THE SHAREHOLDER WEALTH IMPLICATIONS OF STRIKE SIZE AND DURATION

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ABSTRACT

Previous studies have found that strikes, on average, have a negative impact on shareholder wealth. This study confirms those findings, and extends them by using data from individual strikes to measure the relationship between strike size and duration, and changes in the market value of the struck firm. The authors find that, while statistics on strike size and duration are widely disseminated, they have little informational value with respect to gauging the shareholder wealth effects of a strike. This finding weakens the case of those who argue in favor of outside intervention in very large and/or lengthy strikes.

INTRODUCTION

The Bureau of Labor Statistics (BLS) reports strike occurrences monthly in *Compensation and Working Conditions*. In addition to the name of the struck company and the union(s) involved, they also report the number of workers and the duration of the strike. When we look at these statistics and find very large strikes (e.g., AT&T in 1986—155,000 workers), and very long ones (e.g., General Motors in 1998—54 days), it seems obvious that these events would significantly impact the fundamentals of the struck company and thus its market value. However, can these two statistics, by themselves, tell us much about the shareholder wealth implications of the strike? We answer this question by measuring the relationship between strike duration and size and changes in shareholder wealth.

LITERATURE REVIEW

The Hicks (1966) model of strike activity suggests that there are only two parties to the negotiation, the union and the employer. According to this model, with perfect information, the two parties would agree to the Pareto optimal outcome and there would be no strike. However, in practice, strikes do occur as the result of imperfect information, bargaining errors, and misperceptions about bargaining goals. According to the Hicks model, the duration of the resulting strike is a function of the relative size of the union's demands versus the employer's willingness (and ability) to meet those demands. Thus, the duration of the strike can only be estimated using subjective judgments regarding union and employer resistance rates.

Ashenfelter and Johnson (1969) stress the "three-party nature of collective bargaining" (p. 47). They assume that there are three participants in the bargaining process (union members, union leaders, and the employer) and that divergent interests may lead to a strike. When a strike does occur, its duration is a function of union resistance and the employer's tradeoff with respect to strike costs versus the possibility of lower wage rates. Fundamentally, management is attempting to maximize the wealth of their company's shareholders.

Becker and Olson (1986) are among the first to measure the impact of strikes on shareholder wealth. Using event study methodology, they measure strike costs for a sample of firms that incurred strikes between the years 1962 and 1982. They report that the average strike during that period had a negative impact on the market value of the struck firm. In their analysis, they assume that strikes are somewhat foreseeable, and thus begin to affect shareholder wealth even before they are actually announced. In addition, they assume that the impact of a strike on the market value of a firm does not stop the moment a settlement is announced but continues while the implications of the settlement are determined. In order to account for the total impact of a strike, they sum the costs incurred during the pre-strike period (defined as 30 days prior to the announcement), during the strike, and the post-strike period (defined as 30 days after the settlement) to measure the total strike cost. They conclude that the average strike during that period had a negative impact on firm market value, costing between $72 million and $80 million in 1980 dollars.

Using the same methodology, DeFusco and Fuess (1991) measure the impact of strikes on shareholder wealth in the airline industry. They too find that strikes have a negative effect on shareholder wealth but that the percentage return is not statistically significant. Kramer and Vasconcellos (1996) find results similar to those of DeFusco and Fuess for a sample of manufacturing firms. In this paper, we calculate the change in shareholder wealth for a sample of very large strikes drawn from the period 1984-2007.

We then extend this line of research by testing whether the duration and/or size of a strike are significant indicators of the effect of the strike on shareholder wealth. While numerous empirical studies examine the influences of variables like the size of the bargaining unit (Campolieti, Hebdon, and Hyatt, 2005), age of the strike (Kennan, 1980), business conditions (Harrison and Stewart, 1989; McConnell, 1990), strike size (Harrison and Stewart 1993), and media attention (Flynn, 2000) on strike duration, we examine the effect of strike duration and size on shareholder wealth.

We find that, while statistics on duration and size are widely disseminated by the BLS and the media, they have little informational value with respect to gauging the shareholder wealth effect of a strike.

