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JEL Codes: G32, G35

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1. Introduction

Framed in La Porta et al.'s (2000a) dichotomy of the Outcome versus Substitute models of dividends, empirical evidence that dividends are higher where minority shareholders have more power may deceptively suggest the falsification of the Substitute narrative (see La Porta et al. 2000a and Bae et al. 2021, for examples). As if the positive correlation between dividends and minority shareholders power denied the possibility of a negative correlation between dividends and minority shareholder rights protection.

In this paper, we study the Brazilian company law reform of 1976 that protected minority shareholder rights but kept the corporate power structure concentrated (see Salama and Prado 2011, p. 150, and Brazilian legal scholar references therein), providing an experiment to test the Substitute agency theory of dividends. Because Brazilian minority investors did not get a voice with this reform, the Outcome model mechanism of minority shareholders forcing firms to pay out was muted.

We document that growing firms used to signal their type through higher dividend payouts than mature firms in the low-legal-protection Brazilian market prevailing before the reform, according to the Substitute model. With better protection of minority shareholder rights after the reform and consequently lower value of signaling, we show that Brazilian firms have not increased dividends in general and that the positive association of growth opportunities with dividend payouts has declined, supporting the Substitute narrative.

We model the firms' double decision of (i) whether to pay dividends or not, and (ii) how much dividends to pay (i.e., the extensive and intensive margin decisions) using double-hurdle truncated models.

Before the law reform (referred to as the pre-Law period), dividend payouts were very positively related to investment opportunities. The average marginal effect of market-to-book ratio on censored means of dividends-to-book-equity ratios is *0.026* (*t*-stat. = *5.56*) in our baseline result. For illustration, a one-standard deviation increase in the market-to-book ratio (equal to 0.50) causes the censored mean of dividends-to-book-equity ratio to increase by 0.013 per year from a mean of 0.054 per year (that is, an increase of 24%). [1]

However, this relationship becomes weak after the reform (referred to as the post-Law period), in accordance with the Substitute model. The average marginal effect of market-to-book ratio on censored means of dividends-to-book ratio is only *0.005* (*t*-stat. = *2.05*) in our baseline result.

Simultaneously, the average payout does not increase post-Law as predicted by the Outcome model, despite the introduction of a mandatory minimum dividend rule by the new law. The average marginal effect of *Law*-dummy on censored means of dividends-to-book ratios is an insignificant *-0.001* among all firms. Actually, among firms less likely constrained by the minimum dividend rule, the average marginal effect of *Law*-dummy on censored means of dividends-to-book ratios is an important *-0.010* (*t*-stat. = *-3.69*). That is, a 18.5% reduction

[1] Dividends-to-book equity ratios are expressed in decimals per year. That is, a dividends-to-book-equity ratio of 0.054 means 5.4% per year.

in the average dividends-to-book ratio, validating the Substitute model prediction that dividend payouts decrease in general with stronger shareholders' rights protection.

Following up further on the Substitute narrative, we estimate Probit models of future stock issuance on dividends. We show that dividends do anticipate insiders' intentions to issuing stocks in the future during the pre-Law period, in contrast with no such relationship during the post-Law period, in accordance with the Substitute model motive for paying dividends. The average marginal effect of *Paid-Dividend*-dummy on probabilities of issuing new shares is *0.38* (*t*-stat. = *2.94*) pre-Law and decreases to *0.10* (*t*-stat. = *1.32*) post-Law.

Finally, we verify another key motive behind firms' behavior in the Substitute model. We confirm that increases in dividends significantly raise firms' market values in the pre-Law period, but not in the post-Law period. The effect of dividends increase on stock return is *0.128* (*t*-stat. = *3.12*) pre-Law, meaning that a 100% one-year rise in dividends increases market value by 12.8% on the same year. And this effect fades to an insignificant *0.005* post-Law.

In sum, the evidence is consistent with firms facing higher agency costs in the pre-Law period, when signaling through dividends is an effective managerial strategy to lower the cost of future equity issues. By improving shareholders' legal protection, the law reform defused the effectiveness of dividends in establishing a reputation for fair shareholder treatment. That is, the Brazilian company law reform of 1976 caused a substitution of minority shareholder rights protection for dividends. Such patterns are apparent in various relevant subsamples, with the inclusion of various control variables, or with the use of alternative estimation approaches.

Since Jensen and Meckling (1976) introduced the agency theory for corporations, dividends have been depicted as a device to diminish asymmetric information and agency costs. For example, Bhattacharya (1979) and Miller and Rock (1985) imply that dividends are paid to signal higher firm quality, whereas Easterbrook (1984) and Jensen (1986) suggest that dividends should be paid to curb inefficient spending. [2] Although numerous authors have contributed to the understanding of firms' dividend policies in the past 40 years, the causation from corporate governance to dividends is still debatable. Different from La Porta et al.'s (2000a), Agrawal's (2013) and Bae's et al. (2021) conclusions of complementarity between corporate governance and dividends (i.e., the Outcome hypothesis), authors like Grinstein and Michaely (2005), John and Knyazeva (2006), Pinkowitz et al. (2006), Leary and Michaely (2011), Officer (2011) and He et al. (2014) find that firms employ dividend policies to mitigate agency concerns and to establish credible reputation (i.e., the Substitute hypothesis).

We make four contributions to this literature. First, we clarify that the Outcome and Substitute hypothesis are not opposite – that is, they can both be true in the data. In the context of the Brazilian company law reform that improved minority shareholders protection but preserved the corporate power concentrated, we cleanly observe the causal effect on dividends of variation in minority shareholders protection (i.e., the Substitute mechanism) without the confounding effect of variation in minority shareholders' power (i.e., the Outcome mechanism). We demonstrate that Brazilian firms in general do not pay higher dividends with

[2] Recently, Michaely et al. (2020) show that dividends do convey information about quality, although it is about expected earnings volatility, and not about the earnings level.

the improvement in the protection of minority shareholders, not rejecting the Substitute hypothesis. [3]

Second, we go beyond the relationship between corporate governance and dividends in general, and study how the relationship between firms' growth opportunities and dividends varies with corporate governance, which is predicted to vary differently in the Outcome and Substitute models.[4] We show that growth firms used to pay higher dividends than mature firms in the pre-Law period. With the law reform protecting outside investors, growth firms reduce dividends and mature firms do not increase them, all these according to the Substitute narrative of dividends.

Third, we follow up further on the Substitute model logic. We verify that dividends predict new equity issues in the poor-governance pre-Law period, but do not in the improved-governance post-Law period. And we additionally confirm that, on paying dividends, managers lower the cost of equity through improved reputation of good shareholder treatment in the pre-Law period, but less so in the post-Law period.

Fourth, we contribute to the literature of corporate payout policy in general by modeling the censored dividend payments series as a double decision. For example, Fama and French

[3] Actually, in subsamples of firms unconstrained by the minimum dividend rule, we find that firms reduce dividends in general with better minority shareholders protection, according with the Substitute model prediction and contradicting the Outcome model prediction.

[4] Agrawal (2013) and Bae et al. (2021) study how the payout level varies with variation in corporate governance in general, but do not study how the relationship between firms' growth opportunities and dividends varies with variation in corporate governance.

(2001) focus on firms' discrete decision of whether or not to pay dividends (i.e., the extensive margin only, coded as *0*s and *1*s), while Fama and French (2002) least square estimate the dividend-paying firm's continuous decision of how much to pay out (i.e., the intensive margin only, where only strictly positive dividend observations are modeled). Alternatively, La Porta et al. (2000a), Agrawal (2013) and Bae et al. (2012) least square estimate firms' dividend payouts overlooking its censored nature (i.e., they modeled the cluster of zeros and positive values in one stage). However, least square methods on the complete series of dividends (like the three latter studies) and on the unclustered part of the series (like Fama and French 2002) are biased and inconsistent (see Ruud 2000). With the use of a double-hurdle truncated method, we model the extensive and intensive dividend decisions jointly and consistently, controlling for firm-specific factors affecting dividends and relative costs of alternative funding.

We do not claim that the use of double-hurdle truncated models could overturn La Porta et al.'s (2000a), Bae's et al. (2012) and Agrawal's (2013) conclusions.[5] We do not dispute the importance of the Outcome mechanism of minority shareholders forcing firms to pay dividends, clearly demonstrated in the context of board reforms by Bae et al. (2012). However, we vindicate that the Substitute mechanism of signaling fair shareholder treatment through dividends also influences corporate payout decisions. In the Brazilian company law reform of

[5] At least in the current paper, double-hurdle truncated estimates for the whole censored dividend series, least square estimates for strictly positive dividends and least square estimates for the whole censored dividend series provide the same qualitative conclusion.

1976, which improved minority shareholders protection but preserved the corporate power concentrated, the Substitute model predictions come out plainly.

In the following section, we review the theory on dividend policy and corporate governance. We describe the Brazilian market in the 1970s and the agency concerns of the company law reform in Section 3. In Section 4, we introduce the data. We test the Substitute theory in Section 5. Finally, we conclude in Section 6.

2. Agency Problems of Minority Protection, Dividends, and Stock Issuance

La Porta et al. (2000a), hereafter LLSV, distinguish between two dichotomous agency dividend models: (i) dividends as an Outcome of minority shareholders rights, or (ii) dividends as a Substitute for minority shareholders rights. In the Outcome narrative as illustrated in Figure 1.1, dividends are an outcome of the effective legal protection of shareholders. Under effective protection, minority shareholders use their powers to force firms in general to pay out, preventing insiders from misusing firms' earnings. As another consequence of adequate shareholder protection, high-growth firms can have significantly lower dividend payouts than mature firms, because shareholders believe reinvestments will pay out in the future.

Figure 1.1
Outcome Model of Dividends

This figure plots the dividend ratio in the y-axis and investment opportunities in the x-axis. The dashed line is the linear prediction for an economy with a weak legal protection of shareholders and the solid line is the linear prediction for an economy with a strong legal protection of shareholders. Adapted from La Porta et al. (2000a).

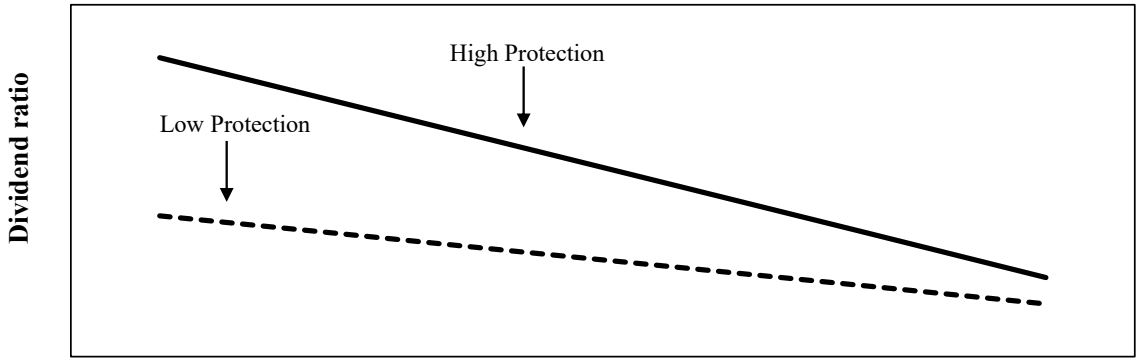
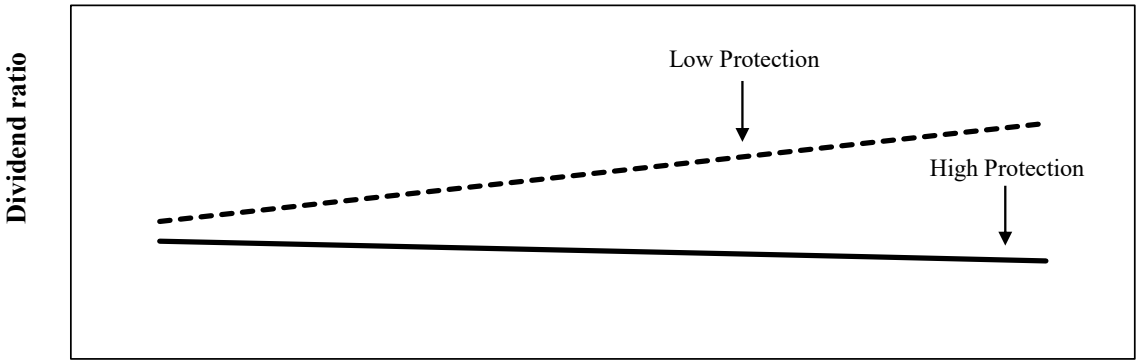


Figure 1.2
Substitute Model of Dividends

This figure plots the dividend ratio in the y-axis and investment opportunities in the x-axis. The dashed line is the linear prediction for an economy with a weak legal protection of shareholders and the solid line is the linear prediction for an economy with a strong legal protection of shareholders. Adapted from La Porta et al. (2000a).



Under the Substitute narrative, as illustrated in Figure 1.2, dividends are a substitute for legal protection. This view relies on the likely necessity of firms raising funds in external capital markets. To raise such funds on attractive terms under weak legal shareholder

protection, a firm must establish a reputation for providing fair shareholder compensation. Thus, firms with superior growth opportunities and greater needs for external funds choose higher dividend payout ratios than firms with poor growth opportunities and less likely to raise capital.

