Investment and Union Certification

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ABSTRACT

A growing body of work--both theoretical and empirical--has emphasized that unionization may be better understood as a tax on capital rather than a tax on labor. Under this "new" view, unionization unambiguously lowers investment. Using data on union certification elections, we estimate the impact of unionization on firms' investment behavior. Employing both a standard q-model and an "investment surprises" technique, we find that union certification significantly reduces investment. We find that a winning certification election has, on average, about the same effect on investment as would a 30 percentage point increase in the corporate tax.

Board of Governors of the Federal Reserve System. The views in this paper do not necessarily reflect those of the Board of Governors of the Federal Reserve System or its staff. We are grateful to David Prince and Tobie Cornejo for excellent research assistance, Stephen Bronars and Donald Deere for providing us with data on union elections, and to Alan Auerbach, Jason Cummins and Glenn Hubbard for helpful comments.

"In the American ships trade to China, it has long been the custom for every sailor to have an interest in the profits of the voyage ..." (J. S. Mill)

I. Introduction

A key result from contract theory states that bargaining between two parties, each having private information, will inevitably lead to inefficient outcomes. A corollary of this is that when two parties bargain with private information, an inappropriate level of investment is generally chosen (Tirole 1986, Klibanoff 1991). Underinvestment results because the entity choosing to commit capital fears that future returns of the capital may be expropriated by the other party.

The relationship in the United States between a unionized firm with market power and its main bargaining opponent, the union, may well be one where these insights apply. The firm possesses private information about future profitability; the union can harm the firm by striking or reducing effort, and alone knows how willing it is to bear the costs of a strike. Contracts typically are renegotiated every few years, with the most recent profit performance of the firm, presumably, influencing the bargaining outcome. In this setting, the bargaining outcome could lead, in part, to a distortion that can be conceptualized as a "tax" on capital, rather than to a "tax" on labor as in the classic work of Johnson and Mieszkowski (1970).

Empirical work to date supports this new view of unionization: There is a large body of evidence suggesting that union power to expropriate returns is significant, and that the "union tax" adjusts as the return to capital changes. Salinger (1983), for example, estimates that up to 77 percent of rents are expropriated by unions. [1] The strongest evidence that unionization can act like a tax on capital is presented in Rose (1987), who documents union concessions when firm rents fall. If union wage demands vary with the return to capital, then the union rent-share is--in part at least--a tax on capital, distorting the level of investment when it is introduced. This distinction is important. If unionization is a tax on labor, then its effect on investment is theoretically indeterminate. If unionization acts as a tax on the return to capital, then the effect on a firm's investment of increased unionization is--in

[1] There is some uncertainty about the proportion of rents attributed to unions. See, for example, Voos (1986), Freeman and Kleiner (1994), and Addison and Hirsch, (1989).

theory--unambiguously negative.

Thus, the response of firm investment to changes in union status could provide a key test of the view that unionization acts as a tax on capital. How firms respond to unionization is an important unresolved question, however. While there has been work documenting the negative effects of capital taxes on investment (see Cummins, Hassett, and Hubbard 1994 for a survey), the effect of unionization on firm investment has not been clearly identified. Indeed, while there is some evidence that unionized firms invest less in research and development (Connoly, Hirsch and Hirschey 1986, and Hirsch and Link 1987), the limited literature to date suggests that investment in plant and equipment is unrelated to changes in the union status of the firm (Bronars and Deere 1993).[2] The absence of strong evidence that unionization decreases investment presents somewhat of a puzzle. If unionization is a tax on capital, then investment should fall after the introduction of a union.

In this paper, we revisit the question by explicitly incorporating a union "tax" into an investment model, and then investigating whether investment responds to this tax according to the theory. As a check on the plausibility of our results, we explore whether the response to the union tax is consistent with past estimates of investment responses to federal taxes.

We focus the empirical study on successful union certification elections. This helps identification because elections provide identifiable shocks to the firm. Our base set of results incorporates union certification into a *q* model, and tests the implication of our model that the union tax reduces investment. To explore the robustness of our results, we also use the "surprises" technique outlined in Auerbach and Hassett (1991) and explore whether investment forecast errors (based on all information available prior to the election) are systematically negative for firms who experience union elections.

