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Rule of Law and Large Firms Concentration in Southeast Europe

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Abstract

The purpose of this paper is to provide empirical evidence on regularities concerning the relationship between the rule of law and economic concentration. We use panel data on the largest companies in ten countries in Southeast Europe between 2009 and 2021 to assess the impact of the rule of law on aggregate concentration, that is, the share of the largest companies in total economic activity. Using fixed-effects panel models and an instrumental variables approach, we find that improvements in the rule of law are associated with greater economic concentration. This finding is consistent with previous research on institutional development and firms' performance in Eastern Europe. It suggests that improvements in the rule of law benefit existing export-oriented companies and that policy efforts should be focused on smaller, start-up firms.

JEL: D02, E02, L11, O43, P37

Keywords: institutions, corruption, economic power, size distribution of firms, large companies

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Introduction

The rise of large firms in the economy is a phenomenon that emerged in the early stages of industrialization in developed market economies. In the process of economic and social transformation, globalization, and the expansion of multinational corporations, the concentration of economic power has become increasingly important for economies in Eastern Europe too. Large companies accumulate considerable resources, which in many cases provide them with the ability to exercise economic power beyond the boundaries of a market. In recent years, concern about the economic and political power of large companies around the world has been refueled by empirical observations of a significant increase in concentration in several countries over the last decades (Kwon, Ma, and Zimmermann 2023; Weche and Wambach 2021; De Loecker et al. 2020). In this context, economists have criticized the systematic lack of information on the economic weight of the largest companies and have advocated the consideration of the economic and political power of large companies in economic theory.

At the same time, much of modern economic research focuses on the direct role of institutions in economic growth and development. The importance of institutions has been recognized and stimulated by the transition of the former socialist countries into market-based economies. From a macro perspective, institutions, understood as the "rules of the game", are considered the main determinants of the level and distribution of transaction costs in the economy (Murrell 2008). Institutions, in a broader sense, provide the framework, in which, organizational efforts are made to reduce transaction costs. Therefore, the number and size distribution of existing organizations could be seen as predetermined by the inherited structure of institutions, so that the process of economic development is gradual and dependent on the past. Consequently, it could be argued that institutions are an important determinant of firm size distributions, through which shocks are transmitted into the aggregate.

In summarizing the findings of some of the studies relating institutional development with firm size distributions, Mitton (2008) highlights five institutional factors that might have an impact on economic concentration: market access, antitrust, financial development, rule of law, and regulatory burden. For most of those factors, existing research suggests clear predictions of the effects of institutional development on economic concentration. The cost of entry, be it a direct monetary cost or a more subtle regulatory burden, is suggested to decrease the number of active firms, to protect incumbent firms and those connected with the political elite, and therefore to increase

aggregate concentration. Improvements in antitrust policy do seem to be associated with lower concentration. Financial development is also expected to lead to lower concentration, as it would encourage the entry and growth of new firms and therefore decrease concentration.

For the rule of law, there appear to be two different views on its effect on economic concentration. According to the first set of theories, improvement of the legal system and its ability to enforce the law and protect property rights reduces idiosyncratic risk and thus increases average firm size. Indeed, empirical studies have found that states with more effective legal systems typically have larger firms. These results imply that improvements in the legal system could be related to higher economic concentration if the benefits are disproportionally absorbed by larger firms. The second set of theories argues that because a stronger rule of law protects contracts and property rights, it favors the formation of new economic activities and the growth of new enterprises. The reversed argument is that weak property rights allow social elites to gain substantial economic power through the concentration of economic activities in large incumbent firms. Both arguments suggest that stronger legal systems should be related to lower concentration.

In this paper, we study the not well understood relationship between a specific type of institution, namely the rule of law, and the concentration of large firms in South-East Europe. The latter is referred to as aggregate concentration, as it refers to major companies in the economy and reflects their latent ability to influence economic processes on an economy wide level. Because it is regarded as a "macro" variable, it is assumed to have no direct bearing on competition in individual markets, and is usually not in the focus of competition authorities. This does not mean that high or increasing levels of aggregate concentration could not be linked to concentration processes taking place in individual markets. It can be expected that overall concentration in the economy will be higher if the market sectors most important to the economy are correspondingly more concentrated.

A plausible suggestion, therefore, is that aggregate concentration also relates to structural changes in the economy. Overall concentration will depend on the forces driving market concentration – market size, barriers to entry, economies of scale, etc. – as well as on factors determining the structure of the economy – technological progress, economic openness, and institutional development. This means that aggregate concentration is a phenomenon that accompanies development and structural change, and as such, has been acquiring special importance for the economies in Eastern Europe in the processes of transition and globalization.

The degree of aggregate concentration might be important for several reasons. For instance, concentration among large, diversified companies in an economy might increase the likelihood of collusive behavior in and across individual markets (Gal and Cheng 2016). This is particularly true for small economies as well as economies where institutional settings and regulatory bodies fail to respond adequately to market challenges. As economic concentration is seen to be correlated with market power, high levels of concentration might be associated with various economic distortions that hinder growth (see, e.g., Aghion et al. 2001). Higher concentration might be associated with higher levels of economic volatility (Gabaix 2011). If the economy is "granular", that is, if it is characterized by a highly disproportioned firm size distribution, then shocks to the few relatively large firms could trigger aggregate business fluctuations.

Finally, high concentration may lead to political distortions. If economic power is translated into political power, then the latter could be used to favor the interests of individuals or companies in highly concentrated sectors (see, e.g., Acemoglu and Robinson 2001). The effect is emphasized when markets are smaller and when it is easier for the business elite to establish additional formal or non-formal networks of influence between large companies. It could therefore be argued that the influence of institutional development on economic concentration represents a possible channel of influence of institutions on macroeconomic volatility and growth. The resulting economic and political imbalances could hamper economic development. In this view, firms and their size distribution play the role of a mechanism transmitting microeconomic shocks into the aggregate.

