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Dividend Policies in Volatile Transitioning Markets

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Abstract: *This paper examines the implicit impact of an individual company financial parameters on dividends payments. The empirical research is conducted within the environment that cross-examines fifteen European transition economies with shared traits of frontier to emerging capital markets development stage and exposure to exogenic global volatility from 2007/8 and Covid-19 economic crises spilling over at magnitude. The purpose of this paper is to test whether companies establish stable dividend policy. Dividends payments are sensitive to earnings and hence adjust imminently. The reason stems from uncertainty on future financial performance and on investor protection. Results yield negative link between solvency and dividends based on the fact that the weaker solvency position decreases the priority of dividends likelihood. Comparably dividends are less desirable if competing with company growth opportunities although investors are less willing to wait for future profits. Altogether transitioning markets are less responsive and structurally feature fewer corporate events.*

Keywords: Dividend policy; Lintner model; Market volatility; Emerging markets; Capital markets

JEL Classification: C33, D22, G35

Introduction

Dividends payment is a core business decision for any company and more importantly so for one whose ownership is distributed amongst publicly-traded shares. Central internal company factors driving the dividends payment policy are profitability, growth opportunities, indebtedness, and ownership concentration. Publicly held companies attract financial investors' interest principally on account of either income from dividends payments or on account of capital gain through stocks' price rise. Predominant

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theories in explaining thesetrends are a) irrelevance of dividends paymentsdue to market efficiency, b) risk aversion from dividends payments due to uncertainty under the so called "bird-in-hand" phenomenon, and c) tax differentiation perspectives.

This research is first of kind to cover an extensive dataset, in tracking performance in the past two decades and through broad set of fifteen transitioning European countries with shared traits of transforming from planned to free market economies. Simultaneously these markets that were largely nascent in early 1990s are today more mature but still diverse by stage of development from middle-income to high-income economies and from frontier to emerging capital markets. Cohesively the transitioning capital markets are attracting an increasing share of global capital and interest. The capital formation varies from growing local retail and institutional involvement to a growing share of foreign investments. By capturing cross-countries shared traits the herewith study presents acomprehensive review of the fundamental and technical companies' financial data parameters implicit impact on dividends payment policies.

Conclusions derived in this paper are of interest to investors and to corporate leaders to understand the importance of sound dividend policies when making corporate governance decisions. Besides that, spotted differences in speed of adjustment coefficients between transition countries and developed capital markets may highlight important questions regarding the variances in the background environment. In that respect the empirical results may reveal more information as to what kind of design leads to more efficient capital markets and to which extent dividend policy as a firm level variable may help to override discrepancies in the underlying settings that defines availability of external sources of financing.

This paper is organized into five sections as follows: 1) An introduction sets the background environment and the economic thoughtbehind the research enquiry. 2) Literature review depicts the global and research equivalent region empirical research evolution and findings. 3) The empirical methodology is designated in a cohesive and a learning based consequential approach. 4) Empirical research results and implicit interpretations are presented. 5) Conclusions and recommendations are brought forward.

Literature Review

Despite vast research there still is not a market consensus on the factors determining the relationship direction between company performance and dividends payment. However, precedent studies have shown that profitability in general has a positive effect on dividends payments while higher leverage and growth opportunities negatively affect dividends payments decision.

Miller and Modigliani (1961) have shown that for a perfectly efficient capital markets the decision on dividends payments is irrelevant under determination of a com-

pany price. In a presumption that market price and dividends payment perfectly a-priori cross-ensemble embedded values, then an investor remains indifferent in the choice between the two. Nevertheless, since purely efficient market hypothesis would also mean that there are none costs for transaction and/or market information, then it is apparent that the postulate does not hold in real case environment. Furthermore different tax regimes, asymetric informational access, and behavioral rationale are only several of vast number of factors diverging further the relevance of prior premise.

Gordon (1962, 1963) and Lintner (1962) laid a proposition that an investor is more likely to prefer dividends payments over capital gain due to risk aversion element. In that respect certainty is higher from own internally driven policy versus higher uncertainty under external market forces that may also drive a price change. In respect of transitioning markets environment the scale of greater uncertainty, illiquidity, and volatility may elevate and tilt the preference further in favor of prioritizing dividends payments to price appreciation. La Porta et al. (2000) empirically show that dividends payment is an outcome of an effective investor protection. In their conclusion an effective legal mechanism enables follow on distribution of dividends if there is a suspicion that earnings retention would not benefit shareholders. In contrast, in environment of weak investor protection, shareholders prefer dividend payout irrespective of company growth opportunities. Litzenberger and Ramaswamy (1979, 1982) illustrated investors preference due to frequently a more favorable tax treatment of capital gain versus dividend income.