In brief, we find robust evidence that union certification significantly lowers firm investment. While our estimated effects are large, they are not unreasonable given the amount of union rent-sharing documented in the literature, and the responsiveness of

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[2] The investment results in Bronars and Deere (1993)--not the principle focus of their inquiry--are difficult to interpret because they do not control for investment fundamentals and do not scale investment by capital. Their result may reflect correlations with firm size and future firm prospects. We address these modelling considerations below.

investment to taxes documented in Cummins, Hassett and Hubbard (1994). Our estimates imply that if a typical firm with no union becomes unionized, the subsequent decline in investment would be roughly equivalent to that which would occur if the corporate tax were doubled. While not ruling out the labor-tax interpretation, this evidence adds support to the view that unionization acts as a tax on capital.

The paper proceeds as follows. In the next section, we briefly derive a model of investment that allows unionization to feed through to the return to investment, and develop our empirical specification. In Section III, we discuss the data that we use to perform our estimation. In Section IV we present some preliminary evidence. Section V reports the results, and Section VI. concludes.

II. A Model of Unionization and Investment

The traditional view of unionization is that it acts like a tax on labor (Johnson and Mieszkowski 1970). Under this view, the union bids up the wage rate, and the firm reduces the quantity of labor hired. The effect of unionization on the decision to invest will depend on--among other things--the elasticity of substitution between capital and labor and the size of the output effect.

Given the large literature on union rent-sharing, an extreme alternative model might be the following: The union accepts the market wage for its workers, and allows the firm to choose labor and capital in order to maximize profits. *Ex post*, the union expropriates a share of the return to capital, and distributes it amongst its members. The union distorts the choice of labor to the extent that the implicit tax on capital induces substitution of labor for capital or changes in the level of output.[3]

While this is an extreme case, we believe that it represents a reasonable starting point

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[3] This type of arrangement has some historical precedent. Mill writes: "M. Leclaire, according to his statement, employs on an average two hundred workman, whom he pays in the usual manner, by fixed wages or salaries. He assigns to himself, besides interest for his capital, a fixed allowance for his labor and responsibility as manager. At the end of the year, the surplus profits are divided among the body, himself included, in the proportion of their salaries." (J.S. Mill, 1901, p. 355)

for exploring the extent to which unionization can be interpreted as a capital tax. Given the relatively large share of rents extracted by unions found in the empirical literature, firms may expect that, even if they employed fewer workers--the natural response if unionization were a tax on labor--the remaining workers would continue to extract capital rents. Indeed, capital deepening, which might be the response of a firm in a more traditional model, could even increase the rent extraction ability of a bargaining unit, since the remaining workers would have higher marginal products, and also might be easier to collect into a strike coalition. In this section we develop an investment model that incorporates a union tax as a guide to our specification in subsequent sections.

Formally, we assume that a firm invests in a capital good and employs labor at a wage W. The union and the firm bargain over the share of the rents, μ that the union will receive. In our setting, the bargaining occurs prior to the investment decision. We do not model here the determination of μ, but rather, model investment as conditional on a particular realization of μ. In our setup, the union rent share is set at the beginning of time, and is not changed subsequently.

At each time t, the firm maximizes its market value, which--assuming the absence of speculative bubbles--is expressed as:

$$V_t = E_t \sum_{s=t}^{\infty} \left(\prod_{j=t}^{s} \beta_j\right) (\eta D_t - S_t) \qquad \textbf{(1)}$$

where D is the firm's dividend, S is the value of new shares issued, β_j is the firm's discount factor in period j, and η is the ratio of the relative after-tax values of dividends and capital gains. The maximization occurs in the presence of five constraints:

$$K_t = (1 - \delta) K_{t-1} + I_t \qquad \textbf{(2)}$$

$$D_t = (1-\tau)(1-\mu)[F(K_{t-1}, N_t) - w_t N_t - C_t - i_{t-1} B_{t-1}]$$

$$+ S_t + B_t - (1-\pi^e) B_{t-1} - p_t (1-\Gamma_t) I_t \qquad \textbf{(3)}$$

$$D_t \geq 0 \tag{4}$$

$$S_t \geq S^* \tag{5}$$

$$\lim_{t\to\infty} \left(\prod_{j=t}^{T-1}\right) B_T = 0 \tag{6}$$

Equation (2) is the capital accumulation equation relating capital, K, to investment, I and depreciation, δ. Equation (3) defines dividends, where τ is the corporate tax rate, F(.) is the production function, N is labor, C(I,K) is the adjustment cost function, i is the interest rate, B is debt, S is the quantity of shares issued, π^e is expected inflation, p is the price of capital goods, and Γ is the present value of depreciation plus the investment tax credit. The first order condition which defines optimal investment is:

