat</i> _{par}	-0,51	-0,99	-0,92	-0,94	-1,51	-0,72
<i>z-stat</i> _{non par}	-0,53	-1,08	-0,96	-1	-1,64	-0,72
<i>Subsample 2: 2004-2008</i>						
ACAR	0,99%	18,28%	18,89%	7,62%	0,34%	-0,84%
<i>t-stat</i> _{par}	0,13	2,2*	1,84	0,56	0,01	-0,03
<i>z-stat</i> _{non par}	0,13	2,25*	1,99*	0,79	0	-0,09
<i>Difference between subsamples 2 and 1</i>						
ACAR	3,83%	30,55%	34,82%	26,37%	40,76%	19,71%
<i>t-stat</i> _{par}	0,34	2,08*	1,85	1,11	1,1	0,49
<i>z-stat</i> _{non par}	0,38	2,05*	1,91	1,29	1,4	0,64
<i>Full sample: 1998-2008</i>						
ACAR	-0,28%	8,09%	6,45%	-4,74%	-23,17%	-12,67%
<i>t-stat</i> _{par}	-0,05	1,13	0,69	-0,4	-1,26	-0,65
<i>z-stat</i> _{non par}	-0,06	1,13	0,70	-0,40	-1,29	-0,68

* Significantly different than zero at 5% level. ** Significantly different than zero at 1% level.

Source: own computations.

Table 3 depicts the results of the calendar-time portfolio approach. All three examined portfolios (with 1-, 2- and 3-year holding periods) showed superior returns in comparison to the market portfolio.

Table 3

Return characteristics of buyback portfolios, 1998–2010

	Portfolio A	Portfolio B	Portfolio C	Stock market portfolio	Risk-free rate
<i>Performance characteristics</i>					
Mean return	19,5%	14,8%	14,7%	8,6%	7,6%
Standard deviation	35,3%	36,1%	39,8%	32,8%	4,3%
Skewness	-0,11	-0,16	-0,52	-0,74	1,19
Kurtosis	-0,66	-0,84	-0,71	-0,13	-0,20
Beta	0,91	1,00	1,11	1,00	-0,05
Tracking error	19,0%	15,1%	16,6%	-	-
Sharpe ratio	0,32	0,19	0,17	0,03	-
Information ratio	0,58	0,41	0,37	-	-
<i>CAPM regression</i>					
β	0,66	0,63	0,67	-	-
$z\text{-stat}_{\text{par}}$	9,03*	9,93*	10,64*	-	-
α	1,02%	0,62%	0,59%	-	-
$z\text{-stat}_{\text{par}}$	1,91*	1,35	1,29	-	-
$z\text{-stat}_{\text{non par}}$	1,86*	1,35	1,31	-	-
R^2	38,1%	42,7%	46,1%	-	-

Portfolios A, B and C denote portfolios with 1-, 2- and 3-year holding period respectively. All the risk and performance ratios annualized. Information ratio and tracking error computed with respect to WIG as a benchmark. Information ratio is calculated according to Sharpe [1994] in contrary to standard Sharpe ratio computed according to Sharpe [1966]. CAPM regression is based on montly returns.

* Significantly different from zero at 5% level.

Source: own computations.

The best performing portfolio seems to be portfolio A with a single-year holding period. This should not be surprising bearing in mind the ACAR hump-pattern in Tables 1 and 2. Nonetheless, all three buyback portfolios appear to be superior to the market portfolio considering their average returns and Sharpe ratios. Moreover, a quick higher moment analysis reveals some additional interesting characteristics. Buyback portfolios seem to have a skewness close to zero and very low kurtosis. It translates to a relatively low probability of extreme negative returns. Such characteristics imply that buyback stocks may constitute a valuable addition to typical stock or bond portfolios, which usually posses distributions of negative skewness and high kurtosis.

In the CAPM regression all the three portfolios (A, B, C) yielded positive monthly alphas ranging from 1,02% to 0,59%. However, the intercept was significant at 5% but only in the case of the portfolio with the annual holding period (A).

Alternative explanations of the phenomenon

There are two main competing theoretical approaches offering different explanations of the buyback phenomenon – the traditional market efficiency school and the behavioral finance view.

