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Financial Signaling with Open Market Share Repurchases and Private Redemptions

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Abstract

Financial decisions can be used to convey information to uninformed market participants aiming to mitigate pricing inefficiencies. Corporate share repurchases are particularly interesting since they have emerged as an integral component of corporate payout policy with a global spread. The objective of this paper is to quantify the market reaction to the disclosure of buybacks that simultaneously apply open market buyback and private redemption and assess the signaling hypothesis.
The results provide evidence for a positive market reaction following the announcement of this type of repurchase. In the same way the findings support the signaling hypothesis and suggest that the magnitude of the post-announcement price alteration is related to the announcement characteristics.

Zusammenfassung

Finanzielle Entscheidungen können durch die Unternehmensleitung dazu genutzt werden, Investoren zusätzliche Informationen zur Verfügung zu stellen um damit Preisineffizienzen des Marktes abzumildern. Aktienrückkäufe sind besonders interessant, da sie sich in einem globalen Kontext zu eine wichtigen Komponente der betrieblichen Ausschüttungspolitik entwickelt haben. Das Ziel dieses Papiers ist es, (i) die Reaktion der Finanzmärkte auf die Ankündigung von Rückkäufen zu quantifizieren, die gleichzeitig Kapitalmarkttransaktionen und private Rückkäufe einsetzen, sowie (ii) die sogenannte „signaling hypothesis“ zu untersuchen.
Die Ergebnisse belegen eine positive Marktreaktion infolge der Bekanntmachung dieser Art von Rückkäufen. Weiterhin unterstützen die Ergebnisse die Validität der “Signaling Hypothesis” und deuten darauf hin, dass die Magnitude der Preisänderungen nach der Ankündigung mit den begleitenden Merkmalen der Transaktion in Zusammenhang steht.

Key Words: *Share Repurchase, Buyback, Open Market Repurchase, Signaling, Valuation*

JEL Classification: *G14*

1 Introduction

Previous research by Akerlof provides evidence that market inefficiencies result from the asymmetrical distribution of information between market participants (Akerlof, 1970, p. 499f.).
The signaling hypothesis is based upon the inference that information disparities exist between the management and the shareholders of a company which may induce a mispricing of shares (Dittmar, 2000, p. 334). It implies that financial decisions, such as changes in corporate payout policy, can be used by economic agents to provide information with regard to the underlying firm value to market participants aiming to mitigate these information asymmetries and induce a correction of the previously erroneous valuation.

In view of corporate share repurchases, the announcement of a buyback program is assumed to convey favorable information about the future prospects of the company or an indication of a current mispricing that the company aims to take advantage of. Following this line of thought, the market perceives the announcement of the repurchase program as a positive signal suggesting that the stock is undervalued (Dittmar, 2000, p. 334; Miller & Rock, 1985, pp. 1045-1048).

Share repurchases constitute a particularly interesting financial vehicle given their vital role in corporate disbursement policy as well as their global extent (Vermaelen, 2005, p. 171). It can be deduced from empirical research that the announcement of share repurchases is usually accompanied by an increase of share prices. Despite the extent of previous academic work, no research exists on repurchase announcements that apply multiple acquisition techniques simultaneously.

The objective of this paper is to empirically investigate the stock price behavior around the announcement of corporate buybacks that simultaneously entail open market transactions and private redemption.

2 Research Methodology

The empirical analysis employs the event study framework and its underlying assumptions in order to determine whether the disclosure of a buyback program evoked an unexpected shift in the average stock price development. The observed stock returns during a predefined time period surrounding the announcement date are opposed to the returns that would have been expected based upon a benchmark model (McWilliams & Siegel, 1997, pp. 630-634).

