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# Electoral systems and trade-policy outcomes: the effects of personal-vote incentives on barriers to international trade

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## Abstract

Despite established benefits in free trade, protectionism persists to varying degrees across the world. Why is that? Political institutions govern the ways in which competing trade-policy preferences are aggregated, shaping policy outcomes. The ubiquitous binary PR/plurality indicator in the trade-politics literature is divorced from comparative institutional research. We build on the latter body of research to generate a new 13-point index that captures the extent to which electoral systems incentivize personal-vote cultivation, based on a combination of established theoretical and new empirical evidence on candidate incentives. We argue that institutional incentives to pursue a personal vote are positively linked to the provision of particularistic policies, including trade protectionism. We find strong empirical support for the hypothesized relationship, and our results highlight the importance of applying parsimonious approaches to studying domestic institutions when analyzing their impact on foreign economic policy.

**Keywords** Electoral institutions · International political economy · Personal-vote incentives · Trade politics

## 1 Introduction

The domestic sources of trade policies have long been a subject of inquiry, from the sources of demands to the ways in which those demands are translated by domestic and international institutions into policy outcomes. To date, research on the effects of domestic political institutions on trade policies among democracies has produced a series of contradictory arguments and results. We argue that the measurement of domestic institutions in the existing studies often is far removed from the insights of comparative political institutional research; consequently, institutions' effects in shaping politicians' incentives are not

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captured adequately. We propose a more parsimonious approach to studying the effect of electoral systems on trade policy by examining the incentives they provide candidates to pursue the cultivation of personal votes.

The most common way of operationalizing electoral systems in studies of trade politics has been a dichotomous indicator, distinguishing systems labelled as either plurality (or majoritarian) or proportional representation (PR), despite significant differences between countries' institutional arrangements within both of those groups. Despite several innovations along these lines (such as Hankla 2006; Ehrlich 2007; Park and Jensen 2007), recent contributions to the literature have continued to point to the need for greater nuance in the measurement of electoral systems in the study of trade politics (Menocal 2011; Hatfield and Hauk 2014; Rickard 2015). We answer that call and present an index that captures personal vote-cultivation incentives, based on the seminal work of Carey and Shugart (1995) and informed by recent empirical contributions by André et al. (2016), accounting for variation among electoral systems well beyond the standard majoritarian-PR divide. By combining institutional supply and candidate-driven demands for building political support, our approach more accurately captures politicians' incentives to respond to demands for protectionism than do earlier approaches. We find significant support for a link between personal-vote incentives and protectionist trade policies, contributing to the body of evidence pointing to the importance of domestic political institutions in shaping trade-policy outcomes.

## 2 The domestic politics of trade

The distributional consequences of trade lead to competing demands over trade policy, which are filtered through electoral institutions. The configurations those institutions take influence the extent to which politicians respond to the demands. The standard treatment of electoral systems in trade-politics research is to enter a binary indicator distinguishing between plurality/majoritarian and proportional representation (PR) systems, following the seminal treatment by Rogowski (1987).

The conclusions reached in the literature often fall on either side of a central debate: that either plurality or PR leads to more protectionist policies. Rogowski (1987) proposes a relationship between PR systems and more open trade policies, with the affinity between PR and free trade attributed to the former's tendency to produce fewer, larger electoral districts and strong, autonomous parties, as well as its ability to provide insulation against trade-based exogenous shocks, compared to majoritarian systems.

Among the influential work examining electoral systems and economic policy more broadly, Persson and Tabellini (2003) (PT henceforth) find that PR systems are correlated with broadly beneficial policies and plurality systems lead to targeted, narrowly beneficial policies. PT contend that the larger average district magnitude in PR systems should produce fewer incentives for legislators to seek rents or cultivate personal votes. As such, plurality electoral rules should correspond with more trade protection owing to greater receptiveness to lobbying by firms or industries that are or would be vulnerable to competition with more competitive foreign firms. Other scholars reach analogous conclusions with different arguments: Knutsen (2011) contends that landslide wins under plurality rules lead to more rent seeking and particularistic policy-making by legislators; Saksena and Anderson (2008) attribute the link between PR systems and liberal trade policies to the insulation of politicians from special interest lobbying. Ito (2015), Grossman and Helpman (2005) and

Hatfield and Hauk (2014) all find evidence of a relationship between PR systems and freer trade policies in panel analyses across a range of samples.

On the other side of the debate over the relationship between electoral systems and protectionism, Mansfield and Busch (1995) contend that the insulation of politicians in PR systems, rather than reducing the impact of special-interest politics, instead leads to more rent seeking and, thus, more protectionism. Rogowski and Kayser (2002), Chang et al. (2008) and Weinberg (2012) propose analogous arguments, finding support in consumer price levels that they treat as a proxy for trade policy liberalization. However, as Rickard (2012) observes, consumer prices capture a wide range of influences, including transportation costs, market size and consumer preferences, obfuscating the link between prices and protectionism.

