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Economic Development as a Factor of
Democratisation: Evidence from Post-Socialist
Economies

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Abstract

Michal Mádr: Economic Development as a Factor of Democratisation: Evidence from Post-Socialist Economies

The main aim of the paper is to verify whether economic development, as the main component of Modernization theory, has affected the development of political regimes/democracy in post-socialist countries. Within Modernization theory, the contribution distinguishes between endogenous and exogenous Modernization theory. As indicators of the political regime, a composite index combining three concepts of democracy (Freedom in the World, Polity2 of the Polity IV Project and Freedom of Press) is used. On the basis of the index, several political systems (liberal democracies, hybrid and authoritarian regimes, non-liberal states, electoral democracies and non-democratic countries) are compared. For attainment of the aim, the paper uses three methods, a test of the equivalence of means, and logistic and linear regression analyses (OLS, OLS fixed effects, the Difference GMM and the System GMM). The reference period is focused on the years 1990-2015. According to the results, the paper rejects the endogenous Modernisation hypothesis as an explanation of the establishment of political regimes (formal institutions) in post-socialist countries, but alongside, one can state that the theory could be used as an elucidation of the formation of liberal democratic and authoritarian political systems in the post-socialist area. Simultaneously, the exogenous Modernization theory is confirmed, which means that higher economic development promotes the consolidation of democratic systems, particularly in the case of liberal democracies.

Key words

Modernization theory, income, democratisation, post-socialist economies

JEL: D72, O17, P26

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Introduction

A political regime is a set of rules that regulates government and states institutions, on the one hand, and enables the interactivity of government institutions with society, on the other. In the European area, the theme of a political regime is largely associated with a democratic arrangement. The extension of democratic regimes has been a long-term global process since the 1970s (Greece, Portugal, Spain) and the 1980s (Latin America) through the 1990s (the European post-socialist area) up to the present (e.g., the “Colours Revolutions” and the “Arab Spring”). In the post-socialist economies, the process led directly to the establishing of liberal democracies (the Visegrad group, the Baltic States, Slovenia) and authoritarian regimes (Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan). At the same time, hybrid regimes and electoral democracies have been constituted in the other countries (most of the Balkan and post-soviet states). Subsequently, part of the hybrid regimes was transformed into liberal democracy (mid-1990s, Bulgaria, Romania and Slovakia, at the turn of the 21st century, Croatia and Serbia) or autocracy (Belarus, Russia). The long-run democratisation process can be explained by the various theories (Modernization theory, natural resources abundance, globalisation and international trade, early developed institutions or ethnic/religious fractionalisation). The paper focuses on the Modernization hypothesis (Lipset, 1959), which claims higher economic development promotes democratisation and the consolidation of democratic institutions.

The main aim of the paper is to verify whether economic development, as the main component of Modernization theory, has affected the development of political regimes/democracy (in general formal institutions) in post-socialist countries, which have not been sufficiently investigated for this purpose yet. The literature review provides a survey of the current theoretical and empirical literature. The methods of regression analyses, used proxies and a sample of the observed countries are described in Data and Methods. Results and Discussion includes a cross-sectional and panel data regression analyses (logistic, OLS, OLS fixed effects, the Difference GMM and the System GMM). Conclusions summarises the major findings.

1 Literature Review

First of all, four types of political arrangements, liberal and electoral democracies, hybrid and authoritarian regimes are categorised and defined. Subsequently, Modernization theory is introduced and the most important empirical contributions, which investigate the relation between economic level and the formation of democratic arrangement, are described.

Within the classification of the individual political regimes, one can consider Merkel's approach (2010) to be pivotal. Merkel (2010, p. 25) states a political system can range from an *ideal democracy* to a *perfect totalitarian regime*. Merkel distinguishes four basic groups, an *embedded (liberal) democracy*, a *defective democracy (electoral democracy/hybrid regime)*, an *authoritarian regime* and a *totalitarian regime*. If we abstract from the totalitarian regimes due to them not being in the observed sample of countries, then three types (two conceptions of democracy and authoritarian regimes) remain. The three types are used and distinguished within the whole paper. Using this approach, the paper differs from other papers and books (e.g., Huntington, 1993; Przeworski et al., 2000), which employ dichotomous concepts, it means two categories – democracy or autocracy. The dichotomous concept is based on the "Minimalist concept of democracy", which is associated with Schumpeter's (2006) procedural approach. According to Schumpeter (2006, p. 269): "*The democratic method is that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote.*" Huntington (1993, p. 9) adds, open, free and fair elections are the basic foundation of democracy regardless of government behaviour between elections. It means *electoral democracies*. In the view of the post-socialist area, one can identify 19 democracies out of 28 states (the Democracy-Dictatorship index – see the next chapter). All 19 countries fulfil the minimalist concept of democracy, but on the other hand, one can term only 10 or 12 of them as liberal democracies (the Western world view) because, as Zakaria (2003, p. 17) states "*liberal democracy is a political system marked not only by free and fair elections but also by the rule of law, a separation of powers, and the protection of basic liberties of speech, assembly, religion, and property. But this bundle of freedoms—what might be termed "constitutional liberalism"—has nothing intrinsically to do with democracy and the two have not always gone together, even in the West.*" If the given regime does not really guarantee constitutional liberalism, then Zakaria (1997) uses the term *illiberal democracy*. The concept of illiberal democracy is part of a hybrid regime paradigm, which can be defined as "*nondemocratic and non-authoritarian regimes*" (Gilbert and Mohseni, 2011, p. 271) or "*regimes "caught" in a grey zone between democracy and autocracy*" (Linde and Ekman, 2010, p. 97).