$$((1-\tau_t)(1-\mu_t)[P_t\left(\frac{1-\Gamma_t}{(1-\tau_t)(1-\mu_t)}\right) + C_I] = q_t \tag{7}$$

Equation (7) merely states that the firm chooses investment so that the marginal cost, controlling for federal and union taxes, and adjustment costs, equals the marginal value of installed capital, *q*. Assuming that the adjustment costs are quadratic, this leads to the expression:

$$\frac{I_t}{K_{t-1}} = \xi + \frac{1}{\alpha(1-\tau_t)(1-\mu)}[q_t - p_t(1-\Gamma_t)] \tag{8}$$

Where ξ is a constant term, and α is the adjustment cost parameter. Crucial to our setup is the assumption that the union profit share acts like a tax on the return to capital. That is, it is not the fear of future expropriation that disrupts capital decisions, it is the knowledge of the surety of such. In such a model, it is well known that capital taxation increases the cost of capital and decreases investment.

Alternatively, if the union tax were a tax on dividends (pure rents), then the well-known result that a tax on distributions has no marginal effect on investment would apply to the union tax as well. In this case, the union tax term would also apply to $p(1-\Gamma)I$ in equation (3), and since marginal q_t responds to tax changes, the union tax would cancel out of equation (8). By taxing distributions, and not allowing its profit share to distort W, the union could, in theory, tax the profits of the firm without distorting any decisions.

Given this highly stylized setup, wherein unionization acts as a tax on the return to capital, unionization would tend to reduce investment. As mentioned above, this setup differs from a standard one, in which unions bid up wages, and firms potentially look to substitute capital for labor. In that case, the sign of the unionization effect is ambiguous, reflecting scale and substitution effects of opposite signs. We believe that our stylized model is a reasonable place to begin for two reasons. First, the evidence in Rose (1987) lends support to the view that unionization is a capital tax, and explicitly treating it as such is a useful specification guide to empirical work Second, while our assumptions are extreme, the model developed above need not be accepted by the data. If unionization is not correlated negatively with investment, then our approach will be rejected.

III. Data

Our data cover the period 1962-1984. Our firm-level data are taken from Compustat's Full Coverage file. Variables measuring investment, q, cash flow and capital stocks are constructed using procedures described in Cummins, Hassett, and Hubbard (1994), and treated at length in their Appendix.[4]

[4] We follow the standard practice of substituting average for marginal q in our estimation. This may introduce specification error into our estimates of the base-case model. We will

Our data on union certification are taken partly from Bronars and Deere (1993), who collected data on union representation elections filed with the National Labor Relations Board, and partly from a tape supplied us by the NLRB. As described by Bronars and Deere, their sample is restricted to elections involving at least 750 workers in New York Stock Exchange firms. The sample also includes a control group of firms that experienced no election involving 750 or more workers during the period. The control group was selected by Bronars and Deere to approximate the distribution of sizes of the firms with elections. We added to this several elections missing from the Bronars and Deere data, and elections that involved between 200 and 750 workers.[5]

We will report estimates for three separate cuts of the data. First will be our "preferred sample" which consists of all elections involving more than 750 workers, a cutoff used by Bronars and Deere that focusses on "significant" elections. Second, we will report results based on an expanded sample that includes all elections that involved more than 200 workers. Finally, we will report results using only those elections supplied to us by Bronars and Deere (the B+D sample), to demonstrate that any differences in conclusions do not depend simply on sample selection.[6]

The resulting sample statistics are described in Table 1. YESWIN is a dummy variable equal to 1 if the firm experienced a winning union election in a given year; FRACWIN is the fraction of a firm's workforce involved in a winning election; I/K is the ratio of investment to the capital stock; CASH is the ratio of cash flow to capital; and q is tax-adjusted q.

