

# The Political Economy of Clientelism\*

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## Abstract

In this paper, we argue that the political-commitment problem provides an explanation for why much income redistribution takes an inefficient form, particularly employment in the public sector. A job is a credible way of redistributing when it provides rents (such as in situations with moral hazard), and employment is optimal *ex post*. Moreover, a job is selective and reversible, and thus ties the continuation utility of a voter to the political success of a particular politician. We show that the need to make offers of employment incentive-compatible leads to inefficiencies in the supply of public goods. We also show that such inefficient redistribution becomes relatively attractive in situations with high inequality and low productivity. Inefficiency is increased when the stakes from politics are high, when inequality is high, and when money matters less than ideology in politics.

*Keywords:* Income redistribution; political competition; public policy

*JEL classification:* H1; H2

## I. Introduction

A basic source of bad economic policies is pressure to redistribute income, which, at least in democratic systems, stems from the fact that political power is distributed more equally than assets and income. Yet (at least) two key problems remain in building a satisfactory theory of the incidence and implications of redistribution. First, there is a dichotomy in the theoretical body of literature between research that emphasizes the fact that politicians or political parties can only commit to actions that are *ex post* rational (see Alesina, 1988; Besley and Coate, 1997), and research (following Downs, 1957) that allows politicians to commit to any policy they desire. Second, in many countries, it appears to be not just that there is redistribution, but

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also that this takes singularly inefficient forms. For instance, redistribution often involves offers of employment in the bureaucracy. Alesina *et al.* (2001) have argued that as much as half of the wage bill of the public sector in the south of Italy can be seen as pure redistribution, and many studies have found that the size of the public sector measured in terms of employment is greater when there is more clientelism (e.g., Gimpleson and Treisman, 2002; Calvo and Murillo, 2004).

In this paper, we argue that a deeper comprehension of the issue of political commitment can help us to understand why income redistribution takes an inefficient form. A novel aspect of our approach is that, contrary to the existing body of literature, we see the issue of credibility as being two-sided, and we develop the notion of redistributive politics as an exchange relationship. Self-interested politicians face a commitment problem, because it is not in their interests to implement *ex post* the policies that would induce people to vote for them. Politicians – whether an incumbent government or the opposition – would like to offer policies to groups of citizens in exchange for political support. Because the law cannot be used to enforce such political exchanges, they must be self-enforcing. However, the problem of credibility is two-sided. Just as politicians might wish to commit to actions that are not *ex post* optimal, so might citizens. For example, a citizen might prefer a left-wing party, but would vote for the right if offered sufficient selective incentives. Therefore, citizens must indeed deliver their support, and politicians, once in power, must pay for the support with the policies that they promised.

For politicians to ensure that they have the support of a group of citizens, they must be able to use policies that tie the continuation utility of a voter to their political success, or alternatively, if behavior is observable,<sup>1</sup> allow voters to be punished if they renege on the exchange. For citizens to ensure that politicians honor their promises, the policies must be *ex post* rational for the politicians to implement.

We argue that the appeal of offers of employment in the bureaucracy is precisely that a job is a credible, selective, and reversible method of redistribution, which ties the continuation utility of a voter to the political success of a particular politician.<sup>2</sup> Why is an offer of employment credible

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<sup>1</sup> Such situations include elections without a secret ballot or where patrons can effectively monitor voting behavior (see Chubb, 1982, for a detailed analysis of how the Christian Democratic party avoided the secret ballot in Southern Italy), or intrinsically observable political activities, such as collective action. Note that even with a secret ballot, the behavior of aggregates of voters is known (electoral districts) and these can also be punished.

<sup>2</sup> An interesting example of incentive-compatible redistribution has been discussed by Chubb (1982). Before elections, the Christian Democratic party would distribute a left shoe to its clients with the promise of a right shoe if they were re-elected. Interestingly, because, presumably, a right shoe is useless to the party, this was an incentive-compatible contract.

when other types of policies, such as income transfers, are not? First, because of moral hazard, optimal employment contracts concede rents to workers. Second, because of the costs of raising taxes on the private sector, employment in the bureaucracy is a relatively attractive way for politicians to generate rents. Thus, an offer of a job is a credible way of transferring rents to specific voters. When political behavior is observable, a job has the additional advantage that it can be withdrawn as a punishment.

Therefore, inefficiency in the form of redistribution arises because it represents one way in which the political-commitment problem can be solved. There is inefficiency not only because employment in the public sector is relatively inefficient, but also because the amount of rents transferred to clients by employment depends on the amount of investment and/or public goods also provided by the government. In essence, the credibility of politicians' and voters' promises depend on the levels of other policy variables. We show that underprovision of investment or public goods results, in order to make employment offers more attractive to voters. Our analysis suggests that one sort of inefficient government policy arises as a way of making voters more dependent on politicians, and hence making it easier to buy their political support with job offers.<sup>3</sup>

Our conceptualization of redistributive politics is close to what is known as "patronage" or, more broadly, "clientelism" in anthropology and political science.<sup>4</sup> Clientelism is a political exchange: a politician (i.e., a "patron") gives patronage in exchange for the vote or support of a "client". The dominant stylized fact in this body of literature is that, in clientelism, it is jobs that are exchanged for votes. In the words of Weingrod (1968, p. 379), "patronage refers to the way in which party politicians distribute public jobs or special favors in exchange for electoral support". In her well-known analysis of the Christian Democratic political machine in Southern Italy, Chubb (1982, p. 91) notes that "a substantial part of politics revolves

<sup>3</sup> The idea that clientelism leads to an undersupply of public goods is widespread in the informal body of literature. The analysis of agricultural policy in Africa by Robert Bates provides a classic statement of the idea that clientelistic redistribution via public goods is politically inefficient because it does not provide an incentive-compatible way for patrons to control clients. Bates (1981, p. 114) argues: "Were the governments of Africa to confer a price rise on all rural producers, the political benefits would be low; for both supporters and dissidents would secure the benefits of such a measure, with the result that it would generate no incentives to support the government in power. The conferral of benefits in the form of public works projects, such as state farms, on the other hand, has the political advantage of allowing the benefits to be selectively apportioned. The schemes can be given to supporters and withheld from opponents."

<sup>4</sup> Some scholars use patronage and clientelism as interchangeable terms (Kitschelt and Wilkinson, 2007), whereas others argue that "clientelism is a much broader phenomenon than patronage, with patronage simply one specific type of clientelistic exchange" perhaps restricted to "the use of resources and benefits that flow from public office" (Hicken, 2011, p. 295).

around the *posto* ('job or position') and . . . when all is said and done, a job signifies a vote and vice versa."

The analysis of clientelism in India by Weiner (1967, p. 34) is similar. He argues that the Congress party became "a means of obtaining jobs for friends and relatives and of gaining access to the many services and material benefits which government at all levels can bestow."

This body of literature never explains why patronage takes the form of employment, although interestingly it usually implicitly emphasizes both the issue of commitment and the fact that the reversibility of an employment offer is part of its political attractiveness. For instance, Piattoni (2001, p. 7) argues that patrons "cannot be sure that the 'clientelistic deal' will be honored, as no legal enforcement mechanisms can be devised." In his analysis of the clientelistic political machine in Chicago, Wilson (1961, p. 373) notes that "the power of a ward leader over the jobs assigned to him is called, in Chicago, the power to 'vice them downtown' – that is, the power to replace one worker on the payroll with another."

Our model captures several of the elements stressed in this informal body of literature. In particular, we emphasize that the social network of individuals whose behavior politicians can observe relatively well will determine who politicians can credibly exchange with – perhaps because they interact socially with these individuals. In this context, Turner and Young (1985, p. 158) note that the "formation of a patron–client relationship is based not only on reciprocal advantage, but on some principle of affinity which supplies a social logic to the network. Kinship and ethnic affinity are the most frequent bases for network formation."

Because of its effect of ameliorating the moral-hazard problem, this network – a clientele – allows politicians to make credible employment offers to such people.<sup>5</sup>

Apart from providing a characterization of the types of inefficiencies that clientelistic politics generate, we also address the question of when such a system of politics is likely to be prevalent. We show that, under a natural condition, clientelism is relatively important in countries with poor technology and high inequality. Intuitively, at low income levels, the political allegiance of clients is cheaper to buy with employment offers, and this makes clientelistic redistribution more attractive as a way of gaining support. This effect operates when aggregate productivity is low or, for given productivity and average income level, when inequality increases. Next, we show that when there is clientelism, various factors influence the extent of inefficiency. In particular, policy is less efficient (1) when the

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<sup>5</sup> Such social networks have been emphasized by Stokes (2005), and measured by Finan and Schechter (2012).

stakes or rents to staying in power are greater,<sup>6</sup> (2) when ideology is more important relative to monetary incentives in determining the outcome of elections, and (3) when, under reasonable conditions, and conditional on clientelism existing, there is greater inequality.

These comparative statics help us to understand why it is that the politics of developing countries, particularly in Africa, seem to be particularly clientelistic. Clientelism emerges in countries where productivity is low. Thus, poverty both causes and is caused by clientelism. This is consistent with a main idea of the political science literature that it is modernization and development that destroy clientelism; for overviews of the literature making this claim, see Kitschelt and Wilkinson (2007) and Hicken (2011), and for econometric evidence, see Bustikova and Corduneanu-Huci (2011). We further show that the inefficiencies associated with clientelism are intensified when the relative stakes of politics are relatively large. It is frequently argued that this is a key problem in Africa. For example, Hodder-Williams (1984, p. 95) notes that the state “dominates the job market, is deeply involved in most economic activities and commands control over an extremely wide range of goods and services as well as badges of status. The lack of a developed indigenous private sector, of entrenched pressure groups and of secondary organizations results in the monopolistic state.” Not only is the state economically dominant but state income in Africa is also dominated by natural resources and historically non-contingent international aid. Both increase the inefficiency of clientelism in our model, which provides a political-economy explanation for the “natural resource curse”. Finally, again in line with our results, Alesina *et al.* (2000) have shown that, within the US, higher inequality leads to greater redistribution in the form of public-sector employment.

