

## THE MARKET VALUATION OF CASH DIVIDENDS\*

### The Citizens Utilities Case Reconsidered

James M. POTERBA

*MIT and NBER, Cambridge, MA 02139, USA*

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This paper re-examines the case of Citizens Utilities, a firm with one class of common stock which pays stock dividends and one which pays taxable cash dividends. John Long's (1978) study of the two shares' relative prices suggests that investors may prefer cash dividends to equal-sized stock dividends. This paper finds that the cash dividend share's ex-day price decline is less than their dividend payment. Stock dividend shares fall by nearly their full dividend. The disparity between ex-day dividend valuation and the observed prices of the two shares is inconsistent with some explanations of the demand for cash dividends.

### 1. Introduction

Financial economists continually debate the influence of taxes on investors' valuation of dividend income. Long's (1978) analysis of the Citizens Utilities Company, a firm which has two classes of common stock, contributes an important empirical finding to this controversy. One class of Citizens Utilities stock pays taxable cash dividends; the other pays stock dividends. These stock dividends are unusual because they are paid on a regular basis and taxed as capital gains.<sup>1</sup> Long's study focuses on the relative prices of the two shares, which provide an almost ideal experiment for measuring the market valuation of taxable cash dividends. He concludes that

'...the price behavior of the two Citizens Utilities (CU) stocks implies that claims to cash dividends have, if anything, commanded a slight

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<sup>1</sup>The Internal Revenue Service generally treats regular stock dividends, or dividends which investors can choose to receive as either cash or stock, as taxable distributions. The unique character of the Citizens Utilities case derives from a set of IRS rulings in 1956. See Long (1978) or Harvard Business School case #9-205-059 (1959) for further details.

premium in the market over claims to equal amounts (before taxes) of capital gains... By a process of elimination, we are left only with the hypothesis that there is a significant demand for cash dividends in spite of a generally lower after-tax total return to investors holding claims to these dividends.' (pp. 262–263)

This paper presents further evidence on the relative valuation of Citizens Utilities' cash and stock dividends. It begins by examining the two shares' relative prices for the period since 1976, the last year included in Long's study. The recent data, described in section 2, provide only weak support for a shareholder preference for cash dividends. They are consistent, however, with equal valuation of cash and stock dividends.

The relative price of the two shares is not the only source of information on the valuation of different types of dividends. The third section examines the two shares' respective price *changes* around ex-dividend days. Analysis of all Citizens Utilities ex-dividend days between January 1965 and June 1984 suggests that cash-dividend shares decline by a smaller fraction of their dividend than do stock-dividend shares. This finding is consistent with the view that marginal investors value capital gains more than equal amounts of pre-tax cash dividends. A brief concluding section discusses the apparent inconsistency between the two shares' relative prices and their ex-day price movements.

## 2. The relative prices of Citizens Utilities shares

Long compares the prices and dividends for Citizens Utilities (CU) Class A (stock dividend) and Class B (cash dividend) shares during the 1956–1976 period. He finds that despite the company's charter, which requires dividend payments of 'equal fair value' on the two shares, CU's annual stock dividend averages 1.097 times its annual cash dividend. Long (1978, p. 255) also finds that the ratio of the two share prices,  $P_A/P_B$ , is 'usually *below* the dividend ratio. During the 1962–76 period, when 90% of the ex-post dividend ratios were above 1.07, over 80% of the monthly price ratios are below 1.07.'

The relative price of the stock dividend shares has been higher since 1976. The ratio of total dividend payments on class A and class B shares during the 1976–84 period was 1.122. The average price ratio was 1.134,<sup>2</sup> although the price ratio was below the average dividend ratio on fifty-five percent of the trading days.<sup>3</sup> These data provide limited support, at best, for Long's conjec-

<sup>2</sup>Asynchronous trading problems could lead to errors in the estimated price ratios. During the 1972–84 period, there were six days (0.18%) on which Class A shares did not trade, and 99 days (3.03%) on which Class B shares experienced zero volume. Non-trading will bias the estimated ratio ( $P_A/P_B$ ) upwards, but this bias is trivial. Details of this calculation are available from the author.

