The Impact of Insider Trading Laws on Dividend Payout Policy

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Abstract

We posit that firms use dividend payout policy to reduce information asymmetry and agency costs caused by country-level institutional weaknesses. Firms operating in countries with weak insider trading laws attempt to mitigate this institutional weakness by committing themselves to paying out large and stable cash dividends. We test this central hypothesis (among others) using an international sample of firms across 24 countries, as well as by conducting a case study within one country. The results show that weak insider trading laws lead to a higher propensity of paying dividends, larger dividend amounts, and greater dividend smoothing. We also show that the market's valuation of dividend payouts is significantly higher when insider trading protection is weak. It is important to note that these insider trading results are not due to cross-country variations in investor or creditor rights, nor are they contingent on the enforcement of insider trading laws. Overall, our evidence supports the view that dividend payouts serve as a substitute bonding mechanism when country-level legal protections fail.

Keywords: Insider trading laws; Payout policy, Agency costs
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1. Introduction

Over the past few decades, most national legislatures have enacted insider trading laws to protect outside shareholders from corporate insiders in possession of material, non-public information (Bhattacharya and Daouk, 2002). Although most countries now have legislation that restricts insider trading to some degree, there is considerable cross-country variation in the effectiveness of this legislation (Beny, 2008). Many countries that have such legislation have never bought an enforcement action by investigating, prosecuting, and penalizing violators. Weak restrictions and the failure to enforce insider trading laws reduce a country's ability to minimize information and agency costs at the national market level. When country-level institutions fail to enforce implicit or explicit contracts, market participants create private enforcement mechanisms. Corporate executives, for example, can mitigate the impact of such institutional failures by employing firm-level bonding mechanisms. In this paper, we examine the degree to which corporate payout policy can be used to reduce the adverse effects of country-level weaknesses in the restrictiveness and enforcement of insider trading laws. We hypothesize that firms will commit to large, stable dividend payouts to establish a reputation for the fair treatment of outside shareholders when the national government fails to prevent insider trading. Since this bonding mechanism is costly, we expect that firms will reduce their commitment to large, stable payouts once the national government demonstrates its willingness to enforce insider trading laws. Our empirical results support both hypotheses.

Our main research question is whether firms actively set payout policies to counteract institutional weakness in their regulatory environments. That is, does firm-level payout policy serve as a substitute (i.e., bonding) mechanism for country-level institutional weakness? While previous research shows that the country-level legal and regulatory environment constrains individual firm behavior (e.g., La Porta et al., 1997), few studies have investigated how individual firms actively respond to such restraints. Gan, Lemmon, and Wang (2011, p. 3) describe the current situation as follows: “A presumption in the existing literature, however, is that firms are passive recipients of the influences of weak investor protection.” In this study, we examine how firms respond to institutional weakness in two ways. First, we analyze the relation between dividend payout policies and the restrictiveness of insider trading laws in an international setting. Second, we conduct a case study that isolates firm-level responses to weak investor protection by analyzing changes in dividend payout policies before and after the enforcement of insider trading laws.

Both theory and empirical results have established significant connections among insider trading, dividend payout policy, and cost of capital. Demsetz (1986) shows that there is a direct, causal relation between insider trading and dividend payout policy. He claims that “if investors expect insider trading, they would discount these stocks, or they would require higher dividends, so as to equalize rates of return (p. 316).” Bhattacharya and Daouk (2002) test and confirm this proposed relation between insider trading and the cost of capital. They show that when countries enforce insider trading laws, capital costs decline. Their study represents an example of how firms are affected by the institutional environment. In contrast, our study examines how firms alter their dividend payout policies to actively counteract institutional weaknesses.

Previous literature suggests that non-binding (or non-enforcement of) insider trading laws exacerbates asymmetric information and agency costs. Without binding constraints, insiders find it easier to extract wealth from outsiders through personal trading and the avoidance of value-maximizing decisions (Easterbrook, 1985). The threat of trading against informed insiders reduces stock market participation and secondary-market liquidity (Bhattacharya and Spiegel, 1991). Empirical studies also show that the restriction of insider trading can lead to many favorable consequences. Such restrictions have been related to lower costs of capital, improved analyst coverage, enhanced liquidity, more diffuse ownership, greater price informativeness, higher equity valuations, and more efficient capital allocations (Bhattacharya and Daouk, 2002; Bushman et al., 2005; Beny, 2005, 2008; and Chen et al., 2010, respectively). Although the potential benefits of restrictiveness are relatively clear and uncontroversial, the reason for less-than-universal implementation is likely the result of a collective action problem; that is, the benefits accrue mostly at the individual firm level, while the costs are incurred mostly at the national government level.

Instead of passively accepting the consequences of this collective action problem, managers have an opportunity to use firm-level mechanisms through which they can mitigate information and agency problems. The firm's dividend payout policy is likely to be a favored mechanism for this purpose due to its reliance on (credible) cash payments. There are several reasons why shareholders are more likely to demand, and firms more likely to commit to, the payment of large and stable dividends when insider trading laws are weak or unenforced. First, the payment of consistently large dividends decreases the need for outside shareholders to trade in the capital market to satisfy their intertemporal consumption requirements. Staying out of the market reduces shareholder exposure to asymmetric information costs in the form of trading against informed traders. Second, large dividend payouts moderate managerial incentives for wealth expropriation and thereby act as a bonding mechanism to reduce agency costs (Easterbrook, 1984; Jensen, 1986). Third, a stable dividend policy (i.e., dividend smoothing) can alleviate problems associated with both agency costs and asymmetric information (Aivazian et al., 2006; Leary and Michaely, 2011).

Our central hypothesis that firms use dividend payout policy to offset the harmful effects of weak investor protection leads directly to testable implications. First, managers should be more willing to incur the costs of committing to high and stable dividend payouts when the national government does not have restrictive, binding insider trading laws. These costs serve as a credible signal to outside shareholders that insiders are committed to fair treatment – and represent, in essence, a type of performance bond against future breaches. We test this implication by examining the impact of insider trading law restrictiveness (and enforcement) on the propensity to pay dividends, dividend amounts, and the use of dividend smoothing. Second, outside investors should place a higher valuation on dividend payouts when such payments serve the purpose of reducing information and agency costs associated with weak investor protection. We test this implication by examining how insider trading law restrictiveness (and enforcement) is related to the market's valuation of dividend payouts. We expect that dividend payments will be more valuable in countries with weak insider trading laws relative to countries with restrictive laws; and more valuable in a country's pre-enforcement period than in its post-enforcement period.

We examine these hypotheses using two distinct samples – an international sample that focuses on cross-sectional relations between insider trading laws and payout policies, and a single country sample (case study approach) that captures time-series variations in payout policies using a pre-versus-post enforcement setting. The cross-sectional sample is based on 32,503 firm-years across 24 countries. We use Beny's (2008) 5-point insider trading law (*ITL*) index to measure the restrictiveness of country-level insider trading laws. The time-series sample uses publicly-traded Canadian firms and covers the 10-year window surrounding the year when insider trading laws were first enforced (i.e. 1976). The advantage of this sample is that the first-time prosecution of insider trading laws serves as an exogenous shock to the institutional environment. It also allows us to measure the marginal impact of enforcement above and beyond the existence of restrictive insider trading laws (*ITLs*). As shown in Panel D of Table 1, Canada has the highest possible (i.e., most restrictive) *ITL* score of 5. Therefore, our case study results will show the incremental effects of enforcement in an already restrictive *ITL* environment.

Our empirical results provide consistent support for our central claim. For the international sample, we find that both the propensity to pay and payout amounts decline significantly with more restrictive *ITL*s. The dividend smoothing results confirm that managers are less concerned about smoothing dividend payouts when their country's *ITL*s are more restrictive. All of these results support the hypothesis that firm-level payout decisions are significantly influenced by country-level institutional quality. Managers spend less effort and cash on establishing a reputation for fair treatment when the country-level judicial system serves this function.

Additional analyses in a cross-sectional setting examine the impact of *ITL* restrictiveness on the market valuation of dividends. We find that the market's valuation of dividend payouts is significantly higher in less restrictive *ITL* countries. This result shows that outside investors place higher values on a given level of dividend payments when insider trading laws are less effective. Overall, these findings suggest that payout policy serves as an effective mechanism to reduce the negative externalities of weak judicial and regulatory institutions.

The results of our Canadian case study are similar to those in our international sample. Specifically, we find significant changes in payout policies following the first-time enforcement of insider trading laws. In the post-enforcement environment, firms reduce the frequency of paying dividends, pay out lower dividend amounts, and engage in less dividend smoothing. The market's valuation of dividend payouts declines significantly in the post-enforcement environment. In addition to providing additional support to our central hypothesis using a case study approach, the Canadian results confirm that insider trading law enforcement has a significant incremental impact on payout policies above and beyond the existence of restrictive laws.

Our study contributes to the literature by investigating and documenting the underlying connections among insider trading, payout policy, and investor protection. We use two different approaches (i.e., cross-sectional international sample and case study) to examine the ability of managers to proactively address country-level institutional weaknesses that affect firm-level information and agency problems. We test and confirm that managers do indeed set dividend policies in relation to their institutional environment. When the legal environment fails to provide adequate protection against exploitative insider trading, managers step into the breach by committing to the payment of large, stable dividends. When this environment changes (through more restrictive *ITL*s or enforcement), managers reduce their costly commitment to such payments.

Our findings also provide support for alternative hypotheses related to the determinants of dividend payout policy, the market effects of insider trading, and the ability of firms to mitigate investor protection weaknesses. Our findings support the substitute hypothesis of dividends as described in La Porta et al. (2000). The substitute hypothesis asserts that firms will increase dividend payouts in a weak investor protection environment to establish a good reputation for the treatment of minority shareholders. Our findings provide direct support for Gan, Lemmon, and Wang (2011) who argue that individual firms will use corporate policy to overcome country-level institutional weaknesses. Lastly, our results contribute to the literature on the real effects of insider trading regulation (Bhattacharya and Daouk, 2002; Bushman, Piotroski and Smith, 2005; Beny, 2005; and Chen et al., 2010).

This paper is organized in the following manner. In Section 2 we discuss related studies on insider trading and develop our hypotheses. In Section 3 we discuss data sources and international sample construction. In Section 4 we present our research methods and analyze the empirical results. In section 5 we present the data sources, methodologies, and empirical results for our Canadian case study. And in section 6 we provide a brief conclusion to the study.

2. Related literature and hypothesis development

In subsection 2.1, we briefly discuss the theoretical and empirical literature on insider trading, paying particular attention to its effect on information asymmetry and agency problems. In subsection 2.2, we integrate this literature into our hypothesis development.

2.1 Information asymmetry and agency problems

Theoretical papers show that when insiders are unrestrained from trading on private information, outside shareholders are highly susceptible to wealth losses due to information asymmetry and agency problems. Many earlier studies, including Bagehot (1971) Copeland and Galai (1983), Easley and O'Hara (1987), and Glosten and Milgrom (1985), suggest that trading costs increase when shareholders face the risk of trading with informed insiders. In addition, Maug (2002) argues that blockholders have less incentive to monitor managers when insider trading is permitted because of the greater potential for collusion between managers and blockholders. In exchange for less monitoring, managers implicitly agree to provide blockholders with any negative information to give them time to exit their block positions before such information becomes public. Maug's (2002) analysis shows that insider trading contributes to agency problems between managers and outside shareholders because managerial rents increase under weak blockholder monitoring. Easterbrook (1985) also argues that insider trading is a severe agency problem. Since managers can profit from both positive and negative information, they are not fully incentivized to maximize firm value when they are permitted to trade on private information. Consistent with this analysis, Manove (1989) argues that insider trading will lead to suboptimal investment decisions (i.e., both under and overinvestment).

A related strand of theoretical literature focuses on the consequences of informed trading for various market participants. Ausubel (1990) argues that the expectation of informed insider trading discourages investment in the firm by outsider investors. Bhattacharya and Spiegel (1991) examine the conditions under which markets can collapse. Their analysis suggests that markets break down when uninformed investors withdraw from trading because of the presence of informed insiders. All of these theoretical studies agree on the central point that the threat of insider trading leads to higher adverse selection costs and lower participation in the stock market.

Previous empirical studies confirm the theoretical predictions that information asymmetry and agency costs are exacerbated by unrestricted insider trading. Bhattacharya and Daouk (2002), for example, show that required rates of return are lower when insider trading is restricted. Bushman et al. (2005) find that analyst coverage is higher when insider trading is restricted. This result suggests that there are stronger incentives for analysts to acquire and process public information when insiders are prevented from exploiting their private information. In addition, Beny (2005, 2008) shows that the legal restriction of insider trading leads to a more diffusely-owned shareholder base, greater price informativeness, more liquidity, and higher equity valuation. Finally, Chen et al. (2010) find that corporate investment policies become more sensitive to growth opportunities and less sensitive to cash flows after the enforcement of insider trading laws. These results suggest that the quality of a firm's investment policy increases after the enforcement of insider trading restrictions.[1]

2.2 Hypothesis development

Our central hypothesis is that managers use firm-level dividend policy as a bonding mechanism to mitigate country-level institutional weaknesses. We posit that large and stable cash dividend payouts serve to establish the firm's reputation for fair treatment of outside shareholders, especially when the country's legal system fails to prevent insider trading. Managers weigh the costs of establishing such reputations against the potential benefits of reduced information and agency costs. Their cost-benefit analyses, and consequent dividend policies, depend crucially on the restrictiveness of country-level insider trading laws.

