The Impact of Open-Market Share Buyback Announcements by Leading European Companies

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ABSTRACT: We analyzed a sample of open market repurchase announcements from 76 leading European companies included in the Stoxx Europe 600 index between 2020 and 2024 and found a significant average cumulative abnormal return of 1.11% within a 3-day event window. Our findings revealed that market reactions were significant during the period between 2020 and 2022, amidst uncertainties caused by the spread of the COVID-19 pandemic and the outbreak of the Russian-Ukrainian war, whereas no significant reactions were observed in the calmer market environment of 2023 and 2024. At the company level, differences in market effects were explained by capital structure theory, indicating that the market particularly rewarded the open market repurchases of firms with leverage ratios below target, prior to the announcements. Importantly, during crises, this effect was only present if leverage levels remained moderate even after the equity transactions.
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Introduction

Compared to the volume of dividend payments, share buybacks, which long lagged behind, became the primary form of shareholder payouts in the 2000s (Skinner, 2008). In the 20th century, several researchers explored the preference for dividend payments despite the tax advantages of share buybacks (Bierman and West, 1966). Finally, in 1998, global share buyback volumes exceeded dividend payments for the first time (Grullon and Ikenberry, 2000).

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Looking at more recent trends, the global volume of share buybacks tripled between 2012 and 2022. The record year was 2022, with publicly traded companies repurchasing shares worth $1.305 trillion. Following the activity of the first few months of 2024, analysts again forecasted global volumes exceeding $1 trillion. (Janus Henderson Investors, 2023)

The relevance and timeliness of examining share buybacks are not only supported by these positive trends but also by their impact on the stock price of the respective companies. This was evident, for example, in the Hungarian stock market. On July 21, 2023, after the close of daily trading, OPUS GLOBAL Plc. announced a share buyback program, causing its stock price to rise nearly 20% on the next trading day. Inspired by such market price movements following buyback announcements, our paper seeks to answer the following questions:

1. What is the average short-term impact of share buyback program announcements on stock prices?
2. What company-specific factors influence market reactions?

Given that most existing literature focuses on the effects of share buybacks on U.S. capital markets, this study exclusively targets leading European capital markets. Our sample is limited to the latest share buyback announcements of the 100 largest-weight companies in the Stoxx Europe 600 index.

Additionally, since publicly traded companies can execute share buybacks in various ways, we further narrowed the scope of our analysis. Among open market repurchase programs, fixed-price tender offers, Dutch auction tender offers, and privately negotiated purchases, we focus solely on open market repurchases. This decision is based on the study by Chen and Obizhaeva (2022), which indicates that companies overwhelmingly favor this method of buybacks, especially in recent years.

We investigate the two research questions using two distinct methodologies. For the first question, we employ an event study analysis, estimating the expected normal returns of the sample stocks based on historical data. By comparing observed daily returns around buyback announcements with these expected normal returns, we calculate abnormal returns that reflect the pure market impact of the announcements. For the second question, we use cross-sectional regressions, where the dependent variable is the cumulative abnormal return calculated in the event study analysis, and the explanatory variables are company-specific factors that, according to the literature, may influence market reactions.

Our results, consistent with Anolick et al. (2021), indicate that in recent years, open market repurchase announcements in Europe generate significant abnormal returns only during periods of financial and economic policy uncertainty. This effect is attributed to the additional confidence such announcements inspire among investors in times of heightened economic risk. Thanks to the European Union's efforts, European financial markets have become so regulated and transparent over the past 20 years that under normal market conditions, we could not identify statistically significant market impacts.

At the company level, we found that differences in the reception of individual announcements are driven by variations in capital structure. Companies operating with lower leverage before buybacks achieve higher abnormal returns. During crises (e.g., the COVID-19 pandemic or the Russia-Ukraine war), when investor concerns about capital structures typically intensify, this phenomenon only holds if the leverage ratio remains at a healthy, low-risk level even after the equity transactions.

In the following sections, we first provide a review of the existing literature on the topic, then present in detail the methodology and data used for the analysis. Finally, we discuss the results more extensively and draw the main conclusions based on our findings.

Literature review

In this chapter, we define open market share repurchase programs, which are the subject of our analysis, explore the short-term market reactions to these announcements as identified by previous literature, and introduce the most prominent existing theories explaining the observed abnormal returns.

Open Market Share Repurchase Programs and Abnormal Returns

Open market share repurchase programs involve companies repurchasing their own shares through traditional capital market trading, within a pre-announced quantity and timeframe. This form of repurchase was not widely practiced for a long time, as regulatory authorities often prohibited it due to risks associated with price manipulation. For instance, according to Lee and Suh (2011), such programs were illegal in Germany and highly challenging to implement in France until 1998.