The defenders of market efficiency argue that the buyback anomaly is not really anomalous. There are various methodological issues that bias long-term abnormal returns and provide illusory results¹⁵. The abnormal returns may be also caused by chance and may be sample specific¹⁶. There might be a problem with a survival bias – companies that conducted a buyback and later went bankrupt naturally are not included in the long-term sample collected from the ex-post data series (bankrupted companies are not listed). Therefore the sample misses in cases of extreme negative returns. This increases the average return calculated for the sample of only those companies that survived over the years. There is also a risk-change hypothesis – a buyback changes the capital structure of a company. After a buyback a portion of stocks is usually redeemed. There is less equity and less cash in the company, and some firms take even additional debt in order to finance the operation. In other words, companies after the buyback have more financial risk. In the lieu of the efficient market theory, higher returns are simply a justified premium for higher risks. The liquidity hypothesis argues that a repurchase reduces liquidity and the abnormal returns are due to this omitted liquidity factor that ought to be priced¹⁷.

The behavioral finance school perceives the buyback anomaly as the result of market inefficiency and the irrationality of market participants. The most popular explanation is an undervaluation of a stock at the time of the buyback announcement. The long-term excess returns are interpreted as a correction of the initial mispricing. Peyer and Vermaelen¹⁸ observe that stocks experience the most significant positive long-run excess returns if the repurchase is triggered by a severe stock-price decline during the previous 6 months. They argue that the buyback anomaly is driven mainly by a market overreaction to bad news prior to the repurchase, rather than a result of insider information. This is somehow contradictory to the results of Babenko, Tserlukevich, and Vedrashko¹⁹ who find a positive relation between insider purchases prior to the buyback announcements and post-announcement, short-term and long-term returns. Their findings suggest that at least to some extent private information known to management may be responsible for the buyback anomaly.

However, it should be remembered that managers are also subject to psychological traps which may lead them to a false perception of the company's value. These biases include attachment to historical high price levels after the stock has dropped, strong loss-aversion if management compensation is based on the stock's performance, overconfidence with

¹⁵ E. Fama: *Market efficiency, long-term returns, and behavioral finance*, "Journal of Financial Economics" 1998, no. 49, pp. 283–306; M.L. Mitchell, E. Stafford: *Managerial decisions and long-term stock price performance*, "Journal of Business 73", no 3, 2000, pp. 287–329.

¹⁶ E. Fama: *op.cit.*, pp. 283–306.

¹⁷ L. Pastor, R.F. Stambaugh: *Liquidity Risk and Expected Stock Returns*, "Journal of Political Economy", University of Chicago Press, 2003, vol. 111(3), pp. 642–685.

¹⁸ U. Peyer, T. Vermaelen: *The nature and persistence of buyback anomalies*, unpublished working paper, INSEAD, Fontainebleau, France 2005.

¹⁹ I. Babenko, Y. Tserlukevich, A. Vedrashko: *Insider Purchases and the Credibility of Open Market Share Repurchase Signaling*, working paper, Social Science Research Network [online], http://papers.ssrn.com/sol3/papers.cfm?abstract_id=891761, [2011-02-13].

their own management skills, and excessive optimism about future company developments. This leads us to the next possible explanation of a buyback anomaly. We cannot rule out that stocks are in fact correctly priced at the time of the repurchase, but an overvaluation typically appears after the announcement. Dann²⁰ and Vermaelen²¹ argue that stock repurchases send a positive signal to the market and it may be used by managers to influence price. If the market overreacts to this signal, abnormal returns occur. However, if this hypothesis is true, we should observe a reversal of excess returns in the longer term (as we actually observed in our research on the Polish market).

The post-repurchase positive market overreaction hypothesis is supported by a number of potential reasons. Firstly, the overvaluation after a buyback may appear due to the manipulative actions of management who want to prove that their earlier decision was right (window dressing, EPS management), particularly if there is strong motivation based on a compensation scheme or worries losing their reputation or job.

Secondly, positive feedback trading may take place²². Tender offer repurchases are usually done with a premium. Open market repurchases create additional demand that may push prices upwards, particularly in the case of less liquid stocks. In both situations the initial positive impact on the stock price may attract more investors. Individual investors are usually trend followers, have shorter horizon, and focus on what has been happening with the stock recently²³. In this particular context, the recent growth after a buyback grabs investors' attention and creates more demand, with the price steadily rising. On the other hand, institutional investors and analysts have a longer horizon and usually bet on reversals²⁴. They still remember when the company was downgraded and/or the price went down, now they see the stock going up, but due to cognitive conservatism²⁵ they react with a delay. Only after some time they start to think that it is time for the reversal. Institutions finally come into the game and create more demand that contributes to further price growth.

Finally, it is also possible that investors are misled by valuation ratios such as EPS, P/E, P/CF, P/Div etc. After a buyback, some shares are usually redeemed. Even if there

²⁰ Dann L.Y., *Common stock repurchases: An analysis of returns to bondholders and stockholders*, "Journal of Financial Economics 9", 1981, pp. 113-138.

