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„Institutions in Transition –
Challenges for New Modes of Governance”

IAMO Forum 2010, 16-18 June 2010 | Halle (Saale), Germany

Political Competition and Support for Agriculture

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EARLY DRAFT

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Abstract

This paper investigates whether political competition plays an important role in determining the level of agricultural protection. In order to do so, we exploit variation in political and economic data from 74 developing and developed countries for the post-war period. Our results robustly show that the level of agricultural distortions is the higher, the higher is the level of political competition. We show that political competition may importantly complement other institutional aspects in determining policy choices. We investigate the heterogeneous effects of political competition across different electoral rules (majoritarian vs. proportional), forms of government (coalition vs. single-party) and level of incomes.

Keywords: Political competition, constitutional rules, agricultural distortions

JEL codes D72, D78, F13, O13, P16

Abstract

This paper investigates whether political competition plays an important role in determining the level of agricultural protection. In order to do so, we exploit variation in political and economic data from 74 developing and developed countries for the post-war period. Our results robustly show that the level of agricultural distortions is the higher, the higher is the level of political competition. We show that political competition may importantly complement other institutional aspects in determining policy choices. We investigate the heterogeneous effects of political competition across different electoral rules (majoritarian vs. proportional), forms of government (coalition vs. single-party) and level of incomes.

1 Introduction

A large literature in political economy has now emerged which studies the effect of political institutions on policy choices (for an overview see e.g. PERSSON AND TABELLINI, 2000). Attention has been paid to both developing theoretical understanding as well as to empirical analysis of the specific features of political system granting privileges to some groups and entailing systematic biases in aggregate spending (LIZZERI AND PERSICO, 2001; MILESI-FERRETTI ET AL., 2002; PERSSON AND TABELLINI, 2003; ACEMOGLU AND ROBINSON, 2006).¹

There are good theoretical grounds to assume that economic policy outcomes may depend on political competition, i.e. the intensity of the challenge political parties face from each other (Roemer, 2001). Intuitively, the impact of political competition on policy formation could be transmitted through several channels. First, political competition may influence the policy platforms proposed by parties (LEVY, 2004; MORELLI, 2004). Second, it may affect the types of candidates for future offices (CARRILLO AND MARIOTTI, 2001).² Third, it may change the policy priorities of current incumbents (ALESINA AND SPEAR, 1988; HARRINGTON, 1992), and, last but not least, it is likely to determine the form of government (coalition vs. single-party) and bargaining in the legislature (JACKSON AND MOSELLE, 2002). In spite of this, the empirical evidence on the role of political competition in determining policy choices is still rather limited and restricted to a large extent to US (for an overview see BESLEY AND CASE, 2003).

¹ Although much of the literature has been devoted to study institutional arrangements among democracies (such as electoral rules and legislative institutions), there are also important contributions that deepen our understanding of institutional details within autocratic regimes (see e.g. MCGUIRE AND OLSON, 1996; BESLEY AND KUDAMATSU, 2008).

² For the discussion on the competition between party and labour market for scarce talent see MERLO (2005).

This paper aims at contributing to this strand of the literature and tries to further investigate the interplay of political competition and policy decisions. More specifically, our goal is to estimate the effect of political competition on the level of agricultural protection. Agricultural policy is often presented as a classic example of a policy that benefits narrowly defined interests of farmers (PERSSON AND TABELLINI, 2000). Nevertheless the mechanism at work behind this systematic bias still needs better understanding. To our knowledge, the present paper is the first to study agricultural policy in the context of political competition. Looking at this phenomenon is of importance for at least two reasons. First, the existing studies document that agricultural protection depends on political regime and electoral rules (OLPER ET AL., 2009; and OLPER AND RAIMONDI, 2010). More specifically, the level of protection increases with transitions to democracy and is higher under proportional representation. However, there is still a great deal of heterogeneity in the level of protection among democracies and among proportional systems which needs explanation. Given that elections are one of the main democratic institutions, political competition may provide some interesting insights into the subject of this heterogeneity. Second, it is important to understand whether electoral rules affect protection level directly or indirectly through their impact on political competition. To address these issues, we exploit both cross-country as well as within-country variation in the political and economic data from 74 countries for the period 1955-2005.

We find that political competition positively affects the level of agricultural protection. Our results are robust across different measures of political competition, the use of additional covariates and estimation techniques. They are consistent with empirical and theoretical contributions to the political economy literature pointing to positive association between political competition and government spending. We also show that the effect of political competition is heterogeneous across countries. In developed countries agricultural policy responds to changes in election results, whereas in developing countries also improvements in more durable rules determining political competition seem to matter. The former result suggests that in developed countries political parties, facing fierce competition from each other, tend to favour agricultural electorate as it is likely to swing election results. As regards the developing countries on the other hand, the obtained results are in line with median voter behaviour since agricultural electorate often far exceeds half of voters. Our results also provide evidence that political competition importantly complements other institutional aspects in determining public policy. First, we find that it seems to dominate the impact of constraints imposed on the executive. Second, we show that political competition may transmit some of the effects of electoral rules. Finally, we document that political competition matters both within coalition

governments as well as between single-party government and opposition. The latter effect, however, is weaker.

The paper proceeds as follows. In Section 2 we review the related literature. In Section 3 we discuss the data used and empirical strategy whereas Section 4 presents the results. Finally, Section 5 concludes.

2 Related literature

By analogy to competition on the product market, many economists have discussed how citizens may benefit from more vigorous political competition (see, for instance, the Chicago School commentators, BECKER, 1958; STIGLER, 1972; WITTMAN, 1989). Widely shared assertion that political competition decreases rent extractions by office-holders was noted by STIGLER (1972, p. 94) who mentioned that “[i]t is commonly asserted that the more competitive the parties [...], the more responsive the political system will be to the desires of the majority”.

Based on the seminal work by DOWNS (1957), earlier generations of political economy models have predicted that in the competitive party scenario public policies should converge to the alternative preferred by the median voter. Despite its centrality in the literature however, this approach has been questioned by many economists. Critics have indicated, among others, that Downsian framework leaves only a little scope, if any, for institutional structure to determine policy outcomes.³ This in turn, is in marked contrast to recent contributions pointing that political institutions pose considerable restrictions on political behaviour and thus on policy choice (BESLEY AND COATE, 1997; ROEMER, 2001; PERSSON AND TABELLINI, 2000; 2003).