Our analysis is clearly related to many ideas in the body of literature on redistributive politics, particularly Lindbeck and Weibull (1987) and Dixit and Londregan (1996, 1998). These authors have determined some of the characteristics that a group must have to be an attractive target for redistribution. However, their models assume commitment to policy and feature pure redistribution with no analyses of efficiency, except when deadweight losses from redistribution are introduced. Also related to our paper are the models that show that the desire to manipulate the future political equilibrium can induce inefficient policies (see Besley and Coate, 1998, and references therein). In these models, the basic cause of inefficiency is that politicians cannot commit to future policy.

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<sup>6</sup> Interestingly, although we do not develop this observation in our model, the very fact that clientelism tends to reduce the supply of public goods automatically raises the stakes from politics. If a government is providing public goods, then even losers at elections benefit from subsequent government spending. Therefore, concentrating on the provision of private goods widens the utility from being in or out of office.

Our work is perhaps most closely related to, and complements, research on inefficiencies in the form of redistribution. There are three arguments. (1) Coate and Morris (1995) have argued that inefficiencies in the form of redistribution arise because of the desire by politicians to hide the fact that they were redistributing. (2) Acemoglu and Robinson (2001) have argued that inefficient redistribution arises as a way to maintain the political strength of a group. (3) Persson and Tabellini (1999) and Lizzeri and Persico (2001) have argued that inefficient spending on a public good might arise because private goods can be better targeted by politicians to supporters. Although public-sector employment as a method of redistribution is not discussed in any of this research,<sup>7</sup> the first and third arguments can be applied to explain this. For example, according to Coate and Morris, public-sector employment could be a politically attractive method of redistributing, if politicians could argue that actually such employment was socially desirable and not really redistribution. Nevertheless, there are problems with this approach. First, the overwhelming body of evidence suggests that public-sector employment in developing countries is too large, and reducing it is typically a key part of structural adjustment programs. Therefore, it is not clear that uncertainty about its inefficiency is plausible. Moreover, for this theory to apply, politicians must have no way of proving their type. The empirical body of literature on public-sector employment in developing countries is far more consistent with the view that voters understand that it is inefficient and that it is precisely a way for a politician to reward supporters. The third model would explain redistribution via employment simply by the fact that a job can be targeted. While this might be important, offers of money or private goods can also be targeted. A contribution of our model is to explain why an offer of employment might be credible, when an offer of income is not.

Finally, a small formal body of literature has recently begun to provide models of clientelism. Like us, Stokes (2005) has emphasized the commitment problem when, with a secret ballot, voters might not be able to credibly promise to vote in the way they agree to in a clientelistic exchange. She examines the way that patrons might be able to use punishment strategies to stop clients renegeing on promises. In our paper, we show that this credibility problem can be solved without the use of repeated play, and we also consider the commitment problem of the patron. Keefer and Vlaicu (2008) have focused on the same one-sided credibility problem, and have argued that it leads to clientelism. However, they have assumed a structure of clientelism where politicians get votes via patrons, which assumes the credibility of this form of exchange. In our paper, we show how the

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<sup>7</sup> Shleifer and Vishny (1994) have provided a rare model where redistribution takes place via employment, but they have simply assumed this rather than explaining it.

form of the exchange between patron and client endogenously determines whether or not it is credible.

The paper proceeds as follows. In Section II. we set up our basic model. We analyze this when voting is unobservable (Section III. and observable Section IV). In Sections V and VI. we consider two extensions to allow for more groups of agents, and also inequality. We conclude in Section VII.

## II. The Basic Environment

We now develop our formal model, which is a version of the standard probabilistic voting model (see Lindbeck and Weibull, 1987; Persson and Tabellini, 2000). In this model, individuals gain utility not only from the values of policy variables chosen by politicians, but also from the characteristics of the politicians themselves. In particular, the model posits that voters are ideologically more or less attached to one or other of the politicians, and that when deciding how to vote they weigh up the net benefits, taking into account not just the policies offered by a politician but also the intrinsic utility they obtain from supporting the politician.

Consider a static model with four types of agents. There is an incumbent political decision-maker (i.e., the patron, denoted by a superscript “P”), a potential patron who contests power (denoted by a superscript “N”), and two groups of voters/clients (indexed by  $g = 1, 2$ ). Group  $g$  has a population of size  $\lambda_g$ . Initially, the incumbent patron chooses the level of a policy variable  $I$ , and then competes for power in an election contested by the potential patron. The patrons compete by offering tax rates, transfers of income, and government employment to clients. After the election, whichever patron wins takes power and adopts a policy (which might or might not be what was offered in the election), after which production and consumption take place.

Agents have the following preferences and budget sets. Each voter has an ideological bias for the patron (and against the potential patron). A representative member  $i$  of group  $g$  has a linear utility function,  $U^{iP}(\cdot) \equiv c^i - \psi(e^i) + \delta^i + \theta$ , if voting for the patron, and utility function  $U^{iN}(\cdot) \equiv c^i$  otherwise. Here,  $c^i$  is consumption of agent  $i$  and  $e^i$  is effort exerted in production at the cost in utility terms of  $\psi(e^i)$ . The terms  $\delta^i$  and  $\theta$  are the variables that capture the ideological proclivities of individual agents. If they are positive for a specific voter  $i$ , then this means that the voter has an intrinsic preference for the patron. For example, if both the incumbent and potential patron offered the same policy, such a voter would vote for the patron. One of these variables,  $\delta^i$ , is individual-specific, while the other,  $\theta$ , is an aggregate shock common to all agents. We assume that  $\delta^i$  is uniformly distributed on the interval  $[-(1/2s_g), (1/2s_g)]$ , where  $\delta^i$  for all

$i$  in group  $g$  has density  $s_g > 0$ . We further assume that  $\theta$  is uniformly distributed on the interval  $[-(1/2h), (1/2h)]$ , and thus has density  $h > 0$ .

Individuals have income from one of two sources: the public sector or the private sector. If working in the private sector, each has a pre-tax income of  $Ay(I)$ , which is a differentiable, strictly increasing, strictly concave function of the amount of the policy variable  $I$  chosen by the incumbent patron before the election takes place.  $A$  is a parameter capturing total factor productivity. We assume that income can be converted one-for-one into the variable chosen by the patron, and that  $y(0) > 0$ . Voters can hide their income at some cost in an informal sector, which is non-taxable. We assume specifically that if agents move their income into the informal sector, they lose a proportion  $1 - \alpha$  of this income, so that income in the informal sector would be  $\alpha Ay(I)$ .<sup>8</sup>

If working in the public sector, voters have to choose an effort level  $e \in \{0, \varepsilon\}$  and are paid a wage  $w_g^j$  for  $j = P, N$ , which might depend on the identity of who wins the election. Exerting effort  $e$  incurs a cost of  $\psi(e)$  with  $\psi(\varepsilon) > \psi(0) \equiv 0$ , and  $R(e)$  is the productivity of an individual public-sector worker as a function of effort. We let  $q_g^j$  be the probability that the effort exerted by a worker in group  $g$  employed in the public sector is observed by patron  $j = P, N$ .

We distinguish the groups by their values of  $q$  and by who can observe them. Specifically, we assume the following.

**Assumption 1.**  $1/q_1^N > R(\varepsilon)/\psi(\varepsilon) > 1/q_1^P$  and  $1/q_2^j > R(\varepsilon)/\psi(\varepsilon)$  for  $j = P, N$ .

This assumption implies that the moral-hazard problem is not too bad, and that therefore the incumbent can make positive rents from employing a member of group 1 in the public sector. However, the potential patron cannot make any rents from members of group 1, and neither patron can do so from members of group 2. We call the members of group 1 the clients of the incumbent patron. Because the incumbent patron is in the same social network as these agents, this patron can observe their effort with relatively high probability, which reduces the moral-hazard problem sufficiently that the patron can make them credible employment offers.<sup>9</sup> The incumbent patron cannot do this to group 2, and the potential patron

<sup>8</sup> This is just a simple modeling device that makes the tax base elastic with respect to the tax rate, and avoids corner solutions where the tax rate is one.

<sup>9</sup> The assumption that members of a group can observe the actions of members in the same group better than the actions of people in other groups has been used by Fearon and Laitin (1996), and the basis of the type of clientelism has been studied by Finan and Schechter (2012).



cannot make credible offers to any group – having no clients. We focus on this asymmetric case because it allows us to illustrate, in the simplest ways, the nature of the forces at work. We later sketch an extension of the model to three groups, which allows the potential patron to also have clients.

Patrons attempt to maximize their expected consumption. If in power, their consumption consists of tax revenues minus transfers plus total profits from public employment, which is  $[R(e) - w_g^j]n_g^j$ , where  $n_g^j$  is the number of voters employed from group  $g$  by patron  $j$  in the public sector. Instead of employing a voter to generate rents  $R(e)$ , we assume that the patron has access to another technology, which generates rents  $\Pi \equiv R(\varepsilon) - \psi(\varepsilon)/q_1^P$ .<sup>10</sup> The patron who loses the election receives zero consumption.

At the start of the period, there is an election in which the patron and potential patron compete for power. They compete by offering three types of policies: (1) the group-specific level of a lump-sum tax  $T_g^j$ ; (2) the group-specific level of transfer  $m_g^j \geq 0$ ; (3) the number of agents from each group to employ in the public sector,  $n_g^j$ . We denote the policy offered by the patron by  $(T_g^P, m_g^P, n_g^P)$ , and the policy offered by the potential patron by  $(T_g^N, m_g^N, n_g^N)$ . We assume that collecting taxes is costly in the sense that some tax revenues are dissipated.

