

# **Turnout in developed and developing countries: Are the two turnout functions different or the same?**

## **Abstract**

In the literature on political participation, there is no baseline model of electoral turnout. Rather, various studies (e.g. Blais 2006, Franklin 1999, 2004, Geys 2006, Remmer 2009), which employ different sample sizes, time periods, cases, and operationalizations of relevant independent variables, produce contradictory results. To shed light on these diverse findings, I evaluate whether different levels of development trigger different turnout functions. My results indicate that highly developed countries have higher levels of citizen participation in elections, and even more importantly, they illustrate that the turnout function in high income and low/medium income countries is quite dissimilar. The GDP per capita, compulsory voting and decisive elections have a different impact in the two universes of cases. This implies that there are two distinct turnout functions between developed and developing nations.

**Keywords:** Turnout, developed countries, developing countries

## **Introduction**

Elections are instruments of democracy. Probably more so than any other feature (e.g. political rights and human rights), competitive, free and fair elections demonstrate a nation-state's commitment to democracy (Huntington 1984; Schumpeter 1976). Through elections, citizens can choose and oust policymakers and impact political outcomes. High voter participation gives legitimacy to those in power; it increases the authority of the democratic system as a whole and leads to less violence and instability (Franklin 2004; Powell 1986). In contrast, the presence of large amounts of citizens, who do not fulfill their civic duty and do not cast ballots, is a sign of apathy toward the democratic system (Dettrey and Schwindt-Bayer 2009). This apathy can give momentum to extremist forces (e.g. radical rightist or leftist groups) that might try to undermine the democratic consensus in a given nation (Minkenberg and Perrinau 2007). In addition, low voter turnout decreases the representiveness of a political system because those cohorts of the population that do not turn out are most likely also not represented. This further implies that their preferences are not considered in the political debate (Verba 1996).

The repercussions of turnout for the health and well functioning of a democracy have triggered a large body of literature in both American Politics (e.g. Patterson and Caldeira 1983; Rosenstone and Hanson 1993) and Comparative Politics (e.g. Geys 2006; Wattenberg 2002). These studies link turnout to institutional variables, such as compulsory voting laws or the electoral system type, party system characteristics (e.g. the number of parties that win seats), socio-economic variables like the GDP per capita, and contextual factors (e.g. the decisiveness of the electoral race). However, despite the fact that many studies (e.g. Blais 2006, Blais and Dobrzynska 1998) point toward the importance of institutions in explaining and predicting macro

level trends in political participation, there is no baseline model of voter turnout that works regardless of time and space.

Why do studies focusing on one particular context (e.g. one region) or on one particular time frame (e.g. a cross sectional analysis of one year) provide sometimes different results pertaining to the relative and absolute importance of institutional, socio-economic, and contextual factors? One reason might lie in countries' various developmental levels. In the aggregate, citizens in rather less developed countries are less educated, have lower material security, and might embrace different goals and beliefs than citizens in rich or highly developed countries. It is highly possible that these variations in wealth, education, and cultural values lead to different dynamics affecting turnout.

Equipped with a dataset that covers turnout rates, as well as 8 theoretically informed covariates for all parliamentary elections in all countries that have held legislative elections between January 1970 and December 2010 for which data are available, I compare whether developed countries have, in fact, a different turnout function than less developed states. In conducting this study, I have two goals. First, and more practically, I want to disentangle whether the indicators that drive turnout are similar or dissimilar across various levels of development. Second, and more methodologically, I aim to evaluate whether it is advantageous to build turnout models by pooling across all space and time periods, or whether subdividing our universe of cases produces more accurate models.

The paper proceeds as follows. Section two situates this study within the broad turnout literature and offers some descriptive statistics on turnout in the developed and developing world. In the third part, I introduce the dataset used for this study and present the predictor variables that undergird the analysis. Section four focuses on the statistical procedures employed

for the panel data analysis. In the penultimate part, I explain the results of the article. In addition to the tendency of wealthy nations to have higher levels of citizen participation at the electoral booth, I find that the impact of various independent variables (e.g. compulsory voting and decisiveness) on turnout differs between high income and low/ medium states. Finally, I summarize the main results of the article and provide some future avenues for research.

### **Existing studies on turnout**

Powell's (1986) contribution has laid the groundwork for the comparative study of macro-level turnout. Focusing on 20 industrialized nations between 1960 and 1980, Powell finds three institutional variables – compulsory voting, a proportional electoral system, and more registered citizens – to be positively related to turnout. Subsequent studies by Jackman (1987) and Jackman and Miller (1995), which also focus on western industrialized countries, mostly confirm the above mentioned institutionalized factor, but add that close races and unicameral systems entice people to cast their ballots at the electoral booth, as well. Blais and Dobrzynska (1998) are the first two scholars, who broaden their analysis beyond wealthy industrialized nations. Focusing on 324 elections in democracies around the globe between 1972 and 1995, they report turnout to be highest in small, densely-populated countries, in which the national lower house election is decisive and close, as well as held under PR with relatively few parties, where voting is compulsory and the minimum voting age is 21.

