# The Political Economy of Clientelism[¤]

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## Abstract

In this paper we argue that a deeper understanding of the political commitment problem provides an explanation for why much income redistribution takes an ine¢cient form, particularly employment in the public sector. To do so we conceptualize redistributive politics as an exchange relationship between politicians and voters that must be self-enforcing. A job is a credible way of redistributing when it provides rents (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 o¤ers of employment incentive compatible leads to ine¢ciencies in the supply of public goods and public investment. Our model provides a formalization of a style of redistributive politics known as 'clientelism.' We show that ine¢cient redistribution and clientelism becomes a relatively attractive political strategy in situations with high inequality and low productivity. Ine¢ciency is increased when (1) the 'stakes' from politics are high, (2) inequality is high, and (3) when money matters less than ideology in politics.

Keywords: Political Competition, Income Redistribution, Public Policy.

JEL Classi…cation: H1, H2.

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# 1 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 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 also that this takes singularly ineﬃcient forms. For instance, redistribution often involves oﬀers of employment in the bureaucracy and Alesina, Danninger and Rostagno (1999) argue that as much as half of the wage bill of the public sector in the south of Italy can be seen as pure redistribution.

In this paper we argue that a deeper comprehension of the issue of political commitment can help in understanding why income redistribution takes an ineﬃcient form. A novel aspect of our approach is that, contrary to the existing 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 policies which would induce people to vote for them are not in their interests to implement ex post. Politicians, whether an incumbent government or the opposition, would like to oﬀer policies to groups of citizens in exchange for political support. Since the law cannot be used to enforce such political exchanges, they must be self-enforcing. The problem of credibility is two-sided. Just as politicians might wish to commit to actions that are not ex post optimal, so may citizens. For example, a citizen may 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 they promised.

For a politician to ensure that a group of citizens supports him, he must be able to use policies that tie their continuation utility to his political success, or alternatively, if behavior is observable,[1] in ways that allow them to be punished if they renege on the

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[1]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 got

exchange. For citizens to ensure that a politician honors his promises, these must be ex post rational for the politician to implement.

We argue that the appeal of o¤ers 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.[2] Why is an o¤er of employment credible when other types of policies, such as income transfers, are not? Firstly, due to moral hazard, optimal employment contracts concede rents to workers. Secondly, 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 o¤er of a job is a credible way of transferring rents to speci...c voters. When political behavior is observable, a job has the additional advantage that it can be withdrawn as a punishment.

Ine¢ciency in the form of redistribution therefore arises because it represents one way in which the political commitment problem can be solved. There is ine¢ciency both because employment in the public sector is relatively ine¢cient, but also because the amount of rents transferred to clients by employment depends on the amount of investment and/or public good 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 o¤ers more attractive to voters. Our analysis suggests that one sort of ine¢cient government policy arises as a way of making voters more 'dependent' on politicians and hence their political support easier to buy with job o¤ers.

Our conceptualization of redistributive politics is close to what is known as 'clientelism' in anthropology and political science. Clientelism is a political exchange between a politician, a 'patron' who gives patronage in exchange for the vote or support of a 'client.' The dominant stylized fact in this literature is that what is exchanged in clientelism are jobs for votes. In Weingrod's (1968, p. 379) words

> "patronage refers to the way in which party politicians distribute public jobs or special favors in exchange for electoral support" .

around 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.

[2] An interesting example of incentive compatible redistribution is discussed in 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, since presumably a right shoe is useless to the party, this was an incentive compatible contract.

In Chubb's seminal analysis of the Christian Democratic political machine in Southern Italy she notes (1982, p. 91),

> "a substantial part of politics revolves around the posto ("job or position") and...when all is said and done, a job signi...es a vote and vice versa."

Weiner's analysis of clientelism in India is similar arguing (1967, p. 34) that the Congress party became

> "a means of obtaining jobs for friends and relatives and of gaining access to the many services and material bene...ts which government at all levels can bestow."

This literature never explains why patronage takes the form of employment though interestingly it usually implicitly emphasizes both the issue of commitment and the fact that the reversibility of an employment o¤er is part of it's 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,"

and Wilson (1961, p. 373) notes in his analysis of the clientelistic political machine in Chicago 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 literature. In particular, we emphasize that who politicians can credibly exchange with will be determined by the social network of individuals whose behavior they can observe relatively well - perhaps because they interact socially with them. This network, a clientele, because of its e¤ect of ameliorating the moral hazard problem, allows politicians to make credible employment o¤ers to such people.