Large, stable dividends are particularly attractive to uninformed investors since such payouts reduce the necessity of liquidating equity holdings for the purpose of allocating intertemporal consumption. With less need for capital market transactions, uninformed investors lower the probability of trading against informed insiders (Brennan and Thakor, 1990). In addition to mitigating asymmetric information problems, payout policy can also be used to address agency problems. Large dividend payouts reduce the availability of free cash flow under the discretion of inside managers (Jensen, 1986), thereby limiting such value-destroying investments as empire building and excess perquisite consumption. Since lower free cash flows reduce the firm's ability to finance new projects with internal capital, large dividend payouts subject the firm to additional monitoring by compelling it to raise capital in external markets (Easterbrook, 1984).

[1] Our analysis and review of the relevant literature focuses primarily on the costs of insider trading. It should be noted, however, that there is another line of research in the law and economics literature that focuses on potential benefits of insider trading. Bainbridge (1999) summarizes the arguments for and against the prohibition of insider trading.

The payment of large, stable dividends serves as a costly (and therefore credible) signal of the firm's commitment to the fair treatment of outside shareholders. As argued in Gan, Lemmon, and Wang (2011, p. 7), this type of reputation building is costly because "firms have to substitute the relatively cheaper internal funds for more expensive external financing, which adds to the overall cost of financing and results in foregone investment opportunities compared to the first best". Mimicking behavior is circumscribed by potentially severe penalties imposed by the market whenever dividend payouts are reduced (Lintner, 1956). In a recent paper, Kose et al. (2011) show that large dividend payouts are used as a bonding mechanism by remotely-located firms with high free cash flow and low investment opportunities. Their findings suggest that when shareholder monitoring is weak, companies commit to high payout policies to minimize agency costs.

Previous research on dividend smoothing, beginning with Lintner (1956), show that commitment to a persistent (smooth) dividend stream can alleviate information and agency costs. Aivazian, Booth, and Cleary (2006) find a significant relation between the use of dividend smoothing and the need to access public markets. Managers practice more intensive dividend smoothing when they need to access public debt markets, due to concerns about information asymmetry and agency problems, than when they access private debt markets. Similarly, Dewenter and Warther (1998) show that US firms practice more intensive dividend smoothing than their more closely-held Japanese (keiretsu) counterparts due to less concern about information and agency problems for the latter. In a related paper, Michaely and Roberts (2011) compare the use of dividend smoothing between publicly-listed and private firms. Their results show that managers of diffusely-held public firms engage in more dividend smoothing to address information and agency problems than managers of closely-held private firms.

Based on the literature review and our analysis above, we expect that managers will use dividend payout policy to reduce gaps in country-level institutional environments. When a country's legal/regulatory environment fails to discourage insider trading, managers will step into this breach and establish their reputation for fair treatment using high levels of stable dividend payouts. Our central hypothesis is that dividend policy is significantly influenced by the effectiveness of insider trading laws. Specifically, dividend payouts (i.e., propensities, magnitudes, smoothing, and market valuations) will be larger for firms operating in ineffective legal/regulatory environments. We test this hypothesis using an international sample of firms across 24 countries (cross-sectional analysis), as well as using a case study where we have a clean before-and-after enforcement sample (time series analysis).

3. Sample construction and variables: International sample

3.1 International sample construction

We collect firm-level financial accounting and market information from COMPUSTAT Global over the period from 1994 to 1997. Following Beny (2008), we restrict the sample to 1994-1997 since this is the relevant period over which Beny's (2008) insider trading law (*ITL*) index is directly applicable. Beny (2008) constructs *ITL* variable based on Gaillard (1992) and Stamp and Welsh (1996). In order to be included in the final sample, we require that each firm-year observation has (1) fully consolidated accounting statements, (2) membership in a non-regulated industry, and (3) all the data fields required for analyses. After applying these filters, our main sample has 32,503 firm-year observations across 24 countries.

3.2 Dependent variables

We construct the following set of dependent variables. *PAYER* is a dummy variable that equals 1 if the firm pays dividends (DVC > 0) and 0 otherwise. *PAYER* is used in logistic regressions. For Tobit regressions, we consider three alternative measures for payout ratios: *DIV_TO_S* is the ratio of dividends (DVC) to sales (SALE); and *DIV_TO_CF* is the ratio of dividends (DVC) to cash flow (i.e., net income (NI) plus depreciation (DP)). Since payout ratios are not meaningful when the denominator (earnings or cash flow) is negative, we calculate *DIV_TO_E* and *DIV_TO_CF* for firms that have positive net incomes and cash flows, respectively.

3.3 Treatment variable: Insider trading law restrictiveness

Our main treatment variable is Beny's (2008) insider trading law (*ITL*) index. The *ITL* is a composite measure ranging from 0 (minimum restrictiveness) to 5 (maximum restrictiveness) based on five key components of insider trading laws. These components are identified and discussed (but not quantified) in Gaillard (1992) and Stamp and Welsh (1996). Each component takes as value of 1 or 0. The first component, "Tipping," equals 1 if insiders are prohibited from giving material nonpublic information to outsiders, and 0 otherwise. The second component, "Tippee," equals 1 if individuals who receive material nonpublic information are prohibited from trading on such information, and 0 otherwise. The third component, "Damages," equals 1 if the penalties for trading on material nonpublic information are proportional to the profits earned by such trading, and 0 otherwise. The fourth component, "Criminal," equals 1 if violators of insider trading laws face the possibility of criminal charges, and 0 otherwise. And the fifth component, "Private," equals 1 if private parties have a right to take legal action against insider trading law violators, and 0 otherwise. The *ITL* index is simply the sum of these five components.

3.4 Control variables

We control for six firm-specific characteristics that are widely used in the payout literature: *RTE* is retained earnings (RE) scaled by the book value of assets (TA); *TE* is shareholder equity (CEQ) scaled by the book value of total assets (TA); *ROA* is net income (NI) scaled by the book value of total assets (TA); *SGR* is the rate of sales growth in logarithms (i.e., $\ln(SALE_t/SALE_{t-1})$); *LOGSIZE* is the natural logarithm of the book value of total assets (TA) in billions of US dollars; and *CASH* is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). The predicted signs between our firm-specific variables and dividends are as follows: retained earnings (+), equity-ratio (+/-), profitability (+), sales growth (-), size (+), and cash holdings (+/-). DeAngelo, DeAngelo, and Stulz (2006) argue that predicted signs for equity-ratios and cash holdings are ambiguous. Firms with low equity ratios might be in financial trouble and do not pay dividends because of financial distress, while firms with high equity ratios might be start-up firms and do not pay dividends because of growth opportunities. Similarly, firms can have high cash holdings due to accumulated free cash flows, or due to the need to finance future growth. In the first case, firms are likely to pay dividends and in the second they are not.

In addition to firm-level variables, we also control for country-level variables related to shareholder rights and creditor rights. Our anti-director index (*AD*) and creditor rights (*CR*) are from Djankov, McLiesh, and Shleifer (2007) and Djankov et al. (2008), respectively. Preliminary results based on principle components analysis shows that variations in our main treatment variable (*ITL*) are not subsumed by variations in shareholder rights (*AD*) or creditor rights (*CR*). We report these findings in Figure 1. The top graph shows that *ITL*, *AD*, and *CR* have two distinct components as the eigenvalues of the first two components are greater than one and the third component is significantly less than 1. The bottom graph shows the contribution of

ITL, *AD*, and *CR* to these two components. We find that *AD* and *CR* primarily contribute to component 1. In contrast, component 2 has a very high loading on *ITL* and much smaller loadings on *AD* and *CR*, suggesting that *ITL*'s variation is not captured by *AD* and *CR*. These results show that the information content of *ITL* is quite distinct from *AD* and *CR*.

In Table 1, we present descriptive statistics, the number of observations by year, industry distributions, country-level institutional variables, and country-level number of observations for our sample in Panels A, B, C, D, and E, respectively. Panel A presents the number of observations, means, medians, standard deviations, and variable values at the 5^{th}, 25^{th}, and 75^{th} percentiles. We find considerable variation across most of the dependent and independent variables. As expected, the median value for each dependent variable is 0. The mean firm-year propensity to pay dividends is 37.3% for the sample. The mean firm-year dividend payout amounts are: dividend-to-sales ratio (*DIV_TO_S*) of 0.9%; dividend-to-earnings ratio (*DIV_TO_E*) of 15.3%; and dividend-to-cash flow ratio (*DIV_TO_CF*) of 8.6%. For the independent variables, the median firm-year values are: 8.3% for retained earnings over book value of total equity (*RTE*); 0.475 (in billions of US dollars) for equity (*TE*); 3.1% for return on assets (*ROA*); 11.6% for the rate of sales growth (*SGR*); -2.371 for the natural logarithm of the book value of total assets (*LOGSIZE*); and 8.1% for cash and short-term investments scaled by the book value of total assets (*CASH*).

In Panel B we present the number of observations by *ITL* category (scores of 1 through 5) and by year. The number of observations increases in each *ITL* category over the sample period, with the largest percentage increase in category 2 going from 148 observations in 1994 to 969 observations in 1997. Summing across all years, we see that the vast majority of firms operate in a category 5 legal environment (i.e., the most restrictive insider trading laws) with 26,610 firm-year observations. In contrast, we find only 66 firm-year observations that correspond to a category 1 legal environment (i.e., the least restrictive insider trading laws). In Panel C we present the industry distribution of the sample firm-years. While the sample includes more than 100 observations for each industry (based on 2-digit NAIC codes), almost half of the sample is engaged in manufacturing (i.e. 15,838 out of 32,503).

Panel D presents the country-level institutional variables, including shareholder rights (*AD*), creditor rights (CR), and the insider trading law (*ITL*) index, for each of our 24 countries. Although there is a general tendency for more developed markets to display higher values of *AD*, *CR*, and *ITL*, there is considerable variation across these three measures. Norway, for example, ranks at the sample median values for both *AD* and *CR*, but at the bottom of the *ITL* index. In contrast, the US ranks below the sample median values for both *AD* and *CR*, but at the top of the *ITL* index. Panel E presents the number of firm-year observations by country and *ITL* score. This partition of the sample space shows that the total number of observations is heavily weighted toward US firm-years. Based on this finding, we estimate all subsequent empirical models using a full sample that includes US observations and a subsample that excludes US observations.

4. Methodology and empirical results: International sample

In this section, we present our model specifications and then discuss the empirical results. We begin with a logit model that captures changes in the likelihood of paying dividends (i.e., the firm's propensity to pay). We also use a tobit model to examine changes in dividend amounts. Next, we analyze the use of dividend smoothing caused by insider trading law (*ITL*) restrictiveness. After confirming significant differences due to *ITL* restrictiveness in the propensity to pay, dividend amounts as well as dividend smoothing, we then measure changes in the market's valuation of dividend payouts using the valuation framework in Fama and French (1998).

4.1. Logit analysis: ITL and the likelihood of paying dividends

We use multivariate logit regressions with firm level-clustered standard errors to test the relation between the likelihood of paying dividends and the restrictiveness of country-level insider trading laws. Specifically, we estimate the following logit model:

$$\begin{aligned}&\text{Prob}(PAYER_t = 1) = F(\alpha_0 + \alpha_1 RTE_t + \alpha_2 TE_t + \alpha_3 ROA_t + \alpha_4 SGR_t \\ &+ \alpha_5 LOGSIZE_t + \alpha_6 CASH_t + \alpha_7 AD + \alpha_8 CR + \alpha_9 ITL)\end{aligned} \qquad [1]$$

Our central hypothesis predicts that the coefficient on *ITL* (i.e., α_9) will be negative and significant. We present the logit results in Table 2. We estimate four separate models based on the inclusion/exclusion of time cluster controls, country-level institutional *AD* and *CR* controls, and US firm-year observations. Estimated coefficients for all control variables have their expected signs and are statistically significant. All four models appear to fit the data reasonably well with pseudo R^2s ranging from a low of 0.52 for model 4 to a high of 0.58 for model 3.