Despite the current strict regulatory restrictions, companies have considerable flexibility in executing open market repurchase programs. First, publicly traded firms are not obligated to repurchase the entire pre-announced quantity of shares, and research indicates that managements frequently take advantage of this discretion. Rau and Vermaelen (2002) estimated the execution rate of open market repurchase programs in the United Kingdom at 37%. Second, companies are not bound to a rigid schedule for their repurchases. For example, Brockman and Chung (2001) found that transactions are often not conducted on every trading day or even every trading month during the program's duration.

In this context, Hou (2024) demonstrates that market reactions are more positive the more credible an open market repurchase announcement is. Evidence from Taiwanese data shows that many announcements have an execution rate of zero, meaning no repurchase transactions follow them. Thus, stock markets respond positively to the credibility of repurchase announcements.

Numerous prior studies have demonstrated that open market repurchase programs carry positive informational value, consistently yielding positive abnormal

returns in the short-term following announcements (Grullon and Michaely, 2004; Ikenberry et al., 1995; Vermaelen, 1981; Zhang, 2005). Possible explanations for these positive abnormal returns are detailed in the following section.

Boubaker et al. (2024), examining the relationship between stock liquidity sidedness and the timing of repurchase transactions, find that upside liquidity (days with positive returns) has a greater influence on repurchase decisions than downside liquidity (days with negative returns). This market liquidity structure also affects the volume of share repurchases discussed above.

Possible Explanations for Positive Abnormal Returns

The literature offers several theories to explain the generally positive market reaction to announcements of open market repurchase programs. Among the most empirically supported are the signaling and undervaluation theory, the agency theory, and the capital structure theory, each discussed below.

Signaling and Undervaluation Theory

The signaling and undervaluation theory posits that investors react positively to share repurchase announcements because they interpret the announcement as a signal from company management – who possess superior information – that the stock is undervalued. Supporting this, Brav et al. (2005) found in a survey that 86.4% of executives considered stock undervaluation one of the most important factors in their repurchase decisions. Additionally, studies have shown that companies often repurchase shares after a decline in their stock prices (Ikenberry et al., 1995; Peyer and Vermaelen, 2009). Moreover, Peyer and Vermaelen (2009) observed that companies with the worst stock performance before repurchases achieve the highest abnormal returns in the period following the buyback.

A critical foundation of the theory is that false signaling through share repurchases is unlikely because it is highly costly (Bhattacharya and Jacobsen, 2016). Repurchasing overvalued shares results in a loss for the company, reducing future stock prices and the wealth of shareholders, including company executives. Consequently, buybacks are regarded as credible signals of undervaluation.

It is important to note, however, that the signaling and undervaluation theory is more complex for open market repurchases than for other types of buybacks. An open market repurchase announcement represents only an option, not an obligation, to buy back shares. As a result, such announcements provide weaker signals of undervaluation compared to other types of buybacks, as the cost of false signaling is lower (Grullon and Ikenberry, 2000; Rau and Vermaelen, 2002).

Huang et al. (2025) support the signaling theory in their study, concluding – based on Chinese share repurchase data – that economic policy uncertainty increases share buybacks. This phenomenon supports the presence of a "signaling" motive, in contrast to the "precautionary" motive observed under similar conditions in developed capital markets, which tends to reduce repurchases.

Also related to these theories are studies examining the effects of share repurchases on market efficiency (e.g., Ren et al., 2024; Huang and Jin, 2024). These findings suggest that share buybacks can enhance pricing efficiency in capital markets by increasing liquidity and improving the quality of information disclosure. This is particularly true for firms with weaker corporate governance structures and higher levels of information asymmetry.

Agency Theory

The agency theory offers another explanation for the positive market reactions to share repurchase announcements. It suggests that these programs mitigate the agency problem, wherein company managers might invest in negative net present value (NPV) projects when excess cash reserves are available. By returning cash to shareholders, repurchases reduce the free cash flow at the managers' disposal, thereby limiting the potential for inefficient investments (Jensen, 1986; Easterbrook, 1984).

Under this theory, share repurchase announcements signal not the undervaluation of the firm but rather the management's commitment to minimizing risks associated with high free cash flow. According to Grullon and Michaely (2004), this signal is particularly important to investors when a company transitions from its growth phase to the maturity phase of its life cycle, characterized by fewer profitable investment opportunities. Their analysis of open market repurchases between 1980 and 1997 found that firms prone to overspending and making imprudent investments achieved higher abnormal returns following repurchase announcements.

Ye et al. (2024) find evidence in the Chinese stock market that share repurchases effectively reduce firms' cash flow holdings, particularly among companies with better financial capabilities. This result illustrates the motivational mechanism of the agency theory.