Since Blais and Dobrzynsk's (1998) study, a host of macro-level analyses have attempted to determine the factors that drive macro level turnout. Some of these studies have taken a global perspective (e.g. Pintor and Gratschew and Sullivan 2002; Endersby and Kriekhaus 2008). Others have endorsed a regional point of view by focusing on, for example, Eastern Europe (Kostadinova 2003), South East Asia (Tayler 1996) and more traditionally on western

industrialized countries (Franklin 2000; 2004). Across the board, these cross-national studies find rather solid evidence that compulsory voting is a primary determinant for high turnout. However, besides the rather intuitive conclusion that forcing the population to vote will increase participation at elections, there is no consensus on the relative and absolute salience of other institutional, social, and contextual variables. For example, debates center around whether turnout is higher in list proportional systems than in majoritarian systems or mixed electoral system types (e.g. Ladner and Millner (1999), Norris (2004), Siaroff and Merer (2002),<sup>1</sup> or whether the decisiveness and competitiveness of the electoral race boost turnout (Kuenzi and Lambright 2007).<sup>2</sup>

The distinct findings that characterize turnout studies conducted in different parts of the world with different subsamples of countries entertain the possibility that election dynamics are embedded in their specific economic and environment. It might well be the case that development by itself might shape the economic and social environment in which voting occurs. For example, classical sociological approaches (e.g. Verba and Nie 1972; Wolfinger and Rosenstone 1980) suggest that turnout should increase as a country modernizes. This theory sees higher levels of education and wealth to be positively correlated with more support for democracy. These engrained democratic values should then lead to higher levels of political

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<sup>1</sup> The majority view (e.g. Selb 2009) claims that PR systems are designed to ensure that all votes count, which guarantees competitiveness of the districts. This, in turn, should entice people of all ideologies and preferences to turn out. The counter perspective (e.g. Blais and Aarts 2006; Brockington 2004) argues that larger party systems, which are often a direct result of PR, actually reduce turnout, which implies that the composition of the government is determined by bargaining elites rather than the actual electoral result (Karp and Banducci and Bowler 2008; Powell 2000).

<sup>2</sup> A classical rational choice argument (e.g. Downs 1957) would suggest that elections with higher stakes might render the electoral process worth investing for potential voters. This would imply that those elections that simultaneously fill all positions of legislative and executive power should boost turnout. The same should apply to competitive elections – contests where the gap between winner and runner up is marginal. While there is little debate about the theoretical foundations of this argument, there seems to be a discrepancy between theory and empirics as a substantial amount of empirical evidence (Kostadinova 2003; Kittelson and Anderson 2009; Tavits 2009a) finds both the decisiveness and closeness of the electoral race to be unrelated to turnout.

participation both at the polls and through unconventional forms (Burns, Schlozman, and Verba 2001).

Conversely, value change theorists (e.g. Inglehart (1990; 1997) argue that the abovementioned rationale is only valid for developing countries. According to Inglehart (1997) the dynamics linking a country's material wealth and its citizens' propensity to cast their ballot in elections are different in wealthy industrialized nations. According to his value change approach or post-materialist thesis, economic development in wealthy countries is accompanied by social and cultural change, which causes an intergenerational shift in values from material "survival" values to post-material "quality of life" values. In such a post-materialist world, citizens "are more likely to demand participation in making major decisions, not just a voice of selecting the decision-makers...mass politics are increasingly apt to be elite-challenging rather than elite directed..." (Inglehart 1992: 6). Implicit in this argument is that the change from material goals to self-realization values might encourage people to abandon the polls and search other more non-conventional forms of participation.

If these two rationales hold, electoral participation should actually increase with development and the maturation of democracy in less affluent countries. However, in affluent countries the aforementioned post-materialist turn is likely to decrease conventional forms of political engagement. While these two theoretical arguments constitute two solid pillars in the political participation literature, scholars have failed to test the potentially different dynamics of the variable development on turnout. Rather most studies include in their models, the variable GDP per capita as a proxy for development, either in its raw form or in the log transformation. However, these two ways of operationalizing the variable material wealth do not take into consideration that the sign of the variable might actually switch at a certain developmental level.

Theoretically, this could explain why most studies (e.g. Kuenzi and Lambright 2007, Lehoucq and Wall 2004) find no impact of the variable development on turnout. It might also be the case that the positive impact development has in rather low income nations countries and the negative influence the variable has in high income nations countries cancel each other out, rendering the non-effect spurious.