THE SAMPLE

We draw our sample from strikes chronicled by the Bureau of Labor Statistics in *Current Wage Developments* (re-titled *Compensation and Working Conditions (CWC)* in 1991). Our preliminary sample includes 104 strikes and is drawn from CWC issues from 1984 (the first year the BLS started reporting such data) through the summer of 2007.[i] The preliminary sample includes only strikes involving 5,000 or more workers.

We limit the sample to very large strikes for several reasons. First, since we are using event study methodology, it is important that the event be noteworthy enough to be a significant news event. As a result, many of the strikes in our sample were against very large companies (e.g., General Motors, General Electric, and Boeing). Second, in order for event studies to accurately measure the impact of an event, it is important that no other significant events impact the company at the same time (e.g., stock splits, mergers, and bankruptcy). While larger companies are more likely to have such events, they are also the only ones to have publicly-available news accounts to check for overlapping events.

We use *The Wall Street Journal* and *Barron's* to check for overlapping events. If we find overlapping events, the company is removed from the sample. Firms must also be publicly-traded to remain in the sample. Of the original 104 strikes in our sample, 42 are eliminated because of simultaneous events or insufficient publicly-available financial information. The remaining 62 strikes occur in 19 different years and vary in size and duration as shown in Table 1. See page 6.

METHODOLOGY

Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969)[ii] originated event study methodology. In this paper, we use it to measure the excess return (positive or negative) attributable to a strike. The excess return equals the realized return less the expected return, given the return on the market and no release of new firm-specific information. We calculate the expected return on stock i during period t using the market model shown as Equation (1).

We estimate the market model parameters for each company over a period of 80 to 180 trading days prior to the announcement date of the strike.[iii]

$$R_{it} = a_i + b_i R_{mt} + e_{it} \qquad (1)$$

where $i = 1,\ldots, n$ (company index); $t = t_a - 180,\ldots, t_a - 81$ (t_a = strike announcement date); R_{it} = return on stock i in period t; R_{mt} = return on the market (S&P 500) in period t; e_{it} = random disturbance term; and b_i = beta of stock i.

Equation (1) captures the impact of market forces on stock price changes. The estimates for parameters a and b, along with a measure of R_{mt} (e.g., the S&P 500 index), allow us to calculate the expected return for stock i, in period t, given a level of market performance and the absence of any new firm-specific information:

$$E\{(R_{it}/\text{No new firm-specific information})\} = a + bR_{mt} \qquad (2)$$

Changes in R_{it} beyond those measured by this equation represent the "excess" returns (e in Equation (3) resulting from firm-specific events that are unanticipated by the market.

To measure interval effects, we calculate the cumulative excess return of each strike:

$$CER_i = \Sigma (e_{it}) = \sum (R_{it} - (a_i + b_i R_{mt})) \qquad (3)$$

where $i = 1,..., n$ (firm index) and t = an interval surrounding the announcement of the strike. Thus the cumulative excess return (*CER*) represents the cumulative cost (or benefit) accruing to the struck company solely as a result of the strike. Consistent with Becker and Olson (1986), we use the interval from thirty days prior to the strike announcement through thirty days post settlement as our measure of total strike impact.

Next, we regress the cumulative excess return of each individual strike against the number of workers involved, and the duration and size of the strike:

$$CER_i = a + b\, w_i + c\, d_i + d\, MV_{i,\,(2006)} + e \qquad (4)$$

where w_i and d_i are the number of workers (in 000s) and duration (in days) of strike i, respectively. We control for firm size using the firm's market value (*MV*) on day $t-31$ and standardizing it into year 2006 dollars (in billions). The results are shown in Table 2.

Additionally, we calculate the weighted and unweighted average dollar cost of a strike as follows:

$$\frac{\sum_{i=1}^{n}(CER_i \times Value_i)}{n} \qquad (5)$$

and

$$\frac{\sum_{i=1}^{n} CER_i}{n} \times \frac{\sum_{i=1}^{n} Value_i}{n} \qquad (6)$$

where $Value_i$ equals the market value of firm i 31 days prior to the announcement of the strike.