The new generation of political economy research has aimed at filling this gap in our understanding of the relationship between political institutions and economic policy. The picture that emerges from this research shows that considering consequences of political competition tends to be more complex than earlier models predicted. To start with, important theoretical contributions that model the (ideological) pork-barrel politics provide insights on incentives that politicians have to target narrow groups of high political clout (LINDBECK AND WEIBULL, 1987; DIXIT AND LONDREGAN, 1998). What follows, political competition instead of favouring majority may respond to desires of pivotal voters.

³ On the other hand, though, BECKER (1983) stressed that equilibrium structure of taxes and subsidies is determined by competition between pressure groups rather than political parties or political institutions in general. The two latter can at best transmit the pressure of active groups.

Indeed, LIZZERI AND PERSICO (2005) develop a model where a larger number of parties reduces the core (partisan) supporters of each party and induces parties to appeal to swing voters. This results in proposing targeted transfers to narrow groups instead of favouring broad public goods.

Other studies focus on the process of political turnover. On the one hand it might be argued that political competition acts as a check on current incumbents and therefore disciplines them to pursue efficient policies (see the Chicago School view on that). On the other hand however, number of commentators show that high risk of losing elections may lead to socially inefficient outcomes. PERSSON ET AL. (1997) point that too strong threat of future dismissal may incline current incumbents to extract maximum rents possible during their remaining time in office.⁴ Different 'political replacement effect' is highlighted by ACEMOGLU AND ROBINSON (2000; 2006) who argue that groups whose political power will be eroded will have incentives to block technological and institutional development. Here however, the effect of political competition is nonmonotonic and elites will block development only when political competition is limited. In a similar vein BARDHAN AND YANG (2004) develop an idea that political competition except for bringing allocative benefits for the society may also limit the set of politically feasible public investment. The main idea behind these models is the observation that due to uncertainty regarding the distribution of gains and losses from reform there is no (credible) way to compensate *ex post* those who are disadvantaged at the end (FERNANDEZ & RODRIK, 1991; ACEMOGLU, 2003). As a result government may fail to adopt policies considered to be efficiency-enhancing. Important to note, however, is the recent study by BESLEY ET AL. (2010) who develop a model to demonstrate that political competition can lead to policies that are widely asserted to be growth promoting. The main mechanism behind this result is that swing voters, whose voting decision is based on parties' economic policy, only start to matter for electoral results if political competition is sufficiently high.

Yet a different perspective is put by PERSSON ET AL. (2007) who show that government spending is higher in coalition governments than in a single-party government. The reason for this is the so called 'common pool problem' in fiscal policy manifesting itself by the fact that one party in coalition does not fully internalise the fiscal costs of spending (see also BAWN AND ROSENBLUTH, 2006). This in turn, positively affects the size of public expenditure. This may point to a positive relationship between political competition and government spending since higher political competition is likely to induce more fragmented party system and thus a coalition government.

⁴ As noted by MARKIS (2009), incentives to incumbents to perform well depend also on the availability of political rents and rent-seeking behaviour of potential candidates for office.

Finally, it might also be noted that MULLIGAN AND TSUI (2008), who concentrate on political entry barriers, argue that political competitiveness may have little effect on a wide range of economic and social policies like the mix of taxes or social spending. Instead, it may affect policies like military spending, torture and execution. WINTROBE (2000) in turn, argues that moving from democracies to autocracies, i.e. from the setting with many incumbents and challengers to the one with single leader, affects only the level of spending and not the direction of redistribution (thus, in essence, public policy remains the same).

As shown above the link between political competition and public policies could be established on several grounds. Which of these theories are important in practice however, seems to be an empirical matter. Several evidences are worth mentioning here. Based on the U.S. data, BESLEY ET AL. (2010) show that in the presence of political competition pro-growth policies are pursued: lower taxes, higher capital spending and more likely use of right-to-work laws. These results corroborate and deepen earlier findings reported by BESLEY AND CASE (2003). The authors also document positive link between political competition and economic growth. SKILLING AND ZECKHAUSER (2002) show that among OECD countries political competition encourages fiscal prudence and smaller debt accumulation. RODRIK (1999) on the other hand argues that political competition can affect a whole range of legislation and institutions that determine labour market outcomes in favour of workers, which leads to higher wages. This result is in line with predictions coming from median voter model. Importantly, the effect of political competition seems to be stronger than that of other institutional characteristics such as rule of law, civil liberties or specific labour rights. Interesting picture also emerges from the study by BESLEY AND PRESTON (2007) who focus on the design of electoral system to local government in England and find that a more competitive setting forces parties to appeal more to swing voters. This results in moderating parties' preferences with respect to policy outcomes so that higher spending parties reduce their spending and low spending parties increase it. Finally, results by MILESI-FERRETI ET AL. (2002) suggesting that the number of parties (and thus intensity of political competition) has a positive effect on the share of transfers in public spending should also be acknowledged.

As already noted, this paper tries to further investigate the interplay of political competition and policy decisions by estimating the impact of political competition on agricultural policy. Choosing this context for the analysis could be motivated on several grounds. Above all, agricultural policy is often presented as a classic example of a policy that benefits narrowly defined interests of farmers

(PERSSON AND TABELLINI, 2000). Although there exist affluent literature dealing with this issue (ANDERSON AND HAYAMI, 1986; SWINNEN, 1994; ANDERSON, 1995; DE GORTER AND SWINNEN, 2002; and citations therein), to best of our knowledge there is no study that would explicitly answer how political competition shape the level of agricultural protection.⁵ In their explanations existing studies referred predominantly to relative homogeneity and small size of farmers' group. Consequently, it has been argued that farmers can organise themselves relatively easy to influence public policy whereas costs of supporting them is diffused in society at large. In general, however, agricultural economics literature has largely ignored latest developments of political economy that focused on structural models of the political process identifying specific institutional arrangements crucial for shaping policy outcomes. Notable exceptions within this strand of the literature include OLPER (2001), SWINNEN ET AL. (2000; 2001), HENNING (2004), OLPER (2007) and OLPER ET AL. (2009). None of them however looked at the role of political competition, which is the focus of our study. OLPER ET AL. (2009) document that agricultural protection increases with transitions to democracy. However, there is still a great deal of heterogeneity in the level of protectionism among democracies. It is important to understand now what mechanism underlies this phenomenon. The closest to our research is the study by OLPER AND RAIMONDI (2010) who compare, among others, the consequences of majoritarian versus proportional constitutions on agricultural policy. Their findings suggest that the level of protectionism is higher under proportional representation. It should be noted though that agricultural protection varies considerably within proportional systems, which needs explanation. We believe that studying the role of political competition may provide some valuable insights into this subject. As regards earlier studies, results by OLPER (2001) who finds a positive relationship between agricultural protection and multiparty democracies should be acknowledged. However, this evidence is based on pooled cross-country OLS regression. Moreover, it takes into account only one dimension of electoral competition, namely the existence of pluralist party systems. Instead, we work with better political competition indicators (see further) and take advantage of panel data econometric techniques. Furthermore, the current paper investigates whether these electoral rules affect agricultural policy directly or only indirectly through their effect on political competition, which is new to the literature. Finally, we also aim at highlighting whether

