The effect of labour unions on payout policies – A cross-country regression analysis

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I. Abstract

Title: The effect of labour unions on payout policies – A cross-country regression analysis

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Summary:

This paper seeks to study an additional effect on payout policies. In particular, the effect of labour unions on payout polices on a cross-country data sample representing 35 countries, 3,461 firms and 41,504 data points in total is analysed. In contrast to previous research that primarily analysed US American firm samples, this dissertation's major finding corresponds to a significant positive relationship meaning that an increase in unionization density, the indicator for labour union, leads to an increase in payout ratios.

Also, the paper checked whether previous research results from Chino (2016) can be applied to an international context. In particular, he claimed that the effect of unionization on payout policies is heterogenous across firms and depends heavily on profitability. This hypothesis cannot be confirmed due to weak regression results – the corresponding indicator, an interaction term between union density and profitability, is positive but not significant which is why it cannot be assumed that the coefficient is statistically different from zero.

As a last measure, the inclusion of further country-specific characteristics, the potential reason for weak results in the first regression models, has not contributed to higher regression accuracy.

Key Words: Payout policy, Labour unions, Determinants

II. Résumé

Titre: L'effet des syndicats sur les politiques de rémunération - Une analyse de régression transnationale

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Résumé:
Cet article cherche à étudier un effet supplémentaire sur les politiques de versement des salaires. En particulier, l'effet des syndicats sur les politiques de versement des salaires est analysé sur un échantillon de données transnationales représentant 35 pays, 3 461 entreprises et 41 504 points de données au total. Contrairement aux recherches antérieures qui analysaient principalement des échantillons d'entreprises américaines, le principal résultat de cette thèse correspond à une relation positive significative, ce qui signifie qu'une augmentation du taux de syndicalisation, l'indicateur des syndicats, entraîne une augmentation des ratios de paiement.
De plus, ce mémoire a vérifié si les résultats des recherches précédentes de Chino (2016) peuvent être appliqués à un contexte international. En particulier, il a affirmé que l'effet de la syndicalisation sur les politiques de versement est hétérogène entre les entreprises et dépend fortement de la rentabilité. Cette hypothèse ne peut pas être confirmée en raison de la faiblesse des résultats de la régression - l'indicateur correspondant, un terme d'interaction entre le taux de syndicalisation et la rentabilité, est positif mais non significatif, raison pour laquelle on ne peut pas supposer que le coefficient est statistiquement différent de zéro.
Enfin, l'inclusion d'autres caractéristiques spécifiques au pays, raison potentielle des faibles résultats des premiers modèles de régression, n'a pas contribué à une plus grande précision de la régression.

Mots clés: Politique de rémunération, Syndicats, Déterminants

III. Abstrato

Título: O efeito dos sindicatos nas políticas de pagamento - Uma análise de regressão entre países

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Resumo:
Este documento procura estudar um efeito adicional nas políticas de pagamento. Em particular, é analisado o efeito dos sindicatos sobre as políticas de pagamentos numa amostra de dados entre países representando 35 países, 3.461 empresas e 41.504 pontos de dados no total. Em contraste com pesquisas anteriores que analisavam principalmente amostras de empresas americanas, a principal conclusão desta dissertação corresponde a uma relação positiva significativa, o que significa que um aumento na densidade de sindicalização, o indicador para sindicato de trabalhadores, leva a um aumento nos rácios de pagamentos.
Além disso, o documento verificou se os resultados de pesquisas anteriores de Chino (2016) podem ser aplicados a um contexto internacional. Em particular, alegou que o efeito da sindicalização nas políticas de pagamentos é heterogéneo entre empresas e depende fortemente da rentabilidade. Esta hipótese não pode ser confirmada devido aos fracos resultados da regressão - o indicador correspondente, um termo de interacção entre densidade sindical e rentabilidade, é positivo mas não significativo, razão pela qual não se pode assumir que o coeficiente seja estatisticamente diferente de zero.
Como última medida, a inclusão de outras características específicas do país, a razão potencial para resultados fracos nos primeiros modelos de regressão, não contribuiu para uma maior precisão da regressão.

Palavras-chave: Política de pagamentos, Sindicatos, Determinantes

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VI. List of Abbreviations

OECD	Organisation for Economic Co-operation and Development
GDP	Gross Domestic Product
OLS	Ordinary Least Square
RD	Regression Discontinuity
ROA	Return on Assets
US	United States of America
Et al.	Et alia

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1. Introduction

1.1 Problem Statement

In the past, financial literature has been consistently trying to better understand factors affecting payout policies. However, after vast research on the topic, there still remain many open subjects which is why a full understanding of the factors that influence payout policies and how these factors interact has not yet been established. That is also the reason why Brealey and Myers considered a firm's dividend or in general payout policy as one of the top ten most difficult unsolved problems in financial economics (2019).

A less analysed area of interest corresponds to the role of one of the most important stakeholders in an organization – the role on payout policies played by a firm's employees. The relevance can be justified since employees are the major claimants to firms' resources in form of wages and working conditions. Though, they stand in direct competition with another claimant, shareholders that generally expect to get remunerated in form of dividends and share repurchases, summarised as total payouts. Consequently, there arises a potential conflict of interest between management and shareholders to respectively maximize their own benefits. In particular, management is interested in keeping a low payout ratio and to invest generated profits or retained earnings in higher salaries for its employees. This might support employee satisfaction that is essentially important for a firm's success. In contrast, shareholders expect a consistent payout stream in absolute terms implying that payout ratios vary or even increase from fiscal-to-fiscal year, depending on the profit generation development.

In order to investigate further on the conflict of interests, a suitable measure to control for the workforce's leverage towards negotiating for higher salaries corresponds to labour unions. Unions are strongly associated with organised labour with the ultimate aim to realise higher salaries, better working conditions or in general more satisfaction for their members (Jie, Tian, & Yang, 2015) that are represented by unions. One potential lever to induce pressure on a firm's management could be to threaten with temporary interruptions of work, mostly in form of labour strikes.

Thus, labour union data represents the ideal variable to be included in a regression analysis so that a potential new effect for payout policies can be explored and so that the conflict of interests can be better understood for the future.

1.2 Managerial and Academic Relevance

Although previous research has already started to investigate on that topic, there still remains a large research gap, since most conclusions were only drawn for a limited data sample (mostly only US American firms). This research gap induces an academic relevance which is the reason why this research dissertation revisits the relationship by increasing the geographical country scope so that a cross-country regression analysis ultimately yields new knowledge about determinants for corporate payout policies.

Given strongly significant regression results, labour union variables could be used as a proxy for future payout ratios which could be a valuable information for shareholders to evaluate their investments. At the same time, other claimable stakeholders in an organization, such as the management of firms could take the paper's results to better understand what impact labour unions have on their bottom-line firm value creation.

1.3 Dissertation Outline

This dissertation is divided into five chapters, following a classical structure.

Firstly, the dissertation gives an overview of the existing literature. The literature review starts with a general introduction to determinants of firms' payout policies and then expands the perspective to labour unions and their effects on corporate finance decisions and ultimately on payout policies.

In the second step, research hypotheses are defined, based on the literature review and potential research gaps that have arisen.

Thirdly, the methodology outlines the research approach and explains the construction of the data sample and its components. Also, risk mitigation measures are elaborated.

Fourth, the analysis follows and several regression models are conducted. In particular, three main regression models are constructed with the aim to answer each of the research hypotheses respectively.

Lastly, the dissertation finishes with the overall conclusion of the research and its limitations as well as elements that could become relevant for upcoming research.

2. Literature Review

2.1 Determinants of Firms' Payout Policy

Remaining in a general context firstly, a firm's payout policy corresponds to an integral element within a company's financial decision-making process. It defines how much of generated earnings are paid back to equity shareholders, usually in the form of dividends or share repurchases (Allen & Michaely, 2003, p. 340). Firms take on these decisions on a regular basis each period and much of the literature determines firms' payout policies follow systematic patterns (Kalay & Lemmon, 2008).

