wiiw

FEBRUARY 2021

Working Paper 194

Firm Profits and Government Activity:

An Empirical Investigation

Petar Jolakoski, Branimir Jovanovic, Joana Madjoska,
Viktor Stojkoski and Dragan Tevdovski

The Vienna Institute for International Economic Studies
Wiener Institut für Internationale Wirtschaftsvergleiche

Firm Profits and Government Activity:

An Empirical Investigation

PETAR JOLAKOSKI
BRANIMIR JOVANOVIC
JOANA MADJOSKA
VIKTOR STOJKOSKI
DRAGAN TEVDOVSKI

Petar Jolakoski is Researcher at the Association for Research and Analysis 'ZMAI' in Skopje. Branimir Jovanovic is Economist at The Vienna Institute for International Economic Studies (wiiw). Joana Madjoska is Junior Analyst at the Department for Monetary Policy and Research of the National Bank of the Republic of North Macedonia. Viktor Stojkoski is Teaching and Research Assistant at the Faculty of Economics, University Ss. Cyril and Methodius in Skopje and Macedonian Academy of Sciences and Arts. Dragan Tevdovski is Professor at the Faculty of Economics, University Ss. Cyril and Methodius in Skopje.

Abstract

If firm profits rise to a level far above than what would have been earned in a competitive economy, this might give the firms market power, which might in turn influence the activity of the government. In this paper, we perform a detailed empirical study on the potential effects of firm profits and markups on government size and effectiveness. Using data on 30 European countries for a period of 17 years and an instrumental variables approach, we find that there exists a robust relationship between firm gains and the activity of the state, in the sense that higher firm profits reduce government size and effectiveness. Even in a group of developed countries, such as the European countries, firm power may affect state activity.

Keywords: firm profits, government size, government effectiveness

JEL classification: C23, H11, H50

CONTENTS

TABLES AND FIGURES

1. Introduction

As the world is facing a severe crisis caused by the COVID-19 pandemic, government fiscal stimuli to keep economies afloat will undoubtedly reshape and redefine the role of the state in the future. Parallel to the measures taken by the public authorities aimed at reducing the potential impact of the health crisis, fiscal stimulus packages were rolled out by governments to help the private sector in order to save jobs and businesses. Public spending as a share of GDP is projected to rise to levels unseen in recent history, changing the global economic landscape, perhaps for a prolonged time, as movements in government spending have been shown to be very rigid.

This raises important questions such as: What determines government expenditures as a percentage of GDP, i.e. state size? Are these determinants related to the quality of public good provision, competition regulation, correction for market failures, promotion of economic and political stability, protection from natural catastrophes and wars etc., or what is simply known as government effectiveness?

Government size and effectiveness have been at the focus of the public economics research community for a long period of time as the subject of many, still ongoing debates. Many factors studied in the literature have been used to explain cross-country differences in size and efficiency of government services. The most dominant theories are: Wagner's law, which is concerned with the relationship between growth of national income and government involvement in the economy (Wagner, 1911); Rodrik's theory of trade openness, which explains government size as social insurance against external risks (Rodrik, 1998); Alesina and Wacziarg's theory of country size, which states that large countries can afford to have smaller governments because they already benefit from a sizeable market that reduces their need to be open to trade (Alesina and Wacziarg, 1998); and Easterly and Levine's demographic theory, which argues that high ethnic diversity is closely associated with small state size (Easterly and Levine, 1997).

To the best of our knowledge, no research so far has empirically investigated the role of firm profits as a determinant of government size and efficiency. Our study aims to close this gap by including profits as an additional explanatory variable alongside those that have already been suggested in the literature to explain the variation in government activity, both across countries and across time. Two research hypotheses are investigated: i) that there exists a negative association between firms' profits and government size; ii) that there exists a negative association between firms' profits and government effectiveness.

The claims that profits are negatively associated with government expenditure and effectiveness might sound surprising at first. What could be a potential explanation? One explanation is through the role of firms in shaping political decisions related to economic issues. In general, firms aim to maximise profits and pay the lowest possible amount of tax to the state. To achieve this purpose, they may use different channels and try to influence political processes within a country. The lighter forms of influence include proposals to chambers of commerce regarding taxes, customs duties or other economic policy issues. More sophisticated forms include media campaigns (with open or hidden participation) about the design

of economic policies and lobbying of government officials and parliamentary members for their support. The hardest forms of influence include – but are not limited to – financing (mostly unofficial) of political leaders, politicians and media, which leads to various types of favours in return.

Another potential explanation for this interaction between firms and the government is known in the literature as 'crony capitalism'. This is an economic and political system in which firms make profits not as a result of competition, but as a result of inefficient state allocation of subsidies, tariffs, quotas, entry and regulatory barriers etc.

We find empirical evidence for the two hypotheses, even in this group of relatively homogenous and developed countries – European Union countries – most of which are required to pass through the same legislation harmonisation process and have a common market. We find that there exists a robust and stable negative relationship between the magnitude of firms' profits, measured through profit markups and profit shares, and the size and effectiveness of countries' governments. In other words, we find strong evidence that higher firm profit shares and profit markups lead to smaller and less efficient governments. The relationship is robust and is not an artefact created by outliers, nor does it change under alternative model specifications.

The rest of the paper is organised as follows. In Section 2 we give a comprehensive overview of the literature that motivated our research. In Section 3 we describe the econometric model, technique and the data used for the testing of our hypotheses. In Section 4 we present our main findings. Section 5 sets out our conclusions.

2. Literature Review

One of the earliest theories of public finance is Wagner's law, which states that there is a long-run tendency of the relative share of the public sector to increase with the growth of per-capita real national income. Wagner (1911) listed three main reasons for this upward trend of government involvement in the economy. First, increasing societal complexity will require greater protective and regulatory activity by the public sector. Second, growth in real income would facilitate the relative expansion of income-elastic expenditures on 'culture and welfare'. And finally, he asserted that economic development and changes in technology require that the government take over the management of natural monopolies in order to enhance economic efficiency (Henrekson, 1993).

In terms of government size, most of the theories are focused either on the determinants of demand for public services or on the determinants of supply for public services (Shelton, 2007). Factors that are most often cited within demand-oriented theories are: national income, trade openness, demographic trends, ethnic fragmentation and wars. Their common denominator is a necessity for the state to provide insurance against various types of risks.

Cameron (1978) was the first to use trade openness as an explanatory variable for government size. In a sample of 18 OECD countries, he demonstrated that trade openness is a strong predictor of the increase in government tax revenues as a share of GDP. The author suggested that more open countries have higher rates of industrial concentration, which tend to foster higher rates of unionisation, better collective bargaining process and stronger labour confederations that eventually lead to greater demand for government transfers in the form of social security, pensions, unemployment insurance and job training. In an extended sample of countries, Rodrik (1998) found a positive correlation between trade openness and government expenditure as a share of GDP. He denied that labour organisation was significant factor here, owing to the existence of weak collective bargaining in most developing countries, and provided an argument that government expenditures are used to provide social insurance against external risks. Similarly, Alesina and Wacziarg (1998) introduced the argument for country size as a mediating factor in the 'openness hypothesis'. The authors showed that smaller countries have a larger state size and are more open to trade, while large countries can afford to have smaller governments (and therefore lower taxes) because they already benefit from a sizeable market that reduces their need to be open to trade.