2.1 Implementation

The analysis employs an estimation window of 145 trading days preceding the repurchase announcement. The event period amounts to 11 trading days in order to reduce the likelihood of confounding effects due to simultaneous events. The stock and index price data is transformed into returns using daily observations and continuous compounding (Henderson Jr., 1990, p. 287; Fama, Fisher, Jensen, & Roll, 1969, p. 5).

$$R_{it} = ln(\frac{Price_{it}}{Price_{it-1}}) \qquad (1)$$

The return data for the estimation period is applied to estimate a market model. Despite differences in the degree of refinement, previous studies suggest that the results of simple benchmark models do not considerably deviate from more sophisticated techniques (Brown & Warner, 1985, p. 10; MacKinlay, 1997, p. 17; Henderson Jr., 1990, p. 288). In this regard R_{mt} resembles the return of the associated market index.

$$\hat{R}_{it} = \alpha_i + \beta R_{mt} \leftrightarrow R_{it} = \alpha_i + \beta R_{mt} + \epsilon_{it} \qquad (2)$$

The expected returns during the event window are computed based upon the regression parameters of the market model and the returns of the market index (Fama, Fisher, Jensen, & Roll, 1969, p. 5; McWilliams & Siegel, 1997, p. 628). The unexpected return resembles the share price change that would not have been anticipated without the repurchase announcement (Peterson, 1989, p. 42).

$$\epsilon_{it} = R_{it} - \hat{R}_{it} \qquad (3)$$

Subsequently the abnormal returns are aggregated throughout the sample and different time intervals to investigate whether the event on average evoked a market reaction (MacKinlay, 1997, p. 21; Peterson, 1989, p. 45).

$$AR_t = \frac{1}{N}\sum_{i=1}^{N} \epsilon_{it} \qquad (4)$$

$$CAR_{t1;t2} = \sum_{t1}^{t2} AR_t \qquad (5)$$

2.2 Significance Testing

We use the framework of statistical testing to assess whether the observed market reaction can be attributed to the specific event or is a product of chance. It is analyzed whether the average and cumulative average residuals during the event period exhibit a considerable deviation from the null hypothesis that a repurchase program has no systematic influence on the share price. In this regard, both a parametric and a non-parametric test approach will be employed. The cross-sectional test assumes that daily abnormal returns are normally distributed for all firms. We are testing the Null hypothesis H_0: $AR_t = 0$. The test statistic is defined as the ratio between the average residual and the standard deviation of estimation period excess returns and follows a Student-t distribution with T-d degrees of freedom (Brown & Warner, 1985, p. 7; Serra, 2002, p. 4; Dutta, 2014, p. 138):

$$t - statistic_{AR_t} = \frac{AR_t}{\sigma_{AR_t}} \qquad (6)$$

Where the estimation window standard deviation of average excess returns is defined as follows:

$$\sigma_{AR_t} = \sqrt{\frac{(\sum_{t_e=1}^{T_e}(AR_t - \bar{A})^2}{(T_e - d)}} \qquad (7)$$

$$\bar{A} = \frac{1}{T_e}\sum_{t_e=1}^{T_e} AR_t \qquad (8)$$

In order to test the statistical relevance of cumulative abnormal returns, the test statistic has to be adapted and is defined as follows (Serra 2002, p. 4):

$$t - statistic_{CAR_{t1;t2}} = \frac{CAR_{t1;t2}}{\sigma_{CAR_{t1;t2}}} \qquad (9)$$

Assuming the independence of abnormal returns over time, the standard deviation of cumulative average residuals equals the standard deviation of abnormal returns for individual days multiplied by the square root of time (Serra, 2002, pp. 6-7):

$$\sigma_{CAR_{t1;t2}} = \sqrt{t * \sigma_{AR_t}^2} \qquad (10)$$

However, Brown and Warner provide evidence, that abnormal returns exhibit fat tails and skewness towards the right exposing parametric tests to the risk of rejecting the null hypothesis to frequently allowing for wrong inferences (Dutta, 2014, p. 137; Brown & Warner, 1985, pp. 9-10).
The generalized sign test accounts for asymmetrical distributions by comparing the share of positive abnormal returns during the event window with "the average fraction of stocks with non-negative abnormal returns in the estimation period" (Dutta, 2014, p. 138), defined as:

$$\hat{p} = \frac{1}{N}\sum_{i=1}^{N}\frac{1}{T_e}\sum_{t_e=1}^{T_e} S_{it} \qquad (11)$$

