

# THE “THREE-D-RELATIONSHIP”: DO DEMOCRACY AND DEVELOPMENT LEAD TO INCREASED DEBT?

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## ABSTRACT

The paper aims to test the research hypothesis of whether more democratic and economically developed countries tend to have higher public debts (the “Three-D-Relationship”) or not. The hypothesis was tested on a panel of 91 countries over the period from 2012 to 2016 using a two way analysis of variance where debt was the dependent variable and regime type and income levels were factors. The results only partially confirmed the hypothesis. Higher democratic standards did correlate with higher debt levels. Similarly, higher income levels also correlated with bigger debt burden. Both “democracy” and “development” combined was not linked to higher debt levels.

## KEY WORDS

democracy, authoritarian regimes, economic development, public debt, GDP, public policy

## JEL CODES

H11, H60, H63, P51

## 1 INTRODUCTION

Democracy, development and debt are among the key variables of economic and political economy research. The high public debt levels can be observed in several developed countries. The debt-focused research accelerated recently due to concerns about debt after the 2008 financial crisis which was followed by the sovereign debt crisis in several of the developed countries. Interestingly, some of the high-debt countries are well established democracies,

such as the US, France, Italy, Japan and others. Democracy, and its impact on economic variables, gains its academic attention due to the challenges that traditional democratic countries of the developed world are exposed when compared to the new strong economic players of emerging economies which are often not full democracies (China, Russia and others). Demographic changes and automation are changing social patterns of the rich democratic

states and beyond. How to preserve democracy and standard of living in the situation of an aging population and more automation? Is the shift of the fiscal burden to the next generation through majority voting in democracies leading to higher debt levels? This paper will analyse whether there is a correlation between the level of democracy and the level of economic development on one hand and public debt on the other.

The paper studied the “Three-D-Relationship”, the interplay between democracy, development and debt. The research hypothesis was: the more developed the democracy and the more developed the economy in terms of the GDP leads to higher public debt. To test this hypothesis, two-way analysis of variance and Tukey methods of multiple comparisons of means were used for studying 91 countries during the period from 2012 to 2016. The period has been limited by the availability of comparable data for the tested variables.

## 2 LITERATURE OVERVIEW

In the focus of the paper lie the triangle of variable, “democracy-development and debt” and their mutual interplay. All three variables represent the core economic parameters determining the quality of life in society and all of them are undergoing dynamic developments. The paper will analyse how democracy on one hand and the economic development as expressed by the GDP per capita influences the public debt of a country.

The democracy variable refers to the type of political regime in which people in various countries live. The Economist Intelligence Unit (2017) distinguishes five categories of states based on electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture and classifies all countries in one of four types of regime, “full democracy”; “flawed democracy”; “hybrid regime”; and “authoritarian regime”. It observed that in 2016, almost one-half (49.3%) of the world’s population lives in a democracy of some sort and around 2.6 billion people, more than one-third of the world’s population, live under authoritarian rule. Regarding the developments of democracy, it notes the year-to-year decrease of “full democracy” from 8.9% in 2015 to 4.5% in 2016. Puddington and Roylance (2017) are noting the recent dynamic where in 2016 a total of 67 countries suffered net declines in political rights and civil liberties compared with 36 that registered gains. They

noted the 11th consecutive year in which democratic declines outnumbered improvements.

The development can be expressed in a narrow sense by the GDP change. The world economy is experiencing a clear increase of GDP. According to the World Bank (2017), GDP at purchaser’s prices in current U.S. dollars has risen from 1.4 trillion in 1960 to 75.5 trillion USD in 2016.

For the debt in this paper, we consider the public debt only: which can be defined as the general government debt-to-GDP ratio, i.e. the amount of a country’s total gross government debt as a percentage of its GDP. The debt level is steadily growing. According to the World Bank (2017a), the debt has risen from 41.4% in 1991 to 93.9% of the GDP in 2015 for the sum of the governments in the world.

The literature about the “triangle variables” is rich, both individually and mutually. However, the papers deal typically with the combination of pairs of the variables and not on all three of them at the same time.

Firstly, on the relation between “democracy-debt”, there is both a pessimistic and an optimistic perspective to whether democracy leads to smaller public debt or not. The pessimistic school of thinkers expects democracy to increase the debt. For them, the critical point was the rule of mass which could tend to redistribute the wealth and to spend more public money for more collective-like purposes and debt would be the price for such a policy.

This prediction was done by earlier authors. Plato (360 BC) expected the democratic elites to have the tendency for transferring wealth from wealthy individuals to themselves and eventually to the rest of the society. Madison (1865) who serves as a one of the US founding fathers warned that democracy could lead to debt accumulation due to the inadequate egalitarian policies connected with a pro-inflation policy to eliminate the debt burden. Hume (in Miller, 1987) warned that public debt is undermining the state sovereignty by limiting the public policy decision-making and transferring it to the private agent of financial sector. The pessimistic position was expressed by Howe (1905) who noticed that the public policy was a failure in democracies due to the decision making mechanism of the majoritarian and representative form. On the other hand, it can easily be argued that the authoritarian regimes are not any better with only a limited control and are vulnerable to corruption, ruling class enrichment and eventually shifting the negative externality of underperforming economy to the debt increase.

An important contribution to the academic discussion on public choice theory was provided by Buchanan (1990). People's choices and preferences are expressed by voting. Forms of expressing opinions to policy makers based on individual interest and are primarily selfish. MacLean (2017) disagrees with Buchanan's view that economic freedom contradicts political liberty. Both points of view highlight the complex relations in societal preferences, including public debt.

In more detail, the interaction between democracy and debt was evaluated by Schragger (2012) who followed the pessimistic path. The possible reason for him as to why democracy does not lead to debt decrease is that the public sector favors spending policies because of the policy failures (corruption or special interests) or because of the inherent characteristic of the democracy, the will of a majority. His policy advice is to follow the market signals for borrowing and subsidies reduction. Lav and McNichol (2011) are also noting the democratic tendency for debt creation due to

public costs of healthcare and education which are together responsible for up to half of the state budgets and a third of local budgets. Krugman (2011) is commenting the opposite aspect of democracy-debt relation and concludes that high public debt generates pressure from creditors which has undermined the democratic processes. Balkan and Greene (1990) analysed around 100 countries in the sample period from 1976 to 1983 and came to the conclusion that the relation between democracy and public debt was unclear and statistically not significant.