On the other hand, Easterly and Levine (1997) present another theory, in which demographic trends are the main determinant of government size. They reported that high ethnic diversity is closely associated with small state size and conjecture that, at least in their sample of African countries, interest-group polarisation leads to rent-seeking behaviour and reduces the consensus for public goods. In a similar fashion, Alesina et al. (1999) showed that ethnic fragmentation is negatively related to local financing of productive public goods (education, roads, libraries, sewers and refuse collection) in US cities and areas, even after controlling for other socioeconomic and demographic determinants (including black vs non-black heterogeneity). In a follow up study, Alesina et al. (2003) provided new measures of ethnic, linguistic and religious fractionalisation for about 190 countries and confirmed the previously

documented relationship between ethnic fragmentation and spending on welfare within a much broader dataset. Interestingly, they found similar but less significant results for linguistic fragmentation and showed that religious fragmentation is not correlated with welfare redistribution. Their explanation of this finding is that religious affiliation is the most endogenous of these three variables. Ethnicity and language are mostly fixed, but religions can be banned and individuals can be motivated to 'hide' their religion in order to avoid repression.

A detailed examination of the role of war, especially global, in the expansion of state size and building institutional capacity can be found in Rasler and Thompson (1985). Besley and Persson (2008) show that civil wars decrease the state's ability to raise revenues, while external wars generally lead to an increase in state capacity. However, Thies (2005, 2007) argued that interstate wars in Latin America, as well as in Africa, are not a catalyst for state-building activities.

When it comes to theories focused on the determinants of the supply of public services, the evolution of government expenditure is often seen through the prism of the political organisation of a society: political participation, government type, electoral rules etc. (Shelton, 2007). For example, Meltzer and Richard (1981, 1983) develop and test a general equilibrium model where the size of the government (measured by the share of income that is redistributed) depends on the relation of mean income to the income of the decisive voter as well as the electoral rules. They find that the amount of government spending in the form of redistribution to aggregate income increases with the ratio of mean to median income and with the level of income. Persson and Tabellini (1999) connect the size of the state with the model of electoral system (majoritarian or proportional) and government type (presidential or parliamentary) within a country and find that the size of the government is smaller in countries with presidential regimes. Similarly, Milesi-Ferretti et al. (2002) distinguish between types of government spending (purchases of goods and transfers) and find that governments in countries with majoritarian systems are more focused on spending on public goods, whereas governments in countries with proportional systems are keener to spend on transfers.

Along with government size, economists have also been concerned about the effectiveness of government services. In particular, using a sample of 154 countries, La Porta et al. (1999) look at economic, political and cultural factors that determine government performance, such as property rights indices, bureaucratic delays, school attainment, infrastructure quality, ethnolinguistic fragmentation, religion, latitude and many other variables for a large sample of countries. They find that countries with higher income, ethnolinguistic homogeneity, a common law system or a location further from the equator have better-performing governments. Importantly, the authors also find that governments that are more effective are also larger in size and collect higher taxes. Furthermore, Ahlerup and Hansson (2011) study the association between nationalism and government effectiveness for a cross-section of countries and find that nationalism has an inverted U-shaped relationship with government effectiveness. Lee and Whitford (2009) make use of the World Bank's Worldwide Governance Indicators (WGI) to analyse variation in government effectiveness across countries and across time to find that a significant part of it is explained by a country's relative position in the worldwide income distribution.

Certain studies have theoretically elaborated the relationship between firm power and government size and effectiveness. Acemoglu et al. (2011) developed a theoretical case to explain the emergence and persistence of inefficient states in which elites capture democratic processes and keep taxation low, at the costs of aggregate inefficiencies. In addition, Epstein and Gang (2019) use game theory to model

interactions between rich and poor constituencies on one hand and a tax administrator on the other hand in order to study the change in the tax enforcement level that subsequently influences the capacity of the state to raise revenues and fund public policy. They find that in states with weak institutions, tax evasion constrains the ability of the state to maximise social welfare.

3. Methodology

3.1. MODEL

We specify our econometric model as:

$$Government_{it} = a_0 + a_1 Profit_{it} + a_2 Controls_{it} + \alpha_t + \beta_i + u_{it} \quad (3.1)$$

where the dependent variable $Government_{it}$ is either the government size or government effectiveness of country *i* in period *t*. We measure the first variable as the log of the share of government total expenditure as a percentage of GDP in the country, whereas the effectiveness is quantified in raw values using the index from the World Bank's WGI.

For firm profits, we use two different quantities: profit shares and profit markups. As will be elaborated in more details in the following subsection, both are calculated as aggregate measures for the total financial gains generated by all firms within an economy.

Profits, however, are not enough to explain government activity, and, therefore, in every regression we also include a set of control variables. The first of these is the rule of law in the country, which is expected to have a positive effect on government performance (La Porta et al., 1999). The second is a measure of the level of economic development of a country and is quantified as the log of GDP per capita in purchasing power terms, which is included as a proxy of the Wagner hypothesis – i.e., is expected to have a positive effect on government activity. The third variable is the size of the economy, approximated through the population of the country. According to the previously mentioned empirical investigations, there is an inverse relationship between the economy and state performance – i.e., as the size of an economy increases, the government size and effectiveness significantly decrease (Alesina and Wacziarg, 1998). The last control variable is the openness of the country, which we measure as the log of the share of international trade as a percentage of GDP. More open economies are expected to have larger and more effective governments because of the increased income risk that greater openness usually entails (Ram, 2009).

Finally, in the regression specification we include time (α_t) and country (β_i) fixed effects, in order to account for possible omitted factors that are not controlled by the explanatory variables and may affect the dependent variables.

3.2. ECONOMETRIC TECHNIQUE

There might be endogeneity in this model, because government activity can also affect firm profitability. Concretely, government size is directly related to government revenues, which are related to the taxes that the government collects, which are in turn related to firm profits. Hence, bigger governments are likely to lead to lower firm profits. Government effectiveness, similarly, may affect firm profitability through several channels. On the one hand, more effective governments are more likely to prevent tax

evasion, which is likely to reduce firm profitability. On the other hand, more effective governments may also improve profitability, through better enforcement of laws and regulations and more effective institutions.

To address this potential endogeneity, one needs to find a way to isolate the changes in firm profitability that are unrelated to government activity. One standard way to do this is through a Two-Stage Least Squares (2SLS) estimation procedure. 2SLS is able to overcome the endogeneity problem by instrumenting firm profits in the first stage of the procedure with variables that are unrelated to government activity:

$$Government_{it} = b_0 + b_1 Profit_{it} + b_2 Controls_{it} + \gamma_t + \delta_i + u_{it} \quad (3.2)$$

$$Profit_{it} = c_0 + c_1 Instrument_{it} + c_2 Controls_{it} + \mu_t + \eta_i + e_{it} \quad (3.3)$$

The task of finding good instruments is never easy. Good instruments have to be correlated with the explanatory variable, but at the same time uncorrelated with the dependent variable, through channels other than the explanatory variables. Here we propose three instruments: oil prices, exchange rates and minimum wages. All of them are likely to be related to firm profits. Oil prices constitute an important part of firm expenses, and thus higher oil prices are likely to reduce firm profits; minimum wages are likely to affect wages in general, and through this firm profits as well; exchange rates determine the price of products on foreign markets, and through this affect firm demand as well as firm profits. At the same time, we do not see a direct way in which they are related to government size or effectiveness, other than through the included explanatory variables, at least in this sample of countries. Oil prices might affect government size in oil-producing countries, where governments have revenues from oil. But in our sample, only Norway has significant oil revenues, and this will be captured by the country fixed effects. Minimum wages might affect government revenues through their effect on consumption and GDP. But this will be captured by the GDP variable, which is included as a control. Exchange rates may affect government revenues through their effect on trade (exports and imports). This will be controlled by the trade openness variable (which is the sum of exports and imports). If there are some other one-time effects of the proposed instruments on government activity – such as, for example a global surge in oil prices, which leads to a global crisis and affects government activity globally – they will be accounted for by the time fixed effects. Thus, we consider that our proposed instruments are not related to government activity through channels other than the explanatory variables, and therefore satisfy the two conditions for appropriate instruments.

3.3. DATA

The main sources for the data used in our analysis are the World Economic Outlook 2019 database from the IMF and the World Bank main database. Specifically, as a proxy for government size we used data on general government total expenditure (% of GDP), while the data for the second dependent variable, government effectiveness, is taken from the World Bank's WGI.