In this context, the present paper aims to empirically assess the relationship between the rule of law and economic concentration. For this purpose, we estimate the extent of aggregate concentration in ten Southeast European (SEE) economies. Given the estimates of aggregate concentration and as proposed by previous research, a relation between aggregate concentration and the rule of law is tested empirically. The findings of our research allow us to relate them to the discussion of economic power and the role of the rule of law in the region. The rest of the paper is structured as follows: The next section reviews some of the key points in the literature on institutional development, the rule of law specifically, and its relation to economic concentration. This discussion allows the formulation of the main hypotheses. Section 3 outlines the methodology and the data. Section 4 presents the empirical findings of the study. The final section concludes and discusses opportunities for future research, as well as some policy implications.

Literature review

To set the relevant background and to be able to derive a hypothetical relationship between rule of law and concentration, an overview of four fields of institutional research with a focus on economies in Eastern Europe is provided. Those cover studies on the direct relationship between a broader range of institutions, including the rule of law and economic growth and development, as well as studies focusing on the effects on entrepreneurship, firm performance, and firm size. The lack of a unified theoretical framework for the analysis of the relationship between the rule of law and economic concentration requires a careful interpretation of the results of previous studies that would enable the formulation of testable hypotheses.

(1) Institutions and growth

The positive effect of institutional improvement on economic growth has been intensively researched and empirically tested for developed economies (see Lloyd and Lee 2016 for a recent overview). In the case of the transition economies of Eastern Europe, Redek and Susjan (2005) empirically analyze the influence of institutions on economic growth from 1995 to 2002. The analysis of the state of institutions in the countries under consideration shows that the countries of the former Soviet Union begin their transition with institutions much more distant from those of market economies than, for example, Yugoslavia, Hungary, and Poland. Accordingly, countries whose institutions are initially closer to those of a market economy catch up faster in terms of institutional quality. These countries are characterized by higher GDP per capita growth. The empirical analysis in the study shows that GDP growth per capita is strongly linked to the quality of institutions.

Beck and Laeven (2006) offer a theoretical (and empirical) explanation of the differences in institutional development in the transition countries of Eastern Europe and its importance for economic growth. Their theory is based on the idea that the socialist elite continues to be a strong political player at the beginning of the transition process. However, its role varies from country to country depending on how tied the elite is to power. They assume that the socialist elite has no incentive to create institutions that encourage competition because competition would threaten their economic power. The authors expect this "embeddedness" of the socialist elite to be stronger in countries that have spent a longer time in socialism. In addition, it is also assumed that in economies that are more dependent on natural resources, the opportunities for the elite to extract economic rents are greater. This lies in the fact that natural resources provide the opportunity to make

a profit faster than manufacturing enterprises, for example, which require additional investment. Therefore, the elite has no incentive to secure strong property rights.

In some transition economies, the authors point out, the elite promotes a transition to a market economy with broad public participation through the provision of basic property rights and the rule of law. In other countries, however, the elite retain their ownership rights in former state-owned enterprises, allowing the appropriation of economic rents and maintaining strong positions in the economic and political life of post-transition society. These two prototypical transition processes are described by the authors as "catalytic transition" in the first case and "extractive transition" in the second case. The behavior of the elite during transition, that is, the institutional trajectory path chosen by the elite (catalytic vs. extractive), depends on two main characteristics: the endowment with natural resources and the entrenchment of the ruling elite during socialism (Beck and Laeven 2006, p. 161).

Efendic and Pugh (2015) analyze the relationship between institutions and economic development in 29 transition countries. The authors find that per capita GDP in those countries is largely determined by their history of institutional reforms. For instance, an estimated improvement in institutional quality of 10% increases GDP per capita by an average of 4% five years ahead. From a methodological perspective, the study also suggests that all considered countries are subject to a common time related shock, which implies, as the authors note, that models examining institutional effects that do not control explicitly for time effects are very likely to be misspecified (Efendic and Pugh 2015, p. 521). From a policy perspective, the study suggests that the effects of institutional improvement are rather long-term, exceeding the typical electoral cycle. This being considered, it may well be the case that the short-term interests of policymakers may not always be aligned with sound long-term institutional policies, which could be a possible explanation for the lagging institutional reforms in some transition economies.

A more recent study by Radulović (2020) examines empirically the effects of institutional improvement on economic growth in ten countries in South-Eastern Europe. Half of the countries are EU members: Croatia, Romania, Bulgaria, Greece, and Slovenia, while the other half are not EU members: Serbia, Bosnia and Herzegovina, North Macedonia, Albania, and Montenegro. The study compares these effects in EU and non-EU member states over a relatively long period of time, from 1996 to 2017. Institutions are measured by the World Governance Indicators (WGI) developed by the World Bank (Kaufmann, Kraay, and Mastruzzi 2010). These include estimates

of voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, the rule of law, and control of corruption. The results provide support for the hypothesis that there appears to be a long-term relationship between institutional quality and economic growth, with some institutional indicators having a positive impact (rule of law and control of corruption), while others have a negative impact (voice and accountability, and regulatory quality).

(2) Institutions and entrepreneurship

The previously described studies assume and analyze the direct effect of institutional improvement on economic development. Other studies take an intermediate approach, where institutions are considered to have a major influence on firms and their performance, thereby affecting aggregate economic variables. A major strand in this literature studies the effects of institutions on entrepreneurship (see the recent surveys by Bjørnskov and Foss 2016, and Grilli, Latifi, and Mrkajic 2019). Less entrepreneurship implies less business creation, less technology adoption, lower returns to education and capital accumulation, and therefore a lower level of GDP. Thus, one effect of extractive economic institutions working in this instance through insecure property rights is to reduce entrepreneurship and GDP.

In this context, a study by Estrin, Korosteleva, and Mickiewicz (2013) analyzes the effects of higher levels of corruption and weaker property rights on entrepreneurs' aspirations to increase employment using a data set on 42 countries for the period between 2001 and 2006. The study finds that entrepreneurial growth aspirations are supported by better enforcement of property rights and are constrained by corruption. Further, in their study, Acs et al. (2018) builds a conceptual framework supported by empirical evidence demonstrating that entrepreneurship and institutions, seen as an ecosystem, can be an important missing part of the economy's production function.

With a reference to post-communist economies in Eastern Europe, Estrin and Mickiewicz (2011) point out that transition economies are characterized by lower levels of entrepreneurial activity than most developed countries. This difference is even larger the longer the communist regime, a finding that corresponds to the results of Beck and Laeven (2006). For Bulgaria, Williams and Vorley (2015) find that there is "institutional asymmetry" between formal and informal institutions. This asymmetry is particularly pronounced in post-communist countries, as formal rules have been improved but informal rules have been following at an even slower pace. Informal

institutions – culture, norms, and values – do not seem to foster entrepreneurship to support entrepreneurship-driven economic growth.