²¹ Vermaelen T., *Common stock repurchases and market signalling*, "Journal of Financial Economics 9", 1981, pp. 139-183. Vermaelen T., *Repurchase Tender Offers, Signaling, and Managerial Incentives*, "Journal of Financial and Quantitative Analysis", Cambridge University Press, 1984, vol. 19(02), pp. 163-181.

²² Cutler D., Poterba J., Summers L. (1990), *Speculative Dynamics and the Role of Feedback Traders*, "American Economic Review" vol. 80, 2, s. 63-68. DeLong B., Shleifer A., Summers L.H., Waldmann R. J., *Noise Trader Risk in Financial Markets*, "Journal of Political Economy 98", 1990, no. 4, pp. 703-738.

²³ De Bondt, W.F.M., *Betting on trends: Intuitive forecasts of financial risk and return*, "International Journal of Forecasting 9", 1993, pp. 355-371. Szyszka A., *Finanse behawioralne. Nowe podejście do inwestowania*, Poznań University Press, Poznań 2009.

²⁴ Shefrin H., *Beyond Greed and Fear*, Harvard Business School Press, 2000, Boston, MA, USA.

²⁵ Szyszka A., *Wycena papierów wartościowych w świetle finansów behawioralnych*. Wydawnictwo AE Poznań, 2007.

is no change in the profitability of the company, the same level of earnings, cash flows, and dividends are divided by a lower number of shares outstanding, therefore EPS ratio is higher, P/E ratio seems to be more favorable, etc. Investor start buying shares because they see improving financial ratios, but they forget that the improvement is in a large part due to the changes in capital structure and lower number of shares outstanding.

Conclusions and final remarks

Excess long-term returns after a stock repurchase are a relatively well documented and persistent anomaly on the US market. This paper provides evidence of a similar phenomenon on the Warsaw Stock Exchange. However, some differences can be noticed. Studies on the US market have documented abnormal returns up to three years after their buyback²⁶. Our research provides evidence that abnormal returns are cumulated mainly over the first year after the repurchase announcement. ACARs diminish from the second half of the second year and reverse into negative values in the third year after the buyback. Similarly, the results of the calendar-time portfolio analysis show that the most profitable buyback portfolio was the one with a one-year holding period. This indicates a possibility that the buyback anomaly – at least in the Polish case – is a manifestation of an overreaction to the initial positive repurchase signal and a temporary overvaluation for the post-announcement period.

However, one should be caution before making any final conclusions based on our study due to the limited number of repurchases in our sample. Further studies will be essential when more data becomes available. Other potential areas of research include attempting to verify various hypothesis and explanations regarding the buyback phenomenon that we mentioned and only briefly discussed in the section 4.

Based on the current economic landscape, we are convinced that further exploration of the buyback anomaly has the potential to bring substantial results to both academics and market practitioners.

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²⁶ J. Lakonishok, T. Vermaelen: *Anomalous price behavior around repurchase tenderoffers*, "Journal of Finance 45" 1990, pp. 455–477; D. Ikenberry, J. Lakonishok, T. Vermaelen: *Market underreaction to open market share repurchases*, "Journal of Financial Economics 39" 1995, pp. 181–208; U. Peyer, T. Vermaelen: *op.cit.*

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Summary

A number of studies carried out on US stock market data found substantial long-term returns following stock buybacks. The aim of this paper is to verify if a similar anomaly can be observed happening on the Polish stock market. We confirmed the existence of long-term abnormal returns following buybacks and the profitability of the buyback mimicking strategy (i.e. buying stocks after repurchase announcements). We discuss potential resources and present various interpretations for our evidence.

**ANOMALIA SKUPÓW AKCJI WŁASNYCH
NA POLSKIM RYNKU KAPITAŁOWYM****Streszczenie**

Badania amerykańskiego rynku akcji wykazały występowanie długoterminowych ponadprzeciętnych stóp zwrotu z inwestycji w spółki, które dokonywały skupu akcji własnych. Celem niniejszego artykułu jest weryfikacja, czy podobna anomalia występuje na rynku polskim. Przeprowadzone analizy potwierdzają występowanie długoterminowych ponadprzeciętnych stóp zwrotu ze spółek skupujących własne akcje oraz wskazują na zyskowność strategii inwestycyjnej, polegającej na budowaniu portfeli złożonych ze spółek, które uprzednio ogłosiły skup akcji własnych. W artykule wskazujemy także na potencjalne przyczyny i wskazujemy na różne możliwe interpretacje zaobserwowanych przez nas wyników.