Company dividends are paid out from earnings and thus it is reasonable to expect that growth in earnings would create a positive impact ondividends payments. Lintner's (1956) survey in twenty-eight major United States (US) companies and Fama and Babiak (1968) more expansive research on three hundred and ninety-two US companies confirmed statistictal importance of current year earnings and prior year dividends payment on current year dividends payment. More recently Fama and French (2001) and DeAngelo and Stulz (2006) have shown that proportionally more profitable companies are more likely to pay dividends. Researchers hint that greater and more stable dividends signal company maturity phase in its life cycle (Bhattacharya, 1979; John and Williams, 1985; Miller and Rock, 1985). In addition, the authors point out to relevance of differentiation per specific industry. Baker, Veit and Powell (2001) and Brav et al. (2005) conducted cross-companies surveys that indicate a perceived stability of future earnings as a significant determinant of dividend policy; nevertheless there is a growing comparative importance of stock buybacks as an alternative tool to utilize earnings. Similar conclusions were repeated instudies across European and developing countries (Hedensted and Raaballe, 2006; Denis and Osobov, 2007; Kowalewski, Stetsyuk and Talavera, 2007; Statescu 2006, Bancel, Bhattacharyya and Mittoo, 2005; Aivazian, Booth and Cleary, 2003).

An extensive body of literature suggests that dividends payment decision is affected by company leverage position and by growth outlook. Myers and Myluf (1984)

presented the pecking order theory wherein companies follow a hierarchical order in sourcing financing and where earning are the cheapest and the fundamental source for future growth. Thereto, growing companies tend to preserve dividends in favor of reinvesting earnings into growth. Rozeff (1982) found negative relationship between company leverage and dividends payment with reasoning that higher debt increases company risk profile and that greater debt payments lower earnings potential, *ceteris paribus*. In transitioning markets results are less uniform, and Kowalewski, Stetsyuk, and Talavera (2007) investigated dividend determinants in Poland and found that more indebted firms, measured through ratio of long term debt to total assets, pay lower dividends. Bebzcuk (2004) in years 1996 to 2002 research in Argentina confirmed the same results. On the other side, Kožul and Mihalina (2013) studied the dividends payment determinants for publicly listed companies in Croatia and found positive impact from higher levels of profitability and from lower levels of debt, while stability of earnings was not statistically significant. Aivazian, Booth, and Cleary (2003) have explored the dividend policy on a sample from eight developing countries (Jordan, Pakistan, Turkey, India, Zimbabwe, Thailand, South Korea, and Malaysia) with findings that indebtness and dividends payments move in the opposite direction. Structurally companies in emerging markets are more sensitive to levels of indebtness and profitability due to lesser availability of alternative and liquid funding sources (Aivazian, Booth, and Cleary, 2003). The same is true for profitability. La Porta et al. (2000) study revealed that dividends payment resembles environment with strong investor protection in a result that is sequence to earlier works of La Porta et al. (1998, 1999) showing that countries with stronger investor protection have more dispersed ownership structure.

In a closer comparative research Dzidic and Orsag (2019) reviewed Lintner's basic model through testing impact on company dividends per share stemming from precedent period dividends per share and from the current period earnings per share. The authors have statistically tested ten years interval data, from year 2008 to 2012, for companies in thirteen transitioning European and Asian markets and utilizing pooled ordinary least square (OLS) method. Their results have revealed statistical significance and positive impact by precedent dividends and by current earnings. However, a novel research is called upon in awareneses of research markets inefficiency (Dodig, 2020) and particularly short existence with frequent failures in nascence years and the data availability limitations that often lead to fads and methodological inconsistencies. Therefore this research considers fifteen transitioning European countries with shared resemblance in 1990s emergence of free market organization. The coverage is extended through grasping performance of fifteen years of more standardized and longer duration covering full economic cycles and providing better conclusiveness with more robustness and supplementary new information. A novel expanded model is introduced to derive direct relationship with dividends payout ratio and in expectation on novel findings for markets overshadowed with sub-par corporate gov-

ernance and transparency. Furthermore given data characteristics methodological framework is strenghtened by an in parallel implementation of fixed effects Huber White (HW) approach, fixed effects Driscoll Kraay (DK) approach, interactive fixed effects (IFE) approach, and generalized method of moments (GMM) approach that correct for standardized errors, auto-correlation, heteroskedasticity, and mostly importantly jointly affirm the uncovered results. This research paper takes a further step in developing a complementary deviation to the base Lintner model through introducing new variable in reviewing impact on dividends payout ratio stemming from prior dividends payout ratio, from return on equity, from company leverage ratio, and from company listed price performance.

Table 1: Concise preview of emerging markets comparative empirical findings

Authors	Sample	Period	Method/ Model	Results
Aivazian, Booth, and Cleary	Jordan, Pakistan, Turkey, India, Zimbabwe, Thailand, South Korea, and Malaysia.	2002 publication covering research period from 1981 to 1990.	Pooled Ordinary Least Squares	Structurally companies in emerging markets are less responsive to dividends but in established relationships show more sensitivity to levels of indebtness and profitability due to lesser availability of alternative and liquid funding sources. Indebtness (measured as debt to total assets) and dividends payments (measured as DPS/EPS) move in the opposite direction.
Dzidic and Orsag	Poland, Hungary, Lithuania, Latvia, Bulgaria, Romania, and Turkey, Slovenia, Croatia, Bosnia and Herzegovina, and North Macedonia.	2019 publication covering research period from 2008 to 2012.	Pooled Ordinary Least Squares	Study on Lintner's basic model through testing impact on company dividends per share stemming from precedent period dividends per share and from the current period earnings per share. Results have revealed statistical significance and positive impact by precedent dividends and by current earnings
Kowalewski, Stetsyuk, and Talavera	Poland	2007 publication covering research period from 1998 to 2004.	Pooled Tobit regression	The quality of corporate governance is an important positive determinant of dividends payout and per micro-company metrics the more indebted firms, measured through ratio of long term debt to total assets, pay lower dividends
Kozul and Mihalina	Croatia	2013 publication covering research period from 2005 to 2010.	Ordinary Least Squares	Study on dividends payment determinants, measures as dividends to total assets, for publicly listed companies in Croatia found positive impact from higher levels of profitability and from lower levels of debt, while stability of earnings was not statistically significant.