On the other hand, there is positive evidence from the literature which clearly link the democracy with the concept of good governance. Here, the literature provides for a large consensus on the positive impact of good governance to the economic development and sound fiscal stance. Bartolini and Santolini (2017), studied the capacity to implement policies that address citizens' preferences. On the sample of 80 democratic countries over the period 1996–2011 they found out that “the performance of the government depends on the interaction between electoral rules and political regimes”. Good governance or “government effectiveness” is therefore seen by Rindermann et al. (2015) “as a critical factor for the wealth of nations insofar as it shapes political and economic institutions and affects overall economic performance”. Respect for political and participatory rights of citizens is widely accepted as being part of good governance (Neumayer, 2002). More specifically on the interaction between the “good governance” and “development”, Nanda (2006) looked at the conditions on which the donor countries assessed their decision to provide economic aid. His research was conducted on data of 1980s and 1990s and concluded that donors tended link their support conditional to good governance and reforms effort in the recipient countries. Good governance included political stability, the rule of law, control of corruption, and accountability. The literature provides well proven evidence that the good governance has positive effects on debt levels. Alt and Lassen (2006) looked at one particular component of good governance, namely transparency. They showed on the basis of an anal-

ysis of 19 OECD countries that “fiscal transparency leads to substantially lower deficits and debt accumulation”. Similarly, Boysen-Hogrefe (2017) concluded from her research of the euro area debt crisis that markets and international donors observed closely the governance quality of the countries which experienced fiscal challenges. Paradoxically, the lack of “good governance” has been rewarded. For instance, Neumayer (2002) found out that “in the past debt forgiveness has not been used much to reward countries with good governance” and he suggests that this practice should be discontinued. In the same line Dijkstra (2018) concluded that external aid can have negative impact on good governance by weakening domestic accountability and support for authoritarian regimes and increase corruption.

North and Weingast (1989) referred to such a democratic advantage in terms of access to debt and its pricing due to the greater credibility of democracies to creditors and their higher level of institutional control mechanisms. Archer et al. (2007) studied this question in fifty developing countries during the period 1987–2003. They came to the conclusion that democracies had no advantage over the authoritarian regimes in terms of more favorable ratings from the major credit rating agencies. Beaulieu et al. (2012) however confirm that there is a democracy advantage related to the debt. For them, this is due to the higher willingness of the creditors to purchase the debt of democratic countries rather than more favorable debt pricing compared to the non-democratic countries debt.

Authors also noted the country specificities in the debt-democracy relation. Frieden (1991) documented in the case of the countries of Latin America in the period of 1970s and 1980s on their individual approach to high debt levels irrespectively whether they were democracies or authoritarian regimes.

Some democratic countries offered solutions to the high-debt levels. One of them is the introduction of the constitutional breaks for spending. These are applied for example in the US or in the EU. Schragger (2012) is however sceptical of the possibility of the constitutional

limitations of debt as borrowing. He sees it primarily as a political not a legal issue. For him, it can lead to adoption of inefficient means of spending policies and often pro-cyclical ones and fails to depoliticize budgetary decisions. It also challenges the democracy operation though the problem of intergenerational equity. On the other hand, Feld and Kirchgässner (2001) do not share this scepticism towards the constitutional restrictions on debt levels and legal rules of the budgetary process, such as a strong role of the Minister of Finance, as they are helping against the debt bias inherent in political decision-making procedures in democracy.

Another solution for debt management in democracies comes from the direct democracy case. Authors are positive about the Swiss experience. Feld and Kirchgässner (2000) refer to the political culture in Switzerland where citizens are well informed and politicians have less leeway to pursue their personal interests. As a consequence, public expenditure and public debt are lower when citizens enjoy direct democratic rights. Citizens also feel more responsible for their community: tax evasion is lower in direct than in representative democratic systems. His argument is supported by Pommerehne and Schneider (1985) who showed for 110 Swiss cities in the period of 1968 to 1972 that expenditure growth in cities with direct democracy was almost three percentage points lower than in representative democracies and cities in Switzerland which enjoy direct democracy. Also Feld and Kirchgässner (2001) investigated a positive impact of fiscal consolidation through referendum approval of budget deficits by the voters on the level of public debt in 134 largest Swiss municipalities in 1990.

Jalles (2011) highlights another aspect of the democracy-debt relation, the quality of governance and control of corruption. He tested the relationship between external debt (borrowing opportunities/constraints) and economic growth of 72 developing countries in the 1970–2005. Low corruption states were able to have lower public debt when compared to the countries with higher corruption levels.

Secondly, on the relation between democracy and growth. This subject enjoys high scholar attention and it was looked at from both perspectives: on how economic development influences democracy and vice versa. Varshney (1999) suggests from his study based on the developing countries that democracy did not stimulate the alleviation of poverty. Notably, the poverty reduction is affected by development increase and redistributive policies. Lipset (1959) concluded from his research that prosperity stimulates democracy. Therefore, the improvement of economic development tends to lead to gradual rise in democracy. On the contrary, democracies with low economic development do not generally persist. Barro (1996) analysed a group of about 100 countries in the period from 1960 to 1990. He identified variables positive to growth, such as rule of law, free markets, low government consumption and human capital. Interestingly, the effect of democracy on growth was weakly negative. He suggested a nonlinear relationship in which more democracy enhances growth at low levels of political freedom but suppresses growth when a moderate level of freedom has already been attained. He explains that the development level increases the probability that political freedoms will grow. But the negative effect of democracy on growth might be caused by the wealth redistributions of the rich in democracies. Authoritarian regimes may partially avoid this tendency. However, the specific type of dictatorship may heavily influence the growth pattern. Wucherpfennig and Deutsch (2009) confirm the existence of economic bias for the creation and viability of a democracy. Li and Leung (2015) concluded from her study, based on the example of China, that there is no consensus on the correlations between democracy and economic growth.

