

# Operating performance around share repurchases – evidence from Poland

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## Abstract

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The issue of share repurchases has attracted the attention of numerous researchers and still lacks a consistent explanation. The main aim of the study is to investigate the changes in operating performance around share repurchase announcements. Until now, the majority of research has concentrated on the stock market reaction to share repurchase announcements. This research was conducted on a sample of companies listed on NewConnect (a stock market operated by the Warsaw Stock Exchange in the form of an alternative trading system) devoted to young and growing companies. It is assumed that operating performance improves after share repurchases, and that share repurchases are a method that indicates promising future prospects of young and growing firms. The research sample consisted of 378 firm-year observations (54 companies over a seven-year period). The authors measured the operating performance by means of profitability ratios (ROA and ROE). Operating performance around the share repurchase announcements was compared by applying the Wilcoxon test. The findings suggest that operating performance deteriorates after share repurchase announcements. This contradicts the prior assumptions of this study, which were consistent with the signalling theory of share repurchases. The results imply that the free cash flow hypothesis is more appropriate when it comes to explaining the share repurchase decisions of the sample firms. The findings may be valuable as the scope of research is widened beyond the market reaction to the financial strategy of the company. The research also tackles specific kinds of companies – young and growing – whereas previous studies have focused on mature companies from emerged markets. The findings could be also interesting for investors and company managers.

## Key words

share repurchases, operating performance, NewConnect, signalling theory, free cash flow hypothesis, mimicking theory

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## Introduction

The issue of share repurchases has been extensively discussed over the last two decades. However, this is still an important area to be investigated, as a large amount of cash has been distributed around the world by companies repurchasing their own shares. There are several potential explanations why companies repurchase their own shares, i.e. share repurchases can be used to deter a hostile takeover (Bagwell, 1991; Ni et al., 2020), to adjust the capital structure (Hovakimian et al., 2001; Bonaimé et al., 2014; Schwarz, 2018), or as a tool of corporate control (Fenn and Liang, 1998; Jolls, 1998). However, two theories explaining the reasons for share repurchases are predominant, namely the information signalling hypothesis (Bhattacharya, 1979; Miller and Rock, 1985; Vermaelen, 1981; Mietzner, 2017; Andriosopoulos and Lasfer, 2015; Chen and Liu, 2021) and the free cash flow hypothesis (Jensen, 1986; Grullon and Michaely, 2004; Li and McNally, 2007). These hypotheses are deemed to be the best for explaining the behaviour of repurchasing companies (e.g. Grullon and Michaely, 2004).

This paper tackles the issue of share repurchases by attempting to discover the reasons behind the decision to repurchase a company's own shares via the analysis of operating performance data. The aim of this study is to discover whether operating performance changes around share repurchases. If so, can a deterioration or improvement be observed in operating performance around share repurchases? In line with the signalling hypothesis, it is assumed that operating performance improves after share repurchases.

The research was conducted based on data from the Polish market. The sample comprises all share repurchases announced and implemented by companies listed on NewConnect (NC), which is an organised stock market operated by the Warsaw Stock

of Exchange (WSE) outside the regulated market in the form of an alternative trading system. All share repurchases announced and conducted over the period 2011-2014 (54 cases) were selected. The primary focus is on the changes in operating performance around the share repurchases. The data was collected for the seven-year window (-3; +3) around the share repurchase, where Year 0 means the year of the share repurchase announcement. To investigate the information content of share repurchases, the operating performance of the analysed companies was examined (using different measures of profitability) before and after the share repurchases. To conduct the statistical analysis, methods of descriptive statistics and the non-parametric Wilcoxon test were applied. Since it was assumed that share repurchase decisions depend on the relationship between the operating performance of a firm and its financial strategy, the analysis of additional ratios was applied.

This study draws on previous research on share repurchases. However, previous methodology relies heavily on market data and share prices. Data is drawn from financial statements, especially those indicating operating performance. The study adopts the perspective of the company repurchasing their own shares and attempts to discern whether the share repurchase has any impact on operating performance, and furthermore, if there is an impact, what the direction and significance of said impact is. The study aims to discover how the decision on repurchasing shares affects the financial standing of the company and its future prospects.

A contribution is made to the existing body of literature by extending the research sample beyond the main markets of stock exchanges. Additionally, the study tackles the problem of the largest emerging economy from Central and Eastern Europe. These

findings might be beneficial to other economies the world over and for the remaining economies from Central and Eastern Europe. To the best of the authors' knowledge, it is the first attempt at research that examines operating performance around share repurchases on the Polish market.

