Abstract

Recently several claims that globalization can deteriorate citizens'/voters' ability to control policy makers in elections has been made. This paper formalizes one of the arguments namely the claim that globalization makes it harder to evaluate own policy makers' conduct since in an open economy world markets have impacts on the domestic economy for which domestic policy makers are not accountable. One basic model of political accountability and a simple model of trade are embedded to study how opening of trade affects accountability. The globalization critique is shown to be valid under certain conditions. But globalization can also improve accountability. Also, globalization can polarize the world partitioning countries into good governance and bad governance groups. But convergence is also possible, with the quality of governance improving in some countries, deteriorating in others.

1 Introduction

This paper studies how international trade affects the quality of the governments. The issue has been raised recently by Basu (2011, ch. 9) and Rodrik (2011, especially ch. 9), who make the claim that globalization (open, frictionless movements of goods, services and capital flows) can deteriorate the quality of governments in terms of accountability to their own citizens. Both but particularly Rodrik argues that with open international markets individual countries face the pressure to adopt policies that attract firms and investments at the cost of regulations benefitting the population. Rodrik also mentions the problem but Basu gives a more extensive discussion of the possibility that with international ties citizens may have difficulties in separating from the flow of information they receive the information needed to evaluate the conduct of their own policy makers. E.g. the prices (goods prices, interest rates etc.) consumers face are influenced by actions of different governments in addition to shocks generated by individual actions internationally.

*pertti.haaparanta@aalto.fi
To analyze the impact of globalization on policy makers' accountability to citizens I focus on the second issue. I will employ one of the standard accountability models (Persson and Tabellini 2001, section 4.5.) where policy makers have career concerns. In elections citizens gather information on the quality of the government and choose whether to re-elect or throw out the current government. The information voters have is imperfect. I extend the model to a quite standard two period trade model by utilizing Roy Ruffin's (2004) reformulation of the Ricardian model where comparative advantage is the associated with factors of production instead of countries. With different proportions of the factors there will be trade. The version I use gives an especially strong role for the information voters have on international prices.

There is an extensive literature on the political economy of trade and trade policies summarized e.g. in Grossman and Helpman (2006) and Hillman (2007). In a way, this literature takes the quality of the national governments as given. This happens e.g. through the assumption that governments give a fixed weight to the payments they receive from lobbies etc. The rents policy makers are able to catch are endogenous but their willingness to receive them is exogenous. The details depend on the voting model but elections do not have the disciplining role they have in models of accountability, where elections play a role in constraining the rent capture by elected officials. In this paper the focus is on the international spill-overs of the quality of governance: does bad governance in one country reduce the quality of governance in other countries? The research closest to this is about whether tax competition has a disciplining role to play in constraining the "Leviathan", i.e. politicians incentives to build to large a public sector (e.g. Edwards and Keen 1996).

The next section presents the model, section 3 analyzes the autarky and basic open economy equilibria, in section 4 equilibria with varying assumptions on how voters understand the international price formation process, section 5 discusses some extensions and concludes.

2 The Model

There are two countries, H and F. H has an endowment of resources that produce R "raw" units of intermediate inputs per period. Similarly F has resources that produce S "raw" units of intermediate inputs per period. The actual intermediate inputs that are produced depends on the ability of policy makers, to be specified below. There are two final goods, 1 and 2, both of which can be produced by either of the intermediate inputs. In H the unit input requirements are

\[ a_{R1}, a_{R2}, a_{S1}, a_{S2}, \]
\[ a_{R1} < a_{S1}, a_{S2} < a_{R2} \]
i.e. input \( R \) has comparative advantage in production of good 1, in \( F \) the same but overall productivity can be different:

\[ \gamma a_{R1}, \gamma a_{R2}, \gamma a_{S1}, \gamma a_{S2}, \gamma \lesssim 1 \]  

(2)

In autarky only the own input is being used. It is assumed that only the intermediate inputs are being traded, the final goods are produced locally, with the implication that gains from trade are pure productivity gains: access to foreign markets allows the use of more productive inputs. All markets are assumed to be competitive. In international equilibrium production of good 1 at \( H \) uses input \( R \) and production of good 2 input \( S \) if

\[ \frac{p_{a_{R1}}}{a_{R1}} \leq \frac{p_{a_{S1}}}{a_{S1}} \quad \frac{p_{a_{R2}}}{a_{R2}} \leq \frac{p_{a_{S2}}}{a_{S2}} \iff \]  

(3)

with the same condition for specialization in input use holding for country 2 also. Complete specialization in input use takes place with strict inequalities and the production of at least one of the goods always uses only one input. Note that in free trade equilibrium (3) holds always: in other cases one of the inputs would not be demanded at all implying that its price would equal 0 making its use profitable after all.

The actual production of intermediate goods depends on the competence of the elected policy maker, \( \sigma_i, i = H, F \). The governments can stay in power at most two periods and there is an election at the end of each period. After the first period of a term the voters choose whether to re-elect the incumbent or elect a new policy maker. The competencies of the policy makers are random variables and not perfectly observable to voters. The distributions of competencies are both uniform with expected competence equalling unity:

\[ \sigma_i \sim U \left[ 1 - \frac{\sigma_i}{2}, 1 + \frac{\sigma_i}{2} \right], 0 < \frac{\sigma_i}{2} < 1, i = H, F \]  

(4)

The voters can estimate the competence of the incumbent when making the decision on re-election after observing their welfare, and for simplicity I assume all voters to be identical. With competence \( \sigma_i \) the realized total output of intermediate output is \( \sigma_i I, I = R, S \).\(^1\)

Policy makers are assumed to be motivated by the possibility of rent capture and career concerns. The rent capture is assumed to take the form of capturing ownership to the "raw" resource. This capture takes place in the first period with country \( i \) policy maker capturing \( c_i \) of the resource in the own country\(^2\). Thus the net supply of inputs the voters receive are

\[ \sigma_H \left[ R - (1 + \delta_H) c_H \right], \sigma_F \left[ S - (1 + \delta_F) c_F \right] \]  

(5)

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\(^1\)The policy makers have quite limited role in the model, they do not explicitly take care of any supplies of public goods, nor do they impose taxes, they just run the economy, either badly or well. These assumptions are made to get the model as simple as it is. In the last section I show how to extend the model to the case with active policies.