Empirical Approach

The starting research sample consists of 3,309 firms from fifteen transition countries over the 2005–2020 interval. The research countries refers to the countries of Central Europe, Eastern Europe, the Balkans, and the Baltics that have transitioned from central planning into a free market economy. Those countries are: Lithuania, Latvia, Poland, Hungary, Czech Republic, Slovakia, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, North Macedonia, Romania and Bulgaria. The coherent sample is an aggregate that contains financial and non-financial firms.We use annual data because companies in transition countries usually pay dividends only once a year. For this type of the research financial firms are sometimes excluded from the sample due to unique operating characteristics and specific regulatory framework. However, due to the fact that these type of firms represents major material part of emerging markets trading activity and market capitalization we include them in our research sample. We exclude firms with missing data on research variables and firms with negative capital book value due to violation of going concern assumption. We start with the well known Lintner model of dividend smoothing and then we incorporate control variables that represent company characteristics to see how these models explain the dividend policy in transition countries. In such markets we are aware of rare corporate events and thus dividend stocks and stocks-splits are spares and are not considered. Variables definitions and expected signs for the Lintner model are given in *Table 2* while the Expanded model is illustread in *Table 3*.

Table 2: Lintner model – expected relationships direction

Variable name	Variable definition	Relationship with DPS
Current year dividend (dependent variable) (DPS_t)	Current year dividends divided by the number oh shares	
Last year dividend per share (DPS_{t-1})	Prior year dividends divided by the number of shares	+
Earnings per share (EPS)	Earnings divided by the number of shares	+

Table 3: Expanded model – expected relationships direction

Variable name	Variable definition	Relationship with DPR
Dividend payout ratio (dependent variable) (DPR_t)	Current year dividends paid divided by total net income	
Dividend payout ratio (DPR_{t-1})	Prior year dividends paid divided by total net income	+
Return on equity (ROE)	Net income divided by total equity	+
Leverage (LEV)	Total debt divided by total equity	-
Market price growth (MPR)	Proportional change in stock price per annum	-

According to Lintner, dividend decisions can be explained on the basis of the following equation:

$$D_{it} - D_{i(t-1)} = \alpha_i + c_i\left(D^*_{i,t} - D_{i(t-1)}\right) + u_{it} \tag{1}$$

where

$$D^*_{i,t} = r_i E_{it} \tag{2}$$

and where
$D^*_{i,t}$ = Planned dividend payment in period
D_{it} = Actual dividend payment in period
r_i = Target payout ratio
E_{it} = Net profit for the period
α_i = The constant associated with the growth of dividends
c_i = Partial adjustment factor
u_{it} = Error term

Constant α_i will be zero for individual firms who do not pay dividends but will generally be positive because it reflects the aversion towards dividend reduction. The term u_{it} represents the difference between the observed and expected changes in D_{it} on the basis of other terms in the equation (Lintner, 1956). By substitution of equation (2) into equation (1) the model can be simplified into the form of multiple regression analysis as follows:

$$\Delta D_{it} = \alpha_i + r_i c_i E_{it} - c_i D_{i(t-1)} + u_{it} \tag{3}$$

or

$$D_{it} = \alpha_i + r_i c_i E_{it} + (1 - c_i) D_{i(t-1)} + u_{it} \tag{4}$$

Thus, the empirical representation of the Lintner's model can be written as:

$$DPS_{i,t} = \alpha_i + \beta_1 EPS_{i,t} + \beta_2 DPS_{i,t-1} + u_{i,t} \tag{5}$$

where
DPS_{it} = Current dividend per share
EPS_{it} = Earnings per share, after tax
DPS_{it-1} = Dividend per share in previous year
$\beta_1 = r_i c_i$
$\beta_2 = 1 - c_i$

