The Dynamics of Political Compromise, Political Institutions and Economic Policies

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Abstract

I explore how political cooperation relates to institutional as well as economic policy developments, and how these in turn affect the dynamics of political cooperation. To do this I build a stylized model where parties with different preferences set policies and invest in political institutions. In the model institutions are explicitly defined as endogenous constraints on the possibility of reneging on political promises. After an improvement in the conditions for cooperation the model generates a dynamic path of institutional development that allows for increasing cooperation and policy convergence. During the transition the gains from acquiring power decrease and policies are too conservative, meaning that the tax rate is lower than the one preferred by the median voter, and converge only asymptotically to this last level.

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1 Introduction

Political cooperation between rival parties or political elites seems to be a common factor behind periods of economic expansion and political development [Hobsbawm, 1995], as well as a key feature behind successful political transitions [Huntington, 1993].[1] What are the conditions leading to cooperation between political groups with different political preferences? How does cooperation influence the dynamics of political institutions and economic policies?

Previous literature on political cooperation between parties with different policy preferences has focused on the first question [see e.g. Alesina, 1988, Dixit et al., 2000, de Figueiredo Jr, 2002, Spiller and Tommasi, 2003]. The second question has been less explored, and it is the focus of this paper. I study how political cooperation relates to institutional as well as economic policy developments, and how these in turn affect the dynamics of political cooperation.[2]

During the last decades politics in developing countries have been exerted in an unprecedented environment. The space for political cooperation has expanded since the end of the Cold War, when the chances from successfully acquire political power trough coercive means were reduced for both sides of the political spectrum, spurring democratic transitions throughout the world. In these countries, economically as well as politically underdeveloped, different trajectories for political institutions have been observed since then. A case widely studied is Latin America, where despite high poverty rates and inequalities many groups have followed a moderate approach in a context of an institutional improvement and better macroeconomic outcomes.[3]

These dynamics motivate the analysis in this paper. I build a stylized model of endogenous incomplete markets to study the interaction between political cooperation, institutions, and economic policies. Following Dixit et al. [2000] I consider the outcome of a dynamic contract where parties

[1] Hobsbawm [1995] argues that the macroeconomic features of the golden age, the decades of rapid economic development in the first world from 1950 to 1975, rested on a political construct based on *"an effective policy consensus between Right and Left in most 'Western countries', the extreme fascist-ultranationalist right having been eliminated from the political scene by the Second World War, the extreme communist left by the cold war"* [Hobsbawm, 1995, p.282]. According to Huntington [1993] explicit or implicit negotiations and compromise among leaders of key political forces and social groups in society were at the heart of the massive democratization process initiated in the mid 1970s, with a central compromise to moderate their tactics and policies in order to participate in the new institutional scheme [Huntington, 1993, p.165-169].

[2] The main focus of the literature in this dimension is the relationship between cooperation on policy volatility, although without endogenous political institutions. For instance Alesina [1988] shows how cooperation between parties with different policy preferences leads to partial policy convergence. In this paper policies may or may not converge depending on institutions.

[3] The left in these countries, notably Chile, Uruguay, and Brazil, switched from activist radicalism to moderate reformism, applying negotiation and compromise rather than confrontation, and gradual reforms that take time but reduce risk of reversals [Weyland, 2009]. This path fits very well into the model predictions. In other countries however the process of moderation has been abandoned. In the conclusions I propose some extensions to the model to explain these cases.

can renege on their promises in every period.[4] In this setting I introduce a policy vector and define institutions as endogenous constraints to the incumbent party on the possibility of reneging on his promises. I study the path of an economy which starts in a non-cooperative initial equilibrium and receives a shock that gives space for political cooperation between rival groups.