Apart from providing a characterization of the types of ine¢ciencies that clientelistic politics generates, 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

clients' political allegiance 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) the greater are the 'stakes' or rents to staying in power,[3] (2) the more important is ideology relative to monetary incentives in determining the outcome of elections, and (3), under reasonable conditions, and conditional on clientelism existing, there is greater inequality.

These comparative statics help us to understand why it is that developing countries' politics, particularly in Africa, seem to be particularly clientelistic (as argued by many scholars, e.g. Bates, 1981, Herbst, 2000, van de Walle, 2000). 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 destroys clientelism (e.g. Scott, 1969, Lemarchand and Legg, 1972). Our analysis provides an explicit mechanism which shows how this might work. We further show that the inefficiencies associated with clientelism are intensified when the relative stakes of politics are relatively large. This is frequently argued to be a key problem in Africa. For example, Hodder-Williams (1984, p. 95, quoted in Herbst, 1990a, p. 2) 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, Baqir and Easterly (1998) show that, within the US, higher inequality leads to greater redistribution in the form of public sector employment.

Finally, our analysis is clearly related to many ideas in the literature on redistributive politics. We follow Alesina (1988) and Besley and Coate (1997) in emphasizing that commitment problems are central to democratic politics, but try to develop a more detailed sense of which type of policies may or may not be credible. It is also related to

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[3] Interestingly, though 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. Concentrating on private good provision therefore widens the utility from being in or out of office.

analyses of pure redistribution between groups by Lindbeck and Weibull (1987) and Dixit and Londregan (1996, 1998). These authors determine 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 e¢-ciency, except when deadweight losses from redistribution are introduced. The authors model neither public good provision nor investment and so they do not study how these may interact with other forms of redistribution which is a central feature of our analysis. Also related to our paper are the models of Persson and Svensson (1989), Alesina and Tabellini (1990), Aghion and Bolton (1990) and Besley and Coate (1998) which show that the desire to manipulate the future political equilibrium can induce ine¢cient policies. In these models the basic cause of ine¢ciency is that politicians cannot commit to future policy.

Our work is perhaps most closely related to and complements research on ine¢ciencies in the form of redistribution. Firstly, Coate and Morris (1995) argued that ine¢ciencies in the form of redistribution arise because of the desire by politicians to hide the fact that they were redistributing. Secondly, Acemoglu and Robinson (2001) argue that ine¢cient redistribution arises as a way to maintain the political strength of a group. Thirdly, Persson and Tabellini (1999) and Lizzeri and Persico (2001) argue that ine¢cient spending on a public good may arise because private goods can be better targeted by politicians to supporters. Though none of these papers discuss public sector employment as a method of redistribution,[4] the ...rst and third argument could be applied to explain it. 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 (as indeed argued by Alesina, Baqir and Easterly, 1998). Nevertheless, there are problems with this approach. Firstly, 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. It is therefore not clear that uncertainly about its ine¢ciency is plausible. Moreover, for this theory to apply, politicians must have no way of proving their type. The empirical literature on public sector employment in developing countries is far more consistent with the view that voters understand that it is ine¢cient and that it is precisely a way for a politician to reward supporters (for example, Geddes, 1994). The third model would explain redistribution via employment simply by the fact that a job can

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[4]Shleifer and Vishny(1994) provide a rare model where redistribution takes place via employment but the authors simply assume this rather than explain it

be targeted. While this may be important, o¤ers of money or private goods can also be targeted. A contribution of our model is to explain why an o¤er of employment may be credible when an o¤er of income is not.

The paper proceeds as follows. In section 2 we set-up our basic model. We analyze this when voting is unobservable (section 3) and observable (section 4). In sections 5 and 6 we consider two extensions to allow for more groups of agents and also inequality. Section 7 then interprets our results and provides some more empirical examples. Section 9 concludes.

# 2  The Basic Environment

We now develop our formal model which is a version of the probabilistic voting model (see Lindbeck and Weibull, 1987, and Persson and Tabellini, 2000). Consider a static model with four types of agents. There is an incumbent political decisionmaker, the "patron", who we denote with a superscript $P$, a "potential patron" who contests power and is superscripted $N$, and two groups of voters/clients indexed $g = 1, 2$. Group $g$ has population of size $\lambda_g$. Initially the incumbent patron chooses the level of a policy variable $I$ after which he competes for power in an election contested by the potential patron. The patrons compete by o¤ering tax rates, transfers of income and government employment to clients. After the election whichever patron wins takes power and adopts a policy (which may or may not be what he o¤ered 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 utility function which is linear in consumption, $U^{iP}(.) ´ c^i + \delta^i + \theta$, if he votes for the patron, and utility function $U^{iN}(.) ´ c^i$ otherwise. Here $c^i$ is consumption of agent $i$. We assume that $\delta^i$ is uniformly distributed on the interval $\left[ \frac{1}{2s_g}, \frac{1}{2s_g} \right]$ 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 $\left[ \frac{1}{2h}, \frac{1}{2h} \right]$ and thus has density $h > 0$.