Lintner conducted his analysis on sample of firms that are considered as typical dividend payers. Namely, large number of the research studies found that dividend paying companies share some similar characteristics. Typical dividend payers are large corporates and widely held profitable companies with weak growth opportunities and low leverage. In order to account for these effects this research expands the study model with two variables, leverage that is calculated as debt to equity ratio and market price growth as proxy for investment opportunities. It is apparent that many studies use price-to-book value (PBV) ratio as an alternative proxy for growth opportunities. Since this research sample does not consider splits or dividend stocks and since it includes financials companies, typically with smaller ratios, using the PBV indicator might lead to biased conclusions (Damodaran, 2022). The focus in utilizing market price growth indicator in this research is to draw attention to comprehensive group trend between value and growth investing and for competing interest for investors between dividends income and capital gains. By analyzing financial performance indicators investors can get signals to decide whether to invest in a company. In case of value stocks investors who are risk-averse will prefer dividends over capital gains due to expectation of shorter-term income. However, in case of growth stocks capital gain or loss may precede dividend policy. To that extent growth may illustrate a company strategy and prospects vis-à-vis dividend payout ratio, and vice-versa (Murhadi, 2008; Deitiana, 2011). The expanded model also uses return on equity (ROE) ratio and lagged dividend payout ratio (DPR) instead of absolute values of earnings and lagged dividends. The Expanded model is specified as:

$$DPR_{i,t} = \alpha_i + \beta_1 ROE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 MPG_{i,t} + \beta_4 DPR_{i,t-1} + u_{i,t} \tag{6}$$

where

DPR_{it} = Dividend payout ratio
ROE_{it} = Return on equity
LEV_{it} = Leverage, measured as the ratio of total debt to total equity
MPG_{it} = Market price growth
DPR_{it-1} = Dividend payout ratio in previous year

In this research the authors confine to universal use of cross-countries and cross-industries data. In that context due to varying sample group individual economies structure and size a defining criteria on determinant individual company size level measure is not applied. In that reference in an example what is considered a large corporation in an European Union (EU) market, typically as defined by total assets, by total revenue, or by total number of employees, is differently threshold constrained from the large corporation definition in a non-EU market. Ownership concentration variable can play a role in dividend decisions across firms but is not

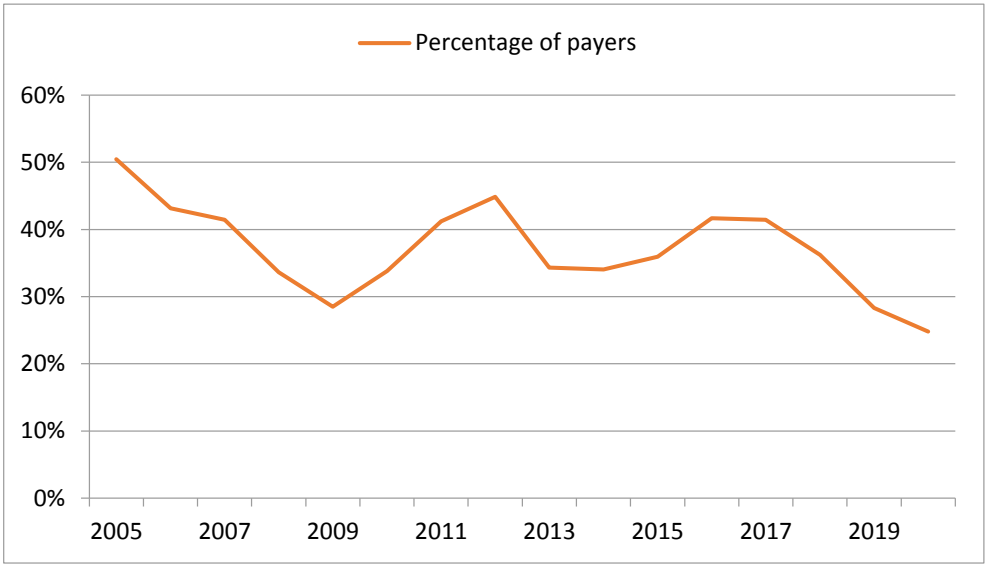
used due to unavailability or inconsistency of ownership data in the majority of sample countries data.

Empirical Results and Sensitivity Analyses

Background

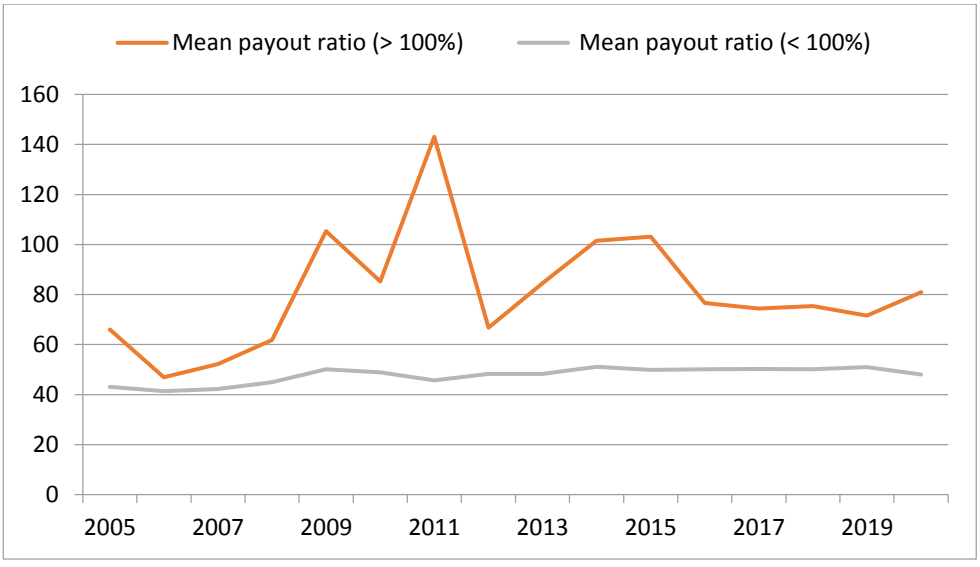
Fama and French (2001) documented that the portion of dividend payers among companies in the United States of America (USA) fell from 66.5 percent in 1978 to 20.8 percent in 1999. The cause of this trend was found in new firms on the stock exchanges (after 1978) finding good growth funding opportunities despite lower assets and lower profitability. However, DeAngelo et al. (2004) responded that, although the number of dividend payers decreased by more than fifty percent, the total paid dividends increased in the same period. Nevertheless the dividends increase was concentrated among smaller number of firms. Fatemi and Bildik (2012) also explored propensity to pay dividends on a sample of 17,106 firms drawn from thirty-three countries in the period from 1985 to 2006. Their findings suggest that the number of dividend payers dropped from eighty-seven percent to fifty-three percent. The likely reason for this development was the increased tendency of firms to buy back their own stocks.