<sup>3</sup>Class A shares may be converted into Class B shares on a one-for-one basis, except around ex-days. This conversion provision keeps  $P_A/P_B$  from falling significantly below 1.0 for any prolonged period.

ture that investors value cash dividend income *more* than capital gains. However, both sets of evidence are strongly inconsistent with the view, advanced by Elton and Gruber (1970) and many others, that investors value dividend income less than capital gains because of higher dividend tax burdens. These findings are consistent with Miller and Scholes' (1978) claim that marginal traders face equal tax burdens on dividends and capital gains.<sup>4</sup>

The relative price of Class A and Class B shares is determined by the demand for taxable cash as opposed to untaxed stock dividends with CU's risk characteristics. Citizens Utilities' investors can choose the tax status of their dividend income. Long (1978, p. 242) explains how this should affect the equilibrium prices of Class A and Class B shares:

'( $P_A/P_B$ ) depends on both the relative supplies of A and B shares and the cross-sectional characteristics of the investor population... If very few investors face strictly higher tax rates on stock dividends than on cash dividends, then equilibrium values of  $P_A/P_B$  should be greater than or equal to the [dividend ratio].  $P_A/P_B$  may equal [the ratio of dividend payments] if demand for series B shares by tax-exempt investors, and from other investors who can costlessly avoid differential taxation of cash dividends and capital gains, is sufficient to exhaust the supply of series B shares.'

Of course, taxes may not be the only consideration in investors' valuation of dividends. Even if the marginal investor in Class B shares faces a higher tax rate on dividends than on capital gains,  $P_A/P_B$  may still equal the dividend ratio.<sup>5</sup> For example, cash dividends may reduce investors' transactions costs in rebalancing their portfolios or in financing consumption expenditures. These factors, by inducing a demand for the receipt of cash dividends, should affect both the relative prices of Class A and Class B shares *and* their respective price movements on ex-dividend days. The hypothesis that marginal investors face equal tax rates on dividends and capital gains cannot be distinguished from the view that dividends, while taxed more heavily than capital gains, are also valued for non-tax reasons.

<sup>4</sup>Miller and Scholes (1978) identify two ways for marginal traders to face equal tax rates on dividends and capital gains. One, which focuses on the value of dividend income in relaxing the interest deduction constraint, has been called into doubt by Feenberg (1981). The second involves trading around ex-days by brokers and dealers, who face equal tax rates on dividends and short-term capital gains. There is some dispute [see Kalay (1982, 1984) and Elton, Gruber and Rentzler (1984)] about the importance of transactions costs in restricting this type of trading. Calculations for the Citizens Utilities case reported in Poterba (1983) suggest that the bid-ask spread is usually large enough to render this trading unprofitable.

<sup>5</sup>Evidence on the shareholding population presented in Long (1978) and Poterba (1983) indicates that a substantial fraction of cash dividend stock is held by investors who appear to face higher marginal tax rates on dividend income than on capital gains. Moreover, the company's annual reports occasionally provide evidence that some investors hold *both* classes of shares!

If cash dividends are as valuable as capital gains, then on ex-days cash dividend shares should decline by the full amount of their dividend payment. Class A shares should always decline by their full dividend, since the stock dividends are essentially taxed as capital gains. However, if the marginal holders of Class B shares value capital gains *more* than dividends, then the observed share price decline on ex-dividend days may be smaller than the dividend payment. The next section investigates the ex-day valuation of dividend income.

### 3. The ex-dividend day behavior of Citizens Utilities shares

Daily averages of closing bid and asked prices for the period January, 1965 through June, 1984 are used to examine ex-day price movements for both classes of Citizens Utilities stock.<sup>6</sup> The data sample includes a total of 3,054 daily observations. I assume that returns on share  $i$  are generated by

$$(g_{it} + \alpha_i d_{it} - \alpha_i r_{ft}) = \beta_i (g_{mt} + \alpha_i d_{mt} - \alpha_i r_{ft}) + \varepsilon_{it}, \quad (1)$$

where  $g_{it}$  is the capital gain on security  $i$  in period  $t$ ,  $d_{it}$  is the dividend yield, and  $g_{mt}$  and  $d_{mt}$  are the market capital gain and yield. The risk-free return is defined by  $r_{ft}$ , and  $\alpha_i$  is the relative value of taxable dividend income vis-a-vis capital gains for share  $i$ 's marginal investors. In daily data, the return variations due to movements in the risk-free rate or the market dividend yield are negligible, and eq. (1) may be approximated by

$$g_{At} = \delta_A + \beta_A g_{mt} - \alpha_A d_{At} + \varepsilon_{At}, \quad (2a)$$

$$g_{Bt} = \delta_B + \beta_B g_{mt} - \alpha_B d_{Bt} + \varepsilon_{Bt}. \quad (2b)$$