\(^2\)One can extend the model to allow some capture of the resource of the other country when there is trade.
where \( \delta_i \geq 0, i = H, F \), is the potential deadweight loss from capture. Policy makers decide on capture before observing their own competence. They observe it at the end of the first period in power and the competence is the same in both periods. With this assumption voters always prefer to re-elect the incumbent if they evaluate him to be more competent than a new entrant would be.

To model the incumbent’s incentive to get re-elected I assume that in the second period of the term the incumbents can earn an "ego rent" from staying in power arising e.g. from respect shown by voters. Assuming the existence of ego rents is a standard practice in the literature (Persson and Tabellini 2001, Besley 2006) but it is also common to allow the re-elected policy makers to still benefit from capture (usually maximum feasible capture, as they cannot any more be re-elected and do not have career concerns). Abstracting from capture in the second term simplifies the analysis considerably as one can then abstract from expected events in the second period of the term and their implications for the global input prices and expectations on them at the beginning of the first term. These will be added to the extended version of the paper.

H policy maker’s utility function is

\[
\lambda_H \frac{p_{R \beta} C_{HH}}{p_1^{1-\mu}} + \beta \chi_{EH} E
\]

where \( \lambda_H \) = a measure of the (dis-)quality of the governance in the country that makes it possible to get direct information on policy makers’ capture. One can interpret \((1 - \lambda_H)\) to be the probability of the capturer being captured. I assume that the policy makers caught will be immediately displaced with new elections taking place. The policy makers will sell their capture in the markets, earn income with it and use it for the purchase of both of the goods. I assume policy makers utility function to be Cobb-Douglas with weight \( \mu \) on consumption of good 1. \( \beta \) = policy makers time preference and \( E = \) ego rent if re-elected, \( \chi_{EH} = 1, \) if re-elected, \( 0 \) otherwise. Policy maker chooses capture to maximize the expectation of (6).

To allow for deeper analysis of international income differences than usually I assume that consumers can have non-homothetic preferences in the way modelled by Markusen (2010): consumer utility function is

\[
U = \frac{(C_1 + C)^{\alpha} C_2^{1-\alpha}}{\alpha^\alpha (1 - \alpha)^{1-\alpha}}, C \geq 0
\]

implying the demand functions

\[
C_1 = \frac{\alpha Y - (1 - \alpha) p_1 C}{p_1}
\]

\[
C_2 = \frac{(1 - \alpha) (Y + p_1 C)}{p_2}
\]

where \( Y = \) consumer income. Good 1 is a luxury good consumed only if income is high enough. Consumers make their decisions with perfect information on
final good prices. I assume that with trade, they do not necessarily observe perfectly the input prices (i.e. cannot infer from final good prices the input prices), as they are formed at international markets, not local markets. Likewise, while observing their incomes they do not observe perfectly its components separately (due not knowing exactly the competence of the policy maker). These type of assumptions are for their to be any sense in even considering elections as a way of disciplining policy makers.

The timing of the events is as follows: At the beginning of the first term of a new government policy makers decide on how much of the resources to capture without knowing their ability to improve the productivity of the resource. After that consumers and policy makers receive their incomes and spend them on the final goods and markets clear. Finally, consumers observe their welfare and estimate on the basis of that the competence of the policy maker. If the estimated competence is high enough, the policy maker is re-elected. In the second term the re-elected policy makers earn their ego rents and there is no capture.

3 Elections and the quality of government: The basics

3.1 Autarky equilibrium

Consider first the autarky equilibrium of country H (similar analysis holds for F). I look for a subgame perfect equilibrium and start thus from voters’ decisions. If a new government has been elected the consumers observe their welfare to be \( \bar{U} \). They use this information to estimate the competence of the policy maker. By observing utility and prices voters can observe their disposable income \( \sigma_H (R - (1 + \delta_H) \bar{c}_H) \). I assume that they know the "raw" resource flow R. But even with this they cannot observe separately the competence and capture. I assume that they have an estimate of the capture \( \bar{c}_H \). Policy makers have ways of influencing what kind of negative information voters are able to receive (e.g. Besley and Prat 2006). This estimate is taken as given by the policy makers. They also know their own utility function and the implied indirect utility (assume here for simplicity that utility is Cobb-Douglas)

\[
\hat{U} = \frac{p_R [\sigma_H (R - (1 + \delta_H) \bar{c}_H)]}{p_1^{\alpha} p_2^{1-\alpha}}
\]

which implies that the estimated competence is

\[
\hat{\sigma}_H = \frac{p_1^{\alpha} p_2^{1-\alpha} \hat{U}}{p_R [R - (1 + \delta_H) \bar{c}_H]}
\]

The estimated competence is the higher, for given observed utility, the higher the costs of living and estimated capture are as reaching the observed utility would not be possible without high enough competence. Likewise, the larger
the "raw" resource and the higher the price of the input, the smaller will be the estimated competence as the observed welfare is possible with lower competence. As stated above, in autarky I assume that consumers observe all the prices and understand the linkage between input and final good prices. As in autarky (without access to the other input)

\[ p_1 = a_{R1}p_R, p_2 = a_{R2}p_R \]

(10) becomes after choosing the input as numeraire, \( p_R = 1 \),

\[ \hat{\sigma}_H = \frac{a_{R1}^{1-a} \hat{U}}{R - (1 + \delta_H) \hat{c}_H} \]

The policy maker is re-elected only if

\[ \hat{\sigma}_H = \frac{a_{R1}^{1-a} \hat{U}}{R - (1 + \delta_H) \hat{c}_H} \geq 1 \] (11)

as by electing a new policy maker would give an incumbent with expected competence equal to unity.