As described below, we will look for certification elections to affect investment in the year after the election, while controlling for investment conditions in the year before the

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provide several checks for the importance of this below. Also, we will henceforth refer to the explanatory variable in equation 8--which includes all of the tax terms etc.--as *q*.

[5] Our data are available on request.

[6]Unfortunately, several of the firms in the Bronars and Deere data set are missing the Compustat data necessary to construct q and the investment-surprise variables, and are consequently not used in our analysis. Therefore, even our third sample differs from that used by Bronars and Deere.

election. The statistics in Table 1 are presented accordingly.[7]

IV. Preliminary Evidence

Union certifications provide a source of discrete variation that allows us to identify the marginal impact of unionization on a targeted firm's investment.[8] For initial motivation of our results, the upper panel of Table 2 provides a comparison of the mean change in investment for firms that face union certification and the mean change in investment for firms that do not. We provide these estimates for each of our three samples. For our preferred sample, the ratio of investment to capital declined on average by .061 (compared to a full-sample mean investment to capital ratio for firms who experience certification of about .13) in the year following a certification election, whereas the sample as a whole experienced essentially no change. The difference between the changes for the two groups is highly significant. The remaining columns in the table provide the mean changes for our two comparison samples. The results are similar to those for the preferred sample.

The change in the ratio of investment to capital may provide a poor measure of the effect of unionization if investment would have been expected to drop even if the certification were unsuccesful. To explore this possibility, the lower panel of Table 2 provides an alternative summary measure of the change in firm investment surrounding certification elections. We report there the mean difference between actual and predicted investment to capital ratios, where the predictions are based upon vector autoregressive regressions using information on investment to capital and cash flow prior to the certification election. For comparison, we provide the mean forecast error for the control firms as well. Once again, the means are consistent with powerful effects of union certification on investment. On average, a firm in our preferred sample that experienced a union certification had an investment-capital

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[7]For simplicity, we present comparison statistics for observations without a winning certification election only for our preferred sample. As the criteria for including elections (e.g., whether the size cut-off is 750 or 200 workers) change, the statistics for the non-certification subsample change, but not by much.

[8]We are certainly not the first to explore the effects of union certifications. See Bronars and Deere (1993).

ratio .048 lower in the year following the election than would have been predicted by a time-series forecasting model. The forecast errors for firms that did not experience an election are close to zero on average, and the difference between the mean errors across the two groups is highly statistically significant. The remaining columns contain roughly similar evidence from our comparison samples.

Of course, these tables are only suggestive, and these responses are suspiciously large. They may reflect other changes in fundamentals not controlled for in this simple first-pass analysis. In the next section, we explore whether this strong relationship holds up once we control for the effects of other structural variables that may be correlated with both unionization and investment.

V. Estimates

In this section, we use certification elections to develop estimates of the effect of unionization on investment via two approaches. First, we present evidence of the effects of union certification on investment within the context of a standard tax-adjusted *q* model. Second, we attempt to identify the certification effect by comparing post election investment to that predicted by a forecasting model which uses available information on fundamentals prior to the election, and regressing the resultant forecast error on the change in union status.

For each of our estimates, we must make some assumptions about timing. As already implicit in Tables 1 and 2, if the union election occurs in year T-1, we will look for the effect of this on the level of investment in year T. Provided that certification is not rapidly followed by decertification, this dating assumption allows us to sidestep problems that might occur if investment for some firms does not fully respond in the year of the certification because of the timing of the election. We also must make a timing assumption about the control variables. Since we argue that a change in union certification can effect *q*, including it contemporaneously with the certification variable would muddy identification. To avoid this problem we control for future prospects of the firm using *q* dated prior to the certification election. That is, rather than attempting to estimate (8) directly, we will control for *q* prior to the election, and then include an additional election variable, which is meant to

capture the subsequent change in q.[9]

Although we do not formally model the union certification choice, the search for the impact of unionization on investment faces a simultaneity issue: Unions, as well as firms, have information about the firm's economic prospects. These prospects influence the firm's expected investment behavior, but also influence unions' organizing behavior: Unions should be more likely to target firms that are expected to earn significant rents in the future. (In their study of union effects on profitability, Voos and Mishel (1986) discuss this endogeneity.) If unions possess no more information about firm prospects than the market, however, our approach controls for the endogeneity of certification by the inclusion of *q*, since a firm's future prospects are fully reflected in *q*. We must necessarily stop short, however of structural estimation of (8) given that we have no direct evidence on the size of μ.

