Review Article

Daniel Stockemer:* **What Affects Voter Turnout? A Review Article/ Meta-Analysis of Aggregate Research**

For more than 40 years, studies trying to explain macro-level electoral turnout have been one of the pillars of political behavioural research. From January 2004 to December 2013 alone, more than 130 articles were published in peer-reviewed journals using turnout at the national, regional or local level as the dependent variable. This meta-analysis tries to synthesize the results of these studies. I find there is a strong consensus in the literature that turnout is higher under compulsory voting, if the election is important, and if it is held in a small country. I also find that the influence of most other predictor variables, including the type of electoral system, the number of parties, development, income inequalities and electoral closeness is inconclusive at best. These results hint at the fact that the determinants of turnout might be more complex than the current theory suggests and is rather more context dependent.

In democracies, voter turnout fluctuates tremendously, ranging from less than 50 per cent of the population in countries such as Switzerland or Mali to over 90 per cent in countries such as Australia or Uruguay. What explains this variation? Since the pioneering studies of Powell (1982, 1986) and Jackman (1987), hundreds of analyses have tried to identify the constituents of macro-level electoral participation. These studies have focused on institutional factors such as the electoral system type or compulsory voting (Franklin 2004), socioeconomic factors such as the country's level of development (Norris 2002), as well as circumstantial and election-specific variables such as the competitiveness of the election (Anduiza 2002). Ten years ago, the major findings of these studies were summarized in Geys' (2006) meta-analysis and Blais' (2006) review article. While admitting that there was little agreement on the

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effects of most factors on voter turnout, both studies nevertheless suggested a preliminary core model of macro-level electoral turnout. According to Geys (2006) and Blais (2006), turnout is higher under permissive institutions (e.g. proportional representation in large district and compulsory voting), in small highly developed countries and when the election outcome is close.

Ten years later, it is time for another review article. Turnout studies are ever expanding. From January 2004 to December 2013 more than 130 studies on macro-level turnout were published in peer-reviewed English-language journals alone.[1] Do these studies, which have been conducted in all regions of the world, across various geographical units, and which have brought to the fore more factors (e.g. corruption), confirm Geys (2006) and Blais (2006)? Or do more recent studies suggest a different core turnout model? What gaps remain in existing turnout studies? Interested in these questions, I conducted a new meta-analysis. This analysis complements the one that was published in March 2016 by Cancela and Geys, but also provides a different focus in various ways. In short, Cancela and Geys (2016) replicate Geys' (2006) article. They use the same variables and research strategy. The only novelty is that they add a comparison of turnout studies at the national and at the sub-national level. For the national level, Cancela and Geys (2016) find that population size and stability, electoral closeness, campaign expenditures and electoral institutions are viable predictors of turn-out. For their comparison between the national and the sub-national level, the two authors report some nuanced findings; they show that campaign expenditures, election closeness and voter registration requirements are better predictors at the national level, whereas population composition and size, concurrent election and the electoral system type are more salient sub-nationally.

I adopt a somewhat different research strategy. First, focusing more on institutions, I ask the question: are institutions still the most important predictors of turnout? Second, while it is unclear how Cancela and Geys (2016) retrieved their studies (they include books, book chapters and articles), I engage in a systematic search of English-language articles that use macro-level turnout as the dependent variable. This search strategy yielded 135 articles published between 2004 and 2013 – about one-third more articles than Cancela and Geys (2016). Third, I identify the most frequently used institutional, socioeconomic as well as circumstantial and

election-specific variables from these studies. This allows me to cover the most important predictors of turnout, including those which have been more recently added to turnout models, such as income inequalities and corruption, factors that Cancela and Geys (2016) do not include in their meta-analysis. Fourth, I discuss the influence of the most widely used determinants of turnout more systematically than Cancela and Geys (2016). Fifth, I discuss the effect of several operationalizations of the same concept on turnout, something that Cancela and Geys (2016) do not do.

Given that I use a large sample and include more studies from the developing world, my results are somewhat more conservative than Cancela and Geys' (2016) findings. I find that three variables: compulsory voting, important elections and a small population size consistently trigger higher turnout. In contrast, the empirical record for other predictors of electoral participation such as the electoral system type, the number of parties or electoral closeness does not provide any clear relationship.

This meta-analysis proceeds as follows. First, I situate this study within the larger turnout literature. Second, I systematically identify the effect the most widely used institutional, socioeconomic and circumstantial factors have on turnout. Third, I summarize the status of turnout studies and provide some avenues for future research.

THE TURNOUT LITERATURE: A SNAPSHOT

Explaining and predicting electoral turnout has been a pillar of behavioural research over the past 30 years. The two seminal works, by Powell (1986) and Jackman (1987), largely defined the research agenda in the comparative voting literature. Focusing on Western democracies, these two scholars found that two institutions – proportional representation (PR) and compulsory voting – increase electoral turnout (see also Franklin 1999; Jackman and Miller 1995). Building on these studies, the turnout literature has branched out in several directions. First, starting with Blais and Dobrzynska (1998), subsequent studies gradually extended the scope of analysis by increasing the number of countries included in turnout models. Second, research has tested the influence of more and more concepts and variables, such as income inequalities or corruption, on

macro-level electoral participation (Kostadinova 2003; Mahler 2002). Third, studies have looked at turnout across more and more levels of government, including the supra-national level such as European elections or the sub-national level such as regional- or municipal-level elections (Jeffrey and Hough 2003).

The first efforts to summarize and synthesize this growing literature were the meta-analysis by Geys (2006) and Blais' (2006) review article. Both studies confirmed that turnout increases under compulsory voting. For PR, the other core variable in Powell (1996) and Jackman (1997), the two review articles offered a slightly more nuanced picture. Geys (2006) found solid positive influence for the effect of PR on turnout. In contrast, Blais (2006) was rather more prudent. He confirmed that PR pushes more citizens to turn out but also warned that the size of PR's impact on electoral participation might be overestimated. In addition, Geys (2006) and Blais (2006) established the existence of two more relationships: that is, turnout increases when the election is decisive and when the population size is small.

