The influence of economic disparities of regions on political polarization in Czech Republic

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Abstract: The aim of the paper is to prove a hypothesis concerning the causality of economic well-being and political polarization in the state. The causality is proven in all regions of the Czech Republic on the observed data set, from 1993 to the present. The evidence was provided by expressing the economic well-being by three indicators, i.e., gross domestic product per capita, unemployment and disposable income per capita in combination with the development of a created polarization index. This index depends on the left-right ideological party division combined with election results in the Chamber of Deputies of the Parliament of the Czech Republic for regional districts. Socio-demographic indicators of the development of individual regions were used as control variables. These include, the average state of the population, the share of university-educated people in the average state of the population, age indicators, the population density of a given region, or voter turnout in a given election year. The most important variable of the economic well-being influencing the development of polarization is the disposable income of households. The proof is accomplished by quantitative economic analysis using the Least Squares Method.

Keywords: polarization, politics, economic well-being, Czech Republic, gross domestic product, disposable income, unemployment, political economics
JEL Classification: D72, E61, I31, P16

1 Introduction

The state's political development is closely linked to its economic situation and vice versa. In the world, there can be found less economically developed states, characterized by weak or corrupt governments, with limited freedom (democratic) political process. The situation of these countries is improving rather slowly. On the contrary, in the developed parts of the world, generally functioning democracies can be observed, where citizens find their representation and the political process is relatively functional, as well as the economies. The Czech Republic is specific in this respect. A sovereign state in Central Europe, which experienced periods of suffering after the First Republic and its economic boom, first after the creation of the Protectorate of Bohemia and Moravia and the occupation of the borderland, followed by decades of economic (and societal) disintegration under the government of the Soviet Union. The economic boom of the 1990s and the newly acquired freedom and democracy were the foundation stones of the development of the modern political situation of the state.

The aim of this paper is to evaluate to what degree, in conditions of higher economic prosperity (represented by economic well-being), political representation and therefore society is less polarized and vice versa, whether regions showing lower economic prosperity are more prone to the choice of more extremist, more polarized, political representatives in given time period (from 1993 to 2021) and given space (NUTS 2 regions of the Czech Republic). The aim defined will be examined in the context pf the theory of political cycle.

Literature review

The question of what polarization is, is best answered comprehensively with the help of the work of DiMaggio et al. (1996), dealing with the definition of polarization as such. Polarization expresses the degree of disagreement (different, even opposite opinions) of two or more subjects. As a rule, it is not possible to simplify polarization only to bipolar agreement or disagreement with a given argument, it is necessary to establish the degree of the strength of polarization. Not only the state but also the process can be considered as polarization. State polarization expresses the maximum theoretical value of the degree of disagreement with a given argument, polarization as a process shows the development of such disagreement or differences of opinion over time. This paper deals with the development of polarization and especially the reasons for such development.

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Significant polarization affects voters' attitudes towards politics, disgust and general disinterest in political affairs come to the word, same as the detachment from the views of a previously preferred party (which can eventually lead to the central voter's theorem, a process of how polarization returns to its beginning state) and lower turnout (Fiorina et al., 2005). Herherington (2001) opposes these views, arguing that polarization is positive in terms of clearly identifying voters with elected parties, because these parties do not seek to reach the centre voters and, conversely, design their programs so that they do not overlap with other parties. Even according to Wilson (2020), it is not proven that the non-polarized situation (i.e., the domination of the central parties) has better socio-economic results in all cases. Binder (1999) and Jones (2001) say that the polarization of the political spectrum undermines trust in the state's political system and can block the legislative process. This is a problem especially for minority governments based on strong compromises, where each party sets its own terms and exercises its right of veto.

The idea of the connection between polarization and economic prosperity is based mainly on the research of Funke et al. (2016). This work demonstrates the theory of the impact of financial crises on political polarization, by analysing the last 140 years of elections in Europe. The main benefit of this work is the finding that financial crises cause political uncertainty due to the fragmentation of government majorities. On average, after the crisis, voters are turning to the far right (an increase in votes of 30% on average, compared to the original values).

