Determinants of Agricultural Protection in an International Perspective: The Role of Political Institutions

Henning Christian [1]

[1] University of Kiel, Germany

Abstract—**This paper studies the role of political institutions in determining the political success of agriculture in avoiding taxation or attracting government transfers in developing and industrialized countries, respectively. The model is based on a probabilistic voting environment, where in industrialized countries rural districts are less ideologically committed than urban districts, while in developing countries urban districts are less ideologically committed than rural districts. As a consequence, in industrialized (developing) countries rural (urban) districts are pivotal in determining the coalition that obtains a majority, whereas urban (rural) districts are pivotal within the majority itself. In bargaining at the legislature, this generates a conflict between the government, who will tend to favor rural (urban) districts, and its parliamentary majority, that will be dominated by urban (rural) concerns. As district size grows and the electoral system converges to a pure proportional system, both of these biases are attenuated. Overall, an opposite nonlinear relationship between district size and agricultural subsidies on the one hand and district size and taxation on the other hand follows, i.e. in developing countries taxation of agriculture first increases and then decreases with district magnitude, while in industrialized countries agricultural subsidization first increases and then decreases with district magnitude. Moreover, the impact of district magnitude on the level of agricultural subsidization is attenuated in presidential when compared to parliamentary systems, while the level of agricultural taxation is amplified in presidential systems. Empirical results from cross-country analysis including 37 countries over 20 years mainly support our theory.**

Keywords—**Political Institutions, Agricultural Protection, Probabilistic Voting Model.**

I. INTRODUCTION AND SUMMARY [1]

It has long been a well-established policy pattern that industrialized countries subsidize their agricultural sector, while developing countries tax this sector (Bale and Lutz, 1981; Anderson, 1995; Krueger et al., 1988). Reducing the taxation of agriculture in developing countries was one of the goals of structural adjustment policies. Has the pattern of taxation and protection changed as a consequence? A recent multi-country study led by Anderson (2008) found that, on average, the anti-agricultural bias has indeed been reduced in most regions, but it still exists. Moreover, the anti-trade bias of agricultural policies has remained. The study also found that, with economic development, some countries have switched from agricultural taxation to protection, rather than stopping at neutral policies (Anderson, 2008). This pattern of taxation-protection switch has been characterized as a development paradox. Most existing political economy studies focus on classical public choice approaches (Peltzman, 1976; Becker, 1983; Krueger et al., 1988; Gardner, 1987; Swinnen, 1994; Tyers and Anderson, 1992; Miller, 1991; Zusman, 1976) to try to solve the puzzle why inefficient (biased) agricultural polices persist in both developing and industrialized countries, respectively. In particular, these studies understand agricultural policies as the results of political bargaining (competition) among various social groups for income/welfare redistribution. The final policy outcome is determined by both the relative political bargaining power of agrarian and non-agrarian groups and the economically determined transformation of welfare among these groups. The higher the political bargaining power of a particular social group and the more favorable political welfare transformation towards this group the higher is c.p. the politically redistributed income towards this group in political economy equilibrium.

Although various political economy approaches differ in their detailed modeling strategy, they basically highlight three components determining

1. For the full version of the paper, please, contact the author.

agricultural protection levels in political economy equilibrium: (1) farmers' cost of organization to overcome the free-rider problem inherent in collective political action, (2) the cost of income redistribution, i.e. deadweight costs, and (3) the relative income of rural and urban population. Accordingly, empirical studies mainly focus on various demographic and economic variables influencing both deadweight cost and cost of organization (Gardner, 1987; Tyers and Anderson, 1992; Anderson, 1995)

Although the existing political economy models certainly contribute to our understanding of biased agricultural policies, they still leave some puzzles unsolved. In particular, they fail to explain the variation of agricultural protection levels across nations with relatively similar economic and demographic structures, e.g. variation of protection levels among industrialized countries on the one hand and among developing countries on the other hand.

At the theoretical level, classical public choice models lack a micro political foundation of political behavior, i.e. these approaches model political decision making assuming a unitary political actor maximizing a given political preference, voter support, or influence function.