It is assumed that policy makers know their own voters’ utility function. Thus, they know that

\[ \hat{U} = \frac{p_R [\sigma_H (R - (1 + \delta_H) c_H)]}{p_1^{1-a}} = \frac{\sigma_H [R - (1 + \delta_H) c_H]}{a_{R1}^{1-a} a_{R2}^{1-a}} \] (12)

After inserting this in (11) the level of competence policy maker knows is required for re-election is

\[ \sigma_H \geq \frac{[R - (1 + \delta_H) c_H]}{[R - (1 + \delta_H) c_H]} \] (13)

This implies the probability of re-election at the time of deciding on capture to be

\[ \pi_{EH} = 1 - \frac{[R - (1 + \delta_H) \hat{c}_H]}{[R - (1 + \delta_H) \hat{c}_H]} - \left( 1 - \frac{\pi_H}{2} \right) = \frac{1 + \frac{\pi_H}{2} - \frac{[R - (1 + \delta_H) \hat{c}_H]}{[R - (1 + \delta_H) c_H]}}{\pi_H} \] (14)

Thus, the expected utility of the policy maker is

\[ E_{PM}^p = \lambda_H \frac{c_H}{a_{R1}^{1-a_{R2}}} + \beta_H p_{EH} E = \]

\[ = \lambda_H \frac{c_H}{a_{R1}^{1-a_{R2}}} + \beta_H \frac{1}{\pi_H} \left[ 1 + \frac{\pi_H}{2} - \frac{[R - (1 + \delta_H) \hat{c}_H]}{[R - (1 + \delta_H) c_H]} \right] E \]
as the autarky prices are non-stochastic. The first order condition for the choice of capture is

\[
\frac{\lambda_H}{a_{R1}^{\mu_1} a_{R2}^{1-\mu_1}} - \beta_H \frac{E}{\sigma_H} \left( \frac{(1 + \delta_H) [R - (1 + \delta_H) \tilde{c}_H]}{[R - (1 + \delta_H) c_H]^2} \right) = 0
\]  

(15)

Assume that voters understand the domestic policy makers behavior. They thus set \( \tilde{c}_H = c_H \) which leads to

\[
\frac{\lambda_H}{a_{R1}^{\mu_1} a_{R2}^{1-\mu_1}} - \beta_H \frac{E}{\sigma_H} \left( \frac{(1 + \delta_H)}{[R - (1 + \delta_H) c_H]} \right) = 0
\]

in equilibrium, with the solution

\[
c_H = \frac{R}{1 + \delta_H} - \frac{\beta_H a_{R1}^{\mu_1} a_{R2}^{1-\mu_1} E}{\lambda_H \sigma_H}
\]  

(16)

The quality of policy making gets lower (rent capture increases) with larger expected output of intermediates both absolutely and as a percentage of (expected) output and obviously with lower quality of the legal and information systems (higher \( \lambda_H \)) and larger dispersion of policy makers’ competence. Equally obviously, quality of the policy making improves with the farsightedness of the policy makers and the ego rents that can be earned later in the office, both because of the career concerns. These are not new results but even though it is obvious here, the quality deteriorates the less costly (the lower \( a_{R1}^{\mu_1} a_{R2}^{1-\mu_1} \)) the consumption basket of policy makers is. This is one of the channels through which access to international markets affects the quality of policy making. Finally, from (14) one can see that in equilibrium the probability of re-election equals 0.5 regardless of capture as voters have rational expectations over the extent of capture.

### 3.2 Equilibrium with free trade: Imperfect information on gains from trade and international prices

Open economy changes the setting from the closed economy case fundamentally. The welfare of voters will be affected by world market prices of inputs and access to foreign inputs simultaneously. The world market prices will in turn be affected by the capture and competence of policy makers in both countries. This makes it hard for voters to evaluate their own policy makers’ competence. In all the analysis it is assumed that voters understand the policy makers’ incentives for capture. For the policy makers themselves prices are now random affecting their incentives for capture. In this section we analyze the impacts of these changes by assuming that policy makers do not internalize the impacts of their capture on world market prices, i.e. both policy makers behave as if small with respect to the world market but in equilibrium their actions will be intertwined. The analysis will be based on the assumption that voters have potentially imperfect signals of world market prices and gains from trade. Also I focus on the case
where both of the policy makers are newly elected, at the beginning of their first term, but will discuss the implications of dropping this assumption.

To consider the equilibrium with free trade assume first that consumer preferences are Cobb-Douglas, i.e. $C_H = C_F = 0^3$ and that there are no international productivity differences, $\gamma = 1$. Assume that the production of both final goods uses only the input with comparative advantage in its production ((3) holds with both inequalities strict). Take the intermediate input produced in F as the numeraire, i.e. $p_S = 1$. The equilibrium final goods prices are the same in both countries

$$p_1 = a_{R1} p_R, p_2 = a_{S2}$$

Then the equilibrium condition for the market for intermediate good R is (taking into account that policy makers sell their capture in the market) is

$$\frac{a_{R1}}{p_1} \{ a_R \sigma_H \left[ R - (1 + \delta_H) c_H \right] + \mu p_R \sigma_H c_H + \alpha p_S \sigma_F [S - (1 + \delta_F) c_F] + \mu p_S \sigma_F c_F \} = \sigma_H \left[ R - (1 + \delta_H) c_H + c_H \right]$$

with the left hand side giving the (induced) demand and the right hand side the supply. Using the assumptions above and noting that $p_1 = a_{R1} p_R$ the equilibrium (relative) price of R is

$$p_R = \frac{\sigma_F}{\sigma_H} \left( \frac{\alpha S - (\alpha(1 + \delta_F) - \mu) c_F}{(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H} \right)$$