Capital Structure Theory

The capital structure theory posits that positive abnormal returns from share repurchase announcements can be attributed to their impact on a company's leverage ratio. Repurchases increase leverage by reducing equity, which enhances the proportion of debt financing (Grullon and Ikenberry, 2000). However, excessively high debt levels introduce costs such as financial distress and bankruptcy risk. When a company's leverage ratio is below the optimal level, a repurchase announcement can positively influence share prices.

Empirical evidence supports this theory. Hovakimian et al. (2001) analyzed corporate capital structure policies between 1979 and 1997, finding that firms with leverage ratios below the optimal level were more likely to repurchase shares. This indicates that capital structure adjustments play a critical role in corporate repurchase decisions.

Further validation comes from Dittmar (2000), who introduced the "LEVER" variable – representing the difference between a company's net debt-to-assets ratio

and the industry median – and demonstrated that, between 1987 and 1996, firms used share repurchases to optimize their debt ratios.

Addressing more recent developments, Aramonte (2020) observed a significant increase in leverage among non-financial corporations between 2010 and 2019, which also raised the debt target levels characteristic of various industries. Companies that did not adjust their capital structures accordingly engaged in larger share repurchase programs to align with these new benchmarks. This phenomenon gained prominence during the COVID-19 pandemic, as firms with higher leverage ratios experienced greater losses in capital markets following the crisis's onset in March 2020.

Wang et al. (2024) also investigate the extent to which firms use share repurchases as a tool to achieve their target capital structure. Analyzing the post-legalization period of share buybacks across 17 global economies, they find that firms with relatively low leverage were more likely to repurchase their own shares, doing so with the objective of reaching their targeted capital structure.

Methodology

This chapter details the methodology used to address the research questions. First, it explains the application of event study methodology to estimate the short-term market impact of open market repurchase announcements. Subsequently, it discusses the linear regressions compiled to test theories and hypotheses related to factors influencing short-term market effects.

Event Study

The foundations of event study analysis were laid by Fama et al. (1969), while its application in scientific research, and its various approaches were summarized in MacKinlay's (1997) study. Since then, this methodology has become widely utilized across numerous economic questions, such as in cryptocurrency analysis (Czeczeli and Vilonya, 2022), economic policy issues (Lehmann et al., 2023), the impact of COVID-19 (Kökény et al., 2022), central bank communications (Neszveda and Siket2023), or examining the effects of the Russia-Ukraine conflict (Kovács et al., 2024).

The first step of the methodology involves defining the so-called event window, which represents the period during which the analyzed event may potentially affect the prices of related financial instruments. Naturally, the day of the announcement is a mandatory element; however, determining the length of the event window is far from straightforward. Choosing a longer event window increases the risk of distortion from factors unrelated to the analyzed event but can capture delayed or non-immediate market reactions. In contrast, a shorter event window focuses strongly on the event and is less likely to be influenced by potential confounding factors (e.g., other news or announcements). Balancing these considerations, a relatively short event window starting one day before and ending one day after the announcement

([-1, +1]) was selected. This three-day window also facilitates comparisons with prior studies, as most academics have similarly opted for this duration.

The second step involves selecting the estimation window, used to estimate the expected normal returns of the financial instrument related to the analyzed event. Based on academic standards, a 250-trading-day estimation window, roughly equivalent to one year, was chosen. This duration is deemed sufficient to provide an accurate estimate of expected normal returns. To avoid the analyzed event influencing the estimated normal returns, the two windows do not overlap. The estimation window ([-256, -6]) ends five days before the start of the event window. It is crucial for the estimation window to be neither too far from the event (to ensure the model is based on recent data) nor too close (to avoid potential pre-event price adjustments if the market begins to price in the event's outcome before its announcement) (Granát et al., 2024).

The next step involves estimating the expected normal returns (excluding the event's impact). Two commonly used methods are averaging returns over the estimation window or applying the market model. In addition to these, there are several other expected return models that are less commonly used in the literature. These include, for example, the CAPM (Capital Asset Pricing Model), which uses the market excess return as the sole factor, as well as multifactor models, which incorporate not only the market excess return but also other stock-specific factors to estimate expected returns. According to MacKinlay (1997), the market model, also utilized in Fama et al.'s (1969) foundational work, proves to be the most reliable. Hence, this study employs the market model for estimation.

According to the market model, the following equation must first be estimated for each stock in the sample, where R_{it} represents the logarithmic return of security i in period t, and R_{mt} denotes the logarithmic return of the market portfolio in period t:

$$R_{it}=\alpha_i + \beta_i R_{mt} +\varepsilon_{it} \tag{1}$$

Given that the sample covers leading European stocks, the STOXX Europe 600 index is used as the market portfolio. The α_i and β_i parameters are estimated using ordinary least squares (OLS) regression over the estimation window.