Up to now, this brief review highlights the contradictions and inconclusiveness in prior research on the effects of electoral institutions on trade policy. Despite reliance on comparable theoretical foundations, modeling techniques, and samples, researchers have reached opposing conclusions. The critique is far from new, as Park and Jensen (2007), Menocal (2011), Ehrlich (2011) and Rickard (2012) all have noted that the lack of consensus may be attributable to a misconception traceable back to the seminal paper by Rogowski (1987). The complexity of electoral institutions' effects on economic policy cannot adequately be captured by a simple binary variable. PT, Blume et al. (2009) and Evans (2009) all recognize the limitations of the rough proportionality dichotomy, and seek to address it in different ways. PT use a mixed-system binary indicator and continuous institutional variables, albeit primarily as a series of robustness checks. Blume et al. (2009) highlight the importance of measures more detailed than the dichotomous indicator. Evans (2009) acknowledges mixed systems, but the operationalization largely is excluded from her analyses. A binary term for mixed systems will suffer from the same constraints as one for the PR-plurality divide: the indicator captures a wide range of systems (such as mixed-member proportional [MMP] in Germany and mixed-member majoritarian [MMM]) in Japan, all of which can have wildly different effects on economic-policy outcomes, as demonstrated in the comparative institutional literature by Thames and Edwards (2006) and Shugart and Wattenberg (2001).

Our approach to obtaining a more nuanced electoral-system measure is by constructing an index not unprecedented in the research on electoral politics and trade protection. Nielsen (2003) applies a similar index to the study of tariffs among middle-income presidential democracies, Kono (2009) does so when assessing the influence of intra-industry trade on protectionist outcomes, and Crisp et al. (2010) take an analogous approach to explaining exceptions contained in investment treaties. Hankla (2006) operationalizes the Carey and Shugart (1995) framework into four component index variables to assess the link between party strength and trade policy. We pick up where the existing studies leave off, by linking theory-based approaches to personal-vote incentives with recent empirical evidence of candidate behaviors (André et al. 2016).

## 3 Incentives to cultivate personal votes and trade protectionism

The effects of political institutions on interest aggregation have been the subject of extensive theoretical and empirical work across political science and political economy. The significant advances in those fields have not extended to the study of trade politics, however, which has been hampered by simplistic institutional modeling. As Shugart (2005)

observes, the plurality-PR divide, which dominates prior research, is no more important than whether voters choose individuals or parties. Within the broad PR and majoritarian electoral families several different electoral systems exist, the effects of which more closely resemble systems from the opposite class than those they have been grouped alongside. That diversity can lead to heterogeneous within-category effects and contradictory results, even when similar analyses are conducted. We rely on insights from the comparative-politics literature on electoral institutions, particularly Carey and Shugart (1995), Shugart (2005), Cox and McCubbins (2001) and André et al. (2016), to create a more theoretically and empirically grounded measure of institutional effects on politicians' incentives, and consequently, economic-policy outcomes.

### 3.1 Electoral incentives and the personal vote

The incentive structures of both political candidates and elected officials are shaped directly in substantial ways by the rules that govern electoral competition, as well as the impact of those rules on voters' information demands (Cox and McCubbins 2001). Operating under the constraints of limited time and information, voters in a democracy often rely on the signals provided by parties and candidates for information when making their electoral choices. The type of signals voters demand—and those provided in response by politicians seeking election—depends on the nature of electoral institutions. In party-centric electoral systems, such as South Africa's closed-list PR (CLPR), voters require information only on parties' policy platforms, as they distinguish each party (or bloc or coalition). If the electoral institutions allow voters to select candidate-specific preferences (such as in open-list PR, single non-transferable vote (SNTV) and plurality systems), voters will seek information on candidates, as it becomes necessary to distinguish them from their counterparts both within and across parties. Such institutions foster intraparty competition in addition to interparty competition (Cox and McCubbins 2001; Crisp et al. 2007); in order to pursue (re)election, politicians in those circumstances will need to create a connection between themselves and their constituencies beyond that provided by their party's reputation and platform.

Where electoral institutions incentivize the cultivation of a personal vote by fostering stronger intraparty than interparty competition, conflicts of interests may arise between candidates and their respective party leaders (Carey and Shugart 1995). While candidates are interested primarily in their own (re)election prospects, parties and party leaders are interested in maximizing the total number of seats won in the district and legislature. Within personal-vote systems, maintaining party reputation becomes a collective-action problem, the extent of which is determined significantly by electoral rules and the extent to which they incentivize the cultivation of a personal vote. Such incentives stand in clear contrast to those found in party-focused electoral systems, such as CLPR, wherein a distinct and clearly defined party brand benefits the party as a whole, and party leaders have an incentive to discourage any independent candidate behaviors that deviate from the party line. Consequently, the more candidate-centric the electoral system is, the greater is the likelihood that candidates will pursue the cultivation of their own reputations, as those will have greater weight relative to that of their party. As candidates cater to the narrowly defined interests within their districts to gain (re)election, they often support and enact particularistic policies, which benefit these narrow groups at the expense of providing broader-based public goods. Those policies contribute greatly to candidates' personal

reputations, while policies with broadly diffuse benefits serve to bolster the party's regional or national reputation.

Carey and Shugart (1995) define four variables affecting the degree to which electoral institutions incentivize cultivation of a personal vote. They are ballot control, vote pooling, types of votes, and district magnitude. When combined, the four variables enable a ranked ordering of electoral systems based on personal-vote cultivation incentives. While the original Carey–Shugart index relies on the hypothetical incentives created by institutional arrangements, recent interview-based research by André et al. (2016) has pointed to some deviations between hypothetical and revealed incentives across electoral systems. The effects of those institutional characteristics remain more or less fixed across countries with readily defined electoral systems.