The rest of the paper is organised as follows: Section 2 presents the literature review; Section 3 presents the data and methodology; Section 4 presents the research results and the discussion; and the final section presents the conclusions, areas for further research and the limitations of the study.

## 1. Theoretical framework and hypothesis development

A large number of studies have reported a positive stock price reaction to announcements of share repurchases (e.g. Vermaelen, 1981; Asquith and Mullins, 1986; Ikenberry et al., 1995; Kahle, 2002; Wang and Johnson, 2008; Louis and White, 2007; Peyer and Vermaelen, 2009; Andriosopoulos and Lasfer, 2015; Wrońska-Bukalska et al., 2018). These findings are in line with the theory that share repurchases provide positive information to the capital market (Lie, 2005).

The potential interpretation of the empirical evidence on the stock price reaction to share repurchase announcements has been extensively discussed in the literature over recent decades (e.g. Comment and Jarrell, 1991; Grullon and Ikenberry, 2000; Weston and Siu, 2003; Grullon and Michaely, 2004; Wang et al., 2009; Liang et al., 2013). The information signalling hypothesis (Bhattacharya, 1979; Vermaelen, 1981) and the free cash flow hypothesis (Easterbrook, 1984; Jensen, 1986) are the most credited. The anti-takeover defence (Bagwell 1991), the capital structure adjustment (Hovakimian et al., 2001; Bonaimé et al., 2014; Schwarz, 2018) or corporate control (Fenn and Liang, 1998; Jolls, 1998) are considered as well.

Jagannathan and Stephens (2003) suggest that the signalling hypothesis is demonstrated in two ways. The first such way is known as the 'earnings signalling' hypothesis, which indicates that the announcement of a share repurchase foreshadows future earnings growth. This theory is an adaptation of Miller and Rock's (1985) 'dividend signalling hypothesis' (Jagannathan and Stephens, 2003). The company's promise of a cash flow disbursement is seen as a positive sign of the company's future earnings performance. Contrarily, a share repurchase announcement could also signal the undervaluation of a company's stock ('undervaluation signalling'), which does not imply any future improvement in earnings performance. According to Comment and Jarrell's (1991) suggestion, undervaluation is an incentive for firms to repurchase their own shares.

The information signalling theory is built on the assumption regarding the asymmetric information between insiders (managers) and outsiders (owners), which leads to an erroneous valuation of a company's stock. Once the stock is undervalued, a company repurchasing undervalued shares (at a low cost) will receive the benefit of a profit when they are reissued. Consistent with that notion, the stock market usually reacts positively to announcements of share repurchase programmes because it is seen as a positive signal for the market (Comment and Jarrell, 1991; Vermaelen, 1981; Liang et al., 2013).

The signalling hypothesis assumes that the company has a better current financial situation and future prospects than the market and investors assume. It posits that a share repurchase announcement is a sign issued to the market by company executives to convey favourable expectations for the company's future operating performance. This behaviour can be observed especially in young companies with high investment opportunities (Nohel and Tarhan, 1998).

In contrast, the free cash flow hypothesis suggests that the market response to the announcement can be linked to a reduction in the firm's free cash flow. Therefore, when firms generate surplus liquidity, conflicts of interest between owners and managers become increasingly crucial. Liang et al. (2013) find that managers are motivated to become involved in ineffective projects which could increase their private benefits but reduce the value of the firm. Managers who are merely concerned with their own interests may be enticed to expand the size of the company beyond the optimum. This mismatch between the aims of shareholders and managers creates agency costs (Jensen and Meckling, 1976). The larger the free cash flow, the more likely agency costs are to arise. If a business generates excess cash flows, managers are more likely to invest in inefficient projects.

Easterbrook (1984) and Jensen (1986) imply that share repurchases will diminish the level of free cash flow that is at the disposal of managers and minimise overinvestment problems as a result. This behaviour can be observed especially in mature companies with low investment opportunities. Based on this assumption, the operating performance of the company should deteriorate after the share repurchase (Nohel and Tarhan, 1998).