At the same time, there is a large amount of existing research that tried to exploit the systematic pattern and to identify factors that influence a firm's payout policy. Already Lindner in 1956 claimed that a payout policy depends on a firm's profitability and its past dividend payouts. This hypothesis is confirmed by Baker and Powell (2000) claiming that more profitable firms likely tend to have higher dividend payments than unprofitable firms. In contrast, Alli et al. (1993) state that a dividend payout depends more on cash-flows than on profitability since earnings are rather subject to accounting standards and do not really reflect the real company's ability to pay dividends. Another determinant for payout policies corresponds to a company's sales growth. Lloyd et al. (1985) investigated a significantly negative relationship between historical sales growth and dividend payout, since rapidly growing firms with significant growth opportunities have huge financings needs which must be covered by external funding, but ultimately also lower payout ratios.

Lastly, also operational factors, such as the age of a company, impact payout policies. On the one hand, Banyi and Kahle (2014) investigated that payout ratios remain more stable for older than for younger firms. On the other hand, while larger and older firms are more likely to pay out dividends, younger firms rather remunerate shareholders by share repurchase programs (Grullon & Michaely, 2002).

The debt-equity ratio, known for a company's leverage or gearing and indicating its level of risk, was also found to be a determinant for payout policies. However, researchers were of conflicting opinions on the exact relationship. While Chebab (1995) concludes that firms having high dividend payout ratios utilize more debt financing, especially when compared to their respective industry averages. In contrast, Lloyd et al. (1985) found a statistically significant and negative relationship suggesting that firms having a higher level of risk (measured by D/E ratio) will pay out dividends at lower rate.

Next to factors that shape dividend policies, there also exists much literature about signals that dividend policy sends out – from there, additional determining factors can ultimately be derived. Namely, the literate intensively analyses the existence of dividend signalling models that seek to capture the information conveyed by both dividend increases as well as decreases. In different terms, the signal theory explains that a change in a firm's dividend policy might signal managers' expectations regarding future earnings (Jensen et al., 2010). Thus, a dividend increase would then indicate a business' well-being and that operations are going well or even better than expected. In contrast, a dividend reduction would be associated with unsatisfactory operations that have underperformed so that changes in the policy are required (Jensen et al., 2010). Interestingly, Benartzi et al. (1997) find that firms who announce a dividend reduction show an improvement in operating performance afterwards. Other literature also concludes that announcements of dividends close before the closing of an accounting year are also associated with dividend reductions. Additionally, Chemmanur and Tian (2012, 2014) investigate that firms who cut their dividends perform better after the announcement as soon as they prepare the market by releasing come information before the dividend cut.

However, the literature overall does not fully agree on the validity of signal theories, since among others, Grullon et al. (2005) were not able to investigate any evidence to support the view that changes in dividends have information content about future earnings changes.

2.2 Effect of Labour Unions on Firms and Corporate Finance Decisions

In the following part, the main topic of this paper is reached more closely. Firstly, it is necessary to define labour unions and its impact on businesses. According to Bryson (2007), labour unions, often also known as trade unions, are a combination and association of employees who band together to bargain and to negotiate directly with employers with the ultimate goal to maintain and ideally to improve the working conditions of employees that are unionized. Generally, there is a significantly positive relationship between the percentage of represented workers by unions and indicators for working conditions, most prominently summarized as wages (Freeman & Medoff, 1981). In different terms, the relationship implies that the more employees are represented by unions, the higher their wages are.

Due to their significant leverage, labour unions have the ability to directly impact firms and its decision-making process. As much of the literature confirms, unions can influence both investment and financing decisions of a firm (Jie, Tian, & Yang, 2015). In more detail,

unionized firms are likely going to have higher leverage since the arising tax shield helps to avoid outgoing cash-flows due to union expropriation (Bronars & Deere, 1991). The same applies for cash holdings which can also be considered as lower for unionized firms – high cash positions likely create the impression that firms can pay higher wages ultimately reducing the bargaining positions during negotiations (Klasa et al., 2009). Additionally, unionization affects corporate acquisitions ("acquirer and target announcement returns are lower in the presence of strong labour rights") (John et al., 2015), executive compensation ("firms with strong unions pay their CEOs less") (Huang et al., 2017), innovation ("passing a union election results in an 8.7% (12.5%) decline in patent quantity (quality) three years after the election") (Bradley et al., 2018), information disclosure ("overall disclosure frequency is negatively related to labour union strength") (Chung et al., 2016), corporate tax planning ("negative association between firms' tax aggressiveness and union power") (Chyz et al., 2013), cash flow sensitivity of investment ("capital expenditures of firms are 1.71 times more sensitive to internal cash flows when unionization rates increase") (Chen and Chen, 2013) and corporate bond yields ("the cost of equity is significantly higher for firms in more unionized industries") (Chen et al., 2011). Ultimately, two studies find that unionization does not contribute to the firm value and rather destroys it (Lee and Mas, 2012) (Bradley et al., 2018).

2.3 Effect of Labour Unions on Payout Policy

In the following section, the existing literature is analysed towards the effects of labour unions on the focussed corporate finance policy of this research: payout policies. In 1990 and 1991, DeAngelo and DeAngelo were one the first ones conducting the analysis. By performing a descriptive analysis with a sample of seven major US steel firms during the 1980's period, they concluded that labour unions indeed have a negative impact on payout policies. Additionally, they find that during or in response to union negotiations, workforces are reduced, earnings are manipulated downwards, executive compensation is cut as well as mentioned earlier, dividend payout ratios are decreased.

Two other research papers, performed by Matsa (2006) and Chino (2016), find similar relations by relying both on Ordinaly Least Square (OLS) regressions to make inference. While Matsa investigated weakly negative effects of bargaining power of unions on dividend policy, Chino includes an additional lever in the analysis, operating profitability, since he identified that previous research often neglected significant heterogenous effects of

unionization on payouts. Thus, the main finding was that highly profitable firms increase dividends and unprofitable firms decrease dividends, while their industry and workers are highly unionized.

Another more recent research studies by Jie et al. (2015) made use of a regression discontinuity analysis that compares firms' payouts subsequent to union elections that barely pass with those subsequent to elections that barely fail. In this case, the Regression Discontinuity (RD) design is used in order to mitigate the effect of endogeneity and unobservable effects in the error term. Ultimately, as previous literature too, they find a negative relationship between labour unions considered by union elections and payout policies: "*Passing a union election leads to an 8.7% lower dividend payout ratio and a 17.9% lower total payout ratio (including both dividends and share repurchases) than failing the election in the following year.*" Additionally, they find that payout is reduced after passing an union election in order to strengthen or maintain a certain level of operating flexibility as well as mitigating the risk of cash-flow volatility.

3. Research Hypotheses

This paper has the objective to identify additional factors that influences a firm's decision to alter its payout policies or more specifically to cut dividends or remunerate shareholders less. After reviewing the literature and referring to sources dealing with the same kind of analysis, the following preliminary research hypotheses can be established:

Hypothesis I: Labour unions reduce a firm's payout

Hypothesis II: Relationship between unionization and firm payouts depends positively on firm profitability

Hypothesis III: Including additional country-specific data supports the accuracy and quality of regression results

The first hypothesis represents the baseline hypothesis which could be derived from reviewing literature, but also from logical reasoning by intuition. Simply speaking, the more workers of a company are members of labour unions, the likelihood of higher wages increases due to better negotiation power of unions towards a firm's management. Thus, companies' labour expenses increase resulting into lower bottom-line profitability and ultimately a diminishing ability to undertake payouts to shareholders. The correctness of this relationship will be analysed and represents the first hypothesis.

The second hypothesis is derived directly from Chino's research (2016). As outlined in the previous chapter, it has been concluded that there is a heterogeneity between labour union density and payouts to shareholders, given the US American data sample. In more detail, it was found that unionization positively depends on total payouts whenever firms are highly profitable. Thus, this hypothesis is checked towards its validity and relevance for companies from a cross-country data sample.

Ultimately, the third regression hypothesis builds on the research of Ahmad, Beuselinck, & Bollaert (2017) who analysed the impact between employment protection and payout variables. They perform the study on an international data sample and include multiple different country-specific characeristics in order to avoid endogeneity constraints among regression variables. Thus, the third hypothesis analyses whether doing so in the given sample helps to sharpen the regression results as well.

Simultaneously, the conclusions drawn from this data set will be compared to those drawn from previous research that dealt with similar topic in the past. Since most of previous

research has been using unionization data only for the US American market, such as Jie et al. (2015), Matsa (2006) or Chino (2016) did, their findings might be limited to the characteristics of the specific market. Thus, it will be evaluated whether their results can be projected to international markets as well or alternatively, what kind of alternative conclusions can be formulated. In different terms, an additional goal of this paper is to check whether results from previous research are valid also on a cross-country level.