Finally, we should note that our dating assumption means that our approach will not adequately control for endogeneity of the certification decision to the extent that important news about future prospects is observed after our last measure of *q*, but before the certification election. This problem is unavoidable, but it biases our results against the finding that union certification lowers investment, provided that unions are more likely to be certified when firms are expected to flourish in the future.

A. The "q" model

Given our timing assumptions, an estimating equation for the "q" model can be written

$$(I/K)_{i,t} = \alpha + \beta * CERT_{i,t-1} + \gamma * q_{i,t-2} + \delta * CASH_{i,t-2} + YEARS_t * \lambda + \epsilon_{i,t}$$

where CERT represents a winning union certification election, CASH is the ratio of cash flow to capital, q is tax-adjusted q and YEARS is a vector of year dummies. We include cash in this equation because it has been found to be significant in previous work, and we would not want its omission to confound the interpretation of our results. We estimated this equation using OLS and two different variables for CERT: YESWIN, a dummy variable equal to one if

[9] That is, we define *q* in period t be equal to *q* in period t-1 plus the change in q, and we assume that the change in *q* is a function of the certification, plus noise.

the firm experienced a winning certification election in the indicated year; and FRACWIN, the fraction of the firm's workers who were involved in a winning certification election in the indicated year. FRACWIN=0 when YESWIN=0, but is generally less than one when YESWIN=1. Thus, in principle, we should expect FRACWIN to have a coefficient that is higher than YESWIN. However, it is difficult to say *a priori* which measure should predict investment changes better. While, in principle, a large FRACWIN should indicate that a more significant election has occurred, FRACWIN is surely a noisier measure. This is because the employment data in the numerator and denominator are taken from different sources (the NLRB tape and Compustat, respectively) and because there is reason to suspect the reliability of the Compustat employment data.[10]

The results for our various samples are shown in columns 1 and 2 of Table 3. All regressions include (unreported) year dummies. First, consider the OLS runs. As measured by YESWIN, union certification reduced the investment-capital ratio chosen by the firms by between .047 and .064, and the effect is highly significant in all of our samples. The point estimates for FRACWIN also imply large investment reductions, but the coefficient is only significant for the B+D sample. The estimates for YESWIN in column 2 implies that a typical certification election--which certifies about 10 percent of a firm's workforce--would reduce the ratio of investment to capital by .043, or roughly 33 percent. The coefficient on *q* is small and significant, roughly comparable to estimates using this technique in the literature (see Cummins, Hassett, and Hubbard 1994 for a review), and the coefficient on cash-flow--that some have argued captures liquidity effects--is also similar to past estimates.[11]

As a further check, we estimated an equation of the form

$$(I/K)_{i,t} = \alpha_i + \beta * CERT_{i,t-1} + \gamma * q_{i,t-2} + \delta * CASH_{i,t-2} + YEARS_t * \lambda + \epsilon_{i,t}$$

[10] For example, the variable for employees in Compustat is in thousands, and, for most firms and years, is entered as an integer. At the very least, this introduces rounding error that may be significant for many of our smaller firms.

[11] When we restrict the coefficient on cash to be zero, the coefficient on the union variables increases, and becomes even more significant.

where the α_i are firm-specific fixed-effects. This estimator allows for the possibility that there are time-invariant characteristics of firms that are correlated with both investment behavior and unionization but not completely captured by *q* and cash-flow. The coefficients on the union certification variables, in columns 2 of Table 3, are significantly negative, although a bit smaller than the OLS estimates. The estimates imply that if a firm were to have 10 percent of its workforce unionized then the ratio of investment to capital would decline by .038, or about 29 percent, for the average certified firm.

B. The "Surprises" model

Another way to analyze the impact of the certification election, is to forecast each firm's investment using the pre-election information set, and compare the actual investment to that forecast. If realized investment is systematically below forecast for firms that experience successful union certification elections, then one might conclude that the certification lowers firms' investment. Auerbach and Hassett (1991), and Cummins, Hassett and Hubbard (1995) present conditions under which one can back out the impact of tax shocks to firm's marginal investment conditions by regressing the cross-section of investment innovations in a given year against the cross-section of tax shocks for that same year, holding all else constant. The idea there was to see what proportion of the cross-sectional innovation to investment can be explained only with the cross-sectional innovation to tax fundamentals. Our approach is necessarily less structural, since we do not observe μ directly, but the analogue to the tax shock in our study is the shock attributable to the union certification election.

