LATINAMERICAN DIVIDENDS
Do they fit in any theory?

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ABSTRACT

We test different predictions of the pecking order and trade-off theories for the dividends of a sample of Latin-American firms in seven countries covering the years 1999 to 2005. Most of the theoretical predictions are confirmed by the data; our tests also report a high speed of adjustment in the dividend levels of the firms in the sample. A simple model testing the effect of the payout level on the dividend yield, find some support for the tax advantage of capital gains over dividends.

Keywords

Dividends, Pecking Order Theory, Trade-off Theory, Dividend Payout

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1. Introduction

There are competing theories about optimal dividend levels. The pecking order theory by Myers (1984) posits that, "controlling for other effects, more profitable firms pay out more of their earnings as dividends" (Fama and French, 2002). The tradeoff model makes similar predictions, for different reasons. Fama and French (2001) report a steady reduction in firms paying dividends, suggesting that larger and more profitable firms are more likely to pay dividends, and those firms with more investment opportunities are less likely to pay dividends.

Other theories suggest an effect on a firm's return given different dividend policies. Miller and Modigliani (1961) argued that investors are indifferent to dividend policies and that the expected return of firm's equity is not affected by higher or lower dividends. Lintner (1962) and Gordon (1963) disagree suggesting that investors prefer dividends to capital gains, driving the stock price up when the dividend payout is increased.[2] A third view posits that investors prefer lower dividends given the higher effective taxation of dividends compared to deferred capital gains.

Papers by Friend and Pucket (1964), Black and Scholes (1974), and Miller and Scholes (1978) support the hypothesis that firm value is independent of dividend yield, which is in accordance with the Modigliani and Miller irrelevancy proposition. On the other hand, papers by Litzenberger and Ramaswamy (1979 and 1982), and Naranjo, Nimalendran, and Ryngaert (1998) suggest a negative association between dividends and value. Long (1978) finds that investors prefer cash dividends over capital gains, providing the only evidence of a positive association.

The theories summarized above suggest an intertwined relationship between firm value and dividends. Fama (1974) uses a two-stage least-squares model to study the causality between dividends and investments, his conclusion support the Modigliani and Miller point of view of independence of investment decisions and dividends. More recently, Fama and French (2002) test which theory, trade-off or pecking order, better explains dividend and leverage levels. By and large, they find more support for the pecking order theory.

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[2] Modigliani and Miller dismiss this view pointing out that higher dividends today reduce the ex-dividend price of the stock, not reducing the firm riskiness.

Aivazian, Booth and Cleary (2003) present evidence of more volatile dividend levels on emerging countries than in the U.S., they posit that dividends in these less developed financial markets are not good mechanisms for signaling and for reducing agency costs.

We add to the literature on dividends a cross-country comparison for Latin-American firms. Our source is Economatica, a business database specialized in Latin-American Markets. The main regressions, in the spirit of Fama and French (2002), test different theories of dividend levels on Latin-American firms. We test the Lintner's model (1956) of a target payout ratio, and a partial adjustment toward the target, given the associated costs. Allowing for country differences we find support for the theoretical predictions of the pecking order and trade-off theories regarding the determinants of dividend levels. Our tests also report a very high speed of adjustment in Latin-American dividends, which can be related with the concentrated ownership that characterizes the firms in the sample. In a dynamic test of the effect of the payout ratio on the dividend yield we find a small positive effect, which supports the tax preference theory of investors preferring lower dividend payouts because realized gains in form of dividends pay more taxes than deferred capital gains.

The rest of the paper is organized as follows: section 2 discusses the theoretical models regarding a firm's optimal capital structure and dividend payout policy,, section 3 describes the dataset and the econometric approach, our findings are reported in section 4 and finally section 5 concludes.

2. Theoretical Models

Myers (1984) posits that asymmetric information led managers to issue risky securities when they are overpriced. As a result, investors demand a premium on new and existing shares, once new issues are announced. In anticipation managers can forego profitable investments if they require additional risky capital. To avoid this problem, minimizing asymmetric information costs, managers prefer to finance new projects with retained earnings, then with low risk debt, risky debt, and as a last option they issue equity. The pecking order model does not explain why firms pay dividends; however, once dividends are paid, firms with less profitable assets in place, large current and expected investments, and high leverage find dividends less attractive, given the financing costs attached to new risky securities.

Higher stability of income can also be associated with less likelihood of foregoing attractive investments or the need of issuing risky securities; to lower the possibility of not taking advantage of investment opportunities when cash flow is low, firms with volatile income pay less dividends.

The following associations, controlling for additional interactions, are expected: 1) more profitable firms pay more dividends; 2) firms with more leverage and more investment opportunities pay less dividends; and 3) firms with more volatile income pay less dividends.

The other main venue in explaining capital structure decisions is the trade-off model. Under this model firms make capital structure decisions weighing different and opposing forces. Easterbrook (1984) analyzes the effect of a consistent dividend policy in an environment characterized by agency problems within the firm. One agency cost firms face is the one related to supervising management[3], a cost which shareholders must assume since they face a significant collective choice problem. A second agency cost refers to risk aversion by management (given its human capital investment in the firm) that prompts management to take low risk projects which in many cases may not be the most beneficial for shareholders. This course of action also tends to benefit bondholders (in lieu of shareholders) because these investors tend to benefit when the level of risk decreases. Dividends can reduce these 2 agency costs since they can force companies to use financial markets more frequently and in the process expose the company to a higher degree of monitoring by investors and investment bankers that ends up reducing monitoring costs initially borne by all investors. Likewise, dividends can serve to adjust the level of risk of the company to a point more in line with shareholder's preference (higher level). In this sense, paying a dividend increases the debt to equity ratio benefiting shareholders and sets free an efficient mechanism[4] which results in a reduction in the firm's agency costs. Jensen (1986) points out the potential

[3] For example, audit costs to avoid manipulation of financial statements and possibly, theft by managers.
[4] That increases the probability of using the market for capital with the consequent reduction of monitoring costs of management's actions.

cost of agency that large free cash flow, under managerial control, could pose on the firm value. Without restrictions in the use of the free cash flow, managers can waste the free cash flow in negative NPV projects. Larger dividends reduce those agency costs forcing managers to take better decisions before wasting resources from the firm.

