Rule of law and corporate investment: European evidence

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Abstract

In recent years, the rule of law has become increasingly important, particularly in the European Union. The EU has even implemented the rule of law conditionality regulation. State-owned enterprises have also grown in importance. Since the Great Financial Crisis, the term "state capitalism" has regained popularity. Some scholars believe that there is a link between state-owned enterprise decisions and country-level rule of law. We have addressed this issue in the context of corporate investment. We conducted our analyses on a sample of 302 matched companies operating in the EU between 2014 and 2021 (2,096 observations). Our findings indicate that the higher the level of rule of law in a country, the more companies invest. These results are significant for the cash flow-based investment rate measures but not for the fixed asset-based ones. We find no correlation between state shareholder ownership and corporate investment rates. Furthermore, we discover no evidence that the rule of law moderates the relationship between the state-owner and investment rates.

Keywords: Corporate investment; rule of law; state ownership.
JEL Classification: G30, G31, G38

1 Introduction

Investment decisions are a critical activity for businesses, determining competitive advantages and ensuring long-term value growth (Levine, 2005). Legal and business environments at the country level, along with firm-level factors, significantly influence corporate performance. Following LaPorta et al. (1997, 1998) research, numerous studies have found that macro-level institutions have an impact on firm economic outcomes (Chen et al., 2009; Dittmar et al., 2003; Giannetti, 2003; Himmelberg and Quadrini, 2002; Liu and Magnan, 2011). Multiple empirical analyses have found that corruption has a negative impact on firm-level investment growth (Asiedu and Freeman, 2009; Batra et al., 2003; Gaviria, 2002; Javorcik and Wei, 2002; and Mauro, 1995). The COVID-19 crisis and current political instability political turmoil have renewed interest in how companies manage capital reallocation during uncertain times and how important the quality of institutions is in these periods.

As one might assume, the above-mentioned increase in instability, related to the pandemic and the war in Ukraine, is one of the reasons for the increase in the number of stated owned enterprises (SOEs). Futhermore, numerous empirical studies have been conducted on the impact of state shareholders on SOE investment decisions (among others: Chen et al., 2011; Firth et al., 2012; Lin and Bo, 2012; Bai and Lian, 2013; Wang et al., 2014; Jiang and Zeng, 2014; O'Toole et al., 2016; An et al., 2016; Chen et al., 2017a; Chen et al., 2017b; Jaslowitzer et al., 2018; Boubarki et al., 2018). Many studies have found significant differences in how SOEs and POEs invest. In some cases, researchers have confirmed that SOEs invest excessively or inefficiently, which is justified by the pursuit of social and political objectives (Chen et al., 2011; Bai and Lian, 2013; O'Toole et al., 2016; Jaslowitzer et al., 2018). Some authors also argue that SOE investments face different financial constraints than POE investments, citing, for example, the phenomenon of "soft budget constraints" (Firth et al., 2012; Jiang and Zeng, 2014; Jaslowitzer et al., 2018; Zhang et al., 2020). However, it is worth noting that the vast majority of these studies focus on the Chinese market, which is strongly associated with the phenomenon of state capitalism (Chen et al., 2011).

Regarding the European Union, the investment activity of State-Owned Enterprises (SOEs) appears to be less significant compared to the highly centralized and state-dependent Chinese market. However, out of the 50 largest companies listed on stock exchanges in the EU, a significant 16.0% have state shareholders who own more than 10% of the company's capital. At the same time, as the authors of the report The New Interventionism pointed out (The Economist, 2022a), the share of SOE assets among the world's largest non-financial sector

companies increased from about 7% in 2007 to nearly 20% in 2018. The impact of state shareholders on companies' investment decisions is also interesting due to the EU's varied economic structure, encompassing both Western European countries and the former Eastern Bloc states that have more recently transitioned to a free market system. This study examines the influence of the rule of law on the relationship between government ownership and corporate investment intensity in European Union.

2 Hypothesis development

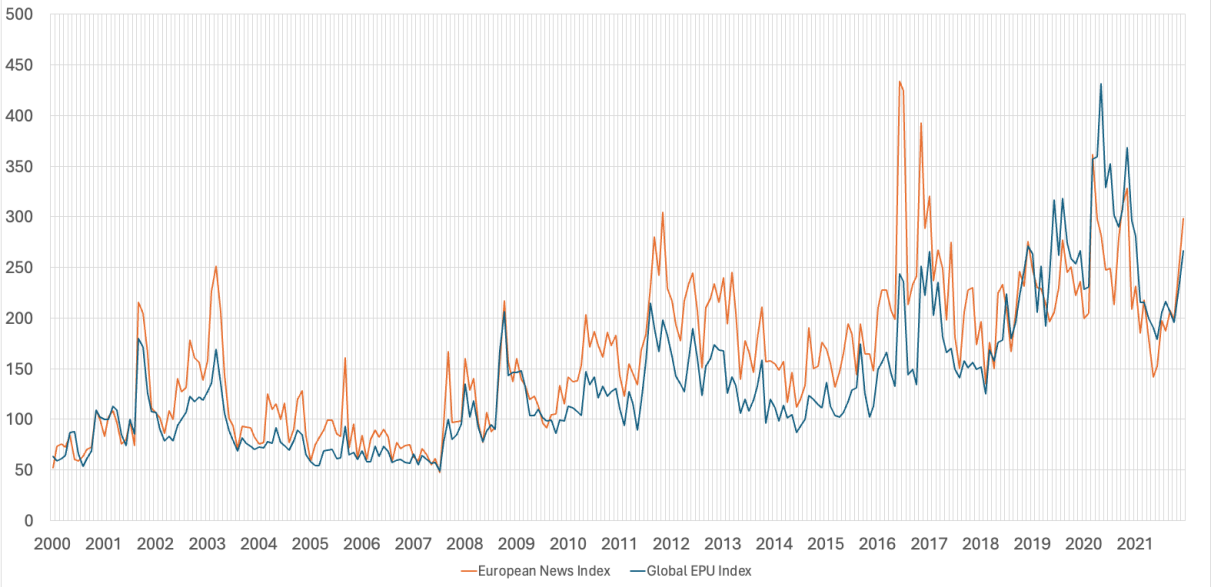
Our paper is related to two strands in the literature: the first focusing on corporate investment decisions and institutional quality the second studying the role of governments as owners. Although both areas are strongly present in empirical studies, papers lying at the intersection of the two are relatively rare. We aim to fill this gap.

The legal and business environments in which firms operate significantly affect firms' growth. The importance of good government for economic growth has been long established in the literature. Since the pioneering work of LaPorta et al. (1997, 1998), a growing body of research has started to explore how institutions shape corporate financing decisions and corporate valuation (Dittmar et al., 2003; Giannetti, 2003; Himmelberg and Quadrini, 2002; La Porta et al., 2002; Liu and Magnan, 2011, Boubakri et al. 2018). A more recent strand of the institutional literature additionally accounts for regional differences. Agostino et al. (2020), examining the effects of institutional quality on new business formation, suggest that rule of law affects entry rates. Çam and Özer (2022), studying the impact of institutional quality on corporate capital structure and investment financing decisions, indicated that firms operating in countries with better institutional quality increase their reliance on long-term debt and equity issuance for financing capital expenditures, while decreasing short-term debt and equity issuance.

An important strand in the literature on corporate investment relates to economic policy uncertainty (Aghion et al., 2010; Converse, 2012). Gulen and Ion (2016) define economic policy uncertainty as the inability to predict when and how existing policies will change. According to Aizenman and Marion (1993), policy uncertainty can impact economic growth by influencing investment decisions. When faced with policy uncertainty, firms often postpone long-term capital investment projects (Gulen and Ion, 2016), particularly crucial and long-term ones (Wang et al. 2014). According to Liu et al. (2022), when faced with a higher EPU (economic policy uncertainty), enterprises prefer innovation investments over maintenance

investments. Chen et al (2019) also show that uncertainty causes a decrease to both long-term and short-term investments. The degree of economic policy uncertainty influence on the corporate investment may differ, depending on company traits. Vo et al (2023) support the argument that the conglomerate form of organization exacerbates investment inefficiencies and find that group-affiliate firms' capital investments are more sensitive to economic policy uncertainty than stand-alone ones. Alam et al. (2023) find a negative relationship between state-level policy uncertainty and corporate capital spending, which is more pronounced for firms with low market competition. Firms that increase their lobbying efforts, on the other hand, can maintain higher investments during times of policy turmoil. Nevertheless, Farooq et al. (2022) argue that better governance quality can mitigate the negative impact of economic policy uncertainty on corporate investment. Economic policy uncertainty (EPU) in Europe has recently reached unprecedented levels (from 105.6 in 2000 to 279.6 in 2022), as measured by the Economic Policy Uncertainty Index for Europe.

Fig. 1. The graph reports the trend in the monthly Global EPU index and European News Index during 2000 - 2021 period.



Because EPU is negatively correlated with the business cycle, it can have a negative economic impact. It has the potential to exacerbate the effects of recessions and contribute to the accumulation of risks during good times. The quality of governance contributes to managing the exaggerated economic situation. Companies located in countries with more developed legal frameworks perform better during a financial crisis (Van Essen et al., 2013).