Subscripts A and B refer to Class A and Class B shares. The constants capture the average value of terms omitted in the approximation:

$$\delta_i = \alpha_i \beta_i (\bar{d}_m - \bar{r}_f) + \alpha_i \bar{r}_f.$$

Dividend payments were obtained from *Moody's Dividend Record*. The value of stock dividends was computed, following Long's (1978) procedure, as

$$DIV_A = [\delta / (1 + \delta)] \cdot P_A,$$

<sup>6</sup>These data were provided by courtesy of Data Resources, Inc., for the 1972–1984 period. Prior to that, quotations for three days around each ex-day were collected from the *Wall Street Journal*. Prior to 1965, ex-day markers appeared in the paper only sporadically and the data period was therefore limited to post-1965.

Table 1  
Ex-dividend day price movements for Citizens Utilities shares.<sup>a</sup>

Equation	Sample period	Constant ( $\times 10^{-4}$ )	Dividend yield	$R_{MKT}$	$R_{MKT}(-1)$	$R_{CU}$	$R_{CU}(-1)$	$R_{CU}(-2)$	Monday ( $\times 10^{-4}$ )	January ( $\times 10^{-4}$ )	$R^2$	$\psi$ -value
1a	Stock/65-84	4.90 (1.89)	-0.942 (0.056)	0.303 (0.023)	—	—	—	—	—	—	0.133	1.66
1b	Cash/65-84	3.93 (1.84)	-0.785 (0.076)	0.209 (0.022)	—	—	—	—	—	—	0.061	—
2a	Stock/65-84	1.68 (1.64)	-0.930 (0.050)	0.185 (0.021)	—	0.562 (0.015)	—	—	—	—	0.397	2.30
2b	Cash/65-84	1.10 (1.63)	-0.738 (0.067)	0.065 (0.020)	—	0.549 (0.014)	—	—	—	—	0.360	—
3a	Stock/65-84	2.21 (1.91)	-0.921 (0.049)	0.183 (0.020)	—	0.561 (0.015)	—	—	-6.33 (3.97)	10.67 (6.07)	0.397	2.21
3b	Cash/65-84	-0.48 (1.91)	-0.735 (0.068)	0.066 (0.020)	—	0.548 (0.014)	—	—	2.91 (3.94)	11.79 (5.98)	0.361	—
4a	Stock/72-84	4.62 (1.80)	-0.941 (0.057)	0.264 (0.023)	0.221 (0.023)	—	—	—	—	—	0.156	1.52
4b	Cash/72-84	3.58 (1.83)	-0.794 (0.078)	0.179 (0.022)	0.172 (0.023)	—	—	—	—	—	0.080	—
5a	Stock/72-84	1.92 (1.65)	-0.965 (0.052)	0.168 (0.020)	0.116 (0.021)	0.539 (0.016)	0.053 (0.016)	-0.023 (0.015)	—	—	0.399	2.25
5b	Cash/72-84	0.88 (1.65)	-0.766 (0.072)	0.060 (0.020)	0.049 (0.021)	0.536 (0.015)	0.018 (0.015)	0.018 (0.015)	—	—	0.359	—
6a	Stock/72-84	2.70 (1.91)	-0.955 (0.052)	0.165 (0.021)	0.118 (0.021)	0.538 (0.016)	0.051 (0.016)	-0.025 (0.015)	-7.69 (3.99)	11.07 (6.04)	0.401	2.15
6b	Cash/72-84	-0.65 (1.92)	-0.765 (0.072)	0.061 (0.020)	0.048 (0.021)	0.535 (0.015)	0.015 (0.015)	0.017 (0.015)	3.17 (3.98)	10.44 (6.01)	0.360	—