Within the theoretical classification of liberal democracy, two conceptions are introduced, Polyarchy (Dahl) and Embedded democracy (Merkel). Polyarchy (Dahl, 1995, p. 202) evaluates the real level of democracy, which is associated with democracy in the Western countries, whereas democracy itself is an unachievable ideal. Dahl defines Polyarchy as: "*a political order distinguished at the most general level by two broad characteristics: Citizenship is extended to a relatively high proportion of adults (distinguishes polyarchy from more exclusive systems of rule which existed before mass suffrage), and the rights of citizenship include the opportunity to propose and vote out the highest officials in the*

government (*distinguishes from modern authoritarian regime in which, though most adults are citizens, citizenship does not include the right to oppose and vote out the government*)." The political order must comprise of seven institutions necessary for it to work: elected officials, free and fair elections, inclusive suffrage, the right to run for office, freedom of expression, alternative information and associational autonomy. The second concept, Embedded democracy, is based on Merkel (2004; 2010), which can be defined as working constitutional democracy. There are five parts (Merkel, 2004, p. 36-42): electoral regime, political liberties, civil rights, horizontal accountability and the effective power to govern of the elected representatives.

If at least one is not fulfilled, then Merkel uses term the "*Defective democracy*", in which one can distinguish four types: "*Exclusive, Enclave, Illiberal and Delegative*" democracy. In the case of the European transition countries, Merkel (2004, p. 51) classifies the EU-8 countries, with the exception of Latvia, as embedded democracies. Focusing on *defective democracies*, Merkel sees Latvia as a representative of *exclusive democracy* and Albania, Bulgaria, Croatia, Macedonia, Moldavia, Romania, Russia and Ukraine as examples of *illiberal democracy*. On the other hand, the classification is from 2002, whereas, according to the Nations in Transit report 2015 of Freedom House (2015), one can distinguish *consolidated democracies* (EU-8 countries) and *consolidated authoritarian regimes* (Azerbaijan, Belarus, Kazakhstan, Russia and Tajikistan) on one hand, while on the other, differentiating between *semi-consolidated regimes* (Armenia, Bulgaria, Montenegro, Croatia, Kosovo, Kyrgyzstan, Romania and Serbia) and *hybrid (transitional) regimes* (Albania, Bosnia and Herzegovina, Georgia, Macedonia, Moldova and Ukraine). As was mentioned, most of the Balkan and the post-soviet states have been regarded as *hybrid regimes*, which means a "*non-democratic and non-authoritarian regime*" (e.g., Gilbert and Mohseni, 2011). One can consider Carothers (2002), Diamond (2002), Levitsky and Way (2002), Linde and Ekman (2010), Merkel (2004) and Schedler (2002) as main contributions about hybrid regimes. Carothers (2002) calls hybrid regimes "*Regimes in a gray zone*" which means there is limited political space for opposition parties and for independent civil society, a lack of political participation and very low levels of public confidence in state institutions, but, on the other hand, there are regular elections and "*democratic*" constitutions. According to Schedler (2002), in hybrid regimes, there is not the rule of law, but if elections are held, then he speaks about "*Electoral democracy*" (there is a minimalist concept of democracy) and "*Electoral authoritarianism*" (there is not minimalist concept of democracy). The term "*Electoral authoritarianism*" was criticised as a different expression for an authoritarian regime. For that reason, Levitsky and Way (2002) replaces the term with "*Competitive authoritarianism*". For "*Competitive authoritarianism*", one can use the alternative expression "*pseudo-democracy*" because it is neither a democracy (the minimalist concept of democracy is not

fulfilled) nor an autocracy (the political opposition can participate in elections and in the legislative process to a limited extent, there is partially judicial independence, and free media can exist).

Here is a short introduction of the authoritarian regimes process from Linz and Stepan (1996). The authors (p. 44-45) use four criteria, pluralism (limited and not responsible political pluralism, social and economic pluralism can exist), ideology (system without elaborate and guiding ideology, distinctive mentality), mobilization (system without extensive or intensive political mobilisation) and leadership (leader or small group exercises power within formally ill-defined, but actually quite predictable norms). For more details, see Linz (2000) and Merkel (2010).