LLSV's tests can be formulated in the following regression:

$$\frac{D_i}{Y_i} = \alpha_1 + \alpha_G \cdot Inv.Opp._{\cdot i} + Law_i \cdot [\alpha_{L1} + \alpha_{LG} \cdot Inv.Opp._{\cdot i}] + e_i ; \qquad (1)$$

where D_i/Y_i is the dividend payout of firm i, with D_i for dividends and Y_i for earnings; Law_i is a dummy variable equal to 1 if firm i's country protects minority stockholders and 0 otherwise; and $Inv.Opp._{\cdot i}$ is a measure of investment opportunities for firm i.

LLSV argue that the Outcome model implies $\alpha_G \leq 0$, $\alpha_{L1} > 0$ and $\alpha_{LG} < 0$, whereas the Substitute model implies $\alpha_G > 0$, $\alpha_{L1} < 0$ and $\alpha_{LG} < 0$. Thus, one can test the Outcome and Substitute models as alternative hypotheses.

LLSV take advantage of the dispersion of the legal protection of minority shareholders across 33 countries to investigate between-country firm variation in the relationship between

corporate governance and dividend payout. [6] They ask whether firms' dividend payouts vary with their operating countries' degree of shareholders protection and whether dividend payout differences between growth and mature compatriot firms vary with their operating countries' degree of shareholders protection.

Supporting the Outcome model of dividends, LSSV find that firms operating in countries with better legal protection pay higher dividends on average than those operating in countries with worse legal protection. And among those firms operating in countries with better legal protection, mature firms pay higher dividends than growth firms. [7, 8]

If the implications of Equation (1) are clear for the Outcome model, $\alpha_G > 0$ is less so for the Substitute model. Under weak protection in the Substitute narrative, firms pay dividends primarily because they intend to access the external funds markets for funds in the future. Although firms with better investment opportunities are more likely to need external financing, this is not necessarily the case if they internally generate abundant free cash flow. Another

[6] LLSV define $Law_i = 1$ if firm i operates in a Common-Law country (in contrast to a Civil-Law country), or if such a country is labeled as having a high shareholder protection (in contrast to a low shareholder protection country).

[7] However, in countries with worse legal protection, although not significantly different, LSSV find that growth firms' median dividend ratios are greater than mature firms' median dividend ratios.

[8] Agrawal (2013) for U.S. mining companies in the context of early 20th century passage of state securities fraud statutes and Bae et al. (2021) for a multi-country sample of companies in the context of country's board reforms also find evidence that firms in general increased dividend payout levels with better governance. But they do not study how payout differences across different growth-opportunity firms vary with governance improvement.

confounding aspect that LLSV recognize is that firms with good growth prospects may also have better current uses of internal funds than paying dividends.

Therefore, a sharper identification of the Substitute model should control for internal fund generation and current investments, while checking in parallel the relationship between dividends and future stock issuances. Other country- and firm-specific factors that affect dividends, growth opportunities, and their relationship should also be considered. For example, if countries with better legal protection have larger firms that pay more dividends for being larger, and the size variable is omitted, then α_{L1} is biased upwards in regression (1). [9, 10]

To investigate the causal relationship from corporate governance to dividend payout, that is, to ask whether firms become more (or less) likely to pay higher dividends if minority shareholders' legal protection improves, we observe a countrywide change in legal protection, controlling for firm-specific factors affecting dividends and the relative costs of alternative funding. Precisely, we reformulate Equation (1) as follows:

[9] Holderness (2016) points out that firms from countries with better legal protection are also larger, and that being larger is an alternative explanation for their ownership being less concentrated instead of the better legal protection motive.

[10] Alternatively, if growing firms from better legal protection countries are in new businesses with lower collateral-asset base, they may pay lower dividends because of their higher cost of external funds. Therefore, the omission of a proxy for collateral assets would biases α_{LG} downwards in regression (1). Fama and French (2001) show that the reduction in dividends observed in the U.S. market during the 1990s is, in part, the result of the different characteristics of new publicly traded firms.

$$\frac{D_{i,t}}{Y_{i,t}} = \alpha_1 + \alpha_G \frac{ME_{i,t}}{BE_{i,t}} + \alpha_C Controls_{i,t} + Law_t \cdot \left[\alpha_{L1} + \alpha_{LG} \frac{ME_{i,t}}{BE_{i,t}} + \alpha_{LC} Controls_{i,t}\right]$$

$$+\vartheta_{i,t}\,; \qquad (2)$$

where, for the reasons previously outlined, the dividend payout of firm i in year t $(D_{i,t}/Y_{i,t})$ is a function of firm i's investment opportunities $(ME_{i,t}/BE_{i,t})$ and other controls $Controls_{i,t} = \left[\Delta ln(A_{i,t}), L_{i,t}/A_{i,t}, ln(A_{i,t})\right]$ to capture current investments, leverage and size. $ME_{i,t}/BE_{i,t}$ is the ratio of market to book values of equity, $ln(A_{i,t})$ is the natural logarithm of total assets, $\Delta ln(A_{i,t}) = ln(A_{i,t}) - ln(A_{i,t-1})$ is total asset growth, and $L_{i,t}/A_{i,t} = (A_{i,t} - BE_{i,t})/A_{i,t}$ is the ratio of total assets minus book value of equity to total assets. The error term $\vartheta_{i,t} = \alpha_i + \alpha_t + u_{i,t}$ can include industry (or firm) and time fixed effects.

For this paper, $Law_t = 1$ in the period of countrywide improved legal protection under the new Company Law after 1977, and $Law_t = 0$ otherwise. [11] As before, according to the Substitute model, $\alpha_G > 0$ under low protection. With better protection, $\alpha_{L1} < 0$, whereas

[11] More generally, one could include a firm subscript i in $Law_{i,t}$ to capture panel variation in the protection of firm's i minority investors. For example, when firms individually choose to follow proper corporate governance standards in Chen et al. (2009); or in Agrawal (2013) and Bae et al. (2021) with the staggered passage of corporate law reforms.

$\alpha_{LG} < 0$ counteracts α_G because it becomes less relevant to signal quality through dividends after the passage of the new Company Law.

Similar to Fama and French (2002), we multiply Equation (2) by $Y_{i,t}/BE_{i,t}$ and analyze:

$$\frac{D_{i,t}}{BE_{i,t}} = a_0 + \left(a_{1Y} + a_{GY}\frac{ME_{i,t}}{BE_{i,t}} + a_C Controls_{i,t}\right)\frac{Y_{i,t}}{BE_{i,t}} +$$

$$Law_t \cdot \left[a_{L0} + \left(a_{L1Y} + a_{LGY}\frac{ME_{i,t}}{BE_{i,t}} + a_{LC} Controls_{i,t}\right)\frac{Y_{i,t}}{BE_{i,t}}\right] + \varepsilon_{i,t}$$

$$= X_{i,t}^T a + \varepsilon_{i,t}\ ; \qquad (3)$$

where $BE_{i,t}$ is the book value of equity for firm i in year t; and $Y_{i,t}/BE_{i,t}$ is return on equity (i.e., the ratio of stock earnings to book equity). Synthetically, $X_{i,t}^T$ is the vector that summarizes firm i's observables in Equation (3) with a the vector of respective coefficients. The error term $\varepsilon_{i,t} = a_i + a_t + u_{i,t}$ can include industry (or firm) and time fixed effects.

We argue that $D_{i,t}/BE_{i,t}$ in Equation (3) is a better indicator of good shareholder treatment than $D_{i,t}/Y_{i,t}$, given the former is a measure of the payout to (replacement value of)

equity and the latter is only a measure of the proportion of earnings distributed. [12] Rather than estimating regression (2) for $D_{i,t}/Y_{i,t}$, writing $Y_{i,t}$ on the right-hand side of Equation (3) avoids the influential observation problem that arises when stock earnings are near zero or negative. When estimating Equation (3) instead of Equation (2), we are still studying the payout ratio $D_{i,t}/Y_{i,t}$, with the advantage of coping with negative or zero earnings that a business might experience. [13]

We additionally note that dividend ratios, like $D_{i,t}/Y_{i,t}$ and $D_{i,t}/BE_{i,t}$, are censored at zero and least square estimates of Equations (1) to (3) are biased. [14] A dividend payout results from the two-stage process: (i) a discrete decision of whether or not to payout (i.e., the extensive margin) and (i) a continuous decision of how much to payout (i.e., the intensive margin). Thus, we propose to model $D_{i,t}/BE_{i,t}$ by a truncated regression method that jointly estimates the *participation* equation:

[12] Note that a higher $D_{i,t}/Y_{i,t}$ does not mean a higher reward to stockholder investments. For the same amount of dividend, $D_{i,t}/Y_{i,t}$ becomes higher with worse $Y_{i,t}$ results.

[13] Our Equation (3) is similar to Equation (4) of Fama and French (2002) for studying how the firm's target payout varies according to its characteristics. Equation (4) of Fama and French (2002) is the product of their equation for $D_{i,t}/Y_{i,t}$ (similar to our Equation (2)) by $Y_{i,t}/A_{i,t}$. However, $D_{i,t}/A_{i,t}$ is susceptible to leverage in $A_{i,t}$ and does not rank better-shareholder-treatment across firms with different indebtedness. Notwithstanding, our results for $D_{i,t}/BE_{i,t}$ presented in section 5 hold also for $D_{i,t}/A_{i,t}$, as indicated in Table A.2.

[14] This is the case of LSSV, Fama and French (2002), Agrawal (2013) and Bae et al. (2021).

$$Prob\left(PayDiv_{i,t+1}=1 \mid Law_t, \frac{Y_{i,t}}{BE_{i,t}}, \frac{ME_{i,t}}{BE_{i,t}}, Controls_{i,t}\right)$$

$$= \Phi\left(\begin{array}{c}\left(b_0 + b_Y \frac{Y_{i,t}}{BE_{i,t}} + b_M \frac{ME_{i,t}}{BE_{i,t}} + b_C Controls_{i,t}\right) + \\ Law_t\left(b_{L0} + b_{LY} \frac{Y_{i,t}}{BE_{i,t}} + b_{LM} \frac{ME_{i,t}}{BE_{i,t}} + b_{LC} Controls_{i,t}\right) \\ + b_F F_{i,} + b_Y Y_t > \epsilon_{i,t}\end{array}\right)$$

$$= \Phi\left(Z_{i,t}^T b\right); \quad (4)$$

and the *intensity* equation:

$$\frac{D_{i,t}^*}{BE_{i,t}} = c_0 + \left(c_{1Y} + c_{GY} \frac{ME_{i,t}}{BE_{i,t}} + c_C Controls_{i,t}\right) \frac{Y_{i,t}}{BE_{i,t}} +$$

$$Law_t \cdot \left[c_{L0} + \left(c_{L1Y} + c_{LGY} \frac{ME_{i,t}}{BE_{i,t}} + c_{LC} Controls_{i,t}\right) \frac{Y_{i,t}}{BE_{i,t}}\right] + c_F F_{i,} + c_Y Y_t + u_{i,t}$$

$$= X_{i,t}^T c + u_{i,t}; \quad (5)$$

where $PayDiv_{i,t+1}$ is a dummy variable equal to *1* if firm i paid dividends in year $t+1$ and *0* otherwise; F_i and Y_t are respectively industry- and year-dummies; $\epsilon_{i,t} \sim N(0,1)$; $\Phi(\cdot)$ is the cumulative distribution function of the standard Normal distribution; $D_{i,t}^*$ is the unobserved latent dividend; and $u_{i,t} \sim N(0, \sigma^2)$. Synthetically, $Z_{i,t}^T$ and $X_{i,t}^T$ are vectors of firm i's observables, and b and c are coefficient vectors.

Once $D_{i,t}/BE_{i,t}$ is modeled as in Equations (4)-(5), we should have in mind that:

$$\frac{D_{i,t}}{BE_{i,t}} = \begin{cases} \frac{D^*_{i,t}}{BE_{i,t}} & \text{from Equation (5) if } \epsilon_i < Z^T_{i,t}b\,, \text{ or} \\ 0 & \text{otherwise ;} \end{cases}$$

and its censored mean is:

$$E\left[\frac{D_{i,t}}{BE_{i,t}}\right] = \Phi\left(Z^T_{i,t}b\right)\left[X^T_{i,t}c + \sigma\lambda\left(\frac{X^T_{i,t}c}{\sigma}\right)\right] ;$$

where $\lambda\left(\frac{X^T_{i,t}c}{\sigma}\right) = \frac{\phi(X^T_{i,t}c/\sigma)}{\Phi(X^T_{i,t}c/\sigma)}$, with $\phi(\cdot)$ for the standard normal probability density function.

Therefore, the c coefficients in Equation (5) measure how the unobserved latent D^*/BE changes with respect to changes in the regressors X^T. For example, a positive c_{GY} tells us that growth firms intended to distribute a higher proportion of their earning in dividends before the company law reform. While a negative c_{LGY} tells us that growth firms became less willing to distribute a higher proportion of their earning in dividends after the company law reform.