Figure 1: Portion of dividend payers across years



During the research period covered by this study the propensity to pay dividends changed over time as well as did the relevance in portion of earnings distributed to shareholders. The overall mean portion of payers is thirty-seven percent and this ratio is trending downwards since 2005 as can be seen from *Figure 1.* The lowest propsensity to pay dividends is recorded in 2020, at twenty-five percent. This may be caused by structural shock of Covid-19 pandemic outbreak where cashflows of firms have been constrained strongly. The second lowest portion of payers was recored in 2009, at twenty-nine percent, in what can be attributed to effects of financial crisis in 2007/8. However, the percentages of dividend paying companies becomes even smaller with an assumption that missing values in this research dataset means that company does not pay dividend. This is reasonable assumption having in mind the characteristics of capital markets in these countries with disproportionately high portion of listed comnpanies relative to the seen liquidity in the markets. Consequently reporting quality is relatively weak and makes it hard to obtain consistent and accurate data. In this assumption the overall portion of dividend payers decreases significantly downwards to seven percent.

Figure 2: Mean dividend payout ratio across study years



Note: >100% is hurdle for split review to flag companies paying dividends from precedent earnings.

Figure 2 depicts the dynamics of the mean DPR ratios in the 2005-2020 interval. According to the sample data average payout ratio for the whole period was eighty-two percent. The characteristic reflects the fact that our research sample contains significant portion of observations where the payout exceeds the level of earnings,

meaning that some companies pay dividends from retained earnings from previous years. However, if we exclude observations with DPR higher than one-hundred percent then the mean payout ratio is relatively lower at 48.39 percent. In this case it is noticeable that companies in transitioning markets tend to stabilize payout ratios instead of absolute values of dividends per share. Previous empirical findigs of Glen et al. (1995) found that firms in transition countries maintain stable dividend payout ratios compared to firms in developed countries that pay more attention to absolute dividends size.

Descriptive statistics

Table 4: Descriptive statistcs for dividends payer and non-payer companies

Payers							
Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**Skewness**	**Kurtosis**
DPR	3105	81,63	254,20	0,02	7.720,72	19,46	469,09
DPS	3248	33,11	1.186,56	0,00	52.502,77	40,84	1.687,23
EPS	3240	5,98	67,60	-50,04	2.614,86	29,17	960,91
ROE	3135	14,08	17,34	-55,90	279,68	5,29	57,95
LEV	3156	41,44	56,14	0,00	820,72	3,97	32,17
MPG	3116	15,44	76,68774	-97,6	2828,743	17,51	592,50
Non-payers							
Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**Skewness**	**Kurtosis**
EPS	5755	3,87	86,51	-1.675,95	3.716,72	22,47	840,78
ROE	5033	-0,79	34,28	-810,32	322,22	-4,92	88,54
LEV	5285	108,43	1.033,54	0,00	60.964,72	45,11	2.432,62
MPG	5370	21,48	203,00	-99,93	8.771,14	23,11	797,86

Piercing sample data between dividend payers and non-payers illustrates the differences in the main explanatory variables characteristics. *Table 4* presents decriptive statistics for both samples. Mean ROE for payers group of companies is 14.08 percent while mean ROE in non-payers group is negative 0.79 percent. Besides that, non-payers have 2.2 times higher leverage than payers. The mean leverage distinctions reflects the fact that the reserach sample data does not exclude financial companies. Mean MPG is also slightly higher for non-payers group, at two hundred and three percent, compared to payers at 76.69 percent. According to descriptive statiscs dividend-payers in transition markets, compared to non-payers, grow slower, earn more, and have less debt.