The timing of the game is as follows.

- The incumbent patron chooses  $I$ .
- Patrons  $j = P, N$  compete in the election by offering policies  $(T_g^j, m_g^j, n_g^j)$ . When voting behavior is observable, these offers can be made conditional on voting behavior.
- Whichever patron wins the election takes power and optimally chooses the policy to implement,  $(\tilde{T}_g^j, \tilde{m}_g^j, \tilde{n}_g^j)$ .
- Production, taxation, and consumption take place.

<sup>10</sup> The role of this alternative technology will become apparent in the model where voting is observable. In this case, the patron makes a contingent offer of a job in exchange for support. Thus, if a voter does not support the patron, it must be credible *ex post* for the patron not to employ the deviating voter. However, if the patron is employing all of the group, then the patron can monitor effectively; because the patron receives positive rents *ex post* from employment, it might not be credible to deny a deviating voter a job. The alternative technology, which gives exactly the same amount of rents to the patron as a voter employed at the efficiency wage, provides a simple way of making credible the threat not to employ. In the Appendix, we sketch a more realistic alternative model, where some potential employees are left unemployed in order to make the threat of non-employment credible. The results we prove below extend to this case, but the algebra is much more involved, and this motivates our assumptions in the text.

Credible Policies

We solve for the pure strategy subgame-perfect Nash equilibrium of the above game. To do so, we apply backward induction. Note, immediately, that whichever patron is elected, the policy vector  $(\tilde{T}_g^j, \tilde{m}_g^j, \tilde{n}_g^j)$  will be chosen *ex post* to maximize utility. This has important implications for what policies will arise. First, it must be true that  $\tilde{m}_g^j = 0$  for all  $j$  and  $g$ . Whatever promise a patron makes to transfer income when in power in exchange for votes is not credible. This will have the effect of ruling out as not credible any offer of transfers for support. Next, note similarly that  $\tilde{T}_g^j$  will be chosen optimally, implying that  $\tilde{T}_g^j = (1 - \alpha)Ay(I)$ . The tax rate is set in order to make voters just indifferent between keeping their income in the formal sector and moving it into the informal sector. This is the revenue-maximizing tax rate for whichever patron wins power; no other rate is credible. However, as noted above, taxation is costly. To model this, we assume that a fraction  $1 - \tau$  of any tax revenues is destroyed.

Finally, we consider public-sector employment. The qualitative difference between such employment and a pure transfer of income is that employment generates rents for the patron. Moreover, because of the existence of moral hazard, some of these rents might be transferred to employees (efficiency wages). We now consider the circumstances under which patrons can make credible commitments to transfer rents to clients by employing them.

Offered a wage  $w_g^j$ , a client will exert effort if

$$\begin{aligned}
 w_g^j - \psi(\varepsilon) &\geq (1 - q_g^j)w_g^j \\
 \implies w_g^j &\geq \frac{\psi(\varepsilon)}{q_g^j},
 \end{aligned}
 \tag{1}$$

where  $(1 - q_g^j)$  is the probability that effort is not observed. Thus,  $w_g^P = \psi(\varepsilon)/q_g^P$  will be the efficiency wage offered by the incumbent patron, which decreases with  $q_g^P$ . Clearly,  $w_g^P - \psi(\varepsilon) \equiv \frac{\psi(\varepsilon)}{q_g^P} - \psi(\varepsilon) > 0$  (when  $q_g^P < 1$ ). There is one other constraint to consider, however. A voter accepts an offer of employment at this wage only if

$$w_g^P - \psi(\varepsilon) \geq \alpha Ay(I),
 \tag{2}$$

which is a standard participation constraint. This constraint plays an important role in the analysis below. When equation (2) is slack, it implies that the efficiency wage (1) provides rents for the voter. However, when equation (2) binds, it implies that the wage has to be such that  $w = \alpha Ay(I) + \psi(\varepsilon)$  and public-sector employment no longer transfers rents to the voters. In this case, public-sector employment cannot be used as a way to influence the outcome of the election.

Together, equations (1) and (2) imply the public-sector wage offer of the incumbent patron

$$w_g^P \geq \max \left\{ \frac{\psi(\varepsilon)}{q_g^P}, \psi(\varepsilon) + \alpha Ay(I) \right\}. \quad (3)$$

Finally, it should be optimal for the incumbent patron to employ clients *ex post*, which entails

$$R(\varepsilon) - w_g^P \geq (1 - \alpha)\tau Ay(I). \quad (4)$$

The benefit  $R(\varepsilon) - w_g^P$  that incumbent patrons derive from providing a public-sector job to one of their clients should be higher than  $(1 - \alpha)\tau Ay(I)$  (i.e., the tax revenue that can be extracted from having that client work in the private sector). Intuitively, to be optimal for the patrons to employ their clients *ex post*, employment should be a relatively more effective method of extracting resources from citizens. It is the *ex post* optimality of this that makes it a credible method for the patron to make promises.

Taken together, equations (3) and (4) describe the set  $\Sigma$  of public wages and public investment levels, which are consistent with credible offers by the incumbent patron to transfer rents to his clients. This is represented in Figure 1. More public investment  $I$  reduces the ability of the patron to transfer clientelistic rents for two reasons. The first reason is a rent dissipation effect, related to the participation constraint of the clients. As  $I$  goes up, this participation constraint becomes binding and public-sector employment no longer transfers rents. The second reason is a credibility effect, associated with the *ex post* optimality constraint of the patron. An increase in  $I$  makes it more attractive for the patron to extract resources through direct taxation, and therefore makes public-sector employment less credible *ex post*. As shown in Figure 1, the precise shape of  $\Sigma$  depends on which effect (rent dissipation or credibility) is binding first. Now, we make an assumption to focus on the main case of interest.

**Assumption 2.**  $Ay(0) > R(\varepsilon) - \psi(\varepsilon)$  and  $(1 - \alpha)\tau/\alpha > [R(\varepsilon) - \psi(\varepsilon)]/[(1 - q_g^P)\psi(\varepsilon)]$ .

Assumption 2 guarantees two things. The first part implies that  $Ay(I) > R(\varepsilon) - \psi(\varepsilon)$  for all  $I$ , which means that the socially efficient level of public employment is zero. The second part,  $(1 - \alpha)\tau/\alpha > [R(\varepsilon) - \psi(\varepsilon)]/[(1 - q_g^P)\psi(\varepsilon)]$ , implies that we concentrate on the case where, at the efficiency wage  $w_g^P = \psi(\varepsilon)/q_g^P$ , the participation constraint (2) is always slack whenever the patron's offer is credible (i.e., equation (4) is slack). In other words, we focus on the case where the binding constraint on clientelism is

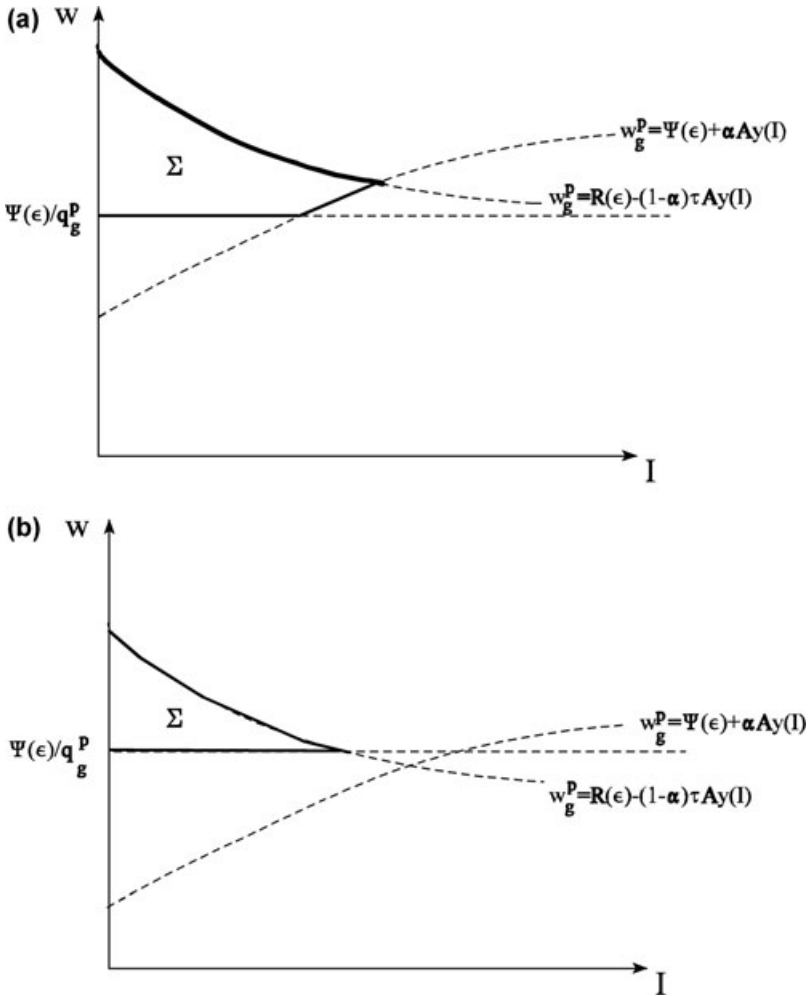


Fig. 1. The set of credible policies

equation (4) as public investment  $I$  goes up. This will be satisfied if public-sector employment is not a very efficient method of extracting resources from citizen, as is probably plausible.