Accordingly, the current study aims to investigate the empirical effects of governance on investment decisions, as well as how this relationship varies across countries with different

governance scores. Based on the above discussion, we first hypothesize that better institutional quality leads to higher investment rate intensity. That is, we predict that rule of law is positively related to investment intensity. More formally:

Hypothesis 1: *The corporate investment rate intensity is linked with country-level rule of law.*

During the 1980s, the United Kingdom initiated a wave of privatisation, which later spread globally in the 1990s. As part of this trend, governments worldwide sold significant portions of their ownership stakes to private companies (Megginson and Netter, 2001). The recent worldwide economic crisis has reignited the discussion on the concept of state capitalism and government intervention in public companies. In response, governments in numerous advanced, market-driven economies have acquired ownership stakes in these companies as part of their efforts to provide financial assistance and support (Nanto, 2009; The Economist, 2012; Guedhami, 2012; Nash, 2017).

Governments, in their capacity as shareholders, may take advantage of their voting rights to exert influence over business decisions. Two selected factors that differentiate SOEs and POEs, which may affect investment decisions, and thus the investment rate, were considered: 1) the existence of different motivations of the state acting as an owner, compared to a private owner (Shleifer and Vishny, 1998; Megginson and Netter, 2001; Peng et al., 2016) and 2) the occurrence of differences between SOEs and POEs in terms of decision-making processes and mechanisms of incentives and supervision over the management staff (Estrin et al., 2009; Borisova et al., 2012; Boubarki et al., 2013). The divergent motives of state and private owners might impact the excessive or insufficient investment of state-owned enterprises (SOEs).

In the literature, these discrepancies focus on two opposing predictions: 1) SOEs are state "empires" that overinvest because they pursue political objectives and are less guided by economic rationale in their decisions than POEs (Chen et al., 2011; Firth et al., 2012; Jaslowitzer et al., 2018), or 2) SOEs are conservative and risk-averse enterprises—they invest little and avoid risk, aiming to provide predictable and stable returns to their owners (John et al., 2008; Chen et al., 2017a; Jaslowitzer et al., 2018). In both cases, the differences in investment rates between SOEs and POEs are explained in terms of the agency problem, which occurs at two levels in the case of SOEs: 1) between the state (as the agent) and the sovereign (the actual owner), and 2) between the state (as the owner) and the managers (as the agent). As Borisova et al. (2012) argue, state ownership is negatively correlated with the quality of corporate governance and management.

Dispersed ownership (officials monitoring SOEs do not own capital in the same way that shareholders in POEs do) is linked to less effective incentive models and lower manager control (Estrin et al., 2009). Managers may be held accountable for political allegiance rather than financial performance, and in order to fulfill political and social goals, they may use SOE funds in economically wasteful projects. Furthermore, SOE managers may be appointed based on political factors rather than market principles, raising concerns about their competency (Shleifer, 1998). On the other side, lower control quality and less appealing incentives than POEs may drive SOE managers to avoid risky and ambitious investment initiatives, as their primary objective is survival and position maintenance (Fogel et al. 2008). Some scholars suggest that the state's ownership hinders the entrepreneurship of management personnel, pointing out that enterprise investment rates grow dynamically following privatization (Boubakri et al., 2013; D'Souza and Megginson, 1999).

Differences in the motivations of state and private owners can affect how SOEs make investment decisions. According to the Modigliani-Miller theorem (1959), business investments should be larger as growth prospects increase, as measured in empirical research by Tobin's Q ratio (Tobin, 1969). However, the amount of SOE investments may not be optimal due to the previously mentioned agency problems (Chen et al., 2011; McLean et al., 2012) and different (or extra) reasons for making investment decisions than POEs (Firth et al., 2012). The pursuit of political and social objectives by the state treasury through the ownership of assets in SOEs or the provision of support instruments implies that SOEs may make decisions that POEs would not. SOEs, unlike POEs, may be more likely to incur higher investment expenditures (Boubakri et al., 2008). This is expressed by Hypothesis 2:

Hypothesis 2: *The corporate investment rate intensity is linked with the type of shareholder.*

The majority of empirical studies support the claim that state-owned enterprises (SOEs) underperform privately owned enterprises (POEs). Issues such as agency problems, clientelism, the misuse of state-owned enterprises (SOEs) as political tools and soft budget constraints are frequently observed as underlying factors contributing to the poor performance of SOEs. According to Shleifer and Vishny (1994) and Shleifer (1998) governments have always provided benefits to their supporters through direct transfers (for example, contracts executed on behalf of SOEs). Kopecký and Spirova (2011) examine party patronage patterns in post-communist Europe and explain the varying practices by institutional legacies from the past. According to Kopecký, Mair, and Spirova (2012), party patronage can be viewed from either a political or administrative perspective. SOEs may be less efficient than private enterprises, not

only because of their dispersed beneficiaries or due to allocating positions based on political allegiance, but also because state-controlled managers are less motivated to engage in innovative activities or reduce costs (Bertrand and Mullainathan 2003). SOE inefficiency could be attributed to the state's financial support, which operates under conditions that differ from market terms. Kornai (1979) developed the theory of soft budget constraints, which was empirically tested by Berglof and Roland (1998), Schaffer (1998), Lin et al. (1998), and Frydman et al. (1999). The state frequently prevents SOEs from going bankrupt, allowing for looser financial discipline. This contrasts with private firms, where financial discipline is enforced by capital markets through hard budget constraints (Kornai et al., 2003). The presence of SBC influences managers' decision-making processes and, over time, fosters an organisational culture in which efficiency and productivity are not required. As Megginson et al. (2014) point out, SBC exacerbate agency problems in SOEs, allowing for abuses and managerial decisions on investments with no economic justification. According to Berglof and Roland (1998), state-owned enterprises in economies behind the Iron Curtain were primarily inefficient due to SBCs.

In contrast, an alternative body of literature suggests that government ownership may, in specific situations, be linked to enhanced oversight and governance. According to Cuervo-Cazurra et al., 2014; Grosman et al., 2016; Mariotti and Marzano, 2019 and Chen et al., 2009, SOEs allow the state to pursue goals and strategic investment projects that POEs cannot do due to their long time horizon and uncertainty. In this regard, SOEs may be more resilient to agency issues involving managers' preference for short-term investments. This is especially important when it comes to financing investments in new technology research and innovations based on basic research, which are too risky for private capital (Mazzucato, 2011, Antonelli et al., 2014; Castelnovo and Florio, 2020). In such cases, the state is viewed as a security guarantor, and thus long-term initiatives, such as investment projects undertaken by SOEs, may be immune to short-term market volatility (Lazzarini and Musacchio, 2018).

These conflicting perspectives prompt the inquiry of whether quality of governance and institutions have the ability to influence the relationship between corporate investment intensity and type of shareholder. La Porta et al. (2002), find that lower corruption is associated with lower government ownership of banks. Beuselinck et al (2017) analyse the significance of government ownership in Europe during the global financial crisis. They discover that companies with government ownership experienced a smaller decrease in their value compared to companies without government ownership. The observed phenomenon was primarily influenced by companies located in countries with reduced expousure to government

expropriation. Boubakri et al. (2018) suggest that the impact of government ownership on valuation depends on the development of the financial market and the quality of governance and institutions. Szarzec et al. (2021) examine the effect of state-owned enterprises (SOEs) on economic growth in 30 European countries from 2010 to 2016. They demonstrate that the impact of SOEs on economic growth depends on institutional quality: the better the institutional environment, the more beneficial (or less detrimental) the overall effect of state-owned enterprises is.

In a nutshell, this discussion allows us to predict that, in countries with higher rule of law standards, the political power arising from government ownership is less likely to be effective in influencing links between corporate investment and growth opportunities:

Hypothesis 3: *Country-level rule of law moderates the relationship between corporate investment intensity and type of shareholder.*

3 Research methodology

3.1 Sample

To investigate the links between the corporate investments, country-level rule of law and the type of the shareholder we use data for companies from 27 European Union countries. Additional dataset selection criteria include: size (SME's are excluded)[1], sector (financial sector is excluded)[2] and listing (non-listed companies are excluded). The raw data sample includes 2,752 companies, which translates into 22,016 observations covering a period from 2014 to 2021. We take the financial data from BVD Orbis database and macroeconomic indicators from the World Bank database.

In order to maintain the appropriate structure of the dataset, we eliminate those companies for which complete observations did not cover at least three consecutive years and we winsorise the financial data at 1/99 percentile levels, to eliminate outliers (Step 1). We estimate regressions for both the whole and matched samples. Except for specifications 1–4, the econometric models used in this study were estimated using a matched dataset, with SOE (State Owned Enterprises) as the treatment group and POE (Privately Owned Enterprises) as the control group (Step 2). The matched dataset is used to reduce the risk of selection bias, which occurs when treatment and control groups are not comparable and thus the impact evaluation is not internally valid. It is worth noting that if the groups differ systematically, the

[1] We have used European Commission criteria for SME classification, related to: number of employees, total assets and revenues. The reason for SME's exclusion in our research is that we believe their comparability to large enterprises is limited. Differences in capital structure, regulatory oversight and board composition are the main factors we have considered.