## 3.2 Political incentives and trade policy

Having illustrated how electoral institutions can shape the incentives political actors face, the question remains: how do they impact international trade policy and economic policy more generally? The political demands that politicians face over trade policy are shaped by a range of interests. A common approach, treating the welfare gains from liberalization as a public good, pitting pro-trade consumers against protectionist producers (Rogowski 1987; Grossman and Helpman 1994, 2005). The extent to which those demands are represented in policy outcomes depends crucially on the configuration of political institutions and the ways in which they shape candidate interests: when politicians are rewarded for cultivating the support of narrowly delineated groups, their efforts tend to favor protectionist interests (Baldwin and Robert-Nicoud 2007).

However, the distribution of trade-policy demands in practice is not distributed so neatly between consumers and producers. Public opinion on the benefits of trade liberalization often is divided, reflecting trade's distributional consequences as well as concerns over its implications for specific communities (Kuo and Naoi 2015). Furthermore, consumer tastes vary with respect to foreign and domestic goods and services, further contributing to divided attitudes (Baker 2005). Among producers, similar divisions in trade-policy stances exist, based on heterogeneity in firm characteristics and the prospects and threats posed by international economic integration (Bernard et al. 2007; Plouffe 2015, 2017).

When fractionalization of attitudes toward trade combines with politicians' institutionally derived interests in creating supporting coalitions, the result is the use of a variety of policy tools to assemble winning coalitions within their constituencies. While trade is just a single example of the countless policies that could be linked to political support, the highly technical and complicated nature of trade policy makes it relatively easy for politicians to hide any preferential policies from non-recipient groups (Kono 2006). The ability to obfuscate redistributive transfers should make trade more attractive than other policy options when it comes to their use for purely electoral gains, whether protection is implemented through product-level tariffs or non-tariff barriers. When personal-vote incentives are absent or weak, politicians can rely on party platforms as a basis for political support. However, where the incentives to cultivate a personal vote abound, politicians can target aspects of trade policy to build support among groups of potential voters.

When seeking to build support by backing narrowly targeted trade policies, politicians choose between liberalizing and protectionist options. Asymmetries exist between the two with respect to the excludability of any benefits from constituents outside the targeted group. In the case of liberalizing policies, targeting beneficiaries is difficult: heterogeneity

in consumption preferences and the varying salience of access to foreign products makes that option relatively unattractive for the support-building politician. In contrast, protectionist policies can be targeted with relative ease based on production patterns within the intended constituency.

# 4 Research design and methodology

## 4.1 Dataset and model specification

As with any study of the effects of electoral systems, the population of interest is confined to democracies. We rely on the Varieties of Democracy (V-Dem) Polyarchy scale (Coppedge et al. 2016) as our starting point, with its focus on competition and participation in political systems. As the original Polyarchy dataset's creator Tatu Vanhanen notes, democracy can be defined as a "political system in which power is widely distributed among its members and in which the status of power holders is based on the consent of the people" (Vanhanen 1984, p. 11). We limit the sample to countries scoring 0.4 or higher on the Polyarchy scale, which provides a compromise between inclusiveness and the capture of highly democratic countries. Admittedly, that strategy does lead to the inclusion of hybrid regimes and, in some cases, country-year observations that may be described only as notionally democratic, but any potential bias introduced by pseudo-democracies would be towards a null result, as non-democratic sources of campaign incentives are likely to override or conflict with those generated by the electoral institutions themselves. When the Polyarchy threshold is increased to prune the questionably democratic observations from analysis, our results remain substantively similar. Our sample also omits countries that are EU members by removing them from the sample at their year of accession. We do so because of the confounding effects of intra-EU decision making and following the examples of recent work by the likes of Weinberg (2016) and Lechner and Wüthrich (2017). Furthermore, we omit a small number of country-year observations that are more than three standard deviations from the mean trade freedom index (TFI) score. Those cases are addressed further in the online appendix. The resulting sample is global in scope, a notable contrast to the existing literature, which typically focuses on developed countries or specific regions. In total, the dataset covers up to 97 countries over the 1990–2012 period,[1] although data coverage for covariates reduces the number of countries analyzed to between 67 and 97.

The model we specify to estimate the relationship between electoral institutions and trade policy takes the general form:

$$y_{it} = \beta_0 + \beta_1(x_{it} - \bar{x}_i) + \beta_2\bar{x}_i + \beta_3 z_i + (u_i + \epsilon_{it})$$

The outcome, $y_{it}$, is one of three dependent variables measuring international trade policy; $x_{it}$ represents time-varying, observation-level (or level 1) independent variable(s); $\bar{x}_i$ is the country mean for variable $x$; and $z_i$ is time-invariant independent variable(s) at the clustered (or level 2) country-level. Following Bell and Jones (2015) and Bell, Johnston and Jones (2014), $\beta_1$ represents the estimated within country effect(s) of the

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[1] Missing data for a number of Eastern European and African states during 1990–1991 generates an unbalanced panel. The 2012 cutoff reflects data availability constraints when the current project began.

time-varying variable(s) and $\beta_2$ accounts for the between-country effect(s) of the time-varying variable(s); $\beta_3$ is the coefficient for the time-invariant, country-level variable(s). The independent variable of interest, electoral institutions, is included in the vector $z_i$. Although some instances were encountered in which countries have enacted sweeping reforms of their electoral institutions, such cases are exceedingly rare. As such, the electoral-institution variable is considered to be slow moving or virtually time-invariant and accordingly is treated as time-invariant, keeping with standard practice (Bell and Jones 2015). Finally, $u_i$ represents the model's random effects and $\epsilon_{it}$ is the level 1 residual error term.