Following Auerbach and Hassett (1991), we proceed in two steps. First, we run vector autoregressive forecasting equations to produce investment forecasts for all firms in our sample in each year. For example, we use the panel through 1983 to estimate vector-autoregressive equations that we use to forecast investment for each firm in our sample for 1984. Second, we regress the forecast errors (the "surprises") against a union certification variable. When we use a dummy variable for union certification election, the coefficient answers the question "On average, was investment for firms where unions were certified overpredicted?" When we use a continuous measure of the percentage of the workforce that was unionized, the coefficient answers the question, "When a firm subsequently saw x percent of it workforce unionized, by how much did we overpredict investment?" As a check that

our *q* controls have not introduced misspecification, we base the beginning-of-period forecasts on lags of investment to capital and cash, rather than on *q*. [12]

The results of these exercises are presented in Table 4. Columns 1 and 2 contain OLS estimates, and columns 3 and 4 contain fixed-effects estimates. In all cases, the investment surprises were generated using firm fixed-effects.[13] The OLS estimates are smaller than those produced by the q model, but the fixed-effects estimates are very similar, and highly significant. A 10% increase in unionization due to a certification election leads to a decrease of about .04 in the firm's rate of investment. Interestingly, FRACWIN is now statistically significant in the fixed-effects results for each sample. This suggests that the measurement error in FRACWIN may be correlated with *q* (perhaps because of an interaction between the measurement error and firm size), a problem ameliorated in this second approach. Thus, both regression techniques have uncovered a strong statistical basis for the conclusion that union certification elections lower investment, confirming the patterns suggested by the simple differences reported in Table 2.

C. Indirect Evidence on the Size of the Union Tax.

In this section, we use our estimates, and those from another study which focusses on the impact of taxation on investment, to attempt to shed light on the size of μ implied by our results.

We have found that a typical successful union certification election reduces the ratio of investment to capital by about .04, or 30 percent of average investment for the targeted firms. Cummins, Hassett, and Hubbard (1994) find that the elasticity of investment with respect to the user cost, or tax adjusted q is in the range -.6 to -.8. Assuming that the elasticity of investment with respect to the user cost is -.8, then the change in the corporate tax that would produce the same predicted response of investment as a union certification,

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[12] Auerbach and Hassett(1991) describe the construction of the correct standard errors in the second stage regressions.

[13] These results do not strictly mimic the results reported in Table 2 because fixed effects are included in these runs. The results do not change appreciably if fixed-effects are not included.

given the current tax law, is an increase of about 33 percentage points (from .34 to .67).[14] That is, a union certification in our sample has about the same predicted effect on investment as a doubling of the corporate tax. While this effect is large, it may not be unreasonable given the large share in rents extracted by unions estimated by past researchers (e.g. Salinger 1984)).

VI. Conclusion

In this paper we provide evidence that union certification significantly reduces a firm's investment. Estimates from both a q-model and a model of investment surprises indicate that a successful certification election would decrease a typical firm's investment-to-capital ratio by about .04 the following year. This--combined with Rose (1987)--suggests that models of union behavior wherein unionization acts like a tax on capital may better capture the interaction of unionization and investment than traditional models that treat unionization as a tax on labor.

[14] We perform this calculation assuming that the real interest rate is .04, the depreciation rate is .147, and the starting point for the change is based on the tax variables from 1988 (presented in table 1 of Cummins, Hassett, and Hubbard 1994).