As Grullon and Michaely (2004) argue, according to the free cash flow hypothesis, companies that repurchase their own shares will be exposed to a drop in profitability. This is explained by the fact that firms which repurchase their own shares should require less cash for investment projects. As a result, firms should experience a reduction in capital expenditures and a reduced need for cash reserves. Additionally, a drop in both the systematic risk and cost of capital should be observed.

There is little research on the impact of the announcements of repurchase programmes on changes in operating performance (Lie, 2005). What is more, existing

research does not provide a conclusive answer on the direction of changes in operating performance. Additionally, as Croce et al. (2008) note, operating performance following share repurchases frequently reveals findings that are consistent with positive abnormal returns around the announcements.

Bartov (1991) examined a sample of 512 share repurchases announced over the period 1978-1986. The findings confirm weak proof of positive earnings changes in the year of the announcement but a reversal in the following year. Nohel and Tarhan (1998) studied all announcements of share repurchases from the period 1978-1991. The authors confirmed the improvement in operating performance only in low-growth firms. Moreover, the authors claim that these operating performance improvements are produced by operations on assets (the more efficient utilisation of assets and asset sales), rather than any improvement in the firms' growth opportunities. This evidence led the authors to argue that the free cash flow hypothesis is the best explanation for this positive stock market reaction. Guay and Harford (2000) conducted a study on companies that announced share repurchases over the period 1981-1993. Based on the results, the authors suggest that firms distribute cash flows through both share repurchase programmes and cash dividends. Jagannathan and Stephens (2003) conducted a study on a sample of share repurchases recorded in the Thompson SDC database from 1986 to 1996. The authors found little evidence for any improvement in operating performance subsequent to the announcements of share repurchases. Grullon and Michaely (2004), based on a sample of more than 4000 share repurchases announced from 1980 to 1997, reported only a slight improvement in operating performance in the year of the announcements, and found no evidence of improvement in the following years. However, the authors discovered that

firms announcing open share repurchases faced deteriorating investment opportunities. The authors argued that, in those cases, the analysed firms paid cash to their shareholders to avoid possible overinvestment.

Lie (2005) confirmed that operating performance improved after the announcement of almost 5000 share repurchases over the period 1981-2000. However, per the findings, only companies that bought back shares in the same fiscal quarter when they announced the share repurchase programme were able to improve their operating performance. Croce et al. (2008) studied the operating performance of industrial companies that declared and executed the share repurchase programmes on the Italian Stock Exchange. The research sample consisted of 160 share repurchase announcements divided into three different groups (depending on the effectiveness of the share repurchases). The operating performance is considered as the EBITDA/Cash Adjusted Assets indicator; however, alternative measures were also used. The findings show a considerable deterioration in the operating performance following the announcement, in both absolute terms and when compared to a control sample. According to the results, the deterioration in operating performance is significant only for the firms that conducted effective share repurchase programmes.

Chen and Wang (2012) analysed operating performance after a share repurchase in the context of financial constraints. Their results indicate significantly worse abnormal returns and operating performance after the repurchase for constrained firms than for their unconstrained counterparts. Wang et al. (2013) examined share repurchases announced by Vietnamese listed companies over the period 2008-2016. They confirmed an improvement in operating performance in the year of the announcement, while adopting a control group consisting of non-event companies. However, it should be noted that the improvement

was confirmed only for the fiscal year concurrent with the announcement of share repurchases.

The latest research also shows inconclusive results. Wang et al. (2020) investigated the abnormal returns and operating performance of Vietnamese listed companies that repurchased shares over the period 2008-2016. Their findings are consistent with Grullon and Michaely (2004), confirming improvements in operating performance in the year of the announcement, but no significant differences for the following years. Chao and Huang (2022), who conducted research on the share repurchases of firms from Taiwan between 2000 and 2016, found a positive relationship between a firm's operating performance measured by profitability (ROA) and share repurchase implementation.

The inconclusive findings leave the research problem unsolved and leave open the path for further studies on the relationship between share repurchases and operating performance. Therefore the aim of this research is to study the operating performance surrounding the share repurchases of companies that are listed on NewConnect, which is dedicated to young and growing companies from high-tech industries.