Debt tax shields (Modigliani and Miller, 1963) resulting from paying more of the firm cash flows as interest or dividends also points out the benefits of higher dividends . However, increased tax deductions of higher leverage and benefits of reduced agency costs are offset by the increased risk of bankruptcy. Nonetheless, investment opportunities reduce the firm's free cash flow and the potential agency costs. So, controlling for investment opportunities, more profitable firms pay more dividends. Conversely, controlling for profitability, firms with more investment opportunities pay less dividends. Additionally, given that dividends and interest are substitute tools to reduce agency costs, dividends are leverage are negatively related. The story is less clear regarding volatility, presumably more stable firms have more space for agency costs increasing payouts, but under more volatile cash flows managers can blame to external factors for bad results, then a higher dividend payout can incentive managers to work harder. Brav et al. (2005) conduct a survey in the spirit of Lintner (1956) that suggests a competing (and contrasting) explanation for the effect of volatility on dividend payout; when analyzing the different responses for private and public firms, the paper finds some evidence in favor of factors such as information conveyance and agency problems in determining payout policy. These problems are more acute for public firms. Thus, these firms care more about the informational content of dividends, and are more inclined to pay dividends in lieu of investing and more likely to change the dividend payout policy only in response to long term changes in earnings than private firms. Large public firms are less likely to be affected than smaller public firms by the informational content of dividends, suggesting a negative effect of volatility on dividend levels for public firms.

The last part of the paper (section 4.3) is aimed at studying the impact of the payout ratio on the dividend yield. Our focus is shifted from the impact of the firm's characteristics on the target payout to study the impact of payout on investor's evaluation of the firm prospects. Under very simple conditions (Gordon, 1959) the cost of equity is equal to $D_0(1+g_1)/P_0+g$, where D_0 is dividend in period 0, P_0 is share's current price, g_1 is the growth in dividends between period 0 and 1, and g is the expected long term growth in dividends. In a recursive solution of the dividend yield (D_t/P_t) we can expect the dividend yield be a function of last's year dividend yield, the current growth in dividends and some other controlling variables, including the payout level. Miller and Modigliani (1961) contends that after controlling for investment policies the dividend payout policy does not change the firm's value or the required cost of equity. On the other hand, 'bird in the hand' followers posits that investors should value more current dividends, given the higher risk of investing more today to receive higher dividends in the future. For others (Allen and Michaely, 2002), under the presence of differential taxes between dividends and capital gains, investors should prefer lower dividends.

3. Dataset and Econometric setting

The firms in the data are public firms in seven Latin-American countries (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela) between the years 1999 and 2005 for which we have information on dividends. Restricting the sample to firms reporting dividends in at least two consecutive years and assets in excess of 5 million dollars, produces a sample of 1923 firm-year observations. We use Economatica, a database specialized in Latin-American exchanges, as our data source[5].

Our main variables are dividends and net income. Given that dividends are not available for most of the firms, we retort to the following calculation:

$$D_t = \frac{DPS_t}{P_t} * \frac{P_t}{BVPS_t} * BE_t,$$

where dividends for fiscal year t (D_t) are calculated multiplying current dividend yield (dividends per share, DPS_t, over share price, P_t) times the price to book ratio[6] times the book value of common equity (BE_t).

[Table 1 goes about here]

[5] Dividend information in the Emerging Markets Database in Compustat produces nearly no data when applied to Latin-American countries.

[6] Book value per share, $BVPS_t$.

Mean values are reported in Table 1, panel A. Assets are reported in thousands of US dollars; on average Mexican and Brazilian firms are the largest, as it is expected being those countries the largest economies of the sample. All other variables are ratios that do not require further manipulation. Table 1, panel B presents the correlations between our variables; NI_t/A_{t+1} and D_{t+1}/A_{t+1} have a correlation of 0.58, the second largest in the sample, which supports the idea of a target payout, because dividend payouts in any given year are a portion of last's year net income. In Table 1, panel C we observe that Brazilian and Chilean firms provide more than 50% of the observations. Table 1 panel D reports a measure closed to profitability, Peruvian firms present higher and more stable ratios, with Argentine and Venezuelan firms showing a recovery in the last years.

3.1 Econometric setting

We regress the dependent variables in our unbalanced panel using GLS (generalized least squares) corrected for heteroskedasticity within panels. Also reported are the results of GLS regressions corrected for heteroskedasticity and autocorrelation (AR1) when tests of serial correlation detect the problem; however this solution is costly in terms of observations modifying our results in an important way, as the reader will see.

3.2 Variables

E_t/S_t, EBIT on sales for fiscal year t is our proxy for the expected profitability of the assets in place. MV_t/A_t, firm's market value on book assets for fiscal year t, can be a proxy for expected investment opportunities or a measure of current profitability. $\Delta PPN_{t+1}/A_t$, the increase in plant and equipment net for fiscal year t+1 on assets for fiscal t, is a less ambiguous proxy for expected investment, as long as the investment policy be long term oriented. Book leverage is L_{t+1}/A_{t+1}, the ratio of total liabilities on book assets for fiscal year t+1. All regressions also include market leverage, MV_{t+1}/A_{t+1} as an alternative measure. The proxy for volatility is $\ln(A_t)$, the natural logarithm of book assets in US dollars for fiscal year t. Larger firms usually face less uncertainty in their cash flows; however, this direct measure of size can also be a proxy for other factors such as age or access to capital markets.