RESULTS AND DISCUSSION

The cumulative average excess return (*CAR*) of our sample is −1.38%. That means that, without adjusting for inflation, the average dollar cost of a strike in our sample, for the period 1984-2007, is between $274 million (unweighted) and $465 million (weighted) for a sample of companies with an average market value of $19.8 billion. That equates to $154 million (unweighted) and $218 million (weighted) in 1980 dollars. This is consistent with the findings of Becker and Olson (1986) that strikes are, on average, costly to companies. Although our estimates are greater than Becker and Olson's, we attribute that to the fact that our sample includes only strikes involving 5,000 or more workers, whereas

their sample includes strikes with as few as 1,000 workers.

We find that neither the size nor the duration of a strike is a statistically significant indicator of the shareholder wealth effects of the strike (see Table 2). Although it is not statistically significant, we find the positive sign on the coefficient for the number of workers to be of interest because it seems to contradict the commonly held belief that there is "strength in numbers." We encourage follow-up research in this area for the following reasons. First, when we examine the highest quartile of our sample in terms of size, the average *benefit* to shareholders in this quartile is 2.3% (*CER* = +2.3%) compared to an average *cost* of 2.56% (*CER* = −2.56%) for the other 47 strikes.

Table 2: Regression Results for Strike Size and Duration

Dependent Variable = CER_i (in %)	
Intercept	−0.322
Number of Workers (in 000s)	0.085 (1.25)
Duration (in days)	−0.067 (−1.53)
Market Value (2006 $s) (in billions)	−0.038 (−0.667)
Adjusted R^2	0.014
n	62

  * Significant at the 0.10 level.
  ** Significant at the 0.05 level.
*** Significant at the 0.01 level.

Second, reviewing news accounts of the strikes in the highest size quartile reveals that in many cases the companies were the perceived winners. For example, the largest strike in the sample was against AT&T in 1986. *The Wall Street Journal* reports that "analysts generally agreed that under terms of the proposed accord, AT&T achieved its major objectives" (6/18/1986). Similarly, the third largest strike was against General Motors in 1996. *The Wall Street Journal* headline reads "GM, UAW Tentatively Settle Walkout: Firm Appears Winner on Supplier Issue." In others, management was able to exact concessions from unions in order to become more competitive. For example, the fourth largest strike in the sample was against General Motors in 1984. *The Wall Street Journal* reports that "The union is, in effect, giving up some jobs to keep the rest" (9/24/1984). In these cases, the market perceives the strike as a signal that management is serious about addressing problems with labor expenses and work rules. Management was rewarded for their actions with an increased market valuation. If we define a positive excess return as a company

victory, then for the entire sample, the company would be categorized as the winner 50% (31/62) of the time. However, the company "wins" 60% of the time (9/15) in the quartile containing the largest strikes, while the company only wins 47% (22/47) of the time across the other quartiles.

The average duration of a strike in our sample is 33.31 days. We find no statistically significant relationship between strike duration and changes in shareholder wealth (see Table 2). Even though the coefficient is not statistically significant, it is worth noting that the sign on the coefficient is negative. This indicates that long strikes may be less favorable to the company. Or, in terms of the Ashenfelter and Johnson (1969) model, as strikes drag on, it becomes more likely that the cost of the strike will exceed the benefits. This is consistent with the findings of Dinardo and Hallock (2002) that examine market reactions to strikes during the years 1925-1937 and find that longer strikes are "associated with larger negative share price reactions." Nevertheless, we caution against extrapolating too strongly from these results because of the lack of statistical significance.

CONCLUSION

We find, consistent with previous studies examining earlier periods that strikes, on average, continue to be costly to shareholders. We estimate the average cost per strike for the period 1984-2007 to be between $274 million and $465 million for a sample of very large strikes. We also find that, although widely disseminated, and oft quoted in the press, statistics regarding strike size and duration do not provide a clear picture of a strike's impact on shareholder wealth. Therefore, decision makers should not generalize regarding the duration and size of a strike and the resulting impact on shareholder wealth. This finding weakens the case of those who argue in favor of outside intervention in very large and/or lengthy strikes.