The coefficients on our main variable of interest, *ITL*, are negative and significant (p-values = 0.000) across all four models. The estimated coefficients range from -1.974 for models 2 and 3 to -1.060 for model 4. For the sake of brevity, we examine in more detail the results from model 4 which includes the full sample, as well as controls for time clustering and country-level institutional features (*AD* and *CR*). These logit results show that the propensity to pay dividends increase with higher levels of retained earnings (*RTE*), firm performance (*ROA*), firm size (*LOGSIZE*), and each of the institutional variables – shareholder rights (*AD*) and creditor rights (*CR*). In contrast, the propensity to pay dividends decreases with higher levels of equity (*TE*), sales growth (*SGR*), and cash balances (*CASH*).

The main result, however, is that after controlling for all of these significant factors (in addition to industry fixed effects, firm and time clustering), we find that firms operating in restrictive *ITL* environments have lower propensities to pay dividends than firms operating is less- restrictive *ITL* environments. This finding is consistent with our hypothesis that firms use dividend payout policy as a bonding mechanism to offset the harmful effects of weak country-level institutions. In addition to statistical significance, these results are economically significant as well. For example, in model 4 when *ITS* moves from 2 to 4 the probability of paying dividends declines by 24% for a manufacturing firm with firm characteristics evaluated at the sample medians. When *ITS* is assumed to change most drastically from 1 to 5, the corresponding decline in probability becomes 70%.

4.2. Tobit analysis: ITL and dividend payout amounts

Next, we employ multivariate tobit regressions with firm-level clustered standard errors to test the relation between insider trading laws and the amount of dividend payouts. Specifically, we estimate the following tobit model:

$$\begin{aligned} DIV\_TO\_S_t &= \alpha_0 + \alpha_1 RTE_t + \alpha_2 TE_t + \alpha_3 ROA_t + \alpha_4 SGR_t + \alpha_5 LOGSIZE_t \\ &\quad + \alpha_6 CASH_t + \alpha_7 AD + \alpha_8 CR + \alpha_9 ITL + \varepsilon_t \\ &\quad \text{where } DIV\_TO\_S_t = \begin{cases} DIV\_TO\_S_t & ;\ \text{if } DIV\_TO\_S_t > 0 \\ 0 & ;\ \text{otherwise} \end{cases} \end{aligned} \qquad [2]$$

In addition to using dividends-to-sales (*DIV_TO_S*) as the dependent variable, we also use dividends-to-earnings (*DIV_TO_E*) and dividends-to-cash flow (*DIV_TO_CF*). For each dependent variable in Panel A (*DIV_TO_S*), Panel B (*DIV_TO_E*), and Panel C (*DIV_TO_CF*) of Table 3 we present the tobit estimates of four separate models based on the inclusion/exclusion of time cluster controls, country-level institutional *AD* and *CR* controls, and

US firm-year observations. The control variables have their expected signs and are statistically significant (with the exception of *TE* in some models) across all three Panels.

In Panel A, all four coefficients on *ITL* are negative and statistically significant at the 5% level. The coefficient magnitudes range from -0.012 for models 1 and 2 to -0.001 for model 4. These results show that increases in country-level *ITL* restrictiveness significantly reduce the firm's dividend payouts as a percentage of sales (*DIV_TO_S*), even after controlling for other payout determinants. We find similar results in Panels B and C. All four coefficients on *ITL* are negative and statistically significant at the 0.01% level in Panel B, with coefficient magnitudes ranging from -0.285 for models 1 and 2 to -0.171 for model 3. Increases in country-level *ITL* restrictiveness significantly reduce the firm's dividend payouts as a percentage of earnings (*DIV_TO_E*) with various control variables included. In Panel C, we examine the impact of *ITL* restrictiveness on dividend payouts as a percentage of cash flows (*DIV_TO_CF*). We again find that all four coefficients on *ITL* are negative and statistically significant at the 0.01% level. The coefficient magnitudes range from -0.138 for models 1 and 2 to -0.046 for model 4.

In addition to statistical significance, the results in Table 3 are economically significant. Focusing on the model 4 results, for example, when *ITL* increases from 2 to 4 predicted decrease in payout ratio (measured as dividend-to-sales in Panel A) is 1.4%, which is quite significant compared to the sample mean of 0.9%. When *ITL* is assumed to increase from 1 to 5, predicted decline in dividend-to-sales becomes 2.8%. When payout ratios are measured as dividend-to-earnings and dividend-to-cash-flow (in Panels B and C), declines in payout ratios are predicted as 32% and 18% for a change in *ITL* from 2 to 4, and as 63% and 34% for a change from 1 to 5. These findings are quite significant considering that sample means for dividend-to-sales and dividend-to-earnings are 15.3% and 8.6%

Overall, the results in Table 3 confirm that firms operating in weak institutional environments with respect to insider trading laws tend to pay out larger cash dividends. These payouts help to overcome institutional gaps through bonding (i.e., the firm's management bonds itself to fair treatment of shareholders by committing to large dividend payouts).

4.3. ITL and dividend smoothing

Consistent with our central hypothesis, we also expect that *ITL* restrictiveness will reduce the need for smooth dividend payouts. We test whether managers engage in more dividend smoothing to build their reputations in weak *ITL* countries by examining changes in the speed of dividend adjustments. The degree to which managers smooth their dividend payouts is captured empirically by analyzing the relation between changes in dividend payouts and changes in earnings. More sensitivity (i.e., faster speed of adjustment) is interpreted as less smoothing. To test our hypothesis, we estimate the speed of adjustment using the following models:

$$\begin{aligned} DPS_t &= \alpha_0 + \alpha_1 EPS_t + \alpha_2 DPS_{t-1} + \alpha_3 ITL \\ &\quad + \alpha_4 EPS_t \times ITL + \alpha_5 DPS_{t-1} \times ITL + \varepsilon_t \end{aligned} \qquad [3]$$

$$\begin{aligned} DPS_t &= \alpha_1 EPS_t + \alpha_2 DPS_{t-1} + \alpha_3 ITL \\ &\quad + \alpha_4 EPS_t \times ITL + \alpha_5 DPS_{t-1} \times ITL + \varepsilon_t \end{aligned} \qquad [4]$$

where *DPS* and *EPS* are dividends per share and earnings per share, respectively. The first specification is from Lintner (1956) and the second specification is from Fama and Babiak (1968).[2] The basic difference between these two models is that the second model constrains the

[2] Dividend smoothing is captured by a speed of adjustment coefficient representing the manager's willingness to change dividend payouts. A lower measure indicates less willingness to change dividend payouts and a higher measure represents a stronger proclivity towards smoothing. The Lintner model estimates this speed of adjustment parameter using the regression model, $DPS_t - DPS_{t-1} = \alpha + c(DPS_t^* - DPS_{t-1}) + u_t$, where DPS_t^* is the target dividend at time t; DPS_t and DPS_{t-1} are dividends at time t and t-1; c is the speed of adjustment coefficient; α is the intercept; and u_t is the error term. The target level of dividends is unobserved and Lintner hypothesizes that it is equal to a target payout ratio multiplied by earnings, or $DPS_t^* = rEPS_t$, where EPS_t is earnings per share at time t; and r is the target payout ratio. Substituting this relation into the previous equation and rearranging the terms, we obtain the following regression model: $DPS_t = \alpha + crEPS_t + (1-c)DPS_{t-1} + u_t$. This model implies that current dividends are a

intercept term to be zero. We estimate both models to ensure that our findings are not sensitive a particular model specification. The main coefficient of interest is α_5. α_5 identifies the impact of *ITL* on the speed of adjustment. If, as hypothesized, the estimated coefficient on α_5 is significantly negative, then this is evidence that the speed of adjustment increases with insider trading law restrictiveness.

We present our empirical results related to dividend smoothing in Table 4. The noticeable difference in these analyses is small sample size. The main reason for reduction in the sample size is partial adjustment equations are estimated for companies that paid dividends at least for once and survived the full sample period. In our analyses on Canadian data this reduction is much smaller as most firms paid dividends during 70s. Top panel of Table 4 reports the regression estimates for each model and the bottom panel provides implied speeds of adjustment. Consistent with expectations, in the top panel we find that dividend smoothing decreases significantly as insider trading laws become more restrictive. Coefficient values for α_5 range from -0.036 in model 1 to -0.051 in model 4. In the bottom panel, we evaluate the economic significance of our findings. Specifically, model 1 estimates, which have the least economic impact, imply that when *ITL* increases from 1 to 5, the speed of adjustment increases more than two folds from 0.134 to 0.278. Model 4 estimates, which have the strongest economic impact, suggest that speed of adjustment increases almost five folds when *ITL* index increases from 1 to 5.

Overall, these results suggest that dividend smoothing is significantly influenced by the desire to reduce agency and information asymmetry costs. In the weaker institutional environment prior to insider trading law enforcement, managers have stronger motivation to

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function of past dividends and a target level of dividends which, in turn, is determined by a target payout ratio and current earnings.

reduce such costs by smoothing dividend payouts. In the stronger protection environment following enforcement, managers see less need for smoothing.

4.4. ITL and dividend valuation

We have shown that the restrictiveness of insider trading laws reduces the propensity to pay dividends, the level of dividends, and the desire to smooth dividend payouts. In this section, we examine whether investors value dividends differently in high-versus-low *ITL* environments. We posit that the market's valuation of dividends will be significantly lower in countries with restrictive insider trading laws (i.e., high *ITL* scores) since the bonding mechanism role of such payouts is less important. To test this hypothesis, we estimate the following regression from Pinkowitz, Stulz, and Williamson (2005) and Fama and French (1998):

$$\begin{aligned}\frac{V_t}{A_t} = {} & \alpha_0 + \alpha_1 \frac{E_t}{A_t} + \alpha_2 \frac{dE_t}{A_t} + \alpha_3 \frac{dE_{t+1}}{A_t} + \alpha_4 \frac{dA_t}{A_t} + \alpha_5 \frac{dA_{t+1}}{A_t} + \alpha_6 \frac{CX_t}{A_t} \\ & + \alpha_7 \frac{dCX_t}{A_t} + \alpha_8 \frac{dCX_{t+1}}{A_t} + \alpha_9 \frac{I_t}{A_t} + \alpha_{10} \frac{dI_t}{A_t} + \alpha_{11} \frac{dI_{t+1}}{A_t} \\ & + \alpha_{12} \frac{D_t}{A_t} + \alpha_{13} \frac{dD_t}{A_t} + \alpha_{14} \frac{dD_{t+1}}{A_t} + \alpha_{15} \frac{dV_{t+1}}{A_t} + \alpha_{16} ITL \\ & + \alpha_{17} \frac{D_t}{A_t} ITL + \alpha_{18} \frac{dD_t}{A_t} ITL \\ & + \alpha_{19} \frac{dD_{t+1}}{A_t} ITL + \varepsilon_t \end{aligned} \qquad [5]$$

The dependent variable is the market value of equity (*V*) scaled by the book value of assets (*A*). All regressors are scaled by the book value of assets to control for heteroskedasticity (Fama and French, 1998). This model specifies the market valuation of dividends as a function of earnings, asset growth, investment, interest expense, and dividends.[3] Our main coefficients of interest are the slope coefficients of the interaction terms (α_{17}, α_{18}, and α_{19}). These interaction terms capture the change in market valuations due to *ITL* restrictiveness. We posit that the market will place less value on dividend payouts in high *ITL* countries, negative and significant coefficients for α_{17}, α_{18}, and α_{19}.

Due to additional data requirements, the valuation regression is estimated using a smaller sample (N = 18,953) than in previous results. We report the summary statistics for this sample along with the regression results in Table 5. Panel A provides distributional characteristics of the dependent and independent variables. Panel B reports sample sizes by year and *ITL* scores. We note that total firm-year observations are spread fairly evenly across the sample years. Panel C reports the number of observations by country and *ITL* scores. Similar to the distribution in Table 1, the sample is skewed toward US-based firms with high *ITL* scores.

Panel D provides the regression results for five models based on the inclusion/exclusion of firm/time clustering and US-based observations. The results in Panel D confirm our predictions across all four models. That is, dividend payouts are significantly more valuable in the weak institutional environments of countries that lack restrictive *ITLs.* The contribution of dividends to firm valuation (i.e., α_{12}) is positive and significant as expected. More importantly, the interaction coefficients of *ITL* and contemporaneous dividends (i.e., α_{17}) are negative and significant; the

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[3] We construct these variables as follows: *V* is the number of shares outstanding (CSHO) multiplied by either the fiscal year-end closing price (PRCC_F), if available, or the fiscal year-end monthly closing price from the Compustat Merged Monthly Security File (PRCCM); *A* is the book value of total assets; *E* is earnings before extraordinary items (IB) plus interest (XINT), deferred tax credits, and investment tax credits (TXDITC) if available; dE_t is the change in earnings from the previous year calculated as $E_t - E_{t-1}$; dE_{t+1} is the one-year ahead lead change in earnings calculated as $E_{t+1} - E_t$; *CX* is capital expenditures (CAPX); dCX_{t-1} is the change in capital expenditures from previous year calculated as $CX_t - CX_{t-1}$; dCX_{t+1} is the one-year ahead lead change in capital expenditures calculated as $CX_{t+1} - CX_t$; *I* is the annual interest expense (XINT); dI_{t-1} is the change in interest expense from previous year calculated as $I_t - I_{t-1}$; dI_{t+1} is the one-year ahead lead change in interest expense calculated as $I_{t+1} - I_t$; *D* is the annual dividend amount (DVC); dD_{t-1} is the change in dividend amount from previous year calculated as $D_t - D_{t-1}$; and dD_{t+1} is the one-year ahead lead change in dividends calculated as $D_{t+1} - D_t$.

interaction coefficients of *ITL* and dividend changes (i.e., α_{18}) are insignificant; and the interaction coefficients of *ITL* and expected changes in future dividends (i.e., α_{19}) are negative and significant. These results confirm that the market places lower valuations on dividend payouts in restrictive *ITL* environments than in less restrictive environments. When countries fail to protect investors from insider trading, dividend-paying firms can receive "a bigger bang for their dividend buck" relative to their high *ITL* counterparts.