However, for our analysis, we are more interested in the marginal effects of $x \in \{X^T, Z^T\}$ on the censored mean of D/BE, which describe how the observed D/BE is expected to change with respect to the regressors x, $\frac{\partial E[D/BE]}{\partial x}$. [15] For example, a strongly positive $\frac{\partial E[D/BE]}{\partial (ME/BE)}$ before the company law reform says that growth firms used to payout more than mature firms. A $\frac{\partial E[D/BE]}{\partial (ME/BE)} \approx 0$ after the company law reform tells us that growth firms' payout policy became indistinguishable from that of mature firms.

In section 5, we estimate Equations (4) and (5) as a Double-Hurdle Truncated Normal model and analyze the extensive and intensive margins. This two-part modeling allows for different mechanisms for the participation and amount decisions, being more flexible than a Tobit model (in which a single mechanism governs both decisions) but with the same form of conditional expectation. [16]

[15] Because the censored mean $E[D_{i,t}/BE_{i,t}]$ is nonlinear, the average of the marginal effects is different from the marginal effect at the means. That is, the average of the marginal effects of variable x is the average of the partial derivatives $\frac{\partial E[D/BE]}{\partial x}$ at the vector values $(X_{i,t}^T, Z_{i,t}^T)$ assumed by each observation, and the marginal effect of variable x at the means is the partial derivative $\frac{\partial E[D/BE]}{\partial x}$ at the vector of mean values $(\bar{X}^T, \bar{Z}^T)$. The average of the marginal effects is the population-averaged marginal effect, which respects the distribution of covariates across firms and thus predicts what is expected to happen in the analyzed population.

[16] We prefer the Double Hurdle rather than the Exponential Type II Tobit model because the former allows all covariates to appear in both parts, whereas the latter only works with an exclusion restriction. In addition, the correlation between the *participation* and *intensity* equation residuals is small for our specifications.

Furthermore, we verify whether dividends predict new equity issues as implied in the Substitute model. Following on the capital structure literature, Baker and Wurgler (2002) mainly explain equity issuance by market timing. They argue that firms are more likely to issue stocks when their market values are higher relative to book and past market values. We extend their theory to contemplate dividends as a factor in the Probit equation:

$$Prob\left(Issue_{i,t+1}=1\right)=\Phi\left\{\begin{array}{c}\left(d_0+d_M\frac{ME_{i,t}}{BE_{i,t}}+d_D PayDiv_{i,t-1\to t}\right)+\\ Law_t\left(d_{L0}+d_{LM}\frac{ME_{i,t}}{BE_{i,t}}+d_{LD}PayDiv_{i,t-1\to t}\right)\\ +d_F F_{i,}+d_Y Y_t>v_{i,t}\end{array}\right\};\qquad(6)$$

where $Issue_{i,t+1}$ is a dummy variable equal to *1* if firm i issues new equity in the next year and *0* otherwise; and $PayDiv_{i,t-1\to t}$ is a dummy variable equal to *1* if firm i paid dividends between this year and the previous years and *0* otherwise; and $v_{i,t}\sim N(0,\sigma^2)$.

The Substitute model presupposes a positive and significant sensitivity of future stock issuance to dividend payments ($d_D>0$) under weak legal protection, and less so if dividends lose their signaling motive (i.e., $d_{LD}<0$ cancels out d_D) with stronger legal protection.

We follow up further on the Substitute narrative that, on paying dividends, managers lower their firms' cost of equity (i.e., they successfully raise firms' stock prices) through an improved reputation of good shareholder treatment. We examine the correlation between dividend payment and stock returns pre- and post-Law:

$$Return_{i,t} = e_0 + e_D \frac{\Delta D_{i,t}}{D_{i,t-1}} + e_R \Delta\left(\frac{Y_{i,t}}{BE_{i,t}}\right) + Law_t \cdot \left[e_{L0} + e_{LD} \frac{\Delta D_{i,t}}{D_{i,t-1}} + e_{LR} \Delta\left(\frac{Y_{i,t}}{BE_{i,t}}\right)\right]$$

$$+ e_F F_{i,} + e_Y Y_t + \nu_{i,t} \; ; \qquad (7)$$

where $Return_{i,t}$ is firm i's real stock return in year t ; $\Delta D_{i,t}/D_{i,t-1} = \left[\left(D_{i,t} - D_{i,t-1}\right)/D_{i,t-1}\right]$ is firm i's dividend growth between years t and $t-1$; and $\Delta\left(Y_{i,t}/BE_{i,t}\right) = \left[\left(Y_{i,t}/BE_{i,t}\right) - \left(Y_{i,t-1}/BE_{i,t-1}\right)\right]$ is firm i's change in the return on equity between years t and $t-1$.

According to Dewenter and Warther (1998), if firms experience greater information asymmetry and agency conflicts before the new Company Law, stock price reactions to dividends should be stronger in the pre-Law than in the post-Law period. That is, we expect $e_D > 0$ to be weakened by $e_{LD} < 0$, given the lower signaling value of the dividends with more information disclosure and management accountability required by the new Company Law.

3. Brazil and the Company Law Reform

Brazil is a French civil law country. As of 1976, the Brazilian stock market was ruled by an outdated Company Law (No. 2627) promulgated in 1940 (see Presidência da República

Federativa do Brasil, 1940) and regulated by a fledgling Brazilian Central Bank just established in 1967.

As part of a broad set of complementary measures designed to develop the Brazilian stock markets, at the end of 1976 a new Company Law (No. 6404) and an Act (No. 6385) establishing the Brazilian Securities and Exchange Commission (*Comissão de Valores Mobiliários*, acronym CVM) were passed to improve corporate and securities legislation and its enforcement (respectively, see Presidência da República Federativa do Brasil, 1976b and 1976a). In the Motives of the Company Law No. 6404, Ministério da Fazenda (1976) asserts that this new regulation "… aims at creating the legal structure necessary for strengthening of the country's capital markets, which in the current stage of the development of the Brazilian economy is indispensable for the survival of private companies. The voluntary mobilization of savings toward the productive sector requires the establishment of a system that ensures minority shareholders the observance of clear and equitable rules that are appealing in terms of security and profitability without paralyzing the business community".[17]

We note that the establishment of a legal structure that respects minority shareholders rights is a prescription of the legal view of corporate governance (see La Porta et al. 2000b) to develop public capital markets, explicitly followed by the incumbent Brazilian policy makers.[18] Based on the Model Business Corporation Act of the U.S., Company Law No. 6404 offered minority shareholders a judicial venue to challenge the decisions of management or shareholder

[17] Translated by Salama and Prado (2011). *Ministério da Fazenda* is the Brazilian Ministry of Finance.

[18] See Simonsen and Campos (1979).

meetings, to have the right to withdraw, to own preemptive rights to new issues, and to ask for mandatory minimum dividends (see Ministério da Fazenda, 1976). The expression "minority shareholder" appears 11 times in this new law, always associated with words such as "rights," "protect," and "insure." The word "rights" appears 184 times.

Company Law No. 6404 introduced the standard of care for directors, made mandatory to publish independently audited financial statements and to disclose relevant facts (see Ministério da Fazenda, 1976). Defined blackout-period restrictions, and penalties to managers, board members, and controlling shareholders were introduced. The expression "controlling shareholder" appears 12 times in this new law, mostly related to words such as "must," "responsible," and "liable." Synonyms for "duties" appear 27 times and 41 times for "obligations." [19]

Through reading and interpretation, we independently compute the La Porta et al. (1998) indices of shareholders' rights in Brazil under the Company Law No. 6404 and the previous Law No. 2627. For Law No. 6404, we assign a value of 3 to the Anti-Director Rights section and a value of 2 for Law No. 2627. The one-point difference is in the item "Oppressed Minority Mechanism", to which the later Law No. 6404 is very attentive. In addition, the "Percentage of Share Capital Required to Call an Extraordinary Shareholder Meeting" was

[19] The previous Company Law No. 2627 made no reference to the terms "minority shareholder" or "controlling shareholder." Article 116 of Law No. 6404 gives own status in the Brazilian Law to the figure of the "controlling shareholder", and Article 117 defines his (or her) main responsibilities.

reduced from 20% to 5%, and a mandatory minimum dividend of 25% of stock earnings was introduced. [20]

Compared to the previous law, the new law represented a significant improvement on the "Accounting Standards", an aspect considered in La Porta's et al. (1998) evaluation of shareholders' rights. Listed Brazilian corporations were required to publish a balance sheet, an income statement, a statement of retained earnings and a statement of changes in financial position. Annual financial statements should be uniform in methods and criteria to facilitate comparison across years, and should be certified by independent auditors.

Inspired by the U.S. Securities and Exchange Commission, the CVM became responsible for regulating, supervising, and promoting stock and corporate bond markets. The CVM could issue complementary rules, instructions and deliberations, investigate, and prosecute misconduct. According to Sarno (2006) – from meeting minutes filed at the CCP/CVM (*Coordenação de Controle de Processos*) –, the CVM initiated 73 administrative inquiries to investigate irregularities in the public placement of shares and bonds from 1979 to 1986. More specifically regarding CVM's decisions about dividends payable by public companies, we find a total of 14 such procedures in the same meeting minutes surveyed by Sarno (2006). Usually, these resulted in CVM requests for firms to adjust the calculation of

[20] We differ from La Porta et al. (1998) on their attribution of one share-one vote to Brazil, because Law No. 6404 allows up to 2/3 of the capital stock to consist of nonvoting preferred stock (Articles 15 and 16). We also disagree that Law No. 6404 grants preemptive rights to new issues to shareholders (Article 171). Additionally, Law No. 6404's mandatory minimum dividend (Article 202, paragraph 1, I) is 0.25 of net income (as "stock earnings" are disclosed in company income statements) and not 0.50 as stated in La Porta's et al. (1998) Table 2.

reserves and to republish their financial statements. In most cases, the recalculation of reserves led to the finding by the CVM that dividends paid were below the legal minimum. Such firms were subsequently forced to pay complementary dividends. That is evidence that, with better information and a specialized supervisor, Brazilian corporate law enforcement improved, another relevant aspect observed by La Porta et al. (1998).

If the new legal framework better protected minority shareholders' economic, oversight and information, procedural and indirect rights, it did little for minority shareholders getting a voice in corporate decisions. Salama and Prado (2011) summarize the understanding by most Brazilian legal scholars that Law No. 6404 preserved the interests of large business groups (for an example, see Carvalhosa 1976), and note that this objective is explicit in the Motives of the Company Law (Ministério da Fazenda 1976). [21] Law No. 6404 allowed up to 2/3 of the capital stock to consist of nonvoting preferred stock (Articles 15 and 16), implying that in the simplest ownership structure a company could be controlled with just one sixth of its capital.

This dual concern of protecting minority shareholders and preserving the control of business by the entrepreneur is what makes the Brazilian reform suitable for a test of the Substitute model. It is a context of increase in protection to minority shareholders rights and lessened information asymmetry, without a simultaneous increase in the minority shareholder's

[21] As quoted above in the Motives of the Company Law No. 6404 (Ministério da Fazenda 1976): "… The voluntary mobilization of savings toward the productive sector requires the establishment of a system that ensures minority shareholders the observance of clear and equitable rules that are appealing in terms of security and profitability **without paralyzing the business community**." (translated by Salama and Prado 2011)

power to demand higher dividends (i.e., without the concurrent mechanism of the Outcome model).

The Brazilian reform setup is clearly different from – not to say complementary to – the country's board reforms setup studied by Bae et al. (2021), which empowered outside shareholders (i.e., gave them a voice) to force management to disgorge dividends. Such a difference in the mechanisms triggered by these two kinds of reforms rationalizes the alternative conclusions for the Substitute or Outcome models respectively in the current paper or in Bae's et al. (2021).

The Brazilian late 1970's context is also clearly different from the early 20th century U.S. mining industry's context studied by Agrawal (2013), where fraud was rampant and its prevention was the driver of the Blue Sky Laws. According to Musacchio (2008b), there is a similar explicit fraud restrain concern in the Brazilian Ministry Justice call for the Brazilian Company Law passed in 1891, after the late 1880's "Encilhamento" financial crisis.

For the first half of the 20th century, Musacchio (2008b) documents that many Brazilian firms' voluntary additions of investor protections to their corporate bylaws had enabled them to attract investors in large numbers. This was an evolution similar to that observed by Frank et al. (2009) for the United Kingdom in the 20th century, where ownership dispersion relied more on informal relations of trust than on formal investor protection.

However, the Brazilian 1970's incumbent policy makers saw these discretionary arrangements as insufficient to the development of public capital markets and the company law reform of 1976 reflected their reliance on the legal view of corporate governance, which

prescribes the establishment of a legal structure that respects minority shareholders rights (see La Porta et al. 2000b).[22] Such a change, from voluntary disclosure and informal trust building to compulsory observance of well-defined rights of minority shareholders, cleanly captures the shrinkage in importance of signaling required to test the Substitute model predictions.