The debt-growth relation, third and final, once again does not receive a clear reply from the academic literature to the question whether high level of economic development (or a proxy of that question, namely high economic growth)

lead to high public debt levels. According to our knowledge the literature offers research on the mirror question which is whether high public debt is slowing the economic growth. On this question, Kumar and Woo (2010) found that *“on average, a 10 percentage point increase in the initial debt-to-GDP ratio is associated with a slowdown in annual real per capita GDP growth of around 0.2 percentage points per year, with the impact being somewhat smaller in advanced economies.”* Reinhart and Rogoff (2010) investigated on this question 44 countries (20 developed and 24 emerging market economies) during 1790–2009. For developed countries the average growth in economies with higher debt levels (above 90% GDP) was 1.7% versus 3.7% when the debt was low (under 30% of the GDP). An even stronger pattern was observed for emerging economies. The author therefor concluded that high debt/GDP levels are associated with notably lower growth outcomes. Similarly, Szabó (2013) found out from his research on the 27 European Union members that a one percentage point increase in the debt to GDP rate causes a slowdown of 0.027% on the economic growth. For the 10 states which entered the European Union after 2004 such an effect is higher (0.041%). He came to the conclusion that the optimal rate of sovereign debt to GDP for the economic growth was 68% in the years preceding the economic crisis and 86% by 2012. On the other hand, other authors draw attention to the fact that the relation is not a linear one. Other research of this question is less conclusive. Égert (2012) on the same question concluded *“that finding a negative nonlinear relationship between the public debt-to-GDP ratio and economic growth is extremely difficult.”* Checherita and Rother (2010) found out that public debt has an optimal level, under and over this level there is a negative effect the economic growth. In conclusion, there is a research evidence of a fact that higher debt levels tend to be associated with lower economic growth. However, on our inverse question the research is missing.

### 3 DATA AND METHODS

The analysis was run for 91 countries for which there was a complete set of data available: Albania, Antigua and Barbuda, Australia, Austria, The Bahamas, Bahrain, Barbados, Belarus, Belgium, Belize, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Dominica, El Salvador, Estonia, Ethiopia, Finland, France, Georgia, Germany, Greece, Grenada, Guatemala, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Italy, Jamaica, Japan, Kazakhstan, Korea Republic, Kyrgyz Republic, Latvia, Liberia, Lithuania, Luxembourg, Malawi, Malaysia, Malta, Marshall Islands, Mauritius, Micronesia Fed. Sts., Moldova, Namibia, The Netherlands, New Zealand, Nigeria, Oman, Palau, Papua New Guinea, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Samoa, San Marino, Seychelles, Singapore, Slovak Republic, Slovenia, Solomon Islands, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Swaziland, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Zambia.

Statistical method used in this paper was a two-way analysis of variance (ANOVA) that examines the influence of two different categorical independent variables on one continuous dependent variable. The reason for choosing this method is also the fact that it allows to assess not only the main effect of each independent variable but also if there is any interaction between them. Therefore, we assume the following model:

$$y_{ij} = \mu + \alpha_i + \beta_j + \gamma_{ij} + \varepsilon_{ij}, \quad (1)$$

where the dependent variable  $y_{ij}$  is debt,  $\mu$  is the total mean,  $\alpha_i$  is the additive main effect of level  $i$  from the first factor (income level),  $\beta_j$  is the additive main effect of level  $j$  from the second factor (level of democracy index),  $\gamma_{ij}$  is the non-additive interaction effect of treatment from the both factors and  $\varepsilon_{ij}$  is the error terms.

For the purpose of our analysis, the debt was expressed as the mean of the percentage

ratio of a central government debt level-to-GDP for the years from 2012 to 2016. It represents the stock of direct government fixed-term contractual obligations. The data used for the debt values was taken from the World Bank database (2017). The time-period limitation for five years was chosen to ensure the robustness of the statistical analysis.

The factors for our analysis are income level expressed as GNI per capita in US\$ based on Atlas methodology of World Bank and the democracy index compiled by the Economist Intelligence Unit (2017). Concretely, we have established four categories for the income level (see Tab. 1). The division of analyzed countries into individual categories based on income level by GNI per capita in US\$ is then included in the Tab. 9 in the Appendix.

Tab. 1: Income level by GNI per capita in US\$ (Atlas methodology)

Income Level	GNI per capita in US\$
Low income	$\leq 1005$
Lower middle income	1006–3955
Upper middle income	3956–12235
High income	$\geq 12235$

Source: World Bank (2017)

We are aware of a possible issue of correlation between the debt and the income variables due to the GDP parameter which is underlining for both of them. However, the approach taken eliminates this problem as the income is expressed in GNI and on top of it the income levels are analysed in the four groups of states and not the GNI directly.

In addition, GDP could be considered instead of GNI as a factor for the two-way analysis of variance. However, in the most of analyzed countries, those two figures are very close ( $\pm 5\%$ ). The reason is the fact the difference between incomes received by the country versus payments made to the rest of the world is not significant. Therefore, if we considered GDP instead of GNI as a factor in our analysis, the results obtained are very similar and will not be presented in this paper.



Similarly, four categories for level of democracy index based on Economist Intelligence Unit were used (see Tab. 2). The division of analyzed countries into individual categories based on level of democracy index by regime type is then included in the Tab. 10 in the Appendix.

Tab. 2: Democracy index by regime type

Category	Score of Democracy index
Full democracies	$8 \leq s \leq 10$
Flawed democracies	$6 \leq s < 8$
Hybrid regimes	$4 \leq s < 6$
Authoritarian regimes	$0 \leq s < 4$

Source: The Economist Intelligence Unit (2017)

## 4 RESULTS

Three tests were run to confirm the research hypothesis. The first test was the two-way analysis of variance. Its outcome is summarised in Tab. 3. Based on our results we can conclude that the type of regime as well as the income level is statistically significant factors for the debt level, with a 5% significance level. However, the interaction between the type of regime and level of income is not statistically significant.

The results of the analysis of variance were also subjected to a statistical analysis of the suitability of the method. Based on the results of diagnostic tests (see Tab. 4 and Fig. 1) we can conclude the homogeneity of variance as well as normal distribution of residuals of analysis of variance, i.e. we can conclude that chosen method is correctly used, at 5% significance level.

Now we can focus on individual factors for which second and third tests will be used. Thus, the second test focuses on the type of regime. Tab. 5 presents the basic statistical characteristics for the debt based on the type of regime. We can see that a higher level of percentage ratio of debt have countries with full and flawed democracies. Similar results are also shown by Fig. 2 and 3.

The literature overview mentioned above offers an insight on the mutual relation of each of the pairs of the triangle of variables of democracy-development-debt. The relationships and causality are in many ways not straightforward and depend on specific circumstances. Some of the studies offer contradictory conclusions. In addition, studies focusing on the interplay of the triangle of all three parameters democracy-development-debt were not available to us.

Now we can focus on multiple comparisons of means. For this, we use the Tukey method of multiple comparisons of means. The results are presented in Tab. 6 and Fig. 4. From the results we can state that there are the statistically significant differences in the level of debt between full democracies and authoritarian regimes as well as between flawed democracies and authoritarian regimes, at 5% significance level. The other differences are not statistically significant.

Finally, we move to the third test focusing on the income levels factor. We can state that there is a statistically significant difference in the level of debt. Tab. 7 presents the basic statistical characteristics for debt based on income level. We can see that the highest level of percentage ratio of debt has countries with high and upper middle level of income. This is also visible from Fig. 5 and 6.

