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Institutional Foundation of Agricultural Protection:

The case of EU-Accession and Agricultural Policy in Eastern European Countries

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Institutional Foundation of Agricultural Protection: The case of EU-Accession and Agricultural Policy in Eastern European Countries

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by

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The literature on political economy analyses of agricultural protection mainly focus on the impact of economic and demographic structures on the level of agricultural protection (Tyers/Anderson 1992, Swinnen 1994, Rausser et al. 1974), although it is commonly accepted that beyond economic and demographic structures political institutions do have an impact on the political power of different interest groups and hence on agricultural policy output (Gardner 1987 as well as Binswanger et al. 1997). The impact of political institutions, e.g. the organization of legislature, election and party systems, on agricultural protection has hardly been taken into account explicitly in theoretical and empirical studies, yet. In this framework the paper investigates to what extent political institutions explain observed variances in the political power of the agrarian population in the ten Central and Eastern European Countries/Candidates (CEEC) applying for an accession of the EU. Moreover, it is analyzed to what extent EU-accession will be politically feasible given the specific political and economic framework conditions of the individual states. In particular, empirical analyses imply the following results: (i) the political power of the agrarian population varies significantly among the analyzed countries ranging from a relative low political weight of 0.115 of the agrarian population in Latvia up to an absolute political dominance of the agrarian population in Slovenia given a weight of 0.887. (ii) The political weights are significantly determined by political institutions. In particular, the more the election systems corresponds to a proportional representation and the more the parliamentary organization allows for a specialized representation of agrarian interests, e.g. bicameralism where a second chamber representing regional interests, and the more efficient the organization of agrarian interests, e.g. existence of a peasant party, the higher is the political weight of the agrarian population. (iii) Analyzing to what extent EU-accession is politically feasible in the CEEC we can show that, assuming national financing of EU-policy, EU-accession would be hardly politically feasible in any CEEC-countries. An exception might be seen in Slovenia. Thus political feasibility of EU-accession crucially depends on keeping the principle of financial solidarity. Moreover, assuming a comprehensive pre-accession CAP-reform will take place, possible options to achieve political feasibility in the CEEC under these conditions would be undertaking constitutional reforms. In particular, the implementation of electorate system corresponding closer to a proportional representation or the establishment of bicameralism would be, at least theoretically, possible options.

Keywords: Formal model of legislative decision-making, political economy of GAP, EU-enlargement

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Introduction

It is a common observation that agriculture is generally subsidized in industrialized countries and mostly taxed in developing countries (Swinnen 1994, Tyers/Anderson 1992, Miller 1991, Krueger/Schiff/Valdes 1988). From a welfare economic point of view both taxation and subsidization are inefficient, e.g. reduce total welfare of the general public. Solving the puzzle why inefficient agricultural polices persist in both developing and industrialized countries, respectively, political economy studies focus on specific characteristics of the political decision–making process (Peltzman 1976, Becker 1983, Krueger/Schiff/Valdes 1988, Gardner 1987, Swinnen 1994, Tyers/Anderson 1992, Miller, T. 1991, Zusman 1976). 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. Given these common features various political economy approaches explaining distorted agricultural policies differ in specific modeling strategies.

On the one hand based on the fundamental contributions of Peltzman (1976) and Becker (1983) *interest group models* interpret the political decision-making process as a bargaining process among various interest groups representing the political interest of different social groups (See Gardner 1987, Miller, T. 1991, Rausser /Freebairn 1974). In political economy equilibrium subsidization and taxation of social groups, respectively, is mainly determinate by two components (1) groups' cost of organization to overcome the free-rider problem inherent in collective political action and (2) the cost of income redistribution, i.e. deadweight costs.

Interestingly, both empirical and theoretical studies focus mainly on economic and demographic factors influencing both cost of organization and deadweight costs. For example, following Becker (1983) Gardner highlights the importance of specific

characteristics of the economic system, e.g. price elasticities of supply and demand, determining deadweight cost of protection.

Moreover, following the famous analysis of Olson (1965) cost of organization circumventing the free-rider problem inherent in political bargaining significantly decrease with the size and homogeneity of the group. At a theoretical level Peltzman (1976) and Becker (1983) have given careful consideration to the numbers in an interest group, while Gardner (1987) and Olson (1986) analyzed empirically the impact of number of group members as well as other economic and demographic variables, i.e. the geographically dispersion of producers, importance of the commodity to each producers income or the stability of the industry, on cost of organization and hence on the agricultural protection level. Beyond Olson (1965) both groups of authors suggest a non-linear relation between bargaining power and group size. At least in democratic systems both the political weight of a social group as well as the free-rider problem increase c.p. with group size. Hence, there exist a threshold value corresponding with the optimal size of a social group. If groups are small, i.e. group size is below this threshold, political bargaining power increases with size and vice-versa if groups are large, i.e. their size is above of this threshold value, political bargaining declines with group size due to the free-rider problem.

In contrast to interest group models *voter support models* interpret political decision-making as an interaction among voters and politicians (Tyers/Anderson 1992, Swinnen 1994, de Grooter/Tsur 1991, Brock and Magee 1978). Rational politicians maximize their political support which is affected, provided by informed citizens, by policy-induced welfare changes. While existing voter support models analogously to the interest group models focus on economic structures determining deadweight costs, their main contribution can be seen in highlighting the fact that beyond the cost of organization relative income has a significant impact on political bargaining power of social groups. Although Gardner (1987) has already discussed the hypothesis that "political appeal to demand of a social group for income redistribution will decline the higher reached level of redistribution", interest group models do not emphasize relative income as a major determinant of the political economy equilibrium.

In particular, within their theoretical approaches Swinnen (1994) as well as Tyers and Anderson (1992) could derive a number of additional economic factors, e.g. share of agriculture in consumption and production, capital intensity of agricultural and industrial production, degree of self-sufficiency in food production, that determine groups' political bargaining power and hence political economy equilibrium of agricultural policy.