Using the estimated α_i and β_i parameters from Equation (1), the expected normal return for any security i during the event window is calculated as follows:

$$NR_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \tag{2}$$

The abnormal returns (AR_{it}) describing the event's adjusted market impact are calculated as the difference between the observed actual returns (R_{it}) and the expected normal returns estimated via Equation (2):

$$AR_{it} = R_{it} - NR_{it} \tag{3}$$

To quantify the market impact over the entire event window, cumulative abnormal returns (CAR_i) are calculated by summing the abnormal returns from the start (t_1) to the end (t_2) of the event window:

$$CAR_i = \sum_{t_1}^{t_2} AR_{it} \tag{4}$$

To assess the collective market impact of all events rather than just one, the cumulative average abnormal return (CAAR) is computed as follows:

$$CAAR = \frac{\sum_{i=1}^{N} CAR_i}{N} \tag{5}$$

Finally, the statistical significance of the average cumulative abnormal returns is tested using the following *t*-test:

$$t_{CAAR} = \sqrt{N}\frac{CAAR}{s_{CAAR}} \tag{6}$$

where S^2_{CAAR} is the variance of the CAAR, calculated as follows:

$$S^2_{CAAR} = \frac{1}{N-1}\Sigma_{i=1}^{N}(CAR_i - CAAR)^2 \tag{7}$$

Regression Analysis

After calculating the cumulative abnormal returns (CAR) quantifying the short-term market impacts of stock repurchase announcements, we test theories and hypotheses regarding firm-specific factors that may influence CARs using linear regressions.

Methodology for Testing the Signaling and Undervaluation Theory

The signaling and undervaluation theory, detailed in Section 2.2.1, is tested using the price-to-book (P/BV) ratios and market capitalizations of the companies in the sample.

According to the theory, when management announces an open market repurchase, it signals to the market that the stock is undervalued based on the information available to them. The relevance of the P/BV ratio lies in its ability to indicate whether a company is over- or undervalued. A P/BV ratio above 1 suggests that the company is valued by the market above its book value, while a ratio below 1 indicates the opposite. In cases of undervaluation, the market is expected to interpret the announcement as a stronger signal, leading to a significant negative relationship between the P/BV ratio and cumulative abnormal returns in the following regression:

$$CAR[-1,+1] = \alpha + \beta_{P/BV} + \varepsilon \qquad \text{(Modell A)}$$

For market capitalization, the hypothesis is that smaller firms receive less attention from the market and analysts, making them more prone to mispricing.

Consequently, the market is expected to interpret announcements by smaller firms as stronger signals. Thus, a significant negative relationship is also expected between the natural logarithm of market capitalization and cumulative abnormal returns:

$$CAR[-1,+1] = \alpha + \beta_{pk} + \varepsilon \qquad \text{(Modell B)}$$

Methodology for Testing the Principal-Agent Theory

The principal-agent theory, discussed in detail in Section 2.2.2, is tested using the free cash flow (FCF) levels and return on assets (RoA) of the companies in the sample.

According to the theory, managers of mature firms with fewer profitable investment opportunities tend to spend the company's free cash flow on unprofitable projects. When firms with high levels of free cash flow announce open market repurchases, the market is likely to view the announcement more favorably, as funds that could otherwise be spent on poor investments are returned to shareholders through buybacks. Therefore, a significant positive relationship is expected between FCF and cumulative abnormal returns in the following regression:

$$CAR[-1,+1] = \alpha + \beta_{FCF} + \varepsilon \qquad \text{(Modell C)}$$

Since firms in the mature stage of their lifecycle generally have lower RoA, a significant negative relationship is expected between the explanatory variable and the outcome in the following regression:

$$CAR[-1,+1] = \alpha + \beta_{RoA} + \varepsilon \qquad \text{(Modell D)}$$

Methodology for Testing the Capital Structure Theory

The capital structure theory, detailed in Section 2.2.3, is tested using the leverage ratio (LR), calculated as the ratio of total liabilities to total assets for the companies in the sample.

Theory suggests that for low-leverage firms, the market rewards the relatively increased debt levels resulting from stock repurchases, as they provide cheaper financing options. Conversely, for high-leverage firms, the market factors in the increased bankruptcy risk premium associated with the additional debt burden.