4. Empirical Results

Lintner (1956) posits that firms have a long term target payout ratio, TP, that affects target dividends in the following way:

$$TD_{t+1} = TP * NI_t \tag{1}$$

In equation (1), TD_{t+1} is target dividend measured in year t+1, and NI_t is the net income that backs the observed dividends. The adjustment costs, produces just a partial movement to the target in year t+1:

$$\Delta D_{t+1} = SOA\left(TD_{t+1} - D_t\right) + \varepsilon_{t+1} \tag{2}$$

Replacing TD_{t+1}, we obtain:

$$\Delta D_{t+1} = a_1 NI_t + a_2 D_t + \varepsilon_{t+1} \tag{3}$$

The speed of adjustment is $SOA = -a_2$. The target payout is $TP = \frac{a_1}{SOA}$.

4.1 The target payout

Following Fama and French (2002) we examine the target payout, allowing for differences in the intercept for the different countries in the sample and the theoretical impacts discussed in previous sections. The equation, derived from equation (1) is:

$$\frac{D_{t+1}}{A_{t+1}} = a_0 + dc_i + \begin{pmatrix} a_1 + a_2 \frac{MV_t}{A_t} + a_3 \frac{E_t}{A_t} + \\ a_4 \frac{\Delta PPN_t}{A_t} + a_5 \ln\left(A_t\right) + Lev_{t+1} \end{pmatrix} \frac{NI_t}{A_{t+1}} + \varepsilon_{t+1} \tag{4}$$

The dummy variables dc_i account for differential intercepts for each country, allowing the estimation of differential target payouts.

In table 2, panel A, we estimate regression (4) to examine how the target payout depends of investment opportunities, profitability, leverage, and other restrictions (country dummies). The regressions are GLS panel regressions corrected for a heteroskedastic error structure with no cross sectional correlation. The exogenous interaction variables include proxies for leverage (L_{t+1}/A_{t+1}, L_{t+1}/MV_{t+1}), profitability (E_t/S_t and NI_t/A_{t+1}), investment opportunities (MV_t/A_t, $\Delta PPN_{t+1}/A_t$) and size ($\ln(A_t)$).

[Table 2 goes about here]

The relation between dividends and the exogenous variables is modeled in four ways. The first assumes no interaction between the proxies used for leverage, investment opportunities, size and the target payout. The second approach allows this interaction without including leverage effects. The last 2 specifications include leverage effects in terms of book or market leverage.[7] The countries dummies under all specifications use Venezuela as the control country. The negative signs of the dummy variables point to the fact that the rest of the countries have lower payout ratios.

The positive slope of MV_t/A_t is unexpected since under the pecking order and trade-off models firms with high investment prospects are expected to pay lower dividends. Perhaps this negative sign can be rationalized under the premise that this proxy for investment opportunities can also be thought of as a measure of current profitability of firms. The change in net plant of property carries the expected negative sign in line with the two models.

The positive sign of E_t/S_t and NI_t/A_{t+1} concur with the pecking order and trade-off models that assume that the most profitable firms are more prone to pay higher dividends. Under the trade off model these higher dividends are explained as a means to counter agency problems prompted by excess cash flows. In the pecking order model, these higher dividends are explained by the use of more profitable assets that allow firms to maintain a low risk debt capacity to finance investment.

The slopes for our leverage proxies show an expected and significant negative sign. In the pecking order model where firms balance current and future financing costs this negative relation is natural since if more levered firms pay a higher fraction of their earnings in dividends this would increase the probability of using higher cost financing[8]. In the trade off model firms dividends and leverage are consider as substitutes to control agency problems. Thus it is sensible for more indebted firms to control their dividends payments.

[7] By and large, under all specifications the results are the same (in terms of signs).
[8] Either debt at a higher interest rate or equity financing.

Ln (A_t), our risk proxy, shows a negative (though economically small) slope. This result does not support the pecking order and trade off models that hypothesize that firms with more volatility cash flow tend to be less levered as well as more conservative in their dividend policies. The alternative explanations of larger firms caring less about the informational content of their dividend policies and smaller firms, more subject to uncertainty about managerial performance, can account for the unexpected result.

Finally, panel A presents additional relevant regression statistics such as the number of observations (N), information criteria (log likelihood, AIC and adjusted R^2), heteroskedasticity (LR), and autocorrelation (F) tests. The heteroskedasticity test rejects the null of no statistical difference between the model corrected for heteroskedasticity and a simpler more restricted model. The F test for autocorrelation shows that it is not possible to reject the null of no autocorrelation.

In panel B of table 2, the implied target payout is calculated under four specifications used for each country in the sample. The target payout is calculated as:

$$\begin{aligned} TP = &\left(a_0 + dc_i\right) / Mn\left(NI_t / A_{t+1}\right) + a_1 + a_2 Mn\left(MV_t / A_t\right) + a_3 Mn\left(E_t / S_t\right) \\ &+ a_4 Mn\left(\Delta PPN_{t+1} / A_t\right) + a_5 Mn\left(\ln\left(A_t\right)\right) + a_6 Mn\left(Lev_{t+1}\right) \end{aligned}$$

Lev_{t+1} is either book or market leverage at t+1.