According to Han (2015) the political polarization of the parties depends on two factors - increasing income inequality and institutional flexibility. Increased income inequality (and the consequent reduction in economic well-being) is creating a demand for more extreme political leaders and shifting the arguments of political parties to more extreme positions. On the contrary, this shift is smaller if the political system is limited by fewer political parties, i.e. less competition and a less liberal environment. Thus, in a system characterized by many parliamentary and broad party coalitions (for example the Czech Republic after year 2010), polarization is more likely to occur than in bilateral systems (e.g. the United Kingdom). Regarding the definition of economic well-being, according to Večerník (2015), its indicators can be considered, for example, GDP per capita or disposable household income. GDP per capita and unemployment can be described as a macro-economic view of measuring subjective well-being, disposable income as a micro-economic view.

Xiao (2015) proposes gross domestic product as the primary indicator of economic well-being. According to his work, it should develop in a positive correlation with well-being. Xiao also includes income, expenses, debt and other owned assets in its consumption indicators. This work will use simplification, in the form of disposable income, from which the other three components are financed. The economic well-being of the consumer is positive if the consumer has subjectively sufficient disposable income and is able to maintain it over time.

After examining the context of political polarization, it is necessary to set it in the context of the theory of the political cycle. The theory is based on periodic fluctuations of fiscal policy depending on the election cycle. An interesting overview of the existing literature and findings is provided by Shi and Svensson (2003). This approach is based on the rational and strategic behaviour of politicians and voters, politicians influence fiscal policy for their re-election and try to stimulate the economy before the elections, sometimes at the cost of increasing the national debt (according to their responsibility and ideological direction. Rational voter behaves in this way, because short-sighted policies have an effect thanks to the signalling effect, as voters have imperfect information about the characteristics of a potential government or party and automatically consider them capable and high-quality based on their communication. According to their work, left-wing parties are not reluctant to solving the problem of unemployment, even at the cost of increased inflation. Similarly, Martinez (2009) proves that governments influence economic conditions at the end of their term, rather than at the beginning. Voters only watch performance, if the performance is good, according to the voter, it will be the same in the future. At the same time, a moral hazard-based approach shows up, as instead of electing a more competent government, voters lean towards a government that ensures greater intervention in the economy for their benefit. As a rule, political cycles are examined through the development of GDP, or the ratio of taxes vs spending. Bojar (2017) reveals that not only the ideological position of the voter, but also his socio-economic background influences the voter within the political cycle. The lower classes are sensitive to a change in the pre-election fiscal policy of the government, especially with regard to the expenditure side of the budget. The work uses economic indicators from the year preceding the election, as voters are influenced by the latest economic results, based on the theory of the political cycle.

In a follow-up, according to Azzimonti (2009), the polarization of society has a direct effect on the government's acceptance of short-sighted economic solutions. This leads to low levels of investment, which are closely linked to economic growth. The greater the degree of polarization, the greater the inefficiency. Opposing groups, whose views are fundamentally different due to high polarization (even in terms of economics), want to enforce their own view of fiscal policy. The government is usually confronted by the opposition, which is trying to bring the second electoral camp to its side. Dissatisfied voters can be silenced by increased government spending, lower taxes and deficit funding. In the long

run, this leads to pushing out the private investment and to two possible scenarios. Either the current (usually the following) government will take advantage of the cuts and starts tightening its policy to prevent further budget deficit growth, which is accompanied by an economic slowdown, or it will continue a similar irresponsible policy until the system is on the verge of collapse. It is likely that the electoral camps will eventually unite and choose the 'golden mean' that will bring up otherwise unpopular belt tightening anyway

The research mentions many points that support the theory of the connection of the economic well-being of voters and their decision-making in the electoral process. The individual differences (and especially their discrepancies) of the works are the reason for the further analysis that this work provides. Based on previous research, GDP per capita, household disposable income per capita and unemployment were selected to describe the relationship between economic well-being and polarization. GDP is a suitable general indicator of the development of the economy, i.e., the overall economic well-being in a given region. The development of disposable income best reflects the living conditions of households and the population, and unemployment as it is also directly related to the living conditions of the population, especially their livelihood and job stability may be the reason for electoral spill overs in the electoral process.