H voters observe the utility $\hat{U}_H$. They know that their indirect utility is

$$\frac{p_R \sigma_H \left[ R - (1 + \delta_H) c_H \right]}{p_1^\alpha p_2^{1-\alpha}} = \frac{\hat{p}_R^{1-\alpha} \sigma_H \left[ R - (1 + \delta_H) c_H \right]}{a_{R1}^{\alpha} a_{R2}^{1-\alpha} a_{R1}^{\alpha} a_{R2}^{1-\alpha}}$$

$$\frac{\hat{p}_R^{1-\alpha} \sigma_H \left[ R - (1 + \delta_H) c_H \right]}{a_{R1}^{\alpha} a_{R2}^{1-\alpha} a_{R1}^{\alpha} a_{R2}^{1-\alpha}} = \frac{\hat{p}_R^{1-\alpha} \sigma_H \left[ R - (1 + \delta_H) c_H \right]}{a_{R1}^{\alpha} a_{R2}^{1-\alpha} a_{R1}^{\alpha} a_{R2}^{1-\alpha}}$$

where

$$G_H = \frac{a_{R1}^{\alpha} a_{R2}^{1-\alpha}}{a_{R1}^{\alpha} a_{S2}^{1-\alpha}}$$

is the measure of gain from trade due to availability of more productive inputs from abroad. But also changes in the terms of trade (price of R) have impacts on welfare.

To proceed I assume that the voters have received signals of the terms of trade and gains from trade, $\hat{p}_R$ and $\hat{G}_H$ respectively. Voters must have some information on these as without them it is impossible to try to evaluate the quality of the incumbent. It is realistic to assume that voters are not estimate the gains from trade precisely (we as economists are not able to do it). Also,

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3Note that these can differ if the number of agents differ between countries even if individual preferences are identical.
in general consumers price perceptions are also rather imprecise (Asplund and Friberg 2001, other references to be added) and in a stochastic environment the precise information at all times may be hard to obtain and follow. Even when at the time of purchase consumers/voters observe the prices they may have difficulties at the time making voting decisions in estimating the components of welfare, in particular correctly the development of the relative prices. With the estimated capture \( c_H \), voters evaluate the competence of the policy maker from

\[
\frac{\hat{p}_R^{-\alpha} \sigma_H [R - (1 + \delta_H) c_H]}{a_R^{1-H} a_R^{1-\alpha}} = \hat{U}_H
\]

leading to

\[
\hat{\sigma}_H = \frac{a_R^{\alpha} a_R^{1-H} \hat{U}_H}{G_H \hat{p}_R^{-\alpha} [R - (1 + \delta_H) c_H]}
\]

(19)

The larger the perceived gains from trade are and the better the perceived terms of trade are the smaller is the estimated competence for the given observed utility.

The policy maker knows that the true utility is. I also assume that policy makers have perfect information about gains from trade. This gives:

\[
\hat{U}_H = \frac{p_R^{-\alpha} \sigma_H [R - (1 + \delta_H) c_H]}{a_R^{1-H} a_R^{1-\alpha}}
\]

Since re-election requires that \( \hat{\sigma}_H \geq 1 \), the policy maker knows that the required true competence is determined by the condition

\[
\left( \frac{p_R}{\hat{p}_R} \right)^{-1-H} \frac{G_H \sigma_H [R - (1 + \delta_H) c_H]}{G_H [R - (1 + \delta_H) c_H]} \geq 1 \iff (20)
\]

\[
\left( \frac{p_R}{\hat{p}_R} \right)^{-1-H} \frac{G_H \sigma_H [R - (1 + \delta_H) c_H]}{G_H [R - (1 + \delta_H) c_H]} \geq 1
\]

The left hand side of this is now a product of three distributions and hard to analyze analytically, in general. To get on I make two assumptions:

**A1:** Voters’ perception of gains from trade are fixed and known to the policy maker, they do not vary with price.

**A2:** Voters’ perceptions of terms of trade are related to actual terms of trade but may be systematically biased:

\[
\hat{p}_R = (\theta + \varepsilon_H) p_R, \theta > 0, \theta \leq 1
\]

where \( \varepsilon \) is uniformly distributed and independent of the distribution of the policy makers competence.

\[
\varepsilon_H \sim U \left[ \frac{h_H}{2}, \frac{h_H}{2} \right], 0 \leq h < 2 \theta
\]
This gives
\[
(\theta + \varepsilon_H)^{1-\alpha} \sigma_H \geq \frac{\tilde{G}_H [R - (1 + \delta_H) \tilde{c}_H]}{\tilde{G}_H [R - (1 + \delta_H) c_H]}
\]
as the condition for re-election. The distribution of the left hand side can now be computed (see the Appendix) and the probability of re-election is
\[
\pi_{EH} = \frac{\pi_{EH}}{1 - (1 - \alpha) \left[ (1 - \frac{\pi_H}{2})^{\frac{1}{1-\alpha}} - (1 + \frac{\pi_H}{2})^{\frac{1}{1-\alpha}} \right]}
\]
From (22) it is readily seen that when voters have imperfect information about world market relative prices and gains from trade, the re-election probability in rational expectations equilibrium, in general differs, from \(\frac{1}{2}\), i.e. there is either incumbency advantage or disadvantage. To see this in a more transparent way, assume that voters have perfect price information, \(\theta = 1, h = 0\), but there is bias in their estimated gains from trade. Then the re-election probability is
\[
\pi_{EH} = \frac{1 + \frac{\pi_H}{2} - \frac{\tilde{G}_H [R - (1 + \delta_H) \tilde{c}_H]}{\tilde{G}_H [R - (1 + \delta_H) c_H]}}{\sigma_H}
\]
which with rational expectations reduces to
\[
\pi_{EH} = \frac{1 - \frac{\tilde{G}_H}{\tilde{G}_H} + \frac{\pi_H}{2}}{\sigma_H}
\]
There is incumbency advantage if voters underestimate the gains, incumbency disadvantage if voters overestimate the gains. In the other extreme case where voters have accurate estimates of the gains from trade but their perceptions of world market prices are imperfect it is again obvious that, in general, the re-election probability will differ from \(\frac{1}{2}\). We have thus proved the following two propositions:

**Proposition 1** If voters do not observe world market prices perfectly and/or have biased perception of gains from trade, there will be incumbency advantage or disadvantage.