However, although the existing political economy models certainly do solve some of the puzzles observed in agricultural policy, these models do completely focus on economic and demographic factors and neglect political factors, e.g. political institutions shaping the political decision-making process. On the other hand, it is commonly accepted that political institutions like electorate system and organization of legislature including formal decision making rules do have an significant impact on policy outcome (Miller, G. 1997, Weingast et. al. 1981, Binswanger/Deininger 1997). Moreover, international organization like The World Bank and IMF often bind their financial aid to the existence of specific democratic institutions, e.g. free election. Nevertheless, neither theoretically nor empirical analyses of the political economy of agricultural protection have taken explicitly into account political institutions as a determinant of agricultural policy outcome, yet. This is especially regrettable given the fact that in comparison to identified economic and demographic factors influencing political economy equilibrium, political institutions could be changed and adapted more easily by a society. While economic structures in general are the result of decentralized actions of many individual actors, i.e. can not easily be changed systematically, political institutions could systematically be changed by centralized constitutional choice procedures. Therefore, identifying inefficient political institutions, that are political institutions implying inefficient agricultural policy outcomes in political economy equilibrium appears as a promising enterprise. Nevertheless one should not be too optimistic in this regard, since changing political institutions is again a collective constitutional choice problem. Hence, as we learned from positive political economy theory that political choice is not just a simple matter of knowing the right policies, we already learned from positive constitutional choice theory that constitutional choice is certainly also not a simple matter of just knowing the right institutions (see Buchanan 1991, North 1993, Voigt 2001). However, the

only way to attain better agricultural policies leads over establishing better political institutions. Thus, understanding the impact of political institutions is a necessary even if not sufficient condition/prerequisite for sustainable agricultural policy reforms in both industrialized and developing countries.

In this framework the paper provides a first attempt to systematically analyze the impact of political institutions on agricultural policies at both theoretical and empirical levels. *Pars pro toto* it investigates to what extent political institutions explain observed variances in the political power of the agrarian population in the ten Central and Eastern European Countries (CEEC) applying for an accession of the EU.

Moreover, it is analyzed to what extent EU-accession will be politically feasible given the specific political and economic framework conditions of the individual CEEC. In detail, a simple general political economy equilibrium model is applied empirically to the ten CEEC. Theoretically, the model corresponds to a political exchange approach that generalized the political market approach of Tyers and Anderson taking multiple political actors into account that maximize their individual political support received by their specific clientle. On the basis of a simplified aggregated version of the political exchange model the impact of selected political institutions on the aggregate political power of the agrarian population is analyzed empirically. In particular, empirical analyses imply the following results: (i) the political power of the agrarian population varies significantly among the analyzed countries ranging from a relative low political weight of 0.115 of the agrarian population in Lativa up to an absolute political dominance of the agrarian population in Slovenia given a weight of 0.887. (ii) The political weights are significantly determined by political institutions. In particular, the more the electorate systems corresponds to a proportional representation and the more the legislative organization allows for a representation of particularistic agrarian interests, e.g. a federal system with a symmetric bicameralism with a second chamber representing regional interests, the higher is c.p. the political weight of the agrarian population.

Forecasting the partial political economy equilibrium of EU-Accession implies that there exists a trade-off between political feasibility of EU-Accession within the CEEC and overall economic efficiency of the CAP in the enlarged EU. In particular, assuming constant economic structures for the non-agricultural sector in the CEEC,

EU-accession would only be politically feasible in these states if the common finance of the CAP according to the principle of financial solidarity will be sustain. Vice-versa, keeping this financial system of the CAP implies an increase of economic inefficiency of future CAP in an enlarged EU. Possible options to achieve political feasibility within the CEEC for a CAP-reform abolishing financial solidarity would be national constitutional reforms within the CEEC implementing a electoral system of proportional representation or establishing a federal system, i.e. a second chamber.

The rest of the paper is structured as follows. In section 2 the theoretical model is introduced and hypothesis regarding the impact of political institutions on political power are derived. Section 3 presents empirical analyses, while in section 4 a simulation analysis of the political feasibility of future EU agricultural polices is undertaken. Section 5 summarizes the main results and discusses main conclusions and implications for future research.

1 The model

Consider a political economy system comprising of an economic system ES and a political system PS. The economic system has two sectors: agriculture (A) and manufacturing (M). Each sector produces one good, X_A and X_M, respectively. Each sector uses one specific immobile factor K_A and K_M, respectively. K_A captures agricultural capital and land, and K_M captures industrial capital. Both immobile factors are assumed to be in a fixed supply. Moreover, both sectors use labor as a variable input. Let L_A and L_M denote the amount of labor used in agriculture and manufacturing, respectively. Labor is considered as perfectly mobile where the total supply of labor L is also assumed to be fixed. Further, P_A and P_M denote the domestic prices of the agricultural and manufacturing good, respectively and P_L denotes the domestic wage rate. We assume that both goods are tradable, where P_A^w and P_M^w denote the corresponding world market prices of the agricultural and manufacturing good, respectively. Labor is considered as non-tradable. Production technologies of the agricultural and manufacturing production can be represented by a restricted profit function:

$$(1) \qquad \Pi^i(p_i, p_L, K_i) \quad i = A, M$$

Society G can be subdivided into agrarian (G_A) and non-agrarian (G_M) population. Agrarian population owns the quasi-fix production factors of the agriculture K_A, while the non-agrarian population owns the quasi-fix production factor K_M. Further, agrarian and non-agrarian population provide a fix amount of labor L^s_A and L^s_M, respectively. Hence, assuming a small country in economic equilibrium without any policy interventions good prices equal their corresponding world market prices and domestic labor wage P_L is determined by market clearance on the domestic labor market:

$$(2) \qquad \sum_{i=A,M} \left(\Pi^i_L (p_i, p_L, K_i) - L^s_i \right) = 0$$

In equilibrium agrarian and non-agrarian population receive the following nominal gross income (Y^0_i):

$$(3) \qquad Y^o_i = \Pi^i + L^s_i P_L$$

Assuming no state activity implies that no taxes are collected, hence gross income equals net income. Furthermore, we assume for simplicity that all members of the agrarian population are identical as well as all members of the non agrarian population. The preferences of an agrarian and non-agrarian citizen can be represented by an indirect utility function v_i (i=A,M). Net income of agrarian and non-agrarian population (Y^r_i) is allocated for consumption of agricultural and manufacturing goods according to this indirect utility function $v_i(p, Y^r_i)$:

$$(4) \qquad C^i_j = -\frac{v^i_{P_j}}{v^i_{Y_i}} \qquad i, j = A, M$$

Finally, net export supply (NE_j) results in equilibrium by:

$$(5) \qquad \begin{aligned} NE_j &= X_j - \sum_i C^i_j \\ X_j &= \Pi^j_j \end{aligned}$$