For the purpose of the multiple comparison of means we use again the Tukey methods. The results are presented in Tab. 8 and Fig. 7. From the results we can state that there is a statistically significant difference in level of debt between high level of income and lower middle income, at 5% significance level. The other differences are not statistically significant

Tab. 3: Results of analysis of variance for debt level (response: debt)

	Df	Sum Sq	Mean Sq	F value	Pr (>F)
Regime	3	18053	6017.8	5.7609	0.001301**
Income	3	16625	5541.7	5.3051	0.002219**
Regime:Income	6	4272	712.0	0.6817	0.664873
Residuals	78	81478	1044.6		

Significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Tab. 4: Diagnostic tests

	Test statistics	p-value
Levene’s test for homogeneity of variance	1.729	0.0763*
Pearson chi-square normality test	16.571	0.0844*
Lilliefors normality test	0.0881	0.0783*
Cramer-von Mises normality test	0.105	0.0939*

Significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

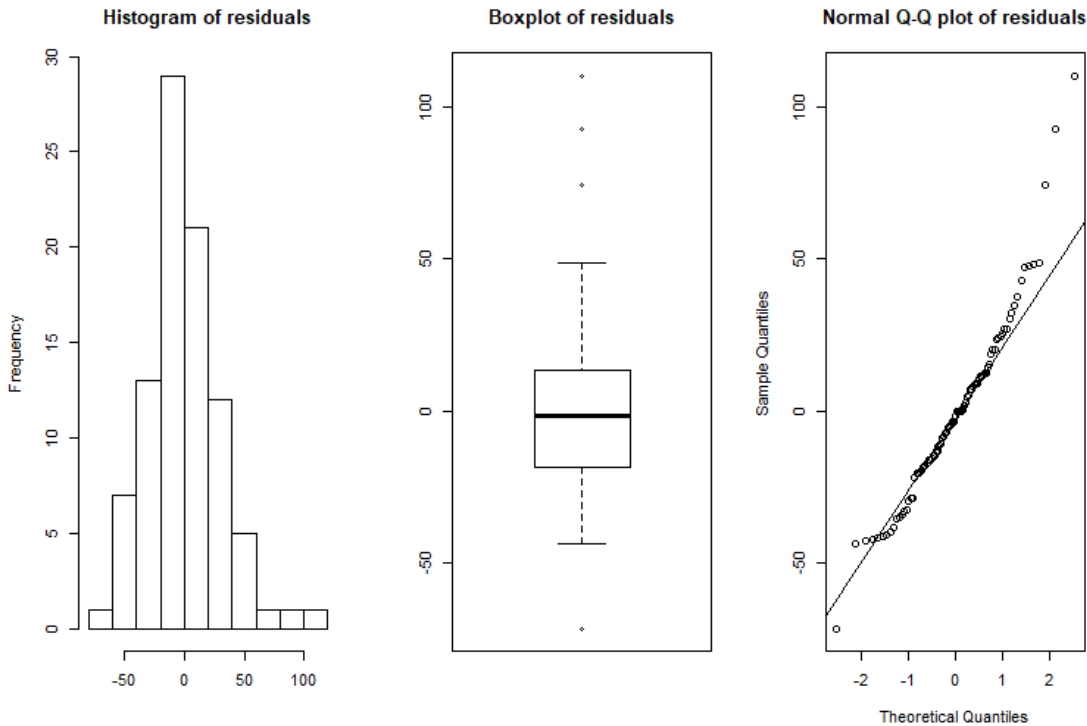


Fig. 1: Histogram, boxplot and normal Q-Q plot of residuals of analysis of variance



Tab. 5: Summary of debt (percentage to GDP) based on type of regime

	AUTH	FLAW	FULL	HYBRID	TOTAL
n	8	48	18	17	91
mean	16.23	65.50	61.48	49.57	57.40
median	12.17	53.75	54.54	37.50	48.83
min	1.89	10.00	20.85	10.46	1.89
max	43.94	192.38	110.95	127.93	192.38
sd	13.98	39.72	27.72	29.38	36.58

Notes: AUTH = Authoritarian regimes, FLAW = Flawed democracies, FULL = Full democracies, HYBRID = hybrid regimes.

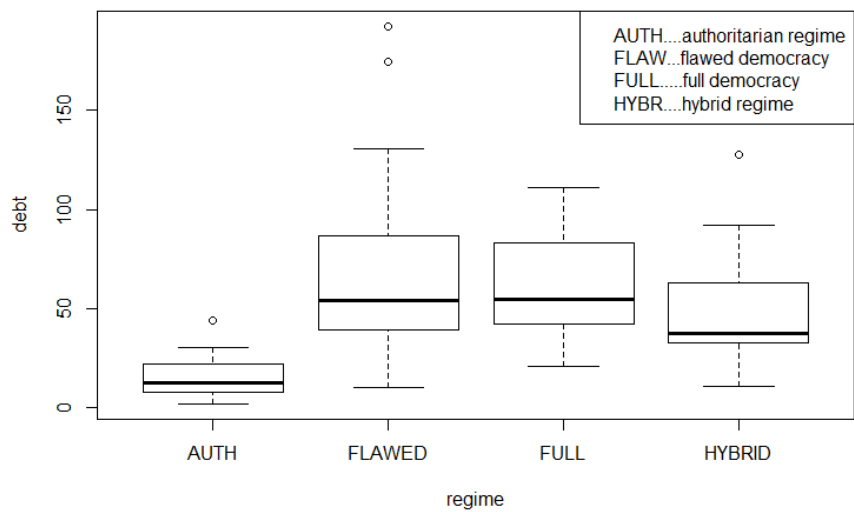


Fig. 2: Boxplots of debt vs. regimes

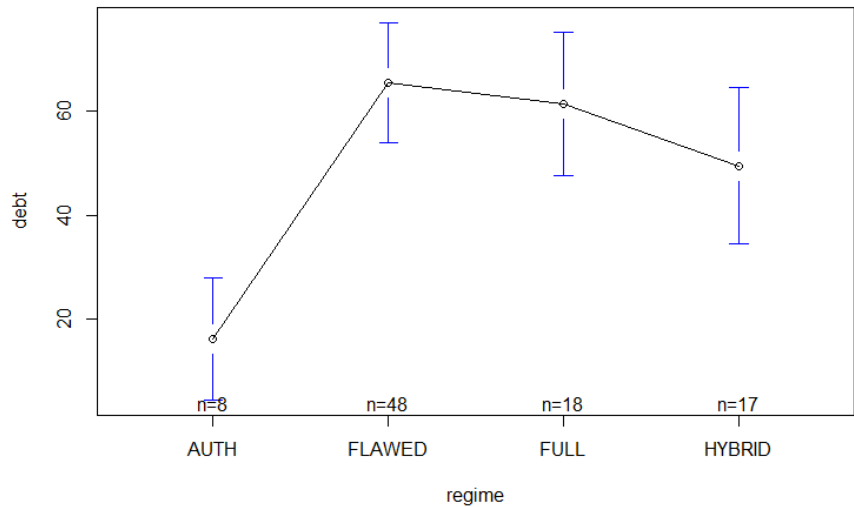


Fig. 3: Plot of means for type of regime

Tab. 6: Tukey multiple comparisons of means for type of regime (95% family-wise confidence level)