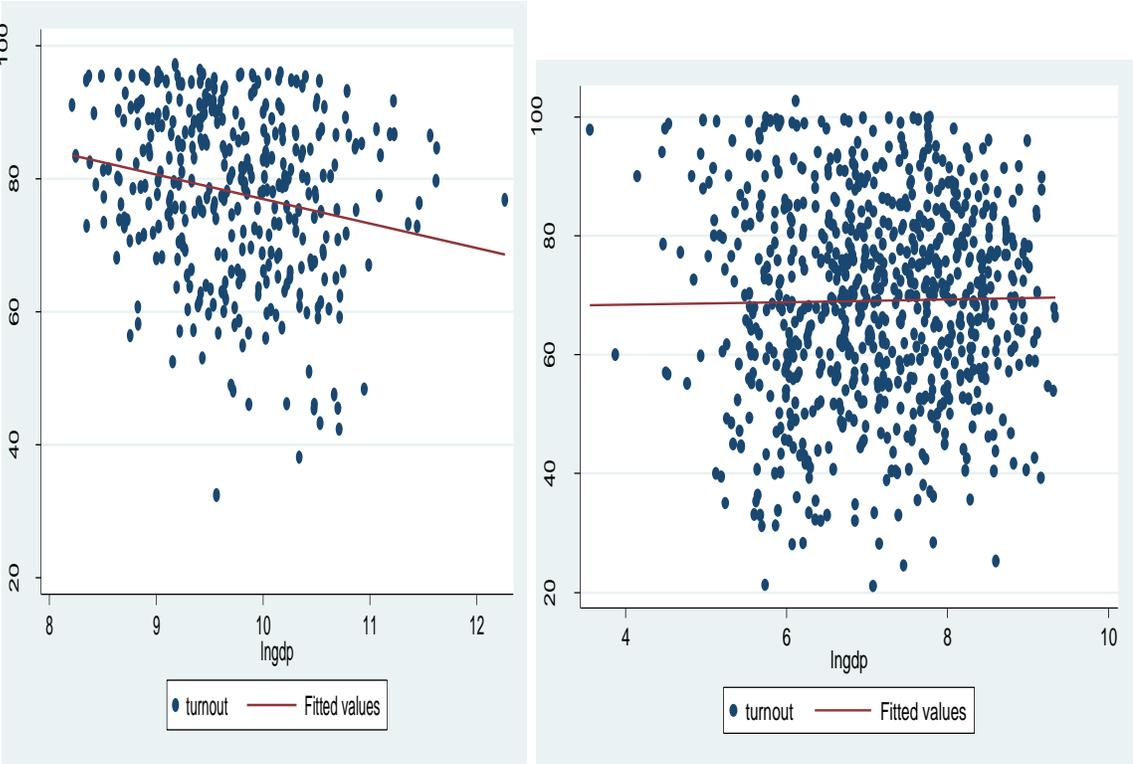
Some rather straightforward empirical evidence entertains the possibility that the turnout function might actually differ between affluent and less affluent countries. First, I find turnout to be lower in less developed countries than in developed countries. From the period between January 1970 and December 2010, turnout rates in 771 elections in medium or low developed countries averaged 69.1 percent, whereas the mean participation rate in 371 elections in highly developed countries during the same time period stood at 77.7 percent.<sup>3</sup> An independent samples T-test indicates that this difference in means is statistically different (the t-value is 8.59 and the significance level  $>.001$ ). This argument falls in line with recent evidence. For instance, Karp and Banducci (2007) claim that compared to rich countries, citizens in poorer states are less likely to be contacted by parties and candidates and are consequently less likely to be engaged in the political process

In addition to the higher numbers of citizens, who turn out on Election Day in more prosperous countries, development appears to have a different impact in the two subsets of countries. Graph 1 illustrates the impact of the log transformed GDP per capita variable on turnout for either developed or developing countries. We see that there is a negative relationship for all countries, whose GDP per capita exceeds 12,196 US dollars and a flat line for those states, which are deemed 'developing' by the World Bank.

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<sup>3</sup> Following the recommendation of the World Bank, I define a country as high developed if it had a GDP per capita of 12,196 or higher in 2010 and as low/medium developed country if the nation's GDP per capita was below 12,196.

**Graph 1: The Relationship between the log GDP per capita and turnout in developed (figure 1) and developing countries (figure 2)**



The distinct empirical relationships between material wealth and citizens' participation in the two subsets of countries imply that there might be distinct dynamics at stake when it comes to explaining and predicting turnout. For example, in less affluent societies, which frequently tend to be more traditional, voting might take place along ethnic and/ or religious lines, as well as through clientelistic networks, whereas in rather wealthy (and supposedly post-materialist) nations, these networks should lose influence and more citizens are likely to have increased access to different sources of information. All of these factors might alter the turnout dynamics based on different levels of development. In addition, the impact the material wealth of a country has on turnout might also interact with other factors in the turnout function or might change it altogether. For example, compulsory voting might have a stronger impact in developed

countries, because poor countries might not have the means and logistics to track down the people who failed to vote. Consequently, these countries might not be able to effectively punish non-voters. In the following sections, I evaluate in a multivariate framework whether and, if so, to what degree development impacts turnout and interacts with other independent variables in the turnout function. To do so, I present the multivariate dataset, the statistical procedures, and the results, respectively.