**Proposition 2** If voters have perfect price information but their evaluation of gains from trade are biased, there is incumbency advantage if the perceived gains are smaller than actual while incumbent has disadvantage is the perceived gains from trade exceed the actual gains.

In the literature a common way to model incumbency advantage is to assume that voters randomly give a preference or non-acceptance to the incumbent in addition to evaluating their performance (see e.g. Besley 2006, ch. 3, Besley and Preston 2007). Here the incumbency advantage/disadvantage arises from the
voters’ evaluation of the incumbent alone and is tied to deficiencies in consumer information. Incumbency advantage can thus be tied to the underlying structure of the economy. This is intuitive: With small evaluated gains from trade it is more likely that current level of welfare is due to the competence of the policy maker.

Proposition 2, tying incumbent’s advantage to perceived gains from trade has some potentially interesting implications. One is that incumbents have an incentive to liberalize trade but downplay the gains e.g. through trade bashing. This can be done in several ways. One is to take measures of liberalization that are not directly observable to consumers or the impacts of which are hard to evaluate, like reductions in bureaucratic trade barriers (abolition of some national standards etc.) while blaming trade for the woes created e.g. by plant closures. More generally, the policy makers have an incentive in trying to influence voters’ image of the policies they have conducted.

To get to the full solution of the model, the re-election probability at H can be rewritten (from (22)) in a compact way as

\[ \pi_{EH} = \pi_{EH} \left( \xi, \tilde{\Delta}_H \left[ \frac{R - (1 + \delta_H) \hat{c}_H}{R - (1 + \delta_H) c_H} \right], \tilde{\Delta}_H = \frac{\hat{G}_H}{G_H} \right) \tag{25} \]

where \( \xi = \) the vector of all other fixed parameters in (22). Obviously

\[ \frac{\partial \pi_{EH}}{\partial \left( \tilde{\Delta}_H \left[ \frac{R - (1 + \delta_H) \hat{c}_H}{R - (1 + \delta_H) c_H} \right] \right)} = -f_{EH} < 0 \]

The policy maker’s expected utility function is, using (17) and (25)

\[ \lambda_H \left( p_R \right)^{1-\mu} a_H G_{HPM} \frac{E_{HPM}}{a_R^1 a_S^2} + \beta_H \pi_{EH} \left( \xi, \tilde{\Delta}_H \left[ \frac{R - (1 + \delta_H) \hat{c}_H}{R - (1 + \delta_H) c_H} \right] \right) E = \tag{26} \]

\[ \lambda_H G_{HPM} \frac{E_{HPM}}{a_R^1 a_S^2} \right) \frac{\alpha S - \alpha (1 + \delta_F - \mu) c_F}{(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H} \right) \right)^{1-\mu} E_{HPM} \left( \frac{\sigma_F}{\sigma_H} \right)^{1-\mu} \tag{27} \]

Denote

\[ A_H \equiv E_{HPM} \left( \frac{\sigma_F}{\sigma_H} \right)^{1-\mu} \]
The first order condition for \( H \) policy maker’s optimum capture is

\[
E_{HPM} (p_R)^{1-\mu} \lambda_H G_{HPM} - \frac{\beta_H f_{EH} \Delta_H (1 + \delta_H) [R - (1 + \delta_H) \hat{c}_H]}{[R - (1 + \delta_H) c_H]^2} = 0 \quad (28)
\]

With rational expectations of policy makers’ incentives voters set \( \hat{c}_H = c_H \) and the optimal capture is given by

\[
c_H = \frac{R}{(1 + \delta_H)} - \frac{\beta_H f_{EH} \Delta_H}{E_{HPM} (p_R)^{1-\mu} \lambda_H G_{HPM}} \quad (29)
\]

with the obvious properties that capture increases with worse institutions, larger gains from trade and better terms of trade for policy makers. Likewise, the smaller the gains from trade voters have observed the larger will be the capture as it give the incumbent an advantage in elections.

In the full equilibrium the expectations of the policy maker must be taken into account, i.e. (27) holds. Plugging it in (29) and rearranging gives the equation for the equilibrium capture

\[
c_H = \frac{R}{(1 + \delta_H)} - \frac{\beta_H f_{EH} \Delta_H [(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H]^{1-\mu}}{\lambda_H G_{HPM} A_H [\alpha S - (\alpha (1 + \delta_F) - \mu) c_F]^{1-\mu}} \quad (30)
\]

One can then show

**Proposition 3** Assume \( \frac{R}{(1+\delta_H)} > \frac{\beta_H f_{EH} \Delta_H [(1-\alpha) R]^{1-\mu}}{\lambda_H G_{HPM} [\alpha S - (\alpha (1+\delta_F) - \mu) c_F]^{1-\mu}} \). Then there exists a unique solution to (30) for the capture by \( H \) policy maker.

**Proof.** To be added. \( \blacksquare \)

The interesting issue is the relationship between the foreign capture and domestic capture. It depends on the sign of \( \alpha (1 + \delta_F) - \mu \). If \( \alpha (1 + \delta_F) - \mu < 0 \) then higher foreign capture reduces domestic capture, while the reverse holds when \( \alpha (1 + \delta_F) - \mu > 0 \). In the latter case foreign capture increases the aggregate foreign demand for the \( H \) resource improving the \( H \) policy maker’s terms of trade. This situation arises if the policy maker’s preferences are very skewed towards consumption of good 1 relative to voters’ consumption. Below I will present a version of the model with non-homothetic preferences which provides deeper foundations for the complementarity and ties it to national income distribution.

These considerations already indicate that foreign economic relationships may magnify international differences in governance and political accountability or reduce them. Note that when the actions of the policy makers are substitutes (better quality foreign governance reduces the quality of foreign governance)
the condition in the previous proposition requires that foreign capture is not extremely large. I assume this to hold (there are enough independent parameters in the model to ensure the solution of this type). With the assumption it is easy to show that capture in H has the expected characteristics otherwise:

**Lemma 4** Lower voters’ perceived gains from trade, higher policy maker’s gains from trade, lower quality of institutions increase capture for given capture in F. The capture in F has an ambiguous effect on capture in H.