Individuals have income from one of two sources; the public sector or private sector. If working in the private sector, each has pre-tax income of $Ay(I)$ which is a di¤erentiable, 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 may be converted one-for-one into the variable chosen by the patron and that $y(0) > 0$. Voters may hide their income at some

cost in an informal sector which is non-taxable. We assume speci...cally that if an agent moves his income into the informal sector he loses a proportion $1 - \alpha$ of his income, so that income in the informal sector would be $\alpha A y(I)$.

If working in the public sector voters have to choose an e¤ort level $e \in \{0, \varepsilon\}$ and are paid a wage $w_g^j$ for $j = P, N$ which may depend on the identity of who wins the election. Exerting e¤ort $e$ incurs a cost of $\psi(e)$ (in terms of income) with $\psi(\varepsilon) > \psi(0) \geq 0$, and $R(e)$ is the productivity of an individual public sector worker as a function of e¤ort. We let $q_g^j$ be the probability that the e¤ort 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 who can observe them. Speci...cally, 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. On the other hand, the potential patron cannot make any rents from members of group 1 and neither patron can do so from members of group 2. We shall call the members of group 1 the 'clients' of the incumbent patron. Because he is in the same social network of these agents he can observe their e¤ort with relatively high probability and this reduces the moral hazard problem su¢ciently that he can make them credible employment o¤ers. He cannot do this to group 2 and the potential patron cannot make credible o¤ers to any group - has 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 pro...ts from public employment which is $\left[ R(e) - w_g^j \right] n_g^j$, 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 $\geq R(\varepsilon) - \psi(\varepsilon)/q_1^P$.[5] The patron who loses the election gets zero consumption.

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[5] The role of this alternative technology will become apparent in the model where voting is observable. In this case the patron makes a contingent o¤er 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 he can monitor e¤ectively, and since he gets positive rents ex

At the start of the period there is an election in which the patron and potential patron compete for power. They compete by o¤ering three types of policies. Firstly, the group-speci...c level of a lump-sum tax $T_g^j$, secondly the group-speci...c level of 'transfer' $m_g^j$ ‚ 0 to make, and thirdly the number of agents from each group to employ in the public sector, $n_g^j$. We denote the policy o¤ered by the patron by $(T_g^P, m_g^P, n_g^P)$ and that o¤ered by the potential patron by $(T_g^N, m_g^N, n_g^N)$. We assume below that collecting taxes is costly in the sense that some tax revenues are dissipated.

The timing of the game is as follows.

² The incumbent patron chooses $I$.

² Patrons $j = P, N$ compete in the election by o¤ering policies $(T_g^j, m_g^j, n_g^j)$. When voting behavior is observable these o¤ers can be made conditional on voting behavior.

² Whichever patron wins the election takes power and optimally chooses the policy to implement, $(\hat{T}_g^j, \hat{m}_g^j, \hat{n}_g^j)$.

² Production, taxation and consumption take place.

## 2.1   Credible Policies

We shall solve for the pure strategy subgame-perfect Nash equilibrium of the above game. To do so we apply backward induction. Notice immediately that whichever patron is elected, the policy vector $(\hat{T}_g^j, \hat{m}_g^j, \hat{n}_g^j)$ will be chosen ex post to maximize utility. This has important implications for what policies will arise. First, it must be true that $\hat{m}_g^j = 0$ 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 e¤ect of ruling out as incredible any o¤er of transfers for support. Next note similarly that $\hat{T}_g^j$ will be chosen optimally, implying that $\hat{T}_g^j = (1 ¡ \alpha) A y(I)$. The tax rate is set so as to make voters just indi¤erent 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

post from employment, it may 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 e¢ciency wage, provides a simple way of making the threat not to employ credible. In the Appendix we sketch a more realistic alternative model where some potential employees are left unemployed so as to make the threat of non-employment credible. The results we prove below extent to this case but the algebra is much more involved and this motivates our assumptions in the text.