4. Data Methodology

4.1 Sample Construction

To test the previously defined hypotheses and to investigate the relationship between payout policies and labour unionization on a cross-country level, data originates from several different sources. On the one hand, labour union data is provided by the Organisation for Economic Co-operation and Development (OECD) that worked out average union density levels on a country as well as year base (2021). On the other hand, all the financial data is retrieved from Refinitiv Eikon. As the major time horizon, the period from 2000-2020 is used, which is congruent to the availability of union data from OECD. Accordingly, fundamental data of companies with an initial public offering (IPO) only before 2000 and with offering ordinary shares to the public was relevant for the sample construction. Another limitation corresponds to the industry a company operates in. In particular, firms of all industries but from the financial as well as utilities industry are considered due to their exclusive nature for payout policies which could potentially lead to biased derivations.

All in all, the final sample is an unbalanced panel comprised of 41,504 firm-year observations each containing several different variables that are defined and further elaborated in the following chapter.

Lastly, the construction of the data sample has been executed by the usage of Python. In particular, it was necessary to construct the different regression variables (payout variables etc.), to merge data from all different sources and to ultimately winsorize the whole data sample. Additionally, baseline regressions have been computed within Python as well, but since the included regression functions are limited towards the maximum number of fixed effects or control variables, more sophisticated regression models have been executed by SPSS, one of the most powerful statistical software tools (IBM, 2022).

4.2 Union Data

As previously mentioned, the major independent variable within the data sample was provided by the OECD. The source combined data from various different objects and projects with the primary emphasis on trade unions in Europe and other OECD countries (OECD, 2021). The database is updated regularly on a yearly basis and can be accessed publicly on the homepage of OECD under the following link www.oecd.org. The relevant variable for the context of this thesis corresponds to trade union density. It is defined as the number of net union members (excluding unemployed or self-employed workers) as a

proportion of the total number of employees in the given country (OECD, 2021). Thus, the figure varies between 0 and 1. In total, the database includes 38 countries and covers 21 years (time span from 2000 to 2020). However, only 698 data points exist since there is some data inconsistency for some countries. For instance, Israel has data available only for two years. Also, there is a lack for the most recent year in 2020 – data for only five countries is reported.

4.3 Firm-level characteristics

As previously mentioned, all financial data originates from Refinitiv Eikon, corresponding to the former Thomson Reuters that has been renamed and rebranded recently (Refinitiv, 2019). Thus, data being indicators for payout policies was exported in line with previous literature, such as Chino (2016), Jie et al. (2015) or Grullon & Michaely (2002). Accordingly, exported variables comprised total dividends paid, treasury stock and issuance/retirement of stock which are all essential to build-up payout policy variables. Since payout policy consists not only of total dividends paid, but also share repurchases that companies buy back to remunerate their shareholders, it was also necessary to decide how to define these due to deviating and partially conflicting definitions. Again, it is referred to previous literature. In particular, Fama and French's approach is executed that define share repurchases as the annual change of the common treasury stock from Y_{-1} to Y_0 (2001). However, whenever companies do not use the treasury stock rather than the retirement method, being recognized when the change in treasury stock is zero, the change in treasury stock is replaced by the maximum of zero and the difference between purchases and sales of common and preferred stock (due to the usage of Eikon, the variable Issuance/Retirement of Stock is used). After having retrieved and constructed all relevant data, it was then possible to establish values for payout policies, on the basis of dividends paid, share repurchases and their addition ultimately representing the cash outflow to shareholders. Thus, sufficient data exists in order to generate variables that are relevant to investigate the hypotheses.

Furthermore, in order to also test the second hypothesis particularly, so to examine what impact profitability has on the relationship between unionization and payout policies, the corresponding data indicating profitability was exported from Refinitiv – as an indicator for profitability, the *Return on Assets* (net income divided by total assets) was used.

Next to data representing profitability, additional variables are created in order to control for firm fixed effects as well as for other determinants that likely affect payout policies. Based

on a mix of previous literature, in particular Fama & French (2001) and DeAngelo et al. (2006) who both researched on driving factors for payout policies, there exists a general and intuitive assumption that larger, more mature, more profitable, less leveraged or cash-rich firms having fewer investment opportunities to grow further pay out more dividends and/or buy back more shares. Therefore, the following variables are exported from Refinitiv for each company and year in the data set:

FIRM CHARACTERISTICS			
Asset Tangibility	Firm Size	Leverage	Profitability
Cash Holdings	Investment Opportunities	Life-cycle Stage	

Figure 1: Overview Firm Characteristics

Additionally, in the course of the analysis, a third regression model seeks to include additional control variables, in particular macroeconomic data. These variables are provided by the World Bank (2022) as well as again OECD (2021) and include the following:

COUNTRY CHARACTERISTICS		
ln(GDP)	GDP Growth	Dividend Tax Rate
ln(GDP per capita)	Recession Dummy	

Figure 2: Overview Country Characteristics

A complete description of all variable definitions, calculation as well as construction methods is reported in the *Appendix 3*.

4.4 Regression Model

In the course of the following analysis, several different regression models are applied. However, all regression analyses rely on OLS panel regressions, in particular using the OLS method to elaborate on the hypotheses. Along all different variations of the regression model, the union density represents the sole independent while *Total Payout Ratio* or *Dividend Payout Ratio* the sole dependent variable. At the same time, the regression model

is partly complemented with other fixed effects or control variables. Ultimately, the effect of unionization on firm payout policy is estimated by the following specification:

$$y_{it} = \alpha_i + \alpha_t + \alpha_c + \beta * UD_{ct} + \gamma * X_{ict} + \epsilon_{it}$$

where *i* denotes a firm and *t* a year. α_i, α_t and α_c are industry, year as well as country fixed effects respectively. y_{it} stands for the dependent variable and either corresponds to total payout or dividend payout ratio. UD_{ct} represents the union density variable on a year and country basis, while β is its corresponding coefficient and the main point of interest in the regression model. Lastly, the variable X_{ict} is a vector summarizing all control variables and ϵ_{it} is the error term.

4.5 Risk Mitigation

To mitigate the risks of outliers and to support the findings' accuracy, several measures have been implemented. Firstly, all firm-years have been dropped with negative earnings and negative dividend payments, respectively negative payouts due to the complicated nature for interpretation (Jie et al., 2015). Secondly, the data sample has been winsorized so that firm-years with a total payout ratio in the 5th respectively 95th percentile have been dropped from the data sample. Lastly, as previously mentioned, companies from the utilities, insurance or financial industry have been removed since they have deviating payout schemes to shareholders leading to a biasing noise in the data sample.

5. Empirical analysis

5.1 Descriptive statistics

Before starting to evaluate regression results, the data sample is analysed towards descriptive statistics. Congruent to *Section 4.1.*, the data sample consists of 41,504 data points, representing more than 3,500 companies and 35 countries. Roughly 50% of all stocks originate from European countries while 35% can be attributed to Japan as well as 15% to the US. On an industry level, companies from Manufacturing industries clearly dominate the data sample – 58% of stocks can be allocated to the corresponding industry. Other major industries comprise Wholesale with 7% as well as Construction with a 6% share in the data sample.

Analysing the unionization data incorporated from OECD (2021) (see *Appendix 1*), the data provision has been satisfactory. While 80% of all countries recorded unionization data for 18 years or more, only Greece and Israel provided data for less than ten years over the sample period. On an aggregate level, Iceland is the country with the highest average quota over the period from 2000-2020 – almost 88% of all workers were members of labour unions. Strikingly, it becomes evident that all Scandinavian countries (Sweden, Finland, Norway and Denmark), generally known for above-average social welfare and income equality, are all located in the Top 6 of all countries (all with a share of more than 50%). For Group of Seven countries (G7) that comprise the seven largest industry nations, their unionization values are comparably low and are all smaller than the OECD countries average - for the United States as well as France, only 10%, respectively 11% of workers are represented by labour unions.

Another recognizable trend is that unionization rates were characterised with the tendency to decrease over the sample period. Comparing yearly unionization values whenever sufficient data points were given, quotas were smaller compared to previous years in 442 cases while they were bigger only in 173 cases. This development indicates the diminishing ratio of employees represented by labour unions.