[2] We have excluded companies from financial sector due to different reporting standards and financial indicators incomparability.

observed relationship between the dependent and independent variables may be due to these differences.

We use PSM (Propensity Score Matching) procedure with covariates representing country, industrial sector and size (natural logarithm total assets) as matching criteria. The control-to-treatment observations ratio has been set to 4:1 (Chen et al., 2017a). The sample creation process is presented in Table 1.

Table 1: Sample creation process

Dataset		No. Obs.	No. Companies
	Raw Dataset	22 016	2 752
Step 1: Cleaning	Clean Dataset	11 797	1 799
Step 2: Matching	Matched Dataset	2 096	302

The Matched Dataset consists of companies from 26 EU countries (no Bulgarian companies have met the selection criteria) and 27 sectors. Data presented in Table 2 indicates that the vast majority of observations come from companies from Western Europe (918) - France (358) and Germany (326), the EU27's two largest and most populated economies. It is noteworthy that there is also a significant number of observations from the Northern Europe countries (446), especially from Sweden (185) and Finland (132), despite their small population. These countries have a considerable number of large or very large enterprises that meet the criteria for inclusion in the research sample. The geographical distribution of the matched dataset has been presented in table 2.

Table 2: Regional and sectoral distribution of the Matched Dataset

EU Region (No. Obs.)	2014	2015	2016	2017	2018	2019	2020	2021	Total	Total %
Panel A: by regions										
Eastern	42	46	46	46	44	46	46	34	350	16,7%
Southern	43	45	47	48	45	46	45	33	352	16,8%
Northern	57	57	58	62	62	64	57	51	468	22,3%
Western	110	115	121	120	118	124	120	98	926	44,2%
Panel B:by "macro sectors"										
Raw Materials	12	12	14	14	12	15	13	9	101	4,8%
Manufacturing	124	132	138	139	137	140	136	113	1 059	50,5%
Services	94	97	98	102	99	102	95	74	761	36,3%
Information Services	22	22	22	21	21	23	24	20	175	8,3%
Total	**252**	**263**	**272**	**276**	**269**	**280**	**268**	**216**	**2 096**	**100,0%**

The sector with the most observations is "Industrial, electrical, and electronic machinery". This is followed by "Chemicals, Petroleum, Rubber, and Plastics", "Business Services", and "Food and Tobacco Manufacturing". The sectors with the smallest representation are "Waste management and treatment" and "Computer equipment". We combined 27 sectors defined by BvD sector classification into four main "macro sectors" to increase the transparency of the analyses, keeping in mind that the number of sectors is relatively large in comparison to the number of observations in the matched dataset. The majority of the observations are from the "Manufacturing" macro sector (50.5%), followed by services (36.3%). The total representation of the "Raw Materials" and "Information Services" sectors in the matched dataset is only about 13%.

3.2 Variables and model

The main equation reflecting links between corporate rate intensity and rule of law takes the following form:

$$Inv_{i,j,t} = \alpha + \beta_1 SOE_{i,j,t} + \beta_2 ROL_{j,t} + \beta_3 InvestmentDeterminants_{i,j,t-1} + \beta_4 FirmControls\ (enterprise)_{i,j,t-1} + \beta_5 MacroControls(macroeconomic)_{j,t} + \delta_i + \omega_t + \epsilon_{i,j,t} \quad (1)$$

In our study we use panel data models. To verify hypothesis 1 we use fixed-effects models (specification 1-4, 13-16). The decision was based on Hausman test and F-test. Since almost all variables failed the test for normality of distribution, we used robust Hausman test. We employ a random-effects model to examine hypothesis 2 and 3 (specifications 5-12, 17-32), irrespective of the outcome of the Hausman test, due to the fact that the SOE is a firm-level variable that remains relatively stable throughout the time period. Wooldridge (2013, p. 495) justifies the use of the random effects model in this particular scenario. The random effect is tested using the Breusch-Pagan test (LM).

The following table (table 3) shows the definition of variables as well as detailed calculation formulas.

Table 3: Definitions of the variables

Variable	Name	Type	Source	Formula	Lagged
Inv 1	Investment Rate	Dependent	BvD Orbis	Additions to fixed assets scaled by total assets	No
Inv 2	Investment Rate	Dependent	BvD Orbis	Sum of additions to fixed assets and R&D expenditure scaled by total assets	No
Inv 3	Investment Rate (alternative)	Additional dependent variable used for robustness tests	BvD Orbis	Cash-flow from investments scaled by total assets	No
Inv 4	Investment Rate (alternative)	Additional dependent variable used for robustness tests	BvD Orbis	Sum of cash-flow from investments and R&D expenditure, scaled by total assets	No

SOE10	SOE10	Independent	BvD Orbis	Type of shareholder (binary, 1 if state share in capital >= 10%)	No
SOE20	SOE20	Additional independent variable used for robustness tests	BvD Orbis	Type of shareholder (binary, 1 if state share in capital >= 20%)	No
ROL	Rule Of Law	Independent	Fraiser Institute	Normalized Judical Independence Score (Frasier Institute)	No
Q	Q Tobin Ratio	Control (investment determinants)	BvD Orbis	Sum of market capitalization and total assets, deducted with totel equity, all scaled by total assets	Yes
CF	Cash Flow from Operations	Control (investment determinants)	BvD Orbis	Cash-flow from operations scaled by total assets	Yes
Lev	Leverage Ratio	Control (investment determinants)	BvD Orbis	Difference of total assets and total equity scaled total assets	Yes
Cash	Cash Holdings	Control (investment determinants)	BvD Orbis	Cash & Equivalents scaled by total assets	Yes
Size	Relative Size	Control	BvD Orbis	natural logarithm of total assets	Yes
GDP	Real GDP Change	Control	WorldBank	real GDP y/y change (Country Level)	No
GDPPC	GDP per capita (PPP)	Control	WorldBank	natural logarithm of GDP per capital (PPP) (Country Level)	No

The dependent variable, investment rate (Inv), was estimated in four variants to ensure the results are robust. The first two variants (Inv1 and Inv2) use "Additions to Fixed Assets" in the counter (Firth et al., 2012; Jaslowitzer et al., 2018), while the second two (Inv3 and Inv4) use "Cash flow from Investing Activities" in the counter (Chen et al., 2011; Lin and Bo, 2012; Bai and Lian, 2013; Boubakri et al., 2018; Du et at., 2018). Additionally, Inv2 and Inv4 include Research & Development expenditure in the counter. Similar approach with regard to R&D inclusion has been used by other researchers (Chen et al, 2017; Jaslowitzer et al. 2018; Zhang et al., 2020). In all four cases we scale investment proxy with total assets. Table 5 shows the average Investment Rates (Inv) in the matched dataset over the period 2014 – 2021.

Table 4: Investment Rates 2014-2021

	2014	2015	2016	2017	2018	2019	2020	2021	Total
Inv1	0,045	0,046	0,046	0,050	0,047	0,051	0,040	0,040	0,046
Inv2	0,054	0,056	0,056	0,060	0,056	0,059	0,048	0,048	0,055
Inv3	0,060	0,064	0,062	0,069	0,064	0,065	0,049	0,055	0,061
Inv4	0,069	0,074	0,072	0,078	0,073	0,073	0,057	0,063	0,070

Data in table 5 shows the mean values for different Investment rate measures (Inv1 – Inv4). The difference can be mostly explained by R&D inclusion (Inv2 and Inv4). The data also indicates the impact of the COVID-19 crisis (2020-2021), which has resulted in a decrease in average investment rates. The average investment rates in our research align with findings from other studies (Chen et al., 2011; Lin and Bo, 2012; Chen et al., 2017). Nevertheless, our mean investment rates are considerably lower compared to those reported by Jaslowitzer et al. (2018)

in a similar study focusing on European companies. Jaslowitzer et al. (2018) uses the "Property, Plants and Equipment" (PP&E) values as the denominator to measure investment expenditure, whereas we employ "Total Assets" for this purpose. The total assets are greater than or equal to property, plant, and equipment (PPE), and typically substantially higher.