The analysis provides a series of implications. There is an endogenous institutional improvement following cooperation opportunities, which, in turn, increase endogenously with the institutional improvement. The economy converges to a steady-state where institutional investments are at the maximum level. In this equilibrium allocations are different from those observed when parties can commit, i.e. a first-best (FB) allocation. In particular there is policy volatility and higher rents for the party in power. This is because institutional investments are too costly relative to the costs of deviating from the FB. During the transition policies are too conservative. The level of taxes are lower than the preferred tax rate of the median voters, and converge to this level only asymptotically. Hence I find a trade-off between efficiency and redistribution, with the first objective prioritized over the second one during the first stages of cooperation and institutional building. Both policy volatility and gains from being in power are high in the beginning, despite cooperation between parties, and decrease during the transition.

2 The Model

There are two groups or political parties, denoted by $i = 1, 2$, with preferences over policies and rents. Party i maximizes its expected discounted utility

$$E\sum_{t=0}^{\infty}\beta^t\Big(u(r_{i,t}) + \upsilon_i(\tau_t)\Big)$$

where r_i are rents, τ is the tax rate, β is the discount factor, u is a strictly increasing and concave function, and υ_i captures preferences over the tax rate, which differ between parties. In particular I assume the following functional form,

$$\upsilon_i(\tau) = -\frac{1}{2}(\tau - \bar{\tau}_i)^2$$

where $\bar{\tau}_i$ is the ideal point of party i. I normalize these such that $\bar{\tau}_1 < \bar{\tau}_2$.

Every period one of the two parties is chosen stochastically and decides rents for each party and next period's tax rate, as well as the value of a variable x_{t+1} which captures the quality of political institutions as explained below. A random variable $z_t \in Z = \{z_1, z_2\}$ governs this process: if $z_t = z_i$ then group i is in power.

Following Dixit et al. [2000] and Acemoglu et al. [2011], in the initial period, $t = 0$, the two parties negotiate the entire sequence $\{r_{1,t}, r_{2,t}, \tau_t, x_{t+1}\}_{t=0}^{\infty}$, for a given x_0, but the group in power

[4] Among other papers on political economy following a similar approach are Acemoglu et al. [2008, 2011].

cannot commit to honor these allocations. Every period it has the option to renege on its promises. If it chooses to do so in some period t it gets $F(x_{t-1})$, where F is strictly decreasing and convex. Hence x can be interpreted as the pre-existing constraints for the party in power to renege on its promises, the measure of political institutions in the model. Therefore the contract needs to complain with the following participation constraints

$$U_{i,t} = E\sum_{s=t}^{\infty}\beta^{s-t}\Big(u(r_{i,s}) + \upsilon_i(\tau_s)\Big) \geq F(x_{t-1}) \qquad \forall t, i$$

where I have defined $U_{i,t}$ as the expected utility gain for the party in power in period t from honoring the contract.

The party in power in t decides the vector $(r_{1,t}, r_{2,t}, \tau_t, x_{t+1})$ before the realization of z_{t+1} and subject to the following resource constraint

$$y_t = \sum_i r_{i,t} + x_{t+1}$$

where y_t are units of output available for the party in power.[5]

Output is endogenous and depends on previous decisions. In particular I impose the following function

$$y_t = y\Big(E(\tau_t|z_{t-1}), V(\tau_t|z_{t-1}), x_t\Big)$$

where $E(\tau_t|z_{t-1})$ is the expected tax rate before the realization of z_t, and $V(t_t|z_{t-1})$ is its variance, again before the realization of z_t. I assume $y_1 < 0$, $y_2 < 0$ and $y_3 > 0$. We can think of y_t as being proportional to public revenues coming from taxing total output in the economy, and total output as being the outcome of intertemporal investments by private agents, and so a function of future expected taxes and uncertainty about them.[6]

Finally I assume the shock z follows a Markov chain with transition probability $\pi(z_{t+1}|z_t)$, and restricted so $\pi(z_2|z_1) = \pi(z_1|z_2) = p$. Note that under this assumption both $E(\tau_t|z_{t-1})$ and $V(t_t|z_{t-1})$ are only functions of p and the level of taxes chosen by each party in case they become the party in power. Denote by $\tau_{i,t}$ the tax rate chosen by party i. Then if party i is in power the previous period, with probability $(1-p)$, $\tau_t = \tau_{i,t}$, and with probability p, $\tau_t = \tau_{j,t}$, where the subindex j is used from now on to denote the party that is contemporaneously out of power. Therefore

$$\begin{aligned} E(\tau_t|z_{t-1}) &= (1-p)\tau_{t,i} + p\tau_{t,j} \\ V(\tau_t|z_{t-1}) &= (1-p)p(\tau_{t,i} - \tau_{t,j})^2. \end{aligned}$$

[5]Hence the cost of institutional investment is expressed in units of output. Alternatively it can be assumed a utility cost for the group in power with similar results.