REFERENCES

Ashenfelter, O. & Johnson G. E. (1969). Bargaining theory, trade unions, and industrial strike activity. *American Economic Review*, *59*(1), 35-49.

Ball, R. & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, *6*(2), 159-178.

Becker, B. E. & Olson, C. A. (1986). The impact of strikes on shareholder equity. *Industrial and Labor Relations Review*, *39*(3), 425-438.

Campolieti, M., Hebdon, R. & Hyatt, D. (2005). "Strike incidence and strike duration: Some evidence from Ontario. *Industrial and Labor Relations Review*, *58*(4), 610-630.

DeFusco, R. A., & Fuess, Jr., S. M. (1991). The effects of airline strikes on struck and nonstruck carriers. *Industrial and Labor Relations Review*, *44*(2), 324-333.

Dinardo, J., & Hallock, K. F. (2002). When unions "mattered": The impact of strikes on financial markets, 1925-1937. *Industrial and Labor Relations Review*, *55*(2), 219-233.

Fama, E., Fisher, L., Jensen, M. & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, *10*(1), 1-21.

Flynn, F. J. (2000). No news is good news: Relationship between media attention and strike duration. *Industrial Relations*, *39*(1), 139-160.

Harrison, A., & Stewart, M. (1989). Cyclical fluctuations in strike durations. *American Economic Review*, *79*(4), 827-841.

Harrison, A. & Stewart, M. (1993). Strike duration and strike size. *Canadian Journal of Economics*, *26*(4), 830-849.

Hicks, J. R. (1966). *The Theory of Wages*. New York: St. Martin's Press.

Kennan, J. (1980). Pareto optimality and the economics of strike duration. *Journal of Labor Research*, *1*(1), 77-94.

Kramer, J. K. & Hyclak, T. (2002). Why strikes occur: Evidence from the capital markets. *Industrial Relations*, *41*(1), 80-93.

Kramer, J. K. & Vasconcellos, G. (1996). The economic effects of strikes on the shareholders of nonstruck competitors. *Industrial and Labor Relations Review*, *49*(2), 213-222.

McConnell, S. (1990). Cyclical fluctuations in strike activity. *Industrial and Labor Relations Review*, *44*(1), 130-143.

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Table 1: Sample Characteristics

Year:	Number of Strikes	Year	Number of Strikes
1984	3	1994	3
1985	9	1995	4
1986	9	1996	4
1987	2	1997	3
1988	2	1998	3
1989	6	2000	2
1990	2	2003	1
1991	1	2005	1
1992	2	2007	1
1993	4	Total	62
Industry	**Number of Strikes**		**Percent of Sample**
Auto & Truck Manufacturers	18		29%
Telecommunications	7		11%
Aircraft Manufacturing	8		13%
Airlines	6		10%
Heavy Equipment	3		5%
Shipbuilding	4		6%
Aircraft Engines & Parts	3		5%
Other	13		21%
Total	62		100%
Strike Size:			
Number of Workers (Mean)	22,650		
Number of Workers (Median)	8,200		
Strike Duration:			
Number of Days (Mean)	33.31		
Number of Days (Median)	14		

[i] We chose 1984 because that is the first year that the Bureau of Labor Statistics reports work stoppages in *Current Wage Developments*, renamed *Compensation and Working Conditions* (CWC) in 1991.

[ii] For a thorough discussion of event study methodology see chapter four of *The Econometrics of Financial Markets* by Campbell, Lo and MacKinley (1997).

[iii] The period chosen for estimation are the same as those used in Becker and Olson (1986), DeFusco and Fuess (1991), Kramer and Vasconcellos (1996), and Kramer and Hyclak (2002). We use these dates because they are well-specified and facilitate comparison of our results with theirs.

[iv] The Bureau of Labor Statistics reports the number of workers involved as "all workers made idle for one shift or longer in establishments directly involved in a stoppage. They do not account for secondary idleness as a result of material or service shortages. The number of workers idled in any stoppage represents the maximum number of workers idled during the referenced period for the work stoppage."