Firm profits can be obtained from macro-data (national accounts) and micro-data (corporate accounts). We follow Katsimi and Sarantides (2012) and use data from national accounts. The amount of profits generated within an economy can be obtained by decomposing the domestic output into types of factor

income that arise from the final production of goods and services. The profit share is then calculated as a ratio between the gross operating surplus and mixed income and the market value of total output.

Profit markups are more difficult to measure because, by definition, they rely on data for marginal costs that are not directly observed. To overcome this difficulty, several approaches have been suggested in the literature. Some of these approaches include the use of micro-data or firm-level data (De Loecker and Warzynski, 2012; Karabarbounis and Neiman, 2019) or aggregate macro-data (Macallan et al., 2008; Balakrishnan and López-Salido, 2002). Here, we obtain an approximation of profit markups by estimating the ratio between the deflator of gross value added and unit labour costs, which captures the relation between final prices and marginal costs in an economy. The gross value-added deflator is calculated as the ratio between nominal value added and real value added, while the unit labour cost is calculated as the ratio between compensation of employees and their productivity. Both profit shares and profit markups were calculated using Eurostat data.

The instruments used in our analysis are the minimum wage in 2017 PPP USD collected from the ILOSTAT database, the nominal exchange rate, expressed as local currency units per USD from the World Bank, and oil shock calculated as a product of oil prices and oil share in a country's imports. Oil prices are averages for Brent, WTI and Dubai Fateh, taken from the IMF, while oil imports are from UN Comtrade.

The data for the remaining control variables – such as GDP per capita (PPP), trade (% of GDP), population – are from the World Bank database.

Annual data, for the period from 2002 to 2018, are used for 30 countries. The countries are geographically located in Europe: 28 of them are EU member states as of 2018, two are EFTA countries; 11 are non-euro and 19 euro-area countries.

Data sources, variable descriptions and their abbreviations are presented in more detail in Table 1. Table 2 shows the descriptive statistics for the variables. Table 3 lists the countries and the mean values of the included variables for each country. As we can see from Table 3, given the range and standard deviation, the cross-country differences are approximately the same in terms of the dependent variable and the independent variables of interest, profit shares and markups. France is the country with the highest ratio of government expenditure to GDP, followed by Denmark, Finland and Belgium, whereas Switzerland has the lowest ratio. Mean profit share is highest in Greece, Romania and Ireland, and lowest in Sweden, Denmark and France. The mean markups, on the other hand, are largest in Slovakia, followed by Ireland and the Czech Republic. Switzerland is the country with the lowest mean value for the markups.

Table 1 / Data sources and description of variables

Variable	Code	Definition	Data Source	Observations	Note
General government total expenditure (% of GDP)	gov_size	Total expense and net acquisition of nonfinancial assets.	WEO, IMF	510	Measured in logs
GDP per capita, constant prices PPP; 2011 international dollars	gdp_ppp_pc	GDP is expressed in constant international dollars per person.	WEO, IMF	510	Measured in logs
Population (persons)	Pop	The total population of a country consists of all persons falling within the scope of census.	WEO, IMF	510	Measured in logs
Population ages 65 and above (% of total population)	pop65	Population ages 65 and above as a % of the total population.	WDI, World Bank	510	Measured in logs
Trade (% of GDP)	Trade	The sum of exports and imports of goods and services as a share of GDP.	WDI, World Bank	510	Measured in logs
Government effectiveness	gov_eff	Captures perceptions of the quality of public services, civil service and the degree of its independence from political pressures, quality of policy formulation and implementation, and credibility of the government.	WGI, World Bank	510	
Rule of law	rule_of_law	Captures perceptions of the extent to which agents have confidence in and abide the rules of society.	WGI, World Bank	510	
Control of corruption	corruption_ control	CI captures perceptions of the extent to which public power is exercised for private gain.	WGI, World Bank	510	
DEC alternative conversion factor (LCU per US$)	exchange_rate	The annual exchange rate used for the World Bank Atlas method, expressed in local currency units per USD.	WDI, World Bank	510	Measured in logs
Statutory nominal gross monthly minimum wage, 2017 USD PPP	min. wage	The minimum monthly earnings of all employees at the end of each year.	International Labour Organization, ILOSTAT	355	Measured in logs
Profit share	profits	The ratio between the gross operating surplus and mixed income and the market value of total output.	Annual Macroeconomic database of the European Commission (AMECO)	510	Measured in logs
Profit markups	markups	The ratio between the deflator of gross value added and unit labour costs.	Bank of Spain, Quarterly Report on the Spanish Economy, Q2 2019, Box 4.	510	Measured in logs
Oil shock	oil_shock	Product between oil prices and oil share in each country's imports.	Oil prices –IMF; Imports – UN Comtrade.	510	Measured in logs

Table 2 / Sample summary statistics

Statistic	e rate	gov size	profits	markups	gdp ppp pc	pop	trade	gov eff	rule of law	oil shock	minw	corruption control	pop65
Observations	510	510	510	510	510	510	510	510	510	510	355	510	510
Mean	10.02	0.44	0.43	1.20	35698.99	17.09	1.16	1.19	1.18	8.10	911.87	1.10	0.17
Std. Dev.	40.91	0.07	0.06	0.13	15761.99	21.97	0.64	0.61	0.63	6.78	481.87	0.81	0.03
Minimum	0.50	0.25	0.31	0.93	10738.43	0.40	0.45	-0.36	-0.26	0.33	150.92	-0.44	0.10
1st quartile	0.75	0.39	0.39	1.10	24977.11	4.24	0.71	0.73	0.75	3.48	516.31	0.37	0.15
Median	0.89	0.44	0.42	1.19	33824.67	8.23	1.01	1.16	1.17	6.17	825.21	1.06	0.17
3rd quartile	3.04	0.49	0.49	1.29	42816.03	16.55	1.42	1.73	1.78	10.86	1278.10	1.88	0.18
Maximum	281.52	0.65	0.64	1.85	98537.42	82.90	4.08	2.35	2.10	47.37	2084.71	2.47	0.23