(3) Institutions and firm performance

Another strand in the institutional economics literature focuses on the effects of institutional development on the performance of firms. A study by Commander and Svejnar (2011) analyzes empirically the role of the business environment on firm performance as a mediating factor for its influence on the overall strength of the economy. They use firm-level data as well as country-level data on institutional development to analyze the effects of a firm's ownership, competition, export orientation, and institutional environment on firm's performance, measured as levels of revenue or growth rate of revenue. From a methodological perspective, these effects are captured through the Cobb-Douglas production function, which follows the revenue generation process using inputs (capital, labor, and materials) and controlling for institutional, structural, industry, country, and time-related factors. The study finds that competition and ownership have a significant impact on performance, with foreign ownership of firms having a positive impact on performance, measured as the levels of revenue controlling for inputs. Export orientation does have a positive influence, but this effect diminishes once foreign ownership has been controlled for, which suggests that foreign firms tend to be the main efficient exporters.

Olbrecht (2016) analyzes the effects of various aspects of the external environment on the performance of firms in a sample of European food manufacturing companies for the period between 2004 and 2013. The sample includes firms from Austria, the Czech Republic, France, Germany, Poland, Slovakia, and Slovenia. Firms' performance is measured by the total factor productivity estimated via the CES production function. Independent variables in the regression model are divided into two groups: proximate and fundamental factors of firms' productivity. Proximate factors include inputs such as labor, capital, and human capital. Fundamental factors are decomposed into institutional factors, represented by a composite index of the World Governance Indicators (WGI), government expenditures (as a ratio to GDP), exports (as ratio to GDP), and a composite index of macroeconomic conditions. The study finds a positive impact of political and legal conditions on performance and a negative effect of government expenditures and economic conditions.

For a set of countries in Central and South-Eastern Europe, Aralica, Svilokos, and Bacic (2018) empirically assess the role of various institutional factors on labor productivity in firms.

The study includes five countries: Slovenia, Croatia, Bosnia and Herzegovina, Serbia, and North Macedonia. The analyzed period covers nine consecutive years, from 2007 to 2015. The research finds that restraining corruption increases labor productivity in these countries over the period under review. At the same time, the stricter regulatory framework, the presence of political constraints, and the construction of infrastructure for development activities have the opposite effect. According to the authors, similar results are typical for firms producing standardized goods in countries with a relatively weak legal framework, where development and legal reforms have adverse effects on costs. Based on their analysis, the authors conclude that institutional development in these countries must be accompanied by measures to strengthen the absorptive capacity of companies in order to benefit from these changes.

(4) Institutions and firm size

As most empirical studies do not focus on a direct relationship between institutions and concentration but rather hypothesize a link between institutional factors, including rule of law, and firm size, rather than concentration, some caution is needed. Although firm size and concentration are related, an increase in one does not necessarily mean an increase in the other. For example, if all firms in the economy grow proportionally, then the average size of firms will increase, but the level of concentration will remain unchanged (Mitton 2008). To increase concentration, the shock should be absorbed disproportionately, that is, by the largest entities mostly.

The relationship between the institutional environment and investments by entrepreneurs is analyzed by Laeven and Woodruff (2007). They show that firm size is increasing with the quality of the legal system. The main reason behind this result is that an effective legal system reduces the idiosyncratic risk faced by an entrepreneur investing in an increasing share of a single firm. One way to mitigate such risk is to diversify ownership, that is, to take on more equity partners. Without this possibility, weaker institutions pose a constraint on the size of the entrepreneur's firm. In their theoretical treatment, Laeven and Woodruff show that the reduction of idiosyncratic risk has a positive influence on investment and wages, which discourages self-employment and motivates entrepreneurs to seek employment within already established firms. This implies an increase in the average firm size. In their empirical analysis, Laeven and Woodruff test this hypothesis on a set of firms in Mexico. They find that firms located in states with weak legal environments are smaller on average than those located in states with stronger legal environments. Again, this supports the hypothesis that if an effective legal system reduces idiosyncratic risk, then capital is allocated more

efficiently. So, it appears that the quality of the legal system might affect the efficiency of the economy via the firm size channel.

Kumar, Rajan, and Zingales (1999) examine empirically the determinants of firm sizes across various industries and across countries in a sample of fifteen European countries. They find that stronger legal systems are positively correlated with larger firm sizes. An examination of the industry's characteristics shows that the positive relationship between the quality of the judicial system and firm sizes is more pronounced for industries with lower capital intensity. The authors suggest that the reason for this might be that legal systems are strong enough to protect investments in physical capital, but the area of protecting intangible assets, such as intellectual property, appears to be more challenging. They link those findings to a theory, in which the legal protection of "critical resources" enables the emergence of large companies. In this theory, the risk of expropriation of a critical resource owned by the entrepreneur limits the size of her business venture. But as legal institutions improve, companies should be able to grow larger, especially in areas, where resources are easier to appropriate by other parties (e.g., brand names, intellectual property, or innovative processes).

A more recent paper by Buera, Sanghi, and Shin (2022) relates firm size and the prevalence of family firms to the rule of law. They investigate the relationship between contract enforcement, which is a score measure for the time required for the resolution of conflicts and the related procedures and costs, and firm sizes in a large set of 46 countries around the world available in the Global Entrepreneurship Monitor from 2002 to 2005. The study finds that countries with lower contract enforcement scores are populated by smaller firms and have a higher fraction of family-owned firms as opposed to countries with higher contract enforcement scores, which tend to have larger firms and fewer family-owned firms. The authors argue that weaker contract enforcement causes firms in those environments to rely heavily on trust, which limits the growth of firms and thus leads to smaller firm sizes and a higher fraction of family firms.