Thus, the following regression is employed, where a significant negative relationship between the variables is expected:

$$CAR[-1,+1] = \alpha + \beta_{LR} + \varepsilon \qquad \text{(Modell E)}$$

Data and descriptive statistics

The data collection process involved retrieving the exact dates of stock repurchase announcements from the Bloomberg database for the top 100 companies with the highest weight in the Stoxx Europe 600 stock index. Out of the selected 100 companies, Bloomberg identified at least one stock repurchase announcement for 76 firms. In cases where multiple dates were available for a single company, the most recent announcement was included in the sample.

According to Table 1, over half of the 76-sample announcements occurred in 2023, while more than a quarter were made in 2024. Additionally, it is evident that companies from France, Germany, and the United Kingdom collectively account for more than 60% of the sample.

Table 1: Frequency of observations by country and year of announcement

Country	Year of announcement			All years
	2020–2022	2023	2024	
France	4	13	1	**18**
Germany	3	5	5	**13**
UK	4	7	7	**18**
Other countries	5	14	8	**27**
All countries	**16**	**39**	**21**	**76**

Source: own compilation

To conduct the event study, daily adjusted closing stock prices were retrieved from the Yahoo Finance online database. These adjusted closing prices account for stock splits and dividend payments, eliminating potential distortions in the data.

Following the execution of 76 event analyses, the resulting 3-day cumulative abnormal returns (CARs) serve as the dependent variable for further analysis. Financial ratios (explanatory variables) for the 76 observations were also sourced from the Bloomberg database, consistent with the methodology for gathering stock repurchase announcement data.

The descriptive statistics for the six relevant datasets are summarized in Table 2. The 3-day CARs exhibited a relatively wide range, with fluctuations exceeding 20 percentage points. In the short term, individual stocks experienced abnormal returns as high as 12.471%, while some incurred abnormal losses up to 9.513%. On average, announcements yielded an abnormal gain of 1.112%.

The average price-to-book (P/BV) ratio of 4.333 and the median of 2.005 indicate that leading European companies generally possess market valuations significantly above their book values, suggesting a predominance of growth stocks in the sample.

Although the logarithmic market capitalization values are less intuitive to interpret, the relatively low standard deviation of 0.666 compared to an average

of 11.092 highlights the homogeneity of the sample. This is likely a result of the sampling methodology.

The mean free cash flow-to-assets ratio of 6.570% and return-on-assets (RoA) of 5.793% confirm that leading European firms are, on average, profitable and maintain positive free cash flow.

Regarding capital structures, the average leverage ratio (LR) of 0.672 reveals that sample companies, on average, have higher liability levels than equity. Notably, the most extreme capital structure in the sample shows that 96.6% of the firm's assets on its balance sheet are funded by liabilities.

Table 2: Descriptive statistical summary of the cumulative abnormal returns (dependent variable) and the financial indicators (independent variables)

Variable	Mean	Median	SD	Minimum	Maximum
CAR[-1,+1] (%)	1.112	1.051	3.671	-9.513	12.471
P/BV ratio	4.333	2.005	5.701	0.449	29.207
ln(Market capitalisation) (USD)	11.092	11.003	0.666	10.062	13.043
(FCF/Total Assets) (%)	6.570	6.208	5.891	-2.560	32.897
RoA (%)	5.793	5.399	5.514	-5.554	30.116
Leverage ratio	0.672	0.661	0.182	0.180	0.966

Source: own compilation

Empirical results

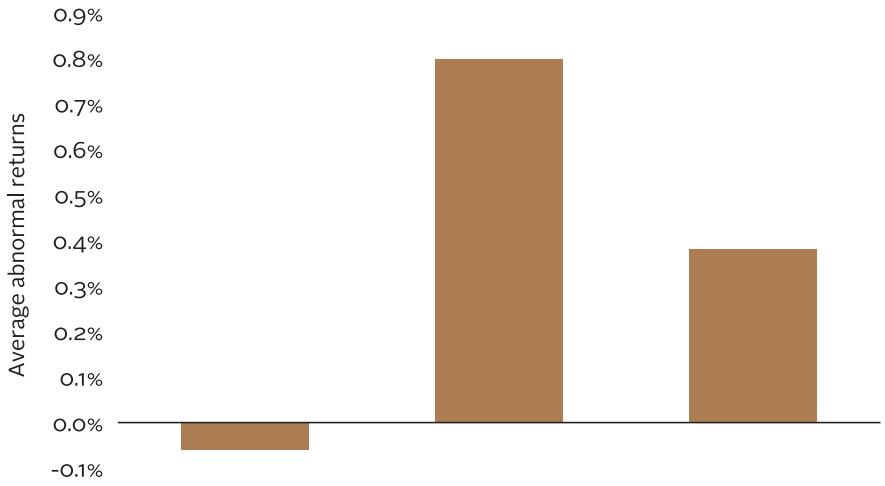
The empirical results of the research begin with an analysis of the abnormal returns obtained for the full sample of 76 observations, aiming to understand the short-term market impacts following open-market share repurchase announcements. This is followed by the statistical testing results of the theories and hypotheses discussed in Chapter 2, based on the conclusions of the regression analysis. Alongside the presentation of our own calculations, we also reflect on the findings of previous studies in the literature.