Under all specifications Venezuelan firms tend to have the highest target payout ratios. The second and third highest payout ratios (in three out four specifications) correspond to Argentinean and Peruvian firms respectively. Meanwhile Mexican firms tend to have the lowest payout ratios in the sample.

4.2 The speed of adjustment

In table 3 we estimate the Lintner model to analyze whether firms adjust their dividends to accommodate short term variation in their investments. Lintner's model scaled by assets and adding $\Delta A_{t+1}/A_t$, to measure the effect of concurrent investments, is as follows:

$$\frac{\Delta D_{t+1}}{A_{t+1}} = a_0 + a_1 \frac{NI_t}{A_{t+1}} + \left(b_1 + dc_i\right) \frac{D_t}{A_{t+1}} + c_1 \frac{\Delta A_{t+1}}{A_{t+1}} + \varepsilon_{t+1} \qquad (5)$$

Equation (5) corresponds to specifications a and b in Table 3, panel A. Fama and French (2002) point out that equation (5) is mispecified, suggesting a correction along with the dynamic coefficient included in equation (4), accordingly the following regression is run for specifications c to f in Table 3, panel B:

$$\begin{aligned}\frac{\Delta D_{t+1}}{A_{t+1}} = a_0 &+ \left(a_1 + a_2\frac{MV_t}{A_t} + a_3\frac{E_t}{S_t} + a_4\frac{\Delta PPN_{t+1}}{A_t} + a_5\ln\left(A_t\right) + a_6 Lev_{t+1}\right)\frac{NI_t}{A_{t+1}} \\ &+ \left(b_1 + dc_i + b_2\frac{MV_t}{A_t} + b_3\frac{E_t}{S_t} + b_4\frac{\Delta PPN_{t+1}}{A_t} + b_5\ln\left(A_t\right) + b_6 Lev_{t+1}\right)\frac{D_t}{A_{t+1}} \\ &+ c_1\frac{\Delta A_{t+1}}{A_{t+1}} + \varepsilon_{t+1}\end{aligned} \qquad (6)$$

This specification allows both the speed of adjustment and the target payout[9] to change across firms with different characteristics in terms of investment opportunities, leverage, profitability and national origin.

[Table 3 goes about here]

Changes from regression (5) to regression (6) seem sensible given the larger Ad. R2, which increases from 0.24, to 0.44 and 0.50 when the interaction terms are included; however, that gain is not confirmed by the Akaike Information Criteria (AIC), which shows that in terms of equation efficiency the simpler model fits the data better. While not all the individual coefficients are significant, all the linear combinations tested in the panel, along with the tests of the joint significance of all coefficients involved in the calculation of speed of adjustment and target payout are significant with p-values lower than 0.001. Differently from the results in Table 2, tests of serial autocorrelation pointed the necessity of including a correction for autocorrelation; specifications b, d, and f report those corrections.

Table 3, panel B reports the relevant calculations for regression in panel A. The simpler regressions report lower speeds of adjustment, however almost all results are higher than those reported by similar regressions in Fama and French (2002), implying that firms in Latin-American countries have much more volatile dividends than firms in the United States. Colombia seems to have the most volatile dividends, exceeding, in some

[9] Slopes on D_t/A_{t+1} and NI_t/A_{t+1}

specifications, the highest expected value of 1. In contrast, Colombia reports the lowest target payout of the whole sample; except in specification f, where Mexico is the lowest.

The additional interesting result in table 3 is the slopes for $\Delta A_{t+1,}$ the effect of short term variation in investment and its effect in dividends paid out by Latin American firms. The slopes try to measure if firms in the region adjust (most likely downwards) their dividend payments in response to new (short term) investment opportunities.

The coefficient is negative and significant (p-values below 0.01) under different specifications of the model. This provides evidence of certain adjustment to dividends in accommodation to investment in the short run.

However from an economic point of view the magnitude of the coefficient is inconsequential or trivial since changes in dividends absorb only 1% (or less) of the change in assets for the sample. Similar to the results in Fama and French (2002) the negative effect of concurrent investments is economically trivial, with reported values 50% below the values reported by Fama and French (2002).

The pecking order theory provides some support to the idea of an inelastic adjustment of dividends to short term investments. Given the negative relation (previously documented in table 2) between dividend payouts and investment opportunities it is natural for firms with excess retained earnings and low risk debt capacity after taking advantage of their investment opportunities to adjust very little their dividend policies to absorb (short term) variation in investment. Our results for Latin America are also in the same line to those in Shyam-Sunder and Myers (1999) and Myers (1984).

4.3 The effect of dividend payout on the return on equity

Table 4 reports the result of an ad-hoc model to study the effect of different variables in the expected return of Latin-American listed firms, the equation we test has the following structure:

$$\frac{D_{t+1}}{P_{t+1}} = a_o + a_1 g + a_2 \frac{D_t}{P_t} + a_3 \frac{D_{t+1}}{NI_t} + a_4 \frac{AFN_t}{A_t} + a_5 \frac{E_t}{S_t} + a_6 \frac{\Delta A_{t+1}}{A_t} + a_7 \ln\left(A_t\right) + a_8 \frac{MV_t}{A_t} + a_9 Lev_{t+1} + \varepsilon_{t+1} \qquad (7)$$

Following a simple recursive model of cost of capital, we expect a negative coefficient for growth, and a positive coefficient for the lagged dividend yield. The coefficient for D_{t+1}/NI_t can be negative, if the bird in the hand argument, has some empirical support; positive, if there is any tax advantage for capital gains versus dividends; whereas a not significant coefficient would support the Modigliani and Miller proposition of dividend irrelevance. Control variables that signal high market valuation, like MV_t/A_t, should have a negative coefficient. The same is true for profitability measures, such E_t/S_t, which also should have a short-term positive impact on price, whereas its impact in dividend levels won't be immediate. The rate of investments, signaling the existence of positive NPV opportunities, should have a negative coefficient if new assets are used as collaterals. The coefficient of tangible assets, AFN_t/A_t, should be negative if tangible assets are also collaterals that reduce the firm risk. Larger firms should have a negative impact in the cost of equity, given their lower risk. Naturally, the effect of leverage should be positive, according to the classical adjustment in the cost of equity when leverage increases.