Next we introduce agricultural policy. In particular, we consider two different policy instruments to support agrarian population, price policy (α) and transfers to quasi-fix factors (β). Price policy is modeled in terms of nominal protection rate, while transfers to quasi-fix rents are modeled as fix payments per quasi-fix factor unit.

Obviously, both policy intervention shift economic equilibrium in the well-known way, e.g. price policy implies higher domestic prices for agricultural goods and therefore higher profits (rents) going to quasi-fix agricultural factors. Moreover, higher domestic agricultural output prices imply a higher domestic wage rates P_L. Overall, nominal income of agrarian population is increased, since both profits and labor income is increased via agricultural price policy. Contrary, nominal gross income of non-agrarian population is overall decreased, as long as agrarian population is a net-supplier of labor to the manufacturing sector. Additionally, agricultural policy implies net budgetary expenditures $B(\alpha,\beta)$:

$$(6) \qquad B(\alpha,\beta) = NE_A P_A^w (\alpha - 1) + K_A \beta$$

It is assumed that net-expenditures are financed via taxes, where t_A, t_M denote the tax share of the agrarian and non-agrarian population, respectively. Obviously, it holds $t_A+t_M=1$ and $t_i \geq 0$, i=A,M. Therefore, including agricultural policy net income no more equals gross income in equilibrium. Nevertheless, it is straightforward to calculate the economic equilibrium for exogenously given agricultural polices α and β. In particular, given the economic system ES, a political transformation surface $T(Y^r_A, Y^r_M, \alpha, \beta)$ can be defined corresponding to the net income redistribution between the agrarian and non-agrarian population that can be reached applying agricultural price and transfer policies α and β. Obviously, T is crucially determined by specific characteristics of the economic system ES (see Gardner 1987, Swinnen 1994, Becker 1983, Tyers/Anderson 1992).

So far we have taken agricultural policy as exogenous variables. To explain agricultural policies endogenously, political economy approaches take explicitly the political decision making process within the political system PS into account. Of course, analogously to the modeling of the economic system, agricultural policy decision should be modeled as an equilibrium within the political system. To this end, the political economy models mentioned above assume a rather simple political system comprising of only one unitary political actor. Although the various political economy models differ in their detailed modeling strategy they all correspond to the following reduced from approach:

$$(7) \qquad \begin{aligned} &\text{Max } S(W_A, W_M) \\ &\text{s.t.}: T(W_A, W_M, \alpha, \beta) = 0 \end{aligned}$$

W_i (i=A,M) denotes the welfare of the agrarian and non-agrarian population, where in voter support models W generally corresponds to the net real income, interest group approaches normally take producer and consumer welfare as relevant welfare measures (see Gardner 1987, Swinnen 1994). S(w) corresponds to a political support function or pressure function reflecting the reaction of the political system induced by the realization of social group welfare w. Obviously, the specific properties of S correspond to specific characteristics of the political system.

Now, to analyze explicitly the impact of political institutions on political economy equilibrium we assume in contrast to former approaches that the political system comprises of n political agents g=1,…,n. Each individual agent tries to maximize her political support. Analogously to the voter support models political support, provided by citizen considered as individual voters, is affected by policy-induced welfare changes. In particular, we assume that each individual agent has her specific constituency by which she is elected. Accordingly, we assume that political support of an individual political agent is determined by an individual support function $S_g(Y^r_A, Y^r_M)$. Analogously to Swinnen and Tyers/Anderson we assume that S_g is monotonic increasing and concave in redistributed income, that is the higher the level of redistributed income the lower is c.p. the marginal political support derived from further redistribution. Under this assumption preferred agricultural policy positions of individual politicians, α_g and β_g respectively, result from individual political support maximization:

$$(8) \qquad \begin{aligned} &(\alpha_g, \beta_g) = \arg\max S(Y_i^r) \\ &\text{s.t.} \quad T(Y_i^r, \alpha, \beta) = 0 \end{aligned}$$

The individually preferred policy positions $[\alpha_g, \beta_g]$ of the individual political agents are aggregated to the final agricultural policy outcome α^*, β^* according to the constitutionally determined legislative decision making-process. Modeling this process is a complex undertaking. In this regard we apply a political exchange model suggested by Henning (2000, see also Pappi and Henning 1998). The political exchange model combines and generalizes political exchange models originally

suggested by James Coleman (1966) assuming a market like organization of political exchange and a political exchange model of Weingast/Marshall (1988) assuming a non-market organization of political exchange. Since the modeling of legislative decision-making is not the main focus of the available paper, we will only briefly outline the main assumption of the model. For a detailed derivation of the political exchange approach see Henning (2000 or 2002).