The following research questions have been formulated:

**RQ 1: Does the operating performance of companies change around share repurchases?**

**RQ 2: If so, can a deterioration or improvement in operating performance around share repurchases be observed?**

It is therefore hypothesised that:

**H1. Operating performance changes significantly after share repurchases when compared to that before share repurchases.**

## **H2. Operating performance after share repurchases improves when compared to that before share repurchases.**

The free cash flow hypothesis of Easterbrook (1984) and Jensen (1986) suggests that the amount of free cash flow at managers' disposal could be reduced by share repurchases. Thus, it can minimise the problems associated with opportunistic investment. This behaviour can be especially observed in mature companies with few investment opportunities. According to this hypothesis, the operating performance of the company should deteriorate after the share repurchase (Nohel and Tarhan, 1998).

The signalling hypothesis assumes that a company is in a better current financial situation and has more promising future prospects than the market and investors assume. It posits that share repurchase announcements denote a signal sent to the market by managers to indicate positive prospects regarding future operating performance. This behaviour can be observed especially in young companies which are characterised by high investment potential (Nohel and Tarhan, 1998).

Thus, the explanation for the hypothesis adopted in this research assuming an improvement in operating performance after share repurchases is that this study attempts to deal with young companies with high investment opportunities. This assumption was made because NewConnect is devoted to young and growing companies. Furthermore, existing research indicates that for young companies with high investment opportunities, an improvement in operating performance might be expected (e.g. Nohel and Tarhan, 1998), with the signalling hypothesis being the best explanation.

## **2. Methodology**

NewConnect has operated since 30 August 2007, and the aim of its operation is to finance the growth of small and medium-sized

companies. NewConnect is operated and controlled by the Warsaw Stock Exchange as an alternative system of trading. As of 2 February 2022, there were 383 companies listed on the market. The total capitalisation of NC on that day amounted to 4.9 million EUR (<https://newconnect.pl/en-home>).

The data were collected manually (since there is no available database covering share repurchase announcements) by analysing all current reports released by the companies listed on NewConnect over the period 2007-2017 (there were more than 10,000 current reports analysed). By analysing current reports, it was possible to identify the companies that had repurchased their shares. The financial data for companies which repurchased their own shares were retrieved from their annual reports and refer to the end of each fiscal year.

Data was collected on share repurchases from the NewConnect companies in the period 2007-2017. There were 77 companies that had announced and implemented share repurchases within this period. However, in this research, the focus was on share repurchase announcements from the period 2011-2014. In this period, there were 53 companies out of the total of 77 that had announced and implemented share repurchases (almost 70% of all companies that had announced and implemented share repurchases from the period 2007-2017). Including the three-year window before and after share repurchases means that this research covers the period of 2008-2017. It is believed that this 10-year period is sufficiently long to find a specific pattern in changes in operating performance around share repurchases. Additionally, this 10-year period presents a specific macroeconomic environment and thus allows for the comparison of operating performance in a similar macroeconomic environment.

In total, there are 378 observations (firm-year). To minimise the outlier effect, the winsorisation technique was implemented. This study's 90% winsorisation strategy assumes setting all annual data below the fifth

percentile to the fifth percentile, and data above the 95th percentile to the 95th percentile (Nyitrai and Virág, 2019).

The operating performance was measured by computing the ROAnet ratio in the following way:

$$ROAnet = \frac{Net\ Income}{Total\ Assets} \quad (1)$$

To test the robustness of the results, other indicators were implemented which

describe a firm's operating performance. These alternative indicators are as follows:

$$ROAop = \frac{Operating\ Income}{Total\ Assets - Cash} \quad (2)$$

$$ROE = \frac{Net\ Income}{Total\ Equity} \quad (3)$$

Following Lie (2005), the firms' operating performance was measured for each year t, collecting data for a seven-year window (-3;+ 3) years around the share repurchase. All the indicators were evaluated for each company for seven periods denoted as -3, -2, -1, 0, 1, 2, 3 where -3 means three years before share repurchases, and 0 is the year when share repurchasing commenced.

To perform the statistical analysis, this study applied the methods of descriptive

statistics and the non-parametric Wilcoxon test. The aim of the Wilcoxon rank sum test is to examine whether the distribution of two samples are the same (Wilcoxon, 1992). The null hypothesis states that the two samples have the same distribution, with the alternative one stating that their distributions differ (de Barros et al., 2018).

The following equation is used to calculate the test statistic (de Barros et al., 2018):

$$z = (R - \mu_R) / \sigma_R$$

Where:

$$\mu_R = n_1 * \frac{n_1 + n_2 + 1}{2}$$

$$\sigma_R = \sqrt{n_1 * n_2 * \frac{n_1 + n_2 + 1}{12}}$$

are the population mean and standard deviation respectively.