[Table 4 goes about here]

In order to have consistent results we restrict our sample to firms with positive net income. Growth, g, is also limited to $-0.5<g<0.5$. The sample is then reduced to 574 observations. For our control variables the results mostly agree with the expected signs, except in specification d, where the coefficient of E_t/S_t becomes positive but economically meaningless, compared with the size of the other variables; clearly an interaction between this variable and market leverage is affecting the results. The same seems to be true between MV_t/A_t, which becomes non-significant, when leverage is measured as market leverage; however, here the interaction is more evident given that both measures include firm market value when being estimated. An important exception is the positive, statistically and economically significant coefficient for the net tangible assets. Investors clearly demand higher rates of returns for tangible assets.

With respect to the effect of payout (D_{t+1}/NI_t) on dividend yield and in the required return on equity, its positive and significant coefficient confirm the tax advantage of capital gains against dividends hypothesis (by increasing the dividend yield and the required return). However, the effect is economically meaningless, far bellow of other coefficients, approaching the results to the irrelevance thesis of Modigliani and Miller (1961).

4.4 Firm Ownership in Latin-American

A very important variable affecting dividends is ownership. Most firms in the United States, have highly liquid shares, which means that those owners do not have private benefits of control that can reduce their needs of higher dividend payouts. That is not the case of most of the Latin-American firms in the sample. For these firms, ownership is very stable and shareholders agreements are very common. Probably we can observe these effects in the very high speed of adjustment reported in Table 3, panel B, pointing to shareholders aligned with managerial objectives, willing to adjust their needs to the firm requirements. La Porta et al (2000) develop a theory where higher dividends are the result of an effective investor protection legal system. However, in our regressions we study the effect of additional determinants of dividend levels, absent in the La Porta et al (2000) tests, finding levels of target payouts similar to those reported by Fama and French (2002). Perhaps the effect of investor protection works more in the sense that a system with higher investor protection produces smoother dividend changes; which is also coherent with the hypothesis that better investor protection reduces ownership concentration by reducing the agency costs of unaccountable managers.

5. Conclusion

Our tests have tried to find support for the classic theories of capital structure following the lead of Fama and French (2002) work on dividends and leverage. Most of the theoretical influences in choosing dividend levels are confirmed by the reported results. Given that both mainstream theories agree on the effect of our proxies on dividend levels, for different reasons, we are not able to distinguish which theory has more ground on reality. Our findings mainly confirm that firms, managers and shareholders respond in the same way that their counterparts do in other regions. One striking difference is the high speed of adjustment that characterizes Latin-American firms, perhaps due to the structural differences in ownership and legal protection between these firms and their counterparts in other regions. We also find a very small positive effect of the payout ratio on the dividend yield, which we interpret as a weak evidence of the tax advantage of capital gains over dividends.

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Table 1
Selected sample statistics

The table reports the sample statistics. D_t, A_t, BE_t, ME_t, NI_t, $L_t=A_t-BE_t$, $MV_t=L_t+ME_t$, E_t, AFN_t, and S_t are dividends, assets, book equity, market equity, net income, liabilities, enterprise market value, earnings before interest and taxes, net fixed assets, and sales at the end of the fiscal year t; ΔD_{t+1}, ΔA_{t+1}, and ΔPPN_{t+1} are changes in dividends, assets, and net plant and equipment at the end of fiscal year t+1. Mean assets are expressed in thousands of US dollars.

Panel A
Mean values of selected variables per country

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	Total
A_t	2,223,907	2,481,768	736,344	984,179	3,248,169	859,672	2,021,534	1,902,614
D_{t+1}/A_{t+1}	5.13%	3.74%	5.29%	2.45%	2.50%	5.43%	5.09%	4.17%
D_t/A_{t+1}	4.18%	3.22%	5.08%	2.53%	2.06%	4.61%	4.98%	3.76%
$\Delta D_{t+1}/A_{t+1}$	0.92%	0.51%	0.42%	-0.03%	0.46%	1.02%	0.33%	0.52%
$\Delta A_{t+1}/A_{t+1}$	4.81%	-4.16%	4.37%	10.88%	8.73%	5.22%	8.77%	1.64%
MV_t/A_t	1.16	1.09	1.32	0.89	1.30	1.15	0.76	1.17
E_t/S_t	-1.32%	8.05%	16.70%	12.34%	15.59%	25.74%	18.20%	12.65%
L_{t+1}/A_{t+1}	37.94%	52.66%	42.21%	35.12%	51.13%	38.20%	31.19%	46.81%
L_{t+1}/MV_{t+1}	37.32%	52.59%	35.55%	42.56%	45.39%	40.76%	45.33%	45.05%
AFN_t/A_t	50.81%	40.30%	50.29%	28.08%	50.14%	49.32%	62.30%	45.35%
NI_t/A_{t+1}	5.95%	5.71%	6.35%	4.06%	5.91%	6.98%	3.54%	5.94%
$\Delta PPN_{t+1}/A_t$	6.61%	3.32%	4.40%	6.31%	4.52%	2.32%	5.36%	3.93%

