

Further Evidence of the Effect of Stock Splits on the Securities Market, Does a “Wal-Mart Effect” Exist?

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Recent research has investigated whether or not there is a distinct “Wal-Mart Effect” in the securities market. That is, does Wal-Mart possess an advantage over its competitors in analyzing security prices? A factor associated with this notion centers around the numerous stock splits by Wal-Mart during its corporate life. This study compares Wal-Mart to all other firms in the retail trade industry that have had multiple stock splits. Results of this study show that Wal-Mart still maintains an advantage over its competitors with respect to information content of a wealth measure. When comparing firms with multiple stock splits to all other firms in the same industry, firms with multiple stock splits have a similar advantage. These findings establish a basis for concluding that, on whole, firms that have multiple stock splits over their corporate life are more likely to possess more significant information content of wealth when linked to security prices than firms with fewer or no multiple stock splits.

As far back as the original Ball and Brown (1968) study, there have been a multitude of studies that empirically link unexpected earnings with security prices. What makes it difficult to apply this standard to a firm such as Wal-Mart is the fact that since 1972, the firm has had eleven 100% stock splits, more than any U.S. firm in history. Although in the past 10 years, Wal-Mart has noticed maturity of their market and there have been no stock splits. Most experts attribute this to the stock price being mired in the \$40-\$50 range. That being said, Wal-Mart stock has risen to the upper \$50 range recently and most analysts believe that when the stock hits the \$60-\$70 range it will split once again. To assess unexpected earnings accurately to Wal-Mart stock prices, one would have to control for the effect of earnings and associated stock splits throughout its history. For instance, Wal-Mart stock price has ranged from less than \$30 to greater than \$80 per share, many of the swings, stock split induced. To date, no practical attempt has been made to control for this factor.

Recent research on equity valuation has focused on ratios. Nissim and Penman (2001) find cross-sectional correlation between financial ratios and equity prices. Penman and Zhang (2005) find that Price/Earnings and Book Value ratios provide greater persistence than earnings when correlating to equity prices, while Nissim and Penman (2005) indicate that financial ratios may be viewed as a building block to analyze future equity payoffs. Stunda (2008) proxies “wealth” for unexpected earnings and then links that measure to security prices in an attempt to ascertain if there is any correlation between a wealth measure and security prices, and if Wal-Mart has any advantage when this measure is assessed. While unexpected earnings are time specific (i.e., quarterly or annual), they are less adaptable to such things as stock splits. Ratios are more elastic and are better adapted to measuring such swings. Therefore, the wealth measure used was Book Value Per Share (defined as total common equity divided by number of common shares outstanding). Results of this study found that Wal-Mart possessed a distinct advantage over its competitors when it comes to the information content of wealth generation and its linkage to security prices.

The questions that remained unanswered by the Stunda study were; do firms that have multiple stock splits over their life possess any advantage over firms that do not, and do firms that have multiple stock splits possess any significant advantage/disadvantage when compared with Wal-Mart? Any advantage would be assessed by significant information content effects on the security prices of the firms.

Research Design

This study focuses on an analysis of Wal-Mart and other firms in the retail trade industry, specifically; those that fall into SIC code 5311. A study period of 1973-2010 is utilized. Many previous studies have used longer event studies. Desai and Jain (1997) use a 17 year event study of stock splits and their

findings are as robust as shorter time frames. Lakonishok and Vermaelen (1990) examine security prices over a 24 year period and find results comparable with shorter 3-5 year studies. Fama (1998) conducts an evaluation of longer term event studies and does not find anomalies between those of longer versus shorter duration. Using the study period 1973-2010, these firms were broken down as follows: Total firms with less than two stock splits (and excluding Wal-Mart), total firms with two or more stock splits, and Wal-Mart. Table 1 provides a summary of firms and firm quarters to be used in this study.