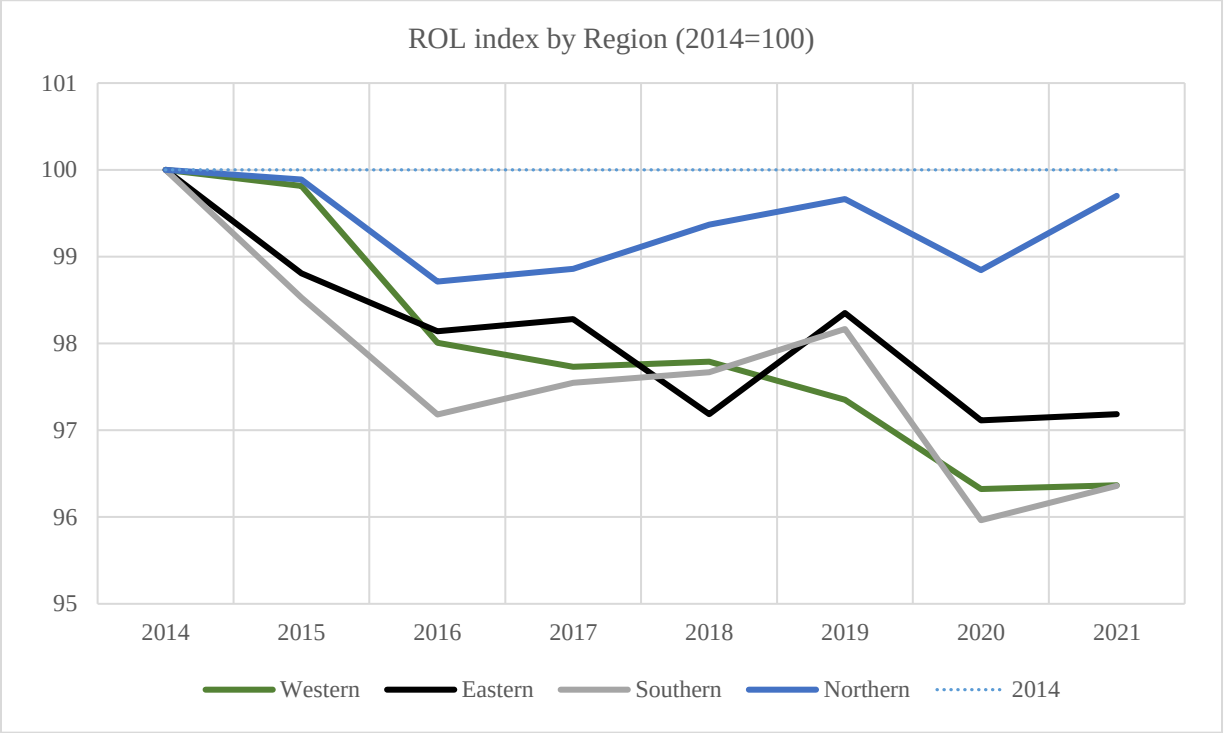
We use two main dependent variables: ROL and SOE10. We use a normalized indicator of country-level judicial independence derived from the Frasier Institute Economic Freedom Research as a proxy of Rule of Law (ROL). Table 5 shows the changes of ROL by country throughout the period of 2014 -2021.

Table 5: Rule of Law index

Country	2014	2015	2016	2017	2018	2019	2020	2021	Total
Austria	7,88	7,78	7,59	7,61	7,78	7,78	7,71	7,71	7,73
Belgium	7,59	7,55	7,40	7,37	7,37	7,36	7,31	7,29	7,40
Croatia	4,95	4,89	4,89	4,83	4,80	5,03	4,87	4,87	4,89
Cyprus	6,88	6,64	6,63	6,76	6,68	6,69	6,55	6,57	6,68
Czechia	6,07	5,96	5,80	5,89	6,04	6,04	5,96	6,00	5,97
Denmark	8,76	8,77	8,68	8,68	8,79	8,82	8,77	8,81	8,76
Estonia	6,75	6,75	6,66	6,64	6,63	6,65	6,63	6,78	6,69
Finland	8,38	8,33	8,33	8,33	8,36	8,38	8,38	8,43	8,36
France	7,61	7,66	7,54	7,52	7,44	7,42	7,32	7,30	7,48
Germany	8,77	8,68	8,65	8,64	8,50	8,50	8,42	8,45	8,58
Greece	5,35	5,25	5,01	4,97	4,86	4,88	4,81	4,96	5,01
Hungary	5,60	5,50	5,43	5,49	5,57	5,55	5,45	5,38	5,50
Ireland	7,97	7,90	7,53	7,46	7,46	7,24	7,23	7,25	7,50
Italy	5,18	5,18	5,08	5,08	5,13	5,14	5,00	5,00	5,10
Latvia	4,54	4,41	4,34	4,45	4,59	4,62	4,51	4,52	4,50
Lithuania	5,81	5,82	5,76	5,77	5,86	5,89	5,79	5,84	5,82
Luxemburg	8,56	8,53	8,45	8,45	8,41	8,40	8,37	8,36	8,44
Malta	6,34	6,25	6,20	6,28	6,19	6,33	6,06	6,07	6,22
Netherlands	8,75	8,92	8,84	8,79	8,92	8,91	8,67	8,68	8,81
Poland	6,29	6,22	5,94	5,86	5,86	5,87	5,80	5,55	5,92
Portugal	6,03	5,91	5,86	5,83	5,97	5,97	5,92	5,91	5,93
Romania	5,57	5,40	5,46	5,54	4,84	5,05	5,11	5,33	5,29
Slovakia	5,08	5,05	5,10	5,10	5,13	5,14	5,09	5,10	5,10
Slovenia	5,59	5,66	5,79	5,76	5,80	5,83	5,73	5,80	5,74
Spain	6,32	6,34	6,31	6,29	6,42	6,43	6,31	6,26	6,33
Sweden	8,31	8,42	8,23	8,19	8,05	8,05	7,97	8,04	8,16
Total	6,73	6,68	6,60	6,60	6,59	6,61	6,53	6,55	6,61

Throughout the 2014 – 2021 period, average ROL in the EU has fallen by 3,2% (from 6,73 to 6,55). The countries with the lowest average ROL include: Latvia, Croatia and Greece, while the highest average ROL can be observed in: Netherlands, Denmark and Luxemburg.

Fig. 2. The graph reports the trend in the ROL index during sample period (2014=100)



Regional ROL data (Fig. 2.) shows than the decrease in average ROL was driven by the negative changes in Western, Eastern and Southern EU Countries, while ROL index in Northern EU Countries remained stable.

Other explanatory variable relates to SOEs (State Owned Enterprises) and POEs (Privately Owned Enterprises) serving as the control group. Whenever the term "SOE" is used in the paper, it refers to an enterprise in which a state shareholder owns more than 10% of the share in capital. Similarly, if POE is used, it refers to a company in which no state shareholder owns more than 10% of the share capital. We use SOE10 as a binary variable and additionally we use 20% SOE qualification threshold (SOE20 variable) to ensure the results were robust. Table 7 shows the structure of the distribution of the observations between SOE (SOE10) and POE.

Table 6: SOE and POE distribution

	2014	2015	2016	2017	2018	2019	2020	2021	Total
POE	195	200	200	200	196	201	194	150	1536
SOE	57	63	72	76	73	79	74	66	560
Total	**252**	**263**	**272**	**276**	**269**	**280**	**268**	**216**	**2096**

Our empirical set-up is designed to control for a multitude of factors that have been proven to affect corporate investment rates (Chen et al., 2011; Firth et al., 2012; Lin and Bo, 2012; O'Toole et al. 2016; Chen et al. 2017). Investment determinants are variables that reflect

the relationship between the market and property situation (Q - Tobin's Q ratio) as well as internal and external financial constraints. Tobin's Q (Q) and the Investment Cash Flow Rate (CF) are the primary determinants of the investment rate (Inv) used in many empirical studies of corporate investment (Fazzari et al., 1988; Kaplan & Zingales, 1997; Cleary, 1999; Almeida et al., 2004 or Whited and Wu, 2006) and the influence of the state shareholder on companies' investment decisions (Firth et al., 2012; Bai & Lian, 2013; An et al., 2016; O'Toole et al. 2016;, Chen et al., 2017a; Jaslowitzer et al., 2018). Tobin's Q ratio (Q) measures a company's growth potential (Tobin, 1969), whereas the operating cash flow (CF) ratio reflects internally generated capital and is used to assess financial constraints. The firm's investment policy should be determined by its investment opportunities as measured by Tobin. Companies with more growth opportunities as measured by Tobin's should invest more, and we predict a positive coefficient for Q. Larger operating cash flows provide a firm with more financial resources for investment, so we anticipate a positive coefficient for CF. Leverage ratio (Lev) is frequently used in research as a measure of external financial constraints (Aivazian et al., 2005; Chen et al., 2011; Firth et al., 2012; Asker et al., 2015; O'Toole et al., 2016; Chen et al., 2017a; Chen et al., 2017b; Jaslowitzer et al., 2018 or Boubakri et al., 2018). A firm with higher leverage (Lev) pays more interest and is less likely to obtain additional debt financing, limiting its ability to invest. Debt financing also helps to reduce overinvestment (Jensen, 1986). We therefore anticipate a negative coefficient for Lev. In contrast, the Cash Holdings is a widely used additional measure of internal financial constraints (Love, 2003; Duchin et al., 2010; Bai & Lian, 2013; Asker et al., 2015; An et al., 2016; Jaslowitzer et al., 2018). We also control for a firm's cash holdings. Companies with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total non-cash assets. We thus expect a positive coefficient for Cash. While larger firms may have more investment resources, resulting in a positive coefficient for size, a negative relationship is also possible if smaller firms are in the expansion stage.