To close the model similar analysis has to be carried out for F. There the policy maker’s first order optimality condition can be written, in analogy with (30), as

\[ c_F = \frac{S}{(1 + \delta_F)} - \frac{\beta_F f_{EF} \Delta_F [\alpha S - (\alpha (1 + \delta_F) - \mu) c_F]^\mu}{\lambda_F G_{FPM} A_F [(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H]^{\mu}}, \quad \Delta_F \equiv \frac{G_F}{G_F} \tag{31} \]

where

\[ A_F \equiv E_{FPM} \left( \frac{\sigma_F}{\sigma_H} \right)^{-\mu} \]

and other parameters are analogous to those for F. Obviously we have the analogy to the previous proposition:

**Proposition 5** Assume \( \frac{S}{(1 + \delta_F)} > \frac{\beta_F f_{EF} \Delta_F [\alpha S]^\mu}{\lambda_F G_{FPM} A_F [(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H]^{\mu}} \). Then there exists a unique solution to (31) for the capture by F policy maker.

The nature of the F equilibrium depends on the sign of \( \alpha (1 + \delta_F) - \mu \), but again the comparative statics with respect to variables of interest is analogous to those for country H. If \( \alpha (1 + \delta_F) - \mu < 0 \), then deterioration in the quality of governance at H improves the quality at F, while if \( \alpha (1 + \delta_F) - \mu > 0 \) worse quality in H deteriorates the quality also in F, capture increases in both.

FIGURE 1 HERE

In the full equilibrium of the global economy equations (30) and (31) hold simultaneously. As is already clear, the nature of this equilibrium depends also on the sign of \( \alpha (1 + \delta_F) - \mu \), the sign determines how changes in one country are transmitted to the other country. Also the impacts of opening the economy (comparison between autarky and free trade equilibria) depend on the sign.

Let us first look at the opening and compare (16) with (31). There are several effects. First, there is the real income or terms of trade effect. If

\[ \frac{\alpha S - (\alpha (1 + \delta_F) - \mu) c_F}{(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H} > 1 \]

the terms of trade for H policy makers (and also for voters) improve inducing higher capture and deterioration in the quality of governance. At the same time obviously

\[ \frac{(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H}{\alpha S - (\alpha (1 + \delta_F) - \mu) c_F} < 1 \]
i.e. the real income of F policy makers, ceteris paribus, falls, improving the quality of governance. If \( \alpha (1 + \delta_F) - \mu < 0 \) then opening through the terms of trade effect reduces the quality of governance at H while improves it at F. If F had better governance than H to begin with, there will be polarization, opening of trade increases the international differences in the quality of governance. But this need not be the case if the initially better governed country experiences an improvement in its terms of trade. If \( \alpha (1 + \delta_F) - \mu > 0 \) the impacts of opening through the terms of trade effect are ambiguous. The deterioration of governance in the country with terms of trade improvement induces an increase in capture in the other but this effect is counteracted by the terms of trade deterioration in the other. The net effect is unclear. The same holds for the terms of trade components \( A_F \) and \( A_H \), as in general,

\[
A_F \geq A_H
\]

The second effect comes from voters perceived gains from trade. If in both countries the perceived gains are smaller than the actual gains,

\[
\tilde{\Delta}_F, \tilde{\Delta}_F < 1
\]

the quality of governance may decline everywhere regardless of the sign of \( \alpha (1 + \delta_F) - \mu \) but in case \( \alpha (1 + \delta_F) - \mu > 0 \) the global deterioration of the governance happens for sure, ceteris paribus. With trade optimism governance may improve governance globally. This raises the possibility of governance cycles, with governance moving with voters' mood. Global trade pessimism reduces the quality of governance, global trade optimism improves it.

Changes in institutional quality have ambiguous spill-over effects. if the quality improves in one country, e.g. \( \lambda_F \) falls, then capture increases in H, if \( \alpha (1 + \delta_F) - \mu < 0 \), and falls if \( \alpha (1 + \delta_F) - \mu > 0 \). Only if institutional quality increases everywhere there is a possibility for global improvements in the quality of governance. This raises potentially interesting policy issues. Currently official development policies put large weight on improving legal institutions and governance in poor countries. These policies, if successful, may have negative effects on governance in the medium income and rich countries.

The discussion is summed up in the next proposition:

**Proposition 6** Opening of trade has ambiguous effects on the quality of governance in individual countries and globally. Trade may induce a polarization of countries to well-governed and poorly governed countries, but it is also possible that the quality of governance converges globally. Since quality of governance matters for citizens’/voters’ welfare, the overall welfare impacts of trade opening are ambiguous.

### 3.3 Equilibrium with non-homothetic preferences

With identical homothetic preferences international and intra-national income distributions do not have impacts global private demand. With non-homothetic
preferences they matter. In this subsection I present first implications of non-homothetic preferences in a special case to justify deeper why the classification of equilibria in the previous subsection may be important. Secondly, I characterize the determination of capture in the same framework as above but with non-homothetic preferences.