Generally, we assume that legislature comprising of the n legislators g=1,…,n is organized as follows. There exists a committee system of m committees Co_1,..Co_m, where the committee system is a partition of the set of legislatures {1,..,n}, i.e. each legislator is a member of exactly one committee. Moreover, each committee has jurisdiction over a specific policy domain. A policy domain comprises of all policies regulating a specific area of the society. In particular agriculture is one of the policy domains and is regulated by the agricultural committee Co_A. Within the agricultural policy domain agricultural policies α^*,β^* are derived from the individual political preferences of its members according to the following mean voter decision rule (for detailed derivation of the mean voter decision rule see Henning 2000):

$$
\begin{aligned}
&\alpha^* = \sum_{g \in Co_A} C_{g\alpha} * \alpha_g \\
&\beta^* = \sum_{g \in Co_A} C_{g\beta} * \beta_g \qquad (9) \\
&\sum_{g \in Co_A} C_{gj} = 1 \quad j = \alpha, \beta
\end{aligned}
$$

C_{gj} denotes the political control or weight of the ideal position of an individual political agent g regarding the agricultural policy j. The actual political control is determined in the political exchange equilibrium. According to the approach of Henning (2000, 2002) political exchange equilibrium is derived in two steps. At a first step, following the non-market organization of political exchange suggested by Weingast and Marshall, legislators bed for "seats on committees associated with rights to policy areas valuable for their reelection" (Weingast/Marshall 1988). At a second step the final policy choice within a committee is derived via centralized political exchange of control resources over different policy dimensions of the policy domain controlled by a committee. Both bidding for seats on a committee and exchanging control rights over policy dimensions within a committee are determined

by legislators interest in reelection. In particular, note that the support maximization problem in eq.(8) can be approximated by a spatial policy preference $U_g(d_g(\alpha),d_g(\beta))$, where $d_g(\alpha)$ and $d_g(\beta)$ denote the Euclidian distance of the final policy choice α^* and β^* to the corresponding ideal point α_g and β_g of the agent, respectively.

However, for simplicity we assume in the context of this paper that agricultural policy is one-dimensional. For example, assume that the agricultural policy mix is fixed to a specific relation of price and transfer policy (α_0,β_0) and politicians can only vary the intensity λ, i.e. their preferred policy corresponds to $\lambda(\alpha_0,\beta_0)$. In this case, the final policy choice corresponds directly to the mean voter position defined in eq. (9). The individual weights of the agricultural committee members are determined by the constitutionally fixed legislative decision-rule. In particular, it can be shown that the weights C_{ij} just correspond to the probability that the ideal position of a committee member will be the outcome of an anticipated non-cooperative legislative bargaining process of a Baron/Ferejohn type (Baron/Ferejohn 1989, a detailed proof is given by Henning 2002). Moreover, the individual weights correspond to apriori voting power indices that can be calculated empirically for given political constitutions (Henning 2002).

Now, legislature organization corresponds to both the committee system, in particular which legislators are members of the agricultural committee, and the institutionally determined legislative decision-making rule under which agricultural policy choices are made.

Obviously, legislators' policy preferences vary systematically with the demographic structure of the constituency in which she is reelected. Thus, legislators being reelected in rural district have c.p. higher preferences for agricultural protection than legislators being reelected in an urban district. Therefore, comparing a centralized legislature including an unicameral parliament with a federal legislature including a bicameral parliament with second chamber that is regionally elected implies c.p. a higher share of legislators having political preferences for agricultural protection. Moreover, taking into account that the bidding mechanism is guided by legislators policy preferences, it follows quite plainly that assuming political exchange in a federal system the share of legislators preferring agricultural protection is even higher for the agricultural committee compared to the share in total legislature.

Hence, according to the mean voter decision rule, final agricultural policy is more biased towards welfare of agrarian population in a two when compared to a one chamber legislature. The latter holds especially true taking the fact into account that seat distribution in the second regional chamber is often biased in favor of rural districts (Lijphart 1999 : 207). Note that in comparative politics it is a well-known theoretical result that federal systems c.p. allow for a stronger representation of (rural) minorities (Lijphart 1999: 186).

By the same argumentation it follows that a strong bicameralism, e.g. a system with formally equal legislative decision making power of both chambers, corresponds c.p. to a more biased agricultural policy when compared to a weak bicameralism, i.e. the second chamber is subordinated to the first (see Lijphart 1999: 205). For example, Lijphart distinguish six different types of bicameralism on the basis of the relative political strength of the second chamber (Lijphart 1999: 212).

One final comment should be made. We do not argue that a change of the organization of legislature or of the electorate system will turn agricultural protection into agricultural taxation or vice versa. There is an overwhelming empirical evidence that taxation or subsidization of agriculture is mainly determined by economic factors, such as share of agrarian population and elasticities of consumption and supply, determining the marginal rate of income transfer between agrarian and non-agrarian population. We only argue that beyond these basic demographic and economic determinants the specific political institutions do explain the variation in the degree of protection and taxation within different industrialized and developing countries, respectively. Note further, that bicameralism generally increases the political weight of rural population, thus, it would imply more efficient agricultural policies in developing countries, but less efficient in industrialized countries.

Beside the organization of legislature we further want to highlight the impact of the electorate system on agricultural protection. In particular, we claim that the more the electorate system equals a majoritarian system the more national agricultural policy reflects c.p. the preferences of the majority of voters and vice versa the more a electorate system equals a system of proportional representation the more it is biased towards particular interest of organized minorities.

Theoretically, scholars of comparative politics define an electorate system mainly via the following three variables (1) electorate formula, i.e. the mechanism by which cast votes are transformed into parliamentary seats, (2) the district magnitude, i.e. the number of candidates to be elected in a voting district and (3) the electorate threshold, i.e. the minimum of votes a party has to receive to be represented in the parliament.

Without going too much into detail based on this three variables electorate systems can be subdivided into different types ranging from a pure majoritarian system to a system of pure proportional representation (see Lijphart 1999: 143pp). It is commonly accepted in political theory that majoritarian systems tend to a higher electorate disproportionality, that is minorities are underrepresented in the parliament, when compared to proportional representation. Hence, according to our exposition above, in industrialized countries agricultural policy will be the more biased in favor of agrarian population the more the electorate systems corresponds to a proportional representation.

To show how electorate systems have an systematic impact on agricultural policy consider the following simple election model. Assume there are n identical voting districts with a share of 45% of the agrarian population. Then applying a majority formula in one-member districts results in a parliament comprising only of urban representatives. In contrast, applying a system of list proportional representation results in a distribution of parliamentary seats with a share of 45% for legislators representing agrarian interests.