Panel B
Correlations

Based on 1298 simultaneous observations

	A_t	D_{t+1}/A_{t+1}	$\Delta D_{t+1}/A_{t+1}$	$\Delta A_{t+1}/A_{t+1}$	MV_t/A_t	E_t/S_t	L_{t+1}/A_{t+1}	L_{t+1}/MV_{t+1}	AFN_t/A_t	NI_t/A_{t+1}	D_t/A_{t+1}
A_t	1.00										
D_{t+1}/A_{t+1}	-0.06	1.00									
$\Delta D_{t+1}/A_{t+1}$	0.01	0.46	1.00								
$\Delta A_{t+1}/A_{t+1}$	-0.01	-0.15	-0.09	1.00							
MV_t/A_t	0.03	0.36	0.03	0.05	1.00						
E_t/S_t	0.03	0.10	0.02	-0.02	0.10	1.00					
L_{t+1}/A_{t+1}	0.20	-0.21	0.00	0.08	0.14	-0.09	1.00				
L_{t+1}/MV_{t+1}	0.14	-0.41	-0.05	0.04	-0.43	-0.15	0.69	1.00			
AFN_t/A_t	0.07	0.06	0.01	0.02	0.01	0.22	-0.13	-0.11	1.00		
NI_t/A_{t+1}	-0.08	0.58	0.14	-0.07	0.43	0.10	-0.30	-0.51	-0.12	1.00	
D_t/A_{t+1}	-0.07	0.47	-0.57	-0.06	0.31	0.07	-0.19	-0.33	0.04	0.40	1.00
$\Delta PPN_{t+1}/A_t$	0.03	-0.07	-0.02	0.29	0.06	0.03	0.05	0.00	0.08	-0.05	-0.04

Panel C
Firms per country

Country	Firm/c	Obs/c	Avg(Obs/F)
Argentina	36	82	2.28
Brazil	236	838	3.55
Chile	118	512	4.34
Colombia	15	64	4.27
Mexico	56	232	4.14
Peru	43	164	3.81
Venezuela	7	31	4.43
Total	511	1923	3.76

Panel D
Average NI_t/A_{t+1} per country per year

NI_t/A_{t+1}	1999	2000	2001	2002	2003	2004	Total
Argentina	4.91%	4.38%	1.98%	8.08%	11.12%	11.59%	5.95%
Brazil	4.49%	5.45%	4.95%	4.86%	6.65%	7.99%	5.71%
Chile	6.82%	5.75%	6.16%	5.80%	6.32%	7.09%	6.35%
Colombia	2.24%	4.16%	4.51%	4.11%	4.44%	4.19%	4.06%
Mexico	6.90%	6.64%	5.57%	4.77%	5.00%	6.63%	5.91%
Peru	6.50%	6.60%	5.85%	6.12%	7.29%	9.28%	6.98%
Venezuela	5.23%	3.63%	1.49%	0.07%	1.85%	7.25%	3.54%
Total	5.47%	5.59%	5.33%	5.18%	6.33%	7.62%	5.94%

Table 2
Dividend payout ratio according to regression (4)

The dependent variable is D_{t+1}/A_{t+1}, dividends for fiscal year t+1 divided by assets in year t+1. The table reports the results of GLS panel regressions corrected for a heteroskedastic error structure with no cross-sectional correlation. The panel consists of public Latin-American firms in seven countries and it covers seven years (1999-2005). A_t, BE_t, ME_t, NI_t, $L_t=A_t-BE_t$, $MV_t=L_t+ME_t$, E_t, and S_t are assets, book equity, market equity, net income, liabilities, enterprise market value, earnings before interest and taxes, and sales at the end of the fiscal year t; ΔPPN_{t+1} is the change in net plant and equipment at the end of fiscal year t+1. All regressions include country dummies; dc_i is the country i dummy. The target payout per country in panel B is $(a_0+dc_i)/Mn(NI_t/A_{t+1}) + a_1 + a_2Mn(MV_t/A_t) + a_3Mn(E_t/S_t) + a_4Mn(\Delta PPN_{t+1}/A_t) + a_5Mn(\ln(A_t)) + a_6Mn(Lev_{t+1})$, where Mn(.) is the sample mean of a variable, and Lev_{t+1} is either book leverage or market leverage in t+1. Panel A presents the regressions results, and panel B presents the implied target payout. Additional relevant regression statistics such as the number of observations (N), information criteria (log likelihood, AIC and Adj. R^2), heteroskedasticity (LR), and autocorrelation (F) tests are also reported.

Panel A

	Dependent variable	D_{t+1}/A_{t+1}			
		a. No interaction	b. No leverage	c. Book leverage	d. Market leverage
	Variable				
	NI_t/A_{t+1}	0.5885 ***	0.634 ***	0.561 ***	0.675 ***
	d-Argentina	-0.0185 ***	-0.0137 **	-0.0156 ***	-0.0182 ***
	d-Brazil	-0.0326 ***	-0.0285 ***	-0.0279 ***	-0.0243 ***
	d-Chile	-0.0172 ***	-0.0262 ***	-0.0262 ***	-0.0255 ***
	d-Colombia	-0.0302 ***	-0.0287 ***	-0.0295 ***	-0.0311 ***
	d-Mexico	-0.0434 ***	-0.0387 ***	-0.0397 ***	-0.038 ***
	d-Peru	-0.0273 ***	-0.0246 ***	-0.022 ***	-0.0213 ***
NI_t/A_{t+1}*	MV_t/A_t		0.1969 ***	0.2142 ***	0.0939 ***
NI_t/A_{t+1}*	E_t/S_t		0.0468 ***	0.0455 ***	0.0339 ***
NI_t/A_{t+1}*	$\Delta PPN_{t+1}/A_t$		-0.8492 ***	-0.5493 ***	-0.3633 ***
NI_t/A_{t+1}*	$\ln(A_t)$		-0.0305 ***	-0.0234 ***	-0.0081 **
NI_t/A_{t+1}*	L_{t+1}/A_{t+1}			-0.2565 ***	
NI_t/A_{t+1}*	L_{t+1}/MV_{t+1}				-0.7605 ***
	Int	0.0332 ***	0.0372 ***	0.0387 ***	0.0383 ***
	N	1406	1298	1298	1298
	log likelihood	3,354.2	3,207.3	3,246.5	3,306.3
	AIC	-6,692.3	-6,390.0	-6,470.0	-6,590.0
Reg.	Wald chi^2	97,669.0 ***	12,000.0 ***	4,251.4 ***	19,200.0 ***
Hetero.	LR chi^2	1,831.7 ***	1,836.9 ***	1,908.2 ***	1,977.2 ***
Autocorr.	F	0.0	0.1	0.1	0.2
	Ad. R2	0.35	0.42	0.39	0.38