Having determined what policies are credible, we now move backward to the election stage. Here, we make a distinction between situations where the patrons can or cannot observe voting behavior. We begin by analyzing the simpler case, which is when patrons cannot observe voting behavior. In this case, policy offers cannot be made contingent on voting decisions.

### III. Non-Observable Voting

Consider now the voting behavior of agents in different groups. For the above analysis, we know what tax rate either patron sets *ex post* and we know that promises of transfers of income are never credible. However, employment is credible to specific groups. In the group where only the patron can credibly make job offers, voter  $i$  supports the patron if

$$w_1^P - \psi(\varepsilon) + \delta^i + \theta \geq \alpha Ay(I). \tag{5}$$

This constraint is, of course, the same as in the standard probabilistic voting model. In equation (5), the patron offers a job and net utility of  $w_1^P - \psi(\varepsilon)$  to a member of group 1, and agent  $i$  of this group supports the patron if this, plus the utility of voting for the patron, is larger than the pay-off from the potential patron. The pay-off that such an agent will receive from the potential patron is given by the right-hand side of equation (5). This takes into account the fact that the potential patron cannot credibly promise to employ anybody, and also that the person does not receive intrinsic utility from voting for the potential patron. In consequence, the person will receive an after-tax income (and thus utility) under the potential patron of  $\alpha Ay(I)$ .

Rearranging equation (5), we can see that a member of group 1 supports the incumbent patron if

$$\delta^i \geq \alpha Ay(I) - [w_1^P - \psi(\varepsilon)] - \theta. \tag{6}$$

Let  $N_g \in [0, \lambda_g]$  be the total number of people in group  $g$  that support the patron. We can calculate this by integrating over the set of agents from whom equation (6) is satisfied, treating  $\theta$  as given. This gives

$$\begin{aligned} N_1 &= \lambda_1 \int_{\alpha Ay(I) - [w_1^P - \psi(\varepsilon)] - \theta}^{1/(2s_1)} s_1 di \\ &= \lambda_1 \left\{ \frac{1}{2} + s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I) + \theta] \right\}. \end{aligned}$$

We can also calculate

$$N_2 = \lambda_2 \left( \frac{1}{2} + s_2 \theta \right).$$

We now define the probability that the patron remains in power:

$$\Pr \left\{ \sum_g N_g \geq \frac{1}{2} \sum_g \lambda_g \right\} \equiv P^P(I).$$

This is simply the probability that at least one-half of the population support the incumbent in the election. Note that from the equations of  $N_1$  and  $N_2$ , this is equivalent to the probability that the aggregate ideology shock  $\theta$  is

sufficiently large. Simplifying, this probability is

$$\begin{aligned}
 P^P(I) &= \Pr \left\{ \theta \geq \frac{-\lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)]}{\sum_g \lambda_g s_g} \right\} \\
 &= \frac{1}{2} + h \lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)],
 \end{aligned}
 \tag{7}$$

where the exact formula comes from integrating over the support of the distribution of  $\theta$  from  $-\lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)]$  to the upper limit  $1/2h$ . For simplicity, we have normalized so that  $\sum_g \lambda_g s_g = 1$ .

Taking  $I$  as given, what is the nature of political competition now? Notice that the incumbent patron can only commit to credibly give a client net utility of  $w_1^P - \psi(\varepsilon)$  if he is in group 1. The patron cannot credibly offer anything to any other agent. However, the potential patron can make no credible offers. In this case, given  $I$ , there is essentially nothing to compete over at the election stage. It is simply a case of calculating who can make credible offers to whom, checking that it is profitable to make offers to all such agents, and then computing the equilibrium probability of winning the election. This is what is captured in the function  $P^P(I)$ . Given Assumption 2, note that equation (2) is slack as long as  $I$  satisfies  $R(\varepsilon) - w_1^P > (1 - \alpha)\tau Ay(I)$  and  $P^P(I) > 1/2$ .<sup>11</sup> When  $R(\varepsilon) - w_1^P \leq (1 - \alpha)\tau Ay(I)$ , then the incumbent patron cannot make any credible offer to clients, and  $P^P(I) = 1/2$  for all such levels of  $I$ .

### Equilibrium Clientelism and Inefficiency

Having computed the probability that the patron wins the election, we can now solve for the optimal choice of  $I$ . Two regimes are possible depending on the level of  $I$ . Let us denote as  $\tilde{I}(A)$  the value of  $I$  such that  $(1 - \alpha)\tau Ay(I) = R(\varepsilon) - w_1^P = R(\varepsilon) - \psi(\varepsilon)/q_g^P$ . For  $I \leq \tilde{I}(A)$ , the patron can offer credible public-sector employment to voters; we refer to this as the clientelistic regime. For  $I > \tilde{I}(A)$ , the patron prefers to have all voters work in the private sector, and there is no clientelism. We denote this alternative regime as non-clientelistic.

In the clientelistic regime, *ex ante* the patron maximizes

$$\max_I V_c^P(I, A) = P^P(I) \{ (1 - \alpha)\tau Ay(I)\lambda_2 + [R(\varepsilon) - w_1^P]\lambda_1 \} - I \tag{8}$$

<sup>11</sup> If it were binding then,  $w = \alpha Ay(I) + \psi(\varepsilon)$ . Substituting this into equation (5), we see immediately that the ability of the patron to bias the outcome of the election vanishes, and we have  $P^P(I) = 1/2$ .

$$s.t. \quad I \leq \tilde{I}(A), \quad (9)$$

where all of group 1 is employed, while no members of groups 2 are employed. Abstracting from the constraint  $I \leq \tilde{I}(A)$ , the first-order condition for this problem, in this case, is

$$\frac{\partial P^P}{\partial I} \{ (1 - \alpha)\tau Ay(I)\lambda_2 + [R(\varepsilon) - w_1^P]\lambda_1 \} + P^P(1 - \alpha)\tau Ay'(I)\lambda_2 - 1 = 0, \quad (10)$$

where

$$\frac{\partial P^P}{\partial I} = -h\lambda_1 s_1 \alpha Ay'(I). \quad (11)$$

We assume that the second-order condition for the incumbent patron's maximization problem is satisfied. Let  $I_c^{\max}(A)$  be the level of investment given implicitly by the marginal condition (10). Then, the solution of equation (8), which we refer to as the clientelistic optimum, is simply given by  $\tilde{V}_c^P(A) = V_c^P(\min\{I_c^{\max}(A), \tilde{I}(A)\}, A)$ .

The condition (10) captures three key effects governing the marginal incentives in the choice of  $I$ . The last term,  $-1$ , is simply the marginal cost of investment. The term  $P^P(1 - \alpha)\tau Ay'(I)\lambda_2$  is the expected marginal benefit in terms of a higher tax base if elected (the incumbent does not care about increasing the tax base in the event of losing power). However, the final term comes from the effect of  $I$  on the probability of winning the election. From equation (5), we can see that higher  $I$  increases the amount of utility that the potential patron can offer to members of group 1, relative to what the patron can credibly offer. This effect tends to reduce  $I$ . Intuitively, the incumbent has an incentive to reduce investment in order to increase the attractiveness of the credible offer, making the voters more dependent upon the employment offer.

The following proposition characterizes the inefficiency of the equilibrium level of investment in the clientelistic regime.

**Proposition 1.** *In the clientelistic regime, the equilibrium level of provision of the good  $I_c^* = \min\{I_c^{\max}(A), \tilde{I}(A)\}$  is smaller than the socially efficient level of provision of the good  $I^e$  given by  $1 = Ay'(I^e)$ .*

Equation (10) tells us that at the government policy  $I_c^{\max}(A)$ , the social marginal product  $Ay'(I)$  of good  $I$  is necessarily smaller than 1, its marginal cost. In our model, there are five potential sources of inefficiency. The first two come from the fact the patrons care only about their own welfare.

- (1) This and the absence of lump-sum taxes, because of the existence of the informal sector, prevent the patrons from providing the socially

efficient level of  $I^e$ , and then taxing away all of the benefits for their own consumption. Taking this into account, the equilibrium (revenue-maximizing) level of the good would satisfy  $1 = (1 - \alpha)\tau Ay'(I^1)$  with  $I^1 < I^e$ .

- (2) The second source of inefficiency is that the incumbent patron discounts the benefits from  $I$  by the probability that he will be elected. This entails a level of investment  $1 = P^P(1 - \alpha)\tau Ay'(I^2)$  with  $I^2 < I^1 < I^e$ .

These effects are entirely standard and unsurprising. The next three effects are less trivial.

- (3) The fact that  $I$  is a public good, but that  $\lambda_1$  agents are, by Assumption 1, inefficiently employed in the public sector, means that the level of investment satisfies  $P^P(1 - \alpha)\tau Ay'(I^3)\lambda_2 = 1$  where  $I^3 < I^2 < I^1 < I^e$ . Hence, when agents are employed in the public sector to influence their political behavior, public goods that only increase private-sector productivity are undersupplied.
- (4) Next,  $\partial P^P/\partial I < 0$ , implying  $(\partial P^P/\partial I)\{(1 - \alpha)\tau Ay(I)\lambda_2 + [R(\varepsilon) - w_1^P]\lambda_1\} < 0$ , which implies that the level of investment  $I_c^{\max}(A)$  must have the property that  $P^P(1 - \alpha)\tau Ay'[I_c^{\max}(A)]\lambda_2 > 1$ . So, by the concavity (diminishing marginal productivity) of  $y(\cdot)$ ,  $I_c^{\max}(A) < I^3 < I^2 < I^1 < I^e$ . This effect stems from the fact that as the provision of the public good increases, it allow the alternative patron to increase the utility that it can offer citizens. Thus, underprovision arises because it increases the comparative political advantage of the incumbent patron.
- (5) Finally, to be in the clientelistic regime, the patron has to choose an investment level, which ensures his credibility (i.e.,  $I_c^* = \min\{I_c^{\max}(A), \tilde{I}(A)\} \leq I_c^{\max}(A)$ ). From this, it follows that  $I_c^* < I^e$ . This effect is interesting because it shows that one incentive to underinvest stems from the need to keep offers of employment credible in order to increase the probability of re-election. Reducing  $I$  achieves this because by making the private sector less productive, it makes public-sector employment relatively more attractive.