### **The dataset and the variables**

To gain some robust evidence on whether the same factors affect turnout differently in developed and developing countries, this study draws on the largest possible dataset, namely all legislative elections between January 1970 and December 2010. The dataset contains more than 1,140 observations from more than 160 countries for which data were available. There are approximately 200 observations with missing data on any of the independent variables discussed in the paper. The cases for which I could not collect data (on all indicators) include some of the smaller states, such as the Pacific Islands (e.g. Marshall Islands, Federated Micronesia) or small African, Asian, or Latin American states such as, Guinea, Palau or Tuvalu. Contrary to many other studies (e.g. Franklin 2004), this dataset also does not over-represent developed or Western countries.<sup>4</sup> In line with the empirical distribution of developed and developing countries, less than 33 percent of the data actually come from high-income states.

Following most of the literature on electoral turnout (Blais 2006; Blais, Massicotte and Dobrzynska 2004; Geys 2006; Franklin 2004; and Renner 2009), this study includes the dependent variable, turnout, and eight controls commonly found in previous studies on turnout. These controls are organized into three categories specifically institutional, socio-economic, and

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<sup>4</sup>The dataset, which was collected with the help of three undergraduate research assistants, can be obtained from the author upon request.

contextual factors and are tested in four models: (1) a pooled model; (2) an interactive model in which I interact a dummy variable for development with all other covariates in the turnout function; (3) a model that only includes developed countries; and (4) a model featuring merely developing countries.

*The Dependent Variable:*

Turnout, the dependent variable, is measured in the standard way as the percentage of registered voters that cast their ballot in the national legislative elections of their country.<sup>5</sup>

*Institutional Factors:*

Three variables are included in the model as institutional factors: compulsory voting laws, the electoral system type, and the decisiveness of the election. For the first variable, compulsory voting, I follow the literature and hypothesize that in countries where voters are required to cast their ballot by law, political participation should be higher than in countries where no such laws exist (Gray and Caul 2000; Franklin 2004). Due to the fact that there is wide variation in the enforcement of these statutes, I only code a country as having compulsory voting laws where credible sanctions against non-compliance are in place. In the analyses, all countries with enforced compulsory voting laws are coded one, while all other countries are coded zero.<sup>6</sup>

The electoral system type is the second institutional factor, which is included in this analysis. Because the number of votes a party receives roughly translates into the number of seats, I expect to see a positive relationship between PR and higher turnout. To capture the three main existing electoral system types, I distinguish between PR (including mixed member

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<sup>5</sup> We collected turnout data from the following four websites: the Institute for Democracy and Electoral Assistance (IDEA) [http://www.idea.int/vt/country\\_view.cfm?CountryCode=PW](http://www.idea.int/vt/country_view.cfm?CountryCode=PW)

Adam Carr's election archive (<http://psephos.adam-carr.net/>), the Inter Parliamentary Union (IPU) praline database on national parliaments: <http://www.ipu.org/parline/>. We also looked at the parliamentary site of each country to find additional data points, if we could not find the information on elections on the above mentioned websites.

<sup>6</sup> Data were collected from the International Institute on Democracy and Electoral Assistance. [http://www.idea.int/vt/compulsory\\_voting.cfm](http://www.idea.int/vt/compulsory_voting.cfm)

proportional (MMP)), mixed member systems, and plurality/majority systems and then create two dummy variables. First, I code all PR systems one and all other systems zero.<sup>7</sup> Second, I code all mixed systems one and the two remaining systems zero. As a third factor, I include the decisiveness of the electoral race into the equation. Because of their greater importance, I hypothesize that high stakes elections should increase turnout (Blais and Dobrzynska 1998). As a measure of decisiveness, I use two proxy variables. First, I label any election as decisive (coded 1), if all executive and legislative seats are filled simultaneously. For example, all countries with parliamentary systems (e.g. Germany or Spain), as well as presidential systems (e.g. Venezuela), in which the parliamentary and presidential election occur on the same day, fit this category. Second, I call an election indecisive (coded 0), if part of the legislature and executive are chosen at different elections on different days. For example, the French President is selected at a different day than are the deputies of the National Assembly. Consequently, France's legislative elections are coded as less decisive or zero.<sup>8</sup> In addition, I include a dummy variable for unicameralism (coded 1). Contrary to bicameral systems, the legislature in a unicameral system does not have to share legislative powers with an upper house, which renders the lower house parliamentary election more decisive.<sup>9</sup>

#### *Socioeconomic Factors:*

The model also controls for the two socioeconomic factors, the wealth of a state and country size. While the exact mechanisms connecting these two factors on voter turnout are currently in