Here, S_{it} assumes the value 1 if the respective abnormal return ϵ_{it} is positive and 0 otherwise (Cowan, 1992, p. 5). Let w denote the number of companies experiencing positive abnormal returns or positive cumulative abnormal return during the event window (Cowan, 1992, pp. 5-6). The test statistic applies the normal approximation to the binomial distribution and is defined as follows:

$$z = \frac{w - N\hat{p}}{\sqrt{N\hat{p}\,(1-\hat{p})}} \qquad (12)$$

3 Data & Results

3.1 Data

The data for the analysis was acquired from the M&A section of the Thomson One database for the time period from 1990 to March 2016. The initial data acquisition comprises 8,267 announcements that simultaneously involve open-market and private redemption. Subsequently the initial sample was reviewed for data completeness and internal consistency to ensure that the data is uncontaminated. This process yielded 4,178 erroneous observations due to the violation of one or several criteria (refer to Appendix 1).

For the remaining 4,089 observations stock and index price data for the combined estimation and event period as well as the USD market value of the company six days prior to the announcement is retrieved from Thomson DataStream. This data is checked to ensure data completeness and exclude possible outliers. This step reports missing or inconsistent data for 479 announcements (refer to Appendix 1).

3.2 Results

The two-stage process of data cleansing provides 3,610 eligible observations for the empirical analysis. Subsequently, the magnitude of the abnormal returns as well as their statistical relevance will be addressed for all announcements in Panel A. Panel B analyzes the dataset based on the percentage of shares sought – the relative size of the program – and is employed to proxy for the credibility of the signal implied in the repurchase announcement. In view of the signaling hypothesis, it is assumed that large programs are costly signals that convey superior information to the markets. Panel C analyzes the dataset with respect to firm size. Taking into consideration the limited coverage by analysts or the financial press, a higher degree of information imbalances is likely to exist for small firms, suggesting an inverse relationship between firm size and announcement returns (Vermaelen, 1981, p. 163f.; Dittmar, 2000, p. 337f.). In the consecutive tables “T-Test” refers to the test statistic of the cross-sectional test, whereas “G-Sign” refers to the generalized sign test. In the following we use the symbol “t” as the respective event time, so that e.g. the notation CAR(t-5;t+5) refers to the sliding window starting 5 days prior and ending 5 days after the event.

The event study results for AR_{t-1} and $CAR_{t-5;t-1}$ are negative and the test statistics imply a systematic average stock price decrease. On days $t = 0$ and $t + 1$ relative to the event date, the sample exhibits a highly significant average price increase of 1.74% and 0.92% respectively. The cumulative abnormal returns over various periods enclosing the event date are positive and significant fluctuating between 2.49% ($CAR_{t-1;t+1}$) and 2.20% ($CAR_{t-5;t+5}$). Since no previous research exists on this mixed repurchase technique, no direct comparison can be drawn. However, the abnormal returns exhibit a similar size as open market repurchases and private redemptions.

Tab. 1: Panel A – Total Sample

Panel A			
Time	**Total Sample**		
	Return	*T-Test*	*G-Sign*
t-1	-0,17%	-2,13	-0,39
t=0	**1,74%**	**21,78**	**18,95**
t+1	**0,92%**	**11,55**	**11,03**
CAR (t-5;t-1)	-1,14%	-6,39	-3,35
CAR (t+1;t+5)	1,61%	9,02	12,09
CAR (t-1;t+1)	**2,49%**	**18,01**	**21,05**
CAR (t-3;t+3)	2,35%	11,13	16,12
CAR (t-5;t+5)	2,20%	8,34	59,83

Source: Author’s calculations; total sample of 3610 repurchase announcements

The event study results for AR_{t-1} and $CAR_{t-5;t-1}$ in Panel B are negative and the test statistics imply a systematic average stock price decrease. On average transactions in the high percentage sought sample entail significant positive abnormal returns of 2.21% and 1.06%, whereas repurchase announcements that aim for less than the median involve a considerably lower market reaction – significant abnormal returns of 1.26% and 0.78% respectively. For the eleven-day event period the high-percentage subsample surges by 2.94% versus 1.46% for the low-percentage sample. In view of the signaling hypothesis, the results provide support for the assumption that larger programs provide superior signals to the market.