⁵ The link between political competition and trade policy in general is also relatively poorly documented. Some exceptions include HILLMAN AND URSPRUNG (2003) who study this relationship also in combination with multinational firms. There exist however, number of contributions investigating the effect of democracy on trade (see e.g. GIAVAZZI AND TABELLINI, 2005; MILNER AND KUBOTA, 2005; O'RURKE AND TAYLOR, 2007; among others). Although not directly, they could also be related to the analysis of political competition. Provided our focus, particularly interesting are findings by PERSSON (2005) who shows that democracies defined as parliamentary systems or with proportional electoral formula enact more open trade policy.

the impact of political competition is heterogeneous across countries. To that end, we check how, if at all, the effect of political competition differ in various subsamples. We focus here on various institutional aspects such as electoral rules and forms of government as well as level of income.

3 Data and econometric approach

3.1 Data

We study the effect of political competition on agricultural protection in a panel of 74 countries. We exploit the variation in political and economic data for the period 1955-2005. In order to accomplish it, we combine three different data sources, two data bases of the World Bank: recently developed data base on agricultural distortions (ANDERSON AND VALENZUELA, 2008) and Database of Political Institutions 2006 (KEEFER, 2007) as well as the widely used Polity IV data base (MARSCHALL AND JAGGERS, 2005).

As regards our outcome variable, i.e. agricultural protection, we use a nominal rate of assistance (NRA) which measures the total transfer to agriculture as a percentage of the undistorted unit value. The NRA is positive when agriculture is subsidized, negative when it is taxed and 0 when net transfers are zero. This measure is based on the Agricultural Distortions data base.

Our key explanatory variable is a measure of political competition in a given country. We follow the existing empirical research in the way we define it. Our first measure focuses on realised political outcomes, i.e. seat shares. It is an index equal to one minus a Herfindahl index calculated as the sum of the squared seat shares of all parties in the parliament. This variable ranges from 0 to 1 with higher values corresponding to higher level of political competition. To construct this measure we use the DPI2006 data base.

We also adopt an alternative empirical approach and define the level of political competition in accordance with information available in the Polity IV data base.⁶ The latter provides insights on how competitive and regulated political participation is. It is an index *polcomp* ranging from 1 to 10, with 1 representing the least amount of political competitiveness and 10 the most competitiveness. We normalise this score to a 0 to 1 scale for greater comparability with measure based on DPI data set.

⁶ An alternative measure could be a number of political parties in the lower house of parliament. Using this measure produces similar results as those obtained with Polity IV and DPI2006 measures. For brevity reasons we do not report them here. They may be, however, obtained from authors upon request. We report though the results from instrumental variables specification where we use this measure to test the robustness of the estimates based on Polity IV and DPI political competition variables (see further).

These two measures of political competition are highly correlated with the correlation coefficient for the 1975-2005 cross-section equal to 0.62.⁷ It should be noted though that due to different rating schemes used for constructing these measures, cross-country comparability across the two sources is limited.⁸

Using Polity IV data set in addition to DPI data has several advantages. First, it covers longer time period and thus allows to use more observations. DPI data base covers the period 1975-2005, whereas the Polity data base spans 1955-2005. Consequently, depending on the data set, we work with 1809 and 2732 observations. What is equally important we believe that these two measures may highlight the importance of different aspects of political competition. While the DPI measure is based on the realised political outcomes (and so it reflects the outcome of last elections), the Polity IV index is likely to capture more durable rules and norms that shape the process of political participation. This, in turn, highlights an essential dimension of institutions (NORTH, 1991). It should also be noted that political competition measure in the Polity data set, as opposed to that from DPI data base, is available not only for democratic countries but also for autocracies. Therefore using this data set allows for greater variation in political institutions in the sample. This is important not only for methodological reasons (obtaining robust results), but also because institutional details seem to matter for both democratic as well as non-democratic regimes (BESLEY AND KUDAMATSU, 2008). Finally, using Polity data set enables us to take advantage of other features of political system such as how competitive and open the recruitment of chief executives is; and to what extent the chief executive is constrained institutionally. Thanks to this we can test the robustness of our results to controlling for these two aspects. This is of importance since the political economy literature suggests that executive constraints can play an important role in conflict of interests between policy-makers and citizens and thus the ultimate choice of policies (e.g. ACEMOGLU AND JOHNSON, 2005).

We begin with displaying some basic associations between the main variables of interest. Table 1 provides information on agricultural protectionism across subsequent quartiles of distributions of political competition measures. As indicated, the preliminary evidence tends to suggest that there is

⁷ Depending on the time period the correlation coefficient ranges from 0.43 to 0.66.

⁸ Considerable differences between the two measures are especially visible for countries with *polity2* index below zero (i.e. those with weaker democratic institutions, see MARSCHALL AND JAGGERS, 2005 for details), such as Morocco or Senegal, where political competition measured as $(1 - \text{Herfindahl index})$ is relatively higher than the rating from Polity IV. However, these differences could also be spotted for some observations for USA, Canada or New Zealand. In these latter cases, we observe high scores from Polity IV together with relatively low score from DPI2006 (when elections were dominated by one party).

a positive correlation between political competition and agricultural protection. Further insights could be derived from Table 2 and Figures 1a and 1b. The former reports descriptive statistics for all main variables used in the analysis. The statistics provided pertain to simple cross-sectional averages over the analysed period. Figure 1a (1b), on the other hand, presents the pattern of political competition measured as the average of political competition index from the Polity IV (DPI2006) data base in every five years intervals between 1955 and 2005 (1975 and 2005). The reported statistics as well as the patterns depicted in graphs suggest that political competition varies quite considerably both in time and across different institutional environments as captured by various subsamples. This may indicate that correlation between different institutional aspects and agricultural protection found in other papers could be accounted for by the variation in political competition. The next section tries to examine these issues using econometric tools.