Table 3 / Mean values of the studied variables per country

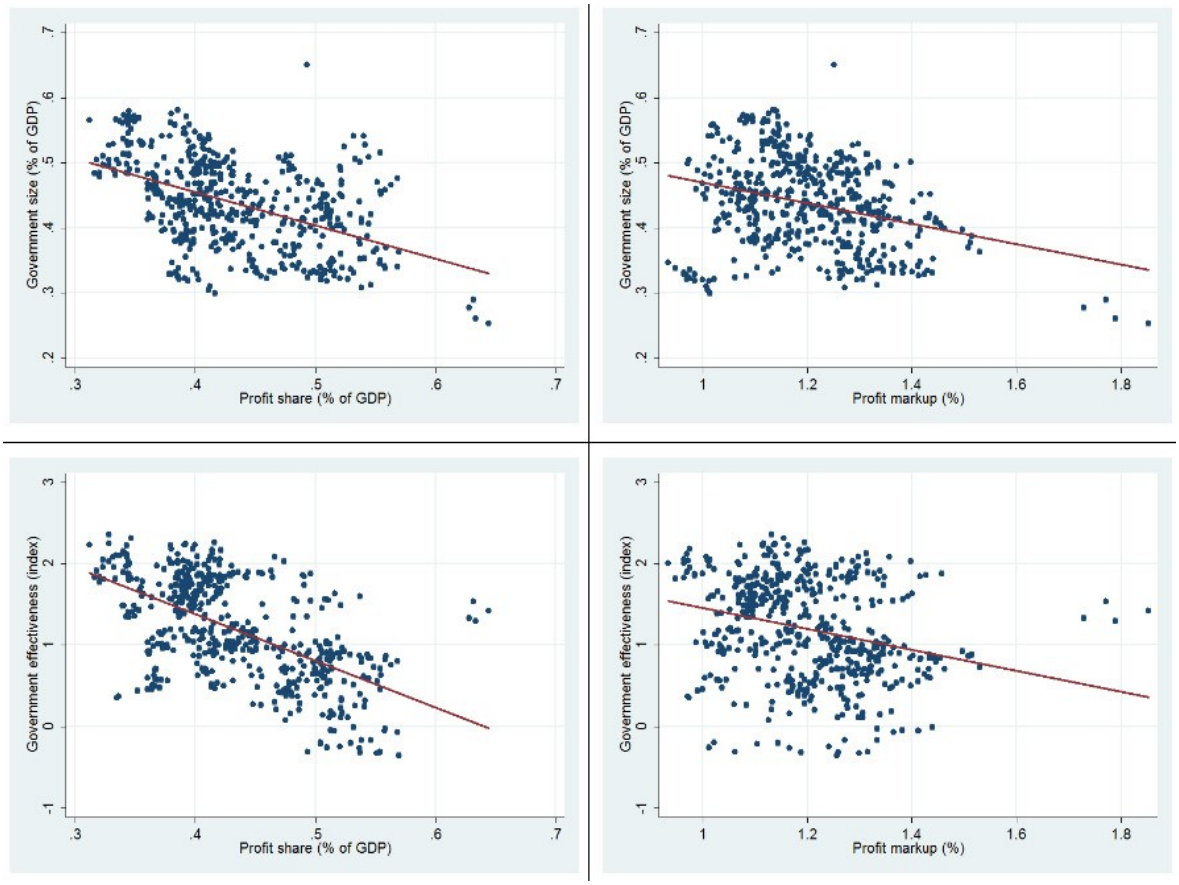
Country	e rate	gov size	profits	markups	gdp ppp pc	pop	trade	gov eff	rule of law	oil shock	minw	corruption control	pop65
Austria	0.81	0.51	0.41	1.16	43400.61	8.42	0.99	1.69	1.86	5.21	/	1.71	0.18
Belgium	0.81	0.52	0.39	1.04	40651.05	10.86	1.52	1.57	1.38	7.74	1553.14	1.49	0.18
Bulgaria	1.59	0.34	0.50	1.26	15865.50	7.44	1.13	0.14	-0.08	9.74	343.16	-0.15	0.19
Croatia	6.04	0.48	0.36	1.07	20338.37	4.31	0.85	0.54	0.17	9.74	721.49	0.14	0.18
Cyprus	0.81	0.40	0.41	1.20	34292.89	0.80	1.21	1.25	1.02	13.58	/	1.01	0.12
Czechia	22.38	0.42	0.51	1.33	28014.22	10.40	1.32	0.95	0.98	4.13	564.39	0.40	0.16
Denmark	6.04	0.53	0.34	1.14	43795.09	5.54	0.97	2.07	1.94	4.78	/	2.34	0.17
Estonia	0.81	0.38	0.42	1.25	24404.56	1.34	1.43	1.03	1.14	8.96	483.74	1.10	0.18
Finland	0.81	0.53	0.40	1.17	39430.91	5.35	0.76	2.09	1.98	10.00	/	2.29	0.18
France	0.81	0.55	0.35	1.10	38398.77	62.59	0.57	1.51	1.44	7.78	1518.33	1.38	0.18
Germany	0.81	0.46	0.39	1.11	41940.35	81.27	0.79	1.61	1.69	6.02	1824.35	1.83	0.20
Greece	0.81	0.49	0.54	1.23	28099.30	10.96	0.58	0.52	0.56	15.96	980.84	0.09	0.19
Hungary	226.40	0.49	0.41	1.30	23489.63	9.98	1.52	0.69	0.74	4.31	576.69	0.40	0.17
Ireland	0.81	0.37	0.53	1.43	50700.50	4.49	1.81	1.49	1.66	6.42	1380.95	1.58	0.12
Italy	0.81	0.49	0.48	1.20	35674.16	59.35	0.53	0.47	0.45	8.58	/	0.24	0.21
Latvia	0.79	0.37	0.47	1.30	20258.35	2.12	1.08	0.76	0.75	7.30	442.18	0.31	0.18
Lithuania	0.81	0.35	0.48	1.31	22662.02	3.11	1.28	0.82	0.78	15.06	486.97	0.38	0.17
Luxembourg	0.81	0.42	0.40	1.21	91974.34	0.51	3.35	1.73	1.82	6.88	1759.95	1.99	0.14
Malta	0.81	0.41	0.45	1.28	30882.25	0.42	2.73	1.06	1.36	17.18	996.27	0.85	0.16
Netherlands	0.81	0.44	0.41	1.09	46292.09	16.60	1.36	1.84	1.82	10.86	1591.37	2.04	0.16
Norway	6.76	0.45	0.45	1.33	63603.31	4.92	0.70	1.90	1.96	3.22	/	2.12	0.15
Poland	3.35	0.43	0.50	1.28	21343.84	38.09	0.85	0.59	0.61	6.25	689.45	0.50	0.14
Portugal	0.81	0.47	0.41	1.14	26681.16	10.46	0.72	1.10	1.12	8.74	767.51	1.03	0.19
Romania	3.30	0.34	0.54	1.22	17181.16	20.54	0.71	-0.23	0.04	5.56	394.27	-0.19	0.16
Slovakia	0.81	0.41	0.53	1.44	24545.66	5.40	1.63	0.82	0.52	5.41	494.47	0.26	0.13
Slovenia	0.81	0.43	0.37	1.03	28501.99	2.03	1.33	1.03	1.00	6.63	975.09	0.89	0.17
Spain	0.81	0.42	0.44	1.14	33128.23	45.35	0.59	1.18	1.10	10.15	914.14	1.00	0.18
Sweden	7.60	0.50	0.33	1.29	43373.75	9.47	0.84	1.93	1.93	7.73	/	2.21	0.18
Switzerland	1.10	0.32	0.39	0.98	54012.23	7.82	1.12	1.98	1.87	3.16	/	2.08	0.17
United Kingdom	0.63	0.40	0.39	1.09	38033.39	62.78	0.57	1.63	1.71	5.97	1232.95	1.80	0.17

4. Empirical Results

4.1. DESCRIPTIVE ANALYSIS

We begin the analysis with a graphical representation of the correlation between government activity and firm profits. Figure 1 shows the scatter plots of these variables for all the analysed countries. The top left panel shows the correlation between government size and the profit share, the top right panel between government size and profit markup, the bottom left between government effectiveness and the profit share and the bottom right between government effectiveness and profit markup. All the scatter plots reveal a clear negative association between government activity and firm profits: as firm profits increase, government activity tends to decline.

Figure 1 / Relationship between government activity and firm profitability



Sources: IMF's World Economic Outlook database for the general government expenditures, as percentage of GDP; World Bank's World Governance Indicators for government effectiveness; Profit share and profit markup as explained in the text.

4.2. OLS RESULTS

We next present the Ordinary Least Squares (OLS) results of the model shown in Eq. (3.1). OLS also provides consistent, unbiased and efficient estimation in situations when there is exogeneity among regressors and the errors are homoscedastic and serially uncorrelated. Even though the exogeneity assumption is unlikely to hold in our case, the OLS has been the most frequently used method for studying the determinants of the government size and effectiveness – see, for example, Shelton (2007) and Ram (2009) – and for that reason, we also report its results. To account for potential heteroscedasticity and serial correlation, the standard errors of each coefficient are corrected by implementing the clustered standard errors procedure. Table 4 reports these results, where the dependent variable in the regressions is shown in the heading row.