In the non-clientelistic regime, the patron's problem becomes

$$\max_I V_u^P(I, A) = \frac{1}{2}(1 - \alpha)\tau Ay(I) - I \tag{12}$$

$$s.t. \quad I > \tilde{I}(A). \tag{13}$$

This is because, when equation (4) binds the profit from public-sector employment,  $R(\varepsilon) - [\psi(\varepsilon)/q_1^P]$  is less than  $(1 - \alpha)\tau Ay(I)$ , which is what the patron would get by leaving the agent in the private sector, and



by taxing rather than employing the agent. The first-order condition for equation (12) is

$$\frac{1}{2}(1 - \alpha)\tau Ay'(I) - 1 = 0, \tag{14}$$

which implicitly defines a solution  $I_u^{\max}(A)$ . Let  $\tilde{V}_u^P(A)$  be the maximized value of equation (12)  $\tilde{V}_u^P(A) = V_u^P(\max\{I_u^{\max}(A), \tilde{I}(A)\}, A)$  where the subscript refers to the non-clientelistic regime. We have then the following.

**Proposition 2.** *In the non-clientelistic regime, the equilibrium level of provision  $I_u^* = \max\{I_u^{\max}(A), \tilde{I}(A)\}$  is smaller than the socially efficient level of provision of the good  $I^e$ . When  $[\psi(\varepsilon)/q_1^P](1 - q_1^P)(1 - \lambda_1) < 1/2hs_1$ ,  $I_u^*$  is greater than  $I_c^*$ .*

The fact that  $I_u^*$  is smaller than the socially efficient level of provision of the good  $I^e$  is immediate. Comparing marginal incentives in conditions (10) and (14), in general, we cannot sign unambiguously the difference between optimal investment under the clientelistic regime and optimal investment under the non-clientelistic regime. On the one hand, it is clear that in the non-clientelistic regime, the patron has no incentive to underinvest in order to bias the outcome of the election (i.e., no term with  $\partial P^P/\partial I$ ). Also, once elected, public investment has a higher marginal return to the non-clientelistic patron, because both agents in group 1 and 2 can be taxed in such a regime. On the other hand, the patron discounts more heavily the marginal return of investment  $I$  because the probability of keeping power, which is  $1/2$ , is less than that of  $P^P$  under clientelism. The condition  $(\psi(\varepsilon)/q_1^P)(1 - q_1^P)(1 - \lambda_1) < 1/2hs_1$  ensures that the two first effects dominate the last effect. Indeed, it is simple to see that, under this condition,

$$\frac{\partial V_u^P(I, A)}{\partial I} > \frac{\partial V_c^P(I, A)}{\partial I}$$

for all  $I$ . Hence, assuming the concavity of  $V_u^P(I, A)$  and  $V_c^P(I, A)$  in  $I$ ,<sup>12</sup> it follows immediately that  $I_c^* \leq I_c^{\max}(A) < I_u^{\max}(A) < I_u^*$ .

Finally, we close this section by characterizing the circumstances under which the clientelistic regime is the equilibrium regime (we relegate the proof to the Appendix). To keep things simple, we do this simply in terms of the productivity parameter  $A$ . We show the following result.

<sup>12</sup> This will hold under certain technical conditions.

**Proposition 3.** *If  $A$  is sufficiently small, the incumbent patron inefficiently employs his clients to bias the outcome of the election. When  $A$  is sufficiently high, however, it is optimal to abandon clientelism.*

As  $A$  increases, the value of the regime where there is no clientelism, and therefore no underinvestment to bias the election, rises relative to the clientelistic regime. It is clear why this is so. In the clientelistic regime, in order to bias the outcome of the election, the patron must inefficiently employ group 1, meaning that only agents in group 2 can be taxed. At some point, the opportunity cost of clientelism becomes so large that it is optimal for the patron to switch away from it.

### Comparative Statics

Two interesting comparative statics can be derived for the level of investment in the clientelistic regime whenever it is determined by the marginal condition (10) (i.e.,  $I_c^{\max}(A) < \tilde{I}(A)$ <sup>13</sup>).

**Proposition 4.** *a) As the rents  $R$  from being in power increase, the patron reduces  $I$ :*

$$\frac{dI^*}{dR(\varepsilon)} < 0.$$

*b) As the whole population is less subject to ideological bias, the patron increases  $I$ :*

$$\frac{dI^*}{dh} > 0.$$

Recall that  $h$  is the density of the aggregate ideological shock  $\theta$ . The larger  $h$  is, the tighter the distribution around zero. Using the second-order condition, we see that

$$\text{sign} \frac{dI^*}{dR(\varepsilon)} = \text{sign} \frac{\partial P^P}{\partial I} \lambda_1 < 0.$$

Using the second-order condition, we see that

$$\text{sign} \frac{dI^*}{dh} = \text{sign} \left[ -\alpha Ay'(I) \lambda_1 s_1 x + \frac{\partial P^P}{\partial h} (1 - \alpha) \tau Ay'(I) \lambda_2 \right],$$

where  $x = \{(1 - \alpha) \tau Ay(I) \lambda_2 + [R(\varepsilon) - w_1^P] \lambda_1\} > 0$  and  $\partial P^P / \partial h > 0$ . In general, there are two effects of higher  $h$ . On the one hand, higher  $h$  increases the marginal effect of  $I$  on  $P^P$ , which reduces investment. On the

<sup>13</sup> This will hold when  $A$  is small enough.

other hand, other things being equal, a higher  $h$  increases the probability that the incumbent will win the election. This increases the expected marginal benefit from investing and leads to higher  $I$ . However, using the first-order condition, in the Appendix we show that the second effect dominates.<sup>14</sup>

There are several interesting interpretations of what rents might be. Note that although we have conducted the comparative statics by varying  $R(\varepsilon)$ , we could have simply added an extra term  $\rho$  to capture the extra benefits from being in office. These could be natural resource rents accruing to the government, in which case the model explains how a political economy resource curse operates, biasing down public investment and inducing inefficient redistribution. All of these features might help to explain why clientelistic politics seems to be endemic in developing countries. They might also help to explain why, as productivity grows, while the private-sector economy develops, more materialistic preferences develop, and as inequality falls, the extent of clientelism falls, and the efficiency of government policies improves.

#### IV. Observable Voting

Now, we extend the model to allow for voting behavior to be observable. Even when there is a secret ballot, this analysis might be relevant because, while not observing individual behavior, politicians can observe more aggregate behavior, such as the voting patterns of electoral districts. Thus, even though individual exchanges between politicians and voters cannot be made contingent, politicians can make contingent offers to larger collections of voters. Moreover, secret ballots are not effectively enforced in many developing countries today and electoral corruption has been of

<sup>14</sup> Other comparative statics exercises with respect to productivity  $A$ , ability to tax  $\alpha$ , and cost of tax collection  $\tau$  can also be undertaken. However, the results are ambiguous. For instance, we can show that

$$\text{sign} \frac{dI^*}{dA} = \text{sign} \left[ -h\alpha y'(I)\lambda_1 s_1 x + \left\{ \left( P^P + A \frac{\partial P^P}{\partial A} \right) y'(I) + \left[ \frac{\partial P^P}{\partial I} y(I) \right] \right\} (1 - \alpha)\tau\lambda_2 \right].$$

An increase in productivity,  $A$ , has four effects. The first term in the expression is negative because  $(\partial^2 P^P / \partial I \partial A) < 0$ . Higher  $A$  increases the marginal impact of reducing  $I$  on the probability of winning, further encouraging underinvestment. The final term is also negative. This captures the effect that higher  $A$  increases the benefit of being in power, which tends to reduce  $I$ . However, the second term  $P^P(1 - \alpha)\tau y'(I)\lambda_2$  is positive and tends to increase  $I$ . Higher  $A$  increases the marginal productivity of  $I$ , and this tends to increase the opportunity cost of underinvestment, a force that induces higher  $I$ . Finally, because  $\partial P^P / \partial A < 0$ , the third term tends to increase the underprovision of the public good  $I$ . Intuitively, higher  $A$  reduces the relative attractiveness of the incumbent patron to agents of group 1. In response to this, the incumbent patron compensates by reducing  $I$ . The whole impact of an increase in productivity  $A$  on  $I$  is therefore *a priori* ambiguous.

great importance historically in most countries.<sup>15</sup> Although as shown in Section III. clientelism does not require observable political behavior, nevertheless, it has also thrived in such circumstances. Therefore, we extend the model to this case. If voting is observable, then patrons can make offers of employment conditional on voting behavior. In essence, they can offer an exchange, a job if a client votes for them, but not otherwise. We now show that this leads to inefficient underinvestment of a qualitatively similar sort as in Section III. Now, the incumbent patron wishes to underinvest, not to reduce what the potential patron can credibly offer to his clients, but rather to reduce what his clients can receive when they are punished and not employed.