<sup>a</sup>This table reports estimates of eqs (2a) and (2b). The dependent variable is the return on one class of Citizens Utilities stock. The independent variables include  $R_{MKT}$ , the return on the NYSE Index, and  $R_{CU}$ , the return on the other class of CU stock. Each system includes two equations, one for each type of share. All pairs of equations are estimated by the seemingly unrelated regression technique. Systems 1-3 are estimated on daily data for all trading days between 1972:001 and 1984:182, supplemented by data on the ex-dividend days between 1965 and 1971. This yields a total of 3,054 observations. Systems 4-6 are estimated using only the 1972-1984 data, a total of 2,980 observations. Standard errors are reported in parentheses below each coefficient. The  $\psi$ -statistic, reported in the last column, is a test for equality of the dividend yield coefficients on Class A and Class B shares. It is computed as  $\psi = (\hat{\alpha}_A - \hat{\alpha}_B) / \sqrt{\text{var}(\hat{\alpha}_A) + \text{var}(\hat{\alpha}_B)} - 2\text{cov}(\hat{\alpha}_B, \hat{\alpha}_A)^{1/2}$ , and is distributed asymptotically as a standard normal variate under the null hypothesis that  $\alpha_A = \alpha_B$ . The critical value for rejecting the null hypothesis at the 0.05 level is 1.96.

where  $\delta$  is the fractional stock dividend declared (e.g., 0.025) and  $P_A$  is the price of class A stock on the last trading day prior to the ex-dividend day.<sup>7</sup>  $DIV_A$  is the value of the shares which an individual could sell before the ex-day while still holding the same number of shares after the ex-day as before the dividend announcement.

Dividends on Class A and Class B shares differ for two reasons. First, the stock dividend shares pay dividends twice each year, while cash dividends on Class B shares are paid quarterly. Stock dividends are therefore larger than cash payments. The data set includes thirty-three ex-days for stock dividend shares, compared to seventy-four for cash dividend shares. Second, the two shares pay dividends at different times and therefore have different ex-dividend days. This asynchronous dividend pattern is responsible for some fluctuations in the shares' relative price.

Several procedural issues arise in estimating eqs. (2a) and (2b). First, since the same shocks should affect both share prices,  $cov(\epsilon_{A_t}, \epsilon_{B_t}) \neq 0$ . Ordinary least squares estimation can therefore be improved upon by using the seemingly unrelated regressions technique [Zellner (1962)]. Second, if the residual variances change during the sample period, further efficiency gains may be achieved by making a heteroscedasticity correction. The equations reported below are estimated allowing for a simple form of heteroscedasticity in which the variances of  $\epsilon_{A_t}$  and  $\epsilon_{B_t}$  changed every two years.<sup>8</sup> Third, the unexplained variations in returns may also be reduced by adding lagged returns on both the market and the other class of CU stock to eqs. (2a) and (2b). Lagged market returns are likely to be correlated with current CU returns if these shares trade infrequently. Finally, the specification includes indicator variables for Mondays and for the month of January to control for well-known return anomalies.<sup>9</sup>

Ex-dividend equations for Citizens Utilities shares are reported in table 1. Payment of a one dollar stock dividend reduces Class A share prices by about ninety-five cents. By comparison, cash dividend share prices decline by only about seventy-five cents when a one dollar dividend is paid. The hypothesis that stock dividends and capital gains are valued equally cannot be rejected in any of the estimated models, while the hypothesis that cash dividends and capital gains are valued equally is always rejected.

Various specifications are reported in table 1. The equations in the first two rows correspond to (2a) and (2b), estimated for the full sample period. The second pair of equations introduces the return on the other class of CU stock

<sup>7</sup>Long (1978) uses the share price on the dividend declaration day rather than the day prior to the ex-day. For computing the ex-day return, it is natural to use my procedure. The two procedures yield nearly identical results for the data period since 1972.

<sup>8</sup>The correlation between  $\epsilon_A$  and  $\epsilon_B$  is constrained to be constant for the whole time period while letting the variances change. Standard tests, such as White's (1980), clearly reject the null hypothesis of homoscedasticity in both equations.