In contrast to classical public choice, taking the political decision-making process as a black box, more recent new approaches focus on explicitly modeling the political decision-making process as an interaction between a set of individually rational political actors. Within these new political economy approaches, biased policies result as specific incentive problems, where political institutions are considered as key factors influencing individual incentives of political actors. Thus, in the light of these new approaches, beyond general economic factors determining deadweight costs and demographic factors determining cost of interest organization, political institutions are main factors in explaining observed variances of economic policies across countries (Persson and Tabellini, 2002). For example, Persson and Tabellini or Milesi- Ferretti et al. nicely demonstrate how the electorate system and the organization of legislature determine general macroeconomic policies (Persson and Tabellini, 2002; Milesi-Ferretti et al., 2002). Nowadays it is commonly accepted that political institutions have a significant impact on policy outcome (Miller, 1997; Weingast et al., 1981; Binswanger and Deininger, 1997). Even international organizations such as the World Bank and International Monetary Fund take governance criteria increasingly into account when granting financial aid.

However, theoretical as well as empirical analyses of the political economy of agricultural policy, taking explicitly political institutions into account, are still rather rare (Beghin and Fafchamps, 1995). Only some recent analyses have attempted to cover this gap (for example, see Beghin and Kherallah, 1994; Beghin et al., 1996; Olper, 2001; Swinnen et al., 2001; Henning, 2004). Most of these studies analyze the general impact of democracy on agricultural protectionism, comparing agricultural protection levels in democratic and autocratic countries. Moreover, all of these studies apply a heuristic approach based on quasi-reduced form estimation, while they do not provide an explicit theory of how political institutions influence agricultural protection. An exemption is Henning and Struve (2007) who derived a theory in a probabilistic voting environment explaining the role of electoral rules on agricultural protection in parliamentary systems in industrialized countries[2].

Within this framework, the paper provides a further attempt to systematically analyze the impact of political institutions on agricultural policies at both the theoretical and empirical levels. In particular, the model of Henning and Struve (2007) explaining the role of electoral rules in agricultural protection in parliamentary systems of industrialized countries, is extended in two directions.

First, the model is applied to the demographic and economic framework conditions of developing countries. Thus, while industrialized countries are characterized by a majority of urban population, developing countries are characterized by a majority of rural population.

In detail, the voting model suggested by Henning and Struve (2007) is based on a probabilistic environment where in industrialized countries rural districts are less ideologically committed than urban

[2]Another exemption is Henning (2004) who explained different protection levels observed for the U.S. and EU by taking the different legislative organization of agricultural policy decision making under the U.S. and EU regime into account

districts. As a consequence, in parliamentary systems of industrialized countries rural districts are pivotal in determining the coalition that obtains a majority, whereas urban districts are pivotal within the majority itself. In bargaining at the legislature, this generate a conflict between the prime minister, who will tend to favor rural districts, and her parliamentary majority, that will be dominated by urban concerns.

At the election stage, both the bias of the prime minister in favor of rural as well as the bias of its majority in favor of urban districts are attenuated, when district size grows and the electoral system converges to a pure proportional representation, since district populations become more homogenous. Overall, a nonlinear relationship between district size and agricultural protection follows: when the system is close to purely proportional, a decrease in district size increases agricultural subsidies, since it implies that the prime minister becomes more biased towards rural districts. As district size continues to decrease, urban legislators become less and less willing to support agricultural subsidies; at some point, this implies that despite party discipline they would be willing to break the coalition, and agricultural subsidies have to decrease in order to preserve unity.

Applying this model to explain agricultural taxation in parliamentary systems of developing countries a corresponding inverse u-shape relation between district magnitude and the level of taxation results by exactly the same logic. This follows since in contrast to industrialized countries in developing countries urban districts are in the minority and less ideologically committed than rural districts. Hence, as a consequence in parliamentary systems of developing countries urban districts are pivotal in determining the coalition that obtains a majority, whereas rural districts are pivotal within the majority itself.

Accordingly, in bargaining at the legislature, this generates a corresponding conflicts between the pro urban premier minister and its pro rural parliamentary majority. Following the same logic derived for industrialized countries, in parliamentary system of developing countries a non-linear relationship between district size and level of agricultural taxation results.

However, these seemingly compatible results have major implications for cross-country analyses. In particular, our theoretical results apply a different regime explaining the influence of political institutions on agricultural protection for countries that tax agriculture when compared to countries that subsidize agriculture. Therefore, to confirm our theory applying a cross-country analyses including both developing and industrialized countries a switching regression model has to be used. To see this, note that measuring agricultural protection applying the usual concepts, e.g. PSE or NPC, it follows directly from our theory that an inverse u-shape relation between district magnitude and the PSE or NPC-measure results for (industrialized) countries subsidizing agriculture. In contrast, our theory implies a u-shape relation between district magnitude and the PSE or NPC measure for (developing) countries taxing agriculture. Therefore, estimating one equation for both regimes, agricultural taxation and subsidization, respectively, will lead to biased results regarding the influence of political institutions on agricultural protection.