Table 4 / OLS results

	(1) OLS	(2) OLS	(3) OLS	(4) OLS
VARIABLES	**gov_size**	**gov_size**	**gov_eff**	**gov_eff**
profits (log)	-0.560***		-0.368	
	(0.169)		(0.284)	
markups (log)		-0.505***		-0.195
		(0.180)		(0.159)
gdp_pp_c (log)	-0.309***	-0.337***	0.355**	0.330**
	(0.098)	(0.089)	(0.145)	(0.129)
trade (log)	-0.015	-0.010	0.223	0.198
	(0.109)	(0.106)	(0.221)	(0.225)
pop (log)	-0.145	-0.248***	-0.462	-0.549*
	(0.123)	(0.087)	(0.341)	(0.311)
rule_of_law	0.095*	0.091**	0.422***	0.429***
	(0.049)	(0.042)	(0.073)	(0.074)
Constant	2.098**	3.185***	-2.491	-1.698
	(0.919)	(0.869)	(2.219)	(1.763)
Observations	510	510	510	510
R-squared	0.518	0.533	0.386	0.381
Number of countries	30	30	30	30

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Columns (1) and (2) show the results where the dependent variable is the government size, columns (3) and (4) where the dependent variable is the government effectiveness. We observe that both profit shares and markups exhibit a negative marginal effect on government size and effectiveness. In the government size regressions, the effects are highly significant statistically. A 1% increase in the profit share results in an average decrease in the government size of 0.6% and a reduction in the government effectiveness of 0.4 units, while an increase in the level of markups is associated with an average decrease in the government size of 0.5% and a decrease of government effectiveness of 0.2 units. As for the control variables, the rule of law is significant in all the regressions, with a positive sign implying that countries with a better rule of law have bigger and more effective governments. GDP per capita is also significant in all of the regressions, with negative coefficients in the size regressions, and positive in the effectiveness regressions. The negative sign in the size regressions is against the Wagner law, as it implies that more developed countries actually have smaller governments. The positive sign in the government effectiveness regressions is as expected, as it implies that more developed countries have

more effective governments. Population is negative in all regressions, although significant in only a few, implying that bigger countries have smaller and less effective governments, as expected. Trade, finally, is insignificant in all regressions, which might be explained by the similarity of the analysed countries.

4.3. 2SLS RESULTS

As a means of addressing the problem of endogeneity, as explained above, we propose a 2SLS estimation, where firm profits are instrumented by oil prices, exchange rates and minimum wages. Table 5 presents the 2SLS estimation of Eqs. (3.2) and (3.3), where the dependent variable is the government size.

Table 5 / 2SLS results for government size

VARIABLES	(1) Second stage gov_size	(2) First stage profits	(3) Second stage gov_size	(4) First stage markups
profits (log)	-0.998***			
	(0.187)			
markups (log)			-0.581***	
			(0.114)	
minw (log)		-0.116***		-0.170***
		(0.022)		(0.027)
e_rate (log)		0.172***		0.303***
		(0.044)		(0.056)
oil_shock (log)		-0.038***		-0.063***
		(0.008)		(0.010)
gdp_pp_c (log)	-0.279***	0.225***	-0.357***	0.229***
	(0.048)	(0.033)	(0.041)	(0.042)
trade (log)	-0.042	0.139***	-0.043	0.241***
	(0.059)	(0.035)	(0.059)	(0.045)
pop (log)	0.108	0.353***	-0.256***	0.021
	(0.124)	(0.063)	(0.083)	(0.080)
rule_of_law	0.083***	-0.068***	0.089***	-0.108***
	(0.027)	(0.018)	(0.026)	(0.023)
Observations	355	355	355	355
R-squared	0.567		0.593	
Number of countries	22	22	22	22
F test for instruments	53.35		76.73	

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Columns (1) and (2) of Table 5 show the results for the profit share, where column (2) shows the first stage regression and column (1) the second stage regression. From the first stage regression, it can be seen that the three instruments are all strong in explaining the dynamics of the profit share – they are all highly significant and with expected signs. The minimum wage and the oil prices are negative, implying that when they increase, firm profits decline, while the exchange rate is positive, meaning that when the exchange rate depreciates against the USD, firm profits increase, owing to the higher foreign demand. The F-test for the significance of the three variables is 23.2, far higher than the rule of thumb value of 10, meaning that the instruments are not weak. From the second stage regression, it can be seen that the profit share is now even stronger than in the OLS estimation – its coefficient is around 1 and highly significant, implying that a 1% increase in the profit share results in an average decrease in the government size of 1%.

Columns (3) and (4) of Table 5 show the results for the profit markup. These results are very similar to the previous ones. The three instruments from the first stage regression are strong predictors for the profit markups – all of them are individually significant at 1%, with the expected signs, and the F-test value for their joint significance is 26.1. Then, in the second stage regression, the markup is highly significant for the government size and with a bigger coefficient than in the OLS estimation (-0.6), implying that if markups increase by 1%, government size declines by 0.6%. When the control variables are in question, their coefficients in the 2SLS estimates are very similar to the previously elaborated OLS results.

Table 6 presents the 2SLS results for government effectiveness. Columns (1) and (2) show the results for the profit share, and columns (3) and (4) for the profit markup. The first stage regressions in both cases are very similar to the government size results – the three instruments turn out to be strong predictors of the profit shares and profit markups. The second stage regressions indicate that the effects of the profit variables on government effectiveness are again negative, significant and stronger than in the OLS case – a 1% increase in the profit share leads to a decline in government effectiveness by 1 unit, while a 1% increase in the profit markup decreases government effectiveness by 0.7 units.

Table 6 / 2SLS results for government effectiveness

VARIABLES	(1) Second stage gov_eff	(2) First stage profits	(3) Second stage gov_eff	(4) First stage markups
profits (log)	-0.976**			
	(0.409)			
markups (log)			-0.672***	
			(0.252)	
minw (log)		-0.116***		-0.170***
		(0.022)		(0.027)
e_rate (log)		0.172***		0.303***
		(0.044)		(0.056)
oil_shock (log)		-0.038***		-0.063***
		(0.008)		(0.010)
gdp_pp_c (log)	0.511***	0.225***	0.445***	0.229***
	(0.105)	(0.033)	(0.091)	(0.042)
trade (log)	0.506***	0.139***	0.534***	0.241***
	(0.129)	(0.035)	(0.129)	(0.045)
pop (log)	-0.177	0.353***	-0.508***	0.021
	(0.271)	(0.063)	(0.184)	(0.080)
rule_of_law	0.313***	-0.068***	0.309***	-0.108***
	(0.059)	(0.018)	(0.057)	(0.023)
Observations	355	355	355	355
R-squared	0.443		0.464	
Number of countries	22	22	22	22
F test for instruments	53.35		76.73	

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4. ROBUSTNESS CHECKS

We conduct several robustness checks. First, we reduce the sample of estimation by eliminating several first and last years from the sample. Next, we reduce the sample by removing the observations with the lowest and highest values. Then, we reduce the instrument set to two variables instead of three. Finally,

we change the specification of our model by including two additional explanatory variables: the fraction of the elderly population in the country and the control of corruption, and include the lagged values of the dependent variables as instruments.

Table 7 shows the results of the regressions with reduced number of years, for government size. The first three columns show the results where the explanatory variable is the profit share, the last three columns for the profit markups. The first of these columns presents the results where the first several years of the sample are excluded; the second of the columns show results where the last several years are excluded; and the third results where both the first and last couple of years are excluded. In all the cases, around 20% of the observations are excluded. The exact time periods are indicated in the heading rows of the table. It can be seen that the coefficients on the profit variables remain similar to before – highly significant and negative, even with slightly higher magnitude than previously.