The specified model is an example of the within-between random effects model (REWB) proposed by Bell and Jones (2015), similar to another random-effects (RE) model originally devised by Mundlak (1978). Although fixed effects (FE) are the de facto standard for dealing with panel data in economics and political science, we prefer the RE model for several reasons. FE's prominent position derives from the fact that FE models tackle the problem of heterogeneity bias by using higher-level unit (country) dummy variables to account for all higher-level (between country) variance. In doing so, they rule out any sort of between-unit variance, eliminating their feasibility for a comparative analysis in our application: time-invariant processes effectively are suppressed, losing their effect on the outcome variable to the higher-level dummies. On the other hand, standard RE models can fail accurately to account for heterogeneity bias, producing biased results. The REWB is better able to account for such bias than standard RE models because it includes both within and between effects by partitioning what would otherwise be combined coefficients into separate effects for all time-varying variables. The within effect is interpreted similarly to the FE modelling of an independent-variable effect over time within units, while the between effect models differences between units. Explicitly modelling those separate effects rather than demeaning or assuming one or the other away (as is the case in fixed effects and pooled models) allows researchers to measure differences between countries (or individuals, units, and so on) as well as changes within countries (or individuals, units, etc.) over time. That is accomplished while controlling for heterogeneity bias without throwing out time-invariant or slow-moving variables, such as electoral institutions.

## 4.2 Independent variables

Our principal independent variable is an ordinal ranking of electoral systems based on intraparty competition and the degree to which they incentivize personal-vote cultivation among individual legislators who seek reelection. This index is derived from Carey and Shugart's (1995) (CS henceforth) typology of electoral institutions (described in greater detail above). In addition, the ranking is adjusted to account for discrepancies found by André et al. (2016) (ADM henceforth). Through thousands of interviews, ADM find that the incentives legislators actually encounter may differ in some cases from how they are hypothesized to occur in CS. Specifically, single-member plurality (SMP) and single-transferrable vote (STV) systems provide much stronger incentives to cultivate personal votes than predicted by CS. As such, those two systems have higher scores in our index than in the original CS index.

The CS (1995) paper provides a ranked list of theoretically possible electoral systems based on the values imparted to legislators' personal reputations relative to party reputation by each system, along with real-world examples of those that exist in practice. Higher values of this index indicate stronger incentives to cultivate personal votes and pursue particularistic policies, such as trade protection. Based on Bormann and

**Table 1** Personal-vote index with ADM-derived changes

| Personal vote score | Electoral system type | Example |
|---|---|---|
| 0 | Closed-list PR (CLPR) | Israel |
| 1 | Open-list PR (OLPR) with multiple votes (MV) | Switzerland |
| 2 | Mixed-member proportional (MMP) | New Zealand |
| 3 | Alternative vote | Australia |
| 4 | OLPR with single vote | Chile |
| 5 | Block vote | Fiji |
| 6 | OLPR SV with open endorsement | Brazil |
| 7 | Single-member plurality with party endorsement | Taiwan |
| 8 | Two-round system | Comoros |
| 9 | Single-member plurality without party endorsement | Philippines |
| 10 | Mixed-member majoritarian (MMM) | Japan |
| 11 | Single transferable vote (PR-STV) | Ireland |
| 12 | Personal-list PR/single non-transferable vote (SNTV) | Colombia |

| Electoral system type | CS score | New score | Reason |
|---|---|---|---|
| Single member plurality | 0 | 9 | Party ballot control turns out to be less influential |
| Single transferable vote | 3 | 11 | Highly emphasizes personal vote importance by pitting co-partisans against one another |

Golder's (2013) *Systems Around the World Index* and numerous individual country case studies and reports (see list in the appendix), each country included in the sample is coded according to its electoral system and assigned a value based on the aggregate score assigned by Carey and Shugart (1995), reflecting performance on the four indicators described earlier (ballot, vote, pooling and district magnitude) and adjusted in the aforementioned cases according to the findings of ADM; they are depicted in Table 1. Countries that underwent significant cases of electoral reform during the period under examination are discussed in the appendix.

We include a number of additional controls in keeping with the established literature (sources are listed in the appendix). GDP per capita (based on purchasing power parity) is used to capture levels of economic development and is expected to be positively associated with trade openness. Country size, measured in terms of land mass, is entered as well; that variable has been associated with trade dependence (Hatfield and Hauk 2014); it is plausible that country size produces similar effects on trade barriers. Unemployment is included because governments facing high levels of unemployment are likely to face more pressure for protectionist policies. Finally, we include a measure of the state of the global economy as measured by the IMF's World GDP estimates. The state of the global economy can have an independent impact on trade flows and the policies meant to insulate national economies in times of crisis; World GDP is treated as an individual non-specific, time-invariant control variable. Following research by Simmons et al. (2008), we enter regional averages of the time-varying dependent variables lagged by one year to control for the potential effects of regional policy diffusion.

Along with the foregoing non-policy economic and geographic controls, a series of dummy variables is included to represent the origins of each country's legal system. The economic implications of legal origins are well-established across the political economy literature (see, for example, La Porta et al. 1997; Persson and Tabellini 2003), embracing

their effects on economic-policy outcomes. Finally, we include a measure of population density, which has been positively linked to trade engagement (Keesing and Sherk 1971).

### 4.3 Dependent variables

We adopt three alternative measures of protectionism. Two are used in Hatfield and Hauk (2014) and so have the added benefit of serving as points of comparison with some recent research. The two variables are trade-weighted average ad-valorem tariff (AT) from the World Bank's World Development Indicators Database and the Overall Trade Restrictiveness Index (OTRI) developed by Kee et al. (2013). The third measure of trade protection is the Trade Freedom Index (TFI) developed by the Heritage Foundation (2016), which has been scaled to account for its non-normal distribution. Each has its own limitations, particularly with respect to data coverage; however, by testing our argument against three measures of protection, we aim to demonstrate a more robust relationship between institutional personal-vote incentives and trade policy.