Although the new Company Law and the creation of CVM did not take the Brazilian market to the finest standards of corporate governance, it is generally recognized that they made great progress in protecting minority investors from agency costs (see Eizirik 2011, Lamy Filho and Pedreira 1996, and Banco Central do Brasil 1977). According to Čihák et al. (2012) – an update of Beck et al. (2000) – the number of listed companies per 100 million inhabitants went from 175.78 in 1977 to 348.61 in 1980. The real value traded increased by approximately 62% between 1977 and 1980 in the São Paulo Stock Exchange (Bovespa). [23, 24, 25]

[22] See Simonsen and Campos (1979).

[23] Ibovespa is the total return stock market index of the São Paulo Stock Exchange, named Bovespa. Bovespa is currently part of B3 (in full, B3 - Brasil Bolsa Balcão S.A., or B3 - Brazil, Stock Exchange and Over-the-Counter Market). In 2008, the Bovespa and the Brazilian Mercantile and Futures Exchange (BM&F) merged, creating BM&FBOVESPA. In 2017, BM&FBOVESPA merged with CETIP, creating B3. There were 338 companies listed at Bovespa as of March 2017. In 1976, the main Brazilian stock market exchange was in Rio de Janeiro. Bovespa, in São Paulo, was the second largest stock market exchange.

[24] The total value traded at the two major Brazilian stock exchanges (the Bovespa in São Paulo and BVRJ in Rio de Janeiro) was 576 billion Brazilian Cruzeiros in 1981 and 389 billion Brazilian Cruzeiros in 1977 at 1981 constant prices, according to APEC (1989).

[25] By December 2017, the market value of publicly traded companies was US$642.5 billion (nineteenth largest in the world), and Brazil produced a GDP (in purchasing power parity terms) of US$3.24 trillion (eighth largest

The fact that other national stock markets developed faster than the Brazilian one since the 1980s is supportive of the argument in Musacchio (2008a and 2008b) that civil-law countries can provide strong protection to investors but still have underdeveloped markets. At this point, we make clear that we are not studying the La Porta et al. (1998) hypothesis that better legal investor protection promotes public capital market development – an explicit intention of Company Law No. 6404. Nor we are testing the Substitute model against the Outcome model alternative of dividend payments as framed in La Porta et al. (2000). We admonish that both Outcome and Substitute hypotheses can be correct provided their respective driving mechanisms are active. Instead, we study the Substitute model motives for dividend payments.

Regarding the minimum 25% dividend-to-earnings rule of Law No. 6404, it appears to have been constraining to firms that had been paying out below that. In section 5, we show that about half of the firms studied paid average dividend-to-earnings below 25% in the 3 years before Law No. 6404 went into effect. However, for the full sample of firms in this same 3 years, the average dividend-to-earnings is close to 25% (in Table 2 of Section 4), revealing that dividend-to-earnings higher than 25% were optimal for a substantial number of firm-year observations. [26]

economy in the world) according to the World Factbook published by the U.S. Central Intelligence Agency. See https://www.cia.gov/library/publications/the-world-factbook/geos/br.html.

[26] Martins and Novaes (2012) explain that, despite the loopholes that allowed the reduction of the effective dividend paid, the mandatory dividend rule effectively protected minority shareholders' cash-flow rights without

The transitional provisions (Articles 295 and 296) of Law No. 6404 stated that the minimum dividend rule would apply to fiscal years beginning after January 1, 1978. Thus, we define the post-Law period from 1978 onwards, and the pre-Law period from 1977 backwards.

4. Data

Our dataset covers the period from 1973 to 1982, extending the original dataset in Sanvicente (2017), which hand-collected information released contemporaneously in various sources: Bovespa's *Boletins Diários de Informações* (BDIs), Brazilian Central Bank's *Relatórios Anuais*, and *Visão* magazine.

During the period studied, dividends are the only form of payout to shareholders. Although the Company Law No. 6404 contemplates open market repurchases as another payout form, they were not used until 1985, according to the previously described collection of documents and a newspaper with broad circulation (*O Estado de São Paulo*), in which public companies from the state of São Paulo usually published relevant facts.

In December 1976, accounting data existed for approximately 370 companies. Excluding banks, financial institutions, and firms without information on characteristics for which we control for, our sample contains 224 firms listed and frequently traded on the stock

distorting investment plans. For example, in their analyzed 2005-2009 period, the average dividend yield in Brazil was higher than in the United States.

exchange. Firms that went public after 1976 are not included. Four of included firms left the sample during the years after 1976 until 1980 because they went private or bust. Table 1 defines the variables of interest. To provide a sense of magnitude, we present descriptive statistics for these variables in Table 2.

Table 1

Variables definitions. The first column names the variables, and the second column provides their definitions. "Stock earnings" is the operating earnings after interest and taxes available for distribution to both common and preferred stocks.

Variable	Definition	Notation
Pay Dividends	Dummy = 1 if firm pays dividends	*PayDiv*
Dividends-to-Earnings	Dividends divided by stock earnings	*D/Y*
Dividends-to-Book Equity	Dividends divided by the book value of equity	*D/BE*
Dividends-to-Assets	Dividends divided by total assets	*D/A*
Assets Growth	Annual percentage growth in total assets	$\Delta ln(A)$
Stock Earnings-to-Assets	Stock earnings divided by total assets	*Y/A*
Return on Equity	Stock earnings divided by book value of equity	*Y/BE*
Market-to-Book of Equity	Market value of equities divided by book value of equity	*ME/BE*
Size	Log of total assets (in 1970 millions of Brazilian Cruzeiros)	$ln(A)$
Leverage	Total assets minus total equity divided by total assets	*L/A*
Issue Stocks	Dummy = 1 if firm issues new equity	*Issue*

The dividends-to-earnings ratio becomes meaningless when earnings are negative, and this happened for 14 observations in the 1975-1980 sample. [27] Dividends paid with previous years' retained earnings also cause this ratio to be greater than one and create the influential

[27] Earnings ($Y_{i,t}$) refers to operating earnings after interest and taxes, available for distribution to both preferred and common stockholders. In Brazil, preferred annual dividends are not fixed, as in the U.S., but proportional to net income, just as common dividends.

observation problem, as observed in 71 cases. These observations are not included in Table 2.

[28]

Table 2

Summary statistics of the 1975-1980 (6 years) period for the 224 non-financial companies traded and listed in December 1976. All variables (except Size) are reported in % and defined in Table 1. Size is the natural logarithm of the Brazilian currency at constant prices of 1970. This table presents the mean, median, standard deviation, and number of observations for each variable in our dataset. All variables are winsorized at the 1% and 99% levels each year. * Included dividends-to-earnings are not negative and not greater than 100%.

Variable	Mean	Median	SD	N
Pay Dividends	88.8	100.0	31.6	1,339
Dividends-to-Earnings *	24.7	20.2	18.8	1,256
Dividends-to-Book Equity	5.4	4.7	4.2	1,335
Dividends-to-Assets	2.8	2.4	2.4	1,334
Assets Growth	1.6	1.7	23.1	1,342
Stock Earnings-to-Assets	11.0	9.9	9.0	1,344
Return on Equity	20.3	19.7	17.2	1,345
Market-to-Book of Equity	58.5	47.1	50.5	1,197
Size	11.6	11.4	1.3	1,344
Leverage	48.3	49.3	15.8	1,344
Issue Stocks	40.0	0.0	49.0	1,344

[28] Negative and greater than 100% dividends-to-earnings observations are not included in Table 2, but they are included in most of the regressions in Section 5 and Appendices without problems, given we model D/BE or D/A instead of D/Y. We additionally note that including dividends-to-earnings greater than 100% (like Bae et al. 2021 and LLSV), the mean and median are respectively 34.9% and 21.5%. Bae's et al. (2021) mean dividends-to-earnings is 31.34% (in their Table 3) and LLSV' civil law median dividends-to-earnings is 25.1% (in their Table III).

We choose to focus on the 1975-1980 years split into the 1975-1977 (pre-Law) and 1978-1980 (post-Law) sub-periods because this 3-year to 3-year comparison seems a good compromise between characterizing the new Company Law treatment effect and not being contaminated by other neighbor structural changes. Moreover, the Brazilian GDP grew at 6.5% per year on average in the former 1975-1977 sub-period and at 6.4% per year on average in the latter 1978-1980 sub-period.[29, 30]

Aware of the possible changes in the relative costs of funding caused by time-varying business conditions, or by variation in the characteristics of firms contemporaneously with the company law reform, we pursue controlled tests of the Substitute model through various specifications in the next section.

5. Results

Our analysis focuses on the 1975-1980 years, split into two three-year sub-periods: the pre-Law 1975-1977 period of less shareholder rights protection and the post-Law 1978-1980

[29] Despite the 1979 oil shock, Brazilian GDP grew 9.11% in 1980. Recalling that we have data for 1973-1982, we prefer not to focus on this 5-year to 5-year comparison because Brazil exhibited different macroeconomic performances during the 1973-1977 (pre-Law) and 1978-1982 (post-Law) sub-periods. The Brazilian GDP grew at 8.4% per year on average in the 1973-1977 period, whereas it grew at 3.4% per year on average in the 1978-1982 period.

[30] See Araujo et al. (2020) for an analysis of the Brazilian economy and stock market during this period.

period of more shareholder rights protection. We take advantage of the strengthen in minority shareholder rights, ensured by the new Brazilian Company Law, to test the Substitute agency theory of dividends.

We answer the following questions: (i) Do growth firms pay higher dividends than mature firms in the pre-Law period, when minority shareholder rights are less protected? (ii) Do firms in general have higher dividend payouts in the pre-Law period than in the post-Law period, when minority shareholder rights are more protected? (iii) Do dividend payments forecast future stock issuances better in the pre-Law period than in the post-Law period? (iv) Is signaling through dividends more effective in reducing agency costs in the pre-Law period than in the post-Law period?

5.1. Dividend Regressions

First, we investigate how dividend payouts ($D_{i,t}/BE_{i,t}$) relate to growth opportunities ($ME_{i,t}/BE_{i,t}$), return on equity ($Y_{i,t}/BE_{i,t}$), other firm's fundamental controls ($Controls_{i,t} = \left[\Delta ln\left(A_{i,t}\right), L_{i,t}/A_{i,t}, ln\left(A_{i,t}\right)\right]$), and the passage of the new Company Law (Law_t). Because the dividends *participation* and *intensity* decisions are different processes, as explained in section 2, we estimate Equations (4) and (5) as a Double-Hurdle Truncated Normal model.[31] The regressions also include industry- and year-dummy variables (F_i, Y_t). From a macroeconomic perspective, year dummies and firms' fundamentals control for the changing business conditions and other time-varying firm characteristics. Industry dummies control for

[31] In Table A.1 below, we test and reject the Tobit assumption that a single mechanism governs both the *participation* and *intensity* decisions.

constant differences in industry characteristics. For the Law_t's coefficient to capture the average increment in the post-Law years, and the *Intercept* to capture the average level in the pre-Law years, we transform the year dummies into centered indicators. [32]

In Table 3, Panel 3.A depicts the *intensity* Equation (5) and Panel 3.B depicts the *participation* Equation (4). To facilitate comparative reading of the pre- and post-Law effects, the coefficient estimates of one regression are split into two adjacent columns The odd-numbered columns in Panels 3.A and 3.B present pre-Law coefficient estimates, and the even-numbered columns present post-Law increment estimates (which, added to pre-Law coefficients, provide post-Law coefficients). [33] Panel 3.C shows the average marginal effect on the censored mean, and Panel 3.D shows the average marginal effect on the probability of paying dividends. In these two last panels, the even-numbered columns directly present post-Law effects (which are already sums of post-Law increments to pre-Law effects).

We are particularly interested in the market-to-book ratio effects. According to the Substitute model, such a coefficient should be positive pre-Law and should flatten as shareholders rights become better protected post-Law. Contemplating all firms during 1975-

[32] We transform the year dummies into centered indicators by subtracting the excluded year dummy from each of the other year dummies. In this study, we have two "intercepts": the *Intercept* itself for the pre-Law period and the *(Intercept + Law_t coefficient)* for the post-Law period. Thus, we exclude one year dummy from the pre-Law period (and subtract it from the included pre-Law year dummies), and exclude another one year dummy from the post-Law period (and subtract it from the included post-Law year dummies).

[33] We choose to show the post-Law increment in the even-numbered columns of Panels 3.A and 3.B to make explicit the significance of the new Law treatment effect.

1980 in columns (1)-(2), estimates in Panel 3.A show that the 0.138 (significant at 1% level) pre-Law effect of $(ME/BE)\cdot(Y/BE)$ on the latent D^*/BE falls to 0.019 in the post-Law period ($0.019 = 0.138 - 0.119$, where 0.119 is in column (2) of Panel 3.A).

Table 3

Double-Hurdle Truncated Normal regressions estimates of Equations (4) and (5) to explain dividend payouts for the 1975–1980 (6 years) period. The dependent variable is D_{it}/BE_{it} , dividends for fiscal year t divided by book equity at the end of t . Y_{it} is after interest and taxes earnings available for stock i in year t . ME_{it}/BE_{it} is market-to-book ratio of equity. The other controls included in all regressions are debt by total assets (L_{it}/A_{it}), asset growth ($\Delta\, ln(A_{it})$) and size ($ln(A_{it})$). Year- and industry-dummies included in all regressions. t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. * , ** , *** indicate significance at the 10%, 5% and 1%. Pseudo R-squared of intensity equation is the squared Pearson correlation coefficient of the censored mean and the actual observed variable. Log pseudo likelihood is the log likelihood of the respective equation.