The findings of Buera, Sanghi, and Shin (2022) are in line with the results of La Porta et al. (1997), who study the role of trust, measured as a country-specific indicator, on the share of the largest companies in GDP across a sample of 40 countries. They find a positive correlation: lower levels of trust imply lower levels of aggregate concentration. Thus, they argue, trust is required for cooperation and is therefore an essential factor for the formation and development of large organizations. This argument is also supported by the findings of Van Herck, Noev, and Swinnen (2012),

who study the effect of late payments and institutional arrangements across the supply chain on investment and firm growth. They use survey data from agricultural farms in Bulgaria. They argue that late payments lower the trust between farmers and processors, so that in the presence of poor legal enforcement, they invest less than otherwise, leading to lower quantities produced and lower farm growth (Van Herck, Noev, and Swinnen 2012, p. 46).

In addition to these findings, Buera, Sanghi, and Shin (2022) also show that family-run firms have a smaller pool of management talent, which suggests that their productivity and development could be lower in the long term. From this perspective, one could argue that improvements in the rule of law could lead to improvement in existing firm's growth and efficiency. This might lead to higher levels of aggregate concentration if larger, established companies benefit strongly from improvements in the legal system as opposed to smaller entities.

This might not be the case, however, if the rule of law implies that contracts and property rights are better protected so that the creation and growth of firms are encouraged. The reverse argument is based on the historical observation that weak rule of law could be used by a power elite to concentrate a larger share of economic activity, thereby hindering smaller firms. Sokoloff and Engerman (2000) review historical episodes and events to show that for some countries (e.g., in Latin America), initial conditions in development, such as endowments with land resources, could favor the formation of a political and economic power elite. To protect its power position, this elite created and shaped subsequently weak institutional environments, including the rule of law. They oppose, for instance, democracy and other institutions that promote equality because this would allow the poor majority to gain power, which could then be used for re-distribution of income (see also Easterly and Levine 2003, pp. 9–10).

In the same vein, Acemoglu, Johnson, and Robinson (2001) argue that throughout history, European settlers had different colonization policies in different colonies and thus created different institutions in different colonies depending on their preconditions. For instance, in colonies, where they were facing higher mortality rates and thus settlement was difficult, they were more likely to set up extractive institutions. They established, for instance, institutions that empowered the elite to extract those resources. In territories that were more settlement-friendly the settlers replicated European institutions to some extent by securing, for instance, property rights and taking preventive measures against the formation of governmental and private power. Some of these early institutional structures have endured to the present day.

With a reference to Eastern Europe, some empirical studies focus on the effect of corruption (or bribery) on firm growth and performance. For instance, Wu and Meeks (2020) study the effect of corruption (bribery) on firm growth in selected countries in Central Asia and Eastern Europe. They use a firm-level panel dataset from the Business Environment and Enterprise Survey (BEEPS) conducted by the World Bank from 2002 to 2008. They found that bribery significantly increases firms' output and employment, and thus its size, but also that it deters firms' labor productivity and propensity to innovate. This implies that indeed corruption is a means to acquire additional "convenience", especially when dealing with the government, e.g., via public procurement contracts. Corruption also seems to misallocate available resources and incentives, thus disturbing economic efficiency. From this perspective, a stronger control of corruption would be beneficial to all firms' in the economy, including those that do not have experience in bribery.

In a complementary study, Ashyrov and Masso (2020) examine the effect of bribery on FDI and firm performance using the same BEEPS data. They find that bribery is negatively correlated with firm productivity. In addition, they find that foreign investors tend to pay higher bribes in comparison to domestically owned firms. A possible explanation is that foreign-owned firms are less familiar with the local environment, in which case they tend to use joint ventures as a form of entry. At the same time, however, the negative effect of bribes on productivity is greater for foreign firms than domestic firms, especially in highly corrupted countries. These results also suggest that companies must pay higher bribes to stay in the market despite higher levels of inefficiency. This seems rational if companies are trying to protect their dominant positions. Following this logic, corrupt governments could try creating artificial entry barriers to protect monopolists or companies with dominant positions so they can extract more rent from them in the future.

To summarize, it appears that there are two possible hypotheses regarding the relationship between the rule of law and large firms concentration (see also Mitton 2008, p. 371 on this point). The first hypothesis would be based on theories and studies emphasizing the reduction of idiosyncratic risk and the protection of critical resources. A positive relationship between the rule of law and concentration might be expected in this case if large companies are in possession of or are able to develop such resources and can therefore benefit disproportionately from their protection. On the other hand, a negative relationship would be hypothesized if improvements in the rule of law have a restrictive effect on the power of the elite.

Data and methodology

(1) Concentration

To estimate the levels of concentration in SEE countries, this study employs company data from SEE TOP 100, an annual ranking of the 100 largest companies in Southeast Europe (SeeNews 2022). Companies are ranked by total revenue (in millions of euros) for the previous fiscal year. The ranking covers non-financial companies in 10 countries: Albania (ALB), Bosnia and Herzegovina (BIH), Bulgaria (BGR), Croatia (HRV), Macedonia (MKD), Moldova (MDA), Montenegro (MNE), Romania (ROU), Serbia (SRB), and Slovenia (SVN). The primary data is compiled from various public sources, including national commercial registers, stock exchanges, as well as company reports.

Economic concentration is measured as a ratio between the revenue of the largest companies in each country and its GDP in each year. This ratio is approximated in two steps. First, data on the revenue of the 10 largest companies in each country is collected from the SEE TOP 100 reports, which are then related to GDP figures for each country. GDP data are compiled from the International Monetary Fund's World Economic Database (IMF 2023a). Original data is reported in current U.S. dollars and is converted into euro figures using the European Central Bank's annual average reference exchange rate (ECB 2023). The constructed variable represents the concentration ratio of the ten largest companies in the respective economy, denoted by CR10. The data starts in 2010, reporting figures for 2009, and is continued up to 2022, reporting figures for 2021, thus covers a period of 13 consecutive years. The dataset has the structure of a balanced panel, consisting of 130 observations. The results on the country level are illustrated in Figure 1.

The average level of concentration in the whole sample, that is, for all ten countries, over the period of 13 years, from 2009 to 2021, is about 25%. There appears to be some cross-country variation in the data, with Romania having the lowest level of aggregate concentration of about 14% over the whole period, and North Macedonia having the highest level of aggregate concentration of about 35%. There is considerable variation across time too, which shows a similar pattern for most of the countries in the sample. There has been an increase in concentration right after the financial crisis in 2008, which could be viewed as an exogenous shock to all the considered economies. Right after the crisis, most economies experience a fall or a stabilization in the levels of concentration, which continues into 2020, showing a spike in the levels of concentration, which could be related to the COVID-19 countermeasures.