The log-transformed average ad-valorem tariff (AT) benefits from its widespread application, ease of measurement, and the way in which it readily lends itself to cross-national comparisons. The use of AT measures has been criticized for the weighting mechanism and the lack of consideration of the impact of non-tariff barriers (NTBs) (Hatfield and Hauk 2014). The impact of the World Trade Organization further dampens the utility of the AT measure, as tariff levels for members on many product lines are bound within those allowed under the WTO.

The second measure, OTRI, captures a broader range of protectionist measures than does AT. OTRI takes the estimated effect of a country's total trade barriers and provides an equivalent ad-valorem tariff applied across all sectors, which would produce the same level of imports as the system currently in place. Of course, that measure, too, has its drawbacks: it is based on estimated "import demand elasticities and non-tariff barrier ad-valorem equivalents" and thus "likely suffers from measurement error"; it is available, so far, only for one year: 2009. (Hatfield and Hauk 2014, p. 525).

The TFI is a similarly broad trade-policy measurement based on data collected from the World Bank, WTO, the Economist Intelligence Unit, and individual government publications from each country included in the index. The resulting index captures the absence of both tariffs and NTBs; while it is similar to OTRI in its conceptual formulation, the directionality is reversed, with a maximum score of 100 indicating full trade openness and a minimum score of zero indicating pure autarky. Consequently, comparable results between AT and OTRI will retain the same sign, while the sign will flip for TFI: stronger (weaker) institutional personal-vote incentives will lead to higher (lower) AT and OTRI outcomes, and lower (higher) TFI scores.

## 5 Results

Regression results are displayed in Tables 2 and 3 with country-clustered robust standard errors in parentheses. For AT and TFI, the REWB model is estimated, with the means of the $x_{ij}$ variables entered as explanatory variables, as recommended by Bell and Jones (2015). Ordinary least squares (OLS) is used to analyze the smaller, purely cross-sectional OTRI sample, following Hatfield and Hauk (2014). All coefficients for the estimated effect of personal-vote cultivation incentives modelled by the electoral systems variable

**Table 2** REWB models of electoral systems and trade protection

|  | Average tariff | | | | TFI | | | |
|---|---|---|---|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Electoral system | 0.046** | 0.030* | 0.029* |  | −0.080** | −0.042* | −0.042* |  |
|  | (0.016) | (0.012) | (0.012) |  | (0.024) | (0.017) | (0.018) |  |
| PR indicator |  |  |  | −0.090 |  |  |  | 0.270 |
|  |  |  |  | (0.126) |  |  |  | (0.151) |
| L.GDP pc within |  | −1.009*** | −1.025*** | −0.943*** |  | 1.312*** | 1.276*** | 1.462*** |
|  |  | (0.139) | (0.139) | (0.135) |  | (0.213) | (0.211) | (0.277) |
| L.GDP pc between |  | −0.290*** | −0.244*** | −0.265*** |  | 0.297*** | 0.290*** | 0.357*** |
|  |  | (0.041) | (0.049) | (0.053) |  | (0.060) | (0.070) | (0.079) |
| L.Land area |  | −0.020 | −0.029 | −0.027 |  | 0.015 | 0.006 | −0.001 |
|  |  | (0.032) | (0.029) | (0.031) |  | (0.049) | (0.053) | (0.058) |
| L.Pop.Den within |  | −0.394 | −0.373 | −0.526 |  | 1.231* | 1.216* | 0.656 |
|  |  | (0.315) | (0.313) | (0.320) |  | (0.591) | (0.587) | (0.706) |
| L.Pop.Den between |  | 0.018 | 0.015 | 0.036 |  | −0.072 | −0.110 | −0.148* |
|  |  | (0.038) | (0.042) | (0.047) |  | (0.061) | (0.072) | (0.084) |
| Unemployment within |  | −0.017* | −0.017* | −0.009 |  | 0.006 | 0.003 | −0.009 |
|  |  | (0.008) | (0.008) | (0.007) |  | (0.019) | (0.020) | (0.019) |
| Unemployment between |  | −0.002 | 0.002 | 0.001 |  | −0.001 | 0.002 | −0.010 |
|  |  | (0.007) | (0.006) | (0.008) |  | (0.008) | (0.008) | (0.008) |
| AVTariff diffusion |  | 0.006 | −0.002 | −0.006 |  |  |  |  |
|  |  | (0.008) | (0.007) | (0.008) |  |  |  |  |
| UK legal origin |  |  | 0.467** |  |  |  | −0.194 | −0.015 |
|  |  |  | (0.143) |  |  |  | (0.212) | (0.285) |
| FR leg. origin |  |  | 0.411** |  |  |  | −0.020 | 0.029 |
|  |  |  | (0.125) |  |  |  | (0.285) | (0.334) |