Table 1. Agricultural protection and political competition

	<i>NRA</i>		
	N	Mean	Sd
Distribution of political competition measure			
<i>Polity IV measure</i>			
1 st quartile	683	-19.51	29.13
2 nd quartile	683	-7.67	26.74
3 rd quartile	683	31.86	68.09
4 th quartile	683	76.36	90.55
<i>DPI measure</i>			
1 st quartile	452	-15.76	32.09
2 nd quartile	452	11.12	42.91
3 rd quartile	452	44.68	66.34
4 th quartile	453	49.54	83.27

Note: Own calculations.

3.2 Econometric approach

The main problem we face is that both public policy and political competition may be determined endogenously. Therefore, investigating casual relationship between political competition and the level of protectionism requires controlling for common variables affecting both of these phenomena. What follows, in the estimations we run we control for country and time fixed effects. Thanks to this we take out the effect of time invariant (potentially historical) factors and time effects respectively that are likely to capture country differences responsible for both policy and political institutions.

To examine the interplay of political competition and the level of agricultural protection we estimate regressions of the form

$$y_{it} = \beta z_{it} + \vartheta x_{it} + \delta_i + \varphi_t + \varepsilon_{it}$$

Table 2. Descriptive statistics

	<i>Full sample</i>			<i>OECD</i>			<i>Non-OECD</i>		
	Obs	Mean	Sd	Obs	Mean	Sd	Obs	Mean	Sd
NRA	2732	20.25	70.76	896	68.61	87.54	1700	-6.68	35.44
Political competition - Polity IV	2732	0.60	0.40	896	0.94	0.19	1700	0.41	0.36
Political competition - DPI2006	1773	0.52	0.26	643	0.66	0.11	1130	0.45	0.30
Executive recruitment	2732	6.36	2.16	896	7.84	0.78	1700	5.56	2.25
Executive constraints	2732	4.83	2.31	896	6.64	1.19	1700	3.84	2.15
Log of gdp per capita	2626	7.63	1.69	889	9.54	0.65	1700	6.63	1.12
Log of total population	2537	9.89	1.28	870	9.80	1.23	1666	9.93	1.30
Log of agricultural land per capita	2537	1.88	4.41	870	2.44	7.05	1666	1.58	1.88
Employment share of agricultural sector	2537	39.46	29.22	870	12.64	13.38	1666	53.46	25.20
		<i>Proportional</i>			<i>Majoritarian</i>				
	Obs	Mean	Sd	Obs	Mean	Sd			
NRA	1029	43,12	73,47	1046	19,18	66,56			
Political competition - Polity IV	1029	0,83	0,25	1046	0,66	0,37			
Political competition - DPI2006	1014	0,65	0,16	1028	0,51	0,26			
Executive recruitment	1029	7,45	1,42	1046	6,33	2,20			
Executive constraints	1029	6,08	1,52	1046	4,87	2,07			
		<i>Coalition government</i>			<i>Single-party government</i>				
NRA	759	42.86	77.96	930	6.97	49.46			
Political competition - Polity IV	759	0.80	0.28	930	0.54	0.40			
Political competition - DPI2006	759	0.68	0.15	924	0.37	0.26			
Executive recruitment	759	7.25	1.66	930	5.95	2.26			
Executive constraints	759	5.89	1.66	930	4.56	2.18			

Note: Simple averages. Observations pooled across countries and years.

Figure 1a. Political competition (Polity IV measure) over years and income levels