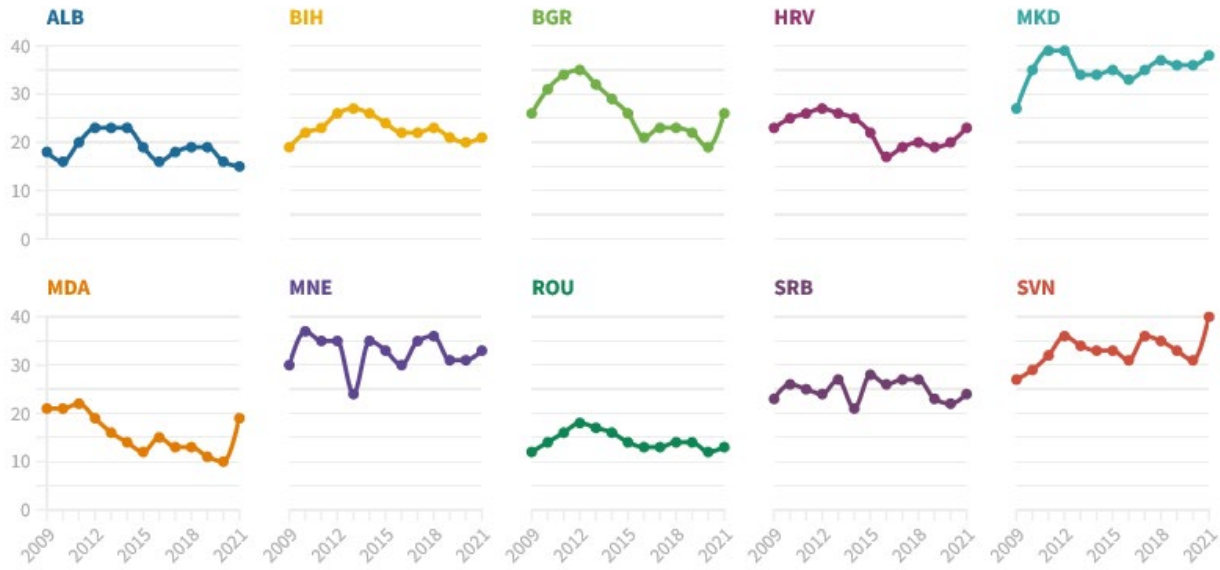

Figure 01. Revenue of the largest 10 companies to GDP ratio (CR10) in SEE, 2009-2021

(2) Rule of Law

The estimates for the Rule of Law (RL) variable are sourced from the World Bank's Worldwide Governance Indicators (WGI) database (World Bank 2023b). The WGI draws on various sources of data, such as surveys, commercial business information providers, non-governmental organizations, and public sector organizations, to construct an aggregate measure for various aspects of governance. The rule of law captures the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The measure used in this study is reported in standard normal units, ranging from -2.5 to +2.5, with higher values corresponding to better outcomes. The WGI's estimates for rule of law are illustrated in Figure 2.

The average estimate for the whole sample is about -0.01, with Albania having the lowest average value of -0.39 and Slovenia having the highest average value of 1.03. There appears to be time variation in the data too. Most countries have experienced at least some improvement in the rule of law. This is more pronounced in Croatia (HRV), Romania (ROU), and Serbia (SRB). In other countries, such as Bosnia and Herzegovina (BIH), Bulgaria (BGR), Montenegro (MNE), and Slovenia (SVN), there is little variation over time as estimates for rule of law are relatively stable with no clear trend. No country in the sample has experienced an overall negative trend in the rule of law.

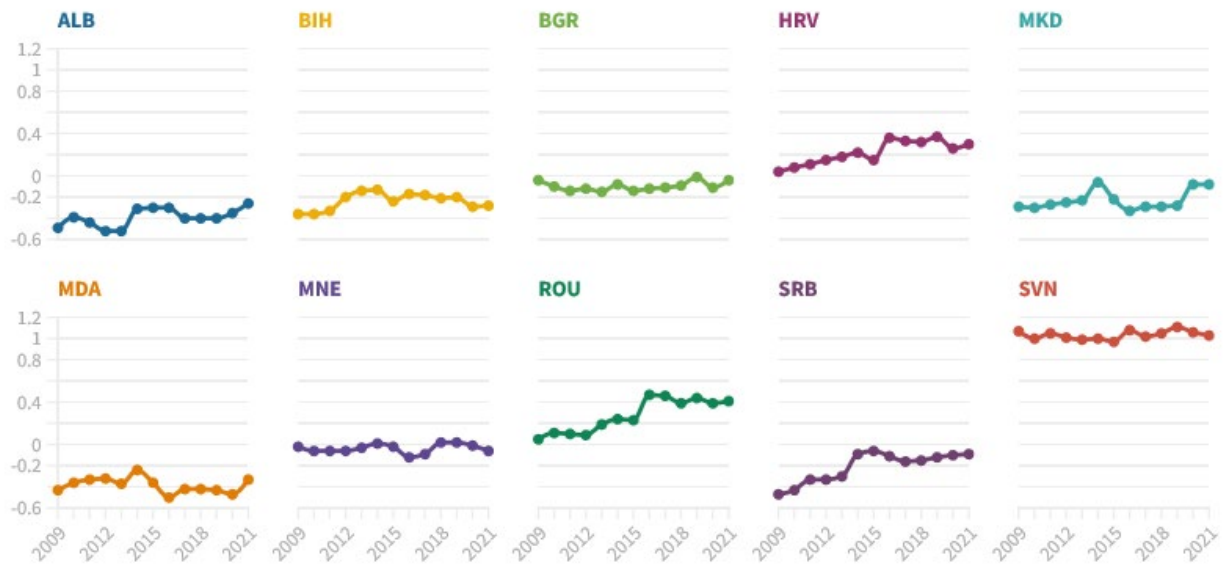

Figure 2. WGI's Estimates for rule of law in SEE, 2009-2021

(3) Other variables

Control variables:

To control for other factors, this study considers five possible variables. These are: (1) population (POP), (2) GDP per capita (GDP), (3) real GDP growth rate (GROW), (4) service sector value added as a percentage of GDP (SER), and (5) exports to GDP ratio (EXP). Data for all control variables is sourced from the World Development Indicators (WDI) database (World Bank 2023a). The inclusion of population (POP) is suggested by a large body of theoretical and empirical literature showing a negative relationship between domestic market size and concentration (Mitton 2008; see also Todorov 2018). Empirical studies report a strong negative correlation between GDP per capita (GDP) and concentration, although the direction of causality is unclear, as economic development may lead to a reduction in concentration or lower levels of concentration may foster growth (Mitton 2008).