Ten years after their first reviews it is time to provide an update of the scholarship in this area. Given Blais' (2006) doubts about the influence of PR on turnout, it is also worth asking whether institutions still shape electoral behaviour, or whether other non-institutional or circumstantial factors have become more important. A new meta-analysis is also justified, considering that over the last 10 years turnout studies have continued to become more diverse in their scope, methods and variables employed. There have been at least four developments in turnout research over the past 10 years. First, recent research has become very diverse with regard to the number of countries treated. For example, some studies are inter-national in scope and use a global perspective (e.g. Endersby and Krieckhaus 2008), whereas others employ a regional or even country-specific focus (e.g. Boulding and Brown 2015). A second feature of recent turnout studies is their increasing methodological sophistica-tion. The methods employed range from simple OLS regression analysis, to various types of pooled time-series analysis, to multilevel or structural equation modelling. Third, the recent wave of turnout studies has brought new variables to the fore, such as religion, thus increasing the list of possible predictors for macro-level turnout. A fourth and final characteristic is that there is no consensus on how to measure certain concepts (for example, the operationalization of

development ranges, from GDP per capita, to literacy rates, to the Human Development Index).

In this study, I aim to provide a much-needed update of Geys' (2006) and Blais' (2006) review articles, and a study that complements Cancela and Geys' (2016) recent article. In addition to determining the key factors of electoral turnout, I have three goals that go beyond Cancela and Geys (2016). First, I intend to determine whether institutions are still the key predictors of turnout. Second, I want to find out whether 'new' predictors of turnout have come to the fore over the past 10 years. Third, I aim to discover whether the measurement of concepts matters. I answer these questions below.

DATA AND METHODS

This meta-analysis covers 135 articles, published in English-language peer-reviewed journals between January 2004 and December 2013 where voter turnout at the municipal, regional or country level is the dependent variable. To identify these articles, I collaborated with a political science librarian. Firstly, we identified four databases that can be expected to cover all turnout studies published in peer-reviewed journals in English. These databases are ProQuest Political Science, PAIS International, EBSCO International Political Science Abstracts and International Bibliography of the Social Sciences (IBSS). Second, I used an encompassing search strategy to retrieve all turnout articles. I searched in the subject lines, titles and abstracts for the following key words: elections, turnout, voting, voter participation, electoral participation, voting participation and citizens' participation. This search yielded more than 600 studies. Third, I manually checked all these articles for two criteria: (1) electoral turnout at the national, state regional or local level had to be the dependent variable; and (2) the research design had to be quantitative. This manual search limited the overall number of articles to 135 and returned slightly over 600 regression models, which make up the corpus of this meta-analysis.

To manage this number of studies with their different foci, I cluster the variables into three types, namely institutional variables, socioeconomic variables and circumstantial and election-specific variables. Due to the sheer number of concepts covered by this meta-analysis (this review covers more than 50 concepts and more

than 100 different variables), I do not aim to explain the particular result obtained in any individual study. Rather, it is my goal to provide summary patterns of the influence of the most important variables on electoral turnout. For each category, I try to cluster all relevant indicators according to their encompassing concepts (e.g. electoral system type or development), present the most used concepts and identify the variables that represent any of these concepts. For each individual indicator, I then present the following information: the absolute number of times the variable in question is used in the 135 turnout studies in my sample, the number of times it is statistically significant according to theoretical expectations, the number of times it shows the reverse rather than the expected relationship, and the number of times the variable is non-significant. I also calculate the success rate for each variable (computed as the percentage of times that the variable in question met the theoretical expectations and showed a significant relationship in the 'right' direction).

FINDINGS

Institutional Variables

Of all types of indicators, institutional variables have featured most strongly in turnout models over the past decade (e.g. Power 2009). In this section, I review the effects of the four most-used institutional variables, namely compulsory voting, the type of electoral system, the importance of the election and the number of parties. In the final part of this section, I also discuss some additional institutional variables that do not feature frequently in turnout models, such as registration requirements, but which might also have some importance in explaining macro-level electoral participation.

Compulsory voting.   The literature provides a clear picture. Compulsory voting boosts turnout. In the over 130 models in which the variable is used, it is positively and statistically significantly related to turnout in all but four cases (e.g. see Franklin and Hobolt 2011; Henderson and McEwen 2010; Rose and Borz 2013). Hence, it seems uncontroversial that countries where citizens are required to cast their ballot by law have higher turnout than countries where those

Table 1
Summary of the Effect of Compulsory Voting on Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Compulsory voting (sanctions)	32	74	72	0	2	0.97
Compulsory voting (no sanctions)	21	54	52	0	2	0.96

laws do not exist. However, the effect size of the variable depends on whether compulsory voting laws are enforced through sanctions or not. In cases where fines or other punishments for non-compliance are in place, the indicator's substantive influence on turnout is normally above 10 percentage points (e.g. Stockemer and Scruggs 2012). In contrast, studies that distinguish between situations where these rules are strongly or weakly enforced or non-enforced (e.g. Quintelier et al. 2011) highlight that the variable's positive influence is only about half the size when these stipulations are not enforced or only weakly enforced (see Table 1).

Electoral system type. Theoretically, there are strong arguments why proportional representation in large districts should trigger higher turnout. Most importantly, PR allows for a proportional distribution of votes into seats (Milner and Ladner 2006; Selb 2009). Whether they support a small or a large party, this entices voters to turn out, because the addition of a few more votes could allow parties to win a seat or gain an (additional) seat. Parties should support this mobilization because they have an incentive to campaign, regardless of the projected election outcome. More indirectly, PR should foster turnout because it entices (large) parties to diversify their slates in order to appeal to multiple constituencies (see, for example, Lijphart 1994).

Yet the turnout literature over the past 10 years does not strongly support these theoretical stipulations. Whether the electoral system is measured by dummy/ordinal variables for various types of electoral systems (e.g. plurality, mixed and proportional representation) (Brockington 2004) or the district magnitude (Lehoucq and Wall 2004), most studies show that PR has no influence on macro-level electoral participation. This finding is particularly striking if we look at the PR dummy variable. In about 80 per cent of models

Table 2
Summary of the Effect of the Electoral System Type on Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Dummy for PR	19	68	3	7	58	0.05
District magnitude	9	52	25	7	16	0.48

proportional representation is unrelated to turnout.[2] For district magnitude, which is finer grained because it distinguishes between small and large PR districts, the success rate is higher (nearly 50 per cent). However, in more than half the cases, there is still no positive relationship between larger district and higher turnout. Hence, it seems that the type of electoral system is no longer as strongly related to electoral participation as some studies assume (e.g. Collier and Vicente 2012; Stokes et al. 2013) (see Table 2).