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<sup>7</sup> Data for the electoral system type of a country were collected from the Inter Parliamentary Union: <http://www.ipu.org/parline-e/mod-electoral.asp>. To track down possible changes in the electoral system type, I used the following IDEA publication: Reynolds' Andrew, Ben Reilly and Andrew Ellis 2005. *Electoral System Design: The New International IDEA Handbook*. Stockholm: International IDEA

<sup>8</sup> Data were retrieved from the IFES Election Guide: <http://www.electionguide.org/country.php?ID=29>. Any legislative election is coded one if it is held at the same time as a presidential election or if there is no presidential election.

dispute (see Blais 2006; Dettrey Schmidt Bayer 2009), both variables are included in the model. As discussed in section two of this article the variable material wealth might have a different impact in the two subsets of countries; developed and developing states. In this analysis, national wealth is measured as per capita income and country size is measured by the overall population.<sup>10</sup> Both variables are transformed in their natural log.

### *Contextual Factors*

The first contextual factor that I include into the equation is the competitiveness of the electoral race. Races, where the expected margin of success between two contenders or parties is small, should not only trigger more campaign activity and media attention, but ought to also increase the likelihood that an individual's vote counts; all of which should increase the prospectus for higher turnout (Fauvelle-Aymar and Abel 2006). The closeness variable measures the vote difference between the winning party and the runner up party.<sup>11</sup> Penultimately, I add a control variable for regime type and expect to see a positive relationship between a democratic form of government and turnout. A democracy allows citizens to choose their representatives and influence the policy direction of their country; two factors that should increase turnout (Kostinova and Power 2007). To classify different regime types, I follow the standard typology and differentiate between democracies, hybrid regimes, and autocracies.<sup>12</sup> (Autocracies are coded one, anocracies or hybrid regimes two and democracies three).

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<sup>10</sup> The GDP per capita data come from the UN: <http://data.un.org/Data.aspx?q=GDP+per+capita&d=SNAAMA&f=grID%3a101%3bcurrID%3aUSD%3bpcFlag%3a1>. The variable population measures the number of people living in a country. Data were retrieved from the United Nations Statistical Division 2010. "Population and Vital Statistics Report." <http://unstats.un.org/unsd/demographic/products/vitstats/default.htm>. Missing data were collected from the "CIA World Factbook 2011." <https://www.cia.gov/library/publications/the-world-factbook/>

<sup>11</sup> Data for the variable come from the Institute on Development and Electoral Assistance ([http://www.idea.int/vt/country\\_view.cfm?CountryCode=PW](http://www.idea.int/vt/country_view.cfm?CountryCode=PW)), the Adam Carr's Election Archive (<http://psephos.adam-carr.net>) and IPU database (<http://www.ipu.org/parline>) as well as the national parliamentary websites of the respective country. For Africa I have also retrieved data from the African Elections Database. <http://africanelections.tripod.com/index.html>.

<sup>12</sup> Data on regime type were retrieved from the Polity IV database:

## Statistical Procedures

To test whether the turnout function differs in developed and developing nations, I run four regression models with all of the above-mentioned independent variables and with turnout as the dependent variable. The first model is the pooled model and contains all data. In model two, I compare whether or not the turnout function is similar or dissimilar for developed countries with a GDP per capita of \$12,196 or more and all other countries, which the World Bank deems developing because their GDP per capita has not yet reached the bar of \$ 12,196. To this end, I create a dummy variable for development and code developed countries one and developing countries zero. In a second step, I interact this dummy variable with all of the other elements in the regression model. Any independent variable has a different impact in developed countries as compared to developing countries, if the respective interaction term is statistically significant. For the two samples, this entails that if many interaction terms display a statistically significant result then the two turnout functions are different. In contrast, if none or few of these interactions display some variation, then it is safe to conclude that the turnout function is very similar between developed and developing countries. In this case pooling across all observations is a viable option. To confirm the results of the interactive model and to illustrate the different dynamics that are at stake in the two different subsamples, I add two separate models which merely feature developed and developing countries, respectively.

*The equation for the first model is as follows:*

$$\text{Turnout} = \beta_0 + \beta_1 D\_ \text{Compulsory Voting} + \beta_2 D\_ \text{PR} + \beta_3 D\_ \text{Mixed} + \beta_4 \text{Decisiveness} + \beta_5 D\_ \text{Unicameralism} + \beta_6 \text{Log GDP per capita} + \beta_7 \text{Log Population Size} + \beta_8 \text{Election Competitiveness} + \beta_9 \text{Regime Type} + \beta_{10} \text{Development} + \varepsilon.$$

To ensure some proper modeling procedure of the pooled time series data, several tests must be undertaken. First, I test the order of integration of the dependent variable. A Fisher Test illustrates that the dependent variable in all three models is stationary, which signifies that I can continue the analysis at the unit level (Maddala and Wu 1999). In a second step, I test for two further violations of the classical linear regression model, namely autocorrelation and heteroscedasticity. A Durbin's 'm' test reveals serial correlation in the disturbance term for all regressions (Kmenta 1990: 330). To eliminate this first order serial correlation in all models, I employ a first order autoregressive model (the Prais Winston transformation). Finally, I detect the presence of heteroscedasticity with the help of the White Test, which indicates that the null hypotheses that the variance across all observations is similar or homoscedastic must be rejected for all the four equations (White 1980). To eliminate heteroscedasticity, I proceed with robust Huber-White standard errors, which I cluster per country.