[6]Here I'm only taking into account the distortionary effects of taxes and not the positive direct effect of the tax on revenues. I assume this is already captured by the function υ_i. If taxes affected positively y then the party would find optimal to set it to 1 to increase its rents.

2.1 Recursive Problem

The constrained Pareto frontier, defined by $V(U_i, \tau_i, x)$, solves the problem of maximizing utility of the party out of power, subject to giving at least U_i to the party in power. Its value is determined recursively by the following maximization problems, for $i = 1, 2$ and $i \neq j$,

$$V(U_i, \tau_i, \tau_j, x) = \max_{\{\tau_i', \tau_j', r_i, r_j, U_i', U_j', x'\}} u(r_j) + \upsilon_j(\tau_i) + \beta\Big[(1-p)V(U_i', \tau_i', \tau_j', x') + pU_j'\Big]$$

s.t.

$$\begin{aligned} u(r_i) + \upsilon_i(t_i) + \beta\Big[(1-p)U_i' + pV(U_j', \tau_j', \tau_i', x')\Big] &\geq U_i & (1)\\ U_i' &\geq F(x) & (2)\\ U_j' &\geq F(x) & (3)\\ y(E(\tau), V(\tau), x) &\geq r_i + r_j + x' & (4)\end{aligned}$$

with multipliers λ_i, $\beta(1-p)\mu_i$, $\beta p \mu_{ij}$, and ϕ_i, respectively.

Hence the problem is solved after the level of taxes has been decided but before rents are extracted and the institutional investment has been made. At that point the contract defines current rents, the level of taxes next period and future discounted utility, both contingent on the party that takes power, and institutional investments. Note that τ_j is a state variable even though it is never realized. The reason is that y depends on what was the expected tax in the previous period, i.e. of the expectation of both $\tau : i$ and τ_j.

The first-order conditions (FOC) are:

$$\begin{aligned} (1-p)V_2(U_i', \tau_i', \tau_j', x') + \lambda_i p V_3(U_j', \tau_j', \tau_i', x') &= 0 & (5)\\ (1-p)V_3(U_i', \tau_i', \tau_j', x') + \lambda_i p V_2(U_j', \tau_j', \tau_i', x') &= 0 & (6)\\ \lambda_i u_1(r_i) &= \phi_i & (7)\\ u_1(r_j) &= \phi_i & (8)\\ -V_1(U_i', \tau_i', \tau_j', x') &= \lambda_i + \mu_i & (9)\\ -\lambda_i V_1(U_j', \tau_j', \tau_i', x') &= 1 + \mu_{ij} & (10)\\ \beta\Big[(1-p)V_4(U_i', \tau_i', \tau_j', x') + \lambda_i p V_4(U_j', \tau_j', \tau_i', x')\Big] &= \phi_i & (11)\end{aligned}$$

The envelope conditions (EC) are:

$$\begin{aligned} -V_1(U_i, \tau_i, \tau_j, x) &= \lambda_i & (12)\\ V_2(U_i, \tau_i, \tau_j, x) &= \upsilon_j'(\tau_i) + \lambda_i \upsilon_i'(\tau_i) + \phi_i \frac{\partial y}{\partial \tau_i} & (13)\\ V_3(U_i, \tau_i, \tau_j, x) &= \phi_i \frac{\partial y}{\partial \tau_j} & (14)\\ -V_4(U_i, \tau_i, \tau_j, x) &= \beta\Big[(1-p)\mu_i + p\mu_{ij}\Big] F_1(x) + \phi_i \frac{\partial y}{\partial x}. & (15)\end{aligned}$$

To characterize the solution to the contract I will keep i as the party initially in power. However this party can be in or out of power the following period depending on the realization of z'. Since rents may vary for the same party depending on this realization it is necessary to introduce additional notation. I denote by $r_i'(z_i')$ next period rents allocated to party i, which was initially in power, when z_i' is realized, i.e. when the party remains in power. The same variable is also defined for party j (which is initially out of power but may be in power next period) and/or for the realization z_j'.