Statistical testing results

In statistical analysis this empirical research next examines how these characteritics affect the intensity of dividend distribution in a sample of dividend payers using DPS and DPR as dependent variables. The multivariate results show that the variables outlined above explain part of the variability in dividend policies across firms in transitioning European economies. First, the Lintner model of dividends is employed using static panel regression analysis through pooled OLS, fixed effects, and random effects methods. All the observations with missing values and with zero dividends were excluded as the final model contained three hundred and fifty-four companies with 1575 observations. In order to select appropriate model, F test was employed to compare fixed effects versus pooled OLS, Breusch-pagan test to dicriminate between random effects and pooled OLS, and Haussmann test to compare fixed versus random effects. According to these tests the most suitable model for the sample data was fixed effects model. Results of the afore mentioned regressions tests are given in **Appendix A**. Since Modified Wald test for the group sample heteroskedasticity in fixed effect regression model suggests heteroscedasticity of variance, and since Wooldridge test points to existence of autocorrelation, regression with robust stanard errors, namely White standard errors (Huber,1967; White, 1980), Driscoll and Kraay estimator (Driscoll and Kraay, 1998), and interactive fixed effects (Bai, 2009) are utilized to ensure valid statistical inference. The calibrated methods grasp standard errors for large time dimensions and additional inclusion, by correlation with regressors, of latent components. However, while these approaches allow controlling for unobserved heterogeneity across firms it may contain dynamic panel bias due to the possible endogeneity of the lagged variable. In order to overcome this problem GMM with Arellano and Bond estimator that was developed by Arellano and Bond (1991) is applied. GMM method therefore is considered as most robust while cohesively contrasted with learning based constrained estimators methods. Regression results for each model are presented in *Table 5* and *Table 6*.

Table 5: Panel regression results for the Lintner model

Dependent variable DPS	**(1)**	**(2)**	**(3)**	**(4)**
	GMM	FE with White SE	FE with Driscoll-Kraay SE	Interactive fixed effects
EPS	**0.0951*****	0.164**	0.164***	0.293***
	(0.000)	(0.002)	(0.000)	(0.000)
L.DPS	**0.149*****	0.333***	0.333**	0.0624***
	(0.000)	(0.000)	(0.002)	(0.000)
_cons	**0.746*****	0.740**	0.740*	

Dependent variable DPS	**(1)**	**(2)**	**(3)**	**(4)**
	(0.000)	(0.003)	(0.023)	
N	**1575**	2189	2189	2189
adj. R^2	**-**	0.180		0.737
R^2 within	**-**	0.1811	0.1811	-
R^2 between	**-**	0.6196	-	-
R^2 overall	**-**	0.5927	-	-
F or Wald chi statistic	**Wald chi 2 (2) 3.16e+08**	F (2,477) 26.00	F (2, 14) 57.79	F (3, 2186)2043.03
Prob > F	**0.0000**	0.0000	0.0000	0.0000

Note: p-values are shown in parentheses and significance is found per $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Table 6: Post-estimation test for the Lintner model

Sargan test of overidentifying restrictions	Arellano-Bond test for zero autocorrelation in first-differenced errors	
	z	Prob > z
Chi 2 (104) = 107.4129 Prob > chi 2 = 0.3897	1. -1.8692	0.0616
	2. -0.7068	0.4797

*Note: S*ignificance is found per $p< 0.05$

EPS and lagged DPS coefficients are both positive and significant at one percent significance level in each of the presented models what is in line with previous research findings. However, due to model structure the results of the GMM estimator are the focus of inferential interpretation. These results show higher speed of adjustment compared to fixed effects models. Sargan test results confirm that the null hypothesis that the overidentifying restrictions are valid cannot be rejected which implies that there is no need to reconsider the model instruments. Besides that, Arellano Bond test rejects the null hypothesis that the errors are not autocorrelated in the first order at ten percent significance level. With that the hypothesis for the second order autocorrelation can neither be rejected.

Having in mind the settings of the previously specified Lintner model, it is clear that the speed of adjustment coefficient is estimated as , and that the target payout ratio is specified as . According to GMM estimates the mean lag DPS coeffiecent is around fifteen percent while the speed of adjustments coefficient for the companies in the sample is eighty-five percent in one year time interval. Using Lintner's target payout ratio formula, or / (1-), the research results in elementary model show target payout ratio of 11.2 percent. Lintner's (1956) empirical work showed the target payout ratio of around fifty percent and the average speed of adjustment of around thirty percent. Brav et al. (2004) found average payout ratios of thirty-seven percent, seventeen percent, and eight percent for the 1950–1964, 1965–1983, and 1984–2002 periods, respectively, while the mean speed of adjustment was sixty-seven, fourty, and thir-

ty-three percent over the three successive intervals. More recent study conducted by Dzidic and Orsag (2019) documented average payout ratio of thirty-five percent in transition countries and twenty percent in USA for the 2008-2012 period. In the same study the average speed of adjustment coefficient in the former Yugoslav southeast European countries was thirty-three percent, followed by other transition countries with negative twenty-four percent coefficient. Differences in the speed of adjustment and mean payout ratio figures may reflect the differences in the sample structure and the applied methodology. Dzidic and Orsag (2019) data sample consisted of companies that paid dividends in shorter time period but in consistent consecutive manner while this study uses a broader sample including every company that paid dividends in at least two in sixteen years. Morever, prior findings were based on pooled OLS method while this paper utilizes diverse constrained fixed effects regressions and GMM estimation to account with better methodological robustness for research environment and model specification choice.