It was assumed that the share repurchase decisions depend on the relationship between the operating performance and the financial strategy of companies; therefore, the study introduced the cash ratio and CAPEX ratio to the analysis. The cash ratio is measured as cash and cash equivalents scaled by the book value of the total assets. The leverage ratio is calculated as total debt scaled by the book value of the total assets. The values

of the ratios were evaluated for each company for a seven-year window.

### 3. Results and Discussion

The methods described was applied to data on companies listed on NewConnect that repurchased shares from 2007 to 2017. Table 1 provides descriptive statistics for the sample. All ratios are computed based on data at the end of the year of the share repurchase announcement.

**Table 1.** Descriptive statistics for the sample

Variable	Formula	N	mean	median	min	max	SD
Size	Total assets [thousands PLN]	54	30,295	14,122	659	497,026	69,434
Share repurchase amount	The amount of money assigned to the share repurchase programme [thousands PLN]	54	1,792	1,150	40	8,000	1,795
MV/BV	Market value to book value	54	3.67	2.01	0.1	26.6	5.1
Cash ratio	Cash holding to total assets [%]	54	23.5	14.0	0.5	86.5	25.5
CAPEX ratio	CAPEX to total assets [%]	54	7.0	2.4	0.0	28.4	8.9
Leverage ratio	Total debt to total assets [%]	54	35.9	33.4	7.2	76.0	21.0

Source: own elaboration

The sample firms have a book value of assets of 30.295 million PLN (a median value of 14.122 million PLN). The mean (median) firm has quite a low leverage ratio at the year of the announcement. The mean (median) cash ratio was 23.7% (14.0%). The average company announced a share repurchase of 1.792 million PLN (median value of 1.150

million PLN), a cash ratio of 23.5%, and a leverage ratio of 35.9%. The results presented in Table 2 show that the sample firms are differentiated.

Table 2 presents the average and median values of the ROAnet ratio as well as the results of the Wilcoxon test.

**Table 2.** Wilcoxon test results for ROAnet ratio [N=54]

Years	-3	-2	-1	0	1	2	3
Mean	12.0	7.6	7.5	5.2	2.4	-3.0	3.0
Median	8.0	9.3	4.8	3.1	2.4	3.4	4.0
Wilcoxon test	-1.742	-0.938	-1.430	x	<b>-1.757***</b>	<b>-3.625*</b>	<b>-2.021**</b>

\*\*\*, \*\*, \* significant at 1%, 5%, 10% respectively

Source: own elaboration

The findings show that share repurchases are associated with a deterioration in future operating performance as measured by the ROAnet ratio. Every year following the announcement, a statistically significant fall in operating performance can be observed. The value of ROAnet from t0 (the year of the

share repurchase announcement) is higher than in the years after. However, the value of ROAnet in year t0 is lower than before the share repurchases. This is clear evidence of declining operating performance.

To test the robustness of the results, ROAop and ROE were used.



**Table 3. Wilcoxon test results for ROAop ratio [N=54]**

Years	-3	-2	-1	0	1	2	3
Mean	27.0	25.7	11.3	10.0	7.9	0.0	5.0
Median	13.0	15.1	7.6	7.8	4.7	5.0	5.0
Wilcoxon test	<b>-1.752*</b>	<b>-2.095**</b>	-0.400	x	-1.146	<b>-3.113***</b>	<b>-2.860***</b>

\*\*\*, \*\*, \* significant at 1%, 5%, 10% respectively

Source: own elaboration

The data shown in Table 3 imply that the value of ROAop before the share repurchases was higher than in the year that the share repurchases began. Additionally, the value of ROAop after the share repurchases was

lower than in the year the share repurchases began. Again, this is solid evidence for the decline in operating performance after the announcement.

**Table 4. Wilcoxon test results for ROE ratio [N=54]**

Years	-3	-2	-1	0	1	2	3
Mean	17.0	15.9	11.3	8.7	8.1	1.0	5.0
Median	15.0	14.4	8.9	7.0	6.4	4.0	6.0
Wilcoxon test	-0.932	-1.621	-0.874	X	-1.332	<b>-2.621***</b>	<b>-1.805*</b>

\*\*\*, \*\*, \* significant at 1%, 5%, 10% respectively

Source: own elaboration

Furthermore, the results shown in Table 4 confirm that firms repurchasing their own shares listed on the NewConnect experienced poorer operating performance as measured by the ROE ratio.

by ROAnet, ROAop and ROE. The findings confirm a deterioration in the future operating performance in comparison to the value in Year 0 (except for the median value of ROA for the changes between Year 2 and Year 0, Year 3 and Year 0).