Asteriscs: * p<0.1; ** p<0.05; *** p<0.01

Panel B

	Target Payout			
	a. No interaction	b. No leverage	c. Book leverage	d. Market leverage
Argentina	0.84	0.48	0.53	0.51
Brasil	0.60	0.23	0.33	0.41
Chile	0.86	0.27	0.35	0.39
Colombia	0.64	0.23	0.30	0.30
Mexico	0.42	0.06	0.13	0.18
Peru	0.69	0.30	0.42	0.46
Venezuela	1.15	0.71	0.80	0.82

Note: All tests of linear combinations (*Means) or joint tests of the coefficients involved in the calculation of the target payout have P-values lower than 0.001.

Table 3

Lintner model with dynamic adjustment according to equations (5) and (6)

The dependent variable is $\Delta D_{t+1}/A_{t+1}$, the change in dividends for fiscal year t+1 versus year t divided by assets in year t+1. The table reports the results of GLS panel regressions corrected for a heteroskedastic error structure with no cross-sectional correlation. The panel consists of public Latin-American firms in seven countries and it covers seven years (1999-2005). New variables D_t, ΔA_{t+1} are dividends in fiscal year t, and the change in assets in fiscal year t+1. All regressions include country dummies, d-i, interacting with D_t/A_{t+1}. Panel A presents the regressions results and the associated regression diagnostics, while panel B present the resulting slopes in Lintner's model. The slope on NI_t/A_{t+1} is $a_1 + a_2 Mn(MV_t/A_t) + a_3 Mn(E_t/S_t) + a_4 Mn(\Delta PPN_{t+1}/A_t) + a_5 Mn(\ln(A_t)) + a_6 Mn(Lev_{t+1})$, where Mn(.) is the sample mean of a variable and Lev_{t+1} is either book leverage or market leverage in t+1. The speed of adjustment is the negative of the average slope on D_t/A_{t+1} calculated as $b_1 + dc_i + b_2 Mn(MV_t/A_t) + b_3 Mn(E_t/S_t) + b_4 Mn(\Delta PPN_{t+1}/A_t) + b_5 Mn(\ln(A_t)) + b_6 Mn(Lev_{t+1})$. The implied target payout is the average slope on NI_t/A_{t+1} divided by the speed of adjustment. Additional relevant regression statistics such as the number of observations (N), information criteria (log likelihood, AIC and Adj. R^2), heteroskedasticity (LR), and autocorrelation (F) tests are also reported.

Panel A

	Dependent variable	$(D_{t+1}-D_t)/A_{t+1}$					
		a. No-int	b. No-int.&ar1	c. Book L.	d. BL&ar1	e. Market L.	f. ML&ar1
	Variable						
	NI_t/A_{t+1}	0.2904 ***	0.3219 ***	0.3984 ***	0.3743 ***	0.9239 ***	0.6111 ***
NI_t/A_{t+1}*	MV_t/A_t			0.0555 ***	0.0753 ***	0.0026	0.0227
NI_t/A_{t+1}*	E_t/S_t			-0.0314	0.009	0.0144	0.0924
NI_t/A_{t+1}*	$\Delta PPN_{t+1}/A_t$			0.2581 **	0.4331 ***	0.2197 **	0.109
NI_t/A_{t+1}*	$\ln(A_t)$			0.0002	-0.0098	-0.0304 ***	-0.0176 **
NI_t/A_{t+1}*	L_{t+1}/A_{t+1}			-0.5573 ***	-0.3391 ***		
NI_t/A_{t+1}*	L_{t+1}/MV_{t+1}					-0.656 ***	-0.433 ***
	$\Delta A_{t+1}/A_{t+1}$	-0.0108 ***	-0.0083 ***	-0.01 ***	-0.0081 ***	-0.0067 ***	-0.0062 **
	D_t/A_{t+1}	-0.3726 ***	-0.5509 ***	-0.9111 ***	-0.9587 ***	-1.5177 ***	-1.0256 ***
D_t/A_{t+1}*	d-Argentina	0.0681	-0.0047	0.0048	0.0118	-0.0419	-0.1665
D_t/A_{t+1}*	d-Brazil	-0.1759	-0.3447 **	-0.1519	-0.128	-0.1898	-0.2068
D_t/A_{t+1}*	d-Chile	-0.0948	-0.1816	-0.145	-0.1042	-0.1895	-0.1506
D_t/A_{t+1}*	d-Colombia	-0.2954 **	-0.4245 ***	-0.3626 ***	-0.299 **	-0.2778 **	-0.103
D_t/A_{t+1}*	d-Mexico	-0.2474 *	-0.2825 *	-0.2051	-0.136	-0.2682 *	-0.2596 *
D_t/A_{t+1}*	d-Peru	-0.0473	-0.0242	-0.056	-0.0005	-0.0581	-0.0464
D_t/A_{t+1}*	MV_t/A_t			0.0896 ***	0.0394	0.1262 ***	0.1149 ***
D_t/A_{t+1}*	E_t/S_t			0.1709 ***	0.1919	0.0114	-0.0354
D_t/A_{t+1}*	$\Delta PPN_{t+1}/A_t$			-0.9177 ***	-1.2013 ***	-0.8193 ***	-0.4883 **
D_t/A_{t+1}*	$\ln(A_t)$			0.0098	0.0323 **	0.0627 ***	0.0241 *
D_t/A_{t+1}*	L_{t+1}/A_{t+1}			0.5866 ***	0.3226 ***		
D_t/A_{t+1}*	L_{t+1}/MV_{t+1}					0.223 ***	-0.2794 **
	Int	0.004 ***	0.0073 ***	0.0086 ***	0.0066 ***	0.0089 ***	0.0139 ***
	N	1406	1300	1298	1195	1298	1195
	log likelihood	3,726.4	3,416.8	3,468.3	3,151.5	3,473.8	3,192.5
	AIC	-7,430.0	-6,810.0	-6,900.0	-6,260.0	-6,910.0	-6,340.0
Reg.	Wald chi^2	1,409.0 ***	4,107.7	4,676.7 ***	1,343.5	12,711.7 ***	2,507.5
Hetero.	LR chi^2	2,395.1 ***		2,207.7 ***		2,187.9 ***	
Autocorr.	F	8.8 ***		43.8 ***		37.433 ***	
	Ad. R2	0.24		0.44		0.50	