	diff	lwr	upr	p-value
HYBRID-AUTH	33.346544	−3.032469	69.72556	0.0842218*
FULL-AUTH	45.255925	9.201731	81.31012	0.0079131**
FLAWED-AUTH	49.274343	16.871826	81.67686	0.0008322***
FULL-HYBRID	11.909381	−16.786771	40.60553	0.6969393
FLAWED-HYBRID	15.927800	−8.019798	39.87540	0.3072410
FLAWED-FULL	4.018419	−19.432802	27.46964	0.9694682

Notes: AUTH = Authoritarian regimes, FLAW = Flawed democracies, FULL = Full democracies, HYBRID = hybrid regimes. Significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

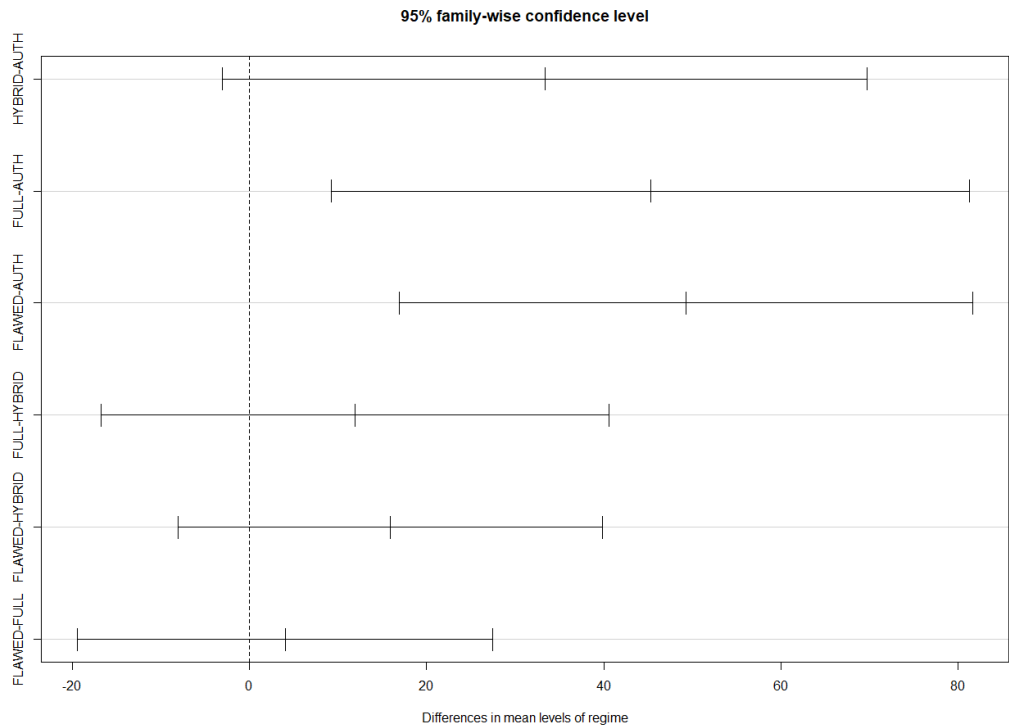


Fig. 4: Tukey multiple comparisons of means

Tab. 7: Summary of debt based on income level

	AUTH	FLAW	FULL	HYBRID	TOTAL
n	44	3	18	26	91
mean	71.18	28.67	39.78	49.58	57.40
median	62.38	32.68	36.44	49.35	48.83
min	1.89	10.73	10.14	11.29	1.89
max	192.38	42.60	91.75	130.80	192.38
sd	41.57	16.31	21.90	27.89	36.58

Notes: AUTH = Authoritarian regimes, FLAW = Flawed democracies, FULL = Full democracies, HYBRID = hybrid regimes.

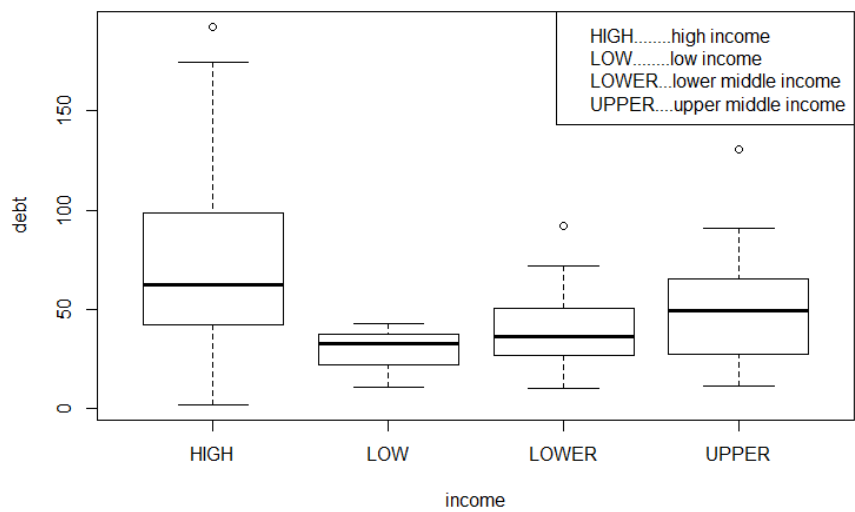


Fig. 5: Boxplots of debt vs. incomes (GNI per capita in US\$, Atlas methodology)