The modernisation hypothesis, which was introduced by Seymour M. Lipset in 1959, is one of the most important themes of political science. The theory is based on the idea that (Lipset, 1959, p. 75): *“democracy is related to the state of economic development, since the more well-to-do a nation, the greater the chances that it will sustain democracy... Wealth society with few citizens lived in real poverty tends to democracy, whereas society divided between a large impoverished mass and a small favoured elite would result either in oligarchy (dictatorial rule of the small upper stratum) or in tyranny (popularly based dictatorship).”* Lipset also states four socio-economic requisites supporting democracy – wealth, industrialisation, urbanisation and education. The paper is focused on wealth society, which is associated with economic development or, more precisely, the level of GDP per capita. There are lots of theoretical and empirical contributions, but for the purposes of the paper, there are two basic important works, Przeworski and Limongi (1997) and Acemoglu et al. (2008; 2009). Przeworski and Limongi (1997) distinguish two approaches to Modernization theory – endogenous (economic development leads to democratisation and the fall of an authoritarian regime) and exogenous (economic development supports democratic consolidation and an increase in the probability that the political system remains democratic). The authors researched 224 regime changes during 1950-1990 and claimed only exogenous theory is important whereas the endogenous explanation is insignificant. On the other hand, according to Boix and Stokes (2003) and Hadenius and Teorell (2005), exogenous theory is valid if a longer time period (1850 – 1990) is used, since the main influence of Modernization theory was before the Second World War (Boix and Stokes, 2003), or if a dichotomous concept is replaced with a detailed regime classification, then the main influence of income is in the countries that are on a boundary between electoral (hybrid regimes) and liberal democracies (Hadenius and Teorell, 2005). On the basis of the contributions, the paper verifies both Modernization theory in general and also the endogenous and exogenous approach.

For the second important contribution, we consider Acemoglu et al (2008; 2009), who state that the correlation between economic development and democracy is given a cross-sectional structure of data

or using pooled OLS in panel data. Whereas, if fixed effects are incorporated, which means the influence of the individual states and the time are taken into consideration, then the correlation disappears (the periods 1875-2000 and 1960-2000). The authors prefer early-developed institutions as an explanation instead of the modernisation hypothesis. This means the current political and economic development trajectories are determined by historical events and institutional arrangement in the past (e.g., proxies such as settler mortality or population density in 1500 or executive constraints during the beginning of independence are used within former colonies). The mentioned contributions caused broad discussion. Similar results can be found in Cervellati et al. (2014), Faria, Montesinos-Yufa and Morales, (2014) and Jung and Sunde (2014), whilst, from a mainly econometric view, there are rather critical contributions, e.g., Benhabib, Corvalan and Spiegel (2013), Che et al. (2013), Heid, Langer and Larch (2012) and Moral-Benito and Bartolucci (2012). According to the first group, the modernisation effect is conditioned by colonial heritage (Cervellati et al., 2014), economic liberalisation (Faria, Montesinos-Yufa and Morales, 2014) or income inequality/other influences (e.g., immigration, demographic development, unbalanced technological change; Jung and Sunde, 2014). The authors within the second group replicate the methods and data used by Acemoglu et al. (2008; 2009). Che et al. (2013) and Heid, Langer and Larch (2012) increase the robustness of the results by employing various instruments in dynamic panel data methods and come to the conclusion that there is a positive influence. Benhabib, Corvalan and Spiegel (2013) and Moral-Benito and Bartolucci (2012) deal with nonlinear relations, tobit regression with censored data from the former and quadratic function the latter. According to the mentioned papers, the regression methods and models are employed.

If we focus on the post-socialist area, there are a few contributions (Kwon, 2004; Petrova, 2007; Pop-Eleches, 2007) dealing with economic development as a factor of democratisation. All authors agree that economic development has a positive impact. Kwon (2004) adds that the economic development has effect, regardless of the region (the same effect as in Latin America and post-socialist states), whereas Pop-Eleches (2007) points out there are more significant explanations (mainly historical legacies and early development institutions).

2 Data and Methods

The following chapter describes three used methods (an equivalence test of two means, logistic and linear regression analyses), the individual proxies and a sample of countries. The first two methods are employed to verify the endogenous Modernization theory, which means whether the level of GDP per capita in 1990 has had an influence on the establishment of liberal and electoral democracies, whereas linear regression analysis tests the exogenous theory, that implies a higher level of GDP per capita support to democratic regime consolidation.

The test of equality of means is a very simple statistic method that compares the difference between two selected means. The inclusion of the method is based on Papaioannou and Siourounis (2008), who tested the influence of the individual factors on democratisation within the Third Way of democratisation (1970s-2000s) using five country groups. The paper uses a similar approach, which means the countries are divided into groups (liberal democracies, hybrid regimes, authoritarian regimes, non-liberal countries, electoral democracies and non-democratic states) according to a composite index (see below) in the observed years (1995, 2000 and 2010; a three-year arithmetic mean) with the level of GDP per capita in 1990 (the beginning period). For testing, three tests are employed, the paired t-test (parametric), the Kolmogorov-Smirnov equality-of-distributions test (nonparametric) and the Wilcoxon rank-sum test (nonparametric). The incorporation of both nonparametric tests is due to small observations in the individual groups. The tests are selected on the basis of the Stata manual. Rejection of a null hypothesis (means are equal) in favour of an alternative hypothesis (means are the difference) leads to the conclusion that GDP per capita can be an important factor in determining the type of political regime.

Both regression analyses (logistic and linear) contain the same control proxies proceeding from Acemoglu et al. (2008; 2009), Benhabib, Corvalan and Spiegel (2013) and Heid, Langer and Larch (2012). In accordance with the mentioned authors, the regression equations comprise of lagged dependent proxy, lagged size of population (the World Bank Group, 2016; logarithmic functional form) and lagged quality of the education system (the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to tertiary education; the World Bank Group, 2016).¹ Economic development (GDP per capita) is tested by way of twice expressions due data availability, the Geary–Khamis dollar in 1990 (the Maddison Project; cross-sectional data)² and in 2011 (the World Bank Group, 2016; panel data).