We found no universal definition of the ownership threshold in the literature. For example, Armoldus et al. (2016) use a 20% threshold, whereas the OECD (2010) uses different definitions depending on the countries in the analysis. Our 10% threshold was motivated by international institutions' thresholds for distinguishing between foreign direct investment and portfolio investment.

Table 7 reports the descriptive statistics for the variables used in this study. Panel A shows the matched dataset results, Panel B shows the statistics of SOE group and Panel C shows the statistics of POE. The explanatory variables, except for macroeconomic variables, have a

one-year lag. The SOE10 and SOE20 variables are binary, whereas the remaining variables are continuous.

Table 7: Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Panel A - Total					
Inv1	2 096	0,05	0,04	0,00	0,19
Inv2	2 096	0,05	0,05	0,00	0,28
Inv3	2 096	0,06	0,07	-0,11	0,38
Inv4	2 096	0,07	0,08	-0,09	0,46
SOE10	2 096	0,27	0,44	0,00	1,00
SOE20	2 096	0,22	0,41	0,00	1,00
ROL	2 096	0,62	0,28	0,10	1,00
Q	2 096	1,29	0,61	0,36	6,63
CF	2 096	0,09	0,09	-0,27	0,57
Lev	2 096	0,58	0,16	0,04	0,87
Cash	2 096	0,09	0,08	0,00	0,62
Size	2 096	7,34	1,98	1,55	10,27
GDP	2 096	1,25	2,94	-10,82	25,18
GDPPC	2 096	10,72	0,28	9,93	11,83
Panel B - SOE					
Inv1	560	0,05	0,04	0,00	0,19
Inv2	560	0,06	0,04	0,00	0,28
Inv3	560	0,06	0,06	-0,11	0,38
Inv4	560	0,07	0,06	-0,09	0,46
ROL	560	0,52	0,30	0,10	0,98
Q	560	1,19	0,60	0,36	5,07
CF	560	0,09	0,07	-0,27	0,57
Lev	560	0,56	0,17	0,07	0,87
Cash	560	0,09	0,08	0,00	0,41
Size	560	7,81	1,89	2,10	10,27
GDP	560	1,41	3,09	-10,82	11,08
GDPPC	560	10,63	0,29	9,93	11,83
Panel C - POE					
Inv1	1 536	0,04	0,04	0,00	0,19
Inv2	1 536	0,05	0,05	0,00	0,28
Inv3	1 536	0,06	0,08	-0,11	0,38
Inv4	1 536	0,07	0,08	-0,09	0,46
ROL	1 536	0,66	0,26	0,10	1,00
Q	1 536	1,33	0,61	0,36	6,63
CF	1 536	0,09	0,09	-0,23	0,57
Lev	1 536	0,58	0,16	0,04	0,87
Cash	1 536	0,09	0,08	0,00	0,62

Size	1 536	7,16	1,98	1,55	10,27
GDP	1 536	1,19	2,89	-10,82	25,18
GDPPC	1 536	10,76	0,27	9,93	11,83

The independent variable (Inv) exhibits a relatively high variance. Inv1 and Inv2 are limited to positive values because they depend on capital expenditure, which cannot be less than zero. Inv3 and Inv4 can have negative values because they are estimated based on net cash flow from investing activities. In the case of large divestments, the net cash flow from investment activities can be negative. The average investment rates (Inv) of state-owned enterprises (SOEs) are higher than those of privately-owned enterprises (POEs). However, the standard deviation of investment rates in the case of SOEs is lower, indicating that SOEs tend to make more stable investments. The Tobin Q value (1,29) indicate that, on average, the companies included in our sample have growth opportunities. Furthermore, it is worth noting that private-owned enterprises (POEs) generally offer greater growth prospects compared to state-owned enterprises (SOEs), although they also tend to have slightly higher levels of leverage (referred to as "Lev"). This indicates that POEs may adopt a less risk-averse approach to investment activities, while SOEs may be more conservative. The volatility of cash-flow measures (CF and Cash) is similar in both state-owned enterprises (SOEs) and privately-owned enterprises (POEs). The cash distribution ceases on the left side because the cash and equivalents position cannot have negative values. A low standard deviation suggests that companies have remained relatively stable in size from 2014 to 2021. State-owned enterprises (SOEs) tend to be larger than privately-owned enterprises (POEs) when measuring size based on total assets.

4 Results

To test the **first hypothesis**, that the corporate investment rate is linked with country-level rule of law, we include a variable representing rule of law in the general model of the corporate investment rate (Table 7). As explanatory variables, we use variables previously used in this type of models in reference studies (see section 3.2). All models show statistical significance for the control variables Q, Lev, and CF, whose importance in shaping enterprise investment rates has been confirmed by numerous studies. The control variables' slope coefficients are consistent with the coefficients of linear correlation (see Appendix 4). Additionally, they are consistent with the coefficients for these variables in reference works. Because most of the variables failed the normality test, we provided robust estimators in the

tables. For comparison purposes and to build more confidence in our main findings, we estimate an alternative measure of the investment rate from the literature (Inv1-Inv4).

Table 7: Rule of law and corporate investment rate (H1)

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(1)	**(2)**	**(3)**	**(4)**
Rule of Law	0.022	-0.001	0.090**	0.066*
	[0.018]	[0.021]	[0.037]	[0.039]
Q	0.008***	0.008***	0.015***	0.016***
	[0.001]	[0.001]	[0.002]	[0.003]
CF	0.036***	0.035***	0.133***	0.129***
	[0.007]	[0.008]	[0.016]	[0.017]
Lev	-0.032***	-0.028***	-0.088***	-0.079***
	[0.006]	[0.008]	[0.013]	[0.015]
Cash	0.014*	0.019*	0.163***	0.160***
	[0.008]	[0.011]	[0.020]	[0.022]
Size	-0.014***	-0.024***	-0.037***	-0.046***
	[0.002]	[0.003]	[0.005]	[0.005]
GDPPC	-0.001	-0.001	-0.012	-0.007
	[0.011]	[0.013]	[0.024]	[0.026]
GDP	0.000	0.000*	0.000	0.000
	[0.000]	[0.000]	[0.001]	[0.001]
Constant	0.122	0.210	0.343	0.366
	[0.120]	[0.142]	[0.263]	[0.279]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,0755	0,0776	0,1044	0,1024
R^2 between	0,0013	0,005	0,0138	0,0213
R^2 overal	0,0057	0,0068	0,0155	0,0184
No. Obs.	11,797	11,797	11,797	11,797
No. Companies	1799	1799	1799	1799
F of model	25,06***	22,18***	27,07***	25,64***
F.E.	7,96***	9,6***	3,47***	4,41***
LM (χ^2)	8567,64***	9915,22***	1702,06***	3095,88***
Hausman (χ^2)	101,44***	113,35***	161,08***	195,31***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

The coefficient of our main independent variable (Rule of Law) is statistically significant for the last two measures of the investment rate (Inv3 and Inv4). It implies that companies located in countries with a stronger rule of law invest more. However, the results vary depending on the investment rate measure used. Our study found significant results for cash flow-based investment rate measures but not for fixed asset-based ones. This is probably due to the higher volatility of cash flow-based investment rate measures (see Table 7).

Due to the strong correlation between the main dependent variable and the GDPPC variable, in Appendix 1 we also include the results without the GDPPC variable. The conclusions remain unchanged, and the statistical significance of the examined variable (ROL) even slightly improves. Nevertheless, we opted to present the results using the GDPPC variable

to control the effect of the level of economic development. This suggests that the relationship between ROL and the investment rate is not contingent on the level of country development.

Our findings support the observations of LaPorta et al. (1997, 1998) and Farooq et al. (2022). Furthermore, they are consistent with the findings of previous research on the impact of policy uncertainty on corporate investment (Wang et al., 2014; Gulen and Ion, 2016; Chen et al., 2019).