Sample:	*All*		*D/E > 25%*		*D/E<= 25%*	
	General	Post-Law increment	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel 3.A: intensity equation					
Y_{it}/BE_{it}	0.155*	-0.078	0.045	-0.053	0.329***	-0.205
	(1.90)	(-0.59)	(0.48)	(-0.41)	(2.90)	(-1.04)
Y_{it}/BE_{it} x ME_{it}/BE_{it}	0.138***	-0.119***	0.118***	-0.101***	0.105***	-0.077**
	(5.04)	(-4.43)	(4.09)	(-3.82)	(3.44)	(-2.38)
Intercept	0.032**	-0.035***	0.042***	-0.030***	-0.003	-0.005
	(2.54)	(-3.98)	(4.17)	(-3.38)	-(0.22)	(-0.35)
Pseudo R^2	0.306		0.469		0.355	
Log pseudo likelihood	2,145.9		1,152.1		1,056.2	
	Panel 3.B: participation equation					
Y_{it}/BE_{it}	8.966***	-3.187*	5.690***	1.734	16.277***	-10.949***
	(5.59)	(-1.77)	(3.05)	(0.64)	(4.98)	(-3.00)
ME_{it}/BE_{it}	0.552*	-0.041	1.175**	-1.507***	0.766	0.948
	(1.74)	(-0.09)	(2.06)	(-2.58)	(0.95)	(0.98)
Intercept	2.756**	1.340	4.764***	1.239	-3.588	3.917
	(2.19)	(0.86)	(2.88)	(0.62)	(-1.11)	(1.34)
Pseudo R^2	0.483		0.496		0.628	
Log pseudo likelihood	-204.7		-79.0		-78.3	

Table 3 - *Continued*

Regressions to explain the Dividend-to-Book-Equity (D_{it}/BE_{it}). Log Likelihood is the sum of the log likelihoods of the intensity and participation equations. The average of marginal effects on the censored mean computes the arithmetic mean of the partial effects of the covariate on each observation. The average of marginal effects on the probability of dividends payment computes the arithmetic mean of partial effect of the covariate. That is, how much the prediction will be affected if the covariate is incremented in one unit. Law_t is a dummy equal to *1* in the post-Law (1978-1980), or *0* in the pre-Law (1975-1977). Significance of the effects computed through Delta method.

Sample:	*All*		*D/E > 25%*		*D/E<= 25%*	
Observations	1,187		589		564	
Censored Observations	127		47		75	
Firms	224		111		107	
Log likelihood	1941.2		1073.1		977.9	
Elasticity:	Pre-Law	Post-Law	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 3.C: average of marginal effects on the censored mean						
Y_{it}/BE_{it}	0.058***	0.126***	0.087***	0.158***	0.079***	0.106***
	(4.18)	(7.84)	(4.02)	(8.03)	(6.74)	(4.42)
ME_{it}/BE_{it}	0.026***	0.005**	0.027***	0.001	0.019***	0.010**
	(5.56)	(2.05)	(4.55)	(0.66)	(4.17)	(2.48)
Law_t		-0.001		-0.010***		0.011***
		(-0.66)		(-3.69)		(5.05)
Panel 3.D: average of marginal effects on the probability of dividends payment						
Y_{it}/BE_{it}	0.767***	0.592***	0.313***	0.676***	1.099***	0.447***
	(6.59)	(7.01)	(3.22)	(4.17)	(10.56)	(2.40)
ME_{it}/BE_{it}	0.047*	0.052	0.065**	-0.030	0.052	0.144**
	(1.72)	(1.35)	(2.01)	(-1.37)	(0.99)	(2.40)

More informative, in column (1) of Panel 3.C the average marginal effect of ME_{it}/BE_{it} on the censored dividend-to-book-equity mean is *0.026* pre-Law, meaning that if ME/BE

increases by one unit, $E[D/BE]$ increases by 2.6%.[34] Given that the standard deviation of ME/BE is close to 0.5 (in Table 2), a one standard deviation increase in ME/BE is associated with an expected 1.3 percentage-point increase in D/BE. This is an economically important 24% increase of $E[D/BE]$, since the average D/BE is 5.4% (in Table 2).

However, post-Law in column (2) of Panel 3.C, the average marginal effect of ME/BE on $E[D/BE]$ reduces to a much less important 0.005. A pattern that corroborates the Substitute model's prediction that firms with better investment opportunities pay higher dividends under lower investor protection, but that such payout differences across different investment-opportunity firms narrows with stronger investor protection (as illustrated in Figure 1.2).

It is also noteworthy that the average marginal effect of Y/BE on $E[D/BE]$ is higher in the post-Law period than in the pre-Law period (from 0.058 to 0.126). This greater sensitivity of $E[D/BE]$ to Y/BE in the post-Law period is an indication that firms become less reluctant to change dividends, which is an expected consequence of lower information asymmetry and fewer agency conflicts, according to Dewenter and Warther (1998) and Leary and Michaely (2011).

[34] We emphasize this is not the effect of $\left(ME_{i,t}/BE_{i,t}\right)\cdot\left(Y_{i,t}/BE_{i,t}\right)$, but of $ME_{i,t}/BE_{i,t}$. It is the average of partial derivatives $\frac{\partial[D_{it}/BE_{it}]}{\partial(ME_{it}/BE_{it})}$ at the values taken on by each firm i, $\left(\frac{Y_{i,t}}{BE_{i,t}}, \frac{ME_{i,t}}{BE_{i,t}}, \Delta ln\left(A_{i,t}\right), L_{i,t}, ln\left(A_{i,t}\right)\right)$. We use the function *margins* from Stata to compute the average of marginal effects on censored means.

Given that the new Company Law introduced a minimum 0.25 dividend-to-earnings rule, it may be suspected that the weakening of the ME/BE coefficient observed from columns (1) to (2) resulted from firms that optimally paid less than 0.25 dividend-to-earnings pre-Law and became bounded to this minimum dividend payout in the post-Law regime. That is, these firms' post-Law dividends no longer vary with respect to any factor that would determine the optimal payout in an unconstrained environment.

To discard this suspicion, we show estimates for a subsample of firms that paid average dividend-to-earnings greater than 25% in the pre-Law period in columns (3)-(4) of Table 3. These firms are less likely to be constrained by the Law's minimum 25% dividend-to-earnings rule.

Pre-Law in column (3), the coefficient of $(ME/BE) \cdot (Y/BE)$ in the *intensity* equation is a very significant 0.118, and the average marginal effect of ME/BE on the censored dividend ratio mean is 0.027. However, post-Law in column (4), the $(ME/BE) \cdot (Y/BE)$ coefficient in the *intensity* equation reduces to 0.017 ($0.017 = 0.118 - 0.101$, adding values in columns (3) and (4) of Panel 3.A), and the average marginal effect of ME/BE on the censored dividend ratio mean reduces to an insignificant 0.001. This pattern is similar to the observed in columns (1)-(2) for the full sample of firms, discarding that the post-Law weaking of the ME/BE effect is caused by firms that became constrained by the Law's minimum dividend rule. [35]

[35] Note that the average of marginal effects of $(ME_{i,t}/BE_{i,t})$ on the censored mean is smaller and less significant in column (4) than in column (2).

These firms that are less likely constrained by the Law's minimum dividend rule also provide a test of the Substitute model prediction that, *ceteris paribus*, firms pay lower dividends under better investor protection.

As predicted by the Substitute model, in column (4) of Panel 3.A, the *Intercept* decreases significantly in the post-Law period, indicating that, *ceteris paribus*, the latent D^*/BE is lower. In column (4) of Panel 3.C, we observe that the average marginal effect of Law_t on the censored dividend ratio mean is *-0.010* (significant at 1% level). That is, the censored mean of (D/BE) decreased by 1.0% in the post-Law period, which is an economically important reduction of 18.5%.

Going back to the full sample in column (2) of Panel 3.C, we realize that the insignificant *-0.001* average marginal effect of Law_t on the censored dividend-to-book-equity ratio mean combines firms that could optimally reduce their payouts post-Law with firms that were sub-optimally forced to increase their payouts to comply with the minimum 25% dividends-to-earnings rule.

Thus, looking at the complement subsample of firms that paid average dividend-to-earnings lower than 25% in the pre-Law period is also informative, given they were more likely forced to increase their payouts above their unconstrained optimum. In column (6) of Panel 3.C, we confirm that firms that paid average dividend-to-earnings lower than 25% pre-Law increased their payouts post-Law, *ceteris paribus*. The average marginal effect of Law_t on the censored mean is *0.011* (significant at 1% level). That is, the censored mean of (D/BE) increased by 1.1% in post-Law period, which is a 20% increase.

Rather than going against the Substitute model, this last result indicates that Brazilian companies did comply with the Law, rebutting suspicions about ineffective law enforcement which could dismiss the event studied here as an experiment in legal-protection improvement. In sum, optimal dividend payouts did decrease for firms in general as predicted by the Substitute model. However, the Law put a floor above the optimum for some firms.

To discard that the above pattern results from other unobservable changes in investment opportunities surrounding the passage of the new Company Law, Table 4 presents estimates of the Double-Hurdle Normal model: (i) for the decade of 1973-1982 and the very same Law_t variable; (ii) for the 1973-1976 period and Law_t substituted with $D7576_t = 1$ in the years 1975 and 1976, or $D7576_t = 0$ in the years 1973 and 1974; and (iii) for the 1979-1982 period and Law_t substituted with $D8182_t = 1$ in the years 1981 and 1982, or $D8182_t = 0$ in the years 1979 and 1980.[36]

[36] Examples are changes in investment opportunities and in corporate governance. For Brazil in this period, the major concern is that the low GDP growth after 1980 could break down the relation between investment opportunities and dividend payments.

Table 4

Double-Hurdle Truncated Normal regressions estimates of Equations (4) and (5) to explain dividend payouts for the 1973-1982, 1973-1976 and 1979–1982 periods. The dependent variable is D_{it}/BE_{it}, dividends for fiscal year t divided by book equity at the end of t. Y_{it} is after interest and taxes earnings available for stock i in year t. ME_{it}/BE_{it} is market-to-book ratio of equity. The other controls included in all regressions are debt by total assets (L_{it}/A_{it}), asset growth ($\Delta ln(A_{it})$) and size ($ln(A_{it})$). Year- and industry-dummies included in all regressions. t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%. Pseudo R-squared of intensity equation is the squared Pearson correlation coefficient of the censored mean and the actual observed variable. Log pseudo likelihood is the log likelihood of the respective equation.

Sample:	1973-1982		1973-1976		1979-1982	
	General	Post-Law increment	General	1975-76 increment	General	1981-82 increment
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 4.A: intensity equation						
Y_{it}/BE_{it}	0.103	-0.134	0.060	0.020	-0.054	0.227
	(1.39)	(-1.08)	(0.72)	(0.23)	(-0.21)	(0.51)
Y_{it}/BE_{it} x ME_{it}/BE_{it}	0.113***	-0.078***	0.080***	0.057	0.030*	0.129**
	(4.78)	(-3.05)	(3.19)	(1.60)	(1.86)	(1.96)
Intercept	0.035**	-0.044***	0.045***	0.006	-0.004	-0.056**
	(2.16)	(-4.96)	(3.62)	(0.91)	(-0.10)	(-2.07)
Pseudo R^2	0.319		0.264		0.326	
Log pseudo likelihood	3,384		1,434		1,267	
Panel 4.B: participation equation						
Y_{it}/BE_{it}	5.773***	-1.259	3.881***	4.449***	6.524***	-2.489
	(5.99)	(-0.97)	(3.47)	(2.69)	(5.55)	(-1.46)
ME_{it}/BE_{it}	0.084	0.017	0.157	-0.374	0.670	-1.010*
	(0.32)	(0.05)	(0.39)	(-0.72)	(1.58)	(-1.94)
Intercept	3.404***	1.320	3.939***	-0.169	6.090**	-0.575
	(3.49)	(1.16)	(2.92)	(-0.10)	(-2.12)	(-0.47)
Pseudo R^2	0.390		0.339		0.452	
Log pseudo likelihood	-454.1		-158.9		-197.6	

Table 4 - *Continued*

Regressions to explain the Dividend-to-Book-Equity (D_{it}/BE_{it}). Log Likelihood is the sum of the log likelihoods of the intensity and participation equations. The average of marginal effects on the censored mean computes the arithmetic mean of the partial effects of the covariate on each observation. The average of marginal effects on the probability of dividends payment computes the arithmetic mean of the partial effect of the covariate. That is, how much the prediction will be affected if the covariate is incremented in one unit. Law_t is a dummy equal to *1* in the post-Law (1978-1982), or *0* in the pre-Law (1973-1977). $D7576_t$ is a dummy equal to *1* in 1975 and 1976, or *0* in 1973 and 1974. $D8182_t$ is a dummy equal to *1* in 1981 and 1982, or *0* in 1979 and 1980. Significance of the effects computed through Delta method.