Overall, our international results show that managers attempt to fill the gap in country-level institutional weakness. Managers use dividend policy as a bonding mechanism to mitigate outside shareholder concerns about fair treatment when national governments fail to enact sufficiently-strict insider trading laws. In the next section, we examine this issue using a unique case study that includes both a before and after insider trading law enforcement period.

5. Sample construction and variables: Canadian case study

In the previous section, we show that dividend payout policy is significantly affected by the restiveness of country-level insider trading laws. These results are based on the existence of such laws, not their actual enforcement. In this section, we investigate whether the enforcement of insider trading laws adds incremental explanatory power to dividend payout policies. To this end, we conduct a case study by focusing on the before and after effects of insider trading law enforcement. Unlike the cross-sectional nature of our international sample where the contents of insider trading laws are slow to change, the case study approach allows us to investigate the effects of a discrete change – the first time enforcement of insider trading laws. Given this emphasis on dividend payout changes following the enforcement of insider trading laws, we require a sample of publicly-traded firms with accounting and financial variables available in both a pre-enforcement period and a post-enforcement period. This means that, in addition to requiring an actual enforcement action, any such enforcement action cannot occur too early or too late in available databases.

The US capital markets will not serve our purposes, for example, since the first US enforcement action occurs relatively early in 1961 – before the beginning year of full coverage of firm-level Compustat North America data in 1963. After screening 103 potential countries (as described below), we find that the Canadian capital markets provide an ideal test sample. In addition to Canada's relatively large capital markets and firm-level sample size, its first insider trading law enforcement occurred in 1976.[4] We are therefore able to construct a 5-year pre-enforcement sample of firm-level data and a 5-year post-enforcement sample of firm-level data.

Before presenting our Canadian sample, we first describe the country selection process. We begin with 103 countries listed in Bhattacharya and Daouk (2002) and eliminate the 65 countries that had not enforced insider trading laws as of their publication. The remaining 38 countries have first-time enforcements ranging from 1961 for the US to 1999 for Oman. With the exception of Canada, however, none of these countries has sufficient data coverage in the pre-enforcement period, post-enforcement period, or both. As mentioned above, the first enforcement action in the US occurred two years before firm-level data became available through Compustat North America in 1963. Similarly, the first enforcement action in the UK occurred in 1981 – several years before firm-level data became available through Compustat Global. Japan's first-enforcement in 1990 also occurs before there is sufficient coverage to construct a pre-enforcement sample. Similarly, coverage for the remaining 34 countries is

[4] We use Bhattacharya and Daouk (2002) to identify this initial enforcement date. Baillie and Alboini (1978) provide a detailed legal analysis of the underlying insider trading case – the 1976 *National Sea* decision – as promulgated by the Ontario Securities Commission.

extremely limited since the Compustat Global database only begins in 1987.[5] Denis and Osobov (2008) observe similar data limitations using the Worldscope database. In contrast to this paucity of data, Compustat North America provides a large database of Canadian firms in both its pre-enforcement and post-enforcement periods.

We collect 10 years of Canadian data covering a 5-year pre-enforcement period from 1970 to 1974, and a 5-year post-enforcement period from 1978 to 1982. We exclude the years 1975 to 1977 due to the construction of lead and lag variables employed in the study. To be included in the final sample, each company must have a fully consolidated accounting statement (CONSOL=C), be a member in a non-regulated industry (all except two digit NAICS codes 22 and 52), and have non-missing data for the variables used in analyses. Our main sample has 2,184 firm-year observations based on 250 unique firms. Using this main sample, we examine the impact of insider trading law enforcement on payout likelihood, amounts, and persistence. We construct a second sample to examine the impact of enforcement on the market's valuation of dividend payments. Due to more restrictive data requirements, this valuation sample includes 1,546 firm-year observations based on 230 unique firms.

5.1. Variable definitions and summary statistics: Canadian case study

We use the same variable definitions and construction as described above for the international sample. The dependent and independent variable definitions are the same as those used in the international section, with two exceptions: first, that there is no independent variable comparable to the insider trading law index (*ITL*), and second, we define a new dummy variable (*IT_ENFORCED*) that equals 1 in the period following the first-time prosecution of insider

[5] We examine the annual number of firm observations by country and find that Compustat Global coverage appears to stabilize after 1998. Specifically, coverage across these 34 countries increases from a combined total of only 38 annual observations in 1987 to a combined total of 987 annual observations in 1997.

trading laws and 0 otherwise. Consistent with past literature, we define *IT_ENFORCED* as the first-time enforcement year and not the law enactment year.

We present summary statistics, sample sizes, and industry distributions for our sample in Panels A, B, and C, respectively, of Table 6. Panel A presents the number of observations, means, medians, standard deviations, and variable values at the 5th, 25th, and 75th percentiles. The typical (i.e., median) Canadian firm pays dividends of approximately 1% of total sales, 23.1% of earnings, and 14.3% of cash flow. Its retained earnings represent 27.2% of equity, and its equity represents 44.6% of the median asset base of roughly $88.4 million. The typical firm held 2.9% of its assets in the form of cash and experienced 14.8% sales growth and 5.3% return on assets during our 10-year sample period.

Panel B shows that annual sample sizes remain fairly stable while slightly increasing over the sample period. The smallest number of firm observations is 201 in 1970 and the largest number of firm observations is 230 in 1982. In Panel C, we report the distribution of firms across 12 industry groups. The largest number of firms belongs to the manufacturing industry (984 out of the total of 2184), followed by mining (493) and retail trade (236). Two industry categories (administrative and support and waste management; unclassified) are tied for the smallest number of firms with 10 each.

5.2. Methodologies and empirical results: Canadian case study

We use multivariate logit regressions with firm level-clustered standard errors to test the relation between the likelihood of paying dividends and insider trading law enforcement. Specifically, we estimate the following logit model:

$$\begin{aligned}\text{Prob}(PAYER_t = 1) = F(&\alpha_0 + \alpha_1 RTE_t + \alpha_2 TE_t + \alpha_3 ROA_t + \alpha_4 SGR_t \\ &+ \alpha_5 LOGSIZE_t + \alpha_6 CASH_t + \alpha_7 IT\_ENFORCED_t)\end{aligned} \quad [6]$$

We present our logit results in Table 7, both with and without controlling for industry fixed effects (i.e., models 1 and 2, respectively). Estimated coefficients for all control variables have their expected signs and, with the exception of *CASH*, are statistically significant. Both models fit the data reasonably well with pseudo R^2s for models 1 and 2 of 0.29 and 0.35, respectively.

The coefficient on our main variable of interest, *IT_ENFORCED*, is negative (-0.355) and significant at the 10% level in model 1 without controlling for industry fixed effects; it remains both negative (-0.352) and significant at the 10% level in model 2 after controlling for industry fixed effects. In addition to statistical significance, the results are economically significant since enforcement of an insider trading law leads to a 7% reduction in the likelihood of paying dividends.[6] After insider trading laws are enforced, companies have a lower propensity to pay dividends. This empirical finding supports the argument that dividends serve as a substitute for weak investor protection.

Next, we employ multivariate tobit regressions with firm-level clustered standard errors to test the relation between insider trading law enforcement and the amount of dividend payouts. Specifically, we estimate the following tobit model:

$$DIV\_TO\_S_t = \alpha_0 + \alpha_1 RTE_t + \alpha_2 TE_t + \alpha_3 ROA_t + \alpha_4 SGR_t + \alpha_5 LOGSIZE_t + \alpha_6 CASH_t + \alpha_7 IT\_ENFORCED_t + \varepsilon_t \qquad [7]$$

$$\text{where } DIV\_TO\_S_t = \begin{cases} DIV\_TO\_S_t & ;\ \text{if } DIV\_TO\_S_t > 0 \\ 0 & ;\ \text{otherwise} \end{cases}$$

Similar to the international sample, we use dividends-to-sales (*DIV_TO_S*) as the dependent variable, as well as dividends-to-earnings (*DIV_TO_E*) and dividends-to-cash flow (*DIV_TO_CF*). In Panels A, B, and C of Table 8 we present the tobit estimates with and without industry fixed effects for dividends-to-sales, dividends-to-earnings, and dividends-to-cash flows

[6] The 7% reduction is based on the logit regression estimated in model 2. All independent variables are evaluated at their sample medians and industry dummies are evaluated for the manufacturing industry. We find similar levels of economic significance using model 1.

as the dependent variable, respectively. The control variables have their expected signs and are mostly significant across all three Panels.

In Panel A, the coefficient on *IT_ENFORCED* is negative (-0.014) and statistically significant at the 0.1% level without controlling for industry effects; it remains negative (-0.016) and significant at the 0.1% level after controlling for industry effects. These results show that firms reduce their dividend amounts (as a percent of sales) after the enforcement of insider trading laws. Panel B and C confirm these findings using dividend amounts scaled by earnings and cash flows, respectively. Using dividends-to-earnings as our dependent variable in Panel B, the coefficients on *IT_ENFORCED* are negative and significant at the 0.1% level for model 1 (coefficient = -0.112) and model 2 (coefficient = -0.114). Similarly, the coefficients on *IT_ENFORCED* in Panel C are negative (-0.049) and significant at the 0.1% level for both models when dividends-to-cash flow is the dependent variable.

In addition to statistical significance, the results in Table 8 are economically significant. For example, the impact of *IT_ENFORCED* on the dividend-to-sales ratio in model 2 of Panel A translates into an unconditional decrease in the dividend-to-sales ratio of 0.8%. That is, companies reduce their dividend payouts by almost 1% of total sales in response to the enforcement of insider trading laws. Given that the median dividend-to-sales ratio is 1%, the economic impact is considerable. In terms of corporate earnings, the coefficient on *IT_ENFORCED* is -0.112. This result means that companies are willing to reduce their dividend payouts by roughly 7.7% of earnings (i.e., more than one-third of the sample median of 23.1%) following insider trading law enforcement. Finally, the *IT_ENFORCED* coefficient of -0.049 in the dividends-to-cash flow regression suggests that companies reduce dividend payouts by 3.6% of corporate cash flows – more than 25% of the sample median of 14.3%. Overall, these results provide further evidence that companies use dividends as a substitute mechanism for non-enforcement of insider trading laws. After enforcement, minority shareholders are less subject to information asymmetry and agency problems and therefore reduce their demand for dividends.

Next, we examine dividend smoothing before and after enforcement. Consistent with our hypothesis, we expect that enforcement of insider trading laws will reduce the need for smooth dividend payouts. We test whether managers engage in less dividend smoothing after enforcement by examining changes in the speed of dividend adjustments in the pre- and post-enforcement periods. The degree to which managers smooth their dividend payouts is captured empirically by analyzing the relation between changes in dividend payouts and changes in earnings. More sensitivity (i.e., faster speed of adjustment) is interpreted as less smoothing. To test our hypothesis, we estimate the speed of adjustment using the following similar models:

$$\begin{aligned} DPS_t = {} & \alpha_0 + \alpha_1 EPS_t + \alpha_2 DPS_{t-1} + \alpha_3 IT\_ENFORCED \\ & + \alpha_4 EPS_t \times IT\_ENFORCED + \alpha_5 DPS_{t-1} \times IT\_ENFORCED_t + \varepsilon_t \end{aligned} \quad [8]$$

$$\begin{aligned} DPS_t = {} & \alpha_1 EPS_t + \alpha_2 DPS_{t-1} \\ & + \alpha_4 EPS_t \times IT\_ENFORCED_t + \alpha_5 DPS_{t-1} \times IT\_ENFORCED + \varepsilon_t \end{aligned} \quad [9]$$

where *DPS* and *EPS* are dividends per share and earnings per share, respectively. The coefficients α_2 and α_5 identify the magnitude of the speed of adjustment during the pre- and post-enforcement periods, respectively. More specifically, α_2 measures dividend smoothness and 1-α_2 measures the speed of adjustment during the pre-enforcement period. The combination of coefficients (i.e., $\alpha_2+\alpha_5$) measures dividend smoothness and the speed of adjustment (i.e., 1-($\alpha_2+\alpha_5$)) in the post-enforcement period. If, as hypothesized, the estimated coefficient on α_5 is significantly negative (i.e., $\alpha_5 < 0$), then this is evidence that the speed of adjustment has increased in the post-enforcement period (i.e., if post-enforcement speed of 1-(α_2+α_5) > pre-enforcement speed of (1- α_2), then $\alpha_5 < 0$).