Assume that F is a poor country with low average income per capita. Assume also that its income is very unequally distributed so that only the richest (minority of population) can afford good 1, the luxury good (see (7) and (8)). The middle class is very small, and just assume it to be non-existent. Then the poor people consume only good 2 and so spend all their income

\[ Y_{FP} = \sigma_F [\theta_{FP} (S - \phi_{FP} (1 + \delta_F) c_F)] \]  

(32)
on it giving them utility

\[ U_{FP} = C^\alpha [\sigma_F (\theta_{FP} S - \phi_{FP} (1 + \delta_F) c_F)]^{1-\alpha} \]  

(33)

where \( \theta_{FP} \) = the share of poor in total income, \( \phi_{FP} \) = the share of poor in the costs generated by the policy maker’s capture. Since the poor are the majority they decide whether the policy maker is re-elected or not. With the assumptions made the poor in F are completely isolated from the global economy except by the capture in H. Following the steps in section 3.1. the estimated competence of the politician with observed welfare \( \tilde{U}_{FP} \) is

\[ \tilde{\sigma}_F = \frac{\left( \frac{\tilde{U}_{FP}}{C} \right)^{\frac{1}{1-\alpha}}}{\theta_{FP} S - \phi_{FP} (1 + \delta_F) c_F} \]

and the re-election policy maker knows that her ability must be at least

\[ \frac{\theta_{FP} S - \phi_{FP} (1 + \delta_F) c_F}{\theta_{FP} S - \phi_{FP} (1 + \delta_F) c_F} \]
to be re-elected. This is exactly as in the autarky. The difference comes from the fact that the policy maker’s incentives are also shaped by what happens in the world market.

F demand for good 1 is now given by the sum of private demand

\[ \alpha \sigma_F [(1 - \theta_{FP}) (S - (1 - \phi_{FP}) (1 + \delta_F) c_F)] - (1 - \alpha) \theta_{RI} \phi_{FR} C \]

\[ a_{R1} \]

where \( \phi_{FR} \) = the share of rich in population. The demand by policy maker is

\[ \frac{\mu c_F}{a_{R1}} \]

Comparing these two it is right away clear that if the rich elite pays only a small share of the aggregate private costs of capture, i.e. \( \phi_{FP} \) is close to unity, then we are in the situation of international complementarity studied in the
previous subsection. Highly unequal income distribution with costs of capture born by the poor majority implies that increased capture is good for the country producing the luxury and good for its policy makers, in particular as their incomes from capture increase. Only the elite is integrated to the global economy through markets, the poor only through policy maker’s capture.

In the case where all the voters are able to consume both of the goods the equilibrium price for $R$ is given by

$$p_R = \frac{\sigma_F \left[ \alpha \left( S - (1 + \delta_F) c_F \right) \right]}{\sigma_H \left[ (1 - \alpha) R - (\beta - \alpha + (1 - \alpha) \delta_H) c_H \right] + (1 - \alpha) (n_H + n_F) a_{R1} C}$$

where $n_i =$ population of country $i$, $i = H, F$. Voter’s utility in $H$ is

$$U_H = G_{1h} p^H R^{1-\alpha} \left[ \frac{\sigma_H (R - (1 + \delta_H) c_H)}{n_H} + a_{R1} C \right]$$

and with the observed utility $\hat{U}_H$ the estimated ability of the policy maker is

$$\hat{\sigma}_H = \frac{n_H \left( \frac{\hat{U}_H}{G_{1h}} - a_{R1} C \right)}{R - (1 + \delta_H) \hat{c}_H}$$

Using the same procedure as in section 3.2. the policy maker knows that his competence must satisfy

$$\left( \frac{p_R}{\tilde{p}_R} \right)^{1-\alpha} \left[ \frac{\sigma_H (R - (1 + \delta_H) c_H)}{n_H} + a_{R1} C \right] \geq \frac{\hat{G}_{1h} \left[ \frac{R - (1 + \delta_H) \hat{c}_H}{n_H} + a_{R1} C \right]}{R - (1 + \delta_H) \hat{c}_H}$$

The biases in voters’ evaluations of gains from trade and international relative prices affect required ability also through the "basic" consumption of good $1$, $C$, not only through voters income. This implies that e.g. the same factor’s that produced incumbent (dis-)advantage with homothetic preferences create even stronger (dis-)advantage with non-homothetic preferences with potential implications for capture. Also, now one cannot separate the ability from the "net income" in calculating the probability of re-election, making the calculation of the distribution in the left hand side of (35) more tedious than in section 3.2. and making the expressions for the policy maker’s optimum more complicated. The appendix provides details for the calculation of the distribution using the same assumptions as in 3.2.. TO BE COMPLETED.

4 Accountability with knowledge on the structure of markets

Until now international governance spill-overs have arisen from the price expectations of the policy makers, international governance has not had any direct influence on the re-election probabilities. This can be potentially remedied by
assuming that voters in individual countries have knowledge on the structure of international markets, especially on how prices are determined. So assume that voters in both countries understand that prices are determined by (18) and that they have signals on the excess demands for R in both countries. Thus, voters in H know that the relationship between their observed utility and observations is

\[
\left( \frac{\sigma_F (\alpha S - (\alpha (1 + \delta_F) - \mu) c_F)_{\text{H}}}{\hat{\sigma}_F ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_H)_{\text{H}}} \right)^{-\alpha} \frac{\hat{G}_F \hat{\sigma}_F [S - (1 + \delta_F) \hat{c}_F]}{a_{S1}^\alpha a_{S2}^{1-\alpha}} = \hat{U}_H
\]

and voters in F know that

\[
\left( \frac{\hat{\sigma}_F (\alpha S - (\alpha (1 + \delta_F) - \mu) \hat{c}_F)_{\text{F}}}{\sigma_H ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H)_{\text{F}}} \right)^{-\alpha} \frac{\hat{G}_H \hat{\sigma}_H [R - (1 + \delta_H) \hat{c}_H]}{a_{R1}^\alpha a_{R2}^{1-\alpha}} = \hat{U}_F
\]

The first question that arises is the nature of signals on policy makers’ competence, especially what happens if voters have access to each others’ signals (e.g. through news etc.), i.e.