2 Methods

This work uses data from the ParlGov project (Döring and Manow, 2022), which deals with the division of individual political parties on various ideological spectra, and data from the Czech Statistical Office, providing both the results of elections to the Chamber of Deputies of the Czech Parliament at regional level (14 Czech regions at NUTS 2 level) same as the necessary economic indicators at the regional level. This work uses its own index for evaluation of the extent of political polarization, based on the left-right political spectrum, which is still proving to be the most used spectrum for political analysis. Although the left-right division is spoken of as outdated, (thanks to the rise of new 'catch-all' parties whose agenda is populist, flexible, and unstable on the spectre), combined with given dataset is considered as sufficient.

The hypothesis states that the dependence of political polarization on the economic well-being of the studied regions of the Czech Republic exists, more precisely on the regional level. Data from the ParlGov project are used, concerning the determination of given parties on the left-right ideological spectrum – the extreme left-wing parties are given the value of −5 by the experts of the project, and the extreme right-wing parties of +5 and are divided into individual groups according to the left-right spectrum. The data are then transformed into a polarization index by the author, separately for each region, where for each year the cumulative voting results of the group are multiplied by the polarization value (on the ideological spectrum) of the group of parties in absolute value, which represents the "weight of polarization". Then all the values of given year and region are added up. Based on this, a polarization index is created for the given region and the given election year. The result of the index is divided by one hundred for greater clarity. These data will then be analysed by the OLS method together with selected indicators of economic well-being.

The economic indicators used in this work are GDP per capita, net disposable household income per capita and unemployment in the region. The data are drawn from the Czech Statistical Office. Regional accounts are used, for NUTS 2 regions (regions of the Czech Republic since their establishment in 2000 with backward calculation of data from the establishment of Czech Republic in 1993). These data correspond methodologically to the European System of Accounts (ESA 2010), are comparable and harmonized. The data are calculated by the workplace method, i.e., the results of units are placed in the regions according to the actual place of the unit operation. Furthermore, the economic results of units operating in several regions are calculated on the basis of the number of employees in the given region and the indicator of disposable household income relates to the place of residence of households (Czech Statistical Office, 2022). The paper further uses 5 control variables. These are socio-demographic variables that have influence on the election results and thus on political polarization. The source of the data comes from the Czech Statistical Office (2022) aswell. Namely, they consist of the voter turnout of given region and election year, the average state of population, the share of university-educated persons in the average state of the population, population density and the share of population of outer age groups in the average state of population (voters aged 20 to 29 and 65 years and older). The share of university-educated persons was created by including the population census data (which takes place every 10 years since 1991). The annual data were not available, so these were added according to the natural movement of the population per data of the CZSO. The use of socio-demographic control variables, namely education variables, is supported by the works of Hayo and Seifert (2003), Stanig (2013), who also use age variables. Hayo and Seifert (2003) also include population density (namely community size). Population state, voter turnout and population density are used by e.g. Lindqvist and Östling (2010). Turnout and education are further mentioned by Doležalová et al. (2017). All 5 control variables are also used in this context by Finseraas and Vernby (2014).

The paper uses a regression model for all the studied regions of Czech Republic of the following form: $Polarization_{i,t}$ as an explained variable where i = 1, 2, . . . , 14 for the regions of the Czech Republic, t = 1992, 1996, . . . , 2021 for the election years (9 observations). The basis of polarization index is explained before. α_i is the constant, $\beta_{j,i,t}$ the regression coefficients and ε_i the random component. GDP_i represents gross domestic product per capita in CZK of the year previous to the year of the elections according to the Czech Statistical Office data (same as the following variables). $Unemp_i$, representing unemployment values of the previous year of elections, and $Disp\_income_i$, representing household disposable income per capita in CZK aswell of the previous elections. $Turnout_i$ represents control variable voter turnout in percentage, Av_pop_i the average state of population of a given year, $Dens_i$ the density of population in persons per square kilometre of region, $University_i$ the share of university educated population on the average state of population in percentage and $Outer\_age_i$ the share of outer age groups of voters in the average state of population in percentage. Variables GDP, Disp_income, Av_pop are logarithmized due to greater clarity of the results and simpler analysis using the OLS method.