Note that most of the FOC are functions of the EC of next period's problem when there is a switch in power, which at the same time are functions of next period's multipliers. The problem is symmetric but I show the EC here to simplify the analysis below.

$$
\begin{aligned}
-V_1(U_j, \tau_j, \tau_i, x) &= \lambda_j && (16)\\
V_2(U_j, \tau_j, \tau_i, x) &= \upsilon_i'(\tau_j) + \lambda_j \upsilon_j'(\tau_j) + \phi_j \frac{\partial y}{\partial \tau_j} && (17)\\
V_3(U_j, \tau_j, \tau_i, x) &= \phi_j \frac{\partial y}{\partial \tau_i} && (18)\\
-V_4(U_j, \tau_j, \tau_i, x) &= \beta\Big[(1-p)\mu_j + p\mu_{ji}\Big]F_1(x) + \phi_j \frac{\partial y}{\partial x}. && (19)
\end{aligned}
$$

2.2 Equilibrium Characterization

Note first that (7) and (8), and the same FOCs for next period in case either party wins power imply

$$
\begin{aligned}
\lambda_i &= \frac{u_1(r_j)}{u_1(r_i)} && (20)\\
\lambda_i' &= \frac{u_1(r_j'(z_i'))}{u_1(r_i'(z_i'))} && (21)\\
\lambda_j' &= \frac{u_1(r_i'(z_j'))}{u_1(r_j'(z_j'))} && (22)
\end{aligned}
$$

Then the PK multiplier defines the rations of marginal utilities coming from the allocation of rents between the loser and the winner. The higher the multiplier, meaning that more utility needs to be given to the winner, the higher the ratio and hence lower rents are allocated to the loser.

In the case of taxes, using (5), (6), (13), (14), (17), and (18), and solving explicitly for υ', I obtain

$$
\begin{aligned}
\tau_i' &= \frac{\bar{\tau}_j + \lambda_i'\bar{\tau}_i + \Big[(1-p)u_1(r_j'(z_i')) + p\lambda_i u_1(r_i'(z_j'))\Big]\partial y'/\partial E(\tau')}{1+\lambda_i'} && (23)\\
\tau_j' &= \frac{\lambda_i\Big(\bar{\tau}_i + \lambda_j'\bar{\tau}_j\Big) + \Big[(1-p)u_1(r_j'(z_i')) + p\lambda_i u_1(r_i'(z_j'))\Big]\partial y'/\partial E(\tau')}{1+\lambda_j'} && (24)
\end{aligned}
$$

Then the higher is λ' the closer is the tax rate to the ideal point of the winner. Additionally a higher tax means fewer resources for tomorrow. Hence the larger the distortion, captured by the (negative) partial derivative in the numerator, the lower the tax. Since the value of one more unit of output tomorrow is the marginal benefit of giving it as rent to the loser, the lower these rents the lower the tax as well. And if λ is high, meaning the giving rents to the winner today is more valued due to the PK constraint, his next period utility is weighted more to value the cost of taxes. Therefore cooperation or institutions allow for a more equal allocation of rents between parties they would also allow for a higher tax, that will be closer to the ideal points of the parties.

The institutional investment decision is characterized by conditions (11), (15), and (19), which give the following Euler equation,

$$u_1(r_j) = \beta\Big[(1-p)u_1(r_j'(z_i')) + p\lambda_i u_1(r_i'(z_j'))\Big]\partial y'/\partial x' - \psi F_1(x'). \tag{25}$$

where $\psi \geq 0$ is a function of next period's multipliers of the IC constraints and λ_i, with $\psi = 0$ if and only if the IC constraints are never binding.