## **Results<sup>13</sup>**

The results (see table 1) confirm the descriptive statistics of two distinct turnout functions between developed and developing countries. First, model 1 indicates that development by itself leads to higher turnout; the first equation predicts that developed countries have approximately 12 points higher citizens' participation at elections than developing countries, if we hold all other variables constant. However, the models also indicate that while in both low and medium developed countries, the variable's impact is basically nil, the indicator has a strong negative impact in developed countries. The interactive model predicts that in wealthy nations a 1-unit increase in the log of the GDP per capita leads to a 4-point decrease in turnout. In particular, this latter finding indicates that Inglehart's value change approach or post-modernization theory

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<sup>13</sup> To make sure that the results are not driven by all compulsories that have compulsory voting laws, I run the same equations excluding all countries where voting is mandatory. These equations (not reported) confirm equations 1 to 4.

might be correct. It seems that if rich countries continue to increase their wealth, some citizens in search of post-materialist and self-realization values (e.g. gender equalities and the protection of the environment) might abandon the electoral booth and possibly engage in more direct forms of political action, such as boycotts and demonstrations (Inglehart and Welzel 2005). However, future studies analyzing the link between a country's material wealth and peoples' level of unconventional political participation could seek to validate or invalidate this hypothesis.

Second, and equally importantly, there are fundamental differences in the two turnout functions. The interactive model indicates that compulsory voting and decisive elections have a significantly different impact in the two universes of cases. Pertaining to the first of these three indicators – compulsory voting – the interactive term indicates that the influence of mandatory voting requirements is stronger in developed countries. In fact, the interactive model predicts that turnout is between 6 and 7 points higher in developed countries that render voting mandatory as compared to developing countries with the same stipulation. Model 3 and 4 confirm this finding. While compulsory voting laws increase turnout rates by approximately 9.6 points in developing countries, the variable's impact jumps to more than 15 percentage points for developed countries. Even more pronounced the impact of the indicator decisiveness triples in developed countries. In those countries, where the GDP per capita is below \$ 12,196, decisive elections lead to a mere 2-percentage point increase in citizens' electoral participation. This increase is not statistically significant. However, scheduling decisive elections in wealthy nations triggers a 9-percentage point jump in turnout. This result implies that rational calculations on the side of the voters are visible in developed nations.

**Table 1: Regression results for national turnout**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
	<b>Pooled Model</b>	<b>Interactive Model</b>	<b>Developed States</b>	<b>Developing States</b>
Compulsory Voting	12.13*** (1.12)	9.74*** (1.78)	16.26*** (1.10)	9.81*** (1.78)
D_PR	2.75*** (1.05)	2.80*** (1.55)	2.86** (1.29)	2.92*** (1.55)
D_Mixed	-2.91* (1.69)	-4.03 (2.51)	-1.03 (2.49)	-3.96 (2.51)
D_Decisiveness	5.11*** (1.17)	2.34** (1.55)	12.01*** (1.63)	2.29 (1.54)
D_Unicameralism	-2.65 *** (.98)	3.20** (1.48)	2.03 (1.39)	3.24** (1.48)
Log GDP per capita	-1.25** (.54)	-.08 (.69)	-4.35*** (.75)	-.12 (.69)
Log Population	-1.35*** (.19)	-1.26*** (.31)	-1.21*** (.26)	-1.29 (.31)
D_Closeness	.05 (.04)	.06 (.04)	-.07 (.06)	.06 (.04)
Regime Type	-2.06* (1.09)	-2.00* (1.18)	-3.28* (1.62)	-2.03* (1.18)
D_Development	12.14*** (1.45)	46.03*** (12.90)		
Interact_Development_Compulsary		6.60*** (2.10)		
Interact_Development_PR		.24 (2.02)		
Interact_Development_Decisiveness		9.53*** (2.25)		
Interact_Development_Unicameralism		-1.15 (2.02)		
Interact_Development_GDP		-4.16*** (1.03)		
Interact_Development_Population		.03 (.40)		
Interact_Development_Closeness		-.12 (.08)		
Interact_Development Regime Type		-1.21 (2.06)		
Constant	95.94*** (5.87)	87.62*** (8.15)	135.63*** (9.87)	88.33*** (8.13)
Rquared	.35	.37	.67	.21
Root MSE	10.7	10.7	5.9	11.7
N	928	928	353	575