Asteriscs: * p<0.1; ** p<0.05; *** p<0.01

Panel B

	Coefficients					
	a. No-int	b. No-int.&ar1	c. Book L.	d. BL&ar1	e. Market L.	f. ML&ar1
NI_t/A_{t+1}	0.29	0.32	0.32	0.37	0.34	0.27
$\Delta A_{t+1}/A_{t+1}$	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01

	Speed of Adjustment					
	a. No-int	b. No-int.&ar1	c. Book L.	d. BL&ar1	e. Market L.	f. ML&ar1
Argentina	0.30	0.56	0.79	0.85	0.86	1.09
Brazil	0.55	0.90	0.95	0.99	1.01	1.14
Chile	0.47	0.73	0.94	0.97	1.01	1.08
Colombia	0.67	0.98	1.16	1.16	1.10	1.03
Mexico	0.62	0.83	1.00	1.00	1.09	1.19
Peru	0.42	0.58	0.85	0.86	0.88	0.97
Venezuela	0.37	0.55	0.80	0.86	0.82	0.93

	Target Payout					
	a. No-int	b. No-int.&ar1	c. Book L.	d. BL&ar1	e. Market L.	f. ML&ar1
Argentina	0.95	0.58	0.40	0.44	0.39	0.25
Brazil	0.53	0.36	0.34	0.38	0.33	0.24
Chile	0.62	0.44	0.34	0.39	0.33	0.25
Colombia	0.43	0.33	0.27	0.32	0.31	0.27
Mexico	0.47	0.39	0.32	0.37	0.31	0.23
Peru	0.69	0.56	0.37	0.43	0.38	0.28
Venezuela	0.78	0.58	0.40	0.43	0.41	0.30

Table 4

The dependent variable in the regressions is D_{t+1}/P_{t+1}, the dividend yield for fiscal year t+1. The table reports the results of GLS panel regressions corrected for a heteroskedastic error structure with no cross-sectional correlation. The panel consists of public Latin-American firms in seven countries and it covers seven years (1999-2005). Country dummies are included but not reported. New variable g, is growth in dividends per share from year t-1 to year t. Additional relevant regression statistics such as the number of observations (N), information criteria (log likelihood, AIC and Adj. R^2), heteroskedasticity (LR), and autocorrelation (F) tests are also reported.

	Dependent variable	D_{t+1}/P_{t+1}							
		a. Basic		b. C.&lag		c. C.&lag&BL		d. C.&lag&ML	
	Variable								
	g	-0.8268	***	-0.5629	**	-0.4262	**	-0.5681	***
	D_{t+1}/NI_t			0.0057	***	0.0056	***	0.0057	***
	AFN_t/A_t			2.2473	***	2.176	***	2.4038	***
	E_t/S_t			-0.3896	***	-0.4407	***	0.0424	
	$\Delta A_{t+1}/A_t$			-2.3651	***	-2.6046	***	-2.5797	***
	$\ln(A_t)$			-0.1631	***	-0.1689	***	-0.2608	***
	MV_t/A_t			-0.3788	***	-0.3834	***	-0.0245	
	D_t/P_t			0.6282	***	0.6369	***	0.581	***
	L_{t+1}/A_{t+1}					0.0356			
	L_{t+1}/MV_{t+1}							3.002	***
	Int	10.5503	***	6.1648	***	6.2461	***	6.4161	***
	N	600		574		574		574	
	log likelihood	-1,500.0		-1,210.0		-1,210.0		-1,210.0	
	AIC	3,025.0		2,453.3		2,455.6		2,442.2	
Reg.	Wald chi^2	371.4	***	6,145.4	***	18,800.0	***	3,842.2	***
Hetero.	LR chi^2	703.05	***	948.11	***	947.84	***	955.58	***
Autocorr.	F	8.063	***	15.723	***	15.679	***	14.604	***
Ad. R2	Ad. R2	0.06		0.33		0.34		0.32	

Asteriscs: * p<0.1; ** p<0.05; *** p<0.01