We present our empirical results related to dividend smoothing in Table 9. The top panel reports the regression estimates for each model and the bottom panel provides the implied speeds of adjustment. Consistent with expectations, in the top panel we find that dividend smoothing decreases significantly after insider trading laws are enforced (α_5 = -0.285 and significant at the 1% level). In the bottom panel, we find an increase in the speed of adjustment (based on Lintner's specification) from 0.053 to 0.338 after insider trading laws are enforced. This difference is statistically significant at the 1% level. The results based on Fama and Babiak's specification are quite similar. When insider trading laws are enforced, the speed of adjustment increases from 0.059 to 0.360 at a 1% statistical level of significance.

Overall, these results suggest that dividend smoothing is significantly influenced by the desire to reduce agency and information asymmetry costs. In the weaker institutional environment prior to insider trading law enforcement, managers have stronger motivation to reduce such costs by smoothing dividend payouts. In the stronger protection environment following enforcement, managers see less need for smoothing.

Finally, we posit that the market's valuation of dividends will fall significantly after enforcement since the bonding mechanism role of such payouts is reduced in the post-enforcement period. To test this hypothesis, we estimate the following regression:

$$\frac{V_t}{A_t} = \alpha_0 + \alpha_1 \frac{E_t}{A_t} + \alpha_2 \frac{dE_t}{A_t} + \alpha_3 \frac{dE_{t+1}}{A_t} + \alpha_4 \frac{dA_t}{A_t} + \alpha_5 \frac{dA_{t+1}}{A_t} + \alpha_6 \frac{CX_t}{A_t}$$
$$+ \alpha_7 \frac{dCX_t}{A_t} + \alpha_8 \frac{dCX_{t+1}}{A_t} + \alpha_9 \frac{I_t}{A_t} + \alpha_{10} \frac{dI_t}{A_t} + \alpha_{11} \frac{dI_{t+1}}{A_t}$$
$$+ \alpha_{12} \frac{D_t}{A_t} + \alpha_{13} \frac{dD_t}{A_t} + \alpha_{14} \frac{dD_{t+1}}{A_t} + \alpha_{15} \frac{dV_{t+1}}{A_t} + \alpha_{16} IT\_ENFORCED_t \quad [10]$$
$$+ \alpha_{17} \frac{D_t}{A_t} IT\_ENFORCED_t + \alpha_{18} \frac{dD_t}{A_t} IT\_ENFORCED_t$$
$$+ \alpha_{19} \frac{dD_{t+1}}{A_t} IT\_ENFORCED_t + \varepsilon_t$$

Our main coefficients of interest are the slope coefficients of the interaction terms (α_{17}, α_{18}, and α_{19}). These interaction terms capture the change in market valuations after the enforcement of insider trading laws. We posit that the market will value dividend payouts less in the post-enforcement period because of their diminished role in reducing agency costs, implying negative and significant coefficients for α_{17}, α_{18}, and α_{19}.

Additional data requirements lead to a reduction in the sample size (N = 1,546) compared to previous results. We report the results for this sample in Table 10. Panel A provides distributional characteristics of the dependent and independent variables. Panel B reports sample sizes by year. We note that firm-year observations are spread fairly evenly across the sample years. Panel C reports the industry breakdown of the valuation sample.

The regression results presented in Panel D confirm our predictions. That is, dividend payouts are significantly more valuable in the weaker institutional environment prior to enforcement. The contribution of dividends to firm valuation (D_t/A_t) before the enforcement of insider trading laws is positive as measured by α_{12} (7.3 in Model 1 and 3.5 Model 2). This coefficient is significant at the 10% level. More importantly, the interaction coefficient (α_{17}) of *IT_ENFORCED* and dividends is negative (-6.0 and -5.0 in Model 1 and Model 2) and statistically significant at the 10% level. The contribution of the expected changes in future dividends also declines during the post-enforcement period; that is, the interaction coefficient (α_{19}) of *IT_ENFORCED* and dD_t/A_t is negative and significant at 10%. We do not find evidence that past changes in dividends contributes to firm value as the coefficient estimates of α_{13} and α_{18} are insignificant. These results confirm that investors value dividend payouts significantly less following the enforcement of insider trading laws. These findings also provide additional support for the idea that dividends serve as a substitute for the lack of enforcement.

Overall, the results from the Canadian case study are consistent with the results from the international database; specifically, managers attempt to fill gaps in country-level weaknesses through the implicit promise to pay large, stable cash dividends. In addition, the Canadian case study results are based on a time-series (before-and-after) analysis as opposed to cross-sectional analysis used for the international sample. The Canadian case study results also confirm that the enforcement of insider trading laws has a significant impact on dividend payout policy, over and above the significant impact of the existence of such laws.

6. Conclusion

In an environment of toothless insider trading laws (i.e., nonbinding, low *ITL* scores), shareholders are especially vulnerable to insiders due to information asymmetry and agency problems. Outside shareholders not only face the risk of trading with informed insiders but they are also subject to the decision making of insiders who are not fully incentivized to maximize firm value. Inside decision makers might find it more profitable to benefit from value-destroying decisions (and trading against uninformed outsiders) than by sharing the gains of value-maximizing decisions. Outside shareholders are also susceptible to trading against informed blockholders who relinquish effective monitoring in exchange for the ability to trade on private information.

Demsetz (1986) argues that to offset the risk of trading against an informed insider, shareholders will demand either higher rates of return (as confirmed in Bhattacharya and Daouk, 2002) or larger dividend payouts. Our study is directly related to this latter prediction. We examine dividend policies in a cross-country setting in which some countries have restrictive insider trading laws and others do not. We also examine dividend policy changes before and after the enforcement of insider trading laws. We hypothesize that when insider trading laws are non-binding, managers have stronger incentives to pay out higher and more persistent (smooth) dividends in an attempt build their reputation for the fair treatment of outside shareholders.

To test our main hypothesis, we examine the dividend policies of publicly-traded firms across 24 countries. We begin by examining the impact of the restrictiveness of a country's *ITL* on the likelihood of paying dividends and the amount of dividend payments. We find that both the propensity to pay and payout amounts decline significantly with more restrictive *ITL*s. Next, we examine the impact of *ITL* restrictiveness on dividend smoothing. The results confirm that managers are less concerned about smoothing their dividend payouts when their country's *ITL*s are binding. These findings support the hypothesis that firm-level payout decisions are influenced by country-level institutional quality. Managers spend less time and effort (and cash flow) on establishing a reputation for fair treatment when the country-level judicial system and regulators serve this function.

Our last set of analyses in a cross-sectional setting examines the impact of *ITL* restrictiveness on the market valuation of dividends. We find that the market's valuation of dividend payouts on firm value is significantly larger for weak *ITL* countries. This result confirms that investors place a higher value on dividend payments when unrestricted insider trading remains a threat. Overall, our findings suggest that payout policy serves as a valuable tool to reduce the negative externalities associated with poor investor protection and that managers use dividend payouts as a substitute mechanism for weak law enforcement.

In addition to this international cross-sectional setting, we also employ a case study approach to examine payout policies before and after the first-time enforcement of insider trading laws. Our results confirm that in the post-enforcement environment firms reduce the likelihood of paying dividends, pay out lower dividend amounts and engage in less dividend smoothing. We also find that the market's valuation of dividend payouts declines significantly in the post-enforcement environment.

Our study contributes to the cross-country corporate payout literature by confirming the bonding hypothesis of dividends based on the restrictiveness (or enforcement) of insider trading laws. We show that the country-level legal environment plays a significant role in determining dividend policy. When shareholders are subject to insider trading risks caused by a lack of binding restrictions, firms will pay out larger and more stable dividend streams as a substitute bonding mechanism.

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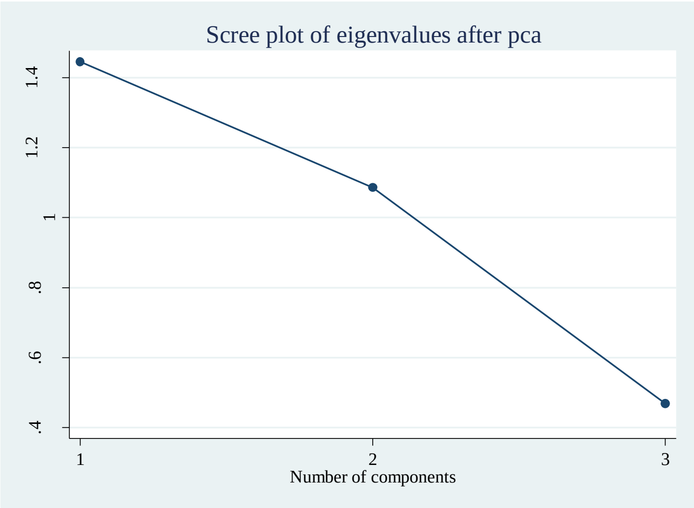
Figure 1

Principle component analysis for insider trading restrictiveness, shareholder rights and creditor rights proxies

The top graphs shows the scree plot resulting from principal components analysis for insider trading restrictiveness (*ITL*), shareholder rights (*AD*) and creditor rights (*CR*). The bottom graph shows the component loadings of each variable for the first and second components.



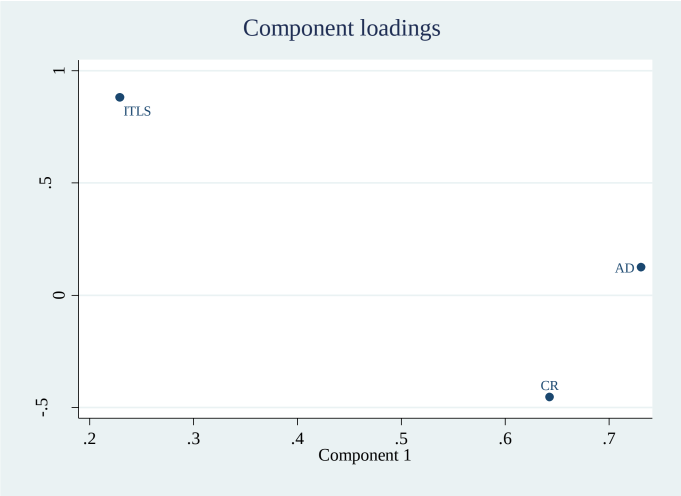


Table 1
International Sample
Summary Statistics

This table shows the summary statistics for the international sample that uses the insider trading laws restrictiveness index, *ITL*. *ITL* ranges between 1 (least restrictive) and 5 (most restrictive). The index components are based on Gaillard (1992) and Stamp and Welsh (1996). The restrictiveness index is defined for the period 1994-1997 from Beny (2008). Panel A shows the descriptive statistics. Panel B shows the number of observation by year. Panel C shows the number of observations by industry. Panel D shows the country level institutional variables. The anti-director rights index *(AD)* and creditor rights *(CR)* are from Djankov, McLiesh, and Shleifer (2007) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Panel E shows the observations by country. *PAYER* equals one if the firm pays dividend (DVC > 0), otherwise equals 0. *DIV_TO_S* is the ratio of dividends (DVC) to sales (SALE). *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log ($SALE_t/SALE_{t-1}$). $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA).