Number of parties.[3]   The number of parties that win seats is another relatively widely used indicator in turnout models (e.g. Grofman and Selb 2011). This variable, which depends on the previously discussed electoral institutions and the number of cleavages in a geographical area, could theoretically either have a positive or a negative influence on turnout. It could positively impact turnout because the more parties that compete and win seats, the more choices are available to voters to vote sincerely. Consequently, voters can cast their ballot for a party that reflects their views. Alternatively, if more parties win seats this could also decrease turnout, because the greater the parties in the political arena, the more complicated the political process is for voters to understand. With many parties on the ballot, voters must acquire information about a variety of candidates and parties; because of the likelihood of coalition governments, there is also a rather unclear chain of accountability between representatives and citizens (Gunther 2005).

Table 3 indicates that neither of the two hypotheses applies. Of the 93 models that gauged the influence of the number of parliamentary parties on electoral turnout, 22 studies found that more parties trigger higher turnout, 13 displayed a negative relationship and the overall majority of 59 models revealed that there is no relationship. Hence this meta-analysis illustrates that neither of the two hypotheses seems to apply. The number of parties is unrelated to electoral turnout in most cases.

Table 3
Summary of the Effect of the Number of Parties on Electoral Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
(Effective) # of parties	20	93	21	13	59	0.23

Table 4
Summary of the Effect of the Importance of the Elections on Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Important elections	16	42	37	0	5	0.88

Importance of elections. This meta-analysis supports the notion that more important elections, probably because of their higher stakes, have higher turnout (Johnston et al. 2007; Matsubayashi and Wu 2012; Reif and Schmitt 1980). While there are many ways of operationalizing the importance of elections, the most widely used operationalization is by the type of election (e.g. first-order versus second-order elections). This measurement confirms that the higher the stakes of the elections, the higher the turnout.[4] In fact, this indicator is statistically significant and has the right sign in nearly 90 per cent of cases (Pacek et al. 2009) (see Table 4).

Other proxy variables for important elections confirm this finding. For example, two-thirds of the models (16 out of 26) that include bicameralism find the expected positive influence on turnout, confirming the notion that two chambers increase the number of veto players and hence render the election to the first chamber less important (Fornos et al. 2004). Other measures of decisiveness, such as the percentage of legislative and executive seats that are filled in one election, confirm the finding that important elections matter (Blais and Dobrzynska 1998; Stockemer and Scruggs 2012). The same positive finding applies to the relatively small number of studies (e.g. Nikolenyi 2010) that include a measure for concurrent elections. These studies confirm that turnout increases if two or more elections are held on the same day.

Other institutional variables. Other potentially important institutional variables, even if they occur in less than 10 per cent of the studies analysed, are the voting age, the number of elections, and registration laws (e.g. Brown and Wedeking 2006; Wagner et al. 2012). The legal voting age has the expected negative association with turnout in only seven of 19 models. This indicates that lowering the voting age might not be as detrimental as some studies assume (e.g. Levine and Lopez 2002). The number of elections displayed the expected relationship: that is, many different elections over a short period of time lead to voter fatigue and lower turnout, in slightly fewer than half of the models (14 out of 33). However, more than half of the studies (19 out of 33) indicated that this relationship is non-existent. This highlights that the link between holding frequent elections and lower turnout might be less strong than (early) theory expected (e.g. Boyd 1981). Finally, the meta-analysis confirms that more stringent registration laws lower turnout. In the 10 studies that employ the indicator, 17 of 28 models returned the expected negative relationship between non-automatic voter registration and lower turnout (e.g. Ansolabehere and Konisky 2006; Neiheisel and Burden 2012).

Socioeconomic Factors

The second most widely used indicators in turnout models are socioeconomic factors. In order of the frequency of their appearance, they are: development, population size and income inequality.

Development. Development is the most widely used socioeconomic indicator in the turnout models in my sample. Both modernization theories (e.g. Inglehart 1997) and classical sociological approaches (Wolfinger and Rosenstone 1980) postulate that material affluence should foster participatory democracy and political engagement, including voting in elections (Burns et al. 2001). Similar to other variables discussed, development is operationalized by multiple indicators in the sample at hand, ranging from various measurements of GDP per capita (e.g. the log of GDP per capita, or GDP per capita $t-1$) (Steiner 2010), to indicators that gauge the literacy rate, average education, or mean income levels (Diwakar 2008), to dummy variables for Western, rich or OECD countries (Stockemer and Scruggs 2012).

Table 5
Summary of the Effect of Development on Electoral Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Per capita GDP	38	94	29	24	41	0.31
Education	19	98	44	13	41	0.45
Literacy rate	9	77	30	13	34	0.39

Table 6
Summary of the Effect of Population Size on Electoral Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Population size	15	58	43	8	7	0.74

The most widely used indicators are GDP per capita, education and literacy rates (see Table 5).[5]

Across all three indicators, less than half of the studies found a positive relationship between development and turnout. In those studies where a positive influence was present, this influence was substantively rather small or moderate (Indridason 2008; Steiner 2010). Hence, similar to the two institutional variables – the electoral system type and the number of parties – the empirical linkage between more affluent countries and higher macro-level participation rates is not as strong as the theory suggests.

Population size.   In the theoretical literature there seems to be some consensus that smaller countries, frequently because of more homogeneous citizenries, closer relations between citizens and representatives, and the relatively close geographical distance between citizens and the administrative capital of the country, have higher turnout (Kostandinova and Power 2007). This meta-analysis confirms this stipulation. The population size measure, which is mainly gauged as the natural log of the population of the geographical unit (mainly countries), has the expected sign and is statistically significant in nearly three out of four studies (see Table 6).