Standard errors in parentheses, \*p<.1, \*\*p<.05, \*\*\*p<.01 (two tailed)

The two distinct models, equations 3 and 4, not only confirm the diverse results from equations 1 and 2, they also highlight that the 8 theoretically informed covariates, which I have chosen for this article, explain turnout considerably well in the developed world. Model 3 has an  $R^2$  of .67, a figure that is more than three times as high as that of model 4. In addition, the average error between predicted and real value is half the size in the developed sample. This implies that model 3 allows for a rather precise explanation and prediction of turnout within its sample. However, the same cannot be said for developing nations. In fact, the poor model fit in equation 4 hints that there might be additional variables that explain and predict turnout in countries with a GDP per capita of 12,196 or below. For instance, it is likely that clientelism, vote buying, and corruption are more pronounced in less developed countries (e.g. Kuenzi and Lambrecht 2007; Reynolds 1999)

More generally, this study confirms some of the well-established propositions in the turnout literature, while disconfirming others. On the one hand, proportional representation, unicameralism and a small population size boost turnout in both developed and developing countries. On the other hand, close elections do not enhance turnout as some rational choice models would predict. In addition, and rather surprisingly, this study does not find democracies to have higher turnout than other regime types. This might stem from the fact that some autocracies (e.g. communist states) “unofficially” force their populations to go vote or rig turnout numbers. For example, the former communist states of the Warsaw Bloc before 1990 (e.g. Poland or Bulgaria) or current autocracies, such as Cuba and Laos, have officially reported turnout figures that surpass 95 percent. It is likely that these cases somewhat drive the results of the variable regime type. To the possible, future studies should evaluate the degree to which

turnout figures are inflated in these countries. Having “more valid numbers” on these autocracies would allow us to build more accurate turnout models. .

## **Conclusion**

Supported by some descriptive statistics (such as different turnout levels between the developed and developing world and by a sound theoretical argument, modernization theory), I find some empirical evidence that development has a distinct impact in the developed and developing world. While nation states, whose GDP surpasses \$12,196, have more citizens turning out on Election Day, I also find that as wealthy countries become even wealthier turnout declines. Such a relationship between increases in material wealth and turnout does not exist for developing countries. My results also indicate that compulsory voting and decisive elections have a strong distinct impact in the two subsamples. This latter finding can provide an explanation as to why previous analyses (e.g. Franklin 2004, Selb 2009) that have focused on different samples of countries from different regions have sometimes produced contradictory findings.

More broadly, the results of this study indicate that researchers should be more modest in reporting their results. This applies even more so, if we consider that many current studies omit relevant variables (e.g. a theoretical sound measure of decisiveness in the case of Tavits (2009a; 2009b) or employ suboptimal statistical techniques (e.g. not controlling for and, when necessary accounting for, possible violations of the general OLS regression such as autocorrelation and heteroscedasticity in the case of Pacek, Pop-Eleches and Tucker 2009). However, even if researchers are more theoretically sound and methodologically rigorous, different results may occur in different subsamples, which suggest that a more finely grained subdivision of countries in empirical large N research might lead to more finely grained results.

## Appendix 1: Average Turnout of all countries that are included in this analysis

Country	# of Elections	Average Turnout	Standard Deviation
Afghanistan	3	51.8	17.1
Albania	7	72.2	21.3
Algeria	4	51.6	13.4
Andorra	5	80	2.7
Angola	2	89.1	3.2
Antigua	6	70.2	12.6
Argentina	15	79.7	5.3
Armenia	4	55.2	3.5
Australia	16	94.9	0.7
Austria	11	84.1	7.6
Azerbaijan	4	58.7	22.4
Bahamas	7	90.3	1.4
Bahrain	2	62.5	13.4
Bangladesh	6	63	15.7
Barbados	9	67.6	9.8
Belarus	4	71.1	15.4
Belgium	13	92.5	2
Belize	6	77.9	6.4
Benin	5	62.4	10.1
Bhutan	1	79.4	
Bolivia	9	77.7	10.8
Botswana	8	67.4	16.5
Brazil	10	80.5	4.8
Bulgaria	11	81	18.2
Burkina Faso	6	48	12.3
Burundi	2	84.3	10
Cambodia	6	85.4	9.2
Cameroon	7	88.9	15.2
Canada	12	69.2	6.1
Cape Verde	6	67.5	10.6
Central African Republic	3	63.5	11.9
Chad	3	52.3	3.8
Chile	7	88	4.1
Colombia	12	43.6	7.9
Costa Rica	10	77.2	6.6
Cote d'Ivoire	3	32.3	0.6
Croatia	6	67.9	6.1
Cuba	3	98.6	0.8