Finally I obtain a law of motion for the PK multipliers using (9), (10), (12), and (16),

$$\lambda_i' = \lambda_i + \mu_i \tag{26}$$

$$\lambda_j' = \frac{1+\mu_{ij}}{\lambda_i}. \tag{27}$$

2.3 First-Best Allocations

Before characterizing in detail the outcome of the contract I first describe the first-best (FB) equilibrium, i.e. the solution to the problem without constraints (2) and (3). I denote FB allocations with a tilde. After setting $\mu_i = \mu_{ij} = 0$, (26) and (27) imply $\tilde{\lambda}_j' = 1/\tilde{\lambda}_i$ and $\tilde{\lambda}_i' = \tilde{\lambda}_i$. Using these and equations (20)-(22), the following holds under FB

$$\frac{u_1(\tilde{r}_j)}{u_1(\tilde{r}_i)} = \frac{u_1(\tilde{r}_j'(z_i'))}{u_1(\tilde{r}_i'(z_i'))} = \frac{u_1(\tilde{r}_j'(z_j'))}{u_1(\tilde{r}_i'(z_j'))} \tag{28}$$

Hence the marginal utility ratios between parties remain constant. Since the problems for i and j are symmetric, $x'(z_i) = x'(z_j)$, and hence next period's total rents are the same whoever wins power. This implies $\tilde{r}_i'(z_i') = \tilde{r}_i'(z_j')$ and $\tilde{r}_j'(z_j') = \tilde{r}_j'(z_i')$. The result comes from the concavity of u and the implied optimality of consumption smoothing for a given party (not across parties). Moreover, since $u(\cdot)$ is CRRA rents are allocated across parties in a fixed proportion. I denote by α_i the fraction of rents going to party i.

In the case of taxes (23) and (24) and the FB law of motions for the PK constraints imply $\tilde{\tau}_i' = \tilde{\tau}_j' = \tilde{\tau}$, where

$$\tilde{\tau}' = \frac{\bar{\tau}_j + \tilde{\lambda}_i\bar{\tau}_i + u_1(\tilde{r}_j'(z_i'))\partial\tilde{y}'/\partial E(\tilde{\tau}')}{1+\tilde{\lambda}_i}$$

Hence under FB the tax is constant over time and doesn't depend on which party is in power. Also the higher is λ_i, the closer is the tax to i's ideal point (both $\bar{\tau}_j$ and the distortion has a lesser influence on the tax level).[7]

In the case of institutional investment the FB law of motions simplify (32) to

$$u_1(\tilde{r}_j) = \beta \frac{\partial y'}{\partial x'} u_1(\tilde{r}_j') \tag{29}$$

Equation (29) is a standard Euler equation that determines the slope of the consumption path as a function of the return on investment. Since rents to each party are a fixed fraction of total rents, equation (29) implies that the future path for x doesn't depend on the value of α_i or U_i. Note that, after defining x as capital, the solution to the FB conditions (28) and (29) is equivalent to the solution to the neoclassical growth model with complete markets. Hence $\tilde{x}$ is strictly increasing and converge to a constant $\tilde{x}^*$ whenever $\tilde{x} < \tilde{x}^*$. Rents are also strictly increasing and converge to $\alpha_i(y(\tilde{\tau}, \tilde{x}^*) - \tilde{x}^*)$ for the party initially in power and to $(1-\alpha_i)(y(\tilde{\tau}, x^*) - x^*)$ for the party initially out of power. Because rents are increasing for both parties the tax rate increases over time as the distortionary effect falls in expression (2.3), and converges to $\tilde{\tau}^*$.