Short-Term Market Effects of Share Repurchase Announcements

On the first day of the 3-day event window, corresponding to the trading day prior to the open-market repurchase announcement, the average abnormal return was minimally negative, at -0.06%. As expected, the announcement day exhibited the highest average abnormal return within the event window, reaching 0.80%. On the day following the announcement, a positive but lower average abnormal return of 0.38% was observed.

The pattern illustrated in Figure 1 – underperformance before the announcement, a breakout on the announcement day, followed by a positive but lower abnormal return – is fully consistent with the established literature (Ikenberry et al., 1995; Peyer and Vermaelen, 2009; Yu, 2024; Huang et al., 2023).

Chart 1: Cumulative average abnormal returns in the event window



Source: own compilation

The 3-day average cumulative abnormal return (CAR), calculated as the sum of the average daily abnormal returns, is 1.11%. According to the performed t-test, which yielded a t-value of 2.62 and a p-value of 0.01, this result is statistically significant at the conventional 5% significance level.

While the result is statistically significant, the magnitude of the abnormal returns is substantially lower than the 3–3.5% typically observed for open-market repurchases in the United States during a 3-day event window (e.g., Grullon and Michaely, 2004; Ikenberry et al., 1995; Peyer and Vermaelen, 2009). This phenomenon is consistently supported by research focusing on companies in European capital markets. Manconi et al. (2014), examining announcements from 32 countries between 1998 and 2008, found an average CAR of only 1.27%. Andriosopoulos and Lasfer (2015), studying firms from the UK, France, and Germany between 1997 and 2006, identified a slightly higher average positive market reaction of 1.55%. Most recently, Anolick et al. (2021) reported a CAR of 1.37% within the range defined by these two values, based on an analysis covering January 2000 to June 2017.

The 1.11% market effect identified in this study not only lags behind the U.S. figures but is also marginally lower than the European benchmarks. Compared to the study by Andriosopoulos and Lasfer (2015), which serves as the most relevant point of reference due to the composition of its sample, the difference is 44 basis points.

To understand this discrepancy, it is crucial to consider that European financial markets have become highly regulated and transparent over the past two decades, primarily due to the efforts of the European Union. A significant milestone in this process was the implementation of the Markets in Financial Instruments Directive (MiFID) on November 1, 2007. MiFID aimed to curb market manipulation and abuse while increasing transparency. Following its adoption across member states, market liquidity improved, informational asymmetry decreased, and the abnormal returns associated with share repurchase announcements significantly declined (Anolick et al., 2021).

Given that Andriosopoulos and Lasfer (2015) analyzed repurchases occurring between 1997 and 2006 – before the MiFID took effect – the observed difference is entirely justified.

Abnormal Returns by Announcement Year

Table 3 groups share repurchases by their announcement year. The 3-day average cumulative abnormal return (CAR) was statistically significantly different from zero at the 5% significance level only for the years 2020 to 2022. The 2.39% CAR for this period exceeds the market reactions of 2023 and 2024 by more than 1.5 percentage points.

Table 3: 3-day cumulative average abnormal returns by country and year of announcement

Category	No. of observations	CAAR[-1,+1] (%)
Full sample	76	1.11 (0.011)
By year of announcement		
2020-2022	16	2.39 (0.035)
2023	39	0.88 (0.090)
2024	21	0.58 (0.556)
By country		
UK	18	0.78 (0.365)
France	18	0.46 (0.425)
Germany	13	0.17 (0.882)
Other countries	27	2.22 (0.014)

Source: own compilation

Note: The numbers in parentheses below the CAARs are p-values.

The significant divergence observed across different years can be readily explained by changes in market conditions during the 2020–2024 period. Anolick et al. (2021) were pioneers in identifying the relationship between market conditions and the market impact of share repurchases. Their empirical findings demonstrated that abnormal returns increase during periods of financial and economic-policy uncertainty in European markets. During such times, repurchase announcements convey confidence to investors and provide a temporary hedge against declining stock prices.

This interpretation is consistent with the findings of Huang et al. (2025), who, based on Chinese data, demonstrated that economic policy uncertainty increases the frequency of share repurchases.

For the 2020 to 2022 period, the significant market reactions can likely be attributed to risks stemming from the COVID-19 pandemic and the outbreak of the Russia-Ukraine war. These events introduced considerable uncertainty, amplifying the positive market impact of share repurchase announcements.