Income inequality.   There are two theories that attempt to account for the link between income inequality and turnout: a majoritarian and a minority perspective. On the one hand, the majoritarian perspective,

Table 7
Summary of the Effect of Income Inequalities on Electoral Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Income inequalities	14	41	22	6	13	0.54

the power theory, posits that high income inequalities should negatively affect turnout (e.g. Goodin and Dryzek 1980). This theory sees a close connection between the distribution of income and the distribution of power. According to Solt (2010), low income citizens, because they do not have the means to become politically engaged, become disenfranchised; this disenfranchisement should then decrease electoral turnout overall (see also Lister 2007). On the other hand, the minority perspective, the conflict theory, a type of rational choice model, posits that the larger the income gap between the rich and the poor, the higher are the stakes in an election for them both. In the aggregate, this ought to imply that higher inequalities trigger higher turnout. The literature somewhat supports the majoritarian perspective. In 54 per cent of the cases the coefficients of the regression models show the expected negative and statistically significant effect. However, in the other half of the studies, this effect is either non-existent or positive, indicating that the effect of income inequality on turnout might be somewhat more complex than most studies indicate (e.g. Horn 2011; Stockemer and Scruggs 2012) (see Table 7).

Other socioeconomic variables. Many more socioeconomic variables have been used in either single or a small number of studies. For example, seven studies use population density or urbanization in their turnout models. The majority of these studies report a negative effect – that is, turnout is higher in rural regions (e.g. Henderson and McEwen 2010). Others (e.g. Stockemer et al. 2013) introduce corruption into the turnout function and find that corruption hampers turnout because it decreases the amount of trust citizens might have in elected officials. A third type of study (e.g. Simpser 2012) focuses on various measures of globalization (e.g. the per cent of exports of the GDP, or the KOF globalization index). However, these studies are too few in number and the indicators are too different to draw any

conclusions about globalization's influence on turnout. Finally, some regional or local studies (e.g. Yamamura 2011) introduce various measures of ethnic fractionalization. Again, these measures and contexts are too different to allow me to reach any conclusions, even preliminary, about their influence on macro-level electoral participation.

Circumstantial and Election-Specific Variables

Circumstantial and election-specific variables are the least frequently used variables in turnout models. In fact, only electoral closeness features frequently in turnout models. Other variables such as weekday or weekend voting are included in only a few studies.

Electoral closeness. For close or competitive elections, the expectations from theory are clear: close elections should trigger higher turnout (see, for example, Cann and Cole 2011; Indridason 2008; Simonovits and Rajk 2012). Rational choice theories would predict that the greater the likelihood that an individual's vote will count, the smaller the gap between the two leading candidates or parties (Grofman 1993: 94). More indirectly, close elections should trigger more media coverage and party canvassing – two additional factors which should boost turnout (Söderlund et al. 2011). While the logic is clear, the empirical evidence is lukewarm at best. Mainly operationalized as the vote distance between the winner and the runner-up for the most recent election or for the previous election (see Galatas 2004; Grofman and Selb 2011), less than half of the models that use the variable trigger statistically significant findings in the expected direction. In fact, 56 per cent of the models reject the notion that close elections are beneficial for turnout. As for some of the previous variables, this finding suggests that the influence of close elections on turnout might be more complex than a simple rational choice model suggests (see Table 8).

Other circumstantial and election-specific variables. Other circumstantial and election-specific variables have only been used sporadically in the studies captured by this meta-analysis. For example, the three studies that examine whether weekday or weekend voting influences turnout find that weekend voting does not significantly increase voter turnout

Table 8
Summary or the Effect of Close Elections on Electoral Turnout

	# of studies	# of models	Success	Failure	No link	Success rate
Close elections	18	89	39	28	22	0.44

(e.g. Henderson and McEwen 2010). Other analyses, which look at whether it makes a difference if incumbents are on the ballot or not, return inconclusive results (e.g. Matsubayashi and Wu 2012). Finally, some articles look at polarization. These studies hint at the idea that an ideologically polarized environment could increase turnout (e.g. Dodson 2010), but this finding is preliminary at best.

QUO VADIS TURNOUT STUDIES?

Five results, which in many ways complement Cancela and Geys (2016), emerge from this meta-analysis. First, and in line with Cancela and Geys (2016), I find that the majority of the findings of Geys (2006) and Blais (2006) still hold; that is, I confirm that electoral turnout increases under three scenarios: (1) voting is compulsory; (2) the election is decisive; and (3) the population size is small. However, by merely confirming the consistent influence of three predictors on turnout, the findings of this meta-analysis are more conservative than the results of Cancela and Geys (2016). Contrary to their meta-analysis, which adds many more factors – such as voter registration requirements and electoral closeness to the list of viable predictors for turnout – I suggest a much more restricted core turnout model.

Second, and again similarly to Cancela and Geys, I confirm that institutions (in particular, compulsory voting) are important to boosting turnout. However, I also highlight that institutions are no panacea or guarantee of high turnout. In particular, it seems that the positive effect of proportional representation in earlier studies was an artefact of case selection. Contrary to Geys (2006) and to a lesser degree Blais (2006), but also Cancela and Geys (2016), my study highlights that PR only has a positive effect on turnout in a minority of cases between 2004 and 2013. This more nuanced finding might stem from the fact that my analysis includes more

studies and models, in particular more cases from non-Western countries.

Third, by looking at several operationalizations of the same concept, I highlight that any concept's influence on turnout might be partially dependent on its operationalization. For example, even if it rests below a 50 per cent success rate, district magnitude has a much higher likelihood of positively affecting turnout than dummy variables for various types of electoral system.

Fourth, my study highlights that the influence of many of the predictors of turnout that have been recently added to turnout studies such as corruption or income inequalities vary from study to study; thus my study suggests more context-specific analyses.

Fifth, and probably most importantly, more so than Cancela and Gey's (2016), my study highlights that there is still no established core model of electoral turnout. No variable is omnipresent or appears in most studies. Rather, different variables are used in various contexts (e.g. different levels of analysis such as the municipal or national level use different variables).

What does this mean for the turnout literature? Does it signify that the literature has not evolved over the past decade? The answer is a clear no. The literature has brought to the fore many new and possibly important predictors of turnout (e.g. religious doctrine, ethnic fractionalization, corruption or globalization); it has become more methodologically sophisticated by using more advanced modelling techniques; it has systematically evaluated turnout outside the Western world; and it has measured turnout at different levels of analysis (e.g. the local, regional, national and sub-national level). However, what is necessary now is to streamline the diverse findings. I suggest three directions for future research: (1) studies should be more context specific; (2) they should engage in systematic comparisons; and (3) they should focus on measurement.