Panel A: Descriptive statistics

Variable	*N*	Mean	Median	Std Dev	5th	25th	75th
PAYER	32,503	0.373	0.000	0.484	0.000	0.000	1.000
DIV_TO_S	32,503	0.009	0.000	0.026	0.000	0.000	0.008
DIV_TO_E	31,082	0.153	0.000	0.408	0.000	0.000	0.204
DIV_TO_CF	30,093	0.086	0.000	0.184	0.000	0.000	0.110
RTE	32,503	-0.397	0.083	1.839	-2.939	-0.214	0.259
TE	32,503	0.436	0.475	0.383	-0.085	0.303	0.665
ROA	32,503	-0.043	0.031	0.828	-0.601	-0.034	0.075
SGR	32,503	0.354	0.116	1.167	-0.297	-0.016	0.323
LOGSIZE	32,503	-2.320	-2.371	2.075	-5.657	-3.744	-0.946
CASH	32,503	0.160	0.081	0.197	0.001	0.021	0.221

Panel B: Number of observations by year

	ITL				
Year	1	2	3	4	5
1994	9	148	616	140	6,034
1995	12	173	665	210	6,360
1996	14	757	722	223	7,051
1997	31	969	955	249	7,165
Total	66	2,047	2,958	822	26,610

Panel C: Industry distribution

NAICS Industry Definition	2- Digit NAICS Code	*N*
Agriculture, Forestry, Fishing and Hunting	11	137
Mining	21	1,954
Construction	23	995
Manufacturing	31-33	15,838
Wholesale Trade	42	1,623
Retail Trade	44-45	2,362
Transportation and Warehousing	48-49	857
Information	51	3,657
Real Estate and Rental and Leasing	53	551
Professional, Scientific, and Technical Services	54	1,375
Administrative and Support and Waste Management	56	962
Educational Services	61	111
Health Care and Social Assistance	62	631
Arts, Entertainment, and Recreation	71	421
Accommodation and Food Services	72	834
Other Services (except Public Administration)	81	195
Total		32,503

Panel D: Country level institutional variables

Country	*AD*	*CR*	*ITL*
AUS	4	3	4
AUT	2.5	3	2
BEL	2	2	3
CAN	4	1	5
CHE	3	1	3
DEU	2.5	3	3
DNK	4	3	3
ESP	5	2	4
FIN	3.5	1	3
FRA	3	0	4
GBR	5	4	3
HKG	5	4	3
IRL	4	1	4
ISR	4	4	3
ITA	2.5	2	3
JPN	3.5	3	2
MEX	3	0	1
NLD	3	3	3
NOR	3.5	2	1
NZL	4	4	4
PRT	2.5	1	4
SGP	5	3	4
SWE	3.5	2	3
USA	3	1	5
Median	3.5	2	3

Panel E: Country level observations

	ITL				
Country	1	2	3	4	5
AUS	0	0	0	292	0
AUT	0	6	0	0	0
BEL	0	0	6	0	0
CAN	0	0	0	0	2,677
CHE	0	0	41	0	0
DEU	0	0	15	0	0
DNK	0	0	37	0	0
ESP	0	0	0	21	0
FIN	0	0	40	0	0
FRA	0	0	0	62	0
GBR	0	0	2,290	0	0
HKG	0	0	141	0	0
IRL	0	0	0	93	0
ISR	0	0	215	0	0
ITA	0	0	5	0	0
JPN	0	2,041	0	0	0
MEX	3	0	0	0	0
NLD	0	0	106	0	0
NOR	63	0	0	0	0
NZL	0	0	0	2	0
PRT	0	0	0	1	0
SGP	0	0	0	351	0
SWE	0	0	62	0	0
USA	0	0	0	0	23,933
Total	66	2,047	2,958	822	26,610

Table 2
International Sample
Effect of Insider Trading Laws Restrictiveness on Likelihood of Paying Dividends

This table reports logit regressions that model the probability of paying dividends. The dependent variable, *PAYER*, equals one if the firm pays dividend (DVC > 0), otherwise equals 0. *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log ($SALE_t/SALE_{t-1}$). $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). *ITL* is the insider trading laws restrictiveness index that ranges between 1 (least restrictive) and 5 (most restrictive). The index components are based on Gaillard (1992) and Stamp and Welsh (1996). The restrictiveness index is defined for the period 1994-1997. The anti-director rights index *(AD)* and creditor rights *(CR)* are from Djankov, McLiesh, and Shleifer (2007) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Statistical significance is calculated based on firm-level clustered standard errors and firm- and time-level clustered standard errors.

Independent Variables (Predicted sign)	Dependent variable = *PAYER*							
	(1)		(2)		(3)		(4)	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	10.530	0.000	10.530	0.000	10.386	0.000	2.662	0.061
RTE (+)	3.534	0.000	3.534	0.000	2.766	0.000	3.630	0.000
TE (+/-)	-1.029	0.000	-1.029	0.000	-0.426	0.318	-1.157	0.000
ROA (+)	2.858	0.000	2.858	0.000	4.855	0.000	2.870	0.000
SGR (-)	-0.361	0.000	-0.361	0.000	-0.521	0.000	-0.373	0.000
LOGSIZE (+)	0.474	0.000	0.474	0.000	0.615	0.000	0.486	0.000
CASH (+/-)	-1.525	0.000	-1.525	0.000	-2.402	0.000	-1.314	0.000
AD							0.607	0.000
CR							0.484	0.011
ITL (-)	-1.974	0.000	-1.974	0.000	-1.703	0.000	-1.060	0.000
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
USA included	Yes		Yes		No		Yes	
N	32,503		32,503		8,570		32,503	
Pseudo R^2	0.51		0.51		0.58		0.52	

Table 3
International Sample
Effect of Insider Trading Laws Restrictiveness on Amount of Dividends

This table reports Tobit regression results based on *DIV_TO_S*, *DIV_TO_E*, and *DIV_TO_CF* as the dependent variable. *DIV_TO_S* is the ratio of dividends (DVC) to sales (SALE). *DIV_TO_E* is the ratio of dividends (DVC) to net income (NI). *DIV_TO_CF* is dividends (DVC) scaled by cash flow calculated as net income (NI) plus depreciation (DP). *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log ($SALE_t/SALE_{t-1}$). $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). *ITL* is the insider trading laws restrictiveness index that ranges between 1 (least restrictive) and 5 (most restrictive). The index components are based on Gaillard (1992) and Stamp and Welsh (1996). The restrictiveness index is defined for the period 1994-1997. The anti-director rights index *(AD)* and creditor rights *(CR)* are from Djankov, McLiesh, and Shleifer (2007) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Statistical significance is calculated based on firm-level clustered standard errors and firm- and time-level clustered standard errors.

Panel A: Tobit regression results with *DIV_TO_S* as dependent variable

Independent	Dependent variable = *DIV_TO_S*							
Variables	(1)		(2)		(3)		(4)	
(Predicted sign)	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	0.063	0.001	0.063	0.000	0.015	0.000	-0.045	0.000
RTE (+)	0.035	0.000	0.035	0.000	0.010	0.000	0.033	0.000
TE (+/-)	0.001	0.675	0.001	0.537	0.022	0.000	0.001	0.868
ROA (+)	0.104	0.000	0.104	0.000	0.157	0.000	0.089	0.000
SGR (-)	-0.006	0.000	-0.006	0.000	-0.006	0.000	-0.007	0.000
LOGSIZE (+)	0.006	0.000	0.006	0.000	0.004	0.000	0.006	0.000
CASH (+/-)	-0.015	0.001	-0.015	0.000	-0.016	0.014	-0.006	0.037
AD							0.010	0.000
CR							0.007	0.000
ITL (-)	-0.012	0.000	-0.012	0.000	-0.004	0.000	-0.001	0.049
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
USA included	Yes		Yes		No		Yes	
N-Total	32,503		32,503		8,570		32,503	
N-Left censored	20,370		20,370		2,117		20,370	

Panel B: Tobit regression results with *DIV_TO_E* as dependent variable

Independent	Dependent variable = *DIV_TO_E*							
Variables	(1)		(2)		(3)		(4)	
(Predicted sign)	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	1.111	0.000	1.111	0.000	0.816	0.000	0.311	0.000
RTE (+)	0.718	0.000	0.718	0.000	0.304	0.000	0.704	0.000
TE (+/-)	-0.132	0.004	-0.132	0.000	0.004	0.896	-0.137	0.000
ROA (+)	2.408	0.000	2.408	0.000	1.866	0.000	2.161	0.000
SGR (-)	-0.109	0.000	-0.109	0.000	-0.126	0.000	-0.121	0.000
LOGSIZE (+)	0.113	0.000	0.113	0.000	0.075	0.000	0.117	0.000
CASH (+/-)	-0.554	0.000	-0.554	0.000	-0.548	0.000	-0.457	0.000
AD							0.125	0.000
CR							0.053	0.001

ITL (-)	-0.285	0.000	-0.285	0.000	-0.171	0.000	-0.185	0.000
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
USA included	Yes		Yes		No		Yes	
N-Total	31,082		31,082		8,168		31,082	
N-Left censored	20,609		20,609		2,609		20,609	

Panel C: Tobit regression results with *DIV_TO_CF* as dependent variable

Independent	Dependent variable = *DIV_TO_CF*							
Variables	(1)		(2)		(3)		(4)	
(Predicted sign)	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	0.687	0.000	0.687	0.000	0.342	0.000	-0.156	0.000
RTE (+)	0.373	0.000	0.373	0.000	0.131	0.000	0.357	0.000
TE (+/-)	-0.069	0.004	-0.069	0.000	0.059	0.002	-0.075	0.000
ROA (+)	1.144	0.000	1.144	0.000	1.064	0.000	1.003	0.000
SGR (-)	-0.043	0.000	-0.043	0.000	-0.050	0.000	-0.049	0.000
LOGSIZE (+)	0.051	0.000	0.051	0.000	0.030	0.000	0.053	0.000
CASH (+/-)	-0.207	0.000	-0.207	0.000	-0.225	0.000	-0.147	0.000
AD							0.078	0.000
CR							0.051	0.000
ITL (-)	-0.138	0.000	-0.138	0.000	-0.072	0.000	-0.046	0.000
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		Yes		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes	
USA included	Yes		Yes		No		Yes	
N-Total	30,093		30,093		7,243		30,093	
N-Left censored	19,876		19,876		2,228		19,876	

Table 4
International Sample
Effect of Insider Trading Laws Restrictiveness on Speeds of Adjustment

This table reports the results for the dividend adjustment models. *ITL* is the insider trading laws restrictiveness index that ranges between 1 (least restrictive) and 5 (most restrictive). The index components are based on Gaillard (1992) and Stamp and Welsh (1996). The restrictiveness index is defined for the period 1994-1997. The anti-director rights index *(AD)* and creditor rights *(CR)* are from Djankov, McLiesh, and Shleifer (2007) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Statistical significance is calculated based on firm-level clustered standard errors and firm- and time-level clustered standard errors.

Independent	Dependent variable = DPS_t							
Variables	Model 1		Model 2		Model 3		Model 4	
(Predicted sign)	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT			-0.015	0.058	-0.015	0.080	-0.019	0.045
EPS_t	0.052	0.009	0.057	0.001	0.057	0.006	0.063	0.006
DPS_{t-1}	0.902	0.000	0.903	0.000	0.903	0.000	0.929	0.000
ITL			0.008	0.000	0.008	0.000	0.010	0.000
$EPS_t \times ITL$	0.005	0.275	0.002	0.642	0.002	0.637	0.000	0.931
$DPS_{t-1} \times ITL$ (-)	-0.036	0.095	-0.041	0.100	-0.041	0.000	-0.051	0.000
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		No		Yes		Yes	
USA included	Yes		Yes		Yes		No	
N	8,818		8,818		8,818		5,434	
Pseudo R^2	0.75		0.75		0.88		0.82	

Estimated speeds of adjustment for varying degrees of insider trading restrictions

ITL	*SOA*			
	Model 1	Model 2	Model 3	Model 4
1	0.134	0.139	0.139	0.071
2	0.170	0.180	0.180	0.172
3	0.206	0.221	0.221	0.223
4	0.242	0.262	0.262	0.273
5	0.278	0.303	0.303	0.324

Table 5
International Sample
Dividend Valuation

This table shows the summary statistics and dividend valuation regression results for the international sample. Panel A shows the descriptive statistics. Panel B shows the number of observation by year and Panel C by country. *ITL* is the insider trading laws restrictiveness index that ranges between 1 (least restrictive) and 5 (most restrictive). The index components are based on Gaillard (1992) and Stamp and Welsh (1996). The restrictiveness index is defined for the period 1994-1997. The anti-director rights index *(AD)* and creditor rights *(CR)* are from Djankov, McLiesh, and Shleifer (2007) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008). Panel D shows the valuation regression results. Coefficient estimates and *p*-values of the following specification are reported. Statistical significance is calculated based on firm-level clustered standard errors and firm- and time-level clustered standard errors.

$$\frac{V_t}{A_t} = \alpha_0 + \alpha_1 \frac{E_t}{A_t} + \alpha_2 \frac{dE_{t-1}}{A_t} + \alpha_3 \frac{dE_{t+1}}{A_t} + \alpha_4 \frac{dA_{t-1}}{A_t} + \alpha_5 \frac{dA_{t+1}}{A_t} + \alpha_6 \frac{CX_t}{A_t} + \alpha_7 \frac{dCX_{t-1}}{A_t} + \alpha_8 \frac{dCX_{t+1}}{A_t} + \alpha_9 \frac{I_t}{A_t} + \alpha_{10} \frac{dI_{t-1}}{A_t} + \alpha_{11} \frac{dI_{t+1}}{A_t} + \alpha_{12} \frac{D_t}{A_t} + \alpha_{13} \frac{dD_{t-1}}{A_t} + \alpha_{14} \frac{dD_{t+1}}{A_t} + \alpha_{15} \frac{dV_{t+1}}{A_t} + \alpha_{16} ITL + \alpha_{17} ITL \frac{D_t}{A_t} + \alpha_{18} ITL \frac{dD_{t-1}}{A_t} + \alpha_{19} ITL \frac{dD_{t+1}}{A_t} + \varepsilon_t$$

V_t is the market value of equity computed as number of shares outstanding (CSHO) multiplied by either the fiscal year-end closing price (PRCC_F) if available or by the fiscal year-end monthly closing price from the Compustat Merged Monthly Security File (PRCCM). A_t is the book value of assets (TA). As for global companies, the market value is calculated as the adjusted number (QUNIT) of shares outstanding (CSHO) multiplied by the fiscal year-end monthly closing price (PRCCD) obtained from the Merged Global Security Daily File. Exchange rate conversions are made by using the Global Currency File where necessary. E_t is earnings before extraordinary items (IB) plus interest (XINT), deferred tax credits, and investment tax credits (TXDITC) if available. dE_{t-1} is the change in earnings from previous year calculated as $E_t - E_{t-1}$. dE_{t+1} is the one-year lead change in earnings from current year calculated as $E_{t+1} - E_t$. CX_t is capital expenditures (*CAPX*). dCX_{t-1} is the change in capital expenditures from previous year calculated as $CX_t - CX_{t-1}$. dCX_{t+1} is the one-year lead change in capital expenditures from current year calculated as $CX_{t+1} - CX_t$. I_t is the annual interest expense (XINT). dI_{t-1} is the change in interest expense from previous year calculated as $I_t - I_{t-1}$. dI_{t+1} is the one-year lead change in interest expense from current year calculated as $I_{t+1} - I_t$. D_t is annual dividend amount (DVC). dD_{t-1} is the change in dividend amount from previous year calculated as $D_t - D_{t-1}$. dD_{t+1} is the one-year lead change in dividends from current year calculated as $D_{t+1} - D_t$.