<sup>9</sup>Eades, Hess and Kim (1984) investigate possible relationships between day-of-the-week effects and ex-day returns.

into the return-generating model. This dramatically improves the explanatory power of each equation, but it does not alter the conclusions regarding the relative valuation of cash dividends and capital gains.<sup>10</sup> The third pair of equations includes the other CU return as well as January and Monday dummy variables. There are substantial positive excess returns on both shares in January, consistent with the usual 'January effect' finding. The pattern of Monday returns, however, is different for the two shares. Stock dividend shares exhibit abnormally low returns which are nearly significant at the 0.05 level, while cash dividend shares yield insignificant positive returns. Adding these variables does not affect the estimated value of cash versus stock dividends.

The last six rows of table 1 report estimates of the same equations for the period 1972–1984. During this interval, lagged market returns as well as lagged values of returns on the other CU stock could be added to the equations. The results continue to suggest larger relative ex-day declines for stock dividend than for cash dividend shares. Estimating the equations for the post-1975 period, when negotiated commissions should have lowered the cost of ex-day trading also yielded results similar to those for the whole sample.<sup>11</sup>

The data provide clear evidence that cash- and stock-dividend shares exhibit different ex-day behavior. Bailey (1983) reports similar findings in a study of cash and stock dividend shares traded on the Toronto Stock Exchange. In contrast, Eades, Hess and Kim (1984) find significant excess returns on stock dividend ex-days. The difference between their results and those in the present study may be linked to the occasional nature of many of the stock dividends and stock splits in their sample. Some investors may be confused regarding the tax status of these dividends. Further research along these lines is clearly required.

Many previous studies identify spurious factors which may contaminate inferences about ex-day share price movements. I tried to evaluate their importance in the Citizens Utilities case. First, Black and Scholes (1973) argue that non-trading around ex-days could induce spurious excess returns. The present data reveal only the one ex-day (for Class B shares) without trades on both the day prior to the ex-day and the ex-day itself. Omitting this observation has virtually no effect on the estimated ex-day price movements. Second, Eades, Hess, and Kim (1984) suggest that dividend announcements could also lead to erroneous estimates.<sup>12</sup> With one exception, Citizens Utilities' dividend

<sup>10</sup> Poterba (1983) reports equations constraining the coefficient on the other CU return to equal unity, yielding results similar to those discussed here.

<sup>11</sup> Poterba (1983) reports these tests in greater detail. Eades, Hess and Kim (1984) suggest that negotiated commissions after 1975 lowered the cost of ex-day trading, and therefore altered the behavior of share prices around ex-days. The absence of any effect for CU is consistent with the view that bid–ask spreads are large enough, even without any commission costs, to deter ex-day trading.

<sup>12</sup> They also explore day-of-the-week effects. Forty eight percent of Class A ex-days occurred on Mondays, compared with thirty-five percent of the ex-days for Class B shares. As the results in table 1 reveal, including a dummy variable for Mondays does not affect the estimated ex-day price drop.

announcements occurred well before the ex-day. Once again, omitting this observation did not alter the results. Finally, Eades, Hess and Kim also discover an 'ex-dividend period anomaly,' unusual return patterns *around* the ex-day. I follow their approach and test for these return patterns by studying excess returns on the five days before and after each ex-dividend day. The hypothesis that there are no return anomalies on these days can not be rejected for either share.<sup>13</sup>

On ex-days, the pre-tax return on cash dividend shares exceeds that on stock dividend shares. Between ex-dividend days, however, the return on cash shares is slightly lower than that on stock dividend shares. Between 1972 and 1984, the average annual pre-tax return on cash dividend shares was 12.4 percent, compared with 13.9 percent on stock dividend shares. I investigate the timing of these differential returns by estimating the excess return on each class of CU shares, relative to the market index, during the month before and after each ex-day. Stock dividend shares seem to earn positive abnormal returns during the twenty trading days before the ex-day, and negative abnormal returns during the twenty days afterwards. A different pattern emerges for cash dividend shares, which earn negative abnormal returns in *both* the month before and the month after the ex-day. The prevalence of negative excess returns on Class B shares may suggest that investors require lower returns on these shares than on Class A securities.