Sample:	1973-1982		1973-1976		1979-1982	
Observations	1,928		752		768	
Censored	226		78		143	
Firms	258		216		218	
Log likelihood	2,929		1,275		1,069	
Elasticity:	Pre-Law	Post-Law	1973-74	1975-76	1979-80	1981-82
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 4.C: average of marginal effects on the censored mean						
Y_{it}/BE_{it}	0.067***	0.119***	0.077***	0.050***	0.100***	0.093***
	(5.76)	(7.79)	(4.45)	(3.00)	(4.84)	(3.64)
ME_{it}/BE_{it}	0.019***	0.004*	0.018***	0.026***	0.006**	0.006
	(4.62)	(1.82)	(2.86)	(4.17)	(2.34)	(1.42)
	Law_t	-0.006***	$D7576_t$	0.000	$D8182_t$	-0.010***
		(-2.81)		(0.05)		(-2.63)
Panel 4.D: average of marginal effects on the probability of dividends payment						
Y_{it}/BE_{it}	0.676***	0.664***	0.544***	0.767***	0.676***	0.770***
	(6.69)	(6.48)	(3.52)	(6.12)	(6.49)	(4.07)
ME_{it}/BE_{it}	0.010	0.015	0.022	-0.020	0.069	-0.065
	(0.33)	(0.37)	(0.40)	(-0.54)	(1.54)	(-0.84)

The inspection of the estimates for the 1973-1982 decade in columns (1)-(2) of Table 4 confirms that the pre- and post-Law patterns documented in Table 3 hold for a longer time window. According to the Substitute model's prediction, there is an important positive relationship between the dividend ratio and (ME/BE) in the pre-Law period that fades away

in the post-Law period. In Panel 4.C, the average marginal effect of (ME/BE) on the censored dividend ratio mean is 0.019 (significant at 1% level) in the pre-Law period and is only 0.004 (significant at 10% level) in the post-Law period.[37]

To test if the reduction in the importance of (ME/BE) on dividend-to-book-equity ratio anticipates the Law's passage, in columns (3) and (4) of Table 4, we split the 1973-1976 period into two earlier and two later years by the variable $D7576_t$. Panel 4.C shows that the average marginal effect of (ME/BE) on the censored dividend ratio mean is pointwise higher in 1975-1976 than in 1973-1974 – and both are significant –, showing that the importance of (ME/BE) on dividends was not decreasing in response to changing unobserved investment opportunities just before the passage of the Law.

To test if the reduction in the importance of (ME/BE) on dividends is more related to lower Brazilian growth after 1980 than to the Law's passage, in columns (5) and (6) of Table 4, we split the 1979-1982 period into two earlier and two later years by the variable $D8182_t$. Column (5) of Panel 4.C shows that the 0.006 average marginal effect of (ME/BE) on the censored dividend ratio mean for 1979-80 is clearly lower than the 0.018 observed for 1973-74 in column (3) – not to say lower than the 0.026 for 1975-76 in column (4) –, showing that the importance of (ME/BE) had faded away before Brazilian GDP growth went down in 1981.

[37] As explained above, we prefer not to focus on this 5-year to 5-year comparison because Brazil displayed different macroeconomic performances during the 1973-1977 (pre-Law) and 1978-1982 (post-Law) sub-periods.

That dividend payouts significantly decreased with the slower economic growth of 1981 and 1982 is confirmed in the *-0.010* average marginal effect of $D8182_t$ on the censored dividend ratio mean in column (6) of Panel 4.C. We additionally note that such dividend payouts decrease due to the slower economic growth contaminated the average marginal effect of Law_t on the censored dividend ratio mean in column (2) of Panel 4.C, which contemplates the years of 1981 and 1982.

Once isolated, the recession effect in the years of 1981 and 1982 (by $D8182_t$ in column 6 of Panel 4.C) and the increase in dividend payouts for firms constrained by the Law minimum dividend rule (by Law_t in column 6 of Panel 3.C), we confirm our conclusion that the average marginal effect of Law_t on the censored dividend ratio mean in column (4) of Panel 3.C evinces the *ceteris paribus* reduction in dividend payouts because of stronger shareholders' rights predicted by the Substitute model.

To inspect the parametrizations of Equations (4) and (5), Table A.1 in Appendix A shows estimates of a Tobit model in columns (1)-(2) and a more parsimonious version of the Double-Hurdle model in columns (5)-(6). [38]

We first point out that the log-likelihood of the Double-Hurdle model in columns (3)-(4) is significantly higher than the log-likelihood of the nested Tobit model in columns (1)-(2),

[38] Columns (3)-(4) of Table A.1 are the same as those of columns (1)-(2) of Table 3, reproduced in Table A.1 for readers' convenience.

demonstrating the better fit of the Double-Hurdle specification in our context.[39] Second, we note that the additional $Controls_{i,t} = \left[\Delta ln\left(A_{i,t}\right), L_{i,t}/A_{i,t}, ln\left(A_{i,t}\right)\right]$, although theoretically justified, were not significantly important for the 1975-1980 period in columns (3)-(4), such that the estimates of a "less-controlled" version in columns (5)-(6) are not qualitatively different. Most important from Table A.1, both the Tobit and the more parsimonious Double-Hurdle estimates confirm that an important pre-Law (ME/BE) effect becomes unimportant post-Law.

A possible objection to our analysis is that we analyze dividends scaled by book equity $\left(\frac{D_{i,t}}{BE_{i,t}}, \frac{Y_{i,t}}{BE_{i,t}}\right)$ in Equations (3) and (5), while other authors scale dividends by assets $\left(\frac{D_{i,t}}{A_{i,t}}, \frac{Y_{i,t}}{A_{i,t}}\right)$. Although we insist that our choice is more appropriate for measuring better shareholder treatment, given that ratios to assets are affected by variation in leverage, we provide Double-Hurdle model estimates for $\left(\frac{D_{i,t}}{A_{i,t}}, \frac{Y_{i,t}}{A_{i,t}}\right)$ in Table A.2. For the full sample of firms in the 1975-1980 period, columns (1)-(2) present estimates of the Tobit model, columns (3)-(4) present estimates of the Double-Hurdle model, and columns (5)-(6) present Double-Hurdle estimates for the subsample of firms that paid average dividend-to-earnings greater than 25% in the pre-Law period.

[39] The χ_k^2 statistic of the Lagrange multiplier test by Lin and Schmidt (1984) is: $\lambda = -2[ln(LT) - ln(LDH)]$, where LT is the likelihood of the Tobit model and LDH is the likelihood of the Double-Hurdle Truncated Normal model that nests the Tobit model. For $k=6$ and the log-likelihoods at the top of Table A.1 – Continued, $\lambda = 218.72$ rejects the hypotheses that the Tobit model is the correct specification.

In all three specifications, the pre-Law effect of ME/BE on $E[D/A]$ is very significant and becomes less important in the post-Law period. Taking columns (3)-(4) as reference, and recalling that the standard deviation of ME/BE is close to 0.5, a one standard deviation increase in ME/BE is associated with an expected 0.5 percentage-point increase in $E[D/A]$, which is economically important given that the average D/A is 2.8% (in Table 2).

Also, similarly to previous results for Y/BE on $E[D/BE]$, the effect of Y/A on $E[D/A]$ becomes stronger post-Law. And the effect of Law_t in the subsample of firms unconstrained by the minimum dividend rule in columns (5)-(6) is to significantly reduce $E[D/A]$, *ceteris paribus*.[40]

Least-square regressions to explain censored dividend ratios are common in the literature, although they are biased and inconsistent (see Ruud 2000). For example, Fama and French (2002) model the dividend-paying firms' decision of how much to pay (i.e., the intensive margin, where only strictly positive dividend observations are modeled), while La Porta et al. (2000a), Agrawal (2013) and Bae et al. (2021) model firms' dividend values overlooking its censored nature (i.e., modeled the zero and positive values in a single stage).

[40] Note that $L_{i,t}/A_{i,t}$ is not negatively significant to explain $D_{i,t}/BE_{i,t}$ but is negatively significant to explain $D_{i,t}/A_{i,t}$. Recalling that the difference between $A_{i,t}$ and $BE_{i,t}$ is $L_{i,t}$, this is in accordance with most dividend theories, which assume that dividends and debt are substitutes.

For comparison with these influential articles, similar to Fama and French (2002), we estimate the intensive margin of dividends only with strictly positive dividends observations parametrized as Equation (3) in Table B.1 of Appendix B.[41]

The odd-numbered columns in Panels B.1.A present pre-Law coefficient estimates, and the even-numbered columns present post-Law increment estimates (which add to pre-Law coefficients for the post-Law effects). In Panel B.1.B, the even-numbered columns directly present post-Law effects (i.e., present the sum of post-Law increment to pre-Law coefficient).

Columns (1) and (2) of Table B.1 show the pre-Law and post-Law estimates from a regression without industry dummies, which resemble most to the Fama MacBeth (1973) methodology used by Fama and French (2002). As in Tables 3, the coefficient of $(ME/BE) \cdot (Y/BE)$ is economically important pre-Law in column (1) of Panel B.1.A and significantly decreases post-Law in column (2). The average marginal effect of (ME/BE) on (D/BE) is *0.026* pre-Law in column (1) of Panel B.1.B and significantly decreases to *0.005* post-Law in column (2). This same pattern is observed in columns (3)-(4) with industry dummies, and in columns (5)-(6) for the subsample of firms that paid average dividend-to-earnings above 25%

[41] Fama and French (2002) estimate an equation similar to our Equation (3) for $\left(D_{i,t}/A_{i,t}, Y_{i,t}/A_{i,t}\right)$ including only strictly positive dividend observations with the Fama and MacBeth (1973) procedure, meaning that their estimates are averages of the 35 cross-section estimates they produce with their sample of 35 years. With only three years – because we need the pre- and post-Law averages – the Fama and MacBeth (1973) procedure does not produce reliable standard errors. Besides, we want to control for industry dummies, a reason for our decision to present least-square dummy variables (LSDV) estimates.

pre-Law. In column (6) of Panel B.1.B, we additionally confirm that the dividend ratio significantly goes down with the passage of the Law, *ceteris paribus*.

Finally, for comparison with Agrawal (2013) and Bae et al. (2021), Table B.2 shows least-square estimates for the complete sample of $\left(D_{i,t}/BE_{i,t}\right)$, for which there is a cluster at zero. As in Tables 3, the coefficients of $(ME/BE)\cdot(Y/BE)$ are economically very important pre-Law in columns (1), (3) and (5) of Panel B.2.A, and significantly decrease post-Law in columns (2), (4) and (6). Averages of marginal effects of (ME/BE) on (D/BE) in columns (1), (3) and (5) are very significant pre-Law in Panel B.2.B and significantly decrease post-Law in columns (2), (4) and (6). We also confirm in column (6) of Panel B.2.B that the dividend ratio goes down significantly with the passage of the Law.

5.2. Stock Issuance Regressions

In the Substitute narrative, firms pay dividends under low levels of investor legal protection because they intend to issue new shares soon. Therefore, we ask: do dividend payments forecast future equity issuance in the pre-Law period? Table 5 presents Probit model regressions estimates according to Equation (6) to explain which firms issue new shares, with year and industry dummies. The dependent variable equals *1* if a firm issues shares in the subsequent years or *0* otherwise. The explanatory variables are dividends paid this year or the year before and market-to-book ratio. According to Baker and Wurgler (2002), firms are more likely to issue shares when their market values are high relative to their book value.

In column (1) of Panel 5.A, we observe that paying dividends in the current year or the year before (i.e., having the reputation of being a dividend payer) forecasts the next year's

equity issuance in the pre-Law period.[42] Column (1) of Panel 5.B displays the marginal effects in the pre-Law period, indicating that paying dividends raises the probability of issuing stocks substantially by *38* percentage points. However, dividend payments become unimportant in forecasting equity issuance in the post-Law period in column (2), denoting that firms issuing new equity no longer signal better quality, or fairer shareholder treatment, through dividends.

Table 5

Probit regressions estimates of Equation (6) to explain which firms issue new shares. The dependent variable is *1* firm i issues shares in the following year (or the year after the following), or *0* otherwise. $PayDiv._{it\text{-}1\text{->}t}$ is 1 if firm i pay dividends in the current year t or in the year before *t-1* , or 0 otherwise. ME_{it}/BE_{it} is market-to-book ratio of equity. Law_t is 1 in the post-Law (1978-1982), or *0* in the pre-Law (1973-1977). We interact each explanatory variable with Law_t .Year- and industry-dummies included in both regressions. z-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%. Significance of the marginal effects in *Panel 5.B* computed through Delta method.