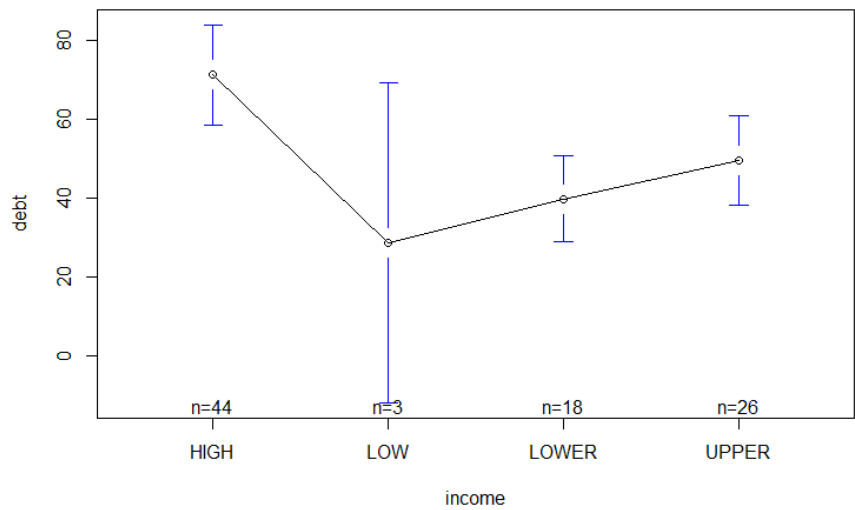


Fig. 6: Plot of means for income level

Tab. 8: Tukey multiple comparisons of means for income levels (95% family-wise confidence level)

	diff	lwr	upr	p-value
LOW-LOWER	6.114489	−46.798601	59.02758	0.9902305
UPPER-LOWER	9.497609	−16.519185	35.51440	0.7733206
HIGH-LOWER	26.850929	3.110771	50.59109	0.0202755*
UPPER-LOW	3.383120	−48.353977	55.12022	0.9981864
HIGH-LOW	20.736440	−29.894072	71.36695	0.7055764
HIGH-UPPER	17.353320	−3.635420	38.34206	0.1405922

Notes: HIGH = High income, LOW = Low income, LOWER = Lower income, UPPER = Upper income.  
Significance codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

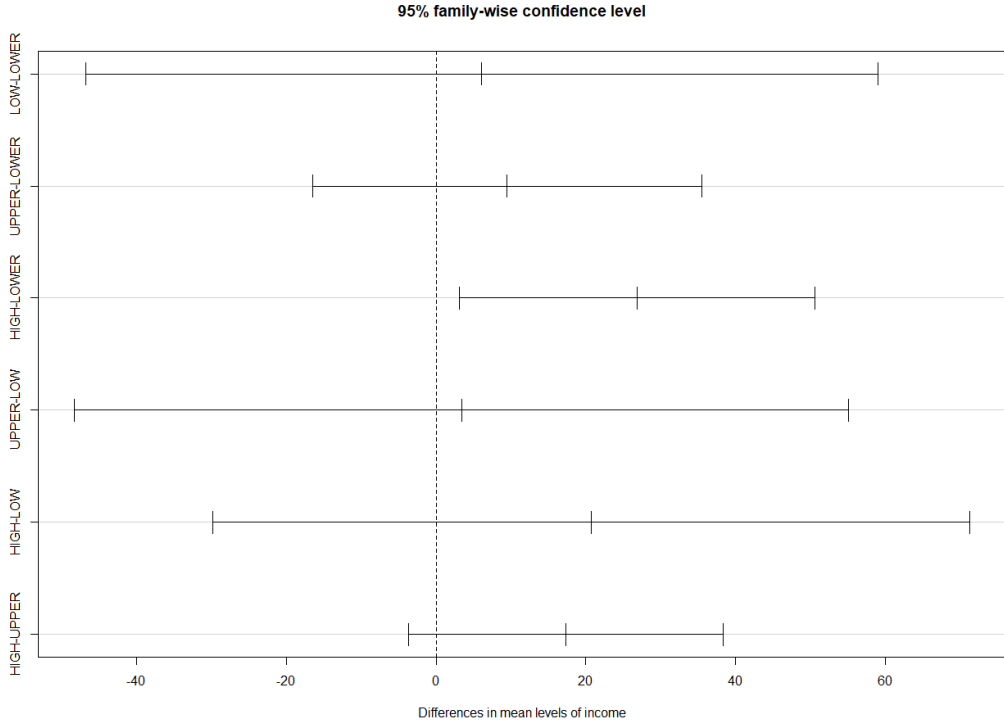


Fig. 7: Tukey multiple comparisons of means (HIGH = High income, LOW = Low income, LOWER = Lower income, UPPER = Upper income.)

(the number of observations for low level of income is very small).

Based on the chosen data and methods, the results confirm the research hypothesis for the individual effect of each of the factors (democracy, development), but not for both of them combined. Our test confirmed that in the panel of 91 countries during the 2012–2016 periods both income level and regime type sta-

tistically significantly influenced a higher level of debt. The interaction between the two factors (income level and regime type) was insignificant for debt levels. The results also show that debt level was higher for the countries with more democratic regimes and higher income levels compared to more authoritarian regimes with lower income levels per capita which had lower debt levels.

## 5 DISCUSSION AND CONCLUSIONS

The economic and political interpretation of the results should be done carefully and with limitations. The time-period is relatively short and the groups of countries contain geographically distant states. Each country has its own debt history based on the political and economic situation. Regarding the question about why democracies tend to produce more debt we can speculate on several possible replies. People in

free choice countries might prefer to postpone the painful economic reforms to the future which can result in debt creation. Similarly, democracies tend to operate in short-term horizons making the structural reforms more difficult. Other factors, such as fiscal constitutions of the state, its monetary sovereignty, economic freedom, interest rates, corruption levels, institutional quality and others are for

sure elements which co-determine debt levels. In respect to our research it is worth noting that the “full democracies” contained several members of the European Union (such as Germany, UK, the Netherlands) and the “flawed democracies” included US, Italy, France, Brazil, India or the Visegrad 4 members while the “authoritarian regimes” group had Russia, United Arab Emirates, Belarus or Kazakhstan.

Nevertheless, our research confirmed the findings of Schragger (2012), Lav and McNichol (2011) and Archer et al. (2007). Some high-income democracies adopted a protection mechanism against high debts. One of them is the Swiss example of direct democracy which demonstrated that it could be able to reduce debt by the means of the educated choice of responsible votes, as supported by Pommerehne and Schneider (1985) and Feld and Kirchgässner (2000, 2001). Similarly, the Member states of the European Union adopted constitutional rules to prevent excessive public deficits which lead to high public debt levels (such as the Stability and Growth Pact and Treaty on Stability, Coordination and Governance in the Economic and Monetary Union). Clearly, individual countries follow their individual results based on political and economic specificities. Our results show that full democracies are related with higher debt accumulation can probably be addressed by a better education concerning civic and public issues.