Tab. 2: Panel B – Percentage Sought

Panel B						
Time	**High % Sought**			**Low % Sought**		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,09%	-0,81	0,86	-0,25%	-3,27	-1,41
t=0	**2,21%**	**20,25**	**15,45**	**1,26%**	**16,37**	**11,35**
t+1	**1,06%**	**9,73**	**7,12**	**0,78%**	**10,10**	**8,48**
CAR (t-5;t-1)	-1,07%	-4,38	-1,50	-1,21%	-7,02	-3,24
CAR (t+1;t+5)	1,80%	7,38	8,34	1,41%	8,19	8,76
CAR (t-1;t+1)	**3,19%**	**16,84**	**16,44**	**1,79%**	**13,39**	**13,33**
CAR (t-3;t+3)	3,10%	10,73	12,58	1,59%	7,82	10,22
CAR (t-5;t+5)	2,94%	8,13	42,38	1,46%	5,73	42,23

Source: Author's calculations, two subsamples formed according to the median percentage sought

In Panel C the event study results for AR_{t-1} and $CAR_{t-5;t-1}$ are primarily negative and the test statistics partially imply a systematic average stock price decrease prior to the event. On the announcement date and the subsequent trading day, both samples exhibit significant positive ARs – 0.85% and 0.58% for high market value firms and 2.62% and 1.26% for low market value firms respectively. The first subsample exhibits considerably lower returns than the second subsample over all periods (0.89% versus 3.52% for$CAR_{t-5;t+5}$). In view of the signaling hypothesis, the presumption that small firms exhibit a higher degree of information asymmetries is affirmed by the data in Panel C.

Tab. 3: Panel C – Market Value

Panel C						
Time	**High Market Value**			**Low Market Value**		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,34%	-4,81	-1,72	0,00%	-0,01	1,16
t=0	**0,85%**	**12,03**	**10,85**	**2,62%**	**21,90**	**15,95**
t+1	**0,58%**	**8,30**	**8,31**	**1,26%**	**10,48**	**7,29**
t+5	0,10%	1,47	0,54	0,17%	1,41	2,15
CAR (t-5;t-1)	-1,05%	-6,68	-3,36	-1,23%	-4,57	-1,38
CAR (t+1;t+5)	1,09%	6,96	8,88	2,12%	7,90	8,23
CAR (t-1;t+1)	**1,09%**	**8,96**	**12,31**	**3,88%**	**18,69**	**17,45**
CAR (t-3;t+3)	0,96%	5,16	8,26	3,73%	11,76	14,54
CAR (t-5;t+5)	0,89%	3,81	42,63	3,52%	8,84	41,98

Source: Author's calculations, two subsamples formed according to the median market value

3.3 Summary of Results

The results of the event study provide evidence that on average a positive market reaction of different magnitudes can be observed around the announcement of a share repurchase program. According to the applied test statistics this market adjustment is associated with the event itself. The cross-sectional regression provides further empirical support for the dependence of the reaction on parameters such as market value as well as size of repurchase.

4 Conclusions

The analysis of corporate share buybacks is interesting for several reasons. In recent decades share repurchases have emerged as an integral component of corporate payout policy surpassing dividend payments. In addition to that share repurchases have intersections with many disciplines of corporate finance. The objective of this paper was to empirically investigate the stock price behavior around the announcement of share repurchases that involve open market transactions and private redemption simultaneously.

In view of the research question, the results provide evidence that the market perceives the announcement of a share repurchase favorably with CARs ranging from 2.20% to 3.52% for the entire event window. The results are similar using different benchmark models. However, differences exist (refer to Appendix 2). The major share of the price alteration is driven by the abnormal returns $AR_{t=0}$ and AR_{t+1}. In the same way the findings suggest that structural differences exist and the magnitude of the ARs is related to the percentage of shares sought and the market value of the enterprise. According to the applied test statistics the abnormal returns are associated with the event. Taking into account the event study results, return-related in panel B and C suggest the plausibility of the signaling hypothesis as an explanatory approach for the emergence of abnormal returns in share repurchase announcements.