Many studies on market concentration report a relationship between concentration and industry growth (see Curry and George 1983 for an overview). It is believed, for instance, that entry barriers are lower for fast growing industries than for slow growing ones. Therefore, it seems reasonable to assume that concentration at economy level may also be related with growth. Because faster growing economies may attract more new companies or motivate the creation of new ones,

a negative relationship between real GDP growth (GROW) and aggregate concentration is expected.

To account for the structure of the economy, the share of the service sector in total value added (SER) is considered. This is relevant in the context of the study at hand, as the change in the relative weight of the major sectors in the economy plays a role in aggregate concentration. Over time, the relative importance of manufacturing has declined, and the relative importance has increased. At the same time, the relative importance of large firms in manufacturing has been shrinking while the relative importance of large firms in services has been rising (at least for the US; see White 2002). Therefore, a positive relationship between the share of the service sector and the level of concentration is expected.

Finally, foreign market size is approximated by exports as percentage of GDP (EXP). Regarding the relationship between foreign market size, that is, exports, and concentration, the literature suggests two alternative hypotheses: the national champion hypothesis and the domestic rivalry hypothesis (e.g., Bramati, Gaggero, and Solomon 2015). According to the national champion hypothesis, large firms are more likely to export because it enables them to exploit economies of scale and scope. Hence, the national championship hypothesis suggests a positive relationship between concentration and export levels.

The domestic rivalry hypothesis, on the other hand, argues that with more intense competition, i.e., lower industry concentration, there is pressure on domestic firms to increase their efficiency by increasing export levels. Because foreign demand is added to domestic demand, total demand is increased. This expansion could induce the creation of new plants and thus increase the number of firms an industry could sustain given its domestic and foreign demand. This would effectively result in a decrease in domestic industrial concentration. Based on the contradictory conclusions from both theoretical and empirical studies, a positive, negative, or no relationship between exports and aggregate concentration can be expected.

Instrumental variables:

To address the problem of endogeneity, the study employs an instrumental variable approach. Following Beck and Laeven (2006), three variables are considered possible candidates for valid instruments: (1) years spent under socialism (COM); (2) geographical distance to Vienna (DIST); and (3) ethnic fractionalization (ETHN). To capture the eventual long-term effects of the time spent under socialism and, therefore, the entrenchment of the socialist elite, we use the

number of years under socialism (COM) as instrumental variable. The data for this variable comes from Beck and Laeven (2006). Additionally, we use the distance to Vienna, measured as the flying distance in kilometers from the capital of the respective country to Vienna, as reported by Distance Calculator (2023). Finally, to account for ethnic fractionalization, we use the share of the major ethnic group as reported by the World Factbook (CIA 2023).

Robustness checks variables:

In the analysis below, we use two additional variables for robustness tests. First, we use an alternative dependent variable: the ratio between the largest five companies in terms of revenue and the respective GDP figure for each country (CR5). This data covers a longer period, as it starts in 2008, reporting figures for 2007, and is continued up to 2022, reporting figures for 2021, except for Albania, for which data is available after 2009. This second dataset represents an unbalanced panel consisting of 148 observations. For the second robustness test, we apply our initial analysis with control of corruption (CC) as the country-level measure for rule of law (Mitton 2008). This variable is compiled from the WGI database, and is measured in standard normal units, ranging from -2.5 to +2.5, with higher values corresponding to better outcomes (World Bank 2023b).

(4) Correlation

Table 1 presents the correlation matrix for all variables used in the study. The results of the Pearson correlation analysis indicate that concentration, measured as the concentration ratio of the ten largest companies (CR10), is positively correlated with rule of law, control of corruption, GDP per capita, share of the service sector, and export intensity. Concentration is negatively correlated with population, GDP growth, years under communism, distance to Vienna, and the share of the largest ethnic group.

For the control variables, GDP per capita is found to be strongly correlated with rule of law (positively, the correlation coefficient is 0.96), control of corruption (positively, the correlation coefficient is 0.92), export intensity (positively, the correlation coefficient is 0.73), and distance to Vienna (negatively, the correlation coefficient is -0.69). Additionally, export intensity is found to be strongly correlated with rule of law (positively, the correlation coefficient is 0.71) and control of corruption (positively, the correlation coefficient is 0.70).

For the instrumental variables, distance to Vienna (DIST) has the strongest (negative) correlation coefficient with both the rule of law (correlation coefficient is -0.59) and control of

corruption (correlation coefficient is -0.68). Finally, the alternative measure of concentration, CR5, almost perfectly correlates with the primary measure of concentration, CR10.

Table 1. Pearson correlation matrix for all variables

Variables	CR10	CR5	RL	CC	POP	GDP	GROW	SER	EXP	COM	DIST	ETHN
CR10	1											
CR5	0,98	1										
RL	0,25	0,21	1									
CC	0,48	0,43	0,91	1								
POP	-0,51	-0,50	0,13	-0,11	1							
GDP	0,28	0,23	0,96	0,92	0,02	1						
GROW	-0,01	-0,03	0,01	-0,06	-0,01	0,00	1					
SER	0,36	0,37	0,39	0,46	-0,20	0,38	-0,06	1				
EXP	0,57	0,55	0,71	0,70	-0,10	0,73	0,15	0,43	1			
COM	-0,16	-0,18	-0,47	-0,46	-0,46	-0,46	0,08	-0,09	-0,43	1		
DIST	-0,31	-0,24	-0,59	-0,68	0,28	-0,69	0,12	-0,33	-0,41	0,15	1	
ETHN	-0,41	-0,38	0,32	0,19	0,40	0,39	-0,01	-0,25	0,15	-0,32	-0,19	1