Since the PK constraint 1 holds with equality, and because the path for $\tilde{x}$ doesn't depend on $\tilde{U}_i$, α_i and $\upsilon_i(\tilde{\tau})$ are strictly increasing in $\tilde{U}_i$. Then $\tilde{U}_i'$ (tomorrow's utility of the party currently in power) is strictly increasing in $\tilde{U}_i$. Because $\tilde{U}_j'$ is strictly decreasing in α_i and in $\upsilon_i(\tilde{\tau})$, it is strictly decreasing in $\tilde{U}_i$.[8] And since the ratio of marginal utilities is constant, both $\tilde{U}_i'$ and $\tilde{U}_j'$ are strictly increasing in x.

2.4 Constrained Allocations

In order to be feasible under no-commitment, FB allocations need to be consistent with restrictions (3) and (2), i.e. the following must hold

$$F(\tilde{x}) \leq \min\{\tilde{U}_i'(\tilde{U}_i, \tilde{x}), \tilde{U}_j'(\tilde{U}_i, \tilde{x})\} \tag{30}$$

An arbitrarily small U_i implies $\alpha_i \approx 0$ and $U_i' \to -\infty$, so the constraint doesn't hold. An arbitrarily large U_i implies $\alpha_i \approx 1$, $U_j' \to -\infty$ and the same happens. The constraints may hold for intermediate levels of U_i. Indeed the RHS is maximized when U_i is such that $\alpha_i = 1/2$. But since the LHS is decreasing in x and the RHS is increasing in x, even in that case the constraint may not hold if x is small enough. It follows that if the steady-state level of x under perfect enforcement is not large enough then FB allocations are never feasible. This is the case whenever the following doesn't hold

$$F(\tilde{x}^*) \leq \frac{\beta}{1-\beta} u\Big((y(\tilde{\tau}^*, \tilde{x}^*) - \tilde{x}^*)/2\Big) \tag{31}$$

[7]Note that if $\lambda_i \to \infty$, then $\tau' = \bar{\tau}_i$.

[8]The distortionary effect on taxes hast the same sign. Higher $\tilde{U}_i$ means lower next period's rents for j.

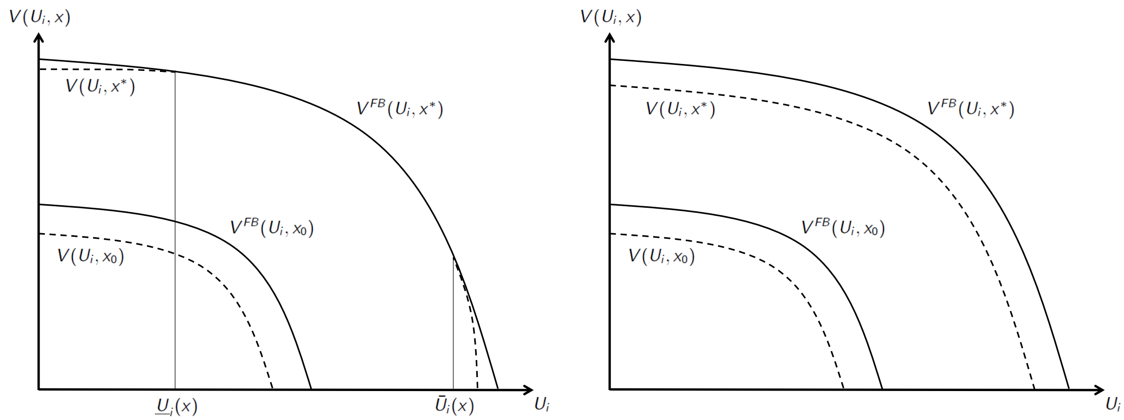

Figure 1: Constrained and Unconstrained Efficient Frontiers

If (31) doesn't hold, meaning that x is not as productive by itself to sustain the necessary level to maintain parties from reneging, FB allocations are never feasible. But if it holds then there are some values for (U_i, x) for which FB allocations are an equilibrium.