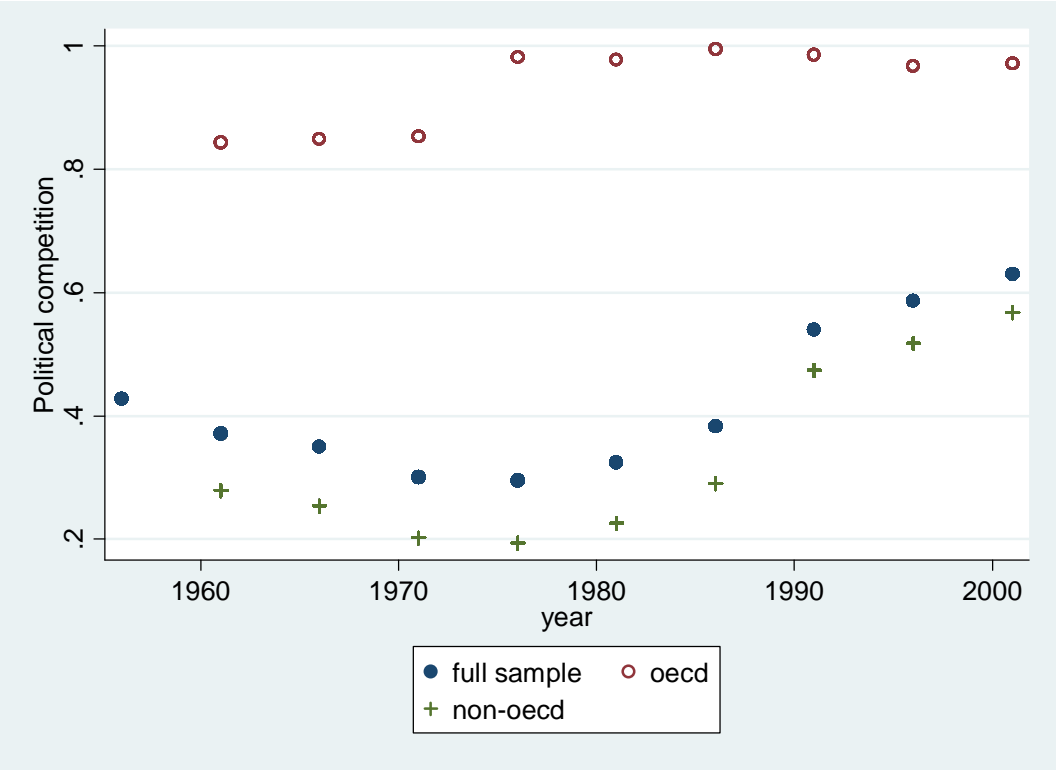
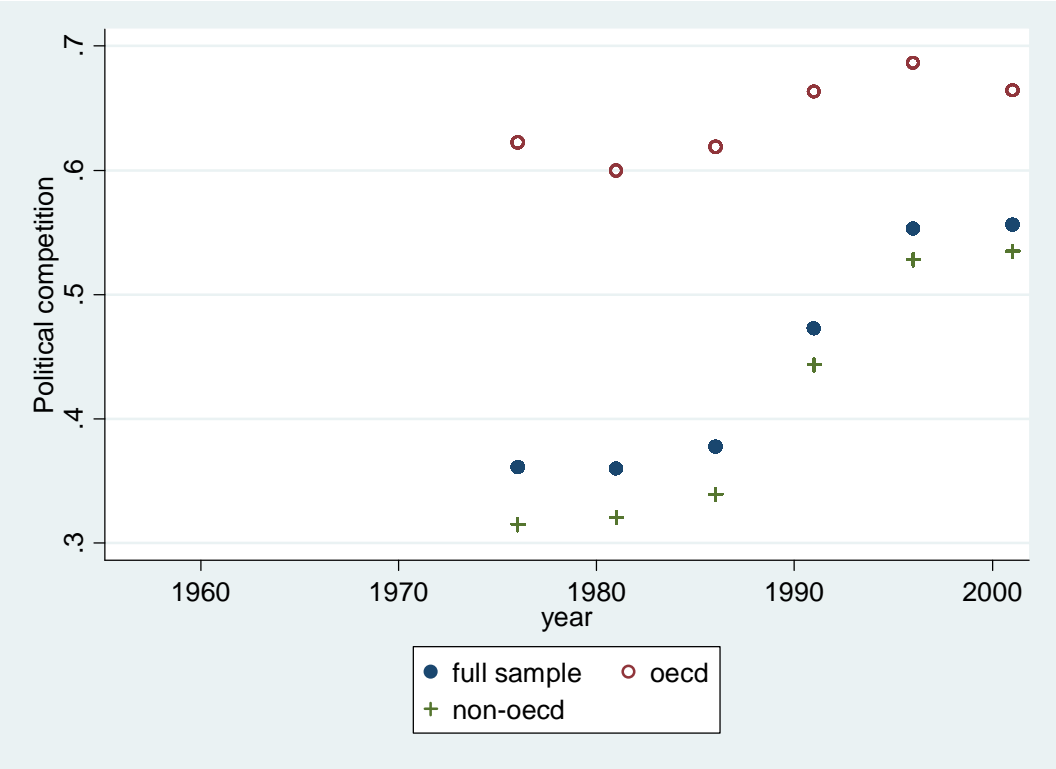


Figure 1b. Political competition (DPI2006 measure) over years and income levels



where y_{it} represents the nominal rate of assistance to agriculture in country i at time t . z_{it} is our key regressor of interest, i.e. our measure of political competition. As mentioned earlier, we consider two different measures for it, namely an index based on market concentration index applied to party

politics and an index characterising regulation and competitiveness of political participation. x_{it} is a vector of covariates and δ_i and φ_t are state and year fixed effects, respectively. Most importantly, vector x_{it} controls for other characteristics of political institutions, namely constraints imposed on the executive as well as the competitiveness and openness of executive recruitment. We define them as component variables *exconst* and *exrec* in Polity IV data base respectively (for details see Marschall & JAGGERS, 2005).⁹ This is done in order to see whether the effect of political competition is robust to controlling for other political institutions. Moreover, this may provide some insights on relative importance of different institutional arrangements. In addition, in order to control the traditional influences on agricultural protection we follow the existing studies and vector x_{it} includes also logarithm of income *per capita*, logarithm of total population, employment share of agricultural sector and logarithm of agricultural land *per capita*. Finally, to control for the potential policy persistence, some specifications include also the lagged dependent variable.

As a robustness check we experiment not only with annual panel but also with average rate of assistance over each legislative period. In addition, we construct also a panel, for which we take observation every election year.¹⁰ In order to correct the standard errors for potential correlation across observations both over time and within the same time period, all standard errors in the paper are robust against arbitrary heteroskedasticity in the variance-covariance matrix, and they allow for clustering at the country level (BERTRAND ET AL., 2004).

Our second strategy is to use instrumental variables regression. This is done since the fixed effects regressions may not necessarily estimate the casual effect of political competition on agricultural policy in the presence of time varying omitted variable. Our approach builds on political science literature and recent findings by PERSSON ET AL. (2007). As noted by many researchers, party fragmentation is larger under proportional representation (COX, 1990; LIJPHART, 1994). Consequently, to the extent that party fragmentation may serve as a proxy for the level of political competition, one may assume that electoral rules would directly affect intensity of competition between parties. As mentioned in connection with Table 2, there is some variation in political competition scores across electoral rules. More specifically, political competition tends to be higher under proportional

⁹ The Polity IV data base includes also other more disaggregated political institutions' variables labelled "component variables" (MARSCHALL AND JAGGERS, 2005). However, as shown by TREIER AND JACKMAN (2005) the coding and values of these variables depend on each other. Including them in regression as independent variables in turn, is likely to increase the risk of inferential error. In contrary, the so-called "concept variables" that we use i.e. *polcomp*, *exrec* and *exconst* can be considered conditionally independent.

¹⁰ This is done in order to overcome potential biases due to serial correlation introduced by averaging.

representation than under majoritarian elections. This gives some credence to the assumption we just made. Therefore, in instrumental variables regressions we proxy political competition with a party fragmentation measure, namely the number of parties in the lower house of parliament.¹¹ In choosing instruments for party fragmentation we follow the existing literature and use information on electoral formula (PERSSON ET AL., 2007). We experiment with two sets of instruments. On the one hand, we use a dummy distinguishing systems where legislators are elected using a winner-take-all/first past the post rule (*majoritarian*) and a dummy for systems where candidates are elected based on the percent of votes received by their party (*proportional*). Countries with mixed electoral rules act as a reference group. Alternatively, instead of *proportional*, we use a *medium district* variable which measures the weighted average of the number of representatives elected by each constituency size.¹² All these variables are created using DPI2006 data base. This strategy has additional advantage as it enables to investigate whether electoral rules affect agricultural policy directly or only through their effect on political competition. By doing so we can deepen the existing study by Olper and Raimondi (2010) who document that agricultural protection depends on electoral rules.