Moreover, following political theory (Cox 1997 see also Lijphart 1999) the establishment of a peasant party specialized on the representation of particularistic interests of the agrarian population is also more probable under a representative when compared with a majoritarian electorate system. Although the existence/establishment of small parties serving particularistic interests is not solely determined by the electorate system (see Lijphart 1999). However, beyond a representative electorate system the existence of a peasant party will c.p. shift agricultural policy equilibrium even more in favor of agrarian population. This follows since the existence of a peasant party, as a formal organization, significantly reduces cost of organization of the agrarian population (see Gardner 1987).

2 Empirical evidence from East European countries

To test our theoretically derived hypotheses regarding the impact of political institutions on the political power of the agrarian population we apply the simple political economy model to the ten Central and Eastern European Candidate states (CEEC in the following) applying for accession to the EU[1]. In detail we proceed as follows.

First, since the estimation of the disaggregated model requires a lot of empirical data which were not available at this stage, e.g. data on individually preferred political positions of relevant politicians, we approximate political economy equilibrium by the reduced from approach in eq. (8). Assuming an aggregate support function of a Cobb-Douglas form we were able to estimate the political weight of the agrarian population for each CEEC-country based on available economic data and observed national levels of agricultural protection. Given the estimates of the national political weights δ, we analyze the impact of political institutions empirically applying simple regression analyses.

Estimation of national political weights (δ)

Generally, political weights (δ) can be estimated on the basis of the first order condition of the maximization problem (8) given empirically observed agricultural policies and a specified economic system. In political economy equilibrium it holds that the marginal rate of political support substitution derived from the political support function S just equals the marginal rate of transformation derived from the economic system T. Formally, it holds:

$$(10) \quad \frac{S_A}{S_M} = \frac{T_A}{T_M}$$

Assuming the following Cobb-Douglas form:

$$(11) \quad S(Y_A^r, Y_M^r) = \left[Y_A^r\right]^{\delta}\left[Y_M^r\right]^{1-\delta}$$

it follows:

[1] In detail the countries we considered are Bulgaria, Estonia, Latvia, Lithuania, Poland, Hungary, Czech Republic, Slovakia, Slovenia and Romania.

$$(12)\quad \frac{S_A}{S_M} = \frac{\delta}{(1-\delta)} * \frac{Y_M^r}{Y_A^r}$$

Further, the marginal rate of transformation can be derived locally from the economic equilibrium implied by the policy $\lambda^*=\lambda^*(\alpha_0, \beta_0)$, thus it holds formally:

$$(13)\quad \frac{T_A}{T_M} = \frac{\frac{\partial Y_M^r}{\partial \lambda}}{\frac{\partial Y_A^r}{\partial \lambda}}$$

Combining eq.(17) and eq (18) delivers:

$$(14)\quad \frac{\delta}{1-\delta} = \frac{\frac{\partial Y_M^r}{\partial \lambda}}{\frac{\partial Y_A^r}{\partial \lambda}} \frac{Y_A^r}{Y_M^r} = \frac{\left(\frac{d \ln Y_M^r}{d \ln \lambda}\right)}{\left(\frac{d \ln Y_A^r}{d \ln \lambda}\right)} = \frac{E_\lambda^M}{E_\lambda^A} \Rightarrow$$

$$\delta = \frac{\frac{E_\lambda^M}{E_\lambda^A}}{\left(1 + \frac{E_\lambda^M}{E_\lambda^A}\right)}$$

Now, E^j_λ (j=A,M) just corresponds to a policy induced percental change of the real net income of the non-agrarian and agrarian population assuming a 1% change of the policy intensity λ. It is a well known result that the different E^j_λ can be derived from a linearized form of the original economic model (see for example DeJanvry et. al. 1991). A main advantage of using the linearized form is that it can be easily calibrated on the basis of general statistical data from the national economic accounting[2] and an estimation of relevant aggregated price and income elasticities,

[2] In detail the share of agriculture in GDP, foreign trade, working population as well as the share of agrarian (rural) population is needed. Additionally, the share of agricultural good in consumption is needed. To calibrate given estimation of price elasticities to a consistent system of price elasticities we needed as well the profit shares. For the different countries data of national and sector accounting were basically taken for a specific year (1997 - 1999) published by European Union. Partly data was completed using specific country reports from the world bank, FAO or OECD. Following DeJanvry et al. (1991) elasticities were taken from available econometric estimation and than calibrated to a consistent system. National protection levels were measured by PSE-measures (see OECD for definition), that also have been published by the EU. Generally, estimating national political weights we assumed that agricultural policy correspond to trade policy interventions. Given the actual national agricultural policy applied in the CEEC this assumption appears realistic, although some countries already apply direct payment schemes.

while a full specification of the corresponding profit and indirect utility function is not necessary.

Analyzing impact of political institutions

Given the estimated national political weights δ, the next step is to analyze to what extent observed variances in national political power can be explained by observed variance in the institutional design of the political system accordingly to the theoretically derived hypotheses above.

To test our hypothesis we construct political variables corresponding to (a) the organization of legislature, (b) the electorate system and (c) to the cost of organization of the agrarian interest group

a. Organization of legislature (O)

Bicameralism (O1): to measure bicameralism we define a dummy variable taking the vaule O1= 0 for unicameral and the value of O1=1 for bicameral systems, respectively;

Presidency (O2): Further, we introduce a dummy variable measuring if national political systems have a president. Since none of the analyzed political system corresponds to a presidential system of the US-type or a semi-presidential system of the French-type, we do not expect a significant impact of this variable. However, according to Cox (1997) the existence of a (strong) president implies that the party system is more focus, i.e. a president might have a least some impact similar to the impact of a majoritarian electorate system.

b. Electorate System (E):

Typology of election system (E1): An index measuring the degree a national election system corresponds to a majoritarian and a representative system, respectively. The index ranges from 0 to 1, where E1=0 indicates a pure majoritarian and E1=1 a pure representative systems. In detail, the index based on empirical work undertaken by Nohlen et. al. (1996, 2000). Nohlen developed a typology of electorate systems based on the electoral formula including ten ideal types and

subdivided the electorate systems of Middle and East European countries into this typology. Basically, we used the typology of Nohlen. Since, according to the theoretical exposition above beyond the electorate formula electorate system is also defined by the magnitude of the district and the electorate threshold. Therefore, contrary to Nohlen we take explicitly **the average magnitude of the districts (E2)** and **the electorate threshold (E3)** into account.

c. Cost of organization of agrarian interest group (I):

Share of rural population (I1): Analogously to the theoretical and empirical interest group studies mentioned above we take the share of rural population as a proxy for the free-rider problem inherent in political action of the agrarian population.