\[
\sigma_F (\alpha S - (\alpha (1 + \delta_F) - \mu) c_F)_{\text{H}} = \hat{\sigma}_F (\alpha S - (\alpha (1 + \delta_F) - \beta) \hat{c}_F)_{\text{H}} = \hat{\sigma}_F (\alpha S - (\alpha (1 + \delta_F) - \mu) \hat{c}_F)_{\text{H}}
\]

\[
\sigma_H ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H)_{\text{F}} = \hat{\sigma}_F ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_F)_{\text{H}} = \hat{\sigma}_F ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_H)
\]

where \( \hat{\sigma}_{HF} = \) signal \( H \) voters have received on \( F \) policy maker’s competence, etc. If these are plugged in the two previous equations they become

\[
\left( \frac{\hat{\sigma}_F (\alpha S - (\alpha (1 + \delta_F) - \mu) \hat{c}_F)_{\text{F}}}{\sigma_H ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H)_{\text{F}}} \right)^{-\alpha} \frac{\hat{G}_F \hat{\sigma}_F [S - (1 + \delta_F) \hat{c}_F]}{a_{S1}^\alpha a_{S2}^{1-\alpha}} = \hat{U}_H \Leftrightarrow \hat{U}_H
\]

\[
\left( \frac{\sigma_H ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) c_H)_{\text{F}}}{\hat{\sigma}_F (\alpha S - (\alpha (1 + \delta_F) - \mu) \hat{c}_F)_{\text{F}}} \right)^{-\alpha} \frac{\hat{G}_H \hat{\sigma}_H [R - (1 + \delta_H) \hat{c}_H]}{a_{R1}^\alpha a_{R2}^{1-\alpha}} = \hat{U}_H \Leftrightarrow \hat{U}_F
\]

These show that, in general, no such signals on the competencies exist that could be shared by voters in both countries simultaneously. Or if such signals exist there are a continuum of them. The problem is that only a (geometric) average of the signals, \( \hat{\sigma}_H^\alpha \hat{\sigma}_F^{1-\alpha} \), the same in both countries, can be observed by the voters.

The problem does not necessarily arise when preferences are non-homothetic.
resource flows can be augmented by policies, e.g. in the second period. The first can be modelled by assuming that the "raw" makers to have powers to conduct active policies. The second is to allow capture of it, e.g.

\[
\sigma_F (\alpha S - (\alpha (1 + \delta_F) - \mu) \hat{c}_F) = \tilde{\sigma}_H (\alpha S - (\alpha (1 + \delta_F) - \beta) \hat{c}_H)
\]

after normalizing the population sizes to unity in both countries. But raises a new problem: The left hand sides need not be monotonic in the signals (the first in \(\tilde{\sigma}_H\), the second in \(\tilde{\sigma}_F\)) and uniqueness of the signals cannot be ensured.

To go on, I just assume that preferences are Cobb-Douglas and

\[
\sigma_F (\alpha S - (\alpha (1 + \delta_F) - \mu) c_F)_H = \tilde{\sigma}_H F (\alpha S - (\alpha (1 + \delta_F) - \beta) \hat{c}_F) \sigma_H ((1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_H) = \tilde{\sigma}_F (1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_H)
\]

and set

\[
\tilde{\sigma}_H F = h_H (\tilde{\sigma}_H), h'_H > 0, \tilde{\sigma}_F H = h_F (\tilde{\sigma}_H), h'_F > 0
\]

With these one can easily solve for the lower bound for the competence level that policy maker has to have to get re-elected

\[
\sigma_H \left( \frac{h_H (\tilde{\sigma}_F)}{\sigma_F} \right) ^{-\frac{1}{\alpha}} \geq \left( \tilde{\Delta} H \frac{R - (1 + \delta_H) \hat{c}_H}{R - (1 + \delta_H) \hat{c}_H} \right) \left( \frac{(1 - \alpha) R - (\mu - \alpha + (1 - \alpha) \delta_H) \hat{c}_H}{(1 - \alpha) R - (\mu + \alpha + (1 - \alpha) \delta_H) \hat{c}_H} \right)^{\frac{1}{\alpha}}
\]

Assuming the distributions of the competencies to be independent of each other and assuming e.g. that H voters have some fixed conception of the F policy makers’ competence the distribution of the left hand side can be calculated. Foreign capture has an impact H re-elections only if H voters have biased signal of it, e.g.

\[
\hat{c}_{HF} = \tau c_F, 0 \leq \tau \neq 1
\]

Otherwise, in equilibrium the threshold depends on domestic capture alone. Thus, biased signals on the quality of foreign policy maker’s and governance are necessary for foreign capture to have an effect on the home elections. TO BE COMPLETED

\section{Extensions and conclusions}

There are two immediate extensions to the model. The first is to allow policy makers to have powers to conduct active policies. The second is to allow capture in the second period. The first can be modelled by assuming that the "raw" resource flows can be augmented by policies, e.g.

\[
R = g (J) R', g' > 0, g'' < 0
\]
where $J =$ public investment in productivity. Let $T$ be the total taxes collected. Then private disposable income is

$$\sigma_H [g(J) R - (1 + \delta_H) T] = \sigma_H [g(J) R - (1 + \delta_H) (J + c_H)]$$

and by assuming that voters can observe only $g(J) R$ the analysis above can be repeated, either by assuming $J$ to be fixed or by assuming it to be determined by the policy makers maximizing their utility. TO BE COMPLETED

The second extension can be modelled by assuming simply and along with the rest of the literature that there is a maximum capture $\bar{c}$ that senior office holder can make. This gives the second term welfare

$$E + \lambda_H \frac{(p_{R2})^{1-\mu} \bar{c}}{a_{R1}^{\mu} a_{S2}^{1-\mu}}$$

where $p_{R2} =$ the price in the second term. The second term rents affect incentives for capture in the first period through re-election probabilities in both countries as the type of the office holder matters for the second term price and welfare. TO BE COMPLETED

This paper was motivated by claims that globalization, in this paper free trade, reduces or may reduce voters’ possibilities to hold politicians accountable. One of the reasons given for this was that in an open economy there are larger number of uncertainties than in the closed economy making it harder to infer the conduct of own policy makers. The analysis here confirms the possibility using a simple trade model. But it also shows that things are more complicated and there are different ways how the international policy environment can affect domestic accountability. One possibility is that there is international polarization, countries are divided to groups of good governance and bad governance, but convergence is also a possibility. TO BE COMPLETED

6 References

TO BE ADDED