Proposition 1. *If (31) holds, there is a non-empty convex set $\Gamma(\beta)$ st. if $(U_i, x) \in \Gamma(\beta)$, the FB is feasible.*

1. *There exists $\underline{x}$ st. if $x < \underline{x}$, $(U_i, x) \notin \Gamma(\beta)$ for any U_i.*
2. *If $x > \underline{x}$, there exist $\underline{U}_i(x)$ and $\bar{U}_i(x)$ st. $(U_i, x) \in \Gamma(\beta)$ if $U_i \in \mathcal{U}(x) = [\underline{U}_i(x), \bar{U}_i(x)]$.*

If (31) doesn't hold the FB is never feasible.

Proof. Denote by $\hat{U}_i$ the value of U_i that is consistent with $\alpha_i = 1/2$. Since $\hat{U}_i$ maximizes the RHS of (30) for any x, then if $(\hat{U}_i, x) \notin \Gamma(\beta)$, the same is true for any U_i. When $\tilde{x} \to 0$, $F(\tilde{x}) > U_i'(\hat{U}_i, \tilde{x})$. Then since $F(\cdot)$ is continuous and strictly decreasing, and U_i' is continuous and strictly increasing in its second argument, there exists the threshold $\underline{x}$ as described in the first part of the proposition only if $F(\tilde{x}^*) \leq U_i'(\hat{U}_i, \tilde{x}^*)$. Since this is true iff (31) holds, statement number 2 and the first item of statement number 1 are true. Fix $x \in [\underline{x}, x^*]$. While the LHS of (30) is fixed for any U_i, the RHS decreases as this variable either decreases or increases. Then by the same argument before there exist limits $\underline{U}_i(x)$ and $\bar{U}_i(x)$ such that for $U_i \notin \mathcal{U}(x) = [\underline{U}_i(x), \bar{U}_i(x)]$, the LHS is lower than the RHS. □

Figure 1 shows the Optimal and Constrained Pareto Frontiers for different levels of x. The left-hand panel shows the case when (31) holds. In this case the constrained Pareto frontier coincides with the efficient frontier when $x = \tilde{x}^*$ whenever U_i takes values that are not too large or too low. But for a low enough level of x these frontiers never coincide and the constrained one is always below the efficient. The right-hand panel shows the case when (31) doesn't hold. In this case the frontiers never coincide, even for $x = \tilde{x}^*$.

To see the dynamics of the contract consider the Euler equation (32). The left-hand side of this expression is the marginal cost of institutional investment. Because utility for the party in power is constrained by past promises, rents to the party out of power need to be adjusted to increase x. Hence the concavity of $u(\cdot)$ prevents the contract to achieve the optimal level of institutions immediately.

The right-hand side is the return from investing in institutions. First it includes the return coming from the increase in output. The value of this is the change in utility that receives the party out of power tomorrow, that may be either i or j. The last term captures the direct positive effect from relaxing the IC constraints when $F(x)$ is lowered and hence being able to smooth consumption. Note that

$$u_1(r_j) \geq \beta \frac{\partial y'}{\partial x'}[(1-p)u_1(r_j'(z_i')) + pu_1(r_i'(z_j'))]. \tag{32}$$

The term inside the square brackets is the expected marginal utility of the party that will be out of power tomorrow. Hence if $\beta \partial y'/\partial x' > 1$, which is true whenever $x' < \tilde{x}^*$, rents for the party out of power are strictly increasing in expected terms. The contract improves the position of the loser, but the only way of doing this is raising x. This increases total resources and allows a reallocation from the winner to the loser as the outside option decreases for the former.

Proposition 2. *x is increasing until it converges to x^*, where $x^* = \tilde{x}^*$ if (31) holds, and $x^* > \tilde{x}^*$ otherwise.*

Proof. Note that the EE implies increasing rents for party out of power if $x < x^*$. Hence the problem with a constraint $x' = x$ is not a solution because this last result cannot be achieved. Then apply the proof of Proposition 4 in Gobert and Poitevin [2006]. □

Hence, and contrary to the underinvestment result in models where capital increases the outside option Thomas and Worrall [1994], Albuquerque and Hopenhayn [2004], in this model we obtain excess of investment. For a given (U_i, x) not only $x' > \tilde{x}'$ but also, if (31) doesn't hold, $x^* > \tilde{x}^*$.