Panel A: Summary statistics

Stat.	Variables															
	$\frac{V_t}{A_t}$	$\frac{E_t}{A_t}$	$\frac{dE_{t-1}}{A_t}$	$\frac{dE_{t+1}}{A_t}$	$\frac{dA_{t-1}}{A_t}$	$\frac{dA_{t+1}}{A_t}$	$\frac{CX_t}{A_t}$	$\frac{dCX_{t-1}}{A_t}$	$\frac{dCX_{t+1}}{A_t}$	$\frac{I_t}{A_t}$	$\frac{dI_{t-1}}{A_t}$	$\frac{dI_{t+1}}{A_t}$	$\frac{D_t}{A_t}$	$\frac{dD_{t-1}}{A_t}$	$\frac{dD_{t+1}}{A_t}$	$\frac{dV_{t+1}}{A_t}$
N	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953	18,953
Mean	1.212	0.044	0.003	-0.001	0.111	0.064	0.073	0.010	0.007	0.019	0.001	0.002	0.011	0.001	0.000	0.085
Median	0.880	0.066	0.010	0.007	0.088	0.059	0.053	0.006	0.003	0.015	0.000	0.000	0.000	0.000	0.000	0.017
StdDev	1.132	0.098	0.074	0.087	0.217	0.179	0.069	0.053	0.057	0.018	0.009	0.010	0.018	0.009	0.008	0.915
5th	0.201	-0.162	-0.136	-0.165	-0.198	-0.238	0.007	-0.064	-0.074	0.000	-0.011	-0.010	0.000	-0.003	-0.004	-1.022
25th	0.880	0.066	0.010	0.007	0.088	0.059	0.053	0.006	0.003	0.015	0.000	0.000	0.000	0.000	0.000	0.017
75th	1.504	0.097	0.033	0.034	0.203	0.170	0.091	0.025	0.023	0.026	0.004	0.005	0.016	0.001	0.001	0.269

Panel B: Number of observations by year

Year	*ITL*				
	1	2	3	4	5
1994	0	26	483	40	3,440
1995	17	30	655	215	3,676
1996	21	31	736	223	3,999
1997	28	37	958	256	4,082
Total	66	124	2,832	734	15,197

Panel C: Panel B: Number of observations by country

Country	*ITL*				
	1	2	3	4	5
ARG	0	0	8	0	0
AUS	0	0	0	329	0
AUT	0	20	0	0	0
BEL	0	0	1	0	0
CAN	0	0	0	0	1,685
CHE	0	0	151	0	0
DEU	0	0	164	0	0
DNK	0	0	86	0	0
ESP	0	0	0	28	0
FIN	0	0	81	0	0
FRA	0	0	0	29	0
GBR	0	0	1,828	0	0
GRC	0	3	0	0	0
HKG	0	0	99	0	0
IRL	0	0	0	64	0
ISR	0	0	89	0	0
ITA	0	0	27	0	0
JPN	0	101	0	0	0
KOR	0	0	0	0	125
MEX	2	0	0	0	0
NLD	0	0	239	0	0
NOR	64	0	0	0	0
NZL	0	0	0	25	0
PRT	0	0	0	10	0
SGP	0	0	0	249	0
SWE	0	0	59	0	0
USA	0	0	0	0	13,387
Total	66	124	2,832	734	15,197

Panel D: Dividend valuation regression results

Coefficient (Predicted sign)	Model 1		Model 2		Model 3		Model 4		Model 5	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
α_0	1.247	0.000	1.247	0.000	-0.057	0.518	-0.057	0.584	0.063	0.466
α_1 (+)	2.424	0.000	2.424	0.000	2.325	0.000	2.325	0.000	0.136	0.110
α_2 (+)	1.003	0.000	1.003	0.001	0.992	0.000	0.992	0.001	0.170	0.677
α_3 (+)	-0.560	0.000	-0.560	0.000	-0.516	0.000	-0.516	0.000	-0.092	0.753
α_4 (+)	1.357	0.000	1.357	0.000	1.309	0.000	1.309	0.000	0.785	0.000
α_5 (+)	1.424	0.000	1.424	0.000	1.373	0.000	1.373	0.000	0.723	0.000
α_6 (+)	0.649	0.000	0.649	0.007	0.614	0.001	0.614	0.009	0.915	0.002
α_7 (+)	0.037	0.817	0.037	0.903	0.090	0.568	0.090	0.765	0.021	0.842
α_8 (+)	0.569	0.000	0.569	0.000	0.592	0.000	0.592	0.000	0.626	0.187
α_9 (-)	-13.637	0.000	-13.637	0.000	-17.110	0.000	-17.110	0.000	-17.676	0.000
α_{10} (-)	-7.356	0.000	-7.356	0.000	-7.365	0.000	-7.365	0.000	-2.801	0.101
α_{11} (-)	-11.163	0.000	-11.163	0.000	-20.064	0.000	-20.064	0.000	-10.799	0.000
α_{12} (+)	7.487	0.000	7.487	0.000	33.833	0.000	33.833	0.000	39.582	0.000
α_{13} (+)	-0.743	0.413	-0.743	0.206	-7.067	0.093	-7.067	0.130	0.364	0.964
α_{14} (+)	5.135	0.000	5.135	0.000	16.139	0.003	16.139	0.000	30.054	0.000
α_{15} (+)	-0.093	0.000	-0.093	0.075	-0.097	0.000	-0.097	0.063	-0.110	0.080
α_{16} (+)					0.274	0.000	0.274	0.000	0.178	0.000
α_{17} (-)					-5.360	0.000	-5.360	0.000	-7.862	0.000
α_{18} (-)					1.357	0.154	1.357	0.183	-0.380	0.869
α_{19} (-)					-2.130	0.096	-2.130	0.005	-6.150	0.010
Firm cluster	Yes		Yes		Yes		Yes		Yes	
Time cluster	No		Yes		No		Yes		Yes	
Industry fixed effects	Yes		Yes		Yes		Yes		Yes	
USA included	Yes		Yes		Yes		Yes		No	
N	18,953		18,953		18,953		18,953		5,566	
R^2	0.29		0.29		0.30		0.30		0.32	

Table 6
Canadian case study
Summary statistics

The sample covers 10 years (1970-1974 and 1978-1982) centered around 1976, during which the insider trading laws are first enforced in Canada. Panel A shows the descriptive statistics. Panels B and C show the number of observations with respect to year and industry. *PAYER* equals one if the firm pays dividend (DVC > 0), otherwise equals 0. *DIV_TO_S* is the ratio of dividends (DVC) to sales (SALE). *DIV_TO_E* is the ratio of dividends (DVC) to net income (NI). *DIV_TO_CF* is dividends (DVC) scaled by cash flow calculated as net income (NI) plus depreciation (DP). *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log ($SALE_t/SALE_{t-1}$). $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). *IT_ENFORCED* equals 1 in the year after the first time prosecution of insider trading laws took place and 0 otherwise.

Panel A: Summary Statistics

Variable	*N*	Mean	Median	Std Dev	5th	25th	75th
PAYER	2,184	0.725	1.000	0.446	0.000	0.000	1.000
DIV_TO_S	2,184	0.025	0.010	0.049	0.000	0.000	0.026
DIV_TO_E	2,088	0.286	0.231	0.327	0.000	0.000	0.414
DIV_TO_CF	2,143	0.168	0.143	0.172	0.000	0.000	0.249
RTE	2,184	0.246	0.272	0.358	-0.086	0.147	0.413
TE	2,184	0.476	0.446	0.221	0.148	0.321	0.620
ROA	2,184	0.054	0.053	0.079	-0.062	0.027	0.084
SGR	2,184	0.204	0.148	0.375	-0.215	0.037	0.271
LOGSIZE	2,184	-2.305	-2.422	1.739	-5.047	-3.499	-1.091
CASH	2,184	0.080	0.029	0.128	0.000	0.005	0.097

Panel B: Number of observations by year

Year	1970	1971	1972	1973	1974	1978	1979	1980	1981	1982
N	201	208	211	212	217	226	223	228	228	230

Panel C: Industry distribution

NAICS Industry Definition	2- Digit NAICS Code	*N*
Mining	21	493
Construction	23	20
Manufacturing	31-33	984
Wholesale Trade	42	142
Retail Trade	44-45	236
Transportation and Warehousing	48-49	65
Information	51	132
Real Estate and Rental and Leasing	53	30
Professional, Scientific, and Technical Services	54	34
Administrative and Support and Waste Management	56	10
Accommodation and Food Services	72	28
Unclassified	99	10

Table 7
Canadian case study
Effect of Insider Trading Laws Enforcement on Likelihood of Paying Dividends

This table reports logit regression results modeling the likelihood of paying dividends. The dependent variable is *PAYER*. *PAYER* equals one if the firm pays dividend (DVC > 0), otherwise equals 0. *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log ($SALE_t/SALE_{t-1}$). $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). *IT_ENFORCED* equals 1 in the year after the first time prosecution of insider trading laws took place and 0 otherwise. Statistical significance is based on firm and year clustered standard errors.

Independent Variables (Predicted sign)	Dependent variable = *PAYER*							
	(1)		(2)		(3)		(4)	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	2.586	0.000	1.740	0.004	2.586	0.000	1.740	0.000
RTE (+)	5.335	0.000	5.225	0.000	5.335	0.000	5.225	0.000
TE (+/-)	-3.425	0.000	-2.725	0.001	-3.425	0.000	-2.725	0.000
ROA (+)	6.998	0.000	6.455	0.000	6.998	0.000	6.455	0.000
SGR (-)	-0.807	0.000	-0.662	0.000	-0.807	0.000	-0.662	0.000
LOGSIZE (+)	0.549	0.000	0.653	0.000	0.549	0.000	0.653	0.000
CASH (+/-)	-0.403	0.741	0.528	0.708	-0.403	0.717	0.528	0.997
IT_ENFORCED (-)	-0.355	0.075	-0.352	0.090	-0.355	0.092	-0.352	0.091
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		No		Yes		Yes	
Industry fixed effects	No		Yes		No		Yes	
N	2,184		2,184		2,184		2,184	
Pseudo R^2	0.29		0.35		0.29		0.35	

Table 8
Canadian case study
Effect of Insider Trading Laws Enforcement on Amount of Dividends

This table reports the Tobit regression results. Panels A, B and C use dividend-to-sales, dividend-to-earnings and dividend-to-cash-flow as dependent variables respectively. *DIV_TO_S* is the ratio of dividends (DVC) to sales (SALE). *DIV_TO_E* is the ratio of dividends (DVC) to net income (NI). *DIV_TO_CF* is dividends (DVC) scaled by cash flow calculated as net income (NI) plus depreciation (DP). *DIV_TO_E* and *DIV_TO_CF* are calculated for firms that have positive net income and cash flow respectively. *RTE* is retained earnings (RE) scaled by the book value of assets (TA). *TE* is the shareholders' equity (CEQ) scaled by the book value of assets (AT). *ROA* is net income (NI) scaled by the book value of assets (TA). SGR_t is the logarithmic sales growth computed as log $(SALE_t/SALE_{t-1})$. $LOGSIZE_t$ is the natural logarithm of the book value assets (TA) in billion $US. $CASH_t$ is the cash and short-term investments balance (CHE) scaled by the book value of assets (TA). *IT_ENFORCED* equals 1 in the year after the first time prosecution of insider trading laws took place and 0 otherwise. Statistical significance is based on firm and year clustered standard errors.