To verify the first hypothesis, we carry estimations on the entire sample without matching. However, the subsequent hypotheses are tested on the sample after matching. To examine the **second hypothesis**, we use the dummy variable SOE (Table 8), which equals one if state owns at least 10% of the shares and zero otherwise (SOE10). To build more confidence in our main findings, we also perform estimations when SOE takes the value one for the minimum state share of 20% (Appendix 2). We employ a random effects model to examine this hypothesis, irrespective of the outcome of the Hausman test (for explanations see section 3.2)

Table 8: State shareholders and corporate investment rates (H2)

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(5)	**(6)**	**(7)**	**(8)**
SOE10	**0.009*** **	**0.008** **	**0.003**	**0.000**
	[0.003]	[0.003]	[0.004]	[0.004]
Q	0.008***	0.011***	0.015***	0.020***
	[0.002]	[0.003]	[0.005]	[0.005]
CF	0.066***	0.070***	0.165***	0.169***
	[0.015]	[0.018]	[0.035]	[0.036]
Lev	-0.059***	-0.067***	-0.078***	-0.086***
	[0.011]	[0.014]	[0.014]	[0.017]
Cash	0.007	0.025	0.076**	0.090**
	[0.016]	[0.021]	[0.035]	[0.036]
Size	-0.001	-0.001	-0.001	-0.000
	[0.001]	[0.001]	[0.001]	[0.002]
GDPPC	-0.005	0.007	0.009	0.018
	[0.009]	[0.010]	[0.013]	[0.014]
GDP	0.000	0.000	-0.001	-0.001
	[0.000]	[0.001]	[0.001]	[0.001]
Constant	0.119	0.009	-0.026	-0.110
	[0.089]	[0.101]	[0.136]	[0.139]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,1098	0,0965	0,0948	0,0907
R^2 between	0,0586	0,0573	0,0966	0,1292
R^2 overal	0,0723	0,0691	0,0840	0,1000
No. Obs.	2,096	2,096	2,096	2,096
No. Companies	302	302	302	302
χ^2 of model	121.18***	95.28***	109.17***	108.46***
F.E.	44,20***	47,68***	9,34***	9,56***
LM (χ2)	1914,10***	1902,34***	160,62***	221,81***
Hausman (χ^2)	20,59	24,15*	57,12***	70,5***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

The significance of the SOE variable is observed only for the first two formulas of the investment rate, namely Inv1 and Inv2. This could account for the inconsistencies in the literature regarding the influence of the state shareholder on the investment rate. By raising the minimum shareholding threshold for a state shareholder from 10% to 20%, we observe that the statistical significance of the coefficients for Inv1 and Inv2 diminishes. The variable was significant in the case of Inv3, but only at the 10% significance level. Overall, this means a deterioration of the significance of the examined relationship (as shown in Appendix 2). This argument supports the rejection of the second hypothesis. This is because when the state's share increases, it should lead to greater disparities between SOE and POE. As a result, the statistical significance of the SOE variable should also increase. Considering this, it should be noted that the data sample did not exhibit statistically significant disparities in the level of investment rates between state-owned enterprises (SOE) and privately-owned enterprises (POE). This suggests that state-owned enterprises (SOEs) in the European Union invest in a way that is similar to privately-owned enterprises (POEs). The results align with the research conducted by Lin and Bo (2012) and Jaslowizzer et al. (2018). Nevertheless, these findings contradict the prevailing body of research that suggests state-owned enterprises (SOEs) tend to invest more on average than privately-owned enterprises (POEs) (Chen et al., 2011; Firth et al., 2012; Bai and Lian, 2013; An et al., 2016; Chen et al., 2017a).

In the last stage of our analysis, we study links between country-level rule of law and shareholder type. According to the **third hypothesis**, country-level rule of law influences the relationship between corporate investment and shareholder type. To test this hypothesis, we include in the model the interaction between SOE and Rule of Law variables. The results are presented in Table 9.

Table 9: State shareholders, rule of law and corporate investment rate (H3)

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(9)	**(10)**	**(11)**	**(12)**
SOE10	0.005	0.004	0.008	0.006
	[0.006]	[0.007]	[0.009]	[0.010]
ROL	0.011	0.024**	-0.004	0.007
	[0.009]	[0.011]	[0.016]	[0.017]
SOE10xROL	**0.006**	**0.007**	**-0.010**	**-0.009**
	[0.009]	[0.010]	[0.014]	[0.015]
Q	0.008***	0.010***	0.015***	0.020***
	[0.002]	[0.003]	[0.005]	[0.005]
CF	0.067***	0.070***	0.164***	0.169***
	[0.015]	[0.018]	[0.035]	[0.037]
Lev	-0.059***	-0.067***	-0.077***	-0.085***
	[0.011]	[0.014]	[0.015]	[0.018]
Cash	0.007	0.024	0.076**	0.090**

	[0.016]	[0.021]	[0.035]	[0.036]
Size	-0.001	-0.001	-0.001	-0.000
	[0.001]	[0.001]	[0.001]	[0.002]
GDPPC	-0.014	-0.012	0.015	0.015
	[0.012]	[0.014]	[0.021]	[0.021]
GDP	0.000	0.000	-0.001	-0.001
	[0.000]	[0.001]	[0.001]	[0.001]
Constant	0.210*	0.192	-0.084	-0.085
	[0.122]	[0.137]	[0.210]	[0.215]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,1084	0,0946	0,0947	0,0905
R^2 between	0,0689	0,081	0,099	0,1306
R^2 overal	0,0789	0,0851	0,0848	0,1006
No. Obs.	2,096	2,0960	2,0960	2,0960
No. Companies	302	302	302	302
χ^2 of model	124.89***	102.62***	111.79***	111.48***
F.E.	41,04***	42,65***	9,16***	9,49***
LM (χ2)	1884,29***	1835,62***	158,77***	219,13***
Hausman (χ^2)	32,19**	34,47***	60,24***	64,39***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

The interaction was not statistically significant regardless of how we calculated the investment rate or the threshold we used (minimum 10% or 20% share in the company) to classify the company as an SOE (see Appendix 3). This means that the level of rule of law does not moderate the shareholder's influence on the investment rate of companies in our sample. Our research did not confirm the suggestions of Boubakri et al. (2018) and is inconsistent with the results obtained by Szarzec et al. (2021).

5 Conclusions

Our research indicates that there is a negative correlation between a country's level of rule of law and corporate investment rates. In other words, as the rule of law decreases, corporate investment rates also decline. Importantly, these results were significant for cash flow-based investment rate measures but not for fixed asset-based ones, which is likely due to the higher volatility of cash flow-based investment rates. Furthermore, we discover weak correlation between state shareholder ownership and corporate investment rates. The significance of the SOE variable is observed only for the fixed asset-based investment rate measures. Perhaps this is because replacement investments are crucial in state-owned enterprises (SOEs), as they are frequently enterprises of systemic importance. Finally we find no evidence that the country-level rule of law moderates the relationship between corporate investment intensity and state shareholder.

There are at least a few possible explanations for the observed results. First and foremost, the study's limitations should be noted, which stem from the characteristics of the

research sample. The matched sample selected for the study is relatively small, consisting only of companies listed on regulated markets where the state shareholder is not the sole owner. Referring to the analyzes of Szarzec et al. (2021a), the number of SOEs in Europe, including unlisted companies, is significantly higher than that included in this study.

The companies that constitute the research sample are among the largest non-financial enterprises in the European Union. Many of the SOEs included in the sample compete globally (for example, Volkswagen, Orange, and Safran). Because of their size and strategic significance, they play an important role in shaping the economic environment and must adhere to the requirements imposed by the capital market and other stakeholders. The research sample excludes unlisted SOEs, which are not required to comply with listed company disclosure obligations and in which the state shareholder may be the sole owner, giving him or her unlimited influence over investment decisions. As a result, the obtained results should be interpreted in light of the research sample's limitations, as previously stated.

In addition to the limitations of the research sample, the explanation for the findings could come from a minority variant of the EU's state capitalism model (Musacchio and Lazzarini 2014). In the minority model, the state shareholder frequently serves as a significant but not dominant owner. Only in a few of the observed SOEs does the state exercise absolute control. As a result, the non-controlling state shareholder agrees to SOEs pursuing purely economic goals, which are identical or similar to those of POE.

The assumption that the control group (POE) always makes their investment decisions solely on economic considerations in order to maximise shareholder value also appears unrealistic. POEs are not immune from agency or information asymmetry issues, which can influence their investment decisions. Capital market and investor pressures can influence POE managers' actions, resulting in "earnings management" that impacts financial reporting, business decisions, and cash flows (Kałdoński et al. 2020).

It is also possible that state ownership of Europe's largest companies emerged from the need to protect entities with special significance to the national or regional economic environment. This could imply that in the EU, the state, as a shareholder, may play a protective role in the SOE without necessarily influencing the SOE's current decisions. With such a justification, the state shareholder would behave similarly to a private shareholder, with the exception of crisis situations where the State may be more motivated by social objectives (for example, protecting strategic sectors of the economy or jobs).

In the European debate, there is a growing belief that the rule of law crisis threatens the financial interests of the EU and its member states. Supporters of this approach argue that in

countries that do not respect the principles of the rule of law, there is an increased chance that EU funds will be wasted or misused. As a result of these beliefs, on December 16, 2020, the European Parliament and the Council adopted a general regime of conditionality for the protection of the Union's budget. Political opposition to financing countries that violate democratic and legal standards is expected to grow over time. As a result, these regulations are likely to become stricter. Our findings have significant implications in this context. They confirm that, after controlling for economic development, there is a significant relationship between the rule of law and corporate investment rates.