First, the fact that the influence of many factors (e.g. income inequalities, the number of parties) on turnout is inconclusive demands more contextual analysis. The question should no longer be: do PR, the number of parties or development increase turnout? But rather: under what conditions or in which socioeconomic and cultural contexts do PR, the number of parties or development increase turnout? For example, it is possible that various regional or, more specifically, country-specific contexts interact with many of the constituents of turnout, rendering their influence context-specific.

Second, studies should engage in systematic comparisons. Cancela and Geys (2016) highlight that there is variation in the predictors of turnout between different levels (e.g. concurrent elections and the electoral system type may play a larger role on the sub-national level), but they do not establish the reasons for these differences. Hence, future studies could systematically compare various levels of analyses such as the local, regional and national levels, first in the same context and then, more broadly, to determine whether institutional or non-institutional factors have the same influence on macro-level electoral participation at any of these levels of analyses. This could allow us to establish domain restrictions of various predictors' influence on macro-level electoral participation.

Third, and possibly most important, future work should focus on measurement. This is significant for the operationalization of independent variables, but, even more so, the dependent variable. With regards to the independent variables, various concepts, including development, important elections or the electoral system, are operationalized in various ways. These types of operationalization might matter; for example, if development is operationalized by education level or per capita GDP. For instance, some countries might have a high per capita income (e.g. many of the Middle Eastern countries), but their education levels, and, in particular, their political education, might be rather low. Citizens in other countries (e.g. Cuba) are materially very poor, but still quite educated. Hence, the context might play a large role depending on one or the other operationalization.

Even more importantly, future work should discuss the operationalization of the dependent variable. In the empirical literature, turnout is mainly operationalized in two ways: (1) turnout as the percentage of registered voters that cast their ballot at a given election (RV turnout); or (2) turnout as the percentage of the voting-age population that turned out at an election (VAP turnout) (e.g. Boulding 2010; Indridason 2008). However, RV turnout and VAP turnout are different measures of electoral participation. The former calculates turnout based on the number of individuals that have the right to vote, because their name features on electoral lists. The latter calculates turnout based on the voting-age population – that is, all adult residents that live in a given country (see Endersby and Krieckhaus 2008; Highton 2004).

In the empirical literature about two-thirds of existing studies use RV turnout and one-third of the studies use VAP turnout (see Table 9). While some authors justify the use of one measure over

Table 9
The Use of RV, VAP and VEP Turnout

Total RV models	Total VAP models	Total VEP models	Total models
496	364	3	862

the other,[6] most studies make it seem a minor choice.[7] Yet the choice of indicator is not trivial. In fact, both operationalizations are suboptimal as neither measures what it is supposed to measure: the percentage of eligible voters who cast their ballot. For one, RV turnout is likely to overestimate turnout, because it does not include in the calculation of macro-level electoral participation those individuals who are eligible to vote, but who choose not to register. The degree of this overestimation depends on the voter registration requirements.[8] VAP turnout can either underestimate or over-estimate turnout. It might underestimate turnout if the number of non-eligible residents (e.g. foreigners) is higher than the number of nationals living abroad. Vice versa, if the number of nationals living abroad exceeds the number of foreigners in a country, then VAP turnout should overestimate electoral participation.[9]

The turnout literature on the US (e.g. Holbrook and Heidbreder 2010) has started to calculate turnout as the percentage of eligible voters using the following formula:

VEP turnout = the number of citizens that voted / (the voting age population – foreign citizens at voting age – all adult citizens that are legally not permitted to vote + adult citizens at voting age who live in a foreign country and who have the right to vote)

(see also McDonald and Popkin 2001; Trounstine 2013; Wattenberg 2005).

Comparing turnout across all 49 US federal states, Holbrook and Heidbreder (2010) not only find that the two measures are often more than 5 per cent apart from each other, but also that the influence of some of the determinants of turnout (e.g. log GDP and the percentage of Hispanics) changes, based on which operationalization of macro-level electoral participation is used. The comparative turnout literature should engage in a similar debate about measurement. This applies even more so, considering what can be approximated for the US: namely, the calculation or approximation of VEP turnout should also work comparatively.[10]

CONCLUSION

This review article has fulfilled several purposes. First, given that the two existing turnout studies by Blais (2006) and Geys (2006) were published more than 10 years ago, it has provided a much-needed update on the state of the macro-level turnout literature. It has also complemented Cancela and Geys' (2016) recent meta-analysis in many ways. I have tried to provide a nuanced analysis by taking into account the fact that over the past 10 years, turnout studies have diversified in terms of their scope, the number and type of variables employed, the unit of analysis, geographical coverage and methods. Second, I have confirmed three core predictors of high turnout: electoral participation increases under compulsory voting, when the elections are decisive, and when they are held in a country with a small population size. However, more so than Cancela and Geys (2016), I also caution that the literature is far from establishing a core turnout model. This applies even more so considering that PR does not figure on my list of core factors any more.

To streamline these diverse findings, I have suggested three avenues for future research: (1) identify the context in which variables such as the electoral system type are salient; (2) systematically engage in comparative research that compares the turnout functions across various levels of analysis, countries or continents; and (3) focus on measurement of both the dependent variable and predictors of macro-level political participation such as development. In the end, I hope that this study has provided an overview of the turnout literature and a guide for future research.