Cyprus	8	89.6	6.5
Czech Republic	5	67.1	7.8
Denmark	14	86.1	1.9
Djibouti	6	67.8	19.7
Dominicana	2	58.4	1.2
Dominican Republic	9	59.7	10.9
East Timor	2	86.8	8.8
Ecuador	11	69.2	9.2
Egypt	5	42.8	8.7
El Salvador	11	52.4	15.3
Equatorial Guinea	3	86.1	16.2
Estonia	5	66.1	11
Ethopia	2	86.3	5.2
Fiji Islands	5	65.9	25
Finland	11	72.3	5.9
France	9	70.9	8.4
Gabon	1	95.6	
Gambia	7	66.5	15.2
Georgia	6	64.7	7.4
Germany	11	82.7	6.5
Ghana	6	57.4	21.6
Greece	12	78.1	4.2
Grenada	7	67.8	11
Guatemala	8	49.3	14.3
Guinea	2	66.9	7.2
Guinea-Bissau	4	70.3	17.2
Guyana	6	84.4	9.1
Haiti	4	42.4	15.2
Honduras	9	69	13.3
Hungary	10	77.8	16.6
Iceland	12	87.8	2.5
India	11	58.4	3
Indonesia	9	87.2	10.3
Iran	3	75.7	24.1
Iraq	4	80.1	13.2
Ireland	11	70.8	5
Israel	11	74.9	6.6
Italy	11	87.2	4.6
Jamaica	7	71.4	11.8
Japan	14	67.9	5.1
Jordan	5	60.2	13.3
Kazakhstan	5	67.5	7.9
Kenya	6	61.1	7.9

Kiribati	3	75.8	8.3
Kuwait	3	85.6	6
Kyrgystan	5	62.7	7.8
Laos	4	89.6	19.8
Latvia	6	71.9	10.4
Lesotho	4	65.2	11
Liberia	2	82.8	8.8
Liechtenstein	10	90.5	4.4
Lithuania	5	53.2	15.7
Luxembourg	8	88.1	2.3
Madagascar	3	62.7	4.5
Malawi	1	80.2	
Malaysia	8	72.5	2.5
Maldives	5	74.3	4.3
Mali	3	28.8	6.5
Mauritius	7	84.6	4.5
Mexico	14	58.9	9.1
Moldova	5	64.9	6.2
Monaco	4	75.6	3.3
Mongolia	1	81.8	
Montenegro	2	69.1	4.1
Morocco	7	63.6	16.8
Mozambique	4	59.2	23.4
Myanmar	2	74.9	3.3
Namibia	3	74.6	11.1
Nepal	5	67.1	12
The Netherlands	12	81	4.5
New Zealand	13	84.3	5.4
Nicaragua	7	74.7	6.3
Niger	4	38	5.2
Nigeria	3	42.3	6
Norway	10	79.5	3.4
Oman	1	62.7	
Pakistan	8	44.8	6.3
Panama	4	74.7	1.9
Papua New Guinea	5	66.5	11.4
Paraguay	10	77.7	14.8
Peru	4	82.7	4.1
The Philippines	10	74.5	12.3
Poland	6	47.4	5.2
Portugal	12	72.1	9.8
Romania	4	59.3	15.6
Russia	5	59.1	6.4

Rwanda	6	96.1	3.2
Saint Kitts and Nevis	6	67	6.1
Saint Lucia	8	62.5	4.7
Saint Vincent and Grenadines	8	69.7	8.6
Samoa	3	82.3	4.2
San Marino	7	77.3	3.6
Sao Tome	5	65.3	8.8
Senegal	7	51.1	12.7
Serbia	3	60.2	1.4
Seychelles	7	80.8	13.1
Sierra Leone	3	73.1	11.7
Singapore	10	94.6	1.2
Slovakia	5	68.7	12.1
Slovenia	5	70.7	10
Solomon Islands	7	60.9	5.4
South Africa	4	82.5	6.4
South Korea	6	62.5	10.7
Spain	9	73.9	4.5
Sri Lanka	8	75.7	9.9
Sudan	2	57.6	3.3
Suriname	4	70.3	7.3
Swaziland	1	60.4	
Sweden	12	86.9	4.1
Switzerland	9	46.7	3.1
Tajikistan	4	90.3	4.4
Thailand	15	59.5	10.5
Togo	5	79	14
Tonga	7	59.1	14.8
Trinidad and Tobago	10	64.1	4.7
Trukey	7	82.9	7.5
Uganda	4	70.7	10.8
Ukraine	5	68.6	4.6
United Kingdom	10	71.2	6.9
USA	20	61.2	12.8
Uruquay	5	90.3	1.3
Vanatu	8	70.7	6.6
Venezuela	8	69.2	23.8
Yemen	3	75.6	14.5
Zambia	8	57.9	16.8
Zimbabwe	5	50.2	43.2

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