(5) Empirical models

To study the relationship between the rule of law and aggregate economic concentration, the following panel data regression model is specified:

$$CR10_{it} = \alpha + \beta RL_{it} + \gamma X'_{it}$$

where i denotes the cross-section dimension (in our case, i denotes the specific country) and t denotes the time-series dimension (in our case, t denotes years). $CR10$ is the primary measure of concentration; it is the ratio between the total revenue of the ten largest companies in each country and its respective GDP figure, both measured in millions of euros. RL represents the estimate for the rule of law. X is a vector of other variables that could plausibly affect concentration. The parameters of interest are β and γ. For our instrumental variables model, we use the same specification as above for the second stage, but estimate a first stage model by regressing the rule of law on the proposed instrumental variables. For robustness checks, we specify two alternative models. First, we use CR5 instead of CR10. This has the advantage that for the CR5 variable, we have two additional years of observations and a slightly larger dataset. The second alternative specification has the form of our baseline model but uses control of corruption (CC) instead of rule of law (RL). All calculations are performed in R using the *plm* package (Croissant and Millo 2008).

Empirical results

(1) Pooled OLS

The empirical analysis of the relationship between the rule of law and aggregate concentration starts with the estimation of a pooled OLS model of the dataset described in the previous section. Table 2 summarizes the results (intercepts not reported). Models (1) to (6) introduce one variable at a time. All explanatory variables are highly significant, excluding the variable GROW, which describes the growth rate of real GDP. From these preliminary regressions, it becomes clear that population (POP), representing the domestic size of the market, and export intensity (EXP), are not only highly significant but also possess high explanatory power, as the R-squared of those regressions has the largest value of all (0.33 in both cases).

Table 2. Determinants of concentration: results from the pooled OLS model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RL	4.655*** (1.35)						-7.515*** (2.29)	3.704*** (1.14)
log POP		-5.031*** (0.43)					-4.710*** (0.41)	-4.714*** (0.53)
log GDP			3.586*** (0.99)				2.350 (1.84)	
GROW				-0.027 (0.17)			-0.225** (0.09)	
SER					0.624*** (0.10)		-0.016 (0.09)	0.250** (0.10)
EXP						0.294*** (0.03)	0.372*** (0.04)	
R-Squared	0.06	0.33	0.07	0.00	0.13	0.33	0.67	0.42
Obs.	130	130	130	130	130	130	130	130

Model (7) in Table 2 introduces all variables into a single regression. From the individually significant variables, only three remain significant: RL, (log) POP, and EXP, and GROW has now become significant too. The sign of RL coefficient changes now and becomes negative, which might be due to problems of multicollinearity. As was shown, in the previous section RL is highly correlated with GDP, that is, GDP per capita, and EXP, that is, export intensity. We test explicitly for multicollinearity by calculating the variance inflation factors (VIF) for each variable in the pooled OLS model. The values of the VIF for RL and log GDP have values above 7 (about 7.3 and 7.8 respectively), which indicates a possible problem of collinearity. The value of the VIF for EXP is about 2.3, and for the rest of the variables, the VIFs are below 1.5.

To account for multicollinearity, we formulate model (8), where several variables are excluded, and the remaining variables are RL, log POP, and SER. In this model, we exclude log GDP, that is the logarithm of GDP per capita, as it is highly correlated with RL, the variable of interest here. EXP is also excluded from model (8) since it is highly correlated with both RL and log GDP. GROW, that real GDP growth is also excluded since its contribution to the regression is significantly small, and it turns out insignificant in its preliminary regression, but also in an additional regression model (not reported here) with RL, log POP, and SER as explanatory variables. In this final model, RL has a positive coefficient of 3.704, log POP has a negative coefficient of -4.715, and SER has a positive coefficient of 0.250. The overall explanatory power of the model is 0.42.

(2) Fixed Effects (FE) Estimation

Due to the panel nature of the dataset at hand, the empirical analysis is continued with the estimation of a fixed effects (FE) panel model. Three types of fixed effects are considered: individual FE, time FE, and two-ways FE. Results are reported in Table 3.

Table 3. Determinants of concentration: results from panel fixed effects (FE) model

	(1) Individual FE	(2) Time FE	(3) Twoways FE
RL	-0.719	3.793***	-0.719
	(2.93)	(1.08)	(2.93)
log POP	12.048	-4.683***	12.048
	(8.69)	(0.47)	(8.69)
SER	0.033	0.306***	0.033
	(0.14)	(0.09)	(0.14)
R-squared	0.03	0.46	0.03
Obs.	130	130	130

Results in Table 3 suggest that controlling for time-fixed effects is reasonable in this case. RL has a coefficient of 3.793. The coefficient of log POP is -4.683, and the coefficient of SER is 0.306. All three are highly significant. The results from the time-fixed FE model correspond also to the final pooled OLS model (8), which is also suggested by a formal F-test for time fixed effects (an additional Hausman test is in favor of using time-fixed effects against random effects). This is plausible, as noted previously by Efendic and Pugh (2015), since time fixed effects capture time relevant shocks that are common to all individual units; these are the countries in our case. These shocks might be related, for instance, to the effects of the global financial crisis in 2008 and to the effects of COVID-19 countermeasures. Including time effects only between country variation is used, so the results imply rather long-run effects.

(3) Instrumental Variables (IV) Estimation

As the next step in the empirical analysis, we address the problem of endogeneity by implementing an instrumental variable approach. As possible instruments, we consider the logarithm of years under socialism (log COM), the logarithm of distance to Vienna (log DIST), and the share of the largest ethnic group (ETHN). In the first stage, RL is regressed on log POP and SER and on the three instrumental variables. Results are reported in Table 4.

Table 4. Determinants of rule of law: results from panel fixed effects (FE) model

First stage	(1)	(2)	(3)	(4)	(5)	(6)
log POP	0.001 (0.03)					-0.076** (0.03)
SER		0.036*** (0.01)				0.019*** (0.01)
log COM			-3.652*** (0.36)			-2.900*** (0.39)
log DIST				-0.621*** (0.08)		-0.415*** (0.06)
ETHN					0.881*** (0.17)	0.609*** (0.18)
R-squared	0.00	0.14	0.23	0.43	0.10	0.61
Obs.	130	130	130	130	130	130

In Table 4, models (1) to (5) introduce one variable at a time, and model (6) contains all three variables. All three potential instruments are highly significant, with log DIST having the highest explanatory power. Given these results, the analysis proceeds to the second stage, where we estimate the effect of the rule of law on concentration when using one instrument at a time and including all instruments as well. We explicitly check for weak instruments, endogeneity, and overidentification. Results are reported in Table 5.