Table 1: Study Sample Summary

Study Period	Total Firms	Firms Total Qtrs.	Total Firm Split	Total >1 Stock Qtrs.	Wal-Mart	Total Wal-Mart Qtrs.
1973-2010	125	18,500 ^{1 2}	59	8,732 ¹	1	148
¹ Excludes Wal-Mart						
² Excludes Firms with >1 Stock Split						

HYPOTHESIS DEVELOPMENT

Wal-Mart in comparison to the rest of the industry

The information content of book value per share, the proxy for wealth, is assessed for significance to security prices for Wal-Mart. Similarly, information content of the same wealth measure is assessed for significance to security prices for the rest of the firms in the retail trade industry. If the wealth measure is not perceived to have greater influence on Wal-Mart stock prices than the same wealth measure would have on stock prices for the rest of the firms in the industry, then there should be no significant difference between the two groups. If, on the other hand, there is significant difference, it may be inferred that Wal-Mart's wealth measure is more/less influential in determining future stock prices. These alternative notions suggest the following null hypothesis:

H1: The information content of book value per share (wealth measure) for Wal-Mart is not significantly different from the information content of the book value per share for all other retail trade firms.

Test of Hypothesis

The purpose of this test is to assess the relative information content of the firm's book value (wealth) to security prices of the firm. Quarterly financial data, which would also contain information for determining book value, is typically released by each publicly held firm within two weeks following the close of the quarter. Based on this information, stock traders respond along with the stock price itself. Heretofore, the prime belief was that earnings, more specifically, "unexpected earnings" was causing the stock price to move. But what if there are influences that go beyond unexpected earnings, such as a firm with a history of unprecedented number of stock splits? Might a wealth measure, such as book value per share, be able to capture any correlation with future stock price? The Dow Jones News Retrieval Service (DJNRS) was used to identify the date that each firm released quarterly financial data for the study periods. This date of data release is known as the event date. The following model is established for determining information content:

$$CAR_{it} = a + b_1 W_{it} + b_2 (d_M W_{it}) + b_3 UE_{it} + b_4 B_{it} + b_5 MV_{it} + e_{it}$$

Where: CAR_{it} = Cumulative abnormal return firm i, time t

a = Intercept term

W_{it} = Wealth measure proxied by book value per share for firm i, time t

d_M = Dummy variable equal to 1 if Wal-Mart, 0 Otherwise

UE_{it} = Unexpected earnings for firm i, time t

B_{it} = Market model slope coefficient as proxy for systematic risk

MV_{it} = Market value of equity as proxy for firm size

e_{it} = error term for firm i, time t

The coefficient “a” measures the intercept. The coefficient b_1 is the response coefficient for measuring the effect of book value (wealth) on security prices for all firms in the industry (excluding Wal-Mart). The coefficient b_2 is the response coefficient measuring book value (wealth) on security prices for Wal-Mart. The coefficient b_3 is the traditional earnings response coefficient (ERC), found to have correlation with security prices in traditional market based studies. The coefficients b_4 and b_5 are potential contributions to the ERC. To investigate the effect of information content on security prices, there must be some control for variables found in prior studies to be determinants of information content. For this reason, variables b_3 , representing systematic risk, and b_4 , representing firm size are included as controls in the study.

Unexpected earnings (UE_i) is measured as the difference between the management earnings forecast (MF_i) and security market participants' expectations for earnings proxied by consensus analyst following as per Investment Brokers Estimate Service (IBES) (EX_i). The unexpected earnings are scaled by the firm's stock price (P_i) 180 days prior to the forecast:

$$UE_i = \frac{(MF_i) - (EX_i)}{P_i}$$

For each firm sample, an abnormal return (AR_{it}) is generated around the event dates of -1, 0, +1 (day 0 representing the day that the firm's financials were available per DJNRS). The market model is utilized along with the CRSP equally-weighted market index and regression parameters are established between -180 and -91. Abnormal returns are then summed to calculate a cross-sectional cumulative abnormal return (CAR_{it}).

Table 2: Test of Hypothesis 1

Sample Period 1973-2010						
Model: $CAR_{it} = a + b_1W_{it} + b_2(d_MW_{it}) + b_3UE_{it} + b_4B_{it} + b_5MV_{it} + e_{it}$						
a	b_1	b_2	b_3	b_4	b_5	Adj. R^2
.25	.12	.19	.15	.03	.04	.112
(.92)	(.80)	(2.49) ^c	(2.11) ^b	(.22)	(.41)	
n = 148 firm quarters for Wal-Mart (b_2 coefficient)						
n = 27,232 firm quarters for All Other firms in the Industry (b_1 coefficient)						
n = 27,380 firm quarters for All firms in industry (b_3 coefficient)						
^a Significant at the .10 level						
^b Significant at the .05 level						
^c Significant at the .01 level						
CAR_{it} = Cumulative abnormal return firm i, time t						
a = Intercept term						
W_{it} = Wealth measure proxied by book value per share for firm i, time t						
d_M = Dummy variable equal to 1 if Wal-Mart, 0 Otherwise						
UE_{it} = Unexpected earnings for firm i, time t						
B_{it} = Market model slope coefficient as proxy for systematic risk						
MV_{it} = Market value of equity as proxy for firm size						
e_{it} = error term for firm i, time t						