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Table 1

Sample Statistics

	Preferred Sample (elections≥750)				Elections ≥ 200		B+D sample	
	$YESWIN_{t-1}$=0		**$YESWIN_{t-1}$=1**		**$YESWIN_{t-1}$=1**		**$YESWIN_{t-1}$=1**	
	Mean	**St.Dev.**	**Mean**	**St.Dev.**	**Mean**	**St.Dev.**	**Mean**	**St.Dev.**
Year	75.3	6.5	74.4	6.5	76.4	6.71	74.0	5.3
I/K	0.18	0.15	0.13	0.11	0.13	0.10	0.11	0.10
Surprise	-0.005	0.14	-0.048	0.088	-0.045	0.089	-0.049	0.93
$FRACWIN_{t-1}$	0	0	0.10	0.17	0.087	0.158	0.069	0.14
q_{t-2}	3.57	6.05	3.43	4.01	2.88	3.69	3.49	3.86
$CASH_{t-2}$	0.41	0.42	0.30	0.28	0.33	0.27	0.31	0.27
# obs	2102		38			50		27

Table 2

Comparison of Firms With and Without a Win

$(I/K)_t-(I/K)_{t-2}$

	Preferred Sample		Elections ≥ 200		B+D sample	
	$Yeswin_{t-1}=0$	**$Yeswin_{t-1}=1$**	**$Yeswin_{t-1}=0$**	**$Yeswin_{t-1}=1$**	**$Yeswin_{t-1}=0$**	**$Yeswin_{t-1}=1$**
Mean	-0.006	-0.061	-0.006	-0.037	-0.019	-0.086
Std Error	0.004	0.022	0.004	0.019	0.006	0.024
T-Ratio		2.47^{**}		1.61		2.68^{**}

"Surprise" in $(I/K)_t$

	Preferred Sample		Elections ≥ 200		B+D Sample	
	$Yeswin_{t-1}=0$	**$Yeswin_{t-1}=1$**	**$Yeswin_{t-1}=0$**	**$Yeswin_{t-1}=1$**	**$Yeswin_{t-1}=0$**	**$Yeswin_{t-1}=1$**
Mean	-0.005	-0.048	-0.005	-0.045	-0.009	-0.049
Std Error	0.003	0.014	0.003	0.013	0.003	0.018
T-Ratio		2.94^{***}		3.08^{***}		2.19^{**}

Table 3

Dependent Variable Is $(I/K)_t$

		$YESWIN_{t-1}$	$FRACWIN_{t-1}$	q_{t-2}	$CASH_{t-2}$	R^2
Preferred Sample	**OLS**	-0.051** (0.023)	---	0.003*** (0.001)	0.128*** (0.011)	.21
		---	-0.142 (0.112)	0.003*** (0.001)	0.129*** (0.011)	.21
	Fixed-Effects	-0.046** (0.022)	---	0.002** (0.001)	0.130*** (0.013)	.34
		---	-0.137 (0.108)	0.002** (0.001)	0.130*** (0.013)	.34
Elections ≥ 200	**OLS**	-0.047** (0.020)	---	0.003*** (0.001)	0.129*** (0.011)	.21
		---	-0.154 (0.110)	0.003*** (0.001)	0.129*** (0.011)	.21
	Fixed-Effects	-0.038** (0.019)	---	0.002** (0.001)	0.130*** (0.013)	.34
		---	-0.140 (0.106)	0.002** (0.001)	0.130*** (0.013)	.34
B+D Sample	**OLS**	-0.064** (0.025)	---	0.004*** (0.001)	0.116*** (0.012)	.22
		---	-0.43*** (0.16)	0.004*** (0.001)	0.116*** (0.012)	.22
	Fixed-Effects	-0.043* (0.025)	--	0.005*** (0.001)	0.133*** (0.016)	.36
		---	-0.343** (0.154)	0.005*** (0.001)	0.132*** (0.016)	.36

Table 4
Dependent Variable Is "Surprise" in $(I/K)_t$

		$YESWIN_{t-1}$	$FRACWIN_{t-1}$	R^2
Preferred Sample	**OLS**	-0.053** (0.021)	---	.12
		---	-0.165 (0.105)	.11
	Fixed-Effects	-0.053** (0.022)	---	.15
		---	-0.195* (0.109)	.15
Elections ≥ ≥ 200	**OLS**	-0.044** (0.019)	---	.12
		---	-0.164 (0.103)	.11
	Fixed-Effects	-0.041** (0.019)	---	.15
			-0.191* (0.107)	.15
B+D Sample	**OLS**	-0.045* (0.024)	---	.11
		---	-0.313** (0.149)	.12
	Fixed-Effects	-0.044* (0.025)	---	.17
		---	-0.356** (0.153)	.17