$$Polarization_{i,t} = \alpha_i - \beta_{1,i,t}GDP_i + \beta_{2,i,t}Unemp_i - \beta_{3,i,t}Disp\_income_i \qquad (1)$$
$$+ \beta_{4,i,t}Turnout_i + \beta_{5,i,t}Av\_pop_i - \beta_{6,i,t}Dens_i$$
$$- \beta_{7,i,t}University_i + \beta_{8,i,t}Outer\_age_i + \varepsilon_i$$

The work assumes the same premise for each of the regions. Polarization will be negatively affected by the value of gross domestic product per capita. Therefore, if GDP per capita drops, the polarization indicator will increase. The indicator of household disposable income per person will show the same inclination and explanation. On the contrary, the impact of the unemployment rate will be expected to be positive. The higher the unemployment, the higher the indicator of the polarization of society. For the control variables, lower voter turnout increases political polarization, as more opinionated and motivated voters go to the elections and mainly extreme parties benefit from that kind of movement. Higher average population state leads to the same result, higher population density occurs in regions with greater urban development, where it is possible to expect less extreme opinions (larger cities usually vote more moderately), a higher proportion of university educated people will lead to a decrease in polarization, as university-educated people tend not to agree with the ideas of the extreme right and left, and finally a larger share of outer age groups will lead to an increase polarization, as these age groups are prone to choose more extreme positions based on benefits offered to them by given parties.

3 Research results

Regarding the results, the most convincing models are models 3 and 6, which include the variable of disposable income. Model 6 is chosen as the final model, which shows fewer problems with statistical verification, namely both models fail the RESET test and the nonlinearity tests, which is most likely due to the low number of observations (126 observations). However, model 3 also fails the autocorrelation tests and model 6 shows higher values of the coefficient of determination (0,68 for model 3 and 0,69 for model 6). GDP variable and disposable income are not used in the models together, as strong multicolinearity between these two variables exists, which is due to the similar basis of these variables. The unemployment variable is not significant in any of the models, whether it is used alone or in combination with another variable. Instead of the share of extreme age groups, the share of only the 65+ age group was also tested, which, however, can be problematic in the Czech Republic, due to the tendency of the older population to choose populist parties, which cannot be properly identified on the left-right spectrum, as they are positioned in the middle positions of the ideological spectrum. This variable was eliminated after the Q-Q graph check, which showed an error with the data. Due to this problem, models with and without the Outer_age variable were tested.

Table 1 Estimation of the linear regression models – the influence on political polarization.

	Coefficient and significance (*)				
	Model 1	Model 2	Model 3	Model 4	Model 5
Const	1.91973***	0.593703	2.58061***	2.35441***	1.70155***
GDP	−0.169790**	-	-	−0.109035	-
Unemp	-	0.00333478	-	-	−0.000207350
Disp_income	-	-	−0.271192***	-	-
Turnout	0.000814174	0.00301617**	0.000142679	0.000208467	0.00103419
Av_pop	0.215988***	0.267230***	0.188335***	0.186399***	0.213306***
Dens	0.000120616***	0.000126771***	9.45849e-05***	0.000118016***	0.000122835***
University	−0.0322505***	−0.0381785***	−0.0287094***	−0.0314108***	−0.0354737***
Outer_age	-	-	-	−0.0187704**	−0.0224166***
	Model 6	Model 7	Model 8	Model 9	Model 10
Const	3.05864***	1.86502***	2.53760***	2.35175***	3.04318***
GDP	-	−0.166538**	-	−0.109117	-
Unemp	-	0.00287631	0.00302040	7.66607e-05	0.000461787
Disp_income	−0.225951***	-	−0.269590***	-	−0.226547***
Turnout	−0.000550007	0.00127830	0.000609850	0.000222521	−0.000465706
Av_pop	0.157742**	0.212571***	0.184108***	0.186390***	0.157664**
Dens	9.52144e-05***	0.000118344***	9.22247e-05***	0.000117963***	9.48418e-05***
University	−0.0274339***	−0.0312598***	−0.0275871***	−0.0313868***	−0.0272860***
Outer_age	−0.0168227**	-	-	−0.0187182**	−0.0165101*