To model this situation, we need some more notation. Let  $P^1$  be the probability expected by individual  $i$  that the incumbent patron wins the election when he supports the patron, and let  $P^2$  be the analogous probability when  $i$  does not support the patron. In this case, given the policies offered by the incumbent patron and the potential patron, a voter  $i$  in group 1 (to whom the incumbent patron can credibly offer employment) supports the patron if

$$P^1[w_1^P - \psi(\varepsilon)] + (1 - P^1)\alpha Ay(I) + \delta^i + \theta \geq P^2\alpha Ay(I) + (1 - P^2)\alpha Ay(I). \tag{15}$$

This incentive constraint takes into account the fact that if the client deviates and the patron is elected, the client will be punished by being denied a public-sector job. Note, first, that because there are a continuum of voters,  $P^1 = P^2 = P^e$ . Thus, this becomes

$$P^e [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] + \delta^i + \theta \geq 0. \tag{16}$$

Note how similar equation (16) is to equation (5). When voting behavior is observable, the client has to take into account the possibility of punishment. This removes the effects of the potential patron's offer, but it introduces the pay-off from being punished, which has very similar qualitative effects on the efficiency of investment.

From the above calculations, this case is easy to analyze. Again, we find that the probability that the patron remains in power is

$$\Pr \left\{ \sum_g N_g \geq \frac{1}{2} \sum_g \lambda_g \right\} \equiv P^P(I, P^e).$$

<sup>15</sup> For example, the Australian secret ballot was only introduced in Colombia in 1988. Before this, the political parties printed their own ballot papers, making it relatively easy to monitor who voted for whom (see Hartlyn and Valenzuela, 1998). Non-secret balloting is also still frequently used, for example, in Kenya (Throup and Hornsby, 1998) and other places in Africa (Bratton and van der Walle, 1997).

Simplifying, this probability is

$$P^P(I, P^e) = \Pr \left\{ \theta \geq \frac{-\lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] P^e}{\sum_g \lambda_g s_g} \right\}$$

$$= \frac{1}{2} + h \lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] P^e,$$

with  $\sum_g \lambda_g s_g = 1$  again. The only difference here is the presence of  $P^e$ . The probability that the patron wins the election now depends on the expected probability that he wins because of the way this enters the incentive constraint.

To focus on the main point of interest, we consider only the case in which it is *ex post* credible for the patron to offer public-sector jobs and a clientelistic regime prevails.<sup>16</sup> Hence, we can again calculate the optimal level of investment for the incumbent patron from the maximization of  $V_c^P(I, A)$  on  $I$ , the first-order condition of which is identical to condition (10):

$$\frac{\partial P^P}{\partial I} \{ (1 - \alpha)\tau Ay(I)\lambda_2 + [R(\varepsilon) - w_1^P]\lambda_1 \} + P^P(1 - \alpha)\tau Ay'(I)\lambda_2 - 1 = 0.$$

However, we now have

$$\frac{\partial P^P}{\partial I} = -h \lambda_1 s_1 \alpha Ay'(I) P^e < 0. \tag{17}$$

To determine the equilibrium  $I$  and its comparative statics, we impose rational expectations so that

$$P^P(I, P^e) = P^e = P = \frac{1}{2 \{ 1 - h \lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] \}}.$$

Thus, the first-order condition, substituting for  $\partial P^P / \partial I$ , becomes

$$\frac{-h \lambda_1 s_1 \alpha Ay'(I) \{ (1 - \alpha)\tau Ay(I)\lambda_2 + [R(\varepsilon) - w_1^P]\lambda_1 \} + (1 - \alpha)\tau Ay'(I)\lambda_2}{2 \{ 1 - h \lambda_1 s_1 [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] \}} = 1. \tag{18}$$

Clearly, condition (18) looks very similar to condition (10). Moreover, inefficient underprovision of  $I$  again arises. However, the incumbent patron now undersupplies  $I$ , not to reduce what the potential patron can credibly offer to group 1, but rather to punish members of group 1 harder if they decide to vote against the incumbent patron.

<sup>16</sup> Again, this is the case when  $A$  is small enough.

### V. Extension to Three Groups

Here, we extend the basic model of Section II. to allow for three groups. In addition to the two groups there, we allow for a third group, which is composed of the clients of the potential patron. Let the population masses of the three groups be  $\lambda_g$  for  $g = 1, 2, 3$ . We assume that for group 3,  $q_3^N > R(\varepsilon)/\psi(\varepsilon) > q_3^P$ , so that the potential patron, but not the incumbent patron, can make credible employment offers to members of this group. Let  $w^N = \psi(\varepsilon)/q_3^N$  be the efficiency wage paid by the incumbent patron in power to members of group 3, and let us drop the subscript on  $w_1^P$ . We assume that it is always profitable for the potential patron to offer employment to all members of group 3. Therefore, in group 3, where only the potential patron can credibly make job offers, voter  $i$  supports the patron if

$$\alpha Ay(I) + \delta^i + \theta \geq w^N - \psi(\varepsilon). \tag{19}$$

Equation (19) shows that the patron is at a disadvantage in group 3 because he cannot promise to employ members in this group, while the potential patron can. In addition to the previous equations for  $N_1$  and  $N_2$ , we have another one for group 3:

$$N_3 = \lambda_3 \left\{ \frac{1}{2} + s_3[\alpha Ay(I) - (w^N - \psi(\varepsilon)) + \theta] \right\}.$$

This is because, in this case, we must have  $\delta^i \geq w^N - \psi(\varepsilon) - \alpha Ay(I) - \theta$ . Now, we have

$$P^P(I) = \frac{1}{2} + \frac{h}{\sum_g \lambda_g s_g} (\lambda_1 s_1 \Delta U^P + \lambda_3 s_3 \Delta U^N),$$

with  $\Delta U^P = w^P - \psi(\varepsilon) - \alpha Ay(I) > 0$  and  $\Delta U^N = \alpha Ay(I) - [w^N - \psi(\varepsilon)] < 0$ . Hence,

$$P^P(I) = \frac{1}{2} + h \{ [\alpha Ay(I) + \psi(\varepsilon)] (\lambda_3 s_3 - \lambda_1 s_1) + \lambda_1 s_1 w^P - \lambda_3 s_3 w^N \}. \tag{20}$$

Now, the probability that the patron wins the election is no longer necessarily greater than one-half. Although employing members of group 1 increases  $P^P(I)$ , the fact that the potential patron can make credible job offers to group 3 tends to reduce it. What is critical for the efficiency results is the sign of  $[\partial P^P(I)]/\partial I$ . This is determined by the term  $\lambda_3 s_3 - \lambda_1 s_1$ . This term generates underinvestment if  $\lambda_1 s_1 > \lambda_3 s_3$  so that  $[\partial P^P(I)]/\partial I < 0$ . In this case, as before, the desire to reduce what the potential patron can offer to group 1 dominates. However, in this model, there is a countervailing incentive. This stems from the fact that by increasing  $I$  the incumbent patron increases what he can credibly offer to members of

group 3, thus narrowing the potential patron's advantage with this group. Indeed, if  $\lambda_3 s_3 - \lambda_1 s_1 > 0$ , this second effect dominates,  $[\partial P^P(I)]/\partial I > 0$ , and this term tends to increase investment. Underinvestment arises when the clients of the patron are larger in number than the clients of the potential patron, or when the clients of the incumbent patron are relatively homogeneous ideologically, and thus they can be easily swayed by offers of income (high  $s_1$ ).

The model with three groups can easily be extended to the case where voting is observable. In this case, a member of group 3 supports the patron if

$$\delta^i + \theta \geq (1 - P)[w^N - \psi(\varepsilon) - \alpha Ay(I)]. \tag{21}$$

Compare this to equation (19). When  $\lambda_3 s_3(1 - P) - \lambda_1 s_1 P < 0$ , this term again generates underinvestment.

### VI. Inequality

Now, we extend the model of Section I. to investigate the implications of inequality for clientelism. We assume that there are three groups, 1, 2, and 3, where the incumbent patron can make credible job offers to groups 1 and 2 but not to group 3. As in Section II. we assume for simplicity that the potential patron can make no credible offers. Let the first two groups both be of size  $\lambda/2$ , with group 3 being of size  $1 - \lambda$ . Both groups 1 and 2 have the same  $q$  and will thus be paid the same efficiency wage. Also, to emphasize clearly the role of economic inequality, we assume that the two groups are identically distributed with respect to their ideological preferences so that  $s_1 = s_2 = s$ .

An individual of group 1 has an income  $\sigma^1 Ay(I)$ , while a member of group 2 has income  $\sigma^2 Ay(I)$ . In order to be consistent with total income, which is equal to  $\lambda Ay(I)$ , given that the two groups are of equal size  $\lambda/2$ , we should have  $\sigma^1 \lambda/2 + \sigma^2 \lambda/2 = \lambda$  or  $\sigma^1 + \sigma^2 = 2$ . Thus, it is convenient to reparametrize  $\sigma^1$  and  $\sigma^2$  as

$$\sigma^1 = 1 + x; \quad \sigma^2 = 1 - x \quad \text{with} \quad 0 \leq x \leq 1, \tag{22}$$

where  $x$  measures the degree of income inequality between the two groups of voters (group 1 is richer than group 2). Inequality (5) becomes

$$w^P - \psi(\varepsilon) + \delta^i + \theta \geq \sigma^g \alpha Ay(I) \quad \text{for} \quad g = 1, 2.$$

We also require that public-sector employment for each group must be *ex post* credible. That is, equation (4) becomes

$$(1 - \alpha)\sigma^g \tau Ay(I) \leq R(\varepsilon) - w^P \quad \text{for} \quad g = 1, 2. \tag{23}$$