Existing parties representing agrarian interests (I2): Obviously, the size of a social group is only a indicator approximating the free-rider problem and the implied cost of organization. However, the actual political bargaining power of a group is mainly determined by the existing formal organization of groups' interest. Hence, even if a group is relatively large, and even if this in fact implies high free-rider problems and costs of organization, it still might be the case for specific reasons that this group still or even despite of high cost of organization manages to organize its political action. In this case, the size is of course a misleading indicator. Therefore, it is always necessary to control existing formal interest group organizations, i.e. formal interest groups or political party specialized to represent particularistic interests of a social group. Although we had no information on interest groups , we were at least able to identify peasant parties in the investigated CEEC countries. Hence, the index I(2) generally measures if a peasant party exists in the parliament. Where I2=1 indicates the existence of a peasant party and I2=0 the non-existence of such party. Since former socialistic parties do generally not represent interest of private farm families, we generally coded I2=0, if only a communist peasant party exists.

Results

Economic structure and marginal rate of income transformation in the CEEC

Empirical economic data used to calibrate the economic system is summarized in table 1 in the appendix. As can be seen from table 1 economic structure varies significantly among the CEEC. First, economic importance of agricultural sector measured in share of agriculture in GDP is high for Bulgaria, Romania and Lithuania with a share ranging from 10% for Lithuania up to 15% for Bulgaria. A slightly different picture appears measuring the importance of the agricultural sector in terms of share of rural population. Here, we observe relative high importance for all CEEC countries when compared to EU-countries given share ranging from 25% up to 48%. Analogously, the level of economic development varies also significantly among the CEEC with a per capita income ranging from 881 ECU for Bulgaria up to 7523 ECU for Slovenia.

Accordingly, given the high variation of economic structures the marginal rate of transformation E defined above varies also significantly among analyzed CEEC-countries. As can be seen in table 1 below, relative income redistribution via agricultural price and transfer policy is extremely costly in Slovenia, Hungary, Czech Republic where non-agrarian population has to give up between 1.8 – 2.6% of their welfare to imply a 1% increase of the agrarian income. Contrary, relative income redistribution is relatively cheap in the Baltic states as well as in Romania. In the Baltic states non-agrarian population has only to give up 0.2 p.a. of their welfare to generate a 1% welfare increase of the agrarian population, in Romania this relation is slightly higher with 0.6 p.a. A direct transfer of relative income changes can be observed for Bulgaria, Poland and Slovakia, i.e. a 1% increase of the relative income of the agrarian population implies roughly a 1 p.a. decrease of relative income of the non-agrarian population. Analogously to the exposition of Tyers and Anderson as well as Gardner observed characteristics of transformation surface are mainly determined by share of agrarian working population and elasticities of supply and demand. Hence, the higher the share of agrarian working population and the more elastic supply and demand, the more costly is c.p. redistribution of income towards agrarian population via agricultural protection. Note that Slovenia is by far the riches CEEC-country for which the most elastic supply and demand responses can be

observed. Moreover, Slovenia has with a value of 48% the highest share of agrarianl population. Therefore, in Slovakia not only deadweight cost are high, but additionally the relative marginal political support is low according to eq. (11,12) above.

However, comparing empirically observed agricultural policy, economically determined marginal rate of transformation seems to have only little impact on agricultural protection level. For example according to PSE-measures, Slovenia observing the less favorable transformation surface has by far the highest agricultural protection level, that is with a PSE of 42% comparable with the EU-level. On the other hand CEEC with economic structures that are relative favorable for agricultural income redistribution, e.g. Latvia, Estonia and also Romania, have an extremely low level of agricultural protection with a PSE below 10 p.a. is observed.

Hence, obviously observed agricultural protection level can hardly been explained by economic factors alone, but political factors determining the relative political bargaining power of agrarian groups have to be taken into account.

Therefore, it is not surprising that according to eq. (14) calculated relative political weights of the agrarian population vary significantly over CEEC. As can be seen from table 1 the highest political weights result for Slovenia with 0.887 followed by Hungary and Poland with a weight of 0.748 and 0.690, respectively. Relatively high political weights around 0.650 are received as well for Slovakia and Czech Republic, while the Baltic states and Bulgaria observe low political weights below 0.2. For Romania also a relatively low political weight of 0.349 was calculated compared to a share of the rural population of 43%.

Overall, empirical analyses imply the following results: Although all CEEC states preparing their EU-membership commonly adapted to a large extent the agricultural policy system of the EU, agricultural protection level vary significantly over CEEC states. These variances can not be explained by economic factors alone, accordingly a significant variance in the calculated relative political bargaining power of agrarian population is observed. Moreover, empirically observed relation between agricultural protection level, calculated political bargaining power and economically determined income transformation is rather complex. This fact implies that national agricultural protection levels are the result of an interplay of political and economic factors and cannot sufficiently explain by focusing on economic factors alone.

Next we want to analyze to what extent political institutions can explain the empirically observed variance in political bargaining power of agrarian population. To this end we undertake simple linear regression analyses taking the national weights δ as endogenous variable and the different political variables defined above as exogenous variables.