Abnormal Returns at the Country Level

In the country-level grouping (Table 3), there were no statistically significant differences in the average abnormal returns of companies from the most represented nations in the sample – United Kingdom, France, and Germany. Between 1998 and 2008, Manconi et al. (2014) observed higher market impacts in Anglo-Saxon countries, including the United Kingdom, due to differences in legal systems. However, since then, the European Union has largely harmonized financial market regulations, eliminating most legal discrepancies.

Conversely, the stocks of companies from other nations with individually low representation in the sample – Belgium, Denmark, Finland, Italy, Netherlands, Norway, and Switzerland – achieved a statistically significant cumulative average abnormal return of 2.22% at the 5% significance level. Given the significant heterogeneity among these countries, the pronounced market reactions were likely driven by firm-specific factors.

Testing Theories

The theories and hypotheses presented in Chapter 2 were tested using the linear regression models discussed in Chapter 3 (Model A – Model E). The robustness of the results is further supported by multivariate models (Model F – Model I).

Testing the Signaling and Undervaluation Theory

The signaling and undervaluation theory was tested by examining the effects of the P/BV ratios and market capitalizations of the sample's publicly traded companies on cumulative abnormal returns (CARs). According to the hypothesis presented in Section 3.2.1, undervalued and smaller companies are expected to exhibit

higher abnormal returns following share repurchase announcements. Hence, we anticipated a statistically significant negative relationship between CARs and both the P/BV ratio and market capitalization.

According to the regression Model A presented in Table 4, the regression coefficient of 0.001 for the P/BV ratio indicates a non-significant relationship with a sign opposite to expectations. In the full Model F, after controlling for the other explanatory variables, the outcome did not change substantially. Based on Appendix 1, the P/BV ratio shows a strong positive correlation with free cash flow and return on assets, with coefficients of 0.800 and 0.748, respectively. Therefore, in Model G, we excluded these two variables to eliminate potential distortion caused by multicollinearity. The original conclusion remained robust even after this adjustment.

In Model B of Table 4, market capitalization has a regression coefficient with a positive sign. After controlling for other variables (Table 4, Models F – I), the direction of the relationship shifted to negative, aligning with our initial expectations; however, the p-values remained above the significance threshold. Based on the overall findings, the signaling and undervaluation theories were not supported in the case of leading European stocks. The lack of significant results is likely due to the low variance observed in the sample for both the P/BV ratio and market capitalization, as the companies with the largest weights in the Stoxx Europe 600 index typically exhibit high market valuations.

Table 4: Summary of regression models A-I

Independent variable	Model								
	A	B	C	D	E	F	G	H	I
P/BV ratio	0.001 (0.108)					0.003 (0.056)	0.001 (0.124)		
Market capitalization		0.001 (0.835)				-0.004 (0.591)	-0.006 (0.363)	-0.003 (0.685)	-0.005 (0.439)
Free cash-flow			0.042 (0.565)			-0.226 (0.075)		0.005 (0.947)	
RoA				0.001 (0.061)		0.000 (0.860)			0.001 (0.280)
Leverage ratio					-0.053 (0.020)	-0.062 (0.031)	-0.054 (0.024)	-0.056 (0.024)	-0.044 (0.100)
Constant	0.006 (0.261)	-0.004 (0.959)	0.008 (0.192)	0.003 (0.646)	0.047 (0.004)	0.096 (0.229)	0.111 (0.166)	0.080 (0.325)	0.094 (0.234)
Adjusted R-squared	0.021	-0.013	-0.009	0.034	0.058	0.082	0.066	0.034	0.050
Observations	76	76	76	76	76	76	76	76	76

Source: own compilation

Note: The numbers in parentheses below the regression coefficients are p-values.

Testing the Agency Theory

The agency theory was tested by analyzing the impact of free cash flow levels at the end of the year prior to the open-market repurchase announcements and the return on assets (RoA) metric on cumulative abnormal returns (CARs). Based on Section 3.2.2, the agency problem is most pronounced in companies with limited positive net present value investment opportunities, leading to low RoA and high free cash flow levels. Therefore, we expected a statistically significant positive relationship between CARs and free cash flow levels and a statistically significant negative relationship with RoA.

According to regression Model C in Table 4, the free cash flow shows a positive relationship with cumulative abnormal returns, consistent with theoretical expectations; however, the regression coefficient of 0.042 is not statistically significant. In the full Model F, after controlling for the other explanatory variables, the sign of the coefficient turns negative. However, in Model H, after removing the P/BV and RoA indicators, the relationship becomes positive again. This suggests that the sign reversal in Model F may be due to multicollinearity-induced distortion. The RoA indicator's regression coefficient of 0.001 in Model D has a positive sign, indicating a relationship contrary to the hypothesis, and with a p-value of 0.061, it is also not statistically significant at the 5 percent level. The relationship remains robust in Models F and I. Overall; the empirical results do not support the agency theory in the context of leading European stocks.