Data source: Czech Statistical Office (Czech Statistical Office, 2022); Own processing

It is possible to confirm the dependence of political polarization on the economic well-being of the region if the economic well-being is defined mainly by the disposable income of households (it plays a role in both chosen models 3 and 6). Model 6 has 69 % of explained polarization values, which is satisfactory for given economic and sociographic data and it can be concluded that the influence of disposable income on political polarization cannot be rejected. The results of economic well-being defined by gross domestic product are also convincing, but with a lower degree of explained polarization values and with less significance (model 1 and 7). Unemployment values are not significant and cannot be included in the given definition of economic well-being. Regarding the chosen model 6, the polarization is affected by disposable income, in a negative direction, when an increase in disposable income by one percent leads to a decrease in the average value of polarization by 0.23, which corresponds to the given theory.

As for the control variables, when the average state of the population increases by one percent, the average polarization value increases by 0.16. When the population density increases by 1 person per square kilometre of the region, compared to the theory mentioned above, the value of the polarization index increases by 0.000096. This is an almost negligible effect, but it's important to mention, especially if it doesn't fit the theory. This effect might take place for a similar reason, why the age variable 65+ was discarded – regions with a lower population density (usually less urban development) are inhabited by older population, which is in recent years in the Czech Republic inclined to choose populist movements, which occupy the central positions of the left-right spectrum. A similar explanation can be used for the variable of a larger share of outer age groups, where the older group 65+ predominates, and therefore when the share increases by 1 percentage point, the polarization decreases by 0.02 of the index value. According to the theory, an increase in the share of university-educated people by 1 percent leads to a decrease in the polarization index by 0.03 of the value. The variable Turnout is not significant, since the agitation of political parties in the Czech Republic is most likely not reflected in increased voter turnout. Increased values of the voter turnout can be observed after the collapse of the Soviet Union and the independence of the Czech Republic, when emphasis was put on the democratic values of the state and citizens went to the elections regularly, and gradually this participation decreased and stabilized.

It could be said that economic prosperity was not perfectly defined, as can be seen in the potential problems with multicollinearity between GDP and disposable income and with unemployment, which is not significant in any of the models. The problem is found in the fact that disposable income is partly contained in the country's gross domestic product and only one of these variables should have been used.

The results of the work are in accordance with the work of Sacks et al. (2010), whose research confirms the connection between higher disposable income and subjective indicators such as happiness, satisfaction with life, but also with the economic well-being (which is defined slightly differently in his work). Fuentes and Rojas (2001) and Diener and Biswas (2002) develop the idea of connecting disposable income with economic well-being with the satisfaction of basic needs.

The dissatisfaction of basic needs is followed by lower economic well-being (which is defined from a subjective point of view, rather than based on objective economic data).

4 Conclusions

The economic well-being definition, represented mainly by disposable income, can be confirmed with some of the reservations mentioned above. The tested hypothesis, i.e., the confirmation of the connection between political polarization and economic well-being of regions of the Czech Republic since its formation in 1993 cannot be rejected. The relation between economic well-being and political polarization suggests that lower economic prosperity is associated with an increased degree of polarization. The findings correspond to the political cycle theory, as it is possible that the political establishment will seek to stimulate the economy in order to get re-elected. This alternative way of researching the reactions of voters to the previous performance of political representation can be interesting for further research into the political cycle, when through polarization there can be observed the irrational reaction of voters to the extremes of the spectrum depending on their programs, statements or short-sighted fiscal decisions regardless of their qualifications and previous responsible governance. Suitable for further research in the field of political cycle theory could be research on the basis used by this work, but based on the data of the Manifesto project (Lehmann et. al, 2022), which instead of a static left-right division of parties on the spectrum introduces an evaluation on the spectrum for each election separately, according to election programs, where current influences and promises of the politicians are best manifested.

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