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Appendix 1. Rule of law and corporate investment rate (H1). Verification of the hypothesis without GDPPC and on a sample after matching

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(13)	**(14)**	**(15)**	**(16)**
ROL	**0.022**	**-0.000**	**0.093****	**0.067***
	[0.018]	[0.021]	[0.036]	[0.039]
Q	0.008***	0.008***	0.015***	0.016***
	[0.001]	[0.001]	[0.002]	[0.003]
CF	0.036***	0.035***	0.133***	0.129***
	[0.007]	[0.008]	[0.016]	[0.017]
Lev	-0.032***	-0.028***	-0.088***	-0.079***
	[0.006]	[0.008]	[0.013]	[0.015]
Cash	0.014*	0.019*	0.163***	0.160***
	[0.008]	[0.011]	[0.020]	[0.022]
Size	-0.014***	-0.024***	-0.037***	-0.046***
	[0.002]	[0.003]	[0.005]	[0.005]
GDP	0.000	0.000	0.000	0.000
	[0.000]	[0.000]	[0.001]	[0.001]
Constant	0.022	-0.000	0.093**	0.067*
	[0.018]	[0.021]	[0.036]	[0.039]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,0755	0,0776	0,1044	0,1024
R^2 between	0,0013	0,0051	0,0152	0,0228
R^2 overal	0,0057	0,0069	0,0164	0,0192
No. Obs.	11,797	11,797	11,797	11,797
No. Companies	1799	1799	1799	1799
F of model	26,76***	23,76***	28,88***	27,40***
F.E.	8,02***	9,63***	3,48***	4,43***
LM (χ^2)	8615,41***	9956,6***	1724,42***	3121,14***
Hausman (χ^2)	101,03***	119,34***	193,83***	221,71***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 2. State shareholders and corporate investment rates (H2). Robustness test (SOE if minimum state share of 20%)

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(17)	**18)**	**(19)**	**(20)**
SOE20	**0.005**	**0.004**	**0.007***	**0.005**
	[0.004]	[0.004]	[0.004]	[0.004]
Q	0.006**	0.012***	0.005	0.016***
	[0.002]	[0.003]	[0.004]	[0.005]
CF	0.060***	0.050***	0.181***	0.152***
	[0.017]	[0.018]	[0.040]	[0.042]
Lev	-0.045***	-0.057***	-0.059***	-0.082***
	[0.011]	[0.013]	[0.015]	[0.018]
Cash	0.010	0.038	0.135***	0.187***
	[0.021]	[0.026]	[0.040]	[0.046]
Size	-0.001	-0.002	0.001	0.001
	[0.001]	[0.001]	[0.001]	[0.002]
GDPPC	-0.010	0.005	0.003	0.016
	[0.007]	[0.010]	[0.013]	[0.013]
GDP	0.001	0.001	-0.001	-0.001
	[0.000]	[0.000]	[0.001]	[0.001]
Constant	0.164**	0.022	0.014	-0.113
	[0.075]	[0.103]	[0.129]	[0.135]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,0895	0,0920	0,1115	0,1158

R^2 between	0,0345	0,1065	0,1021	0,1976
R^2 overal	0,0463	0,0983	0,0834	0,1336
No. Obs.	1973	1973	1973	1973
No. Companies	274	274	274	274
χ^2 of model	94.68***	112.61***	93.97***	106.05***
F.E.	44,20***	47,68***	9,34***	9,56***
LM (χ^2)	1849,38***	2236,81***	263,02***	415,4***
Hausman (χ^2)	51,87***	23,95*	53,71***	69,8***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 3. State shareholders, rule of law and corporate investment rate (H3). Robustness test (SOE if minimum state share of 20% and without GDPPC)

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(21)	**(22)**	**(23)**	**(24)**
SOE20	-0.000	0.002	0.007	0.009
	[0.006]	[0.007]	[0.009]	[0.010]
ROL	0.006	0.015	-0.005	0.001
	[0.010]	[0.013]	[0.017]	[0.017]
SOE20xROL	**0.010**	**0.003**	**-0.001**	**-0.008**
	[0.012]	[0.014]	[0.014]	[0.015]
Q	0.006**	0.011***	0.005	0.016***
	[0.002]	[0.003]	[0.004]	[0.005]
CF	0.060***	0.050***	0.181***	0.152***
	[0.017]	[0.018]	[0.040]	[0.042]
Lev	-0.045***	-0.057***	-0.059***	-0.082***
	[0.011]	[0.013]	[0.015]	[0.018]
Cash	0.010	0.038	0.135***	0.187***
	[0.020]	[0.026]	[0.040]	[0.046]
Size	-0.001	-0.002	0.001	0.001
	[0.001]	[0.001]	[0.001]	[0.002]
GDPPC	-0.016*	-0.006	0.008	0.017
	[0.009]	[0.015]	[0.021]	[0.022]
GDP	0.001	0.001	-0.001	-0.001
	[0.000]	[0.000]	[0.001]	[0.001]
Constant	0.223**	0.127	-0.029	-0.122
	[0.093]	[0.145]	[0.214]	[0.217]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,0905	0,0878	0,0912	0,1155
R^2 between	0,1306	0,0415	0,1164	0,1991
R^2 overal	0,1006	0,0518	0,1051	0,1343
No. Obs.	1,973	1,9730	1,9730	1,9730
No. Companies	274	274	274	274
χ^2 of model	103.01***	121.13***	93.96***	106.53***
F.E.	35,12***	42,34***	9,2***	11,48***
LM (χ^2)	219,13***	1789,97***	2198,56***	407,57***
Hausman (χ^2)	40,88***	30,08**	91,96***	58,17***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(25)	**(26)**	**(27)**	**(28)**
SOE20	-0.000	0.002	0.007	0.009
	[0.006]	[0.007]	[0.009]	[0.010]
ROL	-0.005	0.011	-0.000	0.013
	[0.008]	[0.009]	[0.010]	[0.011]
SOE20xROL	**0.010**	**0.003**	**-0.001**	**-0.008**
	[0.012]	[0.014]	[0.014]	[0.015]
Q	0.006**	0.011***	0.006	0.016***
	[0.002]	[0.003]	[0.004]	[0.005]

CF	0.060***	0.050***	0.181***	0.152***
	[0.017]	[0.018]	[0.040]	[0.042]
Lev	-0.046***	-0.057***	-0.059***	-0.081***
	[0.011]	[0.013]	[0.015]	[0.018]
Cash	0.009	0.037	0.136***	0.189***
	[0.020]	[0.026]	[0.040]	[0.046]
Size	-0.001	-0.002	0.001	0.001
	[0.001]	[0.001]	[0.001]	[0.001]
GDP	0.000	0.001	-0.001	-0.001
	[0.000]	[0.000]	[0.001]	[0.001]
Constant	0.068***	0.071***	0.048***	0.047***
	[0.011]	[0.012]	[0.013]	[0.014]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,0884	0,0916	0,1118	0,1154
R^2 between	0,034	0,1145	0,101	0,1951
R^2 overal	0,0456	0,1037	0,0829	0,1321
No. Obs.	1,973	1,9730	1,9730	1,9730
No. Companies	274	274	274	274
χ^2 of model	99.04***	120.74***	93.53***	106.82***
F.E.	35,33***	42,65***	9,3***	11,63***
LM (χ^2)	1811,18***	2210,04***	265,7***	419,18***
Hausman (χ^2)	42,23***	31,05**	69,07***	52,00***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Dependant Variable: Inv	**Inv1**	**Inv2**	**Inv3**	**Inv4**
	(29)	**(30)**	**(31)**	**(32)**
SOE10	0.005	0.004	0.008	0.005
	[0.006]	[0.007]	[0.009]	[0.010]
ROL	0.002	0.016*	0.006	0.016
	[0.007]	[0.008]	[0.010]	[0.012]
SOE10xROL	**0.007**	**0.008**	**-0.010**	**-0.010**
	[0.009]	[0.010]	[0.014]	[0.015]
Q	0.008***	0.010***	0.015***	0.020***
	[0.002]	[0.003]	[0.005]	[0.005]
CF	0.066***	0.070***	0.165***	0.170***
	[0.015]	[0.018]	[0.035]	[0.036]
Lev	-0.059***	-0.068***	-0.076***	-0.084***
	[0.011]	[0.014]	[0.015]	[0.018]
Cash	0.007	0.025	0.077**	0.090**
	[0.016]	[0.021]	[0.035]	[0.036]
Size	-0.001	-0.001	-0.001	-0.000
	[0.001]	[0.001]	[0.001]	[0.002]
GDP	0.000	0.000	-0.001	-0.001
	[0.000]	[0.001]	[0.001]	[0.001]
Constant	0.067***	0.070***	0.065***	0.062***
	[0.010]	[0.012]	[0.014]	[0.015]
Year F.E.	Yes	Yes	Yes	Yes
R^2 within	0,1095	0,0959	0,094	0,0896
R^2 between	0,0599	0,0739	0,0953	0,1285
R^2 overal	0,0728	0,0802	0,084	0,1004
No. Obs.	2,096	2,096	2,096	2,096
No. Companies	302	302	302	302
χ^2 of model	122.48***	99.36***	112.48***	111.65***
F.E.	41,20***	43,35***	9,19***	9,57***
LM (χ^2)	1898,1***	1862,71***	159,52***	218,92***
Hausman (χ^2)	28,81**	18,55	95,98***	77,46***

Notes: Robust t-statistics in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 4. Correlation matrix