As the dependent variable in the following regressions, type of political regime (logistic) and level of democracy (linear regression), is employed. The dependent proxy is expressed as a composite index of

¹ All mentioned authors use the proxy average years of total schooling, but the proxy only has available data for each five years, which means that it can be used only in the paper's cross-sectional analyses but not in the panel data regression analyses, where year data is employed. For the same reason, the fourth control proxy, the lagged age structure, is omitted.

² The reference period is focused on 1990-2015, whereas the GDP per capita of the Maddison Project (Bolt and van Zanden, 2014) comprises of the last observations for 2010. Therefore, it is replaced by an expression according to the World Bank within the panel data analyses. Whereas, within the cross-sectional analyses the GDP per capita of the Maddison Project, it remains due to higher information ability.

three indicators, the Freedom in World of Freedom House, the Polity IV Project of the Center for Systematic Peace and the Freedom of Press of Freedom House.

The concept, Freedom in World, consists of two parts, political rights (10 indicators) and civil liberties (15 indicators). The range is from 1 (the best level) to 7 (the worst level). The resulting score is an arithmetic mean that divides countries into three groups, Free (1 to 2.5), Partly Free (3 to 5) and Not Free (5.5 to 7; Freedom House, 2016a). The Polity2 proxy (Polity IV Project) combines two indicators, Institutionalised Democracy (DEMOC) and Institutionalised Autocracy (AUTOC). The value is computed by subtracting the AUTOC score from the DEMOC score. The concept divides countries into six groups, Full Democracy (10), Democracy (6 to 9), Open Anocracy (1 to 5), Closed Anocracy (-5 to 0), Autocracy (-10 to -6) and Failed States (without value; Marshall, Gurr and Jagers; 2014). The Freedom of Press has evaluated media and press freedom in 199 countries since 1980. There are three evaluated areas (legal, political and economic environment) comprising 23 questions. The states are divided into three groups, Free (score 0-30), Partly free (score 31-60) and Not Free (score 61-100; Freedom House, 2016b).

The individual proxies are normalised, and the resulting score is the arithmetic mean with a range from 0 to 1, where 1 denotes the highest quality of political regime (the ideal level of liberal democracy). As with the composite index, the dependent variable is applied in a linear regression analysis, whilst in the case of the equivalence test and logistic regression, the index is grounds for the determination of the individual political systems. The types are computed by averaging the three normalised values (the Freedom in World, the Polity2, the Freedom of Press) and dividing according to the former index categories. To sum up, liberal democracies (an index score higher than 0.75), hybrid regimes (0.28-0.75), authoritarian regimes (lower than 0.28) and non-liberal democracies (lower than 0.75). Using a composite index, the paper differentiates from other authors (e.g., Acemoglu et al., 2008; 2009; Benhabib, Corvalan and Spiegel, 2013; Heid, Langer and Larch, 2012; Przeworski and Limongi, 1997), who use and compare the individual measures of democracy. But as Diamond, Linz and Lipset (1989, p. 17) said: *“the boundary between democratic and nondemocratic is sometimes a blurred and imperfect one”*. Therefore, the paper prefers a composite index for determining the individual political systems (liberal democracy, hybrid and authoritarian regimes). On the other hand, the composite index is not suitable for the classification of electoral democracies, for this reason, the paper also uses a standard dichotomous indicator, the Democracy-Dictatorship Index (the electoral democracies – parliamentary, semi-presidential and presidential democracies; non-democratic states – civilian, military and royal dictatorship; Cheibub, Gandhi and Vreeland, 2010). Categorisation of the individual countries according to the political systems is located in Appendix.

Just as the test of equality of means, the logistic regression verifies the endogenous Modernization theory. Against Papaioannou and Siourounis (2008) and Przeworski and Limongi (1997), the paper does not aim at a transition from an authoritarian regime to democracy, but on the establishment of a political system after the fall of the Eastern bloc in 1990. Both contributions use the probit model, but as Brooks (2008, p. 518) states, both methods (probit and logit) have similar results. Within logistic regression, cross-sectional and panel data are used. In the case of cross-sectional data, 1990 is considered to be the initial period for the establishment of the new political regimes. The impact of income on the individual types is observed for the years 1995, 2000 and 2010 (a three-year arithmetic mean), it means a five, ten and twenty-year interval describing the formation of formal institutions (see Williamson, 2000). On the other hand, cross-sectional analysis has two disadvantages, a small sample of observations and enables the capturing of only long-run changes. For this reason, panel analysis with annual data is added. All regressions consist of the Huber-White standard errors. The impact of the economic level on the individual types is researched from three perspectives, differentiation of liberal democracies, hybrid and authoritarian regimes (ordered logistic regression; Stata commands “ologit” and “xtlogit”), liberal democracies and non-liberal countries and electoral democracies contra non-democratic states (Stata commands “logit” and “xtlogit”). Verification is evaluated according to statistical significance, but the factual impact is obtained by way of marginal effects at means instead of regression coefficients. The influence of the economic level on the type of political regime within the logistic regression model can be expressed by the following equations (for cross-sectional data):

$$p(PolReg) = \frac{1}{1 - e^{-PolReg}} \quad (1)$$

$$PolReg = \beta_0 + \beta_1 Y_{1990} + \beta_2 X_{1990} + \beta_3 Z_{1990} + \varepsilon \quad (2)$$