APPENDIX: VARIABLES FOUND IN TURNOUT MODELS CLUSTERED BY CONCEPTS[11]

Amount of government grants, average levels of trust in government, average level of trust in democracy, average level of political interest, ballot type, ballot initiatives, by-election versus general election, campaign activities (e.g. number of visits to a state by the president), campaign spending, campaign financing, capital flows as a percentage of the GDP, civic education, compulsory voting

(sanctions/no sanctions), coalition government, closeness of the election, communist parties' strength, communism (post-communism), concurrent elections, contested elections, corruption (e.g. electoral manipulation, World Bank corruption indicators), crime rates, economic contraction, economic growth, development (e.g. GDP per capita, education, literacy rates), effective threshold, election held concurrently with referendum, electoral reform, electoral system type (e.g. district magnitude, dummy variables for various electoral system types), ethnic fractionalization, female empowerment (e.g. female literacy rates), high competition electoral environment (e.g. high competition state), importance of elections (e.g. dummies for various types of elections), incidences of protest (also change in incidences of protest), inflation, income inequalities (e.g. Gini coefficient), incumbent on ballot box, federalism, female voting population, financing regulations for parties, frequency of elections, gentrification, globalization (e.g. trade share as percentage of the GDP, value of exports), government deficit, government spending priorities (e.g. social sector or military), government strength, lagged turnout, legal voting age, level of government responsiveness, majority party status before the election, number of candidates, number of citizens per legislator, number of NGOs (also change in the number of NGOs), number of voters per legislator, number of parties that win seats, party polarization, per cent of public spending as part of the GDP, percentage of the population that lives in urban places, percentage of the population that lives in rural places, percentage of youth voters, population size, population density (e.g. number of people per square kilometre), presence of regional parties, presence of regional languages, possibility of e-mail voting, possibility of mail voting, ratio number of registered voters to the number of voting stations, redistricting, respect for human rights, size of the electorate, size of indigenous populations, size of the geographical unit in which the election takes place, size of the parliament, size of the state product in the energy sector, size of young voters in the electorate, social stratification, time to next election, trust in parties, type of welfare state, unicameralism, unemployment, union density, voter registration laws, voting machines, weekend voting, years of membership in international organizations such as the EU, years of democratic experience, years of universal suffrage.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit http://dx.doi.org/10.1017/gov.2016.30

NOTES

[1] For a list of all studies included in this meta-analysis please see the online appendix at http://dx.doi.org/10.1017/gov.2016.30.

[2] Three studies (e.g. Gallego et al. 2012) indirectly operationalize electoral institutions by the disproportionality between votes and seats. However, these studies also find no impact of the disproportionality on electoral turnout.

[3] In the literature the number of parties is generally measured by the effective number of parties, a measure that accounts for the number of political parties weighted by their relative strength. The formula to calculate the effective number of parties is as follows (see Laakso and Taagepera 1979):

$$N = \frac{1}{\sum_{i=1}^{n} p_i^2}$$

In the formula, N is the number of parties that win seats, p_i^2 is the square of each party's proportion of all seats.

[4] I ranked the importance of elections as follows: presidential elections, parliamentary elections, sub-national elections such as elections to the European Parliament, regional elections and local elections.

[5] The precise operationalization varies within each category. For example, GDP per capita is sometimes operationalized through its natural log or time lagged.

[6] For instance, according to Aarts and Wessels (2005: 67), the inclusion of foreigners in the calculation of VAP turnout makes this measure suboptimal.

[7] For example, Elgie and Fauvelle-Aymar (2012) argue that data availability should guide the selection of any of the two measures; Geys (2006) indicates that there is no decisive argument in favour of one or the other alternative.

[8] For example, in Germany, every German national who has his or her first residency in the country is automatically registered. Hence, RV turnout should closely match turnout figures based on the number of eligible voters. In contrast, 20 per cent of the electorate is not registered in the Bahamas. In this Caribbean country voter registration is the entire responsibility of the individual, can only be done in person at an electoral office and must be renewed every five years. In addition, individuals must register before any election is called (normally at least one month before the election date) (Brennan Center 2013).

[9] For instance, Israel is a probable case of an underestimation of electoral participation. In this Middle Eastern country, around 25 per cent of the inhabitants are non-nationals (e.g. they are either Palestinians or Arabs), whereas only 4 per cent of Israeli nationals live abroad. Vice versa, VAP turnout should

overestimate 'real' turnout in Macedonia. This south-eastern European country has three times as many expatriates as foreign residents.

[10] Data for the voting-age population and the number of individuals who voted in national parliamentary elections can be retrieved from the International Institute for Democracy and Electoral Assistance (2013). Data on migration flows (i.e. the number of emigrants and immigrants per destination and origin) are available from the United Nations Division of Economic and Social Affairs (2013). The only component of the formula which is missing across countries is the percentage of disenfranchised individuals. However, this number should not seriously bias the VEP calculation, as in most countries, prisoners and the mentally ill are allowed to vote. In those countries where these groups are not allowed vote (e.g. some states in the US), their number is negligibly small. Given the possibility to do so, future studies should try to calculate VEP turnout.

[11] I do not include in the list country-specific variables such as the vote for a certain person, or the vote for a certain party.

REFERENCES

Aarts, K. and Wessels, B. (2005), 'Electoral Turnout', in J.J.A. Thomassen (ed.), *The European Voter: A Comparative Study of Modern Democracies* (Oxford: Oxford University Press).

Anduiza, P.E. (2002), 'Individual Characteristics, Institutional Incentives and Electoral Abstention in Western Europe', *European Journal of Political Research*, 41(3): 643–73.

Ansolabehere, S. and Konisky, D. (2006), 'The Introduction of Voter Registration and Its Effect on Turnout', *Political Analysis*, 14(1): 83–100.

Blais, A. (2006), 'What Affects Voter Turnout?', *Annual Review of Political Science*, 9(1): 111–25.

Blais, A. and Dobrzynska, A. (1998), 'Turnout in Electoral Democracies', *European Journal of Political Research*, 33(2): 239–61.

Boulding, C.E. (2010), 'NGOs and Political Participation in Weak Democracies: Sub-national Evidence on Protest and Voter Turnout from Bolivia', *Journal of Politics*, 72(2): 456–68.

Boulding, C. and Brown, D.S. (2015), 'Do Political Parties Matter for Turnout: Number of Parties, Electoral Rules and Local Elections in Brazil and Bolivia', *Party Politics*, 21(3): 404–16.

Boyd, R.W. (1981), 'Decline of U.S. Voter Turnout: Structural Explanations', *American Politics Research*, 9(1): 133–59.

Brennan Center (2013), 'Appendix Bahamas', Appendix to M. Chen and J.S. Rosenberg, *Expanding Democracy: Voter Registration Around the World*, Brennan Center for Justice White Paper, www.brennancenter.org/sites/default/files/legacy/publications/Appendix.Bahamas.pdf.