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Appendix

Appendix 1

The sample from the Thomson One database was reviewed according to the following criteria of data completeness and internal consistency:

1. The percentage of shares sought in the repurchase transaction is available.
2. The percentage of shares sought is less than 50% of the shares outstanding.
3. The DataStream code of the disclosing company is available.
4. The respective acquisition technique is the only form of the deal reported in the disclosure.
5. The name and DataStream code of the acquirer correspond to those of the target.

The data for stock and index prices as well as the USD-market values derived from Thomson DataStream are checked against the following conditions:

1. Stock and index price data is available in DataStream for all days.
2. The market value of each company is available six days prior to the announcement
3. Disclosures for which the daily returns during the combined estimation and event window period exhibit a zero standard deviation or zero returns on more than half of the trading days imply no or a limited liquidity and are excluded from the analysis.
4. Announcements with daily returns of more than 100% are considered outliers and will be excluded from the analysis.

Appendix 2

The mean-adjusted model assumes that the mean return of a given security is constant through time (MacKinlay, 1997, p. 15):

$$\hat{R}_{it} = \frac{1}{T}\sum_{t_{te=1}}^{T_e} R_{it} \qquad (13)$$

According to the market-adjusted approach, the expected return equals the market return on the respective day (Brown & Warner, 1985, p. 7; MacKinlay, 1997, p. 18):

$$\hat{R}_{it} = \alpha_i + \beta R_{mt} \qquad (14)$$

Tab. 4: Panel A – Benchmark model comparison Panel A

Panel A									
	Market Model			**Mean-Adjusted Model**			**Market-Adjusted Model**		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,17%	-2,13	-0,39	-0,18%	-1,89	0,40	-0,24%	-3,03	0,19
t=0	1,74%	21,78	18,95	1,75%	18,67	18,31	1,62%	20,67	21,76
t+1	0,92%	11,55	11,03	0,96%	10,30	11,85	0,81%	10,38	12,41
CAR (t-5;t-1)	-1,14%	-6,39	-3,35	-1,31%	-6,25	-5,30	-1,54%	-8,82	-1,41
CAR (t+1;t+5)	1,61%	9,02	12,09	1,76%	8,42	11,78	1,11%	6,37	12,74
CAR (t-1;t+1)	2,49%	18,01	21,05	2,54%	15,63	19,80	2,19%	16,18	22,62
CAR (t-3;t+3)	2,35%	11,13	16,12	2,36%	9,54	16,37	1,68%	8,13	17,65
CAR (t-5;t+5)	2,20%	8,34	59,83	2,20%	7,09	59,22	1,19%	4,58	64,71

Source: Author’s calculations; total sample of 3610 repurchase announcements

Tab. 5: Panel B – Benchmark model comparison for Panel B - high percentage sought

Panel B - High Percentage Sought									
	Market Model			Mean-Adjusted Model			Market-Adjusted Model		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,09%	-0,81	0,86	-0,08%	-0,65	0,78	-0,16%	-1,47	1,13
t=0	2,21%	20,25	15,45	2,18%	17,37	14,43	2,10%	19,26	17,51
t+1	1,06%	9,73	7,12	1,11%	8,85	8,08	0,94%	8,66	7,97
CAR (t-5;t-1)	-1,07%	-4,38	-1,50	-1,20%	-4,29	-2,85	-1,54%	-6,34	0,61
CAR (t+1;t+5)	1,80%	7,38	8,34	1,96%	6,98	8,08	1,28%	5,24	8,87
CAR (t-1;t+1)	3,19%	16,84	16,44	3,20%	14,76	15,00	2,88%	15,27	18,45
CAR (t-3;t+3)	3,10%	10,73	12,58	3,09%	9,32	12,50	2,37%	8,21	14,82
CAR (t-5;t+5)	2,94%	8,13	42,38	2,93%	7,06	41,92	1,83%	5,07	45,84

Source: Author's calculations, subsample of 1805 announcements above median percentage sought