Approaching the context of the research topic closer and introducing payout variables, it can be summarised that over the sample period the average dividend payout ratio amounted to 44.79% with a standard deviation of 0.55 while the average total payout ratio is 50.52% with a standard deviation of 0.66. Compared to previous research that focussed on the US American market in contrast ((Jie et al., 2015) or (Chino, 2016)), payout variables in the

given sample have considerably larger values, both for mean as well as standard deviation. However, previous research both defined payout ratios in an alternative way and did not express it in relation to net income but total sales. This indicates that the wider geographical coverage and the alternative variable definition indeed provides a new lever for regressions to analyse how labour unions impact firms' payout policies. Also, it shows that dividend payouts primarily contribute to total payouts, while share repurchases play a less significant role. Thus, upcoming regression models will be adjusted accordingly and dependent variables will only be differentiated among *Total Payout Ratio* and *Dividend Payout Ratio*. Descriptive Statistics are visualized in the following *Figure 3*:

Variables	**N**	**Mean**	**25th Percentile**	**Median**	**75th Percentile**	**Std.Dev**
Dependent Variables						
Dividend Payout Ratio	41504	0.4479	0.1794	0.2889	0.4870	0.5812
Total Payout Ratio	41504	0.5052	0.1918	0.3139	0.5423	0.6622
TP / TR	41411	0.0388	0.0056	0.0108	0.0224	2.3821
DP / TR	41411	0.0353	0.0052	0.0099	0.0199	2.3809
Independent Variables						
Union Density	41504	0.1756	0.1290	0.1760	0.1880	0.0727
Profitability	41504	0.0707	0.0343	0.0577	0.0919	0.0559
Interaction Term	41504	1.2246	0.5713	0.9440	1.4918	1.3599
Firm Characteristics						
Firm Size	41504	20.5382	19.2103	20.2967	21.6601	1.8161
Tangibility	34253	0.6375	0.3296	0.5816	0.9053	0.4001
Investment	41391	0.0432	0.0167	0.0333	0.0575	0.0411
Leverage	41501	0.1980	0.0512	0.1721	0.3069	0.1666
Cash Holding	2999	0.0559	0.0031	0.0254	0.0706	0.0805
Life Cycle	41395	0.3454	0.1833	0.3209	0.4823	0.2561
Inv Opportunities	38169	0.0655	-0.0324	0.0396	0.1214	0.3252
Country Characteristics						
ln(GDP)	41504	29.4519	29.1228	29.2265	29.3818	29.2063
GDP Growth	41504	0.0142	0.0046	0.0156	0.0228	0.0206
ln(GDP PC)	41504	10.6055	10.4851	10.5809	10.7137	9.2519
Recession Dummy	41504	0.2835	0.0000	0.0000	1.0000	0.4507
Dividend Tax	41504	23.2038	10.0000	20.3200	28.8800	13.1842

Figure 3: Summary Statistics

On a country basis, stocks located in Luxembourg have the highest total payout ratio with 133% (however only 2 stocks are included in the sample wherefore this derivation is limited). A more accurate figure is provided by Finnish stocks (34 stocks in total) and a total payout ratio of 97%. On the contrary, the lower end occupies Canada with 10 stocks and an average total payout ratio of 40%. G7 countries' total payout ratio has no severe specialities and lies between 40% and 68%.
An overview about the descriptive statistics of the main dependent and independent variables on a country level can be found in *Appendix 2*.

5.2 Regression Results

5.2.1 Labour Unions and Payout Variables

The first and foremost regression (see *Panel A* (1)) represents the baseline regression setting labour union as the independent variable while total payout ratio as the dependent variable. Also, neither any fixed effect nor control variable are included. Evaluating the results, one can see that labour unions' coefficient is positive and amounts to 0.048. In different terms, this figure represents that increasing labour union density by 100 basis points, so one percent, the total payout ratio would increase by 0.48%. This positive relationship contradicts the previously defined first hypothesis in *Section 3* which intuitively assumed a negative relationship. Also, it can be confirmed that the independent variable is significant at the 1% level, thus it is possible to conclude that the coefficient of labour union density is statistically different from zero.
The same finding can be drawn from the same regression model with the sole difference compared to the first one that now the dependent variable has been changed to *Dividend Payout Ratio* (6). As dividends were the major and primary type of cash outflow to shareholders (as specified in *5.1*), regression results have barely deviated. Namely, in this case the dividend payout ratio would increase by 0.62% whenever labour union density increases by 1%. Again, there is a significance at the 1% level. The regression results are visualised in the following *Panel A*. It displays the respective coefficient as well as the t-statistic of each coefficient in parenthesis. Subscripts ***, **, * denote significantly different from zero at the 1%, 5% and 10% level, respectively.

	Total Payout Ratio					Dividend Payout Ratio				
	1	2	3	4	5	6	7	8	9	10
Variable of Interest										
Union Density	0.048***	0.049***	0.048***	-0.025	-0.122	0.062***	0.061***	0.061***	-0.014	-0.093
	(9.726)	(9.909)	(9.855)	(-0.492)	(-0.56)	(12.561)	(12.437)	(12.481)	(-0.277)	(-0.425)
Control Variables										
Firm Size					-0.002					-0.017
					(-0.07)					(-0.704)
Profitability					-0.101***					-0.093***
					(-4.164)					(-3.82)
Tangibility					0.030					0.035
					(1.264)					(1.465)
Investment					-0.010					0.001
					(-0.448)					(0.052)
Leverage					-0.007					-0.008
					(-0.292)					(-0.299)
Cash Holding					0.006					0.013***
					(0.255)					(-3.448)
Life Cycle					-0.0622***					-0.082*
					(-2.637)					(-1.787)
Fixed Effects										
Year FE		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Industry FE			Yes	Yes	Yes			Yes	Yes	Yes
Country FE				Yes	Yes				Yes	Yes

Figure 4: Panel A

Thus, both baseline models having a positive coefficient for labour union density as well as being significant at the 1% level align with results from previous literature (Chino, 2016). However, so far no fixed effects have been included. That is why, the first and second regression model are respectively complemented by fixed effects. Firstly, by year fixed effects (2 and 7), secondly by year and industry fixed effects (3 and 8) and thirdly by year, industry and country fixed effects (4 and 9).

Strikingly, regression results barely change in the first and second adjustment. Coefficients of labour union density are almost identical with the previous results (*Total Payout Ratio*: 0.048 vs. 0.048; *Dividend Payout Ratio*: 0.061 vs. 0.062). Also, the t-statistic and p-values remain on a similar level indicating that the respective coefficient is significantly different from zero. There, a first discrepancy to the results from previous literature arises. Referring to Chino (2016), coefficients for the same regression were negative and not significantly different from zero. However, the discrepancy can be logically justified by the specific composition of the labour union density data coming from OECD (2020). In contrast to the labour union data representing only the US in previous research, OECD's dataset did not

show labour union density on a country as well industry level. Thus, data only varied from country to country, but not between industries on an additional level.

Therefore, in order to rule out as many fixed effects that might influence the accuracy of findings as possible, cross-country differences might represent another lever. Since macroeconomic or labour indicators (such as minimum wages or strength of labour unions due to the domestic legal system) differ from country to country, these conditions might impact the decision to pay-out dividends or buy back shares. That is why, including the country impact within the main regression model might sharpen the coefficients' creditability. Doing that and adding country fixed effects to the regression model, columns 4 and 9 in *Panel A* represent the regression results. Here, the most striking change can be recorded. Suddenly, the unionization's coefficient turns negative and is no longer significantly different from zero, respectively valid for both *Total Payout* as well as *Dividend Payout Ratio*. In different terms, the regression's accuracy has diminished after adding country fixed effects and a relationship can no longer be determined.

Up to now, union density's coefficients have always been positive at approximately 0.50% with being significantly different from zero. In previous research, coefficients have turned negative after adding industry fixed effects to the model – due to the above-mentioned reasons, the coefficients in the corresponding model here remained positive. Though, including country fixed effects has ultimately led to a transformation as well and now, the coefficient of union density is negative, but no longer significant, consistent with the referred research of Chino (2016) or Matsa (2006).

To validate the findings or to counteract the diminishing accuracy, the last two regression models (5 and 10) also control now for firm characteristics. As described in *Section 4.3.*, firm characteristics such as profitability, maturity or cash holdings indeed drive payout policies. Doing so and evaluating the results, one must diagnose that coefficients do not change – they remain negative and are not statistically different from zero. Ultimately, no clear relationship can be derived and the first hypothesis can neither be accepted nor rejected.