Brockington, D. (2004), 'The Paradox of Proportional Representation: The Effect of Party Systems and Coalitions on Individuals' Electoral Participation', *Political Studies*, 52(3): 469–90.

Brown, R.D. and Wedeking, J. (2006), 'People Who Have Their Tickets But Do Not Use Them: "Motor Voter", Registration, and Turnout Revisited', *American Politics Research*, 34(4): 479–504.

Burns, N., Lehman Schlozman, K. and Verba, S. (2001), *The Private Roots of Public Action: Gender, Equality, and Political Participation* (Cambridge, MA: Harvard University Press).

Cancela, J. and Geys, B. (2016), 'Explaining Voter Turnout: A Meta-Analysis of National and Subnational Elections', *Electoral Studies*, 42(2): 264–75.

Cann, D.M. and Cole, J.B. (2011), 'Strategic Campaigning, Closeness, and Voter Mobilization in U.S. Presidential Elections', *Electoral Studies*, 30(2): 344–52.

Collier, P. and Vicente, P.C. (2012), 'Violence, Bribery and Fraud: The Political Economy of Elections in Sub-Saharan Africa', *Public Choice*, 157(1–2): 117–47.

Diwakar, R. (2008), 'Voter Turnout in the Indian States: An Empirical Analysis', *Journal of Elections, Public Opinion and Parties*, 18(1): 75–100.

Dodson, K. (2010), 'The Return of the American Voter? Party Polarization and Voting Behavior, 1988 to 2004', *Sociological Perspectives*, 53(8): 443–49.

Elgie, R. and Fauvelle-Aymar, C. (2012), 'Turnout under Semi-Presidentialism: First and Second Order National Elections to National-Level Institutions', *Comparative Political Studies*, 45(12): 1598–623.

Endersby, J. and Krieckhaus, J. (2008), 'Turnout Around the Globe: The Influence of Electoral Institutions on National Voter Participation, 1972–2000', *Electoral Studies*, 27(8): 601–10.

Fornos, C.A., Power, T.J. and Garand, J.C. (2004), 'Explaining Voter Turnout in Latin America, 1980 to 2000', *Comparative Political Studies*, 37(8): 909–40.

Franklin, M.N. (1999), 'Electoral Engineering and Cross-National Turnout Differences: What Role for Compulsory Voting?', *British Journal of Political Science*, 29(1): 205–17.

Franklin, M.N. (2004), *Voter Turnout and the Dynamics of Electoral Competition in Established Democracies since 1945* (Cambridge: Cambridge University Press).

Franklin, M.N. and Hobolt, S.B. (2011), 'The Legacy of Lethargy: How Elections to the European Parliament Depress Turnout', *Electoral Studies*, 30(1): 67–76.

Galatas, S.E. (2004), 'Electing the First Parliament: Party Competition and Voter Participation in Scotland', *Party Politics*, 10(2): 213–33.

Gallego, A., Rico, G. and Anduiza, E. (2012), 'Disproportionality and Voter Turnout in New and Old Democracies', *Electoral Studies*, 31(1): 159–69.

Geys, B. (2006), 'Explaining Voter Turnout: A Review of Aggregate-level Research', *Electoral Studies*, 25(4): 637–63.

Goodin, R. and Dryzek, J. (1980), 'Rational Participation: The Politics of Power', *British Journal of Political Science*, 10(3): 273–90.

Grofman, B. (1993), 'Is Turnout the Paradox that Ate Rational Choice Theory?', in B. Grofman (ed.), *Information, Participation, and Choice: An Economic Theory of Democracy in Perspective* (Ann Arbor: University of Michigan Press): 93–103.

Grofman, B. and Selb, P. (2011), 'Turnout and the (Effective) Number of Parties at the National and District Levels: A Puzzle-solving Approach', *Party Politics*, 17(1): 93–117.

Gunther, R. (2005), 'Parties and Electoral Behavior in Southern Europe', *Comparative Politics*, 37(3): 253–75.

Henderson, A. and McEwen, N. (2010), 'A Comparative Analysis of Voter Turnout in Regional Elections', *Electoral Studies*, 29(3): 405–16.

Highton, B. (2004), 'Voter Registration and Turnout in the United States', *Perspectives on Politics*, 2(3): 507–15.

Holbrook, T. and Heidbreder, B. (2010), 'Turnout in the United States: Does Measurement Matter? The Case of VAP and VEP in Models of Voter Turnout', *State and Policy Quarterly*, 10(2): 157–79.

Horn, D. (2011), 'Income Inequality and Voter Turnout', Growing Inequalities' Impacts (GINI) Discussion Paper 16, October, http://www.uva-aias.net/uploaded_files/publications/DP16-Horn.pdf.

Indridason, I.H. (2008), 'Competition and Turnout: The Majority Run-off as a Natural Experiment', *Electoral Studies*, 27(4): 699–710.

Inglehart, R. (1997), *Modernization and Postmodernization* (Princeton: Princeton University Press).

International Institute for Democracy and Electoral Assistance (IDEA) (2013), 'Parliamentary Elections', www.idea.int/vt/country_view.cfm?CountryCode=PW (accessed 25 October 2014).

Jackman, R.W. (1987), 'Political Institutions and Voter Turnout in the Industrialized Democracies', *American Political Science Review*, 81(2): 405–24.

Jackman, R. and Miller, R.A. (1995), 'Voter Turnout in the Industrial Democracies during the 1980s', *Comparative Political Studies*, 27(4): 467–92.

Jeffrey, C. and Hough, D. (2003), 'Regional Elections in Multi-Level Systems', *European Urban and Regional Studies*, 10(3): 199–212.

Johnston, R., Matthews, S.J. and Bittner, A. (2007), 'Turnout and the Party System in Canada, 1988–2004', *Electoral Studies*, 26(4): 735–45.

Kostadinova, T. (2003), 'Voter Turnout Dynamics in Post-Communist Europe', *European Journal of Political Research*, 42(6): 741–59.

Kostadinova, T. and Power, T.J. (2007), 'Does Democratization Depress Participation', *Political Research Quarterly*, 60(3): 363–76.