Correlation matrix for the matched dataset

p=0.05	Inv1	Inv2	Inv3	Inv4	SOE10	SOE20	ROL	Q	CF	Lev	Cash	Size	GDP	GDPPC
Inv1	1.00													
Inv2	0.86*	1.00												
Inv3	0.51*	0.47*	1.00											
Inv4	0.46*	0.56*	0.95*	1.00										
SOE10	0.13*	0.05*	-0.00	-0.03	1.00									
SOE20	0.14*	0.05*	0.02	-0.02	0.87*	1.00								
ROL	0.02	0.12*	0.03	0.08*	-0.22*	-0.27*	1.00							
Q	0.06*	0.15*	0.17*	0.22*	-0.11*	-0.12*	0.22*	1.00						
CF	0.17*	0.15*	0.23*	0.22*	-0.01	0.02	0.04	0.23*	1.00					
Lev	-0.18*	-0.17*	-0.15*	-0.15*	-0.05*	-0.08*	0.05*	0.02	-0.17*	1.00				
Cash	-0.03	0.05*	0.05*	0.07*	-0.03	-0.04	0.06*	0.16*	-0.04	0.01	1.00			
Size	-0.05*	-0.03	-0.03	-0.02	0.15*	0.17*	0.12*	0.02	-0.05*	0.28*	-0.01	1.00		
GDP	0.12*	0.09*	0.06*	0.04	0.03	0.04	-0.01	0.01	0.07*	-0.16*	-0.05*	-0.11*	1.00	
GDPPC	-0.06*	0.01	0.03	0.06*	-0.20*	-0.23*	0.68*	0.19*	0.08*	0.11*	0.07*	0.22*	-0.14*	1.00

Correlation matrix for the whole dataset

p=0.05	Inv1	Inv2	Inv3	Inv4	SOE10	SOE20	ROL	Q	CF	Lev	Cash	Size	GDP	GDPPC
Inv1	1.00													
Inv2	0.78*	1.00												
Inv3	0.51*	0.47*	1.00											
Inv4	0.43*	0.64*	0.92*	1.00										
SOE10	0.08*	0.02*	0.01	-0.01	1.00									
SOE20	0.08*	0.02*	0.02*	-0.01	0.89*	1.00								
ROL	-0.00	0.12*	0.07*	0.14*	-0.08*	-0.10*	1.00							
Q	0.08*	0.24*	0.21*	0.30*	-0.06*	-0.06*	0.21*	1.00						
CF	0.16*	0.06*	0.20*	0.13*	0.02*	0.03*	-0.02	0.05*	1.00					
Lev	-0.09*	-0.13*	-0.09*	-0.12*	0.01	-0.00	0.05*	-0.11*	-0.01	1.00				
Cash	-0.02*	0.17*	0.09*	0.19*	-0.04*	-0.03*	0.10*	0.33*	-0.14*	-0.16*	1.00			
Size	-0.02*	-0.03*	-0.01	-0.01	0.19*	0.19*	0.20*	-0.03*	0.09*	0.24*	-0.06*	1.00		
GDP	0.05*	0.02*	0.02*	0.01	0.00	0.01	-0.03*	-0.01	0.02*	-0.11*	-0.10*	-0.13*	1.00	
GDPPC	-0.05*	0.05*	0.07*	0.12*	-0.07*	-0.08*	0.71*	0.20*	0.02	0.08*	0.12*	0.30*	-0.12*	1.00

Appendix 5. Time distribution of Inv

By EU Region

EU Region (mean Inv)		2014	2015	2016	2017	2018	2019	2020	2021	Total
Eastern										
	Inv1	0,057	0,062	0,056	0,060	0,059	0,057	0,047	0,058	0,057
	Inv2	0,058	0,064	0,058	0,061	0,059	0,057	0,047	0,058	0,058
	Inv3	0,053	0,080	0,058	0,066	0,059	0,056	0,049	0,062	0,060
	Inv4	0,053	0,081	0,060	0,066	0,059	0,056	0,049	0,062	0,061
Southern										
	Inv1	0,033	0,033	0,031	0,034	0,037	0,037	0,031	0,033	0,034
	Inv2	0,039	0,039	0,034	0,035	0,037	0,039	0,031	0,033	0,036
	Inv3	0,039	0,041	0,043	0,049	0,059	0,045	0,045	0,058	0,047
	Inv4	0,045	0,046	0,046	0,050	0,060	0,048	0,046	0,061	0,050
Northern										
	Inv1	0,041	0,045	0,044	0,040	0,042	0,056	0,045	0,045	0,045
	Inv2	0,053	0,060	0,055	0,055	0,052	0,068	0,062	0,055	0,057
	Inv3	0,046	0,052	0,046	0,059	0,062	0,076	0,046	0,058	0,056
	Inv4	0,058	0,066	0,057	0,076	0,074	0,087	0,063	0,068	0,069
Western										
	Inv1	0,045	0,051	0,048	0,051	0,051	0,047	0,035	0,038	0,046
	Inv2	0,060	0,067	0,061	0,065	0,067	0,062	0,047	0,051	0,060
	Inv3	0,065	0,058	0,065	0,067	0,063	0,055	0,046	0,052	0,059
	Inv4	0,080	0,075	0,080	0,081	0,078	0,069	0,058	0,065	0,073
Total										
	Inv1	0,044	0,049	0,045	0,047	0,048	0,049	0,038	0,042	0,045
	Inv2	0,054	0,061	0,055	0,057	0,057	0,058	0,047	0,050	0,055
	Inv3	0,054	0,058	0,056	0,062	0,061	0,058	0,047	0,056	0,056
	Inv4	0,064	0,069	0,066	0,072	0,070	0,067	0,056	0,064	0,066

By Macro Sectors

Macro Sector (mean Inv)		2014	2015	2016	2017	2018	2019	2020	2021	Total
Raw Materials										
	Inv1	0,064	0,065	0,054	0,051	0,060	0,057	0,044	0,050	0,055
	Inv2	0,071	0,072	0,055	0,052	0,060	0,058	0,045	0,052	0,058
	Inv3	0,063	0,071	0,049	0,055	0,060	0,056	0,048	0,064	0,058
	Inv4	0,070	0,078	0,050	0,055	0,061	0,057	0,050	0,066	0,060
Manufacturing										
	Inv1	0,042	0,046	0,042	0,042	0,044	0,047	0,040	0,047	0,044
	Inv2	0,057	0,063	0,057	0,057	0,059	0,062	0,054	0,060	0,059
	Inv3	0,051	0,056	0,054	0,055	0,057	0,058	0,054	0,062	0,056
	Inv4	0,066	0,072	0,069	0,069	0,071	0,073	0,067	0,075	0,070
Services										
	Inv1	0,046	0,051	0,049	0,055	0,054	0,053	0,036	0,033	0,048
	Inv2	0,050	0,056	0,052	0,060	0,056	0,056	0,040	0,036	0,051
	Inv3	0,058	0,059	0,059	0,073	0,070	0,057	0,034	0,044	0,057
	Inv4	0,061	0,065	0,063	0,079	0,073	0,059	0,040	0,048	0,061
Information Services										
	Inv1	0,042	0,049	0,044	0,043	0,037	0,039	0,034	0,035	0,040
	Inv2	0,047	0,054	0,045	0,044	0,038	0,040	0,035	0,036	0,042
	Inv3	0,051	0,060	0,058	0,066	0,046	0,060	0,046	0,059	0,056
	Inv4	0,058	0,066	0,059	0,067	0,047	0,061	0,047	0,061	0,058
Total										
	Inv1	0,044	0,049	0,045	0,047	0,048	0,049	0,038	0,042	0,045
	Inv2	0,054	0,061	0,055	0,057	0,057	0,058	0,047	0,050	0,055
	Inv3	0,054	0,058	0,056	0,062	0,061	0,058	0,047	0,056	0,056
	Inv4	0,064	0,069	0,066	0,072	0,070	0,067	0,056	0,064	0,066

By Type of Shareholder

Type of Shareholder (mean Inv)		2014	2015	2016	2017	2018	2019	2020	2021	Total
POE										
	Inv1	0,042	0,046	0,041	0,044	0,046	0,046	0,033	0,040	0,042
	Inv2	0,054	0,060	0,053	0,054	0,056	0,057	0,043	0,051	0,054
	Inv3	0,056	0,057	0,054	0,059	0,063	0,052	0,042	0,055	0,055
	Inv4	0,067	0,071	0,066	0,071	0,074	0,062	0,053	0,066	0,066
SOE										
	Inv1	0,052	0,056	0,056	0,056	0,053	0,057	0,052	0,046	0,054
	Inv2	0,057	0,063	0,060	0,063	0,058	0,062	0,058	0,048	0,059
	Inv3	0,048	0,059	0,061	0,070	0,057	0,072	0,059	0,056	0,061
	Inv4	0,054	0,066	0,064	0,075	0,062	0,077	0,063	0,060	0,066
Total										
	Inv1	0,044	0,049	0,045	0,047	0,048	0,049	0,038	0,042	0,045
	Inv2	0,054	0,061	0,055	0,057	0,057	0,058	0,047	0,050	0,055
	Inv3	0,054	0,058	0,056	0,062	0,061	0,058	0,047	0,056	0,056
	Inv4	0,064	0,069	0,066	0,072	0,070	0,067	0,056	0,064	0,066