Tab. 6: Panel B – Benchmark model comparison for Panel B - low percentage sought

Panel B - Low Percentage Sought									
	Market Model			Mean-Adjusted Model			Market-Adjusted Model		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,25%	-3,27	-1,41	-0,27%	-3,07	-0,22	-0,31%	-3,99	-0,86
t=0	1,26%	16,37	11,35	1,32%	14,82	11,46	1,13%	14,37	13,26
t+1	0,78%	10,10	8,48	0,82%	9,21	8,68	0,68%	8,63	9,58
CAR (t-5;t-1)	-1,21%	-7,02	-3,24	-1,42%	-7,11	-4,64	-1,54%	-8,74	-2,60
CAR (t+1;t+5)	1,41%	8,19	8,76	1,57%	7,88	8,59	0,95%	5,39	9,15
CAR (t-1;t+1)	1,79%	13,39	13,33	1,87%	12,10	13,01	1,50%	10,98	13,54
CAR (t-3;t+3)	1,59%	7,82	10,22	1,64%	6,96	10,66	1,00%	4,78	10,14
CAR (t-5;t+5)	1,46%	5,73	42,23	1,48%	4,99	41,82	0,54%	2,08	45,68

Source: Author's calculations, subsample of 1805 announcements below median percentage sought

Tab. 7: Panel C – Benchmark model comparison for Panel C - high market value

Panel C - High Market Value									
	Market Model			Mean-Adjusted Model			Market-Adjusted Model		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	-0,34%	-4,81	-1,72	-0,38%	-4,54	-1,57	-0,39%	-5,43	-1,73
t=0	0,85%	12,03	10,85	0,87%	10,24	10,05	0,78%	11,06	12,37
t+1	0,58%	8,30	8,31	0,65%	7,72	8,88	0,53%	7,47	9,02
t+5	0,10%	1,47	0,54	0,12%	1,40	1,77	0,05%	0,66	1,38
CAR (t-5;t-1)	-1,05%	-6,68	-3,36	-1,35%	-7,12	-4,63	-1,29%	-8,16	-1,87
CAR (t+1;t+5)	1,09%	6,96	8,88	1,25%	6,59	7,84	0,83%	5,26	9,21
CAR (t-1;t+1)	1,09%	8,96	12,31	1,14%	7,74	10,52	0,93%	7,56	13,27
CAR (t-3;t+3)	0,96%	5,16	8,26	0,92%	4,12	8,55	0,61%	3,25	10,39
CAR (t-5;t+5)	0,89%	3,81	42,63	0,77%	2,73	42,58	0,32%	1,38	45,25

Source: Author's calculations, subsample of 1805 announcements below median market value

Tab. 8: Panel C – Benchmark model comparison for Panel C - low market value

Panel C - Low Market Value									
	Market Model			**Mean-Adjusted Model**			**Market-Adjusted Model**		
	Return	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*	*Return*	*T-Test*	*G-Sign*
t-1	0,00%	-0,01	1,16	0,03%	0,22	2,13	-0,09%	-0,76	2,01
t=0	2,62%	21,90	15,95	2,63%	19,77	15,84	2,45%	20,95	18,40
t+1	1,26%	10,48	7,29	1,28%	9,59	7,88	1,09%	9,36	8,53
t+5	0,17%	1,41	2,15	0,23%	1,74	2,84	0,03%	0,27	2,86
CAR (t-5;t-1)	-1,23%	-4,57	-1,38	-1,27%	-4,27	-2,86	-1,79%	-6,85	-0,12
CAR (t+1;t+5)	2,12%	7,90	8,23	2,28%	7,66	8,82	1,39%	5,34	8,81
CAR (t-1;t+1)	3,88%	18,69	17,45	3,94%	17,08	17,49	3,45%	17,06	18,73
CAR (t-3;t+3)	3,73%	11,76	14,54	3,81%	10,81	14,61	2,75%	8,91	14,58
CAR (t-5;t+5)	3,52%	8,84	41,98	3,64%	8,25	41,18	2,05%	5,30	46,28

Source: Author's calculations, subsample of 1805 announcements below median market value

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