Where p is probability, PolReg is the type of political regime (binary regression – 1 for liberal democracy or electoral democracy; ordered logistic regression – 1 for liberal democracy, 2 for hybrid regime, 3 for authoritarian regime) for the years 1995, 2000 and 2010 (mean of intervals 1994-1996, 1999-2001, 2009-2011), Y_{1990} is the type of political regime in 1990, X_{1990} is GDP per capita in 1990 (the Maddison Project), Z_{1990} is the control proxies in 1990 (size of population in logarithmic functional form and gross enrolment tertiary ratio), ε is an unobserved error term.

and for panel data:

$$PolReg_{it} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t-1} + \beta_3 Z_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Where i and t are country and year indicators, $PolReg_{it}$ is the type of political regime (binary regression – 1 for liberal democracy or electoral democracy; ordered logistic regression – 1 for liberal democracy, 2 for hybrid regime, 3 for authoritarian regime; 1991-2015), $Y_{i,t-1}$ is the year-lagged type of political regime (1990-2014), $X_{i,t-1}$ is year-lagged GDP per capita (1990-2014; the World Bank Group, 2016), $Z_{i,t-1}$ are year-lagged control proxies (size of population in logarithmic functional form and gross enrolment tertiary ratio; 1990-2014), ε_{it} is an unobserved error term.

Whereas the former regression analysis verifies the endogenous theory, the following linear regression of panel data tests the exogenous theory, meaning, how income affects the quality of a democratic regime, in other words, the impact of GDP per capita on the consolidation of democratic regime is tested. Also cross-sectional and panel data is combined. The cross-sectional analysis substitutes the long-run effects, which are expressed as five or ten-year intervals/averages in the mentioned empirical literature. Due to the short time period, annual data is employed. The linear regression model can be expressed by the following equations (for cross-sectional data):

$$PolReg = \beta_0 + \beta_1 Y_{1990} + \beta_2 X_{1990} + \beta_3 Z_{1990} + \varepsilon \quad (4)$$

Where $PolReg$ is the level of democracy (composite index) for the years 1995, 2000 and 2010 (the mean of intervals 1994-1996, 1999-2001, 2009-2011), Y_{1990} is the level of democracy in 1990, X_{1990} is GDP per capita in 1990 (logarithmic functional form; the Maddison Project), Z_{1990} is the control proxies in 1990 (the size of population in logarithmic functional form and gross enrolment tertiary ratio), ε is an unobserved error term.

and for panel data:

$$PolReg_{it} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t-1} + \beta_3 Z_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

Where i and t are country and year indicators, $PolReg_{it}$ is the level of democracy (composite index; 1991-2015), $Y_{i,t-1}$ is the year-lagged level of democracy (1990-2014), $X_{i,t-1}$ is year-lagged GDP per capita (logarithmic functional form; 1990-2014; the World Bank Group, 2016), $Z_{i,t-1}$ are year-lagged control proxies (the size of population in logarithmic functional form and gross enrolment tertiary ratio; 1990-2014), ε_{it} is an unobserved error term.

Within the panel data linear regression analysis, the static and the dynamic methods are used. There are two basic methods in the static panel data, fixed and random effects. The paper uses the Hausman test for the determination of a suitable method (random effects are preferred under a null hypothesis while the preference for fixed effects is an alternative hypothesis). We assume using fixed effects

because economic and institutional proxies are changing over time, especially in the case of transition economies. Econometric verification is checked by testing the occurrence of the unit root (the Fisher-type test and the Im-Pesaran-Shin test)³, homoscedasticity (the Wald test) and serial autocorrelation (the Wooldridge test). The tests are selected according to Drukker (2003) and Wooldridge (2002). The inclusion of the dynamic method also has an econometric reason since, according to Nickell (1981), incorporation of the lagged dependent proxy may lead to biased coefficient estimates in the case of the fixed effect method. Therefore, it is necessary to execute the comparison with the GMM system estimator. Within the dynamic methods, the paper employs the Difference GMM estimator (Arellano and Bond, 1991; Stata command “xtabond”) and the System GMM estimator (Stata command “xtabond2”) according to Arellano and Bover (1995) and Blundell and Bond (1998). On the basis of the mentioned literature, two-step estimations are used. Econometric verification is extended by the Sargan and Hansen tests of over-identification (the null hypothesis is that the used instruments are valid) and the Arellano-Bond test for AR(1) and AR(2) processes in the first differences (the presence of first-order serial correlation and the absence of second-order serial correlation) – in more detail, Roodman (2009).

For post-socialist economies, the paper considers states that were central-planned economies for some part of the 20th century and subsequently were directly or indirectly under Soviet rule. Namely, there are 27 observed economies: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan). Kosovo and Montenegro are not included due to the availability of data.

3 Results and Discussion

First of all, the endogenous Modernization theory is verified via an equivalence test of means and via logistic regressions. Within both methods, the paper compares several types of political regime (liberal democracies, hybrid and authoritarian regimes, non-liberal states and non-democratic countries).

Within the equivalence test of means, one can see most of the results indicate (significance level at 5% or 10%) that economic development as GDP per capita in 1990 could be a factor that has had an influence on the establishment of liberal democracies (the individual tests are constant over time),

³ Compared to the Levin-Lin-Chu test, both tests do not require strongly balanced panel data and have a null hypothesis, that is, all the panels contain a unit root. Tests include the time trend and lags structure (1).

since the null hypothesis is rejected. On the other hand, there are not differences between hybrid and authoritarian regimes and between electoral democracies and non-democratic states at a level of statistical significance.