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 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 may 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,

$$w_g^j - \psi(\varepsilon) \geq (1 - q_g^j)w_g^j \qquad (1)$$
$$\Rightarrow \quad w_g^j \geq \frac{\psi(\varepsilon)}{q_g^j}.$$

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 is decreasing in $q_g^P$. Clearly, $w_g^P - \psi(\varepsilon) = \frac{\psi(\varepsilon)}{q_g^P} - \psi(\varepsilon) > 0$ (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,

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

which is a standard participation constraint. This constraint will play an important role in the analysis below. When (2) is slack it implies that the efficiency wage (1) provides rents for the voter. However, when (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

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

Finally it should be optimal for the incumbent patron to employ his clients ex post :

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

The benefit $R(\varepsilon) - w_g^P$ that the incumbent patron derives from providing a public sector job to one of his clients should be higher than $(1 - \alpha)\tau Ay(I)$, the tax revenue he can

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extract 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 e¤ective 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 (3) and (4) describe the set $\S$ of public wages and public investment levels which are consistent with credible o¤ers by the incumbent patron to transfer rents to his clients. This is represented in Figure I. More public investment $I$ reduces the ability of the patron to transfer clientelistic rents for two reasons. The ...rst one is a "rent dissipation" e¤ect 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 one is a "credibility" e¤ect 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 I, the precise shape of $\S$ depends on which e¤ect (rent dissipation or credibility) is binding ...rst. We make now 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 ...rst part implies that $Ay(I) > R(\varepsilon) \; \psi(\varepsilon)$ for all $I$, which means that the socially e¢cient 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 e¢ciency wage $w_g^P = \psi(\varepsilon)/q_g^P$, the participation constraint (2) is always slack whenever the patron's o¤er is credible (i.e. (4) is slack). In other words we focus on the case where the binding constraint on clientelism is (4) as public investment $I$ goes up. This will be satis...ed if public sector employment is not a very e¢cient 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 o¤ers cannot be made contingent on voting decisions.

# 3 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 income are never credible. Employment is credible however to specific groups. In the group where only the patron can credibly make job offers, voter $i$ supports the patron if

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

These constraints are of course as in the standard probabilistic voting model. In (5) the patron offers a job and net utility of $w_1^P - \psi(\varepsilon)$ to a member of group 1 and agent $i$ supports the patron if this plus the utility of voting for the patron is larger than the payoff from the potential patron - taking into account the fact that the potential patron cannot credibly promise to employ anybody.

A member of group 1 supports the incumbent patron if,

$$\delta^i \geq \alpha Ay(I) - (w_1^P - \psi(\varepsilon)) - \theta.$$

Let $N_g \in [0, \lambda_g]$ be the total number of people in group $g$ that support the patron. Therefore,

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\begin{aligned}
N_1 &= \lambda_1 \int_{\alpha Ay(I) - (w_1^P - \psi(\varepsilon)) - \theta}^{\frac{1}{2s_1}} s_1 \, di \\
&= \lambda_1 \left[ \frac{1}{2} + s_1 \left( w_1^P - \psi(\varepsilon) - \alpha Ay(I) + \theta \right) \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 stays in power, $\Pr\left( \sum_g N_g \geq \frac{1}{2} \sum_g \lambda_g \right)$, $P^P(I)$. Simplifying, this probability is,

$$P^P(I) = \Pr\left( \theta \geq \frac{- \lambda_1 s_1 \left( w_1^P - \psi(\varepsilon) - \alpha Ay(I) \right)}{\sum_g \lambda_g s_g} \right) = \frac{1}{2} + h\lambda_1 s_1 \left( w_1^P - \psi(\varepsilon) - \alpha Ay(I) \right) \tag{6}$$

For simplicity having 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. To no other agent can the patron credibly offer anything. On the other

hand, the potential patron can make no credible o¤ers. In this case, given $I$ there is essentially nothing to compete over at the election stage. One simply calculates who can make credible o¤ers to whom, checks that it is pro...table to make o¤ers to all such agents, and then computes the equilibrium probability of winning the election. This is what is captured in the function $P^P(I)$. Given Assumption 2, note that (2) is slack as long as $I$ satis...es $R(\varepsilon)$ ¡ $w_1^P > (1$ ¡ $\alpha)\tau Ay(I)$ and $P^P(I) > 1/2$[6]. When $R(\varepsilon)$ ¡ $w^P \cdot (1$ ¡ $\alpha)\tau Ay(I)$, then the incumbent patron cannot make any credible o¤er to his clients and $P^P(I) = 1/2$ for all such levels of $I$.

## 3.1   Equilibrium Clientelism and Ine¢ciency

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 $\bar{P}(A)$ the value of $I$ such that $(1$ ¡ $\alpha)\tau Ay(I) = R(\varepsilon)$ ¡ $w_1^P = R(\varepsilon)$ ¡ $\psi(\varepsilon)/q_g^P$. For $I \cdot \bar{P}(A)$, the patron can o¤er credible public sector employment to voters and we refer to this as the "clientelistic" regime. For $I > \bar{P}(A)$, the patron prefers to have all voters work in the private sector and there is no clientelism. We denote this alternative regime "non-clientelistic".