Results

As indicated in Table 2, the coefficient representing the proxy for wealth for Wal-Mart, b_2 , is significant. This variable has a value of .19 with a p-value of .01. The coefficient representing the proxy for wealth for all other firms in the retail trade industry, b_1 , does not show significance at traditional levels with a value of .12. Table 2 also shows that the unexpected earnings variable, b_3 , has a value of .15 and is significant with a p-value of .05. This result supports most past studies that link unexpected earnings to security prices. No other variables in the model were found to contain significance at traditional levels. The results from this regression analysis do not support the hypothesis that information content of the wealth measure for Wal-Mart is not significantly different from the information content of the wealth measure for all other firms in the industry, and therefore, H1 is rejected.

In addition, whenever a set of multiple regression variables are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive perspective. To assess the presence of multicollinearity, the Variance Inflation Factor (VIP) was utilized. Values of VIP exceeding 10 are often regarded as indicating multicollinearity. In the test of hypothesis 1, a VIP of 2.1 was observed, thus indicating a non-presence of significant multicollinearity.

Firms with Multiple Stock Splits in Comparison to the Rest of the Industry

If the Wal-Mart wealth proxy exerts greater influence on security prices than the wealth proxy of all other firms in the retail trade industry, as seen in hypothesis 1, it is possible that the multiple stock splits of Wal-Mart may have played a factor in the results. If, however, multiple stock splits are unrelated to wealth and security prices, it could be conjectured that the results of hypothesis 1 are spurious or only related to Wal-Mart and any specific effects it exerts. If multiple stock splits, in general, have little or no impact on wealth and security prices, then we should see insignificant differences between firms with multiple stock splits and the rest of the industry when assessing wealth to security prices. This notion suggests the following hypothesis:

H2: The information content of book value per share (wealth measure) for all firms in the retail trade industry with multiple stock splits is not significantly different from the information content of book value per share for all other retail trade firms.

Test of Hypothesis

A similar regression as was used for hypothesis 1 is used again for hypothesis 2:

$$CAR_{it} = a + b_1W_{it} + b_2(d_MW_{it}) + b_3UE_{it} + b_4B_{it} + b_5MV_{it} + e_{it}$$

Where: CAR_{it} = Cumulative abnormal return firm i, time t

a = Intercept term

W_{it} = Wealth measure proxied by book value per share for firm i, time t

d_M = Dummy variable equal to 1 if firms with multiple stock splits, 0 Otherwise

UE_{it} = Unexpected earnings for firm i, time t

B_{it} = Market model slope coefficient as proxy for systematic risk

MV_{it} = Market value of equity as proxy for firm size

e_{it} = error term for firm i, time t

The coefficient “a” measures the intercept. The coefficient b_1 is the response coefficient for measuring the effect of book value (wealth) on security prices for all firms in the industry with fewer than 2 stock splits. The coefficient b_2 is the response coefficient measuring book value (wealth) on security prices for industry firms with multiple stock splits. The coefficient b_3 is the traditional earnings response coefficient (ERC). The coefficients b_4 and b_5 are potential contributions to the ERC.

Results

As indicated in Table 3, the coefficient representing the proxy for wealth for firms with multiple stock splits, b_2 , is significant. This variable has a value of .23 with a p-value of .01. The coefficient representing the proxy for wealth for firms with fewer than 2 stock splits in the retail trade industry, b_1 , does not show significance at traditional levels with a value of .10. Table 3 also shows that the unexpected earnings variable, b_3 , has a value of .15 and is significant with a p-value of .05. Results of this variable are the same as hypothesis 1. No other variables in the model were found to contain significance at traditional levels. The results from this regression analysis do not support the hypothesis that information content of the wealth measure for firms with multiple stock splits is not significantly different than the information content of the wealth measure for firms with fewer than 2 stock splits, and therefore, H2 is rejected.