We also check how, if at all, the influence of political competition differs in various subsamples defined according to forms of government (coalition vs. single-party) and level of income. This investigation builds on findings by PERSSON ET AL. (2007) and statistics reported in Table 2.

4 Results

Table 3 displays the results of our fixed-effects regressions where we use annual data. The left panel refers to political competition measure based on Polity IV data base, whereas the right one reports estimations for DPI measure. We start with basic specifications in columns (1) and (6). For both political competition measures the estimated coefficients are highly significant and positive suggesting that more intense political competition leads to higher agricultural protection. This result holds also in number of specifications with additional control variables including other institutional variables as well as lagged dependent variable (columns 5 and 10). Importantly, the impact of political competition seems to dominate the role of constraints imposed on the executive or openness of executive recruitment. Note that the former variable is concerned with the checks and

¹¹ Since the data on number of parties raised some doubts that it was confounded with number of seats held by a given party we restrict our sample to observations with number of parties from 1 to 5.

¹² District magnitudes grow with the number of seats appointed in proportional elections. What is important, they display higher variation than electoral rules and that is why using *medium district* may be more preferable than using *proportional* as an instrument.

Table 3. Political competition and agricultural protection – full sample, annual data.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
COEFFICIENT	<i>Polity IV measure of political competition</i>					<i>DPI2006 measure of political competition</i>				
	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS
Political competition	30.22*** (9.13)	26.13** (12.5)	27.80*** (6.32)	35.69*** (7.78)	11.00*** (2.39)	34.14*** (10.5)	22.30** (8.81)	24.29** (10.1)	16.73* (9.24)	5.610* (3.08)
Executive recruitment		1.657 (1.37)		0.0443 (1.59)	0.117 (0.34)		4.348** (2.17)		3.906** (1.92)	0.918 (0.61)
Executive constraint		-0.542 (2.55)		-1.824 (1.64)	-0.483 (0.49)		0.734 (1.82)		-0.393 (1.78)	0.243 (0.57)
log_gdp			42.99*** (12.5)	43.17*** (12.5)	14.64*** (3.34)			43.84*** (14.8)	41.05*** (13.3)	17.56*** (5.13)
Logpop			40.18* (21.9)	37.07* (22.0)	20.79*** (6.25)			66.04*** (23.3)	59.91** (22.8)	36.77*** (8.34)
Landpc			-1.504 (1.48)	-1.546 (1.47)	-0.495 (0.45)			-2.352 (2.01)	-2.072 (1.78)	-0.725 (0.63)
emps_100			-1.105* (0.57)	-1.191** (0.57)	-0.165 (0.15)			-1.646** (0.77)	-1.589** (0.69)	-0.172 (0.25)
Lagged NRA					0.754*** (0.025)					0.685*** (0.026)
Constant	-31.34 (19.0)	-36.54* (20.5)	-624.4** (263)	-586.4** (262)	-273.7*** (76.0)	4.544 (7.54)	-20.42 (14.7)	-965.4*** (321)	-903.1*** (306)	-513.2*** (117)
Observations	2732	2732	2530	2530	2489	1809	1773	1748	1714	1701
Number of country_numeric2	74	74	74	74	74	74	74	74	74	74
R-squared	0.13	0.14	0.27	0.27	0.69	0.12	0.15	0.22	0.24	0.61

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All regressions include time fixed effects as additional explanatory variables; robust standard errors clustered by country

balances on a leader, whereas the latter one informs how competitive and open the recruitment of chief executive is. It should also be noted that our results are consistent with previous findings showing that agricultural policy is characterised by high persistence¹³ and that protectionism is positively correlated with the level of income, and negatively with both agricultural land *per capita* and the employment share of agriculture (e.g. OLPER, 2001; 2007).

One could argue that changes in political competition are mostly due to general developments under democracies which could determine agricultural policy choices as showed by OLPER ET AL., (2009). To take this concern into account, we estimate additional specifications in which we include interaction terms between time dummies and a democracy dummy. The latter is based on the Polity score, measuring the degree of democracy (see MARSCHALL AND JAGGERS 2005, for details).¹⁴ Our results (not shown) however, are robust to such inclusion. This suggests that the impact of political competition remains fairly the same regardless of the fact whether we exploit variation in full sample or only within democracies.

Table 4 and 5 further check the robustness of our analysis using as a dependent variable nominal rate of assistance but only in a elections' year panel and an average nominal rate of assistance to agriculture in interelection years respectively. In general, both these exercises strengthen our earlier findings and point to positive association between political competition and agricultural protection. However, in regressions with all additional covariates the estimated coefficient on DPI political competition variable is indistinguishable from zero.

We now move to instrumental variables estimations. The results of 2SLS regressions are reported in Table 6. The left hand side panel refers to estimation using as instruments *proportional* and *majoritarian* whereas the right panel to estimation using as instruments *medium district* and *majoritarian*. Both these regressions support our earlier findings, namely that political competition significantly increases agricultural protection. The question obviously remains whether the instruments we use are appropriate. Note that in the first stage regression only one of the instruments is significantly correlated with our political competition measure (in the left panel the

¹³ Although the lagged dependent variable is correlated with the error term and standard fixed effects estimation is not consistent, it can be shown that fixed effects OLS estimator becomes consistent as the number of time periods in the sample increases (WOOLDRIDGE, 2002). Therefore, we believe that especially in our annual data estimations (Table 3) this problem is of minor importance. An alternative would be to use GMM panel estimator (ARELLANO AND BOND, 1991).

¹⁴ Following the literature, we create a discrete cutoff between democracies and autocracies with democracies being those with positive Polity score.