5.2.2 Labour Unions, Payout Variables and Profitability

In the following step, the second hypothesis is explored further. In more detail, a second regression model is developed which now includes an additional independent variable. In order to derive what impact profitability has, so whether low-profitability firms tend to be impacted negatively by unionization while high-profitability firms tend to be impacted positively, a completely new regression model is constructed which closely aligns with Chino's approach (2016). In the first step, the dependent variable representing total payouts is modified and from now on is put into relation with total sales – previously it was put with net income. Thus, the new dependent variable is a fraction of total payouts (sum of dividends and net repurchases) divided by total sales.

Simultaneously, next to unionization (β_1), another independent variable was added corresponding to profitability (β_2) which has previously only been considered as a control variable. All other control variables (Firm Size, Tangibility, Investment Opportunities, Leverage, Cash Holding and Life-cycle Stage) remain and are again summarized by the vector (X_{ict}). In a more sophisticated regression model, also an interaction term between union density and profitability is implemented in order to evaluate the heterogeneity of payouts across firms and the ultimate dependency on profitability, as specified by the second hypothesis (β_3). Generally, it will be assumed that the corresponding coefficient is positive (so $\beta_3 > 0$) which would lead to accepting the second hypothesis.

Of course, again also fixed effects have been included. As conducted previously, while two of the following regression models do not consider any fixed effect, the other two models include all three fixed effects (year, industry and country). Lastly, the regression model renunciates on the constant, aligning with Chino's approach (2016) The following function outlines the regression model (including the interaction term):

$$y_{it} = \alpha_i + \alpha_t + \alpha_c + \beta_1 * UD_{ct} + \beta_2 * ROA_{it} + \beta_3 * UD_{ct} * ROA_{it} + \gamma * X_{ict} + \epsilon_{it}$$

The first regression model (see *Panel B* (1)) starts by only executing the plain regression model including the above-mentioned dependent, independent variables and no other fixed effect or control variable. While Union Density's coefficient is positive and is significantly different from zero, profitability's coefficient is negative, but also significant at the 1% level.

The second regression model (2) is complemented by all three fixed effects as well as the control variables, but profitability that is already present as independent variable. Thus, now it is possible to compare results to Chino (2016). By comparing the results, only minor differences occur. On the one hand, one commonality is the negative and insignificant coefficient for Union Density. On the other hand, a major difference corresponds to the coefficient for profitability. While coefficients in both approaches are highly significant at the 1% level, their signs deviate – positive in Chino's work (2016), negative in this work. Regression results from this data sample suggest that on a global scale, higher profitability tends to decrease the payout ratio – to be precise, when *Return on Assets* increase by 1%, the total payout ratio would decrease by 1.01%. This relationship is the direct opposite to the findings of Chino (2016) having the identical regression settings. Furthermore, in both regression settings, it cannot be assumed that union density's coefficient is statistically from zero.

	Total Payout Ratio			
	1	2	3	4
Variable of Interest				
Union Density	0.041***	-0.0122	0.049***	-0.152
	(8.54)	(-0.56)	(-6.484)	(-0.695)
Profitability	-0.156***	-0.101***	-0.146***	-0.137***
	(-32.261)	(-4.164)	(-15.725)	(-3.622)
Interaction Term			0.014	0.057
			(-1.258)	(1.233)
Control Variables				
Firm Size		-0.002		-0.005
		(-0.07)		(-0.207)
Tangibility		0.03		0.032
		(1.264)		(1.343)
Investment		-0.01		-0.011
		(-0.448)		(-0.495)
Leverage		-0.007		-0.005
		(-0.292)		(-0.19)
Cash Holding		0.006		0.005
		(0.255)		(0.218)
Life Cycle		-0.062***		-0.062***
		(-2.637)		(-2.616)
Fixed Effects				
Year FE		Yes		Yes
Industry FE		Yes		Yes
Country FE		Yes		Yes

Figure 5: Panel B

All in all, it can be confirmed that also on a cross-country comparison, regressing payout ratios with profitability and union density (incl. fixed effects and control variables) yields in weak results, which is consistent with research from the past on sole US-American firm samples (Chino, 2016 or Matsa, 2006). Thus, it is not possible to derive that unionization and profitability have a shared impact on payout variables.

However, in order to shed new light on the second hypothesis, the third model is complemented by the interaction term, the product of union density and profitability. In Chino's research (2016), the following has been determined:

> "*The inclusion of the interaction term, Union*ROA, in model (4) significantly alters the estimation result. In model (4), the coefficient of Union is negative though not significant. However, importantly, the coefficient of the interaction term, Union*ROA, is positive and significant at the 1% level, consistent with the hypothesis that the relation between unionization and payouts would be heterogeneous across firms and depend positively on firm profitability.*"

Comparing the above-mentioned results to results from this data sample (4), having a cross-country composition, again low data quality must be constituted since all relevant coefficients, but the one representing profitability are not significant. In more detail, the coefficient of Union Density turned negative, though is not significant which is consistent with the finding of Chino (2016). Also, one major difference to Chino can be determined since the coefficient for profitability is highly negative while it is positive in Chino's research. However, to answer the second hypothesis, one must look at the coefficient of the interaction term predominantly - the sign of the interaction is positive, but not significant. Thus, it is not possible to conclude the same finding as Chino (2016), since it cannot be assumed that the coefficient is statistically different from zero as well as that there is a positive dependency on firm profitability. Accordingly, the second hypothesis must be rejected.

5.2.3 Labour Unions, Payout Variables and Macroeconomic Factors

From the findings that were investigated so far, significant, but opposing relationships could be determined (first hypothesis). Also compared to Chino's research, it was not possible to

derive the same conclusion since the interaction term has been negative. Thus, it is not possible to apply past findings (heterogeneity across firms), that were derived from mostly US American data samples, to an international context due to low data quality (second hypothesis). One potential reason for the weak results corresponds to the large international sample of firms and the large number of countries that is represented in the data. The only countermeasure in the previous regressions was applied by including country fixed effects that should capture systematic differences in the macroeconomic, political and financial environment across countries. However, this approach appears to have been too weak and too narrow. Therefore, a third regression model is developed seeking to include further country characteristics and to better control with them for cross-country differences that potentially impact the relationship between unionization and payout variables. Then the first and second hypothesis are tested again with the aim to have stronger results. By this, it will also be possible to answer the third hypothesis whether adding these characteristics helps to improve results' quality and accuracy-

Congruent to previous research, such as from Ahmad, Beuselinck, & Bollaert (2017) who analysed the relationship between employment protection and corporate payouts on a similarly large international data sample, there is clear evidence to control for macro-economic conditions, heterogeneity in dividend tax treatments and other labour related data. More particularly, it is controlled for GDP per capita, GDP growth, and a Recession Dummy to tease out variation in payout policies that depend on macro-economic conditions.

Further, a control variable for dividend tax rates is used to capture differential tax treatments of dividends across countries.

	Total Payout Ratio				Dividend Payout Ratio			
	1	2	3	4	5	6	7	8
Variable of Interest								
Union Density	0.037***	0.035***	0.045***	0.082***	0.049***	0.047***	0.053***	0.105***
	(7.453)	(7.145)	(8.699)	(3.774)	(9.92)	(9.537)	(10.271)	(4.863)
Control Variables								
Firm Size				-0.016				-0.033
				(-0.725)				(-1.492)
Profitability				-0.078***				-0.068***
				(-3.462)				(-3.062)
Tangibility				0.036				0.042*
				(1.55)				(1.806)
Investment				-0.023				-0.01
				(-1.057)				(-0.463)
Leverage				-0.026				-0.024
				(-1.025)				(-0.979)
Cash Holding				-0.002				0.003
				(-0.104)				(0.14)
Life Cycle				-0.085***				-0.103***
				(-3.684)				(-4.499)
Country Characteristics								
GDP Growth	-0.023***	-0.033***	0.006	-0.017	-0.032***	-0.044***	-0.012	0.014
	(-3.889)	(-5.376)	(0.877)	(-0.531)	-5.362	(-7.257)	(-1.266)	0.437
GDP PC	0.051***	0.06***	0.06***	0.057**	0.058***	0.071***	0.075***	0.074***
	(10.097)	(11.871)	(10.484)	(2.526)	11.681	(13.966)	(13.08)	3.298
Recession Dummy	0.034***	0.036***	-0.01	0.028	0.033***	0.036***	-0.006	0.024
	(5.665)	(6.013)	(-1.179)	(0.958)	5.655	(6.102)	(-0.699)	0.818
Dividend Tax		0.055***	0.02***	-0.073***		0.07***	0.032***	-0.058***
		(10.862)	(2.532)	(-3.27)		(13.83)	(4.215)	0.818
Fixed Effects								
Year FE			Yes	Yes			Yes	Yes
Industry FE			Yes	Yes			Yes	Yes
Country FE								