In addition, an assessment of VIP for multicollinearity in the hypothesis resulted in a VIP value of 2.0, indicating non-presence of any significant multicollinearity.

Table 3: Test of Hypothesis 2

Sample Period 1973-2010						
Model: $CAR_{it} = a + b_1W_{it} + b_2(d_MW_{it}) + b_3UE_{it} + b_4B_{it} + b_5MV_{it} + e_{it}$						
a	b ₁	b ₂	b ₃	b ₄	b ₅	Adj. R ²
.20	.10	.23	.15	.05	.08	.122
(.87)	(.67)	(2.64) ^c	(2.11) ^b	(.27)	(.39)	
n = 18,500 firm quarters for firms with fewer than 2 stock splits (b ₁ coefficient)						
n = 8,880 firm quarters for firms with multiple stock splits (b ₂ coefficient)						
n = 27,380 firm quarters for All firms in industry (b ₃ coefficient)						
^a Significant at the .10 level						
^b Significant at the .05 level						
^c Significant at the .01 level						
CAR _{it} = Cumulative abnormal return firm i, time t						
a = Intercept term						
W _{it} = Wealth measure proxied by book value per share for firm i, time t						
d _M = Dummy variable equal to 1 if firms with multiple stock splits, 0 Otherwise						
UE _{it} = Unexpected earnings for firm i, time t						
B _{it} = Market model slope coefficient as proxy for systematic risk						
MV _{it} = Market value of equity as proxy for firm size						
e _{it} = error term for firm i, time t						

Firms with Multiple Stock Splits in Comparison to Wal-Mart

If the Wal-Mart wealth proxy exerts greater influence on security prices than the wealth proxy of all other firms in the retail trade industry, as seen in hypothesis 1, it is possible that the multiple stock splits of Wal-Mart may have played a factor in the results. Accordingly, if multiple stock split firms' wealth proxy exerts greater influence on security prices than the wealth proxy of all other firms in the retail trade industry, as seen in hypothesis 2, one may again conclude that the multiple stock splits may have played a factor. The final comparison is that between Wal-Mart and other firms with multiple stock splits. If multiple stock splits, in general, are associated with security prices, and if Wal-Mart and other firms in the retail trade industry with multiple stock splits have a greater influence on security prices than do firms without multiple stock prices, one might conclude that there is no significant difference between Wal-Mart and associated firms with multiple stock splits. This notion suggests the following hypothesis:

H3: The information content of book value per share (wealth measure) for Wal-Mart is not significantly different from the book value per share of all other firms in the retail trade industry with multiple stock splits.

Test of Hypothesis

The following regression is used to test hypothesis 3:

$$CAR_{it} = a + b_1W_{it} + b_2(d_SW_{it}) + b_3(d_MW_{it}) + b_4UE_{it} + b_5B_{it} + b_6MV_{it} + e_{it}$$

Where: CAR_{it} = Cumulative abnormal return firm i, time t

a = Intercept term

W_{it} = Wealth measure proxied by book value per share for firm i, time t

d_S = Dummy variable equal to 1 if any firm with multiple stock splits, 0 Otherwise

d_M = Dummy variable equal to 1 if Wal-Mart, 0 Otherwise

UE_{it} = Unexpected earnings for firm i, time t

B_{it} = Market model slope coefficient as proxy for systematic risk

MV_{it} = Market value of equity as proxy for firm size

e_{it} = error term for firm i, time t

The coefficient “a” measures the intercept. The coefficient b_1 is the response coefficient for measuring the effect of book value (wealth) on security prices for all firms in the industry with fewer than 2 stock splits. The coefficient b_2 is the response coefficient measuring book value (wealth) on security prices for industry firms with multiple stock splits. The coefficient b_3 is the response coefficient measuring book value (wealth) on security prices for Wal-Mart. The coefficient b_4 is the traditional earnings response coefficient (ERC). The coefficients b_5 and b_6 are potential contributions to the ERC.