Table 4. Political competition and agricultural protection – parliamentary election years subsample, dependent variable – NRA from the year that elections were held.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Polity IV measure of political competition</i>					<i>DPI2006 measure of political competition</i>				
COEFFICIENT	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS
Political competition	26.27*** (8.56)	23.41* (13.1)	26.13*** (6.51)	40.61*** (9.49)	11.77*** (4.23)	34.49*** (9.35)	30.47*** (9.31)	21.72** (9.69)	19.42* (10.0)	1.843 (6.19)
Executive recruitment		1.479 (1.28)		-1.413 (1.73)	0.442 (0.52)		1.869 (2.48)		1.721 (2.55)	0.948 (1.37)
Executive constraint		-0.692 (2.76)		-1.859 (1.78)	-1.119 (0.78)		0.267 (2.10)		-0.261 (2.04)	-0.727 (1.19)
log_gdp			42.86*** (13.3)	42.68*** (13.4)	13.63*** (4.08)			23.46 (14.5)	25.21* (14.3)	13.73* (7.08)
Logpop			31.02 (23.1)	25.62 (23.2)	13.28* (7.76)		44.14 (26.5)	41.31 (26.9)	31.35* (18.4)	
Landpc			-1.144 (1.24)	-1.211 (1.19)	-0.447 (0.43)		-2.515* (1.38)	-2.377* (1.32)	-0.745 (0.73)	
emps_100			-1.188** (0.59)	-1.372** (0.60)	-0.180 (0.18)		-1.778** (0.79)	-1.696** (0.77)	-0.249 (0.45)	
Lagged NRA					0.762*** (0.042)				0.621*** (0.059)	
Constant	-15.29 (14.3)	-19.49 (16.0)	-576.8* (304)	-506.3* (303)	-214.7** (102)	11.33 (9.32)	-9.402 (10.9)	-526.3 (366)	-547.0 (367)	-381.3 (232)
Observations	1236	1236	1080	1080	1054	429	424	414	410	407
Number of country_numeric2	73	73	73	73	73	73	73	73	73	73
R-squared	0.18	0.18	0.33	0.34	0.74	0.26	0.26	0.30	0.31	0.62

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All regressions include time fixed effects as additional explanatory variables; robust standard errors clustered by country

Table 5. Political competition and agricultural protection – parliamentary election years subsample; dependent variable – average NRA in interelection years.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Polity IV measure of political competition</i>					<i>DPI2006 measure of political competition</i>				
COEFFICIENT	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS
Political competition	30.90*** (8.48)	22.86** (11.0)	28.34*** (8.26)	29.18** (11.5)	18.21 (11.0)	29.01*** (7.76)	22.37*** (7.66)	15.79* (8.30)	11.52 (8.33)	-1.797 (7.08)
Executive recruitment		2.118 (1.66)		1.944 (1.55)	1.028 (1.16)		1.698 (1.78)		1.249 (1.70)	1.563 (1.39)
Executive constraint		0.0578 (2.12)		-2.059 (2.13)	-0.467 (1.76)		2.751 (1.92)		1.937 (1.68)	1.771 (1.72)
log_gdp			21.21* (11.3)	21.77* (10.9)	13.25 (9.80)			13.58 (11.0)	16.49 (10.6)	10.88 (9.77)
Logpop			28.46 (21.3)	26.55 (21.0)	52.00** (24.6)			46.22** (22.3)	45.20** (21.7)	65.84** (26.9)
Landpc			-1.910* (1.14)	-1.900* (1.10)	-2.647** (1.21)			-2.020* (1.03)	-1.870* (0.98)	-2.418* (1.27)
emps_100			-1.416** (0.65)	-1.470** (0.62)	-1.271 (0.77)			-1.655** (0.69)	-1.462** (0.64)	-1.142 (0.77)
Lagged NRA					0.300*** (0.063)					0.301*** (0.064)
Constant	-6.058 (8.20)	-15.25 (10.4)	-387.0 (280)	-374.6 (273)	-610.4** (306)	22.89*** (4.53)	-0.593 (8.55)	-481.3* (288)	-557.7* (287)	-678.1** (328)
Observations	488	488	454	454	385	451	446	416	412	370
Number of country_numeric2	73	73	73	73	72	73	73	73	73	72
R-squared	0.22	0.22	0.28	0.28	0.38	0.20	0.23	0.26	0.28	0.38

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All regressions include time fixed effects as additional explanatory variables; robust standard errors clustered by country

Table 6. Agricultural protection and political competition – instrumental variables estimation

COEFFICIENT	Cross section		Cross section	
	OLS	2SLS	OLS	2SLS
	First stage		First stage	
	<i>Proportional and majoritarian</i> as instrumental variables		<i>Medium district and majoritarian</i> as instrumental variables	
Political competition		48.95*** (13.3)		31.73*** (6.91)
Majoritarian	-0,220* (0.13)		-0.058 0.206	
Proportional	0,215 (0.14)		0.096*** 0.022	
exrec	0,079* (0,05)	-6.313** (2.73)	0.186** (0.08)	-5.054 (3.51)
exconst	0,143** (0,06)	-2.411 (3.80)	0.112 (0.11)	0.0329 (4.48)
log_gdp	0,045 (0,06)	15.38*** (3.33)	0.138* (0.08)	16.47*** (3.61)
logpop	-0,172*** (0,04)	5.845* (3.04)	-0.173*** (0.05)	2.669 (3.05)
landpc	-0,028*** (0,01)	-0.0878 (0.46)	-0.010 (0.007)	-0.810*** (0.27)
emps_100	-0,001 (0,00)	0.507** (0.23)	0.009* (0.005)	0.402* (0.22)
Constant	3.57*** (0.81)	-295.4*** (67.5)	1.469 (1.01)	-228.5*** (42.0)
First stage F –statistic (2; 539)	8.3***		24.5***	
Sargan-Hansen statistic		0.001		1.126
degrees of freedom		1		1
Observations	548	548	374	374
R-squared	0.26		0.34	

Dependent variable: number of parties in lower house of parliament. Sample restricted to countries with number of parties in lower house of parliament <1;5>; *** p<0.01, ** p<0.05, * p<0.1; Critical value of the Sargan-Hansen test statistic is distributed as χ^2 . Critical value at 5% significance with 1 degree of freedom is 3.84.

coefficient on *proportional* is on the edge of being so). This is probably due to low variation in electoral rules as mentioned earlier. Nevertheless in both cases, the F-test induces to reject the null of both instruments being jointly equal to zero. Moreover, in both cases the Sargan-Hansen statistic does not allow to reject the null that electoral rules have no direct effect on agricultural policy.¹⁵ We conclude therefore, that instrumental variables strengthen our results from fixed effects regressions. There is also an additional important insight coming from this analysis. Note that inability to reject the overidentification restriction is identical to inability to reject the null that electoral rules have no direct effect on agricultural policy. This in turn, seems to importantly complement earlier studies

¹⁵ In the left hand site panel however, the Sargan-Hansen statistic looks suspiciously low.

which document the impact of electoral rules, paying however, no attention to the underlying mechanism of this effect (OLPER AND RAIMONDI, 2010). Our results suggest that political competition may be an important channel through which electoral rules determine agricultural policy.