Table 5 provides the levels of changes in the yearly operating performance measured

**Table 5. Yearly changes in operating performance**

	ROAnet		ROAop		ROE	
	N=54		N=54		N=54	
	Mean	Median	Mean	Median	Mean	Median
0 to +1	-2.8%	-0.7%	-2.1%	-3.1%	-0.6%	-0.6%
0 to +2	-8.2%	0.3%	-10.0%	-2.8%	-7.7%	-3.0%
0 to +3	-2.2%	0.9%	-5.0%	-2.8%	-3.7%	-1.0%

Source: own elaboration

The results of the study conducted on the share repurchases announced over the period 2011-2014 on NewConnect indicate that (RQ 1 and H1) operating performance changes around share repurchases. Moreover, the findings suggest that share repurchases are associated with poor future operating performance, as measured by all three ratios. Therefore, to answer RQ 2, it can be confirmed that a deterioration in operating performance around share repurchases can be observed (contrary to hypothesis H2). These findings confirm only some of the previous research, especially that of Bartov (1991), Nohel and Tarhan (1998), and Croce et al. (2008). However, these results contradict a large body of research that shows a positive change in operating performance, and thus shows support for the signalling and undervaluation hypothesis (e.g. Grullon and Michaely, 2004; Lie, 2005; Wang et al., 2013), although some of these studies show only slight and short-term positive changes in operating performance after share repurchases (Lie, 2005; Wang et al., 2013). Furthermore, Grullon and Michaely (2004) found that with the improvement in operating performance, the companies faced deteriorating investment opportunities.

These results contradict the assumptions of this study. It was assumed that companies listed on the NewConnect index (which can be considered young and growing companies) would conduct share repurchases in order to signal their current and future prospects (the signalling theory). However, the findings might suggest that the explanation for share repurchases may well lie in the free cash flow hypothesis. This hypothesis, as mentioned before, implies that share repurchases reduce the amount of free cash flow, which means a lower value of the free cash flow under the control of managers. This could be a way to minimise investment issues which have an opportunistic character. However, this behaviour was observed in mature companies with low investment opportunities. According to this hypothesis, the operating performance of the company should deteriorate after the share repurchase (Nohel and Tarhan, 1998; Grullon and Michaely, 2004).

In order to verify whether the free cash flow hypothesis is a suitable way to explain the share repurchase decision for the sample companies, the values of two other ratios were additionally examined: the cash ratio and the CAPEX ratio for the entire seven-year period. The findings are shown in Tables 6 and 7.

**Table 6.** Wilcoxon test results for cash ratio [N=54]

Years	-3	-2	-1	0	1	2	3
Cash ratio (mean)	28.0	24.3	24.6	25.4	22.9	25.0	23.0
Cash ratio (median)	18.0	13.4	24.8	17.1	14.0	13.0	10.0
Wilcoxon test	-0.970	-0.710	-0.280	x	-1.191	<b>-3.026***</b>	-0.980

\*\*\*, \*\*, \* significant at 1%, 5%, 10% respectively

Source: own elaboration

The findings show a statistically significant fall in the value of the cash ratio in the second year after the announcement. This is

quite understandable, as a company repurchasing its own shares should maintain sufficient cash reserves to be able to manage the

cash payments. This is consistent with prior findings showing that companies preparing to repurchase their shares hoard cash (Davis,

2018; Nyborg and Wang, 2021). However, the findings confirm a relatively stable level of the value of the cash ratio after the announcement.

**Table 7. Wilcoxon test results for CAPEX [N=54]**

Years	-3	-2	-1	0	1	2	3
CAPEX ratio (mean)	4.0	5.0	6.0	7.3	4.1	3.0	2.0
CAPEX ratio (median)	1.0	1.5	2.4	3.4	1.6	1.0	1.0
Wilcoxon test	-1.378	-1.069	-0.141	x	<b>-2.370**</b>	<b>-2.353**</b>	<b>-4.185***</b>

\*\*\*, \*\*, \* significant at 1%, 5%, 10% respectively

Source: own elaboration

As presented in Table 7, the value of the CAPEX ratio declines after share repurchase announcements. This means that companies decrease the value of the CAPEX ratio in order to increase cash on hand to serve the share repurchase programme. This is consistent with previous studies (Wang et al., 2021; Apergis et al., 2021). These findings are also in line with the free cash flow hypothesis. This is somewhat surprising as the studies confirming the free cash flow hypothesis are appropriate for mature companies, while this research was conducted on young and growing companies. Thus, it might assumed that the analysed companies listed on NewConnect are no longer young and growing but are rather mature.