Table 7 / Results for government size with reduced number of years

	(1) After 2005	(2) Before 2016	(3) After 2004 and Before 2017	(4) After 2005	(5) Before 2016	(6) After 2004 and Before 2017
VARIABLES	**gov_size**	**gov_size**	**gov_size**	**gov_size**	**gov_size**	**gov_size**
profits (log)	-1.609***	-0.960***	-1.637***			
	(0.215)	(0.312)	(0.297)			
markups (log)				-1.032***	-0.538***	-0.926***
				(0.126)	(0.177)	(0.154)
gdp_pp_c (log)	-0.214***	-0.328***	-0.226***	-0.384***	-0.379***	-0.417***
	(0.073)	(0.062)	(0.084)	(0.054)	(0.056)	(0.060)
trade (log)	0.215**	-0.032	0.289***	0.217***	-0.047	0.210**
	(0.087)	(0.073)	(0.106)	(0.078)	(0.069)	(0.085)
pop (log)	0.609***	-0.137	0.326*	0.110	-0.412***	-0.180
	(0.164)	(0.143)	(0.176)	(0.113)	(0.115)	(0.122)
rule_of_law	-0.002	0.107***	0.014	0.008	0.105***	0.038
	(0.036)	(0.034)	(0.040)	(0.032)	(0.033)	(0.033)
Observations	275	288	251	275	288	251
R-squared	0.544	0.494	0.417	0.646	0.532	0.577
Number of countries	22	21	22	22	21	22
F test for instruments	49.81	26.45	34.5	67.85	45.12	56.88

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 shows the results with reduced number of years, for government effectiveness. The columns are the same as before – the first three columns show the results where the explanatory variable is the profit share, and the last three columns show the results for profit markups. Again, results remain very stable. Profit variables are negative and highly significant, and on some occasions even with a stronger magnitude than in the baseline regressions.

Table 8 / Results for government effectiveness with reduced number of years

	(1) After 2005	(2) Before 2016	(3) After 2004 and Before 2017	(4) After 2005	(5) Before 2016	(6) After 2004 and Before 2017
VARIABLES	gov_eff	gov_eff	gov_eff	gov_eff	gov_eff	gov_eff
profits (log)	-0.617*	-1.448**	-1.052**			
	(0.373)	(0.673)	(0.507)			
markups (log)				-0.516**	-0.964**	-0.765**
				(0.245)	(0.381)	(0.299)
gdp_pp_c (log)	0.335***	0.461***	0.462***	0.290***	0.388***	0.355***
	(0.127)	(0.134)	(0.144)	(0.105)	(0.121)	(0.115)
trade (log)	0.204	0.580***	0.404**	0.254*	0.591***	0.417**
	(0.151)	(0.158)	(0.182)	(0.151)	(0.149)	(0.165)
pop (log)	-0.492*	-0.421	-0.628**	-0.643***	-0.844***	-0.941***
	(0.284)	(0.309)	(0.301)	(0.219)	(0.246)	(0.237)
rule_of_law	0.346***	0.379***	0.327***	0.335***	0.367***	0.329***
	(0.063)	(0.072)	(0.069)	(0.062)	(0.070)	(0.065)
Observations	275	288	251	275	288	251
R-squared	0.334	0.378	0.309	0.352	0.428	0.353
Number of countries	22	21	22	22	21	22
F test for instruments	49.81	26.45	34.5	67.85	45.12	56.88

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We next present the results when the observations with lowest and highest values for the government activity and firm profits variables are excluded from the sample, in Table 9. The coefficients for the profit variables remain roughly the same as before in magnitude. Only the significance of the profit variables in the government effectiveness regressions declines.

Table 9 / Results with low and high values for the variables excluded

VARIABLES	(1) Gov. size + Profit share	(2) Gov. size + Profit markup	(3) Gov. eff. + Profit share	(4) Gov. eff. + Profit markup
profits (log)	-1.315***		-0.919	
	(0.273)		(0.694)	
markups (log)		-0.743***		-0.740
		(0.156)		(0.515)
gdp_pp_c (log)	-0.320***	-0.338***	0.515***	0.487***
	(0.047)	(0.038)	(0.110)	(0.107)
trade (log)	-0.087	-0.090*	0.580***	0.625***
	(0.056)	(0.049)	(0.136)	(0.137)
pop (log)	0.139	-0.172**	-0.233	-0.583***
	(0.117)	(0.072)	(0.277)	(0.197)
rule_of_law	0.013	0.049**	0.355***	0.310***
	(0.032)	(0.024)	(0.078)	(0.076)
Observations	305	300	308	300
R-squared	0.416	0.581	0.433	0.483
Number of countries	22	22	21	21
F test for instruments	32.14	45.4	27.98	39.73

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We continue the robustness check by reducing the instrument set to two variables, instead of all three. Table 10 shows the results for government size, Table 11 for government effectiveness. The first three columns of the two tables show the results for the profit share variables, the last three for the profit markup. The instrument set is indicated in the heading row of the tables. It can be seen that results remain largely unchanged – in Table 10, the profit variables are always highly significant and with coefficients similar to the baseline ones. In Table 11, the profit variables are insignificant in the cases where the instrument set consists of the oil prices and the minimum wage.

Table 10 / Results for government size with alternative instrument set

VARIABLES	(1) Minimum wage + Exchange rate gov_size	(2) Oil prices + Exchange rate gov_size	(3) Oil prices + Minimum wage gov_size	(4) Minimum wage + Exchange rate gov_size	(5) Oil prices + Exchange rate gov_size	(6) Oil prices + Minimum wage gov_size
profits (log)	-1.136***	-0.518*	-1.370***			
	(0.247)	(0.273)	(0.241)			
markups (log)				-0.658***	-0.335**	-0.868***
				(0.151)	(0.162)	(0.148)
gdp_pp_c (log)	-0.261***	-0.313***	-0.230***	-0.350***	-0.346***	-0.330***
	(0.054)	(0.044)	(0.056)	(0.043)	(0.037)	(0.045)
trade (log)	-0.018	-0.023	0.021	-0.021	-0.046	0.039
	(0.066)	(0.062)	(0.069)	(0.065)	(0.051)	(0.067)
pop (log)	0.178	-0.158	0.295*	-0.238***	-0.272***	-0.189**
	(0.150)	(0.110)	(0.151)	(0.088)	(0.073)	(0.092)
rule_of_law	0.074**	0.097***	0.058*	0.081***	0.103***	0.060**
	(0.030)	(0.026)	(0.031)	(0.028)	(0.023)	(0.029)
Observations	355	510	355	355	510	355
R-squared	0.537	0.517	0.466	0.582	0.521	0.527
Number of countries	22	30	22	22	30	22
F test for instruments	32.81	21.85	39.78	45.07	43.43	52.85

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11 / Results for government effectiveness with alternative instrument set

VARIABLES	(1) Minimum wage + Exchange rate gov_eff	(2) Oil prices + Exchange rate gov_eff	(3) Oil prices + Minimum wage gov_eff	(4) Minimum wage + Exchange rate gov_eff	(5) Oil prices + Exchange rate gov_eff	(6) Oil prices + Minimum wage gov_eff
profits (log)	-1.256**	-1.588**	-0.190			
	(0.534)	(0.700)	(0.461)			
markups (log)				-0.919***	-0.910**	-0.134
				(0.336)	(0.403)	(0.301)
gdp_pp_c (log)	0.548***	0.470***	0.407***	0.468***	0.365***	0.394***
	(0.116)	(0.113)	(0.107)	(0.095)	(0.091)	(0.091)
trade (log)	0.552***	0.444***	0.374***	0.605***	0.349***	0.381***
	(0.144)	(0.159)	(0.132)	(0.146)	(0.127)	(0.137)
pop (log)	-0.036	-0.084	-0.571**	-0.450**	-0.449**	-0.635***
	(0.324)	(0.282)	(0.289)	(0.195)	(0.183)	(0.187)
rule_of_law	0.295***	0.355***	0.365***	0.284***	0.381***	0.363***
	(0.064)	(0.066)	(0.059)	(0.063)	(0.058)	(0.059)
Observations	355	510	355	355	510	355
R-squared	0.414	0.287	0.47	0.439	0.332	0.473
Number of countries	22	30	22	22	30	22
F test for instruments	32.81	21.85	39.78	45.07	43.43	52.85

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Next, we change the model specification and investigate if our model is robust with the inclusion of certain explanatory variables from the literature. For this purpose, we include two additional variables in the model. First, we include the log of the fraction of the population aged above 65. This variable is a proxy of the demographic constitution of the country. It is known that demographics play an important role in the production of the long-run government supply and demand. Concretely, the ageing population should exert a positive influence on government spending by increasing the expenditures for social security and medical care, thus additionally affecting the effectiveness of the government (Shelton, 2007; Lee and Lin, 1994). Second, we add the corruption variable from WGI. The control of corruption 'captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption'. By definition, the control of corruption evaluates the condition of the state with respect to capture by elites and private interests. Therefore, it may serve as an alternate measure for the magnitude of crony capitalism in an economy to our profit quantities. The results are displayed in Table 12. In each specification, the markups and profit shares remain significant explanatory variables with negative marginal effect.