Sample:	*75-80*		*73-82*	
	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)
	Panel 5.A: estimated coefficients			
$Pay\ Div._{it\text{-}1\text{->}t}$	1.016***	-0.678	1.026***	-0.766**
	(2.85)	(-1.47)	(3.44)	(-2.11)
ME_{it}/BE_{it}	0.159	-0.075	0.350***	-0.185
	(1.15)	(-0.45)	(3.13)	(-1.28)
Intercept	-1.260**	0.081	-1.561***	0.461
	(-2.47)	(0.18)	(-3.44)	(1.34)
Pseudo R^2	0.083		0.095	
Observations	1,191		1,936	
	Panel 5.B: average of marginal effetcs			
Elasticity:	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)
$Pay\ Div._{it\text{-}1\text{->}t}$	0.380***	0.105	0.369***	0.079
	(2.94)	(1.32)	(3.52)	(1.24)

[42] This finding is similar to He's et al. (2017).

To confirm whether this pattern generalizes to a longer period, columns (3)-(4) show estimates for the extended 1973-1982 period. We note that the effects of $PayDiv_{t-1\rightarrow t}$ on the probability of issuing stocks are similar to those observed in columns (1)-(2), although more significant.

5.3. Return Implied Relationship

To further check the Substitute narrative, we follow up on its complementarity aspects. Through Equation (7), we verify the assumption that dividend-signaling is an effective way to reduce the cost of new equity financing in the pre-Law period. Because stock returns react to a firm's performance, we control for earnings variation to obtain a better sense of the information added by changes in dividends.

Table 6 presents estimates of Equation (7) to understand how stock returns (or prices) are affected by dividend payments. According to columns (1) and (2), increases in dividend payments ($\Delta D_t/D_{t-1}$) are strongly and positively related to higher returns in the pre-Law period, whereas not related in the post-Law period.

As in Dewenter and Warther (1998) or Pinkowitz et al. (2006), this is consistent with the hypothesis that firms in the pre-Law period faced substantial agency costs, and therefore signaling through dividends was an effective policy of lowering the equity cost of equity of future issues. The new Company Law reduced the need (or attenuated the effectiveness) to use dividend payments to establish a reputation for a fair shareholder treatment.

Table 6

Panel regressions estimates of Equation (7) to explain stock returns. $Return_{it}$ is the real stock return of company i in year t. $\Delta D_{it}/D_{it-1}$ is the rate of growth in dividends between year t and $t-1$ for firm i. $\Delta(Y_{it}/BE_{it})$ is the variation in the return on equity. Law_t is 1 in the post-Law (1978-1982), or 0 in the pre-Law (1973-1977). Year- and industry-dummies included in both regressions. In *Panel 6.A*, t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%. In *Panel 6.B*, t-statistics (in parentheses) of test that coefficient is equal to zero.

Coefficient:	*75-80*		*73-82*	
	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)
	Panel 6.A: panel estimates			
$\Delta D_{it}/D_{it-1}$	0.128***	-0.123***	0.089***	-0.084***
	(3.12)	(-2.84)	(3.53)	(-3.08)
$\Delta(Y_{it}/BE_{it})$	0.720***	0.161	0.757***	0.278
	(4.92)	(0.78)	(6.25)	(1.50)
Intercept	-0.131***	-0.129***	0.203	-0.067***
	(-4.36)	(-7.40)	(0.70)	(-3.03)
R^2	0.178		0.190	
Observations	1,008		1,604	
	Panel 6.B: hypothesis tests for ΔDividend effects after law			
$[1+Law_t] * (\Delta D_{it}/D_{it-1})$	0.005		0.005	
	(0.38)		(0.57)	

Finally, to confirm whether this pattern generalizes to a longer period, columns (3)-(4) show estimates for the extended 1973-1982 period. We note that the effects of $\Delta D_t/D_{t-1}$ on the probability of issuing stocks are similar to those observed in columns (1)-(2).

6. Conclusions

How do firms choose their dividend policies? How can dividends be used to deal with agency problems? In this paper, we test the Substitute agency-theory of dividends using the passage of a Brazilian Company Law which increased the emphasis on minority shareholder rights but kept the corporate power structure concentrated.

The evidence we document supports the notion that dividends are substitutes for legal protection. In the low level of legal protection Brazilian stock market before the law reform, firms with better investment opportunities used to signal proper shareholder treatment through dividends. After the law reform, which demanded greater transparency and protection of minority shareholders' rights, dividends become more responsive to earnings as a result of the reduced information asymmetry and agency conflicts.

The Outcome model predictions that dividends should increase in general and that mature firms should pay higher dividends than growth firms with the strengthening of minority shareholders' rights are not substantiated, probably because the Brazilian reform did not give a voice to minority shareholders. However, firms with better growth opportunities noticeably reduce signaling through dividends, and firms unconstrained by the Law minimum dividend-to-earnings rule reduced dividend payouts. Both as predicted by the Substitute model.

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Appendices

Appendix A

To assess our specifications of Equations (4) and (5), columns (1)-(2) of Table A.1 show estimates of a Tobit model that parametrizes both the participation and intensity equations like the non-linear Equation (5). Columns (5)-(6) show estimates of a simplified Double-Hurdle Truncated Normal version in columns (5)-(6). The results in columns (3)-(4) are the same as those in columns (1)-(2) of Table 3, reproduced in Table A.1 for readers' convenience.

We first note that the log-likelihood of the Double-Hurdle model in columns (3)-(4) is significantly higher than the likelihood of the Tobit model in columns (1)-(2). According to Greene (2002), the χ_k^2 statistic of the Lagrange multiplier test by Lin and Schmidt (1984) is given by: $\lambda = -2[ln(LT) - ln(LDH)]$, where LT is the likelihood of the Tobit model and LDH is the likelihood of the Double-Hurdle Truncated Normal model. For $k=6$ and the log-likelihoods at the top of Table A.1 – *Continued*, $\lambda = 218.72$ strongly rejects the hypotheses that the Tobit specification is the correct one.[43]

[43] The comparison of the Double-Hurdle Truncated model in columns (1)-(2) of Table 3 with a Tobit model that parametrizes both the participation and intensity equations like the linear Equation (4) results in $\lambda = 209.8$, strongly rejecting the hypothesis that the Tobit specification is the correct one.

Table A.1

Tobit and Double-Hurdle Truncated Normal regressions estimates to explain dividend payouts for the 1975–1980 (6 years) period. The dependent variable is D_{it}/BE_{it}, dividends for fiscal year t divided by book equity at the end of t. Y_{it} is after interest and taxes earnings available for stock i in year t. ME_{it}/BE_{it} is market-to-book ratio of equity. The other controls included in columns (1) to (4) are debt by total assets (L_{it}/A_{it}), asset growth ($\Delta ln(A_{it})$) and size ($ln(A_{it})$). Year- and industry-dummies included in all regressions. t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%. Pseudo R-squared of intensity equation is the squared Pearson correlation coefficient of the censored mean and the actual observed variable. Log pseudo likelihood is the log likelihood of the respective equation.

Model:	Tobit		Hurdle			
Sample:	General	Post-Law increment	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A.1.A: intensity equation						
Y_{it}/BE_{it}	0.085	-0.014	0.155*	-0.078	-0.040	0.201***
	(1.49)	(-0.14)	(1.90)	(-0.59)	(-1.24)	(4.32)
Y_{it}/BE_{it} x ME_{it}/BE_{it}	0.084***	-0.063***	0.138***	-0.119***	0.109***	-0.080***
	(3.95)	(-2.87)	(5.04)	(-4.43)	(4.19)	(-3.01)
Y_{it}/BE_{it} x L_{it}/A_{it}	0.091*	0.012	0.122*	0.053		
	(1.68)	(0.18)	(1.72)	(0.65)		
Y_{it}/BE_{it} x $\Delta ln(A_{it})$	-0.099***	-0.004	-0.085**	-0.052		
	(-3.02)	(-0.07)	(-2.12)	(-0.91)		
Y_{it}/BE_{it} x $ln(A_{it})$	-0.006	0.009	-0.023***	0.024**		
	(-1.13)	(1.18)	(-2.94)	(2.10)		
Intercept	0.030***	-0.011**	0.032**	-0.035***	0.032**	-0.037***
	(3.45)	(-2.33)	(2.54)	(-3.98)	(2.04)	(-4.09)
Pseudo R^2	0.296		0.306		0.284	
Log pseudo likelihood			2,146		2,129	
Panel A.1.B: participation equation						
Y_{it}/BE_{it}			8.966***	-3.187*	9.268***	-3.045*
			(5.59)	(-1.77)	(5.82)	(-1.71)
ME_{it}/BE_{it}			0.552*	-0.041	0.299	0.146
			(1.74)	(-0.09)	(1.25)	(0.36)
L_{it}/A_{it}			-2.772***	0.850		
			(-3.35)	(0.78)		
$\Delta ln(A_{it})$			0.696	0.204		
			(1.18)	(0.28)		
$ln(A_{it})$			0.292***	-0.121		
			(3.15)	(-1.03)		
Intercept			2.756**	1.340	4.494***	0.486*
			(2.19)	(0.86)	(17.41)	(1.71)
Pseudo R^2			0.483		0.444	
Log pseudo likelihood			-204.7		-220.6	

Table A.1 - *Continued*

Regressions to explain the Dividend-to-Book-Equity (D_{it}/BE_{it}). Log Likelihood is the sum of the log likelihoods of the intensity and participation equations. The average of marginal effects on the censored mean computes the arithmetic mean of the partial effects of the covariate on each observation. The average of marginal effects on the probability of dividends payment computes the arithmetic mean of partial effect of the covariate. That is, how much the prediction will be affected if the covariate is incremented in one unit. Law_t is a dummy equal to *1* in the post-Law (1978-1980), or *0* in the pre-Law (1975-1977). Significance of the effects computed through Delta method.

Model:	Tobit		Hurdle			
Observations	1,187		1,187		1,189	
Censored	127		127		127	
Firms	224		224		224	
Log likelihood	1831.8		1941.2		1908.0	
Elasticity:	Pre-Law	Post-Law	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A.1.C: average of marginal effects on the censored mean						
Y_{it}/BE_{it}	0.090***	0.141***	0.058***	0.126***	0.067***	0.133***
	(6.68)	(10.10)	(4.18)	(7.84)	(5.31)	(8.15)
ME_{it}/BE_{it}	0.018***	0.004**	0.026***	0.005**	0.019***	0.006**
	(3.98)	(2.04)	(5.56)	(2.05)	(4.58)	(2.50)
L_{it}/A_{it}	0.020*	0.018	0.007	0.015		
	(1.67)	(1.48)	(0.52)	(1.15)		
$\Delta ln(A_{it})$	-0.022***	-0.018**	-0.011	-0.014**		
	(-3.02)	(-2.54)	(-1.47)	(-2.40)		
$ln(A_{it})$	-0.001	0.001	-0.002*	0.001		
	(-1.13)	(0.32)	(-1.85)	(0.51)		
Law_t		0.001		-0.001		0.001
		(0.49)		(-0.66)		(0.38)
Panel A.1.D: average of marginal effects on the probability of dividends payment						
Y_{it}/BE_{it}	0.396***	0.746***	0.767***	0.592***	0.878***	0.690***
	(4.72)	(8.30)	(6.59)	(7.01)	(7.77)	(8.33)
ME_{it}/BE_{it}	0.057***	0.011**	0.047*	0.052	0.028	0.049
	(3.73)	(2.05)	(1.72)	(1.35)	(1.23)	(1.22)
L_{it}/A_{it}	0.062*	0.052	-0.237***	-0.197***		
	(1.66)	(1.44)	(-3.16)	(-2.61)		
$\Delta ln(A_{it})$	-0.068***	-0.052**	0.060	0.092**		
	(-2.93)	(-2.40)	(1.16)	(2.26)		
$ln(A_{it})$	-0.004	0.001	0.025***	0.018*		
	(-1.12)	(0.32)	(3.07)	(1.92)		

Second, we note that the additional $Controls_{i,t} = \left[\Delta ln\left(A_{i,t}\right), L_{i,t}/A_{i,t}, ln\left(A_{i,t}\right)\right]$, although theoretically justified, were not significantly important for the 1975-1980 period in columns (3)-(4), since the estimates of a "less-controlled" version in columns (5)-(6) are not qualitatively different.

To assess the double-hurdle estimates of dividend and earnings scaled by total assets $\left(\frac{D_{i,t}}{A_{i,t}}, \frac{Y_{i,t}}{A_{i,t}}\right)$, instead of by book equity $\left(\frac{D_{i,t}}{BE_{i,t}}, \frac{Y_{i,t}}{BE_{i,t}}\right)$, Table A.2 shows estimates for the full sample of firms in the 1975-1980 period. Columns (1)-(2) present estimates of the Tobit model, columns (3)-(4) present estimates of the Double-Hurdle model, and columns (5)-(6) present Double-Hurdle estimates for the subsample of firms that paid average dividend-to-earnings greater than 25% in the pre-Law period.

In all three specifications, the pre-Law effect of ME/BE on $E[D/A]$ is very significant and becomes less important in the post-Law period. Taking columns (3)-(4) as reference, and recalling that the standard deviation of ME/BE is close to 0.5, a one standard deviation increase in ME/BE is associated with an expected 0.5 percentage-point increase in $E[D/A]$, which is economically important given that the average D/A is 2.8% (in Table 2).