Testing the Capital Structure Theory

The capital structure theory was evaluated based on the impact of leverage ratios at the end of the year prior to open-market repurchase announcements on CARs. Section 3.2.3 posits that companies with lower leverage ratios underutilize the advantages of debt financing. Repurchase announcements increase leverage ratios, which investors perceive positively. Accordingly, we hypothesized a statistically significant negative relationship between CARs and leverage ratios.

According to regression Model E in Table 4, the leverage ratio has a regression coefficient of -0.053, indicating a negative relationship consistent with prior expectations. This result is also economically significant, as a 0.1 increase in the leverage ratio is associated with an average decrease of 53 basis points in the three-day cumulative abnormal returns following announced open market share repurchases. With a p-value of 0.02, the leverage ratio also statistically significantly explains short-term market reactions. This negative relationship remains significant even after controlling for other explanatory variables (Models F through I in Table 4), holding at the 5 percent significance level in three models and at the 10 percent level in one model.

Further evidence for the capital structure theory is provided by the quartile analysis in Table 5. Companies in the first quartile with the lowest leverage ratios experience an average market reaction of 2.96%, which, with a p-value of 0.001, is

statistically significant. Accordingly, it can be expected that firms with low leverage ratios are more likely to repurchase their shares than other firms. This expectation is supported by the findings of Wang et al. (2024), who concluded that such firms are indeed more likely to engage in share repurchases, doing so with the aim of achieving an optimal capital structure. Conversely, market reactions are not significant for firms in the second quartile, despite still being below the median leverage ratio.

This phenomenon can be attributed to heightened investor sensitivity to leverage ratios during crises, such as the COVID-19 pandemic and the Russia-Ukraine war. For example, higher-leverage companies incurred greater losses in March 2020 as financial markets reacted to the pandemic (Aramonte, 2020). It follows that repurchase announcements only instilled extra confidence in investors if the capital structure remained at a healthy, low-risk level even after the transactions.

Based on the overall outlined picture, the empirical results collectively support the capital structure theory for leading European stocks.

Table 5: 3-day cumulative average abnormal returns by leverage ratio quartiles

Category	No. of observations	CAAR[-1,+1] (%)
Full sample	76	1.11 (0.011)
by leverage ratio quartile		
1 (low)	19	2.96 (0.001)
2	19	0.41 (0.674)
3	19	0.46 (0.543)
4 (high)	19	0.62 (0.488)

Source: own compilation

Note: The numbers in parentheses below the CAARs are p-values.

Conclusions

In our study, we examined the short-term effects of open market share repurchase announcements on stock prices by leading European companies between 2020 and 2024. Across the entire sample, we documented a significant 1.11% average cumulative abnormal return over a 3-day event window. Further analysis of subsamples revealed that market reactions were significant during 2020–2022, amid uncertainties caused by the spread of the COVID-19 pandemic and the outbreak of the Russia-Ukraine war, whereas in calmer market conditions during 2023 and 2024, they were not. This result aligns with the earlier findings of Anolick et al. (2021), which suggested that in the

face of financial and economic policy uncertainties on European markets, repurchase announcements convey particularly strong signals, as they instill confidence in investors and provide temporary hedging against declines in share prices.

At the company level, the differences in market reactions are explained by the capital structure theory. For firms with the lowest leverage ratios, the average cumulative abnormal return following announcements was 2.96%. Investors highly rewarded situations where repurchases could elevate the proportion of debt financing from a low level to a more optimal one. However, the results indicate that during crises (such as the COVID-19 pandemic and the Russia-Ukraine war), market participants placed greater emphasis on leverage ratios than usual. Repurchase announcements significantly boosted confidence in a company only when the capital structure could remain at a low-risk level even after the share transactions.

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Appendix

Appendix 1: Correlation Matrix of Variables Used in Regression Analysis

Variable	CAR[-1;+1]	P/BV ratio	Market capitalization	Free cash-flow	RoA	Leverage ratio
CAR[-1;+1]	1.000					
P/BV ratio	0.186	1.000				
Market capitalization	0.024	0.356	1.000			
Free cash-flow	0.067	0.800	0.432	1.000		
RoA	0.216	0.748	0.429	0.727	1.000	
Leverage ratio	-0.266	-0.147	-0.262	-0.292	-0.495	1.000

Source: own compilation