The second extension we suggest corresponds to the analyses of the impact of the governmental system, i.e. parliamentary versus presidential system, on patterns of agricultural protection in developing and industrialized countries, respectively. In particular, we will extend the model of Henning and Struve (2007) to incorporate also presidential systems. In contrast to parliamentary systems, which are characterized by stable ex ante majorities and strong legislative cohesion granting the prime minister strong legislative power, legislative cohesion is rather small in presidential systems which in turn are characterized by agenda setting power of parliamentary committees. Therefore, we will demonstrate that legislative bargaining in presidential system is characterized by a conflict between the median of the agricultural committee, who will tend to favor rural (urban) district and the floor median, who tends to favor urban (rural) districts in industrialized (developing) countries, respectively.

Again, at the election stage, both bias of the committee median in favor of rural as well as the bias of its floor median in favor of urban districts are attenuated, when district size grows and the electoral system converges to a pure proportional representation, since district populations become more homogenous. Overall, analogously to parliamentary systems also for presidential systems the same

nonlinear relationships between district size and agricultural protection and taxation follows for industrialized and developing countries, respectively. However, as long as agenda setting power of the agricultural committee is lower when compared to agenda setting power of the prime minister due to legislative cohesion in parliamentary systems, agricultural subsidization in industrialized countries should be lower for presidential systems, and by the same argument the level of agricultural taxation in developing countries should also c.p. be lower for presidential when compared to parliamentary systems. Moreover, our theory implies that the cut points of the nonlinear relationship will c.p. occur at a lower district magnitude. Finally, please note the our model also extents standard result of pre-election politics models implying that majoritarian election systems lead to higher target redistribution when compared to systems of proportional representation (Persson and Tabellini, 2002). Note, that these models focus solely on the policy preferences of the party or government leader, neglecting postelection bargaining.

In the empirical part of the paper we test our theory using cross country data. The data cover a period from 1982 to 2003 and includes overall 37 countries, 13 OECD countries, 4 CEEC and 20 developing countries.

In particular, we apply a switching regression model to take into account for different protection regimes, agricultural taxation and subsidization, respectively. Moreover, following Beghin et al. (1996) we also apply a two-stage-least-square regression to take into account for a possible simultaneous equation bias when regressing agricultural protection on specific economic framework variables. Additionally, since we use cross-country time series data we also take possible correlations of error terms over time for the same country into account. To cope with the latter problem we apply a cluster-specific random effect model (Hosmer and Lemeshow, 2000).

Estimation results mainly support our theory. In particular, we find a significant inverse u-shape relation between district magnitude and the PSE measure for the subsidy regime as well as a significant u-shape relation between district magnitude and the PSE measure for the tax regime.

Regarding the impact of governmental system, we got mixed results. First, for both regimes, i.e. the tax and subsidy regime, we could identify a significant impact of the governmental system on agricultural protection. However, the direct effect and indirect effects resulting from the interaction with the district magnitude oppose each other. Thus, overall impact of governmental system depends on district magnitude. For majority like electoral systems a presidential regime leads to a higher subsidization and higher taxation when compared to parliamentary systems, while moving towards proportional representation, i.e. higher district magnitude, an opposite effect results.

One explanation might be unobserved characteristics of governmental regimes. On the one hand parliamentary systems vary regarding rules determining legislative cohesion, e.g. detailed rules of government breakup and formation, that differ over countries. On the other hand, presidential systems vary regarding rules determining agenda setting power of the parliamentary committees, e.g. open and close rules. Moreover, presidential regimes might vary regarding formal and in particular informal rules granting legislative power to the president. Thus, further research is necessary to understand in more detail the role of governmental institutions and their interaction with electoral rules regarding the pattern of agricultural protection in developing and industrialized countries.

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- Author: Christian Henning
- Street: Olshausenstrasse 40
- City: D-24098, Kiel
- Country: Germany
- Institute: Institute of Agricultural Economics, University of Kiel
- Email: chenning@agric-econ.uni-kiel.de