Finally, we investigate whether the effects of political competition are heterogeneous across countries (Table 7). According to the data displayed in Table 2 this may indeed take place. Moreover, the patterns depicted in Figures 1a and 1b seem to suggest that there is considerable difference in variation in political competition between OECD and non-OECD countries. While looking at changes in political competition scores in these two groups of countries one may assume that in the OECD subsample agricultural policy might be driven especially by the variation in political competition measured as “1 – Herfindahl index”. The Polity IV political competition score in this group on the other hand remains fairly stable. In the non-OECD sample, both political competition measures vary substantially though, changes in the Polity IV measure might be more influential. Table 7 reports basic regressions that aim at highlighting these issues (columns (1)-(4)). Indeed, the obtained results confirm the above-mentioned suppositions. Note further that coefficient on DPI political competition in the OECD subsample is now tripled in magnitude (compare it with Table 3 column (9)). Taking into account that DPI measure is based on the concentration index applied to party politics, this tends to indicate that in developed countries agricultural policy responds predominantly to electoral competition. Provided that the share of agricultural electorate in total electorate in these countries is rather marginal, this result is consistent with theoretical predictions that policy is targeted at swing voters.¹⁶ As far as developing countries are concerned on the other hand, it seems that agricultural policy is also shaped by improvements in more durable rules that determine political competition. Taking into account that in these countries agricultural electorate constitutes absolute majority, the evidence provided tends to indicate that there a median voter model could find some support.

In the next columns we distinguish between countries with coalition and single-party government. PERSSON ET AL. (2007) develop a theoretical model and document that coalition governments tend to spend more than single-party ones. Data provided in Table 2 seem to confirm these findings showing that agricultural protection is higher in countries with coalitions government. It is interesting therefore to note that political competition is highly significant and positive under both of these settings. This means, that electoral competition affects agricultural policy both inside the coalition governments as well as between single-party government and opposition.

¹⁶ In our sample the median (mean) employment share of agriculture in OECD countries is roughly 8% (13%), whereas in non-OECD countries it is roughly 58% (54%).

Table 7. Fixed effects estimates of political competition specification for various subsamples.

COEFFICIENT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS	Fixed effects OLS
	<i>Polity IV political competition</i>		<i>DPI2006 political competition</i>		<i>Polity IV political competition</i>		<i>DPI2006 political competition</i>	
	<i>OECD</i>	<i>Non-OECD</i>	<i>OECD</i>	<i>Non-OECD</i>	<i>Coalition govt.</i>	<i>Single-party govt.</i>	<i>Coalition govt.</i>	<i>Single-party govt.</i>
Political competition	-9.45 (27.16)	25.24*** (8.60)	59.71* (30.43)	10.04 (7.24)	37.66*** (9.29)	36.46** (15.8)	27.11** (12.0)	35.68 (22.3)
Observations	863	1666	617	1097	907	724	901	724
Number of country_numeric2	26	58	26	55	65	63	65	63
R-squared	0.35	0.37	0.38	0.32	0.41	0.29	0.38	0.29

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All regressions include log of gdp *per capita*, log of population, log of agricultural land *per capita*, employment share of agriculture and time fixed effects as additional explanatory variables; robust standard errors clustered by country

5 Conclusions

In recent years political economy literature has been trying to deepen our understanding of the interplay of political institutions and policy choices. In response to this, in this paper we investigate casual relationship between political competition and agricultural policy. In order to achieve it, we exploit variation in political and economic data from 74 countries for the post-war period. Our results robustly show that political competition positively affects the level of agricultural protection. They are fully in line with empirical and theoretical contributions to the political economy literature pointing to positive association between political competition and government spending. Even though that these results hold for various subsamples, some heterogeneity with respect to these effects could be observed. While in developed countries this result is driven by electoral competition in developing countries it is also a consequences of improvements in more durable rules that affect political competition and participation. Our results also incline towards hypothesis that agricultural policy could be explained by swing voters and median voter models in developed and developing countries respectively.

Our results also provide evidence that political competition importantly complements other institutional aspects in determining public policy. First, we find that it seems to dominate the impact of constraints imposed on the executive. Second, we show that political competition may transmit (some of) the effects of electoral rules. Finally, we document that political competition matters both within coalition governments as well as between single-party government and opposition.

The obtained results have also some implications for further research. First, collating our results with findings by BESLEY ET AL. (2010), who document positive relationship between political competition and growth-promoting policies, rises an important question concerning the relationship between agricultural protection and growth.

Further, it is important to note that changes in agricultural protection, in whatever direction, mask subtle but important changes between taxation and subsidisation. From this point of view a promising field of research could be to verify a hypotheses originating from BECKER (1983) on the relationship between political competition, (agricultural) protection, and deadweight cost of taxation/subsidisation. Note that, in general, in developed countries agriculture is subsidised whereas in developing countries it is taxed. From this perspective, interesting insights could be provided by theoretical predictions made by AIDT (2003). According to this study, distributive

programmes that are inefficient are unlikely to be contested, which may explain that we do not observe reductions in agricultural protection in developed countries. On the other hand, in developing countries agricultural policy may be perceived as an inefficient source of taxes which in turn implies that political competition should increase agricultural protection (decrease agricultural taxation). Other areas which seem to be worth investigating in this context include the issue of rigidity of product and labour markets. As showed by BUTI ET AL. (2010), governments introducing policy changes tend to be voted out of office in countries with rigid product and labour markets. This in turn may provide politicians to behave strategically. Provided that agricultural sector is one of the most important stage for the restructuring process, this may prove to be an interesting line of research.

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