Table 1: Endogenous Modernization theory (test of means)

		1995					2000					2010				
		Lib (7)	Lib (7)	Hyb (15)	Lib (7)	Dem (16)	Lib (10)	Lib (10)	Hyb (12)	Lib (10)	Dem (17)	Lib (12)	Lib (12)	Hyb (9)	Lib (12)	Dem (19)
GDP per capita in 1990 (the Maddison Project)		Hyb (15)	Aut (5)	Aut (5)	NonL (20)	NonD (11)	Hyb (12)	Aut (5)	Aut (5)	NonL (17)	NonD (10)	Hyb (9)	Aut (6)	Aut (6)	NonL (15)	NonD (8)
GDP per capita (t-1)	t-test	0.01	0.00	0.09	0.00	0.07	0.06	0.02	0.17	0.01	0.07	0.03	0.03	0.66	0.01	0.1
	K-S	0.01	0.02	0.21	0.00	0.14	0.09	0.06	0.17	0.06	0.07	0.11	0.11	0.78	0.04	0.13
	Wilcoxon	0.01	0.01	0.13	0.00	0.1	0.09	0.03	0.17	0.03	0.09	0.05	0.03	0.63	0.01	0.14

Source: Author's calculation.

Legend: p-values; Lib – liberal democracies; Hyb – hybrid regimes; Aut – authoritarian regimes; NonL – non-liberal states; Dem – electoral democracies; NonD – non-democratic states; () – number of observations; K-S – the Kolmogorov-Smirnov equality-of-distributions test; Wilcoxon – the Wilcoxon rank-sum test.

The logistic regression investigates the impact of GDP per capita (divided by 1.000 due to result clarity) on the establishment of the individual political systems. In a few models, the lagged dependent proxy is omitted owing to perfect collinearity. At the beginning of the analysis, differences between liberal democracies, hybrid and authoritarian regimes are compared. The statistically significant results can be found in the case of liberal democracies and authoritarian regimes, whilst statistical insignificance prevails in the case of hybrid regimes. The income has an expected positive effect on the foundation of liberal democracies and a negative influence in other cases. The marginal effects at mean can be interpreted that if the given state achieves economic level about 6.300 dollars per capita (international dollar in 1990), then an increase of GDP per capita in one per cent (about 63 dollars) leads to an increase of probability from 5 to 15%, that the liberal democratic regime will be established in the following period and, at the same time, a decreased probability of the establishment of an authoritarian regime from 6 to 9%. In general, if we compare liberal democratic post-socialist countries with other regimes, then one can also see statistically significant results and a positive effect from 10 to 17%. On the other hand, the level of income does not explain the difference arrangement between electoral democracies and non-democratic states. To sum up the conclusions of both analyses, in general, the paper rejects the endogenous modernisation hypothesis as an explanation of the establishment of political systems (formal institutions) in post-socialist countries, but alongside, one

can state that the theory can be used as elucidation of the formation of liberal democratic and authoritarian political systems in the post-socialist area.

The results of panel data logistic regression can be employed as the first findings about the exogenous Modernization theory, meaning that a higher level of GDP per capita (international dollar 2011) with the mean of about 11.300 dollars leads to an increase in probability from 4 to 10% that a liberal democratic system will be consolidated in the following year, but, at the same time, a higher income does not support the consolidation of electoral democracies.

Table 2: Endogenous Modernization theory (logistic regression; marginal effects; robust option)

(GDP per capita / 1000	1995	2000	2015	Panel	1995	2000	2015	Panel	1995	2000	2015	Panel
Marginal effects (Liberal democracy)	0.05* (1.94)	0.12** (2.82)	0.15** (4.96)	0.1* (1.84)	-	-	-	-	-	-	-	-
Marginal effects (Hybrid regime)	0.02 (0.4)	-0.03 (-0.49)	-0.04* (-1.94)	-0.004 (-1.55)	-	-	-	-	-	-	-	-
Marginal effects (Authoritarian regime)	-0.06* (-1.9)	-0.09* (-2.39)	-0.1** (-3.91)	-0.01** (-2.08)	-	-	-	-	-	-	-	-
Marginal effects (Liberal)	-	-	-	-	0.17** (2.88)	0.1* (2.63)	0.13** (2.73)	0.04** (4.51)	-	-	-	-
Marginal effects (Electoral)	-	-	-	-	-	-	-	-	0.07* (1.69)	0.07* (1.69)	0.06 (1.62)	0.02 (1.18)
Dem (t-1)	YES	YES	YES	YES	NO	NO	NO	YES	NO	NO	NO	NO
Control proxies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Average value	6.36	6.36	6.36	11.35	6.36	6.36	6.36	11.35	6.36	6.36	6.36	11.35
Number of observations	27	27	27	626	27	27	27	626	27	27	27	626
R ² (Pseudo)	0.53	0.38	0.38	-	0.66	0.22	0.23	-	0.13	0.14	0.16	-

Source: Author's calculation.

Notes: (.) denotes z-score; */**/** means a significance level at 10%/5%/1%; Dem (t-1) – lagged dependent proxy (value in 1990 or 1990-2014); Control proxies mean the size of population (logarithmic functional form) and gross enrolment tertiary ratio; Marginal effects are at mean; R² means the McFadden's pseudo R-squared. Constant, control proxies and regression coefficients are not reported.