Table 7: Panel regression results for the Expanded model

Dependent variable DPR	**(1)**	(2)	(3)	(4)
	GMM	FE with White SE	FE with Driscoll-Kraay SE	Interactive fixed effects
ROE	**-0.876*****	-0.630***	-0.630***	0.0342
	(0.000)	(0.000)	(0.000)	(0.408)
LEV	**-0.0280*****	-0.0419	-0.0419*	-0.0539***
	(0.000)	(0.104)	(0.021)	(0.000)
MPG	**-0.00449*****	-0.00513	-0.00513	-0.0247*
	(0.000)	(0.671)	(0.587)	(0.027)
L.DPR	**0.125*****	0.264***	0.264***	0.00815***
	(0.000)	(0.000)	(0.000)	(0.000)
_cons	**56.88*****	47.63***	47.63***	
	(0.000)	(0.000)	(0.000)	
N	**989**	1549	1549	1709
adj. R^2		0.131	-	0.802
$R^{2\ within}$		0.1330	0.1330	
$R^{2\ between}$		0.1935	-	
$R^{2\ overall}$		0.1643	-	
F or Wald chi statistic	**Wald chi 2 (4) 3.92e+06**	F(4,410) 16.72	F(4, 14) 59.80	F(5, 1704) 1383.64
Prob > F	**0.0000**	0.0000	0.0000	0.0000

Note: p-values are shown in parentheses and significance is found per $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Table 8: Post-estimation test for the Expanded model

Sargan test of overidentifying restrictions	**Arellano-Bond test for zero autocorrelation in first-differenced errors**	
	z	Prob > z
Chi 2 (104) = 99.39266 Prob > chi 2 = 0.6095	1. -5.2036	0.0000
	2. -0.32812	0.7428

*Note: S*ignificance is found per $p< 0.05$

Apart from profitability and lagged dividends as the main determinants of dividends policies, numerous empirical studies suggest that dividends payment decision is also affected by other internal factors like company size, investment opportunities, and company leverage position. Based on this notion, the extended research model controls for other factors that may affect intensity of dividends distribution. The independent controlled variables in this model are leverage, measured by debt-to-equity ratio, and investment opportunities, measured by stock price growth. Again, the model test uses static and dynamic panel regressions on the sample of dividend payers data. However, in this case an even stricter sample selection criteria is employed in order to avoid potential results bias. Namely, data where DPR is greater than one hundred percent is excluded because of clear relation to precedent financial perfomance in one or more time periods events. Such approach ensures capturing only a standardized and a recurring practice. Final sample for this model consists of two hundred and seventy-eight companies with nine hundred and eighty-nine observations. Results of the static panel regression models and tests are given in **Appendix A** while results of the fixed effects regressions and GMM estimations are given in *Table 6*.

The results reveal that ROE has negative and significant effect on DPR at one percent confidence level in each method except the intereactive fixed effects method. This means that listed companies in transition countries may be prone to decrease DPR in times of higher returns. Such behavior may be justifiable in reasoning that stocks price growth, as a proxy for investment opportunities, was negative and significant at five percent significance level. If strong profitability is accompanied with poor investiment opportunities then higher portion of retained earnings points to serius agency problems (Jensen, 1986), especially in those countries that lag behind best practices in transparency and investor rights protection. Having in mind that earnings are the numerator in ROE ratio but are the denominator in the DPR ratio, then the negative effect of ROE reflects the fact that earnings are changing faster relative to dividends which leads to lower relative DPR and which is in line with Lintner's dividends model. Such behavior is also confirmed with the coefficient of lagged DPR which is shown to be positive and significant at one percent significance level in all the presented methods. The lagged DPR coefficient is 12.5 percent which in comparison to target payout ratio of 11.2 percent is relatively very similar.

More of the model test results reveal leverage factor to be negatively and significantly associated with the level of DPR in three of four methods. These results are in line with the expectations that the contractual obligation to pay interest on debt reduces the available cash to pay dividends. Morever, due to fact that higher leverage increases financial risk, retention of earnings is often perceived as a protection against default risk (Rozeff, 1982). Again that behavior is also in line with the pecking order theory of Myers and Myluf (1984) who argue that firms prefer internal sources of founding to external ones.

Finally, MPR factor is found to be negatively associated with DPR in two of four methods. As a proxy for investment opportunities, this confirms the notion that companies with strong growth opportunities, e.g. firms in early phase of life-cycle, are more likely to retain higher portion of earnings (DeAngelo and Stulz, 2006). These statistical testing results are consistent with the residual theory of dividends (Weston & Brigham, 1979) meaning that companies will pay dividends only if more earnings are available than are needed to support the optimal capital budget allocation. Comprehensively the findings are presented in *Table 8* and *Table 9*.