On the development-debt relation, it was found that richer countries tend to have higher debts compared to lower income states. In our “high income” group we had most of the European Union members, US, Japan, Korea Rep., Australia or United Arab Emirates. The “upper income” group was composed by the countries like Russia, Belarus, Turkey, Iraq or Peru. The “lower incomes” were represented among others by Ukraine, India, Philippines or Kyrgyz Rep. and finally the “low income” by Ethiopia, Liberia and Malawi. Why richer countries tend to accumulate more debt than the poorer ones is a challenging question and our research does not provide answers to it. One can think about the historical factor where most of the rich countries suffered from the oil crisis and created

huge debt since. On the other hand, many formal soviet-bloc states which are mainly part of the second income group operated in closed economies, profited from cheap resources and had only a limited free trade. The lower and low income countries might also tend to use financial means available as their population is used to the given welfare levels. One cannot exclude the role of the “enlightened” rulers who do not allow high debt on political or economic ground.

Putting the results in perspective to the results of literature, the first aspect to be noted is that the results of the study are not directly comparable with literature results for the reason of the research hypothesis. The main difference is the fact that our research studied two independent variables (democracy and development) and their impact on debt levels. In the literature, the relation is typically mono-variable. In addition, authors were researching another direction than we were, namely whether high public debt leads to lower economic growth. Such hypothesis was confirmed by Kumar and Woo (2010), Reinhart and Rogoff (2010) and Szabó (2013). Other authors, such as Checherita and Rother (2010) and Égert (2012), provided to this question more nuanced reply. However, on the inverse question whether high economic development levels lead to higher debt the research is missing.

We try to fill this gap in research by the above analysis which can be seen as our contribution to the contemporary research. However, the results obtained should be interpreted cautiously and we would call for more research in the area, including on the possible reasons why democracy and development – two positive things – tend to produce high debts.

In summary, the paper aimed at confirming the “Three-D-Relationship” research hypothesis that more democratic and more economically developed countries exhibit higher public debt. This hypothesis was tested in a panel of analysis for 91 countries over the period from 2012 to 2016 and was confirmed for the each of the factors individually but not combined together.

The two-way analysis of variance confirmed that both income level and regime type statistically significantly cause a higher level of debt,

meaning that more democratic states as well as more high-income countries exhibit higher debt levels. However, the interaction between the income level and regime type had insignificant for debt levels. The results also show that debt level was higher for the countries with high more democratic regime and higher income level

compared to more authoritarian regimes and lower income levels per capita which had lower debt levels.

The results suggest the rather challenging conclusions that higher democratic standards lead to higher public debt which can call on specific policy actions.

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## 7 REFERENCES

- ALT, J. E. and LASSEN, D. D. 2006. Fiscal Transparency, Political Parties, and Debt in OECD Countries. *European Economic Review*, 50 (6), 1403–1439. DOI: 10.1016/j.euroecorev.2005.04.001.
- ARCHER, C. C., BIGLAISER, G. and DEROUEN, K. JR. 2007. Sovereign Bonds and the “Democratic Advantage”: Does Regime Type Affect Credit Rating Agency Ratings in the Developing World? *International Organization*, 61 (2), 341–365. DOI: 10.2307/4498148.
- BARRO, R. J. 1996. Democracy and Growth. *Journal of Economic Growth*, 1 (1), 1–27. DOI: 10.2307/40215879.
- BALKAN, E. M. and GREENE, K. V. 1990. On Democracy and Debt. *Public Choice*, 67 (3), 201–211. DOI: 10.1007/BF00224681.
- BARTOLINI, D. and SANTOLINI, R. 2017. Political Institutions Behind Good Governance. *Economic Systems*, 41 (1), 68–85. DOI: 10.1016/j.ecosys.2016.05.004.
- BEAULIEU, E., COX, G. W. and SAIEGH, S. 2012. Sovereign Debt and Regime Type: Reconsidering the Democratic Advantage. *International Organization*, 66 (4), 709–738. DOI: 10.2307/23279976.
- BOYSEN-HOGREFE, J. 2017. Risk Assessment on Euro Area Government Bond Markets – The Role of Governance. *Journal of International Money and Finance*, 73 (A), 104–117. DOI: 10.1016/j.jimonfin.2017.01.005.
- BUCHANAN, J. M. 1990. The Domain of Constitutional Economics. *Constitutional Political Economy*, 1 (1), 1–18. DOI: 10.1007/BF002393031.
- CHECHERITA, C. and ROTHER, P. 2010. *The Impact of High and Growing Government Debt on Economic Growth: An Empirical Investigation for the Euro Area*. ECB Working Paper No. 1237.
- DIJKSTRA, G. 2018. Aid and Good Governance: Examining Aggregate Unintended Effects of Aid. *Evaluation and Program Planning*, 68 (C), 225–232. DOI: 10.1016/j.evalprogplan.2017.09.004.
- ÉGERT, B. 2012. *Public Debt, Economic Growth and Nonlinear Effects: Myth or Reality?* OECD Economic Department Working Paper No. 993.
- FELD, L. P. and KIRCHGÄSSNER, G. 2000. Direct Democracy, Political Culture, and the Outcome of Economic Policy: A Report on the Swiss Experience. *European Journal of Political Economy*, 16 (2), 287–306. DOI: 10.1016/S0176-2680(00)00003-3.
- FELD, L. P. and KIRCHGÄSSNER, G. 2001. Does Direct Democracy Reduce Public Debt? Evidence from Swiss Municipalities. *Public Choice*, 109 (3–4), 347–370. DOI: 10.1023/A:1013077121942.
- FRIEDEN, J. A. 1991. *Debt, Development, and Democracy: Modern Political Economy and Latin America, 1965–1985*. Princeton University Press. ISBN 0691078998.
- HOWE, F. C. 1905. *The City: the Hope of Democracy*. New York: Charles Scribner’s Sons. 319 pp.
- JALLES, J. T. 2011. The Impact of Democracy and Corruption on the Debt-Growth Relationship in Developing Countries. *Journal of Economic Development*, 36 (4), 41–72.
- KRUGMAN, P. 2011. Rule by Rentiers. *The New York Times*, June 9, 2011.