Panel A: Tobit regression results with *DIV_TO_S* as dependent variable

Independent	Dependent variable = *DIV_TO_S*							
Variables	(1)		(2)		(3)		(4)	
(Predicted sign)	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	0.011	0.156	0.039	0.003	0.011	0.172	0.039	0.031
RTE (+)	0.047	0.002	0.067	0.000	0.047	0.002	0.067	0.000
TE (+/-)	0.004	0.852	-0.028	0.165	0.004	0.843	-0.028	0.627
ROA (+)	0.276	0.000	0.254	0.001	0.276	0.001	0.254	0.002
SGR (-)	-0.021	0.000	-0.024	0.000	-0.021	0.005	-0.024	0.005
LOGSIZE (+)	0.010	0.000	0.008	0.000	0.010	0.000	0.008	0.000
CASH (+/-)	0.055	0.063	0.046	0.128	0.055	0.053	0.046	0.043
IT_ENFORCED (-)	-0.014	0.000	-0.016	0.000	-0.014	0.006	-0.016	0.004
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		No		Yes		Yes	
Industry fixed effects	No		Yes		No		Yes	
N-Total	2,184		2,184		2,184		2,184	
N-Left censored	600		600		600		600	

Panel B: Tobit regression results with *DIV_TO_E* as dependent variable

Independent Variables (Predicted sign)	Dependent variable = *DIV_TO_E*							
	(1)		(2)		(3)		(4)	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	0.391	0.000	0.371	0.000	0.391	0.000	0.371	0.000
RTE (+)	0.694	0.000	0.714	0.000	0.694	0.000	0.714	0.000
TE (+/-)	-0.372	0.006	-0.415	0.001	-0.372	0.005	-0.415	0.002
ROA (+)	0.818	0.045	0.667	0.125	0.818	0.058	0.667	0.109
SGR (-)	-0.219	0.000	-0.204	0.000	-0.219	0.000	-0.204	0.000
LOGSIZE (+)	0.068	0.000	0.066	0.000	0.068	0.000	0.066	0.000
CASH (+/-)	-0.091	0.626	0.000	0.998	-0.091	0.642	0.000	0.977
IT_ENFORCED (-)	-0.112	0.000	-0.114	0.000	-0.112	0.009	-0.114	0.009
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		No		Yes		Yes	
Industry fixed effects	No		Yes		No		Yes	
N-Total	2,088		2,088		2,088		2,088	
N-Left censored	600		600		600		600	

Panel C: Tobit regression results with *DIV_TO_CF* as dependent variable

Independent Variables (Predicted sign)	Dependent variable = *DIV_TO_CF*							
	(1)		(2)		(3)		(4)	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT	0.152	0.000	0.134	0.001	0.152	0.000	0.134	0.000
RTE (+)	0.415	0.000	0.422	0.000	0.415	0.000	0.422	0.000
TE (+/-)	-0.144	0.061	-0.149	0.047	-0.144	0.056	-0.149	0.016
ROA (+)	0.644	0.003	0.597	0.009	0.644	0.011	0.597	0.017
SGR (-)	-0.101	0.000	-0.096	0.000	-0.101	0.000	-0.096	0.000
LOGSIZE (+)	0.032	0.000	0.033	0.000	0.032	0.000	0.033	0.000
CASH (+/-)	0.061	0.597	0.098	0.414	0.061	0.596	0.098	0.371
IT_ENFORCED (-)	-0.049	0.000	-0.049	0.000	-0.049	0.012	-0.049	0.000
Firm cluster	Yes		Yes		Yes		Yes	
Time cluster	No		No		Yes		Yes	
Industry fixed effects	No		Yes		No		Yes	
N-Total	2,143		2,143		2,143		2,143	
N-Left censored	596		596		596		596	

Table 9
Canadian case study
Effect of insider trading law enforcement on dividend smoothing

This table reports the estimation results for dividend adjustment models. The top panel shows the regression estimates for model 1 and model 2. Model 1 is estimated without the intercept whereas model 2 includes the intercept. The bottom panel contains the implied speed of adjustments estimates. The dependent variable is dividends per share at time t, DPS_t. DPS_t is dividends (DVC) at time t scaled by adjusted (AJEX) common shares outstanding (CSHO) at time t. EPS_t is net income (NI) at time t scaled by adjusted (AJEX) common shares outstanding (CSHO) at time t. DPS_{t-1} is dividends (DVC) at time t-1 scaled by adjusted (AJEX) common shares outstanding (CSHO) at time t-1. *IT_ENFORCED* equals 1 in the year after the first time prosecution of insider trading laws took place and 0 otherwise. Statistical significance is based on firm and year clustered standard errors.

Independent Variables (Predicted sign)	Dependent variable = DPS_t					
	Model 1		Model 2		Model 3	
	Estimate	*p*-value	Estimate	*p*-value	Estimate	*p*-value
INTERCEPT			0.010	0.000	0.010	0.224
EPS_t	0.033	0.000	0.032	0.001	0.032	0.001
DPS_{t-1}	0.947	0.000	0.941	0.000	0.941	0.000
IT_ENFORCED			0.023	0.028	0.023	0.026
$EPS_t \times$ *IT_ENFORCED*	0.053	0.000	0.053	0.000	0.053	0.000
$DPS_{t-1} \times$ *IT_ENFORCED* (-)	-0.285	0.000	-0.301	0.000	-0.301	0.000
Firm cluster	Yes		Yes		Yes	
Time cluster	No		No		Yes	
N	1,879		1,879		1,879	
Pseudo R^2	0.85		0.85		0.85	

Implied speeds of adjustment for pre- and post- enforcement periods

Period	Model 1	Model 2	Model 3
Pre enforcement	0.053	0.059	0.059
Post enforcement	0.338	0.360	0.360

Table 10
Canadian case study
Effect of insider trading law enforcement dividend valuation

This table shows the summary statistics and dividend valuation regression results for the regime-shift sample. The sample covers 10 years (1970-1974 and 1978-1982) centered around 1976, during which the insider trading laws are first enforced in Canada. Panel A shows the descriptive statistics. Panels B and C show the number of observations with respect to year and industry. Panel D shows coefficient estimates and *p*-values of the following regression specification. Statistical significance is based on firm and year clustered standard errors.

$$\frac{V_t}{A_t} = \alpha_0 + \alpha_1 \frac{E_t}{A_t} + \alpha_2 \frac{dE_{t-1}}{A_t} + \alpha_3 \frac{dE_{t+1}}{A_t} + \alpha_4 \frac{dA_{t-1}}{A_t} + \alpha_5 \frac{dA_{t+1}}{A_t} + \alpha_6 \frac{CX_t}{A_t} + \alpha_7 \frac{dCX_{t-1}}{A_t} + \alpha_8 \frac{dCX_{t+1}}{A_t} + \alpha_9 \frac{I_t}{A_t} + \alpha_{10} \frac{dI_{t-1}}{A_t} + \alpha_{11} \frac{dI_{t+1}}{A_t} + \alpha_{12} \frac{D_t}{A_t} + \alpha_{13} \frac{dD_{t-1}}{A_t} + \alpha_{14} \frac{dD_{t+1}}{A_t} + \alpha_{15} \frac{dV_{t+1}}{A_t} + \alpha_{16}\, IT\_ENFORCED + \alpha_{17}\, IT\_ENFORCED \frac{D_t}{A_t} + \alpha_{18}\, IT\_ENFORCED \frac{dD_{t-1}}{A_t} + \alpha_{19}\, IT\_ENFORCED \frac{dD_{t+1}}{A_t} + \varepsilon_t$$

V_t is the market value of equity computed as number of shares outstanding (CSHO) multiplied by either the fiscal year-end closing price (PRCC_F) if available or by the fiscal year-end monthly closing price from the Compustat Merged Monthly Security File (PRCCM). A_t is the book value of assets (TA). E_t is earnings before extraordinary items (IB) plus interest (XINT), deferred tax credits, and investment tax credits (TXDITC) if available. dE_{t-1} is one-year lagged change in earnings calculated as $E_t – E_{t-1}$. dE_{t+1} is one-year lead change in earnings calculated as $E_{t+1} – E_t$. CX_t is capital expenditures (*CAPX*). dCX_{t-1} is one-year lagged change in capital expenditures calculated as $CX_t – CX_{t-1}$. dCX_{t+1} is the one-year lead change in capital expenditures calculated as $CX_{t+1} – CX_t$. I_t is the annual interest expense (XINT). dI_{t-1} is one-year lagged change in interest expense calculated as $I_t – I_{t-1}$. dI_{t+1} is one-year lead change in interest expense calculated as $I_{t+1} – I_t$. D_t is annual dividend amount (DVC). dD_{t-1} is one-year lagged change in dividend amount calculated as $D_t – D_{t-1}$. dD_{t+1} is one-year lead change in dividends calculated as $D_{t+1} – D_t$. *IT_ENFORCED* equals 1 in the year after the first time prosecution of insider trading laws took place and 0 otherwise.

Panel A: Summary statistics

	Variables															
Statistic	$\frac{V_t}{A_t}$	$\frac{E_t}{A_t}$	$\frac{dE_{t-1}}{A_t}$	$\frac{dE_{t+1}}{A_t}$	$\frac{dA_{t-1}}{A_t}$	$\frac{dA_{t+1}}{A_t}$	$\frac{CX_t}{A_t}$	$\frac{dCX_{t-1}}{A_t}$	$\frac{dCX_{t+1}}{A_t}$	$\frac{I_t}{A_t}$	$\frac{dI_{t-1}}{A_t}$	$\frac{dI_{t+1}}{A_t}$	$\frac{D_t}{A_t}$	$\frac{dD_{t-1}}{A_t}$	$\frac{dD_{t+1}}{A_t}$	$\frac{dV_{t+1}}{A_t}$
N	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546	1,546
Mean	0.91	0.09	0.01	0.02	0.11	0.16	0.09	0.01	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.10
Median	0.51	0.09	0.01	0.01	0.11	0.11	0.08	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.04
Std Dev	1.27	0.08	0.08	0.09	0.17	0.28	0.08	0.07	0.09	0.02	0.01	0.02	0.04	0.03	0.03	0.96
5^{th}	0.15	0.00	-0.08	-0.09	-0.13	-0.13	0.01	-0.08	-0.08	0.00	-0.01	-0.02	0.00	-0.01	-0.01	-0.63
25^{th}	0.31	0.06	-0.01	-0.01	0.03	0.02	0.04	-0.01	-0.02	0.01	0.00	0.00	0.00	0.00	0.00	-0.08
75^{th}	1.01	0.12	0.04	0.04	0.19	0.22	0.13	0.04	0.04	0.03	0.01	0.01	0.03	0.00	0.00	0.20

Panel B: Number of observations by year

Year	1970	1971	1972	1973	1974	1978	1979	1980	1981	1982
N	137	146	149	152	154	149	155	163	157	184

Panel C: Industry distribution

NAICS Industry Definition	2- Digit NAICS Code	*N*
Mining	21	414
Construction	23	20
Manufacturing	31-33	685
Wholesale Trade	42	87
Retail Trade	44-45	130
Transportation and Warehousing	48-49	58
Information	51	105
Real Estate and Rental and Leasing	53	3
Professional, Scientific, and Technical Services	54	20
Administrative and Support and Waste Management	56	1
Accommodation and Food Services	72	13
Unclassified	99	10

Panel D: Valuation regression results

Coefficient (Predicted sign)	Model 1		Model 2	
	Estimate	*p*-value	Estimate	*p*-value
α_0	1.281	0.000	1.281	0.000
α_1 (+)	4.815	0.000	4.815	0.001
α_2 (+)	-3.419	0.000	-3.419	0.000
α_3 (+)	2.768	0.001	2.768	0.001
α_4 (+)	0.802	0.018	0.802	0.001
α_5 (+)	0.372	0.254	0.372	0.278
α_6 (+)	3.221	0.000	3.221	0.000
α_7 (+)	-2.390	0.000	-2.390	0.000
α_8 (+)	0.643	0.063	0.643	0.012
α_9 (-)	-12.805	0.000	-12.805	0.000
α_{10} (-)	-3.263	0.412	-3.263	0.342
α_{11} (-)	-11.162	0.000	-11.162	0.000
α_{12} (+)	8.016	0.027	8.016	0.020
α_{13} (+)	-1.020	0.697	-1.020	0.632
α_{14} (+)	6.782	0.039	6.782	0.009
α_{15} (+)	-0.211	0.000	-0.211	1.000
α_{16} (+)	0.277	0.100	0.277	0.131
α_{17} (-)	-7.235	0.018	-7.235	0.000
α_{18} (-)	0.571	0.842	0.571	0.837
α_{19} (-)	-9.101	0.003	-9.101	0.000
Firm cluster	Yes		Yes	
Time cluster	No		Yes	
Industry fixed effects	Yes		Yes	
N	1,546		1,546	
R^2	0.35		0.35	