Laakso, M. and Taagepera, R. (1979), 'Effective Number of Parties: A Measure with Application to West Europe', *Comparative Political Studies*, 12(1): 3–27.

Lehoucq, F. and Wall, D.L. (2004), 'Explaining Voter Turnout Rates in New Democracies: Guatemala', *Electoral Studies*, 23(3): 485–500.

Levine, P. and Lopez, M. (2002), 'Youth Voter Turnout Has Declined by Any Measure', Center for Information and Research on Civic Learning & Engagement Fact Sheet, http://pweb.jps.net/~lsbonnin/mark/docs/MeasuringYouthVoterTurnoutFinal.pdf.

Lijphart, A. (1994), *Electoral Systems and Party Systems: A Study of Twenty-Seven Democracies, 1945–1990* (Oxford: Oxford University Press).

Lister, M. (2007), 'Institutions, Inequality and Social Norms: Explaining Variations in Participation', *British Journal of Politics and International Relations*, 9(1): 20–35.

Mahler, V.A. (2002), 'Explaining the Subnational Dimensions of Income Inequality: An Analysis of the Relationship between Inequality and Turnout in the Developed Countries', *International Studies Quarterly*, 46(1): 117–42.

Matsubayashi, T. and Wu, J.D. (2012), 'Distributive Politics and Voter Turnout', *Journal of Elections, Public Opinion and Parties*, 22(2): 167–86.

McDonald, M. and Popkin, S.L. (2001), 'The Myth of the Vanishing Voter', *American Political Science Review*, 95(4): 963–74.

Milner, H. and Ladner, A. (2006), 'Can PR Voting Serve as a Shelter against Declining Turnout? Evidence from Swiss Municipal Elections', *International Political Science Review*, 27(1): 29–45.

Neiheisel, J.R. and Burden, B.C. (2012), 'The Impact of Election-day Registration on Voter Turnout and Election Outcomes', *American Politics Research*, 40(4): 636–664.

Nikolenyi, C. (2010), 'Concurrent Elections and Voter Turnout: The Effect of the De-linking of State Elections on Electoral Participation in India's Parliamentary Polls, 1971–2004', *Political Studies*, 58(1): 214–33.

Norris, P. (2002), *Electoral Engineering: Voting Rules and Political Behavior* (New York: Cambridge University Press).

Pacek, A.C., Pop-Eleches, G. and Tucker, J.A. (2009), 'Disenchanted or Discerning: Voter Turnout in Post-Communist Countries', *Journal of Politics*, 71(2): 473–91.

Quintelier, E., Hooghe, M. and Marien, S. (2011), 'The Effect of Compulsory Voting on Turnout Stratification Patterns: A Cross National Analysis', *International Political Science Review*, 34(4): 396–416.

Powell, G.B. (1982), *Contemporary Democracies: Participation, Stability, and Violence* (Cambridge, MA: Harvard University Press).

Powell, G.B. Jr (1986), 'American Voter Turnout in Comparative Perspective', *American Political Science Review*, 80(1): 17–43.

Power, T.J. (2009), 'Compulsory for Whom? Mandatory Voting and Electoral Participation in Brazil, 1986–2006', *Journal of Politics in Latin America*, 1(1): 97–122.

Reif, K. and Schmitt, H. (1980), 'Nine Second-order National Elections: A Conceptual Framework for the Analysis of European Election Results', *European Journal of Political Research*, 8(1): 3–44.

Rose, R. and Borz, G. (2013), 'Institutional Stimuli and Individual Response as Explanations of Turnout: The 2009 EP Election', *Journal of Elections, Public Opinion and Parties*, 23(4): 405–22.

Selb, P. (2009), 'A Deeper Look at the Proportionality–Turnout Nexus', *Comparative Political Studies*, 42(4): 527–48.

Simonovits, G. and Rajk, L. (2012), 'Competition and Turnout Revisited: The Importance of Measuring Expected Closeness Accurately', *Electoral Studies*, 31(2): 364–71.

Simpser, A. (2012), 'Does Electoral Manipulation Discourage Voter Turnout? Evidence from Mexico', *Journal of Politics*, 74(3): 782–95.

Söderlund, P., Wass, H. and Blais, A. (2011), 'The Impact of Motivational and Contextual Factors on Turnout in First- and Second-order Elections', *Electoral Studies*, 30(4): 689–99.

Solt, F. (2010), 'Does Economic Inequality Depress Electoral Participation? Testing the Schattschneider Hypothesis', *Political Behavior*, 32(2): 285–301.

Steiner, N.D. (2010), 'Economic Globalization and Voter Turnout in Established Democracies', *Electoral Studies*, 29(3): 444–59.

Stockemer, D. and Scruggs, L. (2012), 'Income Inequality, Development and Electoral Turnout: New Evidence on a Burgeoning Debate', *Electoral Studies*, 31(4): 764–73.

Stockemer, D., LaMontagne, B. and Scruggs, L. (2013), 'Bribes and Ballots: The Impact of Corruption on Voter Turnout in Democracies', *International Political Science Review*, 34(1): 74–90.

Stokes, S.C., Dunning, T., Nazareno, M. and Brusco, V. (2013), *Brokers, Voters, and Clientelism: The Puzzle of Distributive Politics* (Cambridge: Cambridge University Press).

Trounstine, J. (2013), 'Turnout and Incumbency in Local Elections', *Urban Affairs Review*, 49(2): 167–89.

United Nations Division of Economic and Social Affairs (2013), 'International Migrant Stock Total', www.un.org/en/development/desa/population/migration/data/index.shtml (accessed 30 December 2014).

Wagner, M., Johann, D. and Kritzinger, S. (2012), 'Voting at 16: Turnout and the Quality of Vote Choice', *Electoral Studies*, 31(2): 372–83.

Wattenberg, M.P. (2005), 'Elections: Turnout in the 2004 Presidential Election', *Presidential Studies Quarterly*, 35(1): 138–46.

Wolfinger, R.E. and Rosenstone, S.J. (1980), *Who Votes?* (New Haven: Yale University Press).

Yamamura, E. (2011), 'Effects of Social Norms and Fractionalization on Voting Behaviour in Japan', *Applied Economics*, 43(11): 1385–398.