Figure 6: Panel C

Applying the above-described process, four regression functions were developed. The first one (see Panel C (1)) includes *Total Payout Ratio* as a dependent variable, *Union Density* as an independent variable and *GDP per capita*, *GDP growth* and the *regression dummy* as control variables controlling for the respective macroeconomic conditions in a country. Results indicate a positive coefficient with being significantly different than zero. Compared to the baseline regression in the beginning where the same function but without the macroeconomic control variables was applied, coefficients do not vary severely – both coefficients indicate a positive and significant relationship between unionization and payout

variables. A minor derivation leads to the second model (2) that additionally includes the dividend tax rate, so that potentially removes the incentive to have higher payouts to shareholders due to lower dividend taxes in a given country. However, coefficients barely change and remain positive and significant.

Although now more sophisticated country effects are included, results must still be monitored with caution since year and industry fixed effects are still neglected. Doing that, a third model (3) is developed, and coefficients indeed slightly change. Though, the unionization coefficient becomes even more positive, and still remains highly significant. For this reason, the positive relation between unionization and total payout ratio can be confirmed once more. Strikingly, in the baseline regression, the unionization coefficient was positive and significant for the model with only year and industry fixed effects. After adding country fixed effects, the sign of the coefficient changed its sign to negative and was no longer significant. Here, a clear difference can be constituted underlying that the inclusion of more detailed cross-country characteristics as control variables sharpened the results.

Lastly, the ultimate regression model (4) is complemented by the remaining firm characteristics that have not been considered yet – they are again added as additional control variables. Ultimately, the same finding as before applies here as well: union density's coefficient is positive and significantly different from zero. In practical terms, across all four regression models with different settings, unionization's coefficient varied between 0.035 and 0.082, meaning that a one percent change in union density leads to an effective increase in the total payout ratio of between 0.35% and 0.82%.

The same regression models were also performed with *Dividend Payout Ratio* as the dependent variable – the remaining settings have been the same (1-4). Overall, the same positive relationship could be determined. Strikingly, the coefficients for the *Dividend Payout Ratio* were even slightly higher than those for the *Total Payout Ratio*, meaning that the positive relationship between *Unionization* and *Dividend Payout Ratio* is even stronger.

Ultimately, it is now possible to answer the third hypothesis. In particular, regression results did not change significantly and tendencies, including the sign of coefficients or their significance, remained. Given this investigation, one would need to reject the third hypothesis, however scientifically, it is indeed reasonable to include as many as fixed effects or control variables as possible. It indeed improves the creditability of the focussed coefficients which is why it is legitimate to accept the third hypothesis.

5.2.4 Labour Union, Payout Variables, Profitability and Macroeconomic Factors

The same regressions as in *Section 5.2.2.* are repeated and now include the macroeconomic and labour-related variables, in order to better control for cross-country differences. Results can be found in *Panel D* (see *Appendix 4*).

On the bottom-line, no significant differences can be investigated. All tendencies have not changed severely. Especially in the regression models with the interaction term as an independent variable, the inclusion of the additional control variables did not support the findings accuracy (5 and 10). In particular, the interaction term's coefficient remains positive, but not significant.

Thus, the second hypothesis must still be rejected although macroeconomic and labour-related data was added to the regression model. Therefore, it cannot be concluded that on a cross-country level the effect of unionization on payouts depends on firm profitability

6. Conclusion

6.1 Closing the Research Gap

This research aims to elaborate on the following research topic:

The effect of labour unions on payout policies - a cross-country regression analysis

Thereby, the research seeked to shed new light on factors impacting payout variables, in particular how labour unions affect payout policy decisions. Based on past research, the goal was also to check whether derivations from different data samples could be applied to other international countries seamlessly. To achieve these goals, three research hypotheses were formulated that either were constructed in accordance with common knowledge (Hypothesis I) or were constructed based on past research conclusions Hypothesis II and Hypothesis III). Several different OLS regression functions and models were then developed to ultimately answer the hypotheses.

Conclusively, this paper finds a significantly positive relationship between unionization and payout variables, meaning that with increasing unionization, payout ratios rise. This finding is opposing to the first hypothesis which stated a negative relationship as well as which is the direct opposite to conclusions from several research papers in the past.

Also, this paper was not able to answer whether effects of unionization on payouts are heterogenous, differ across firms and highly depend on the firm's profitability – relevant coefficients were not statistically different from zero which is why the second hypothesis could not be accepted. Based on the given regression results, this also implies that it is not necessarily possible to apply Chino's "heterogeneity" finding seamlessly to any other country.

Lastly, the inclusion of further country-specific characteristics did not help to improve accuracy and quality of results leading to the rejection of the third hypothesis. Anyhow, it is generally still reasonable to include as many fixed effect or control variables as possible in order to minimize the margin of error expressed by the error term.

6.2 Research Limitations and Future Research

Since only a limited period of 20 years was analysed, it is hardly possible to derive a general causal relationship between unionization and payout indicators. Also, the underlying result of having investigated a positive relationship between unionization and payour variables is

against intuition, logical reasoning and most importantly contradicting financial research in the past. Therefore, it is indeed necessary to validate the hypothesis once more.

To do so, a potential next step in an upcoming research dissertation could be the implementation of robustness checks, so to exclude firms with specific characteristics (industries, countries, financial data above/below a certain threshold) temporarily from the sample. Thus, a new view and an additional result could be obtained.

Another measure to shed new light on the given relationship on a cross-country level could be the adoption of an RD design. For instance, it could be analysed how payout variables of a company change after an union election passed (leading to unionization in the firm) or failed (not leading to a unionization), such as Jie et al. analysed for an US American sample only (2015). However, given the international data sample, there exists no data about union elections for all countries that are included in the data sample. Thus, it was not possible to conduct this kind of regression analysis. As soon as sufficient data exists, the corresponding analysis could be executed.