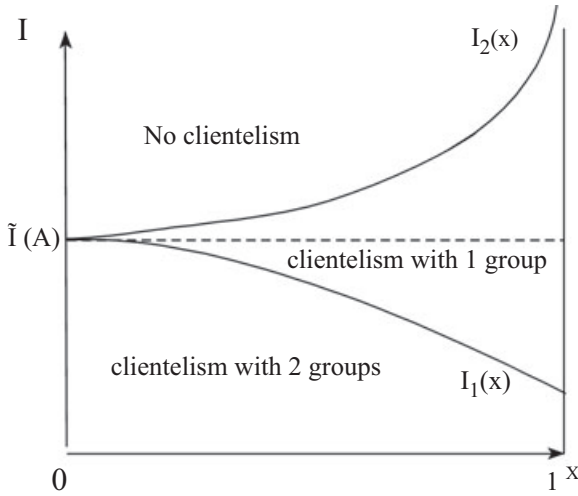


Fig. 2. The impact of inequality on clientelism

Let  $I_1(x)$  and  $I_2(x)$  denote the levels of investment over which the incumbent patron cannot make credible offers to the agents of groups 1 and 2, respectively. Using equation (23), these are given by

$$y[I_1(x)] = \frac{R(\varepsilon) - w^P}{A(1 - \alpha)\tau} \frac{1}{1 + x} \quad \text{and} \quad y[I_2(x)] = \frac{R(\varepsilon) - w^P}{A(1 - \alpha)\tau} \frac{1}{1 - x}. \quad (24)$$

Note that  $I_1(0) = I_2(0) = \tilde{I}(A)$  and  $I_1(x) < I_2(x)$  for  $x \in (0, 1]$  because the opportunity cost of offering public-sector jobs to the richer and more productive agents of group 1 is higher than offering them to the poorer and less productive agents of group 2. From this, it follows that there are three regimes. For  $I \leq I_1(x)$ , the patron can make credible offers to both groups 1 and 2 – a regime we refer to as complete clientelism. For  $I_1(x) < I \leq I_2(x)$ , the patron can only make offers to the agents of the poorer group 2 – a regime we describe as incomplete clientelism. Finally, for  $I_2(x) < I$ , there is no clientelism (i.e., the non-clientelistic regime). The three regimes are easily represented in Figure 2 in terms of the level of inequality  $x$  and the level of provision of  $I$ . It is apparent that as inequality increases from  $x = 0$  (i.e., perfect equality) to  $x = 1$  (i.e., complete inequality), the incomplete clientelism region grows larger as it becomes cheaper to provide public jobs to the poor and more expensive to do the same for the rich. Overall, clientelism (complete and incomplete) increases at the expense of the non-clientelistic regime.



Now, it is easy to calculate the incumbent patron's probability of winning the election in the clientelistic regimes. This is given by

$$\begin{aligned}
 P^P(I) &= \frac{1}{2} + h\lambda s[w^P - \psi(\varepsilon) - \alpha Ay(I)] \quad \text{when } I \leq I_1(x) \\
 &= \frac{1}{2} + h\frac{\lambda}{2}s[w^P - \psi(\varepsilon) - \alpha(1-x)Ay(I)] \quad \text{when } I_1(x) < I \leq I_2(x).
 \end{aligned}$$

We can also write the problem of the incumbent patron in the three regimes. Compared to Section II, only the intermediate case of incomplete clientelism has different first-order conditions. In such a regime, the problem can be stated as

$$\max_I V_{ic}^P(I) = P^P(I) \left\{ (1-\alpha)\tau Ay(I) \left( 1 - \frac{\lambda}{2} + \frac{\lambda}{2}x \right) + [R(\varepsilon) - w^P] \frac{\lambda}{2} \right\} - I \tag{25}$$

$$\text{s.t. } I_1(x) < I \leq I_2(x). \tag{26}$$

Then, the first-order condition becomes

$$\begin{aligned}
 \frac{\partial P^P}{\partial I} &\left\{ (1-\alpha)\tau Ay(I) \left( 1 - \frac{\lambda}{2} + \frac{\lambda}{2}x \right) + [R(\varepsilon) - w^P] \frac{\lambda}{2} \right\} \\
 &+ P^P(1-\alpha)\tau Ay'(I) \left( 1 - \frac{\lambda}{2} + \frac{\lambda}{2}x \right) - 1 = 0,
 \end{aligned} \tag{27}$$

where

$$\frac{\partial P^P}{\partial I} = -h\frac{\lambda}{2}s\alpha(1-x)Ay'(I). \tag{28}$$

Here,  $I_{ic}^{\max}(x)$  denotes the solution of equation (27) in the incomplete clientelistic regime. It follows immediately that, as in the other regimes (complete clientelism and non-clientelistic), the optimal level of provision of  $I_{ic}^*(x) = \min[\max\{I_{ic}^{\max}(x), I_1(x), I_2(x)\}]$  in the incomplete clientelistic regime is less than the socially optimal one  $I^e$ . We can also see immediately that as  $x$  increases, the left-hand side of equation (27) increases for two reasons. First, the patron's clients become less productive. This implies that provision of  $I$  has less of a detrimental effect on the probability that the patron will remain in power (i.e.,  $(\partial^2 P^P)/(\partial I \partial x) > 0$ ). Hence, the patron is more likely to invest in  $I$ . Second, the rich agents also become more productive. This increases the tax base of the private sector, which increases the marginal return of  $I$  from the point of view of the patron. It follows that  $I_{ic}^{\max}(x)$  is increasing with  $x$ . This does not necessarily imply that the optimal provision of the incumbent patron  $I_{ic}^*(x)$  is increasing with  $x$  because, from equation (24),  $I_1(x)$  is decreasing with  $x$ . Indeed, consider the case where the productivity level  $A$  is small enough

that  $I_{ic}^{\max}(0) < I_1(0) = \tilde{I}(A)$ . Then, clearly for some range of  $x$  in an interval  $[0, \bar{x}]$ ,  $I_{ic}^{\max}(x) < I_1(x)$  and  $I_{ic}^*(x) = \min[\max\{I_{ic}^{\max}(x), I_1(x), I_2(x)\}] = I_1(x)$  is decreasing with the level of inequality  $x$ .

We can summarize this discussion in the following proposition.

**Proposition 5.** *a) An increase in inequality  $x$  within the group of the patron's clients increases the likelihood of clientelism, and makes it more likely that clientelism will occur with the poorest agents.*

*b) For a low enough productivity level  $A$ , the optimal level of provision of  $I$  in that clientelistic regime is decreasing with the level of inequality  $x$ , at least when  $x$  is not too big.*

## VII. Conclusion

In this paper, we have argued that an attempt to understand what types of policies politicians can actually commit to can provide a new explanation for why income redistribution often takes an inefficient form – in particular, through offers of employment in the bureaucracy. An innovation of our approach is to conceptualize redistributive politics as an exchange between politicians and voters and to emphasize that the issue of credibility is two-sided. We have studied the circumstances under which such exchanges can be mutually incentive-compatible. From this perspective, redistribution takes the form of public-sector employment because a job is a credible, selective, and reversible method of redistribution, which ties the continuation utility of a voter to the political success of a particular politician. We have shown that other types of policies are inefficiently undersupplied in equilibrium, either because they are not credible (income transfers), or because they influence the terms of trade between politicians and their supporters (public goods or public investment). Inefficiencies in other public policies arise because of the way they interact with such clientelistic redistribution. In particular, they arise in our model because of a desire to make political exchanges incentive-compatible.

Such relationships are called patronage or clientelism in the body of literature concerning political science, and our model provides a formalization of some key ideas in this informal body of literature. Consistent with some of the claims in this body of literature, our model also has several implications that can help us to understand why clientelistic politics and the consequent inefficient redistribution might be endemic to developing countries. We have shown that characteristics such as low productivity and inequality make clientelism relatively attractive to politicians.

## Appendix

### *Ex Post Unemployment in the Public Sector*

In the main body of the paper, we have assumed that the patron had access to an alternative technology, which generates rents  $\Pi \equiv R(\varepsilon) - \psi(\varepsilon)/q_g^P$ . The role of this alternative technology, which gives exactly the same amount of rents to the patron as a voter employed at the efficiency wage, was to ensure a credible threat for the patron *ex post* not to employ a deviating voter. We now sketch a more realistic alternative model where some potential employees are left unemployed, in order to make the threat of non-employment credible. We assume that the technology of production of the public sector is characterized by a decreasing returns-to-scale production function  $Q = R(en_g)$ , where  $e \in \{0, \varepsilon\}$  is the effort level of an employed civil servant,  $n_g$  is the number of employed individuals in the public sector, and  $R(\cdot)$  is an increasing concave function with  $R' > 0$ ,  $R'' < 0$  and the conditions  $R(0) = 0$ ,  $\varepsilon R'(\varepsilon\lambda_1) = 0$  and  $Ay(0) > R'(0) - \psi(\varepsilon)$  (inefficiency of the public sector).

Clearly, applying a similar reasoning to that employed in the main body of the paper, the public-sector wage offer of the incumbent patron is given by

$$w_g^P \geq \max \left\{ \frac{\psi(\varepsilon)}{q_g^P}, \quad \psi(\varepsilon) + \alpha Ay(I) \right\}. \quad (\text{A1})$$

It should then be optimal for the incumbent patron to employ his marginal client *ex post*

$$\varepsilon R'(\varepsilon n_g) - w_g^P = (1 - \alpha)\tau Ay(I). \quad (\text{A2})$$

The marginal net benefit  $\varepsilon R'(\varepsilon n_g) - w_g^P$  that the incumbent patron derives from providing a public-sector job to one of his clients should be higher than  $(1 - \alpha)\tau Ay(I)$  (i.e., the tax revenue that he can extract from having that client work in the private sector). Equation (A2) determines an equilibrium *ex post* public employment level  $n_g(I, w_g^P)$ . This level is obviously decreasing with the public wage offer  $w_g^P$ . It is also decreasing with the investment level  $I$ . A larger value of  $I$  increases both the productivity of the private sector and the tax revenues that could be collected from having the marginal client work in the private sector. Considering equation (A1), we can be even more precise. Denoting  $I_0^*$  as the level of investment such that

$$\frac{\psi(\varepsilon)}{q_g^P} = \psi(\varepsilon) + \alpha Ay(I_0^*),$$

the shape of  $n_g(I)$  is then given by

$$n_g(I) = n_g^0(I) = n_g \left[ I, \frac{\psi(\varepsilon)}{q_g^P} \right] \quad \text{when } I \leq I_0^*$$

$$n_g(I) = n_g^1(I) \quad \text{when } I > I_0^*.$$

Here,  $n_g^1(I)$  is determined implicitly by

$$\varepsilon R'(\varepsilon n_g^1) = \psi(\varepsilon) + [\alpha + (1 - \alpha)\tau]Ay(I).$$

The first regime  $I \leq I_0^*$  corresponds to the clientelistic regime, with rents allocated to the clients employed in the public sector. The regime  $I > I_0^*$  corresponds to the non-clientelistic case, where such rents do not exist.