Results

As indicated in Table 4, the coefficient representing the proxy for wealth for all firms with fewer than two stock splits, b_1 , is not significant at traditional levels. This variable has a value of .24. The coefficient representing the proxy for wealth for firms with multiple stock splits, b_2 , has a value of .20 and a p-value of .10. The coefficient representing the proxy for wealth for Wal-Mart, b_3 , has a value of .27 and a p-value of .01. Table 4 also shows that the unexpected earnings variable, b_4 , has a value of .15 and is significant with a p-value of .05. Results of this variable are the same as hypothesis 1 and 2. No other variables in the model were found to contain significance at traditional levels. The results from this regression analysis do support the hypothesis that information content of the wealth measure for firms with multiple stock splits is not significantly different than the information content of the wealth measure for Wal-Mart, and therefore, H3 cannot be rejected. In relating Wal-Mart to other multi-stock-split firms, this hypothesis captures a unique effect that the wealth measure for Wal-Mart may have on stock prices, namely, because Wal-Mart has been so consistent about splitting its stock relative to other firms that also have split more than once, Wal-Mart’s wealth measure may be sending a stronger signal to the securities market than those of other firms. Thus there may indeed exist a unique “Wal-Mart Effect.”

The VIP multicollinearity factor was found to be 2.4 among the independent variables, indicating a non-presence of any significant multicollinearity.

Table 4: Test of Hypothesis 3

Sample Period 1973-2010							
Model: $CAR_{it} = a + b_1W_{it} + b_2(d_SW_{it}) + b_3(d_MW_{it}) + b_4UE_{it} + b_5B_{it} + b_6MV_{it} + e_{it}$							
a	b_1	b_2	b_3	b_4	b_5	b_6	Adj. R^2
.08	.24	.20	.27	.15	.08	.11	.122
(.62)	(.76)	(1.63) ^c	(2.79) ^b	(2.11) ^b	(.27)	(.39)	
n = 18,500 firm quarters for firms with fewer than 2 stock splits (b_1 coefficient)							
n = 8,880 firm quarters for firms with multiple stock splits (b_2 coefficient)							
n = 148 firm quarters for Wal-Mart (b_3 coefficient)							
n = 27,380 firm quarters for All firms in industry (b_4 coefficient)							
^a Significant at the .10 level							
^b Significant at the .05 level							
^c Significant at the .01 level							
CAR _{it} = Cumulative abnormal return firm i, time t							
a = Intercept term							
W _{it} = Wealth measure proxied by book value per share for firm i, time t							
d _S = Dummy variable equal to 1 if firm i has multiple stock splits, 0 Otherwise							
d _M = Dummy variable equal to 1 if Wal-Mart, 0 Otherwise							
UE _{it} = Unexpected earnings for firm i, time t							
B _{it} = Market model slope coefficient as proxy for systematic risk							
MV _{it} = Market value of equity as proxy for firm size							
e _{it} = error term for firm i, time t							

Conclusions

Recent Penman et al studies have shown ratios to have increasing importance in relation to security prices. Past research (Stunda) has used this ratio analysis concept and singled out one firm in retail trade, Wal-Mart, as being exceptional among all other firms with respect to the number of stock splits that it has had during its corporate life. Findings showed that Wal-Mart’s book value (proxy for wealth) possesses information content relative to security prices beyond the traditional measure of unexpected earnings,

possibly influenced by the number of stock splits. This current study extends prior research and extends the comparison of Wal-Mart to other firms in the retail trade industry to a greater time period, 1973-2010. When the time period is extended, results show that Wal-Mart still seems to possess an advantage, with respect to information content, over industry competitors when associating a wealth measure to security prices. Wal-Mart's wealth measure is found to possess significance relative to security prices while the other firms do not display significance at traditional levels. This study also evaluated firms in the retail trade industry with multiple stock splits (i.e., greater than 1) relative to firms in the same industry with 0 or 1 stock split over the same study period. Results indicate that, from a perspective similar to Wal-Mart, multiple stock split firms' wealth measure contains significant information content relative to security prices while firms with 0 or 1 stock split do not contain significant information content at traditional levels. In addition, when multiple stock split firms were compared to Wal-Mart, both groups' wealth measure exhibited significant information content relative to security prices. It may be concluded that from the perspective of firms with multiple stock splits, information content of wealth generation plays a significant role relative to security prices. In addition, Wal-Mart continues to exhibit an effect of its own to the securities market. These findings have potential implication to security traders and corporate managers, namely, firms with multiple stock splits have a greater influence on their security prices than firms with one or no stock splits.

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