**Table 2** (continued)

| | Average tariff | | | | TFI | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Socialist leg. origin | | | −0.098 | | | | 0.055 | 0.337 |
| | | | (0.134) | | | | (0.260) | (0.280) |
| DL leg. origin | | | 0.129 | | | | 0.481 | 0.679*** |
| | | | (0.202) | | | | (0.327) | (0.221) |
| L. World GDP | | | −0.004 | | | | −0.033** | −0.040*** |
| | | | (0.005) | | | | (0.011) | (0.011) |
| TFI diffusion | | | | | | 0.241 | 0.186 | 0.123 |
| | | | | | | (0.133) | (0.135) | (0.155) |
| Countries | 97 | 93 | 93 | 82 | 67 | 67 | 67 | 55 |
| Adj. R2 | 0.133 | 0.513 | 0.530 | 0.537 | 0.038 | 0.394 | 0.400 | 0.434 |
| Num. obs. | 993 | 971 | 971 | 788 | 638 | 638 | 638 | 504 |

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$ Standard errors in parenthesis

**Table 3** OLS regression, electoral systems and OTRI

|  | Log OTRI | |
|---|---|---|
|  | (9) | (10) |
| Electoral system | 0.053** | 0.052* |
|  | (0.016) | (0.022) |
| L.GDP pc |  | −0.077 |
|  |  | (0.078) |
| L.Land area |  | 0.081 |
|  |  | (0.052) |
| L.Pop.Den |  | 0.139 |
|  |  | (0.075) |
| Unemployment |  | −0.035** |
|  |  | (0.012) |
| UK legal origin |  | −0.523 |
|  |  | (0.430) |
| FR leg. origin |  | −0.190 |
|  |  | (0.408) |
| Socialist leg. origin |  | −0.511 |
|  |  | (0.441) |
| DL leg. origin |  | −0.840 |
|  |  | (0.545) |
| Electoral system | 0.053** | 0.052* |
|  | (0.016) | (0.022) |
| L.GDP pc |  | −0.077 |
|  |  | (0.078) |
| N | 92 | 66 |
| Adjusted R$^2$ | 0.099 | 0.321 |
| Residual std. error | 0.601 (df = 90) | 0.593 (df = 64) |

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$ Standard errors in parentheses

are statistically significant in the expected direction. Our full specification also is robust against multicollinearity (VIF results are presented in Table A1 in the appendix).

Models 1–3 estimate that the link between the institutional personal-vote cultivation incentives and AT is positive, as expected. In the simple univariate model, the effect of a single rank increase along the personal-vote cultivation scale corresponds to a 0.046 increase in AT. In Models 2 and 3 the estimated effect is reduced by about half (to 0.03 and 0.029) after inclusion of, first, geographic and economic control variables and then legal origin variables, respectively. The effect is statistically significant throughout. The control variables all show the expected effects, except for country size, which has a negative impact on AT. It has been argued elsewhere that smaller countries will trade more out of necessity, which one might expect to lead to lower tariffs as trade policy and market access tend to be reciprocal. A possible explanation is that the connections in geographically smaller countries between legislators, lobbyists, and the electorate are closer, which could lead to more lawmakers being more responsive to protectionist pressures, *ceteris paribus,* or that geographic size is proxying for market size. However, for AT, the effect is statistically insignificant. The inverse relationship between geography

and protection generally is consistent regardless of the dependent variable used, and follows results depicted in previous studies (for example, Hatfield and Hauk 2014), likely as a consequence of the marginal effect of the logarithmic transformation.

The within and between effects (WE and BE, respectively) of GDP per capita and population density are in the expected directions, so that an increase in either corresponds to lower tariffs; the effects of both are quite large. As might be expected. Interestingly, the WE coefficients for both are larger than for BE. Both effects for GDP per capita are significant and its estimated impact on AT likewise is quite large, as expected. The WE of unemployment has a significant negative effect on AT, though its estimated coefficient is considerably smaller than other state-level economic or geographic variables, which could reflect significant subnational variation in unemployment patterns and corresponding levels of sectoral protection. The adjusted $R^2$ is very high in the fully specified AT model in column 3, especially compared to similar studies that utilize the binary PR/plurality variable. For example, in Hatfield and Hauk (2014) the (standard) $R^2$ for their AT regressions with a binary electoral-system variable is less than a quarter of the reported (adjusted) $R^2$ here, which implies a better fit for the personal-vote index approach to electoral systems.

The results from TFI in Models 5–7 are similar to that of the AT results. Electoral systems incentivizing personal-vote cultivation are associated inversely with lower TFI scores (greater protectionism). The effect of including controls is to halve the substantive effect of personal-vote incentives, similar to the previous battery of models. Model fit, according to adjusted $R^2$, is slightly weaker than in the AT regressions, but remains very good.

The geographic and economic control variables behave in a manner similar to the previous models, with the exception of unemployment, which loses significance. That result could be explained by the complexity of NTBs relative to tariffs, which makes them a less useful policy tool for a legislator seeking to win over their constituents and cultivate a personal vote by addressing a particular problem (a logic similar to that presented by Kono 2006). The legal origin indicators also are not significant in the TFI REWB models. Our measure of the global economy is significant and negatively associated with TFI, reflecting increasing protectionism as the global economy grows; most likely, that finding reflects policies enacted as governments sought to re-establish economic growth following the Great Recession.

Models 4 and 8 substitute a binary indicator for PR systems in place of our personal-vote incentive index. We follow Evans (2009) in removing mixed systems and, as expected, the PR indicator is insignificant in the fully specified models. These results are slightly sensitive to the way in which mixed systems are treated (Table A7), raising the question of the sensitivity of similar results reported elsewhere in the literature.