Main results are reported in table 2 below. Overall, the regression analysis supports our theoretically derived hypothesis. In particular, both bicameralism and a proportional representation scheme increase significantly the political bargaining power of agrarian population. The existence of a president has no significant impact on the political bargaining power. This is conceivable given the exposition above, since the president has in none of the analyzed CEEC significant legislative power. Beyond the electorate system index E1 neither the average magnitude of districts (E2) nor the electorate threshold (E3) has a significant impact on the political power. Moreover, for both variables the estimated signs do not correspond to the theoretically expected signs. Excluding the electorate system index resulted at least in the right estimated sign for the magnitude of districts, but the electorate threshold and magnitude of districts still remain statistically insignificant. Overall, the estimation results regarding indicator variables of the electorate system nicely corresponds with our theory.

In contrast to former studies (see Gardner 1987) no significant influence of the share of rural population or share of agriculture in total GDP on political bargaining power was found (see table 2). Since rural population is significantly correlated with the number of chambers of the parliament, it turned to be statistically significant at least at the 10%-level, when we drop out the latter variable O1. But, including O1 results in a much better fit of the estimation measured in terms of adjusted R^2. Moreover, O1 is highly significant at the 5% level.

Furthermore, econometric analyses imply some influence of the existence of a peasant party. Excluding non-significant variables stepwise leads to a final model including the number of chambers, the electorate system index and the peasant party dummy (I2). In this model peasant party dummy is statistically significant at least at the 10% level.

In quantitative terms the electorate system seems to have the highest impact on the political bargaining power of the agrarian populations followed by the legislative organization, while the organization of agrarian interest seems to have the lowest impact on political power. In detail, moving from unicameralism to bicameralism implies in average an increase in the political bargaining power of 50%, where introducing a peasant party increases average political power by 39%. Moving the electorate system in the most majoritarian system observed for the ten CEEC-countries to the system with the highest proportional representation implies an increase of average political power of agrarian population by 90%.

3 Implications for political feasibility of EU-accession of CEEC-countries and economic efficiency of CAP

According to standard trade theory EU-accession of the ten CEEC countries can be understood as a positive sum game, e.g. all states will realize a net gain of total social welfare.

However, the distribution of welfare among different states as well as within states among different social groups might vary significantly and specific national social groups might even realize an overall welfare loss. Thus, from a political economy perspective beyond trade theory distribution of welfare is crucial for political feasibility of accession. In this regard it is a common point of view that CEEC states explicitly realize social welfare gains in agriculture, while the EU will realize a net gain in manufacturing. The explanation is twofold. First, CEEC do have comparative advantages in agriculture when compared with EU-15 and second the specific organization of the CAP implies additionally net-social welfare transfers from EU-15 to CEEC. The last point follows directly from the specific principle of "financial solidarity" and the fact that the comparatively low per capita income of the CEEC states implies an extremely low budget share. Hence, in essence under the EU-regime CEEC states will only have to finance a small part of the budgetary expenditures induced by their realized national agricultural protection levels when compared to a pure national finance of agricultural protection (see Koester 1976 and 1996).

On the other hand, the principle of financial solidarity has been heavily criticized as a inefficient political institution inducing systematically higher agricultural protection levels, blowing up budget expenditures and fostering economic inefficiency of CAP (Koester 1976, 1996 and Henning 2002). Therefore, recent discussions on CAP-reform suggest to abolish the principle of financial solidarity and re-nationalize the financing CAP-expenditures. The more future CAP-reform will abolish common finance of CAP-expenditure the lower are c.p. social welfare transfers from EU-15 to CEEC states. Hence, the less attractive appears EU-accession to CEEC. On the other hand it is straightforward to show that re-nationalization implies a political economy equilibrium corresponding with lower EU agricultural protection levels and therefore a higher economic efficiency of the CAP (Henning et. al. 2001).

Thus, there is a trade-off between overall economic efficiency of the CAP, i.e. total sum of economic welfare realized in the enlarged EU, and the political feasibility corresponding to the specific welfare distribution among EU und CEEC states as well as among social groups within CEEC, respectively.

Given our model above we can analyze to what extent EU-accession is politically feasible from a national perspective of the CEEC. In essence, forecasting the partial political economy equilibrium of EU-Accession implies two changes[3]: (1) level of agricultural protection increases from actual national level to the EU-level and (2) according to the financial principles of the CAP-regime national budget share change from $t_n = 1$ (pure national finance) to a lower share $t_n < 1$.

To analyze to what extent EU-accession is politically feasible in the CEEC we proceed as follows. (1) We assume that national PSE levels increase to the EU-level of 50%. (2) since future budget shares are not easy to estimate[4], we calculate instead the maximal national cost share of the non-agrarian population that would imply that agricultural EU-policy would be a national political economy equilibrium. Note that national cost shares include both national share in EU-budget expenditures and national deadweight costs. Formally, this maximal cost share can be calculated as follows:

[3] In fact a third change occurs, that is the policy mix would also change. For simplicity we neglect this change in our simulation analyses. This can at least partly be justified, since most accession countries have already adapted to agricultural policy regime of the EU.

$$(15) \quad t_n = \frac{\delta_n}{(1-\delta_n)} \frac{dY_A^r}{dY_M^r}\bigg|_{\omega_{EU}}$$

Maximal national cost shares calculated according to eq.(15) are presented in table 3. To be able to analyze to what extent calculated cost shares imply problems of political feasibility, table 3 additionally contains the share of national cost to finance total national direct payments calculated by Weise et. al. (2001) assuming that the current EU-system will be continued in an enlarged EU.

As can be seen from table 3 assuming national financing of EU-policy EU-accession of would be hardly politically feasible in any CEEC-countries. An exception might be seen in Slovenia for which the calculated maximal national cost share is at least relatively close to 1. Thus, neglecting for the moment possible welfare gains in the manufacturing sector, political feasibility of EU-accession crucially depends on keeping the principle of financial solidarity. Now, assuming financial solidarity political feasibility seem to be no problem in most CEEC-countries giving the calculated maximal national cost shares in table 3. For all CEEC-countries these shares lie high above the corresponding cost shares calculated by Weise et. al. The only exception is again Slovenia, where the cost share imposed by financing direct payment lies already above the maximal cost share guaranteeing political feasibility.