The exogenous theory is tested by cross-sectional and panel data linear regression analysis. Within the cross-sectional, there is a positive long-run effect of the economic development, since the initial level in 1990 has a positive and statistically significant effect on the quality of democracy in five, ten and twenty-year intervals. Similar results can be found in the case of panel data using the OLS method. The results, one can interpret that an increase of GDP per capita in 1% leads to an increase of the level of democracy up to 0.3. The findings are in accordance with empirical literature. Before interpretation of static panel data methods, it is necessary to carry out the basic econometric tests. First of all, the cointegration of unit roots was verified by the Fisher-type test and the Im-Pesaran-Shin test. According to the results, all data is cointegrated. The fixed effects method is chosen on the basis of the result of the Hausman test. The paper rejects a null hypothesis about the preference of random effects in favour of an alternative hypothesis about the preference of fixed effects. A Chi-square is 230.42 (p-value 0.00) in the case of the first model, and 219.00 (p-value 0.00) in the case of the second model. The models of OLS and OLS fixed effects incorporate heteroscedasticity (the Wald test) and serial autocorrelation (the Wooldridge test). Therefore, the robust standard errors option is used (Hoechle, 2007). Within the fixed effects models, there is not a statistical significance, which means that the paper comes to similar findings as Acemoglu et al. (2008; 2009), who state that if fixed effects are incorporated, then the correlation between income and democracy disappears. On the one hand, the result can be biased by the occurrence of a lagged dependent proxy (see Nickell, 1981) due to the fact that a comparison with dynamic panel data methods is necessary for robust and transparent conclusions.

Within the dynamic panel data, the Difference GMM and the System GMM estimators contain Windmeijer robust standard errors (Windmeijer, 2005). The paper considers all proxies endogenous and the variables are instrumented with first-order to second-order lags. An amount of instruments is selected, with regard to the number of cross-sectional units. The matrix of instruments has been collapsed. On the basis of the mentioned literature, the paper uses two-step estimations. The Sargan (difference GMM), the Hansen (system GMM), the Arellano-Bond for AR(1) and AR(2) tests confirm that the estimates are reliable. It means that the used instruments are valid and the model incorporates only first-order serial autocorrelation. Three out of four income regression coefficients are statistically significant, which means, jointly with OLS results, that the exogenous Modernization theory is valid in the case of post-socialist economies.

Table 3: Exogenous Modernization theory (linear regression analysis; robust option)

	1995		2000		2010		Panel (1990-2015)							
	OLS (1)	OLS (2)	OLS (1)	OLS (2)	OLS (1)	OLS (2)	OLS (1)	OLS (2)	FE (1)	FE (2)	GM M - Dif (1)	GM M - Dif (2)	GM M - S (1)	GM M - S (2)

Dem (t-1)	0.69 *** [0.12 (3,63)	89* ** [0.15 (5,04)	0.59 *** (3.75)	0.77 *** (4.4)	0.47 ** (2.42)	0.65 ** (2.77)	0.97 *** (67.06)	0.97 *** (49.1)	0.72 *** (8.96)	0.73 *** (9.03)	0.74 *** (15.41)	0.74 *** (12.9)	1.05 *** (24.17)	0.94 *** (13.44)
log GDP per capita (t-1)	0.29 ** [0.11 (2,46)	0.28 ** [0.12 (2,28)	0.35 ** (2.71)	0.33 ** (2.55)	0.33 ** (2.19)	0.29 * (1.99)	0.01 * (1.76)	0.01 *** (2.14)	0.01 (1.14)	0.01 (0.69)	0.07 ** (2.21)	0.06 * (1.91)	0.00 1 (0.26)	0.16 ** (2.54)
Dem (t-1)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control proxies	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Number of observations	27	27	27	27	27	27	671	626	671	626	617	567	671	626
R ² / R ² (within)	0.53	0.59	0.49	0.47	0.28	0.65	0.96	0.95	0.96	0.69	-	-	-	-
B-P/C-W test	0.07 (3.33)	0.03 (5.03)	0.14 (2.15)	0.05 (3.89)	0.13 (2.3)	0.04 (4.29)	0.00 (79.2)	0.00 (97.2)	-	-	-	-	-	-
Fisher-type test	-	-	-	-	-	-	0.00 (23.2)	0.00 (12.6)	0.00 (26.8)	0.06 (1.56)	-	-	-	-
IPS test	-	-	-	-	-	-	0.00 (-14.5)	0.00 (-3.73)	0.00 (-14.4)	0.95 (1.6)	-	-	-	-
Wald test	-	-	-	-	-	-	-	-	0.00 (485)	0.00 (451)	-	-	-	-
Wooldridge test	-	-	-	-	-	-	0.00 (56.1)	0.00 (54.5)	0.00 (56.1)	0.00 (54.5)	-	-	-	-
Number of instruments	-	-	-	-	-	-	-	-	-	-	439	405	6	12
Sargan test	-	-	-	-	-	-	-	-	-	-	1.00 (22.1)	1.00 (21.5)	-	-
Hansen test	-	-	-	-	-	-	-	-	-	-	-	-	0.08 (8.37)	0.1 (13.5)
AR(1) test	-	-	-	-	-	-	-	-	-	-	0.00 (-3.47)	0.00 (-3.31)	0.00 (-2.91)	0.04 (-2.02)
AR(2) test	-	-	-	-	-	-	-	-	-	-	0.18 (-1.35)	0.17 (-1.36)	0.14 (-1.46)	0.42 (-0.81)

Source: Author's calculation.