Table 3 presents OLS regressions estimating the relationship between the personal-vote cultivation effect of electoral systems and OTRI. OTRI is similar to the TFI, although it approaches NTBs by estimating a comparable economy-wide average ad-valorem tariff, rather than treating NTBs in a qualitative and less transparent manner. The results of the OTRI models presented in Table 3 are consistent with those presented in Table 2 for AT and TFI. The coefficient for institutional personal-vote incentives is positive and significant in both Models 9 and 10; the penalty imposed by the battery of controls is much smaller than for the previous dependent variables, with the coefficient reduced only from 0.053 to 0.052. Curiously, per capita GDP is not significant in Model 10, despite being significant in the REWB regressions, although the coefficient retains the expected sign. The same is true for the coefficients for land area and population density. Unemployment is statistically significant and its effects remain in the same direction as the AT and TFI models.

Across all specifications, our results remain consistent: increases in institutionalized personal-vote incentives are associated with higher levels of trade protection. One final point worth mentioning is that, according to $R^2$, our electoral index alone explains nearly 15% of the variation in tariff levels (see Model 1), and up to nearly 10% of the variation in combined trade protection (see Model 9).

## 6 Robustness checks and discussion

The statistical results reported in Tables 2 and 3 provide evidence supporting our argument that electoral systems providing stronger incentives to legislators to cultivate personal votes lead to more protectionist trade policies. Our electoral-institution index appears to serve as a more than capable replacement for the ubiquitous PR-plurality indicator. We conduct a number of further tests to ascertain the robustness of our approach.

Our sample is deliberately wide, admittedly allowing for a loose institutional definition of democracy, including a number of observations in which the political regime could be defined as hybrid or democratizing. The incentives created in hybrid or newly democratic systems, where the legislators are not necessarily accountable in the conventional sense to their constituencies, may be misrepresented by the ordinal institutional variable, which relies on democratic institutions as well as internalized democratic norms. To examine the effect among more consolidated democracies, we increase the Polyarchy threshold by 0.1 and 0.2 (to 0.5 and 0.6, respectively), which leads to improved coefficients and statistical significance for the electoral systems variable run against both AT and TFI as well as improvements in model fit, as presented in Table 4. The strong performance of our institutional index in Models 11–14 indicates that the inclusion of less consolidated democracies in our original sample biases against finding a result, as politicians in those electoral environments are less responsive to institutional incentives, either because of the presence of strong non-institutional incentives or a lack of familiarity with the structure of their institutionalized incentives.

We complement the foregoing tests with those on a sample derived from the ubiquitous Polity IV index, where countries with a Polity 2 score of six or greater are defined as democratic, following a common convention. Those results, presented in the appendix, are substantively similar to the ones presented here. We also test a reduced-form version of our index, with the index collapsed into a three-point scale, representing electoral systems with low, medium and high personal-vote incentives. The results for those models, likewise presented in the appendix, also provide support for our argument here.

Recent research on institutions and trade policy additionally has sought to address concerns of the potential endogeneity of electoral systems first described in Rogowski (1987). PT (2003), Evans (2009) and Hatfield and Hauk (2014) all address endogeneity by estimating two-stage least squares (2SLS) regressions, allowing them to control for correlation between the error term and endogenous regressors by running a first-stage OLS regression on the electoral-institution index and instrumental variables with which they may be causally related, and then substituting the first-stage fitted values for the electoral-institution index in the second-stage regression. We run 2SLS regressions with AT and TFI, including instrumental variables for legal and colonial origins, geographic area, and the time of ratification of the current constitution, presenting the estimates in Table 5. The results for our electoral-system index remain consistent with those of our previous models, albeit with larger substantive effects.

**Table 4** REWB regressions with higher Polyarchy thresholds

| DV, polyarchy threshold | AT, 0.5 (11) | AT, 0.6 (12) | TFI, 0.5 (13) | TFI, 0.6 (14) |
|---|---|---|---|---|
| Electoral system | 0.035* | 0.040** | − 0.055* | − 0.066** |
| | (0.013) | (0.014) | (0.022) | (0.024) |
| L.GDP pc within | − 0.941*** | − 0.964*** | 1.362*** | 1.351*** |
| | (0.143) | (0.153) | (0.274) | (0.285) |
| L.GDP pc between | − 0.275*** | − 0.303*** | 0.346*** | 0.525*** |
| | (0.051) | (0.065) | (0.085) | (0.101) |
| L.Land area | − 0.038 | − 0.023 | 0.004 | 0.005 |
| | (0.029) | (0.028) | (0.060) | (0.065) |
| L.Pop.Den within | − 0.540 | − 0.478 | 1.021 | 0.850 |
| | (0.332) | (0.386) | (0.719) | (0.783) |
| L.Pop.Den between | − 0.001 | 0.006 | − 0.115 | − 0.181 |
| | (0.039) | (0.047) | (0.083) | (0.092) |
| Unemployment within | − 0.013 | − 0.018* | 0.003 | − 0.015 |
| | (0.008) | (0.008) | (0.021) | (0.021) |
| Unemployment between | 0.005 | 0.007 | − 0.003 | − 0.017* |
| | (0.006) | (0.009) | (0.008) | (0.008) |
| AVTariff diffusion | 0.413** | 0.307* | | |
| | (0.143) | (0.140) | | |
| UK legal origin | 0.373** | 0.303 | − 0.085 | 0.157 |
| | (0.132) | (0.161) | (0.225) | (0.231) |
| FR leg. origin | − 0.163 | − 0.222 | 0.122 | 0.390 |
| | (0.135) | (0.158) | (0.344) | (0.444) |
| Socialist leg. origin | 0.150 | 0.124 | 0.147 | 0.743* |
| | (0.190) | (0.196) | (0.287) | (0.319) |
| DL leg. origin | − 0.001 | − 0.006 | 0.570 | 0.904* |
| | (0.006) | (0.007) | (0.373) | (0.416) |
| L. WOrld GDP | − 0.003 | 0.001 | − 0.031* | − 0.042*** |
| | (0.008) | (0.010) | (0.012) | (0.012) |
| TFI diffusion | | | 0.111 | − 0.015 |
| | | | (0.151) | (0.139) |
| $R^2$ | 0.527 | 0.507 | 0.411 | 0.426 |
| Adj. $R^2$ | 0.519 | 0.496 | 0.396 | 0.408 |
| Num. obs. | 842 | 658 | 562 | 458 |