Interpreting these results one has to keep in mind that simulation analyses correspond only to partial political economy analyses, since welfare gains or losses in the manufacturing sector implied by EU-accession have been neglected. Of course, assuming positive welfare gains implied by EU accession in the manufacturing sector, overall political feasibility can still be reached. However, actual discussion at both academic and political level assume that CEEC mainly gain from EU-accession via realized net welfare gains in the agricultural sector. Therefore, given this assumption our simulation results highlight an important trade-off between political feasibility of EU-accession and economic efficiency of CAP. Empirically, this trade-off has to be solved in international negotiations among actual EU-member states and CEEC-candidates. Monitoring on-going negotiations indicates that EU-15 seems to be

[4] Note that national budget shares in the model reflects both (a) the national share in financing EU-budget and (b) the total amount of future EU-budget.

willing to trade-off comprehensive reform of the CAP against a soon realization of EU-enlargement.

In contrast, assuming a comprehensive pre-accession CAP-reform will take place, our regression analyses imply that possible options to achieve political feasibility in the CEEC under these conditions would be undertaking constitutional reforms. In particular, the implementation of electorate system corresponding closer to a proportional representation or the establishment of bicameralism would be, at least theoretically, possible options.

4 Conclusion

The paper shows, that beyond economic and demographic structures political institutions do have a crucial impact on the political power of the agrarian population in the ten Central and Eastern European Candidates States. Political variables which were tested in the econometric analyses correspond to the organization of legislature, the electorate system and the cost of organization of agrarian interest groups. The analyses in this paper point out, that the electorate system has the highest impact on the political bargaining power of the agrarian population. Regarding the legislative organization, it was exposed that bicameralism implies c.p. a higher weight of the agrarian population. In detail, moving from unicameralism to bicameralism induce an increase of average political bargaining power of 50%.

In contrast to former political economy studies (e.g. Gardner 1987) no significant influence on political power was found neither for the share of rural population nor the share of the agriculture in total GDP.

Applying our simple political economy model to analyze EU-accession indicates a trade-off between domestic political feasibility of EU-accession within CEC-states and overall economic efficiency of future CAP. In particular, political feasibility of EU-accession crucially depends on keeping the principle of financial solidarity, while economic efficiency will be improved abolishing this principle.

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APPENDIX

Table1: Empirical economic data and variable values used in regression analysis

	Latvia	Lithuania	Estonia	Bulgaria	Romania	Slovakia	Czech Republic	Poland	Hungary	Slovenia
PSE-Measure (%)	8	18	9	5	9	25	11	22	16	42
Relative Political-Weight of Agrarian Population	0,155	0,156	0,183	0,188	0,348	0,639	0,663	0,690	0,748	0,887
Relative Income Redistribution	0,2	0,2	0,2	1,0	0,6	1,0	1,8	1,2	2,1	2,6
GDP per capita (Ecu)	1568	1324	2274	881	1239	2759	3980	2782	3466	7523
economical + structural variables										
GDP-Share (%)	5	10	3,6	15	13,9	4,5	3,7	3,8	5	4
Rural Population-Share (%)	26	26	25	32	43	40	34	36	34	48
political variables										
Organization of legislature										
Bicameralism	0	0	0	0	1	0	1	1	0	1
Presidency	0	1	0	1	1	1	1	1	0	1
Electoral System										
Electorate System Index	0,7	0,55	0,5	0,5	0,5	0,8	0,8	0,5	0,85	0,9
Magnitude (number of candidates)	40	1	6	8	8	37,5	25	10	4,1	11
Electorate Treshhold (%)	5	0	2	4	3	5	5	5	4	0
Cost of organization										
Peasent Party	0	0	0	1	0	0	0	1	1	1

Table 2: Main results of regression analysis

Adjusted R-squared	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	0.49	0.01	0.65	0.72	0.68	0.76	0.75
Variable	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
CONST	**-0.759** *(-1.601)	**-0.367** (-0.613)	**-0.532** (-1.647)	**-0.532** (-1.841)	**-0.702** (-2.486)	**-0.178** (-0.62)	**-0.410** (-2.097)
Bicameralism (O1)	**0.152** (0.794)	**0.136** (0.51)	**0.189** (1.228)	**0.190** (1.399)		**0.237** (2.559)	**0.245** (2.62)
Presidency (O2)	**0.033** (0.169)	**-0.116** (-0.468)	**0.004** (0.028)				
Electorate System Index (E1)	**1.207** (1.958)		**0.975** (2.322)	**0.970** (2.795)	**0.832** (2.321)	**0.860** (2.504)	**1.069** (3.691)
Magnitude (E2)	**-0.007** (-0.716)	**0.004** (0.333)					
Electorate Threshold (E3)	**0.043** (0.838)	**0.005** (0.07)					
Rural Population Share (I1)	**0.008** (0.494)	**0.021** (1.012)	**0.006** (0.466)	**0.006** (0.603)	**0.016** (1.98)		
Peasant Party (I2)	**0.073** (0.388)	**0.192** (0.768)	**0.162** (1.379)	**0.162** (1.551)	**0.148** (1.326)	**0.194** (2.073)	**0.181** (1.916)
GDP-Share						**-0.014** (-1.095)	

*Values in brackets denote the t-statistic

Table 3: Corresponding and maximal national cost shares

	Latvia	Lithuania	Estonia	Bulgaria	Romania	Slovakia	Czech Republic	Poland	Hungary	Slovenia
Corresponding* national cost shares	0,13	0,10	0,24	0,09	0,05	0,23	0,29	0,23	0,19	0,98
maximal national cost shares	0,49	0,69	0,66	0,36	0,32	0,64	0,32	0,55	0,44	0,89

*by Weise et al. (2001)