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IX. Appendix

Appendix 1: Labour Union Data

Countries	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	24.9	24.6	23.2	23.2	22.8	22.5	20.4	18.8	18.8	19.6	18.4	18.4	18.2	17.0	15.1		14.6		13.7		
Austria	36.9	36.2	36.0	34.6	34.8	33.8	31.6	30.4	29.6	29.3	28.9	28.3	28.0	27.8	27.7	27.4	26.9	26.7	26.3	26.3	
Belgium	56.6	57.6	56.9	55.4	55.3	54.9	53.8	53.6	53.4	53.8	53.0	54.2	54.1	53.3	52.9	52.3	51.6	50.7	50.0	49.1	
Canada	28.2	28.4	28.3	28.2	27.8	27.7	27.4	27.3	27.0	27.3	27.2	26.9	27.2	27.1	26.4	26.5	26.3	26.3	25.9	26.1	27.2
Chile	11.2	10.9	11.1	11.7	11.5	11.1	11.2	11.5	12.9	13.7	13.9	13.8	14.4	14.1	14.6	15.3	16.9	17.0	16.6		
Colombia	12.3		10.9		10.5	9.6	9.6		9.6	9.4	9.2	9.1	9.1	9.7	9.6	9.4	9.5	9.5			
Costa Rica	14.3	13.5	14.3	14.5	13.9	13.3	12.9	11.5	12.0	13.0	12.9	13.4	13.1	13.7	12.4	18.6	19.3	19.3	19.4	20.5	
Czech Republic	27.2	23.8	22.4	22.3	20.6	19.1	18.1	17.4	16.9	16.7	16.1	15.4	14.8	13.6	12.9	11.9	11.9	11.7	11.4		
Denmark	74.5	73.9	73.6	72.4	71.7	71.5	69.7	69.0	68.8	68.9	68.1	68.7	69.0	68.8	68.5	68.2	67.4	66.7	67.5	67.0	
Estonia	14.0	14.0	12.6	11.0	9.4	8.7	8.4	7.6	6.2	7.6	8.2	7.0	6.0	5.6	5.3	4.5	5.0	4.7	5.9	6.0	
Finland	74.2	76.6	75.7	74.5	73.5	72.7	71.9	71.1	69.9	72.5	71.4	69.6	69.2	67.5	67.8	67.5	65.7	62.9	60.0	58.8	
France	10.8	10.8	10.8	10.8	10.5	10.5			10.6		10.8			11.0			10.8				
Germany	24.6	23.7	23.5	23.0	22.2	21.5	20.6	19.8	19.0	18.8	18.9	18.4	18.3	18.0	17.7	17.6	17.0	16.7	16.6	16.3	
Greece		24.9			24.1			22.6			22.2			23.1			19.0				
Hungary	23.8	20.4		18.9	17.9	17.3			15.3				12.5		11.0		9.2		8.3		
Iceland	89.1	88.9	93.3	86.5	84.1	84.1	85.2	84.9	84.7	84.9	85.2	85.0	85.3	88.9	90.4	91.6	90.4	91.0	90.7	90.7	92.2
Ireland; Republic of	35.9	35.0	35.1	34.9	33.6	32.4	31.7	30.5	30.9	31.9	31.6	31.6	30.1	28.5	26.3	25.4	23.4	24.3	24.1	25.1	26.2
Israel	37.7							30.3					22.8					25.0			
Italy	34.8	34.2	33.7	33.6	34.0	33.8	33.6	34.0	33.9	34.7	35.3	35.2	35.5	35.7	35.4	34.2	33.6	33.2	32.6	32.5	
Japan	21.5	20.9	20.3	19.7	19.3	18.8	18.3	18.3	18.2	18.5	18.4	19.0	18.0	17.8	17.6	17.5	17.4	17.2	17.0	16.8	
Korea; Republic (S. Korea)	11.4	11.5	11.3	10.7	10.3	9.9	10.0	10.5	10.2	9.9	9.6	9.8	9.9	10.1	10.1	10.0	10.0	10.5	11.6		
Lithuania		18.5		12.2			9.8	9.3	8.9	10.0	10.1	9.7	9.0	8.4	8.1	7.9	7.7	7.7	7.1	7.4	
Latvia				21.0			18.0	16.7	15.2	15.2	15.1	13.7	13.2	12.9	12.8	12.7	12.4	12.3	11.6		
Luxembourg				44.0	43.4	42.6	41.4	39.5	37.6	36.8	36.1	36.6	35.3	34.8	34.1	33.3	32.3	32.1	30.4	28.2	
Mexico	16.7		15.5			16.9	16.3	16.7	15.6	15.3	14.5	14.7	14.0	13.8	13.6	13.1	12.7	12.5	12.0	12.3	12.4
Netherlands	22.3	21.6	21.4	20.9	21.3	22.1	21.4	20.2	20.0	20.0	19.5	19.3	18.8	18.2	18.1	17.7	17.3	16.8	16.5	15.4	
New Zealand	22.4	22.3	21.8	21.7	21.7	22.3	21.8	20.8	21.4	21.5	21.4	20.5	20.3	19.5	18.6	17.9	17.8	17.5	17.7		
Norway	53.6	52.6	52.8	51.8	51.6	51.2	51.1	50.1	49.8	50.3	50.5	49.9	49.9	49.8	50.1	49.8	50.0	50.0	49.9	50.4	
Poland	23.5	22.3	22.8	22.9	22.9	23.8	17.9	16.7	15.7	15.4	17.4	17.3	16.6		16.5		14.1	13.4			
Portugal			20.5	21.1	21.6		21.1		20.7	20.4	19.6	18.6				16.1	15.3				
Slovak Republic	34.2	32.5	30.1	27.7	25.4	23.5	20.6	18.7	16.8	16.0	16.4	14.5	14.5	14.1	13.4	12.6	11.8	11.5	11.3		
Slovenia	44.2	43.3	47.1	45.3	37.1	37.5	32.2	30.6	29.7	40.4	32.6	36.7	26.8	26.2	29.4	23.8					
Spain	17.5	17.2	16.8	16.5	16.0	15.5	15.6	16.4	17.4	18.3	18.2	17.9	17.8	17.0	15.8	14.4	13.9	13.4	13.0	12.5	
Sweden	81.0	78.7	78.0	77.2	76.4	75.7	74.3	70.8	68.3	68.4	68.2	67.5	67.5	67.7	67.3	67.0	66.7	66.1	65.5	65.2	
Switzerland	20.7	20.2	20.3	20.4	19.9	19.8	19.3	18.9	17.9	17.7	17.6	17.0	16.5	16.6	16.1	15.7	15.3	14.9	14.4		
Turkey	12.5	12.5	11.9	11.2	10.5	10.3	9.4	8.3	7.3	7.3	7.3	7.1	6.3	6.3	6.9	8.0	8.2	8.6	9.2	9.9	
United Kingdom	29.8	29.3	28.8	29.3	28.8	28.6	28.3	28.0	27.5	27.4	26.6	26.0	26.1	25.6	25.0	24.7	23.6	23.3	23.4	23.5	
United States of America	12.9	12.9	12.8	12.4	12.0	12.0	11.5	11.6	11.9	11.8	11.4	11.3	10.8	10.8	10.7	10.6	10.3	10.3	10.1	9.9	10.3
OECD - Total	20.9	20.3	20.0	19.7	19.3	19.0	18.3	18.2	18.0	18.1	17.8	17.7	17.3	17.1	16.8	16.5	16.2	16.0	15.9	15.8	