Notes: GMM-dif means the Difference GMM estimator (Arellano and Bond, 1991); GMM-S means the System GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998); (.) denotes t-statistic, */**/** means a significance level at 10%/5%/1%; R² means adjusted (within) R-squared; B-P/C-W test means the Breusch-Pagan/Cook-Weisberg test, p-value (Chi square); the Fisher-type test, p-value (inverse Chi square); the Im-Pesaran-Shin test, p-value (t-statistic); the Wald test, p-value (Chi square); the Wooldridge test, p-value (F

statistic); the Sargan test, p-value (Chi square); the Hansen test, p-value (Chi square); the Arellano-Bond tests for AR(1), AR(2), p-value (z-score). Constant and control proxies are not reported.

Conclusions

The main aim of the paper was verified – whether Lipset’s Modernization theory could be used for the explanation of the establishment and consolidation of political systems (in general formal institutions) in post-socialist economies after the fall of communist regimes in 1989/1991. Moreover, the paper distinguishes the endogenous and exogenous Modernization theory. Modernization theory was expressed by way of GDP per capita, meaning, the paper puts an emphasis on the wealth of society and, simultaneously, the other factors of the theory (education, urbanisation and industrialisation) were omitted. Against the mentioned literature, the composite index (average of the Freedom in World, the Polity2 of the Polity IV Project and the Freedom of Press) for quantification of the political regime was employed instead of the individual indicators. Also, several expressions of the political system (liberal democracies, hybrid and authoritarian regimes, non-liberal states, electoral democracies and non-democratic countries) were compared. For attainment of the aim, three methods were used, a test of equivalence of means, logistic and linear regression analyses. Within both regressions, cross-sectional and panel data are employed. The equivalence test and logistic regression were used for the purpose of the verification of the endogenous theory, whereas linear regression analysis tested the exogenous theory. All regressions contained robust standard errors.

In general, the paper rejected the endogenous modernisation hypothesis as an explanation of the establishment of political regimes (formal institutions) in post-socialist countries, but, alongside, one could state that the theory could be used as elucidation of the formation of liberal democratic and authoritarian political systems in the post-socialist area. Within linear regression analysis, several methods were used, cross-sectional and pooled OLS, OLS with fixed effects, the Difference GMM and the System GMM estimators and, on the basis of the individual results, the exogenous Modernization theory was confirmed, which means that higher economic development promotes the consolidation of democratic systems, particularly in the case of liberal democracies.

As a possible extension, the paper proposes the comparison of Modernization theory with other theories (e.g., natural resources abundance, globalisation and international trade or ethnic/religious fractionalisation, early developed institutions). Out of the individual theories, the empirical literature omitted the early development institutions (in the case of post-socialist economies’ influence of institutional arrangements before the Second World War, or, more precisely, before the establishment of a communist totalitarian regime), which offers a promising alternative explanation.

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Appendix – An Overview of Political Regimes in Post-Socialist States (1990-2015)

Liberal democracies:

Bulgaria (1991-1995; 1997-2015), Croatia (2001-2015), the Czech Republic (1990-2015), Estonia (1991; 1993-2015), Hungary (1990-2015), Latvia (1991-2015), Lithuania (1991-2015), Poland (1990-2015), Romania (1997-2003; 2005-2015), Serbia (2007-2015), Slovakia (1990-1992; 1998-2015) and Slovenia (1991-2015).

Hybrid regimes:

Albania (1990-2015), Armenia (1990-2015), Azerbaijan (1990-1992), Belarus (1990-1995), Bosnia and Herzegovina (1990-2015), Bulgaria (1990; 1996), Croatia (1990-2000), Estonia (1990; 1992), Georgia (1990-2015), Kazakhstan (1990-2001), Kyrgyzstan (1990-2015), Latvia (1990), Lithuania (1990), Macedonia (1990-2015), Moldova (1990-2015), Romania (1990-1996; 2004), Russia (1990-2015), Serbia (1990; 2000-2006), Slovakia (1993-1997), Tajikistan (1990-1991; 2002-2004), Turkmenistan (1990), Ukraine (1990-2015) and Uzbekistan (1990).

Authoritarian regimes:

Azerbaijan (1993-2015), Belarus (1996-2015), Kazakhstan (2002-2015), Serbia (1991-1999), Tajikistan (1992-2001; 2005-2015), Turkmenistan (1991-2015) and Uzbekistan (1991-2015).

Electoral democracies:

Albania (1991-2015), Armenia (1991-2015), Bulgaria (1990-2015), Croatia (1991-2015), the Czech Republic (1990-2015), Estonia (1991-2015), Georgia (2004-2015), Hungary (1990-2015), Kyrgyzstan (2005-2015), Latvia (1991-2015), Lithuania (1991-2015), Macedonia (1991-2015), Moldova (1991-2015), Poland (1990-2015), Romania (1990-2015), Serbia (2000-2015), Slovakia (1990-2015), Slovenia (1991-2015), and Ukraine (1991-2015)