Also, similarly to previous results for Y/BE on $E[D/BE]$, the effect of Y/A on $E[D/A]$ becomes stronger post-Law. And the effect of Law_t in the subsample of firms unconstrained by the minimum dividend rule in columns (5)-(6) is to significantly reduce $E[D/A]$, *ceteris paribus*.

Table A.2

Tobit and Double-Hurdle Truncated Normal regressions estimates to explain dividend payouts for the 1975–1980 (6 years) period. The dependent variable is D_{it}/A_{it}, dividends for fiscal year t divided by book total assets at the end of t. Y_{it} is after interest and taxes earnings available for stock i in year t. ME_{it}/BE_{it} is market-to-book ratio of equity. The other controls included in all regressions are debt by total assets (L_{it}/A_{it}), asset growth ($\Delta ln(A_{it})$) and size ($ln(A_{it})$). Year- and industry-dummies included in all regressions. t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%. Pseudo R-squared of intensity equation is the squared Pearson correlation coefficient of the censored mean and the actual observed variable. Log pseudo likelihood is the log likelihood of the respective equation.

Model:		Tobit		Hurdle			
		All				*D/E > 25%*	
Sample:		General	Post-Law increment	General	Post-Law increment	General	Post-Law increment
		(1)	(2)	(3)	(4)	(5)	(6)
Panel A.2.A: intensity equation							
Y_{it}/A_{it}		0.145**	0.08	0.283***	0.057	0.279***	-0.072
		(2.33)	(0.84)	(3.05)	(0.45)	(3.10)	-(0.54)
Y_{it}/A_{it} x	ME_{it}/BE_{it}	0.071***	-0.046*	0.112***	-0.085***	0.095***	-0.064**
		(2.83)	(-1.73)	(3.51)	(-2.58)	(3.56)	(-2.45)
	L_{it}/A_{it}	-0.047	-0.034	-0.230**	0.022	-0.339***	0.01
		(-0.66)	-(0.52)	(-2.12)	(0.23)	(-3.87)	(0.09)
	$\Delta ln(A_{it})$	-0.128***	0.035	-0.125***	0.021	-0.236***	0.140**
		(-4.03)	(0.89)	(-3.50)	(0.46)	(-4.05)	(2.35)
	$ln(A_{it})$	-0.003	0	-0.014*	0.006	-0.003	0.011
		(-0.49)	(0.01)	(-1.63)	(0.54)	(-0.36)	(1.04)
Intercept		0.010***	-0.003	-0.004	-0.008	0.003	-0.007
		(3.48)	(-1.02)	(-1.63)	(-0.47)	(-1.47)	(0.53)
Pseudo R^2		0.377		0.384		0.586	
Log pseudo likelihood				2409.8		1350.0	
Panel A.2.B: participation equation							
Y_{it}/A_{it}				23.947***	-10.546**	14.738***	0.779
				(6.25)	(-2.48)	(2.72)	(0.11)
ME_{it}/BE_{it}				0.462	-0.102	1.400**	-1.828***
				(1.52)	(-0.23)	(2.37)	(-2.91)
L_{it}/A_{it}				-0.349	-0.748	-3.238**	1.336
				(-0.35)	(-0.59)	(-2.05)	(0.73)
$\Delta ln(A_{it})$				0.747	0.071	0.894	-0.07
				(1.39)	(0.11)	(1.10)	(-0.06)
$ln(A_{it})$				0.241***	-0.092	0.216*	-0.182
				(2.65)	(-0.78)	(1.72)	(-1.07)
Intercept				2.122	1.785	1.548	4.272**
				(1.31)	(1.36)	(0.71)	(2.35)
Pseudo R^2				0.476		0.480	
Log pseudo likelihood				-207.8		-81.4	

Table A.2 - *Continued*

Regressions to explain the Dividend-to-Assets (D_{it}/A_{it}). Log Likelihood is the sum of the log likelihoods of the intensity and participation equations. The average of marginal effects on the censored mean computes the arithmetic mean of the partial effects of the covariate on each observation. The average of marginal effects on the probability of dividends payment computes the arithmetic mean of partial effect of the covariate. That is, how much the prediction will be affected if the covariate is incremented in one unit. Law_t is a dummy equal to *1* in the post-Law (1978-1980), or *0* in the pre-Law (1975-1977). Significance of the effects computed through Delta method.

Model:	Tobit		Hurdle			
Sample:	*All*				*D/E > 25%*	
Observations	1187.0		1187.0		589.0	
Censored	127.0		127.0		47.0	
Firms	224.0		224.0		111.0	
Log Likelihood	2496.9		2617.6		1431.4	
Elasticity:	Pre-Law	Post-Law	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)	(3)	(4)
Panel A.2.C: average of marginal effects on the censored mean						
Y_{it}/A_{it}	0.106***	0.143***	0.095***	0.124***	0.113***	0.153***
	(7.20)	(12.34)	(6.85)	(8.95)	(5.31)	(8.53)
ME_{it}/BE_{it}	0.008***	0.002***	0.010***	0.003**	0.011***	0.002**
	(2.84)	(2.79)	(3.79)	(2.29)	(4.00)	(1.98)
L_{it}/A_{it}	-0.005	-0.008	-0.020**	-0.018*	-0.036***	-0.032***
	(-0.66)	(-0.91)	(-2.26)	(-1.92)	(-4.69)	(-2.95)
$\Delta ln(A_{it})$	-0.015***	-0.009***	-0.009***	-0.006**	-0.021***	-0.006*
	(-4.03)	(-3.84)	(-2.69)	(-2.37)	(-3.85)	(-1.93)
$ln(A_{it})$	-0.000	-0.000	-0.001	-0.000	-0.000	0.001
	(-0.49)	(-0.37)	(-0.90)	(-0.30)	(-0.01)	(0.77)
Law_t		0.001		0.001		-0.004***
		(1.17)		(0.96)		(-3.11)
Panel A.2.D: average of marginal effects on the probability of dividends payment						
Y_{it}/A_{it}	1.000***	1.462***	2.155***	1.375***	0.852***	1.470***
	(4.52)	(8.79)	(7.60)	(7.46)	(2.91)	(3.91)
ME_{it}/BE_{it}	0.049***	0.012***	0.042	0.037	0.081**	-0.041
	(2.71)	(2.79)	(1.52)	(0.94)	(2.41)	(-1.37)
L_{it}/A_{it}	-0.032	-0.039	-0.031	-0.113	-0.187*	-0.180
	(-0.66)	(-0.91)	(-0.35)	(-1.41)	(-1.95)	(-1.46)
$\Delta ln(A_{it})$	-0.088***	-0.045***	0.067	0.084**	0.052	0.078
	(-3.90)	(-3.66)	(1.37)	(2.12)	(1.14)	(1.27)
$ln(A_{it})$	-0.002	-0.001	0.022***	0.015*	0.013	0.003
	(-0.49)	(-0.37)	(2.59)	(1.67)	(1.56)	(0.32)

Appendix B

To simply estimate the intensive margin – that is, to model the truncated dividend payout series that only include positive dividends – we estimate Equation (3) with OLS in Table B.1.[44] The panel regression of $D_{i,t}/BE_{i,t}$ does not include industry dummies in columns (1)-(2), it includes industry dummies in columns (3)-(4), and it includes industry dummies for firms that used to pay dividends-to-earnings lower than 25% pre-Law in columns (5)-(6).

Like the results of Tables 3, 4 and A.1, $\left(ME_{i,t}/BE_{i,t}\right) \cdot \left(Y_{i,t}/BE_{i,t}\right)$ is positive and significant pre-Law and becomes less important post-Law. The average of marginal effect of $ME_{i,t}/BE_{i,t}$ on the truncated dividend-to-book-equity mean goes from a pre-Law 0.028 to a post-Law 0.005 in columns (3) to (4) of Panel B.1.B, which is similar to 0.026 and 0.005 in columns (1)-(2) of Panel 3.C.

In Table B.2, we estimate Equation (3) with OLS for the censored dividend series – that is, we model the dividend payout series that includes zeroes and positives as if the decisions to pay and how much to payout were a single decision. The panel regression of $D_{i,t}/BE_{i,t}$ does not include industry dummies in columns (1)-(2), it includes industry dummies in columns (3)-(4), and it includes industry dummies for firms that used to pay dividends-to-earnings below 25% pre-Law in columns (5)-(6).

Like the results of Tables 3, 4 and A.1, $\left(ME_{i,t}/BE_{i,t}\right) \cdot \left(Y_{i,t}/BE_{i,t}\right)$ is positive and significant pre-Law and becomes less important post-Law. The average of marginal effect of

[44] Fama and French (2002) is an example of an intensive-margin modelling of dividends.

$ME_{i,t}/BE_{i,t}$ on the censored dividend-to-book-equity mean goes from a pre-Law *0.021* to a post-Law *0.006* in columns (3) to (4) of Panel B.2.B, which is similar to the Tobit model estimates *0.021* and *0.004* in columns (1)-(2) of Panel A.1.C.

Table B.1

Panel regressions estimates of equation (3) to explain the dividend payout intensive margin. That is, only include observations with positive dividends. The regressions are run for the 1975–1980 period (6 years). The dependent variable is D_{it}/BE_{it}, dividends for fiscal year t divided by book equity at the end of t. Y_{it} is after interest and taxes earnings available for stock i in year t. ME_{it}/BE_{it} is market-to-book ratio of equity. L_{it}/A_{it} is debt by total assets. Asset growth is $\Delta ln(A_{it})$, and $ln(A_{it})$ is size. Law_t is a dummy equal to *1* in the post-Law (1978-1980), or *0* in the pre-Law (1975-1977). Year dummies included in all columns. t-statistics (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%.

Industry dummies:	*No*		*Yes*			
	All				*D/E > 25%*	
Sample:	General	Post-Law increment	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B.1.A: panel regressions					
Y_{it}/BE_{it}	0.123**	-0.094	0.111*	-0.060	0.042	-0.063
	(2.33)	(-0.90)	(1.93)	(-0.59)	(0.50)	(-0.54)
ME_{it}/BE_{it} x Y_{it}/BE_{it}	0.102***	-0.076***	0.108***	-0.085***	0.112***	-0.092***
	(4.75)	(-3.50)	(5.17)	(-3.99)	(4.16)	(-3.76)
Intercept	0.055***	-0.018***	0.050***	-0.021***	0.061***	-0.021***
	(11.79)	(-3.30)	(8.46)	(-3.88)	(8.56)	(-3.24)
	Panel B.1.B: average marginal effects					
Coefficient:	Pre-Law	Post-Law	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)	(5)	(6)
ME_{it}/BE_{it}	0.026***	0.005**	0.028***	0.005**	0.026***	0.004
	(4.75)	(2.07)	(5.17)	(2.02)	(4.16)	(1.58)
Law_t		-0.001		-0.001		-0.008***
		(-0.66)		(-0.68)		(3.17)
R^2	0.20		0.24		0.43	
Observations	1060		1060		542	

Table B.2

Panel regressions estimates of equation (3) to explain dividend payouts in one step. That is include observations with dividends equal to zero. The regressions are run for the 1975–1980 period (6 years) and only include observations with positive dividends. The dependent variable is D_{it}/BE_{it}, dividends for fiscal year t divided by book equity at the end of t. Y_{it} is after interest and taxes earnings available for stock i in year t. ME_{it}/BE_{it} is market-to-book ratio of equity. L_{it}/A_{it} is debt by total assets. Asset growth is $\Delta ln(A_{it})$, and $ln(A_{it})$ is size. Law_t is a dummy equal to 1 in the post-Law (1978-1980), or 0 in the pre-Law (1975-1977). Year dummies included in all columns. t-statistic (in parentheses) calculated using heteroskedasticity-robust standard errors clustered by firm. *, **, *** indicate significance at the 10%, 5% and 1%.

Industry dummies:	*No*		*Yes*			
	All				*D/E > 25%*	
Sample:	General	Post-Law increment	General	Post-Law increment	General	Post-Law increment
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B.1.A: panel regressions					
Y_{it}/BE_{it}	0.095*	-0.083	0.097*	-0.062	0.057	-0.02
	(1.82)	(-0.81)	(1.78)	(-0.60)	(0.67)	(-0.15)
ME_{it}/BE_{it} x Y_{it}/BE_{it}	0.088***	-0.054**	0.090***	-0.059***	0.108***	-0.077***
	(4.13)	(-2.43)	(4.36)	(-2.66)	(4.33)	(-3.22)
Intercept	0.038***	-0.005	0.032***	-0.007*	0.051***	-0.013***
	(11.11)	(-1.60)	(6.37)	(-1.96)	(8.58)	(-2.64)
	Panel B.1.B: average marginal effects					
Coefficient:	Pre-Law	Post-Law	Pre-Law	Post-Law	Pre-Law	Post-Law
	(1)	(2)	(3)	(4)	(5)	(6)
ME_{it}/BE_{it}	0.020***	0.006***	0.021***	0.006***	0.024***	0.005**
	(4.13)	(2.75)	(4.36)	(2.69)	(4.33)	(2.13)
Law_t		-0.000		-0.000		-0.010***
		(-0.11)		(-0.17)		(3.36)
R^2	0.25		0.28		0.44	
Observations	1187		1187		589	