The estimates from the IV model suggest that log DIST, that is, distance from Vienna, could be considered a valid instrument for rule of law. The other two variables, log COM and ETHN, do not pass the endogeneity test. The coefficients of the other relevant explanatory variables: RL, log POP, and SER are highly significant too. The RL coefficient is 3.837, the log POP coefficient is -4.686, and the SER coefficient is 0.306. These coefficients correspond to the previous results from the pooled OLS and the FE models. Therefore, we consider model (2) in Table 5 as our final model.

Table 5. Determinants of concentration: results from instrumental variables (IV) model

Second stage	(1) Inst.: log COM	(2) Inst.: log DIST	(3) Inst.: ETHN	(4) Inst.: All
RL	15.005***	3.837**	-1.311	6.578***
	(3.55)	(2.26)	(2.61)	(1.85)
log POP	-5.307***	-4.686***	-4.399***	-4.838***
	(0.78)	(0.52)	(0.51)	(0.56)
SER	-0.129***	0.304***	0.503***	0.198***
	(0.17)	(0.13)	(0.139)	(0.12)
Weak instruments	42.59***	36.93***	25.20***	24.77***
Wu-Hausman	20.86***	0.001	7.19***	4.12**
Overidentification	No	No	No	Yes
R-squared	0.32	0.46	0.39	0.45
Obs.	130	130	130	130

(4) Robustness checks

As a final step in the empirical analysis, we provide two robustness checks for the final model. First, we use an extended dataset with CR5, that is, the ratio between the total revenue of the five largest companies and GDP, as a dependent variable. In the second robustness check, we use the same dataset as previously, with CR10 as a dependent variable, but replace the rule of law with control of corruption. For both scenarios, we estimate a pooled OLS, time fixed effects, and an instrumental variables model. Results are reported in Table 6.

Table 6. Determinants of concentration: robustness checks

	Dependent variable: CR5			Dependent variable: CR10		
	Pooled OLS	Time FE	IV	Pooled OLS	Time FE	IV
RL	1.139	1.286	0.818			
	(0.85)	(0.82)	(1.66)			
CC				6.234***	5.962***	3.607*
				(1.18)	(1.09)	(2.08)
log POP	-3.165***	-3.120***	-3.097***	-4.262***	-4.241***	-4.332***
	(0.43)	(0.39)	(0.43)	(0.51)	(0.45)	(0.51)
SER	0.250***	0.316***	0.334***	0.136	0.196**	0.297**
	(0.09)	(0.07)	(0.11)	(0.11)	(0.10)	(0.13)
Weak instruments			41.54***			52.26***
Wu-Hausman			0.13			3.19*
Overidentification			No			No
R-squared	0.32	0.38	0.38	0.47	0.51	0.50
Obs.	148	148	148	130	130	130

In the models with CR5 as a dependent variable, the rule of law is not significant, although log POP and SER remain highly significant. In the pooled OLS and the time FE model, RL has a positive coefficient, which is significant at a 20% level of confidence. The reasons for this could

be twofold. First, it could be that CR5 is rougher measure of concentration than CR10. Second, since these models are estimated using an extended (unbalanced) panel dataset including two additional years, it suggests that having more observations or missing data on some countries (in our case, Albania for 2007 and 2008) might alter the initial results. The second robustness check, in which the rule of law is substituted with control of corruption (CC), supports the initial results. CC is highly significant with a coefficient of 3.607, and the remaining two variables, log POP and SER, have coefficients of -4.332 and 0.297 in the final instrumental variables model.

Conclusion

It is generally agreed that strong institutions are needed to foster economic growth. After the collapse of the communist regime, this has been gradually recognized by countries in Eastern Europe, and governments have taken the challenge to induce institutional changes. Little is known about the channels through which institutions affect growth. Recent literature has emphasized the importance of microeconomic factors for the transmission of shocks into the aggregate. It has been shown that firms' size distributions may play an important role, since countries with skewer firm size distributions, that is, higher levels of concentration, may be more volatile in terms of macroeconomic performance. By examining empirically, the relationship between one aspect of the institutional environment, namely the rule of law, and economic concentration, the paper provides evidence for a possible link between institutions and growth in Southeast Europe.

The analysis has focused on ten countries in Southeast Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Moldova, Montenegro, Romania, Serbia, and Slovenia. For each of those countries, the levels of concentration have been estimated using data on the ten largest companies. On average, over the whole studied period, from 2009 to 2021, North Macedonia had the highest ratio between total revenue of the ten largest companies and GDP of about 35%, while Romania had the lowest concentration ratio of about 14%. The estimates for the rule of law, provided by the World Bank's World Governance Indicators, suggest that on average, Albania has the lowest score, while Slovenia is the leading country in the region.

The econometric analysis of the relationship between concentration and rule of law shows that there appears to be a positive relationship, that is, improvements in the rule of law are related to higher levels of aggregate concentration. This result is confirmed by the fixed effects panel model as well as the instrumental variable estimation. This finding is in line with previous research

on the role of institutions, control of corruption, and rule of law on firms' performance in Southeast Europe. It has been shown that those factors are positively related to industrial production, which implies that institutional improvement could boost production in those countries (Aralica, Svilokos, and Bacic 2018). The results from the present study complement these findings by establishing a positive relation between rule of law and (aggregate) concentration, which indicates that larger firms benefit mostly from improving the legal system. At the same time, the data suggest that the service sector appear to be contributing significantly to concentration. These findings, combined, provide some support for the "critical resource" theory. From a policy perspective, the implications of the study are that policymakers' efforts should be oriented towards small, startup firms. In some countries, supporting programs in terms of funding and institutional infrastructure are on the way for some time. Given the long-term nature of such investments, it would take years, if not a decade, to see the results in the data. Future research could make an attempt at using more disaggregated data, say, on the market level or on additional, more specific, dimensions of institutional development.

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