There is also another explanation connected with mimicking theory, namely that young companies mimic the behaviour of mature ones. Research on share repurchases found that some companies mimic the behaviour of their counterparts in the industry (Haw et al., 2013; Massa et al., 2007). Another explanation is that some managers use stock repurchase announcements as a tool to deceive investors. Chan et al. (2010) and Massa et al. (2007) claim that

repurchases could be used as a defensive measure to avoid a potential decline in stock price. Sometimes, share repurchases can be implemented just to follow the repurchase decisions of other firms. The alternative explanations are supported by previous findings on the positive market reaction to share repurchase announcements by Polish companies listed on NewConnect (Wrońska-Bukalska et al., 2018).

An explanation for implementing share repurchases might be the fact that dividends happen to be an inefficient method of returning cash to shareholders and companies implement share repurchases instead. This research focused only on the relationship between the share repurchases and operating performance surrounding this action. Dividend payments were not considered. The main aim was to examine the operating performance around share repurchases. Additionally, the results of prior studies on determinants of the payout policy conducted on the WSE (Kaźmierska, 2019; Kowerski and Kaźmierska, 2022) show that share repurchases are no substitute for cash dividends. However, in further research, dividends could be included as well.

## Conclusions

The paper examines the operating performance surrounding the share repurchases of companies listed on the NewConnect index – the alternative trading system of the Warsaw Stock Exchange. The study focuses on the share repurchases announced and conducted over the period 2007-2017. As NewConnect is devoted to high-tech companies during the early stage of their life cycle, it is assumed that operating performance improves after share repurchases when compared to the situation beforehand. It is assumed that through share repurchases, young and growing companies desire to signal their good current and future financial standing.

In the research, the operating performance is determined via the ROAnet ratio, as well as alternative indicators (ROAop and ROE). The findings provide strong evidence of a significant deterioration in the operating performance of the analysed companies that repurchase their own shares subsequent to the year of the announcement.

The results examine the financial situation of companies that have announced and conducted share repurchases. Thus, the results could be interesting for both investors and company managers, who should consider the financial implications of share repurchases for their companies. The findings of our study confirm that the share repurchases announced and conducted by the analysed companies over the period 2007-2017 are associated with a deterioration in future operating performance. These results are in line with those of a study conducted by Croce et al. (2008).

The results contradict the assumption that operating performance improves after share repurchases. This consequently contradicts the prior assumption that the signalling theory explains the share repurchase decisions of the analysed companies. The findings might suggest that the free cash flow hypothesis is a more appropriate means by which to explain the decisions of the analysed firms

to repurchase their own shares. Thus, it could be implied that the sample firms are no longer growing, but instead are rather mature. Further explanation of the share repurchases of the analysed firms can also be considered – namely mimicking theory and as a tool for deceiving investors.

The originality of this research lies in the fact that it reflects the interest of the company. Existing studies focus on shareholders' interests and use the event study approach to attempt to discover the market reaction to share repurchase announcements. This study instead investigated the financial data of companies repurchasing shares to attempt to discover what the impact of share repurchases on operating performance was. The originality of this approach also lies in the specific features of the sampled companies. The research was conducted on companies listed on the NewConnect index, which is devoted to high-tech companies in their early stages of development. The prior research focused more on the main markets of stock exchanges.

The main limitation of this study is connected with the sampling method. Data was collected only from companies listed on the alternative trading system NewConnect that had announced share repurchases and indeed repurchased their own shares. However, this limitation is an advantage of the study, since it examines share repurchases on the NewConnect market and also indicates the future direction of the research. Another limitation is connected with the fact that the methodology implemented (Lie, 2005), does not capture the causality of the researched issues. The methodology enables the investigation of the changes in operating performance around share repurchases.

Further studies could include the main market of the Warsaw Stock Exchange, as well as other European markets. Further studies could also include a different methodological approach utilising techniques encompassing causality.

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