Appendix 2: Sample Composition

Country	N	UD	TPR	DPR	UD	TPR	DPR	UD	TPR	DPR	UD	TPR	DPR	UD	TPR	DPR
			Mean			25th Percentile			Median			75th Percentile			STDEV	
Austria	16	0.31	0.52	0.47	0.28	0.25	0.24	0.30	0.34	0.33	0.35	0.51	0.41	0.04	0.69	0.68
Belgium	28	0.53	0.65	0.57	0.51	0.29	0.27	0.53	0.47	0.44	0.54	0.73	0.69	0.02	0.66	0.56
Canada	10	0.27	0.40	0.38	0.26	0.22	0.22	0.27	0.30	0.29	0.27	0.50	0.46	0.01	0.30	0.28
Chile	12	0.15	0.88	0.76	0.14	0.41	0.40	0.15	0.55	0.55	0.17	0.85	0.76	0.02	1.00	0.79
Colombia	5	0.09	0.69	0.68	0.09	0.39	0.39	0.09	0.57	0.52	0.10	0.85	0.83	0.00	0.45	0.43
Costa Rica	3	0.14	0.58	0.57	0.13	0.36	0.35	0.13	0.46	0.44	0.14	0.56	0.55	0.02	0.39	0.38
Czech Republic	2	0.16	0.90	0.81	0.12	0.61	0.59	0.15	0.82	0.70	0.17	1.02	0.95	0.04	0.44	0.38
Denmark	14	0.69	0.47	0.34	0.68	0.17	0.14	0.69	0.29	0.26	0.69	0.45	0.36	0.02	0.72	0.38
Estonia	2	0.07	0.76	0.74	0.05	0.23	0.19	0.06	0.62	0.62	0.07	0.99	0.97	0.03	0.72	0.72
Finland	34	0.69	0.97	0.91	0.68	0.42	0.41	0.70	0.63	0.62	0.73	1.00	1.00	0.05	1.02	0.94
France	85	0.11	0.54	0.45	0.11	0.25	0.22	0.11	0.39	0.33	0.11	0.58	0.51	0.00	0.66	0.51
Germany	62	0.19	0.68	0.62	0.18	0.31	0.28	0.18	0.49	0.43	0.21	0.82	0.78	0.02	0.70	0.67
Greece	14	0.23	0.85	0.47	0.22	0.26	0.24	0.23	0.38	0.38	0.23	0.82	0.74	0.02	1.57	0.33
Hungary	4	0.14	0.53	0.51	0.09	0.23	0.21	0.14	0.29	0.25	0.18	0.42	0.42	0.05	0.55	0.56
Iceland	1	0.85	1.11	1.10	0.84	0.10	0.09	0.85	0.13	0.12	0.85	1.14	1.13	0.01	2.02	2.01
Ireland; Republic of	9	0.28	0.47	0.38	0.24	0.21	0.20	0.26	0.28	0.27	0.31	0.45	0.41	0.03	0.69	0.39
Israel	77	0.26	0.65	0.64	0.23	0.26	0.26	0.25	0.48	0.48	0.30	0.78	0.78	0.04	0.65	0.65
Italy	33	0.34	0.65	0.55	0.34	0.25	0.22	0.34	0.44	0.39	0.35	0.74	0.68	0.01	0.73	0.65
Japan	1,771	0.18	0.48	0.43	0.18	0.19	0.18	0.18	0.30	0.27	0.19	0.50	0.44	0.01	0.64	0.57
Korea; Republic (S. Korea)	366	0.10	0.41	0.34	0.10	0.13	0.12	0.10	0.23	0.21	0.11	0.43	0.37	0.01	0.60	0.49
Lithuania	4	0.09	0.52	0.41	0.08	0.12	0.11	0.08	0.38	0.26	0.10	0.84	0.76	0.02	0.46	0.46
Luxembourg	2	0.35	1.33	1.32	0.32	0.72	0.71	0.35	0.97	0.97	0.38	1.47	1.47	0.05	1.09	1.09
Mexico	12	0.14	0.46	0.38	0.12	0.13	0.13	0.13	0.19	0.18	0.15	0.44	0.41	0.02	0.84	0.56
Netherlands	12	0.18	0.61	0.48	0.17	0.25	0.24	0.18	0.41	0.35	0.20	0.73	0.60	0.02	0.58	0.40
New Zealand	1	0.19	1.09	1.07	0.18	0.93	0.93	0.19	1.07	1.07	0.21	1.23	1.23	0.02	0.22	0.20
Norway	26	0.51	0.70	0.69	0.50	0.23	0.23	0.50	0.40	0.38	0.51	0.81	0.79	0.01	0.81	0.80
Poland	24	0.18	0.66	0.48	0.16	0.19	0.13	0.17	0.34	0.30	0.23	0.94	0.76	0.03	0.76	0.52
Portugal	12	0.19	0.66	0.59	0.19	0.19	0.17	0.20	0.47	0.45	0.21	0.83	0.80	0.02	0.78	0.62
Slovenia	7	0.31	0.85	0.82	0.27	0.25	0.23	0.31	0.39	0.38	0.37	0.86	0.86	0.05	1.16	1.15
Spain	40	0.16	0.58	0.51	0.14	0.24	0.22	0.16	0.41	0.35	0.17	0.67	0.61	0.02	0.63	0.56
Sweden	4	0.70	0.48	0.45	0.67	0.28	0.27	0.68	0.42	0.42	0.73	0.56	0.54	0.04	0.25	0.23
Switzerland	36	0.17	0.56	0.49	0.16	0.27	0.26	0.17	0.39	0.36	0.19	0.64	0.57	0.02	0.60	0.54
Turkey	12	0.09	0.44	0.41	0.09	0.17	0.16	0.09	0.32	0.28	0.10	0.62	0.62	0.01	0.37	0.37
United Kingdom	119	0.26	0.60	0.55	0.24	0.28	0.27	0.26	0.44	0.42	0.28	0.65	0.59	0.02	0.65	0.59
United States of America	602	0.11	0.57	0.50	0.10	0.19	0.18	0.11	0.36	0.34	0.12	0.63	0.57	0.01	0.73	0.62

Appendix 3: Variable Definitions and Sources

Variable	Definition and Source
Measures of Payout Policy	
Dividend Payout	Cash dividends paid (*Source*: Refintiv Eikon, *ID*: TR.CashDividendPaidCmn)
Share Repurchases	Derived by *Treasury Stock Method* and difference between the respective treasury stocks (*Source*: Refintiv Eikon, *ID*: TR.TreasuryStockCommon). If change is zero for two consecutive years is zero, the *Retirement Method* (*Source*: Refintiv Eikon, *ID*: TR.IssuanceRetirementOfStock) instead is applied. Then, share repurchases are defined by the maximum of zero or the difference between purchases and sales of common and preferred stock from y_{-1} vs. y_0.
Total Payout	Sum of *Dividend Payout* and *Share Repurchases*
Total Payout Ratio	*Total Payout* divided by *Net Income* (*Source*: Refintiv Eikon, *ID*: TR.NetIncome)
Dividend Payout Ratio	*Dividend Payout* divided by *Net Income* (*Source*: Refintiv Eikon, *ID*: TR.NetIncome)
TP / TR	*Total Payout* divided by *Total Revenue* (*Source*: Refintiv Eikon, *ID*: TR. Revenue)
DP / TR	*Dividend Payout* divided by *Total Revenue* (*Source*: Refintiv Eikon, *ID*: TR.Revenue)
Unionization Data	
Union Density	Number of net union members (i.e excluding those who are not in the labour force, unemployed and self-employed) as a proportion of the number of employees. (*Source*: OECD (2021))
Interaction Term	*Union Density* multiplied by *Profitability*
Profitability	Return on Assets. Earnings before Interest and Taxes divided by Total Assets

	(Source: Refintiv Eikon, *ID*: TR.EBIT & TR.TotalAssets)
Firm Characteristics	
Firm Size	Natural logarithm of total assets of a firm *(Source*: Refintiv Eikon, *ID*: TR.TotalAssets)
Asset Tangibility	Property, Plant and Equipment divided by Total Assets *(Source*: Refintiv Eikon, *ID*: TR.PptyPlantEqpmtTtlGross & TR.TotalAssets)
Investment	Capital Expenditures divided by Total Assets *(Source*: Refintiv Eikon, *ID*: TR.CapitalExpendituresCFStmt & TR.TotalAssets)
Leverage	Short term and long term debt divided by book value of assets *(Source*: Refintiv Eikon, *ID*: TR. TotalDebtOutstanding & TR.TotalAssets)
Cash Holdings	Cash and short-term investments divided by book value of total assets *(Source*: Refintiv Eikon, *ID*: TR.Cash & TR.TotalAssets)
Life-Cycle	Retained Earnings over Total Assets *(Source*: Refintiv Eikon, *ID*: TR.RetainedEarnings & TR.TotalAssets)
Country Characteristics	
ln(GDP)	The natural logarithm of Gross Domestic Product (*Source*: World Bank)
GDP Growth	Ratio of GDP_t divided by GDP_{t-1} subtracted by -1
ln(GDP PC)	Per capita Gross Domestic Product in US dollars (*Source*: World Bank)
Recession Dummy	Dummy variable set to 1 if *GDP Growth* is negative in two consecutive quarters within a year for a specific country (*Source*: OECD)

Dividend Tax	Personal income tax rate on dividend income (*Source*: OECD)

Appendix 4: Panel D

	Total Payout Ratio			
	1	2	3	4
Variable of Interest				
Union Density	0.228***	-0.035	0.282***	-0.067
	(19.081)	(-0.121)	(19.064)	(-0.236)
Profitability	-0.234***	-0.125***	-0.179***	-0.168***
	(-36.236)	(-4.144)	(-16.08)	(-3.79)
Interaction Term			-0.064***	0.052
			(-6.179)	(1.193)
Control Variables				
Firm Size		0.009		-0.014
		(0.05)		(-0.074)
Tangibility		0.046		0.049
		(1.396)		(1.474)
Investment		-0.014		-0.015
		(-0.495)		(-0.54)
Leverage		-0.006		-0.003
		(-0.205)		(-0.107)
Cash Holding		0.005		0.004
		(0.215)		(0.184)
Life Cycle		0.081***		-0.08**
		(-2.593)		(-2.569)
Country Characteristics				
GDP Growth	0.012	-0.02	0.007	-0.019
	(2.182)	(-0.5)	(1.333)	(-0.496)
GDP PC	0.291***	0.075	0.255***	0.07
	(16.177)	(0.385)	(13.5)	(0.359)
Recession Dummy	0.05***	-0.011	0.046***	-0.011
	(9.265)	(-0.419)	(8.499)	(-0.404)
Dividend Tax		-0.178	0.156***	-0.179
		(-1.443)	(20.789)	(-1.456)
Fixed Effects				
Year FE		Yes		Yes
Industry FE		Yes		Yes
Country FE				

Affidavit

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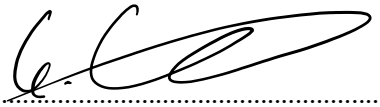

..... (Signature)

Leon David Velten
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