#### 4. Interpretation and conclusion

The ex-day results suggest that a one dollar cash dividend on Class B shares is valued less than a one dollar stock dividend on Class A shares. This seems inconsistent with the roughly equal dividend-adjusted relative prices of the two shares. One potential resolution of this paradox argues that the special tax treatment of Class A shares' dividends may not persist. The prices of the two shares need not satisfy  $P_A/P_B = (\alpha_A/\alpha_B)\kappa$ , where  $\kappa$  is the ratio of the dividends paid on the two shares, unless both shares receive their current tax treatment forever. Ex-day price movements should reflect *current* tax rates on dividends and capital gains, but the share prices should depend on both current and future tax provisions. Under current law, the special status of Class A shares will expire in 1990,<sup>14</sup> and all dividends (cash or stock) paid by

<sup>13</sup>The only individual days around the ex-day which exhibit statistically significant abnormal returns are: Class A shares, excess returns equal to 0.18, 0.16, and  $-0.14$  times the dividend payment on the day before, three days after, and four days after the ex-day; Class B shares,  $-0.166$  and  $-0.177$  times the dividend three days before and four days after the ex-day. However, the joint hypothesis of no abnormal returns can never be rejected. Moreover, the days which had large excess returns vary across data subsamples, suggesting the possibly spurious character of these results.

<sup>14</sup>This is detailed in Long (1978), and a discussion of the present value of tax savings is found in Poterba (1983). The managers of CU appear confident, however, that they will win an extension of Class A's special treatment.

Citizens Utilities will be subject to ordinary income taxation. If investors account for the future expiration of Class A status, then the price ratio  $P_A/P_B$  will be less than  $(\alpha_A/\alpha_B)\kappa$ .

The 'expiration effect' suffers from one significant shortcoming as an explanation of the differences between measured prices and ex-day movements. It predicts that the relative price of the two shares should have narrowed over time, as the expiration date approaches. However, the price difference between the shares, relative to the dividend differential, has in fact widened in recent years. Stock dividend shares have risen relative to cash dividend shares.

This leaves an apparent inconsistency between the relative ex-day valuations and the relative prices of the two classes of Citizens Utilities stock. The market places a higher value on a dollar of stock dividends than on an equal amount of cash dividends, but the average prices of the two shares reflect roughly equal valuation. Although this inconsistency may be impossible to resolve completely, it is possible to sketch a class of explanations which would suffice. If investors applied different discount rates to the after-tax income from cash-dividend and stock-dividend securities, then the differential valuation of each dividend payment might still be consistent with equal share prices.<sup>15</sup> Possible reasons for dividends to affect discount rates include signalling, agency problems, or the desire to avoid regret from selling stock dividends.<sup>16</sup>

Unfortunately, most theories which could explain a dependence between discount rates and dividend policy appear incapable of explaining the facts in the Citizens Utilities case. For example, theories which hinge on the information which dividends transmit from managers to shareholders must confront the fact that stock-dividend shareholders receive the same information as cash-dividend shareholders. The differential valuation of the two shares is therefore difficult to explain using signalling models. Similar arguments apply to agency-cost and monitoring models.

The failure of currently available explanations, however, does not detract from the basic argument that investors could demand cash dividends for either of two reasons. They might value cash dividend *income*, as in models where transactions costs are important, or they might value certain firm attributes which are correlated with cash dividend payments. The first set of explanations predicts that on ex-dividend days, share prices should decline by the full amount of cash dividends. The second class of theories, however, could explain why firms pay dividends *even though* shareholders value each cash dividend less than a comparable amount of capital gains. Although the first class of explanations appears to be inappropriate in the Citizens Utilities case, the second type of model would reconcile the findings of Long (1978) with those

<sup>15</sup>Poterba and Summers (1985) explore a model in which cash dividend payments affect shareholders' required returns.

<sup>16</sup>Further discussion of these motives for investors to value firms which pay dividends, as opposed to the dividends themselves, can be found in Bhattacharya (1979), Vishny and Shleifer (1984), Easterbrook (1984), Shefrin and Statman (1984), and Feldstein and Green (1983).

reported here. The ex-day results may therefore provide some guidance in searching for an explanation of why firms pay dividends.<sup>17</sup>

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<sup>17</sup>The results presented here suggest a possibly negative relationship between a firm's dividend yield and its required after-tax return. Additional research should consider the differential returns *between* ex-days on securities which do and do not pay cash dividends. Work along these lines includes Rosenberg and Marathe (1979), Elton, Gruber and Rentzler (1983), Blume (1980), and Keim (1985).

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