Table 12 / 2SLS results for government size and effectiveness with two additional control variables

VARIABLES	(1) Second stage gov_size	(2) First stage profits	(3) Second stage gov_size	(4) First stage markups	(5) Second stage gov_eff	(6) First stage profits	(7) Second stage gov_eff	(8) First stage markups
profits (log)	-0.986***				-1.185***			
	(0.183)				(0.398)			
markups (log)			-0.582***				-0.778***	
			(0.112)				(0.243)	
minw (log)		-0.123***		-0.181***		-0.123***		-0.181***
		(0.023)		(0.029)		(0.023)		(0.029)
e_rate (log)		0.160***		0.290***		0.160***		0.290***
		(0.045)		(0.057)		(0.045)		(0.057)
oil_shock (log)		-0.039***		-0.062***		-0.039***		-0.062***
		(0.008)		(0.010)		(0.008)		(0.010)
gdp_pp_c (log)	-0.242***	0.252***	-0.323***	0.258***	0.362***	0.252***	0.273***	0.258***
	(0.051)	(0.038)	(0.044)	(0.048)	(0.111)	(0.038)	(0.096)	(0.048)
trade (log)	-0.037	0.142***	-0.035	0.244***	0.505***	0.142***	0.529***	0.244***
	(0.059)	(0.035)	(0.058)	(0.045)	(0.127)	(0.035)	(0.126)	(0.045)
pop (log)	0.123	0.359***	-0.253***	0.003	-0.083	0.359***	-0.517***	0.003
	(0.126)	(0.065)	(0.084)	(0.083)	(0.273)	(0.065)	(0.182)	(0.083)
rule_of_law	0.103***	-0.050**	0.091***	-0.108***	0.291***	-0.050**	0.268***	-0.108***
	(0.030)	(0.021)	(0.030)	(0.027)	(0.065)	(0.021)	(0.066)	(0.027)
pop65_log	-0.139	-0.055	-0.166*	-0.105	0.861***	-0.055	0.828***	-0.105
	(0.090)	(0.068)	(0.088)	(0.087)	(0.196)	(0.068)	(0.190)	(0.087)
corruption_control	-0.046*	-0.033*	-0.021	-0.01	0.109**	-0.033*	0.139***	-0.01
	(0.025)	(0.017)	(0.024)	(0.022)	(0.054)	(0.017)	(0.051)	(0.022)
Observations	355	355	355	355	355	355	355	355
R-squared	0.576		0.598		0.457		0.491	
Number of countries	22	22	22	22	22	22	22	22
F test for instruments	55.14		77.98		55.14		77.98	

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finally, we add the lagged values of the profit share, profit markups, government size and government effectiveness to the set of instruments in our 2SLS regression analysis. Table 13 gives these results for the first and second stages of the regression analysis. In every case, firm profits and profit markups remain significant predictors, with negative marginal value of the government size and government effectiveness.

Table 13 / 2SLS results for government size and effectiveness with lags as additional instruments

VARIABLES	(1) Second stage gov_size	(2) First stage profits (log)	(3) Second stage gov_size	(4) First stage markups (log)	(5) Second stage gov_eff	(6) First stage profits (log)	(7) Second stage gov_eff	(8) First stage markups
profits (log)	-0.808***				-0.602***			
	(0.099)				(0.211)			
markups (log)			-0.547***				-0.419***	
			(0.066)				(0.142)	
minw (log)		-0.062***		-0.083***		-0.055***		-0.076***
		(0.017)		(0.018)		(0.017)		(0.018)
e_rate (log)		0.072**		0.093**		0.062*		0.096**
		(0.035)		(0.039)		(0.036)		(0.040)
oil_shock (log)		-0.01		-0.021***		-0.01		-0.023***
		(0.006)		(0.007)		(0.006)		(0.007)
profits lagged (log)		0.756***				0.715***		
		(0.044)				(0.042)		
markups lagged (log)				0.825***				0.779***
				(0.037)				(0.035)
gov_size lagged (log)		0.062**		0.091***				
		(0.028)		(0.031)				
gov_eff lagged						-0.031**		-0.02
						(0.013)		(0.014)
gdp_pp_c (log)	-0.309***	0.100***	-0.374***	0.090***	0.454***	0.089***	0.407***	0.060**
	(0.044)	(0.028)	(0.042)	(0.030)	(0.095)	(0.027)	(0.090)	(0.029)
trade (log)	-0.05	0.088***	-0.03	0.104***	0.454***	0.101***	0.468***	0.114***
	(0.056)	(0.026)	(0.056)	(0.029)	(0.119)	(0.027)	(0.120)	(0.030)
pop (log)	0.03	0.121**	-0.247***	0.02	-0.376*	0.101**	-0.579***	-0.01
	(0.097)	(0.048)	(0.084)	(0.051)	(0.208)	(0.048)	(0.180)	(0.052)
rule_of_law	0.090***	-0.02	0.092***	-0.036**	0.315***	-0.01	0.315***	-0.03
	(0.025)	(0.014)	(0.025)	(0.015)	(0.054)	(0.014)	(0.054)	(0.015)
Observations	335	335	335	335	335	335	335	335
R-squared	1		1		0		0	
Number of countries	22	22	22	22	22	22	22	22
F test for instruments	186		229		187		227	

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To conclude, the robustness analysis supports the previous findings, that firm profits exhibit a sizeable and significant negative effect on government activity.

5. Conclusion

We investigated the potential impact of firm profits on government size and effectiveness for a panel of 30 European countries over a period of 17 years. This was done by considering country-wise aggregated indices of profit shares and margins as measures for the level of firm gains within an economy. By utilising a 2SLS technique, which accounts for endogeneity, we showed that profits have a significant negative effect on government size and effectiveness. A series of robustness checks was also performed, which confirmed the initial results. Hence, the discovered pattern is non-trivial and may play a major role in shaping state activity.

We conjectured several possible explanations for the direction and the magnitude of the relationship between firm profits and government size and effectiveness. Among these conjectures was the role of firms in shaping political decisions related to economic issues. Another possible explanation was the effect of crony capitalism – the presence of an economic system in which businesses thrive not as a result of risk, but rather as a return on money amassed through a nexus between a business class and the political class. By definition, crony capitalism is directly related to the presence of corruption within a state, but may not necessarily represent a synonymous concept. In this aspect, we believe the observation that our measures of firm gains offer a more plausible explanation for the effect of firm power on government activity.