Consider the voting behavior of the clients. In the group where only the patron can credibly make job offers, voter  $i$  supports the patron if

$$\frac{n_g(I)}{\lambda_1} [w_1^P - \psi(\varepsilon)] + \left[ 1 - \frac{n_g(I)}{\lambda_1} \right] \alpha Ay(I) + \delta^i + \theta \geq \alpha Ay(I).$$

Compared to equation (5), this equation differs because it takes into account the fact that, *ex post*, not all clients will be given a public-sector job. With the probability  $n_g/\lambda_1$ , a client will receive such a position and obtain a net utility  $w_1^P - \psi(\varepsilon)$ . With the residual probability  $[1 - (n_g/\lambda_1)]$ , the client will not be given a public-sector job and will therefore receive a net income  $\alpha Ay(I)$  in the private sector of the economy. A member of group 1 supports the incumbent patron if

$$\delta^i \geq \frac{n_g(I)}{\lambda_1} \{ \alpha Ay(I) - [w_1^P - \psi(\varepsilon)] \} - \theta.$$

The probability that the patron stays in power will become

$$\tilde{P}^P(I) = \frac{1}{2} + hs_1 n_g(I) [w_1^P - \psi(\varepsilon) - \alpha Ay(I)], \quad (A3)$$

which is clearly a decreasing function of  $I$  because

$$\frac{\partial \tilde{P}^P}{\partial I} = -hn_g(I)s_1\alpha Ay'(I) + hs_1 n'_g(I) [w_1^P - \psi(\varepsilon) - \alpha Ay(I)] < 0. \quad (A4)$$

In the clientelistic regime (i.e., when  $I \leq I_0^*$ ), *ex ante* the patron will now maximize

$$\tilde{V}_c^P(I, A) = \tilde{P}^P(I) [(1 - \alpha)\tau Ay(I)(\lambda_2 + \lambda_1) + \{ R[\varepsilon n_g(I)] - [w_1^P + (1 - \alpha)\tau Ay(I)] n_g(I) \}] - I,$$

while he will obviously use the same function  $V_u^P(I, A) = (1/2)(1 - \alpha)\tau Ay(I) - I$  in the non-clientelistic regime. An analysis of the main body of the paper can be performed with the new value functions  $\tilde{V}_c^P(I, A)$  and

$V_u^P(I, A)$ , which yields similar qualitative results, although the details are more complex.

### *Equilibrium Regimes*

*Proof of Proposition 3:* We prove some of the results used in the paper.

Recall that the value of the clientelistic regime is  $\tilde{V}_c^P(A) = V_c^P[\min\{I_c^{\max}(A), \tilde{I}(A)\}, A]$ , while that of the non-clientelistic regime is  $\tilde{V}_u^P(A) = V_u^P[\max\{I_u^{\max}(A), \tilde{I}(A)\}, A]$ .

(i) First, we show that

$$\frac{\partial V_u^P(I_u^{\max}, A)}{\partial A} > \frac{\partial V_c^P(I_c^{\max}, A)}{\partial A},$$

so that as  $A$  increases, the value of the regime where there is no underinvestment to bias the election rises relative to the clientelistic regime. Using the envelope theorem, this inequality can be written as

$$\frac{1}{2}(1 - \alpha)\tau y(I_u^{\max}) > P^P(I_c^{\max})(1 - \alpha)\tau y(I_c^{\max})\lambda_2 + \frac{\partial P^P(I_c^{\max})}{\partial A}D,$$

where  $D = \{(1 - \alpha)\tau Ay(I_c^{\max})(1 - \lambda_1) + \lambda_1[R(\varepsilon) - w^P]\}$ . Otherwise, using the first-order conditions (10) and (14), and simplifying, we obtain

$$\begin{aligned} \frac{y(I_u^{\max})}{y'(I_u^{\max})} &> \frac{y(I_c^{\max})}{y'(I_c^{\max})} \cdot \left(1 - \frac{\partial P^P}{\partial I}D\right) + A \frac{\partial P^P(I_c^{\max})}{\partial A}D \\ \implies \frac{y(I_u^{\max})}{y'(I_u^{\max})} &> \frac{y(I_c^{\max})}{y'(I_c^{\max})} + D \left[ \frac{y(I_c^{\max})}{y'(I_c^{\max})} \frac{\partial P^P}{\partial I} + A \frac{\partial P^P(I_c^{\max})}{\partial A} \right]. \end{aligned}$$

However, because

$$\frac{\partial P^P}{\partial I} = -h\lambda_1 s_1 \alpha Ay'(I_c^{\max})$$

and

$$A \frac{\partial P^P(I_c^{\max})}{\partial A} = -h\lambda_1 s_1 \alpha Ay(I_c^{\max}),$$

it is immediately obvious that

$$\left[ \frac{y(I_c^{\max})}{y'(I_c^{\max})} \frac{\partial P^P}{\partial I} + A \frac{\partial P^P(I_c^{\max})}{\partial A} \right] = 0.$$

Thus,

$$\frac{\partial V_u^P(I_u^{\max}, A)}{\partial A} > \frac{\partial V_c^P(I_c^{\max}, A)}{\partial A}$$

if

$$\frac{y(I_u^{\max})}{y'(I_u^{\max})} > \frac{y(I_c^{\max})}{y'(I_c^{\max})},$$

which follows from the standard assumptions we have made on  $y(\cdot)$  and from the fact that  $I_u^{\max} > I_c^{\max}$ .

- (ii) There exists  $\bar{A}$  such that, when  $A \in [0, \bar{A})$ ,  $V_c^P(I_c^{\max}, A) > V_u^P(I_u^{\max}, A)$  while for  $A \in [\bar{A}, \infty)$ ,  $V_u^P(I_u^{\max}, A) \geq V_c^P(I_c^{\max}, A)$ . Indeed,  $V_u^P[I_u^{\max}(0), 0] = 0$ , while  $V_c^P[I_c^{\max}(0), 0] > 0$  because a clientelistic patron makes rents from employing members of group 1. Note that as  $A$  becomes very large,  $\lim_{A \rightarrow \infty} V_u^P(I_u^{\max}, A) > \lim_{A \rightarrow \infty} V_c^P(I_c^{\max}, A)$ . This follows from the L'Hopital rule, which immediately shows that the value for the non-clientelistic regime  $V_u^P(I_u^{\max}, A)$  goes to infinity faster than  $V_c^P(I_c^{\max}, A)$ .
- (iii) Finally, note that the threshold level of investment  $\tilde{I}(A)$  is decreasing with  $A$  with  $\lim_{A \rightarrow 0} \tilde{I}(A) = +\infty$ . Also, we have  $A_0$  such that  $y(0) = [R(\varepsilon) - w^P]/[A_0(1 - \alpha)\tau]$ , which means that  $\tilde{I}(A) = 0$  for all  $A \geq A_0$ .

It follows from (i), (ii), and (iii) that for  $A$  small enough,  $\min\{I_c^{\max}(A), \tilde{I}(A)\} = I_c^{\max}(A)$  and  $\max\{I_u^{\max}(A), \tilde{I}(A)\} = \tilde{I}(A)$ . Hence, for  $A$  small enough,  $\tilde{V}_c^P(A) = V_c^P[I_c^{\max}(A), A] > V_u^P(I_u^{\max}, A) > V_u^P[\tilde{I}(A), A] = \tilde{V}_u^P(A)$ , and the clientelistic regime dominates the non-clientelistic regime.

Also, for  $A$  large enough (i.e., larger than  $\max\{A_0, \bar{A}\}$ ),  $\tilde{I}(A) = 0$  and  $\tilde{V}_c^P(A) = V_c^P(0, A) < V_u^P(I_u^{\max}, A) = \tilde{V}_u^P(A)$ , and the non-clientelistic regime dominates the clientelistic regime. ■

### Comparative Statics

We show that  $dI^*/dh > 0$ . To see this, we note that

$$\text{sign} \frac{dI^*}{dh} = \text{sign} \left[ -s_1 \alpha A y'(I) x \lambda_1 + \frac{\partial P^P}{\partial h} (1 - \alpha) \tau A y'(I) \lambda_2 \right], \quad (A5)$$

where  $x = \{(1 - \alpha)\tau A y'(I) \lambda_2 + [R(\varepsilon) - w_1^P] \lambda_1\} > 0$ . Now, the first-order condition can be written as

$$-s_1 \alpha A y'(I) \lambda_1 = \frac{1 - P^P(1 - \alpha) \tau A y'(I) \lambda_2}{h}.$$

By using this to substitute  $-s_1 \alpha A y'(I) \lambda_1$  from equation (A5) and by simplifying, we show that  $dI^*/dh > 0$  if and only if  $1/2h > 0$ , which is true.

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