Using conditions (20)-(22) and the law of motions of the PK constraints (26) and (27), I obtain

$$\frac{u_1(r_j'(z_i'))}{u_1(r_i'(z_i'))} = \frac{u_1(r_j)}{u_1(r_i)} + \mu_i \tag{33}$$

$$\frac{u_1(r_j'(z_j'))}{u_1(r_i'(z_j'))} = \frac{u_1(r_i)}{u_1(r_j)}(1 + \mu_{ij}) \tag{34}$$

Condition (33) implies that if the IC is binding, consumption of the party that remains in power increases relative to the party out of power. But then, given that x is increasing, higher consumption would mean that the IC constraint shouldn't be binding.

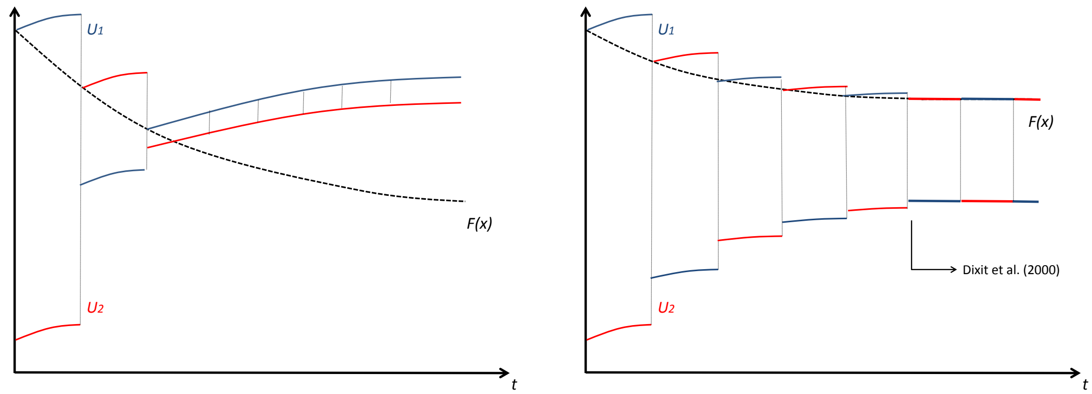

Figure 2: Policy and Institutional Dynamics

Proposition 3. *Proposition 3: The IC constraint for the party remaining in power (??) never binds, so* $\mu_i = 0$*.*

Proof. See the text □

Since $\mu_i = 0$, (33) implies that the ratio of marginal utilities remains constant when there is no power switch. When there is a switch in power (34) implies that if the IC is binding, which needs to be true for $(U_i, x) \notin \Gamma(\beta)$, consumption of the party transiting to power rises relative to the one losing power. this is the case along the transition toward FB allocations when (31) holds. But when it doesn't this is always the case. Perfectly smoothing consumption requires a level of x that is too expensive for the planner to achieve (in terms of current utility of the group out of power).

These dynamics are shown in Figure 2. The case when (31) holds is depicted in the left-hand side panel, and the case when it doesn't hold is in the right-hand side panel.

3 Conclusions

This paper builds a political economy model of cooperation between rival parties, where political institutions are explicitly modeled as endogenous constraints on incumbents. The model explains some of the dynamics of policies and institutions in developing countries triggered by better cooperation conditions. Not only policy volatility but also moderate policies are an outcome in the first stages of cooperation as long as political institutions are not strong enough.

Reversions to the process of cooperation and institutional development occur in the real world. The model is very stylized and cannot explain these cases. But it can be extended in different dimension to allow for different outcomes. For instance loser parties may take coercive actions. Because the institutional improvement make cooperation less vulnerable to external shocks that extension may allow to study path-dependent equilibriums that may explain why mature democracies are more robust to external shocks. The model can also be extended to consider how economic shocks, i.e. commodity price shocks, affect the dynamics of cooperation and institutional building. An external flow of resources may reduce the desirability of building political institutions damaging with that political cooperation, with the consequent effects on policies and rent extraction.

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