$*p<0.05$, $**p<0.01$, $***p<0.001$ Standard errors in parenthesis

We also revisit our AT models, using multiple imputation to ensure that missingness and listwise deletion are not driving our results (Honaker and King 2010). As above, the process and results are discussed in greater detail in the appendix (Table A3). Finally, we incorporate an AR(1) correction on the fully specified models (Table A6). The combined results serve to strengthen our confidence in those presented here: institutional incentives to cultivate personal votes are positively linked to trade protection.

**Table 5** 2SLS results

| | AT | TFI |
|---|---|---|
| | (15) | (16) |
| Electoral system | 0.065*** | −0.056** |
| | (0.012) | (0.020) |
| L.GDP pc within | −0.875*** | 1.439*** |
| | (0.070) | (0.135) |
| L.GDP pc between | −0.161*** | 0.229*** |
| | (0.021) | (0.037) |
| L.Land area | −0.067*** | 0.049* |
| | (0.013) | (0.022) |
| L.Pop.Den within | −0.751*** | 0.834* |
| | (0.211) | (0.413) |
| L.Pop.Den between | −0.054** | −0.040 |
| | (0.017) | (0.028) |
| Unemployment within | −0.013 | −0.004 |
| | (0.008) | (0.015) |
| Unemployment between | 0.004 | −0.005 |
| | (0.003) | (0.005) |
| L. World GDP | 0.341*** | −0.042 |
| | (0.090) | (0.168) |
| UK legal origin | 0.515*** | −0.104 |
| | (0.093) | (0.174) |
| FR leg. origin | 0.038 | 0.023 |
| | (0.093) | (0.176) |
| Socialist leg. origin | 0.105 | 0.422* |
| | (0.113) | (0.208) |
| DL leg. origin | −0.001 | −0.030 |
| | (0.009) | (0.016) |
| AvTariff diffusion | 0.041*** | |
| | (0.006) | |
| TFI diffusion | | 0.372*** |
| | | (0.069) |
| $R^2$ | 0.529 | 0.503 |
| Adj. $R^2$ | 0.522 | 0.492 |
| Num. obs. | 971 | 638 |

$*p < 0.05$, $**p < 0.01$, $***p < 0.001$ Standard errors in parenthesis

Overall, our electoral-institution index performs well across a series of tests involving multiple measures of trade protection and over a large and varied dataset. It has the benefit of being well-grounded in research on comparative political institutions, and provides a more nuanced measure of the interests and opportunities that drive politicians in their electoral environment than the common binary PR indicator. While some recent results have pointed away from the influence of party-driven electoral incentives (Hatfield and Hauk 2014), we find substantial evidence that those sorts of motivations do influence policy outcomes. Specifically, when comparing our personal-vote index to

Hankla's (2006) party-strength index as employed by Hatfield and Hauk (2014), some notable differences emerge when politicians' responses to their institutional environments are incorporated. Notably, party control over ballots in single-member plurality systems with party endorsement turns out to be less influential than previously theorized (André et al. 2016). Consequently, the approach used by Hatfield and Hauk (2014) to capture politicians' institutional incentives differs from ours in both what it tests, and how it measures the construct.

# 7 Conclusions

As a significant body of research has established, electoral institutions affect trade-policy outcomes. However, exactly how those institutions influence policy has remained contested, with a proliferation of contradictory arguments and results, often revolving around the use of a binary institutional indicator to model variation among electoral systems. While the PR/plurality divide is an intuitive starting point for capturing differences among electoral institutions, it is just one of several points of institutional variation, and on its own has little impact on politicians' electoral incentives. Building on a large body of comparative institutional research, we create an index that better captures politicians' incentives to pursue personal votes and use the index to explain trade policy, innovating on previous approaches focusing on electoral incentives by combining recent empirical evidence with an established index of institutionalized personal-vote incentives. Our index better captures the construct underlying the supply-side argument than previous approaches: politicians with stronger incentives to build support through particularistic means are more likely to respond by backing trade protection than those without such incentives. Within the index itself, plurality electoral systems are intermingled with proportional-representation and other systems, highlighting the importance of other aspects of electoral systems in determining politicians' incentives.

Testing this index against several measures of trade protection for a panel of democracies yields support for our argument: increasing institutional personal-vote incentives lead to increases in trade protection. The results are robust across a range of model specifications and complement those of much of the existing literature. While the typical construction of the plurality-PR argument may not hold, the underlying intuition—electoral systems influence politicians' behaviors in response to protectionist demands—appears to remain accurate.

Our analysis more clearly points to the electoral mechanism through which protectionist interests can influence trade policy, but pro-trade interests cannot be ignored. Indeed, as Betz (2017) has demonstrated, competition between these groups leads to observable patterns in policy outcomes. Further investigation into the ways that interest-group demands interact with institutionally driven supply should prove fruitful in further explaining the forces that shape trade policy, both at the domestic level and by shaping international trade agreements.

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