Apart from the increase in profits from a macroeconomic perspective, another trend that is worth mentioning is the increase in profit concentration within a relatively small number of companies. In a 2015 report by the McKinsey Global Institute, it was reported that 10% of the world's publicly listed companies make around 80% of all the profits. According to *The Economist*, this 'superstar effect' – observed for large and global companies – is most visible in the United States. The effect has also been confirmed in the literature for some of the largest economies in the world, but mostly for the US (De Loecker et al., 2020; Grullon et al., 2015; Bessen, 2016; Philippon, 2019). In fact, using an example for the telecommunications industry, Philippon (2019) explains that the relationship between competition and concentration arises from rent-seeking behaviour among big firms that continuously lobby to increase their profits. Autor et al. (2020) show that the increase in the aggregate markup comes as a result of an increase in the market share of big companies, or 'superstar firms' with the use of micro-data. Finally, using industry-level data, in Barkai (2016) the shares of labour, capital and profits and their interaction with market competition were studied and it was found that increments in market concentration occur simultaneously with a decline in the labour share and an increase in the profit share. In this context, further analysis of the correlation and/or causality between the trend of increasing profits and the trend of increasing concentration of profits within a few companies/industries represents an interesting direction for future research.

References and other relevant works

Acemoglu, D., D. Ticchi and A. Vindigni (2011), 'Emergence and Persistence of Inefficient States', *Journal of the European Economic Association*, 9(2), pp. 177-208.

Ahlerup, P. and G. Hansson (2011), 'Nationalism and Government Effectiveness', *Journal of Comparative Economics*, 39(3), pp. 431-451.

Alesina, A., R. Baqir and W. Easterly (1999), 'Public Goods and Ethnic Divisions', *The Quarterly Journal of Economics*, 114(4), pp. 1243-1284.

Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat and R. Wacziarg (2003), 'Fractionalization', *Journal of Economic Growth*, 8(2), pp. 155-194.

Alesina, A. and R. Wacziarg (1998), 'Openness, Country Size and Government', *Journal of Public Economics*, 69(3), pp. 305-321.

Autor, D., D. Dorn, L.F. Katz, C. Patterson and J. Van Reenen (2020), 'The Fall of the Labor Share and the Rise of Superstar Firms', *The Quarterly Journal of Economics*, 135(2), pp. 645-709.

Balakrishnan, R. and J.D. López-Salido (2002), 'Understanding UK Inflation: the Role of Openness', Bank of England Working Papers, No. 164.

Barkai, S. (2016), 'Declining Labor and Capital Shares', *The Journal of Finance*, 75(5), pp. 2421-2463.

Besley, T. and T. Persson (2008), 'Wars and State Capacity', *Journal of the European Economic Association*, 6(2-3), pp. 522-530.

Bessen, J.E. (2016), 'How Computer Automation Affects Occupations: Technology, Jobs, and Skills', Boston University School of Law, Law and Economics Research Paper, No. 15-49.

Cameron, D.R. (1978), 'The Expansion of the Public Economy: A Comparative Analysis', *American Political Science Review*, 72(4), pp. 1243-1261.

De Loecker, J., J. Eeckhout and G. Unger (2020), 'The Rise of Market Power and the Macroeconomic Implications', *The Quarterly Journal of Economics*, 135(2), pp. 561-644.

De Loecker, J. and F. Warzynski (2012), 'Markups and Firm-Level Export Status', *American Economic Review*, 102(6), pp. 2437-2471.

Easterly, W. and R. Levine (1997), 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *The Quarterly Journal of Economics*, 112(4), pp. 1203-1250.

Epstein, G.S. and I.N. Gang (2019), 'Inequality, Good Governance, and Endemic Corruption', *International Tax and Public Finance*, 26(5), pp. 999-1017.

Grullon, G., Y. Larkin and R. Michaely (2015), 'The Disappearance of Public Firms and the Changing Nature of US Industries', available at dx. doi. org/10.2139/ssrn, 2612047.

Henrekson, M. (1993), 'Wagner's Law – A Spurious Relationship?', *Public Finance*, 46(3), pp.406-415.

Karabarbounis, L. and B. Neiman (2019), 'Accounting for Factorless Income', *NBER Macroeconomics Annual*, 33(1), pp. 167-228.

Katsimi, M. and V. Sarantides (2012), 'The Impact of Fiscal Policy on Profits', *Economic Inquiry*, 50(4), pp. 1050-1068.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishny (1999), 'The Quality of Government', *The Journal of Law, Economics, and Organization*, 15(1), pp. 222-279.

Lee, B.S. and S. Lin (1994), 'Government Size, Demographic Changes, and Economic Growth', *International Economic Journal*, 8(1), pp. 91-108.

Lee, S.-Y. and A.B. Whitford (2009), 'Government Effectiveness in Comparative Perspective,' *Journal of Comparative Policy Analysis*, 11(2), pp. 249-281.

Macallan, C., S. Millard and M. Parker (2008), 'The Cyclicality of Mark-Ups and Profit Margins for the United Kingdom: Some New Evidence', Bank of England Working Papers, No. 351

Meltzer, A.H. and S.F. Richard (1981), 'A Rational Theory of the Size of Government', *Journal of Political Economy*, 89(5), pp. 914-927.

Meltzer, A.H. and S.F. Richard (1983), 'Tests of a Rational Theory of the Size of Government', *Public Choice*, 41(3), pp. 403-418.

Milesi-Ferretti, G.M., R. Perotti and M. Rostagno (2002), 'Electoral Systems and Public Spending', *The Quarterly Journal of Economics*, 117(2), pp. 609-657.

Persson, T. and G. Tabellini (1999), 'The Size and Scope of Government: Comparative Politics with Rational Politicians', *European Economic Review*, 43(4-6), pp. 699-735.

Philippon, T. (2019), *The Great Reversal: How America Gave Up on Free Markets*, Harvard University Press, Cambridge, Massachusetts.

Ram, R. (2009), 'Openness, Country Size, and Government Size: Additional Evidence from a Large Cross-Country Panel', *Journal of Public Economics*, 93(1-2), pp.213-218.

Rasler, K.A. and W.R. Thompson (1985), 'War Making and State Making: Governmental Expenditures, Tax Revenues, and Global Wars', *American Political Science Review*, 79(2), pp. 491-507.

Rodrik, D. (1998), 'Why do More Open Economies Have Bigger Governments?', *Journal of Political Economy*, 106(5), pp. 997-1032.

Shelton, C.A. (2007), 'The Size and Composition of Government Expenditure', *Journal of Public Economics*, 91(11-12), pp. 2230-2260.

Thies, C.G. (2005), 'War, Rivalry, and State Building in Latin America', *American Journal of Political Science*, 49(3), pp. 451-465.

Thies, C.G. (2007), 'The Political Economy of State Building in Sub-Saharan Africa', *The Journal of Politics*, 69(3), pp. 716-731.

Wagner, A. (1911), 'Staat' (in nationalökonomischer Hinsicht), in: *Handwörterbuch der Staatswissenschaften* Bd. 7, Jena, pp. 727-739.

IMPRESSUM

Herausgeber, Verleger, Eigentümer und Hersteller:
Verein „Wiener Institut für Internationale Wirtschaftsvergleiche“ (wiiw),
Wien 6, Rahlgasse 3

ZVR-Zahl: 329995655

Postanschrift: A 1060 Wien, Rahlgasse 3, Tel: [+431] 533 66 10, Telefax: [+431] 533 66 10 50
Internet Homepage: www.wiiw.ac.at

Offenlegung nach § 25 Mediengesetz: Medieninhaber (Verleger): Verein "Wiener Institut für Internationale Wirtschaftsvergleiche", A 1060 Wien, Rahlgasse 3. Vereinszweck: Analyse der wirtschaftlichen Entwicklung der zentral- und osteuropäischen Länder sowie anderer Transformationswirtschaften sowohl mittels empirischer als auch theoretischer Studien und ihre Veröffentlichung; Erbringung von Beratungsleistungen für Regierungs- und Verwaltungsstellen, Firmen und Institutionen.

wiiw

wiiw.ac.at

https://wiiw.ac.at/p-5598.html