Table 9: Lintner model – study resulting relationships direction

Variable name	**Variable definition**	**Relationship with DPS**
Current year dividend (dependent variable) (DPS_t)	Current year dividends divided by the number oh shares	
Last year dividend per share (DPS_{t-1})	Prior year dividends divided by the number of shares	+
Earnings per share (EPS)	Earnings divided by the number of shares	+

Table 10: Expanded model – study resulting relationships direction

Variable name	**Variable definition**	**Relationship with DPR**
Dividend payout ratio (dependent variable) (DPR_t)	Current year dividends paid divided by total net income	
Dividend payout ratio (DPR_{t-1})	Prior year dividends paid divided by total net income	**+**
Return on equity (ROE)	Net income divided by total equity	-
Leverage (LEV)	Total debt divided by total equity	-
Market price growth (MPR)	Proportional change in stock price per annum	-

Conclusions and Recommendations

The empirical results factually support understanding of the relationship between the underlying capital market structure, inherent listed companies' performance, and the relevance on dividends payment policy. The findings show that dividend payers are on average larger companies, that they are more profitable, that they are less indebted, and

that they have lesser investment opportunities to compete with in decision making. The results of the Lintner model show that the current earnings and previous year dividends are good predictors of future dividends. However, according to these results companies in transitioning markets adjust their dividends payments faster than companies listed in more developed capital markets. Reasoning for such may likely rest in market uncertainty from informational asymmetries and sub-par transparency in what is recommended to be researched in the future. The results of the expanded model show that companies in transitioning markets also care about previous intensity of dividend distribution as measured by lagged dividend payout ratio. More of, the results show that the portion of earnings distributed to shareholders is relatively lower when contrasted with competing imminent growth investment opportunities and with higher levels of debt.

The main limitations in this study are the assumptions in data filtering due to frontier and transitioing markets lack of information on corporate events. Besides that, an important notion relies on non-controlling for other factors such as ownership control, tax regimes differentiation, market liquidity issues, etc. In future researching it is recommended to endogenize further factors and to employ further sensitivity testing per independent industries. Moreover, in future outlook, it may be constructive to expand the geographical coverage, time span of research, and corporate actions should these markets start to feature such activity frequently.

Appendix

Table 11: The Lintner model of dividends - static panels

Dependent variable DPS	(1)	(2)	(3)
	Pooled OLS	Fixed Effects	Random Effects
EPS	0.232***	0.164***	0.232***
	(0.000)	(0.000)	(0.000)
L.DPS	0.0703***	0.333***	0.0703***
	(0.000)	(0.000)	(0.000)
_cons	1.009*	0.740***	1.009*
	(0.034)	(0.000)	(0.034)
N	2189	2189	2189
adj. R^2	-	-0.048	-
$R^{2\ within}$	0.1081	0.1811	0.1081
$R^{2\ between}$	0.8433	0.6196	0.8433
$R^{2overall}$	0.7293	0.5927	0.7293
F or Wald chi 2 (2)	Wald chi 2 (2) 2664.64	F (2,1709) 189.02	Wald chi2 (2) 2664.64
Prob > chi 2	0.0000	0.0000	0.0000

p-values in parentheses, $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Table 12: Tests in the Lintner model selection procedures

Fixed vs. Random Effects (Hausman test)				
DPS	Fixed effects (b)	Random effects (B)	(b-B) Difference	S.E.
EPS	0.1635085	0.2323349	-0.0688264	0.0104023
DPS_LAG	0.3329333	0.0702572	0.2626761	0.0215031
Chi 2 (2)	227.29			
Prob > chi 2	0.0000			
F test that all u_i=0: (FE vs. Pooled OLS)				
F (477, 1709) = 46.74			Prob > F = 0.0000	
Breusch and Pagan Lagrangian multiplier test for random effects (RE vs. Pooled OLS)				
Chi bar 2 (01) = 1251.34			Prob > chi bar 2 = 0.0000	
Wooldridge test for autocorrelation in panel data				
F (1, 279) = 20.487			Prob > F = 0.0000	
Modified Wald test for groupwise heteroskedasticity in fixed effect regression model				
Chi 2 (478) = 5.6e+09			Prob > chi 2 = 0.00000	
Test of overidentifying restrictions: fixed vs random effects with Huber/White estimate of variance				
Sargan-Hansen statistic	158.339	Chi - 2 (2)	P-value	0.00000

Table 13: Tests in the Expanded model selection procedures

Fixed vs. Random Effects (Hausman test)				
DPR	Fixed effects (b)	Random effects (B)	(b-B) Difference	S.E.
ROE	-0.629989	-0.1241583	-0.5058306	0.0681844
LEV	-0.0419044	-0.0331049	-0.0087995	0.0154713
MPG	-0.0051331	-0.0123266	0.0071935	0.0040087
L.DPR	0.2643522	0.5295517	-0.2651995	0.0171919
Chi 2 (2)	296.00			
Prob > chi 2	0.00	0.0160		
F test that all u_i=0: (FE vs. Pooled OLS)				
F (410, 1134)		2.04	Prob > F	0.0000
Breusch and Pagan Lagrangian multiplier test for random effects (RE vs. Pooled OLS)				
Chi bar 2 (01) = 4.60			Prob > chi bar 2 = 0.0160	
Wooldridge test for autocorrelation in panel data				
F (1, 199) = 78.250			Prob > F = 0.0000	
Modified Wald test for groupwise heteroskedasticity in fixed effect regression model				
Chi 2 (411) = 1.7e+05			Prob > chi 2 = 0.00000	
Test of overidentifying restrictions: fixed vs random effects with Huber/White estimate of variance				
Sargan-Hansen statistic	158.339	Chi – 2 (4)	P-value	0.00000

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