- KUMAR, M. S. and WOO, J. 2010. *Public Debt and Growth*. IMF Working Paper No. 10/174.
- LAV, I. J. and McNICHOL, E. 2011. *Misunderstandings Regarding State Debt, Pensions, and Retiree Health Costs Create Unnecessary Alarm*. Centre on Budget and Policy Priorities.
- LI, R. Y. M. and LEUNG, T. H. 2015. *Is Democracy a Pre-Condition in Economic Growth? A Perspective from the Rise of Modern China*. UNChronicle.
- LIPSET, S. M. 1959. Some Social Requisites of Democracy: Economic Development and Political Legitimacy. *The American Political Science Review*, 53 (1), 69–105. DOI: 10.2307/1951731.
- MACLEAN, N. 2017. *Democracy in Chains: The Deep History of the Radical Right's Stealth Plan for America*. Viking Publ. ISBN 1101980966.
- MADISON, J. 1865. Political Observations, April 20, 1795. In *Letters and Other Writings of James Madison*, vol. 4, p. 491.
- MILLER, E. F. (ed.). 1987. *Essays Moral, Political, Literary*. Political Discourses, My Own Life (by David Hume). Indianapolis, IN: Liberty Fund.
- NANDA, V. P. 2006. The “Good Governance” Concept Revisited. *The Annals of the American Academy of Political and Social Science*, 603 (1), 269–283. DOI: 10.1177/0002716205282847.
- NEUMAYER, E. 2002. Is Good Governance Rewarded? A Cross-National Analysis of Debt Forgiveness. *World Development*, 30 (6), 913–930. DOI: 10.1016/S0305-750X(02)00018-9.
- NORTH, D. C. and WEINGAST, B. R. 1989. Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England. *The Journal of Economic History*, 49 (4), 803–832. DOI: 10.2307/2122739.
- PLATO. 360 BC. *The Republic, Book 7* [online]. Available at: <http://classics.mit.edu/Plato/republic.1.introduction.html>.
- POMMEREHNE, W. W. and SCHNEIDER, F. 1985. Politisch-ökonomische Überprüfung des Kaufkraftinzidenzkonzepts: Eine Analyse der AHV-Abstimmungen von 1972 und 1978. In BRUGGER, E. A. and FREY, R. L. (eds.). *Sektoralpolitik vs. Regionalpolitik*, Rüegger, pp. 75–100.
- PUDDINGTON, A. and ROYLANCE, T. 2017. *Populists and Autocrats: The Dual Threat to Global Democracy*. Freedom in the World 2017. Freedom House.
- REINHART, C. M. and ROGOFF, K. S. 2010. *Growth in a Time of Debt*. NBER Working Paper No. 15639.
- RINDERMAN, H., KODILA-TEDIKA, O. and CHRISTAINSEN, G. 2015. Cognitive Capital, Good Governance, and the Wealth of Nations. *Intelligence*, 51, 98–108. DOI: 10.1016/j.intell.2015.06.002.
- SCHRAGGER, R. C. 2012. Democracy and Debt. *The Yale Law Journal*, 121 (4), 860–886.
- SZABÓ, Z. 2013. The Effect of Sovereign Debt on Economic Growth and Economic Development. *Public Finance Quarterly*, 58 (3), 251–270.
- The Economist Intelligence Unit. 2017. *The Economist Intelligence Unit's Democracy Index 2016 – Revenge of the “Deplorables”* [online]. Available at: <http://www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy-Index-2016.pdf&mode=wp&campaignid=DemocracyIndex2016>.
- VARSHNEY, A. 1999. *Democracy and Poverty*. Conference on World Development Report 2000, Organized by the U.K. Department for International Development and the Institute of Development Studies, Sussex, Caste Donnington, England, August 15–16, 1999.
- World Bank. 2017. *Central Government Debt, Total (% of GDP)* [online]. Available at: <http://data.worldbank.org/indicator/GC.DOD.TOTL.GD.ZS>.
- World Bank. 2017a. *GDP (Current US\$)* [online]. Available at: <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.
- WUCHERPFENNIG, J. and DEUTSCH, F. 2009. Modernization and Democracy: Theories and Evidence. *Revisited Living Reviews in Democracy*, 1, 9 pp.



## 8 ANNEX

Tab. 9: List of the countries under the analysis divided by GNI per capita in US\$

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<b>High:</b> Antigua and Barbuda, Australia, Austria, The Bahamas, Bahrain, Barbados, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea Republic, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Oman, Palau, Poland, Portugal, San Marino, Seychelles, Singapore, Slovak Republic, Slovenia, Spain, St. Kitts and Nevis, Sweden, Switzerland, United Arab Emirates, United Kingdom, United States, Uruguay
<b>Upper:</b> Albania, Belarus, Belize, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Colombia, Croatia, Dominica, Grenada, Iraq, Jamaica, Kazakhstan, Malaysia, Marshall Islands, Mauritius, Namibia, Peru, Romania, Russian Federation, Samoa, St. Lucia, St. Vincent and the Grenadines, Thailand, Turkey
<b>Lower:</b> Bhutan, El Salvador, Georgia, Guatemala, India, Indonesia, Kyrgyz Republic, Micronesia Fed. Sts., Moldova, Nigeria, Papua New Guinea, Philippines, Solomon Islands, Sri Lanka, Swaziland, Tunisia, Ukraine, Zambia
<b>Low:</b> Ethiopia, Liberia, Malawi

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Tab. 10: List of the countries under the analysis divided by democracy regime

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<b>Full:</b> Australia, Austria, Denmark, Finland, Germany, Iceland, Ireland, Luxembourg, Malta, Mauritius, Netherlands, New Zealand, San Marino, Spain, Sweden, Switzerland, United Kingdom, Uruguay
<b>Flawed:</b> Antigua and Barbuda, The Bahamas, Belgium, Botswana, Brazil, Bulgaria, Colombia, Croatia, Cyprus, Czech Republic, Dominica, El Salvador, Estonia, France, Greece, Grenada, Hungary, India, Indonesia, Italy, Jamaica, Japan, Korea Republic, Latvia, Lithuania, Malaysia, Marshall Islands, Micronesia Fed. Sts., Namibia, Palau, Papua New Guinea, Peru, Philippines, Poland, Portugal, Romania, Samoa, Seychelles, Singapore, Slovak Republic, Slovenia, Solomon Islands, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Tunisia, United States
<b>Hybrid:</b> Albania, Barbados, Belize, Bhutan, Bosnia and Herzegovina, Georgia, Guatemala, Iraq, Kyrgyz Republic, Liberia, Malawi, Moldova, Nigeria, Thailand, Turkey, Ukraine, Zambia
<b>Auth:</b> Bahrain, Belarus, Ethiopia, Kazakhstan, Oman, Russian Federation, Swaziland, United Arab Emirates

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