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

$$\max_I \quad V_c^P(I,A) \;=\; P^P(I)\Big[(1 \text{ ¡ } \alpha)\tau Ay(I)\lambda_2 + \big[R(\varepsilon) \text{ ¡ } w_1^P\big]\lambda_1\Big] \text{ ¡ } I \tag{7}$$

$$s.t. \; I \; \cdot \; \bar{P}(A) \tag{8}$$

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

$$\frac{\partial P^P}{\partial I}\Big[(1 \text{ ¡ } \alpha)\tau Ay(I)\lambda_2 + \big[R(\varepsilon) \text{ ¡ } w_1^P\big]\lambda_1\Big] + P^P(1 \text{ ¡ } \alpha)\tau Ay^0(I)\lambda_2 \text{ ¡ } 1 = 0, \tag{9}$$

where,

$$\frac{\partial P^P}{\partial I} \;=\; \text{ ¡ } h\lambda_1 s_1\alpha Ay^0(I). \tag{10}$$

We assume that the second-order condition for the incumbent patron's maximization problem is satis...ed. Let $I_c^{\max}(A)$ the level of investment given implicitly by the marginal condition (9). Then the solution of (7) which we shall refer to as the 'clientelistic' optimum is simply given by $\bar{V}_c^P(A) = V_c^P(\min\{I_c^{\max}(A), \bar{P}(A)\}, A)$.

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[6] If it were binding then, $w = \alpha Ay(I) + \psi(\varepsilon)$, and substituting this into (5) we see immediately that the ability of the patron to bias the outcome of the election vanishes and we have $P^P(I) = \frac{1}{2}$.

The condition (9) captures three key e¤ects governing the marginal incentives in the choice of $I$. The last term, $-1$ is simply the marginal cost of investment. The term $P^P(1-\alpha)\tau Ay^0(I)\lambda_2$ is the expected marginal bene…t in terms of a higher tax base if elected (the incumbent does not care about increasing the tax base if he loses power). The …nal terms however comes from the e¤ect of $I$ on the probability of winning the election. From (5) we can see that higher $I$ increases the amount of utility that the potential patron can o¤er to members of group 1 relative to what the patron can credibly o¤er. This e¤ect tends to reduce $I$. Intuitively, the incumbent has an incentive to reduce investment in order to increase the attractiveness of his own credible o¤er, making the voters more 'dependent' upon his employment o¤er.

The following proposition characterizes the ine¢ciency of the equilibrium level of investment in the "clientelistic" regime.

**Proposition 1** In the "clientelistic" regime, the equilibrium level of provision of the good $I_c^\pi = \min\{I_c^{\max}(A), \hat{P}(A)\}$ is smaller than the socially e¢cient level of provision of the good $I^e$ given by $1 = Ay^0(I^e)$.

Equation (9) tells us that at the government policy $I_c^{\max}(A)$, the social marginal product $Ay^0(I)$ of good $I$ is necessarily smaller than 1, its marginal cost. In our model there are …ve potential sources of ine¢ciency. The …rst two come from the fact the patrons care only about their own welfare. Firstly, this and the absence of lump-sum taxes due to the existence of the informal sector prevents the patrons providing the socially e¢cient level of $I^e$ and then taxing away all of the bene…ts for their own consumption. Taking this into account, the equilibrium (revenue maximizing) level of the good, would satisfy $1 = (1-\alpha)\tau Ay^0(I^1)$ with $I^1 < I^e$. The second source of ine¢ciency is that the incumbent patron discounts the bene…ts from $I$ by the probability that he will be elected, this entails a level of investment $1 = P^P(1-\alpha)\tau Ay^0(I^2)$ with $I^2 < I^1 < I^e$.

These e¤ects are entirely standard and unsurprising. Less trivial are the next three e¤ects. Thirdly, the fact that $I$ is a public good but that $\lambda_1$ agents are, by Assumption 1, ine¢ciently employed in the public sector, means that the level of investment satis…es $P^P(1-\alpha)\tau Ay^0(I^3)\lambda_2 = 1$ where $I^3 < I^2 < I^1 < I^e$. Hence, when agents are employed in the public sector to in‡uence their political behavior, public goods which only increase private sector productivity are undersupplied. Fourthly, $\frac{\partial P^P}{\partial I} < 0$ implying $\frac{\partial P^P}{\partial I}\left[(1-\alpha)\tau Ay(I)\lambda_2 + R(\varepsilon) - w_1^P\right]\lambda_1 < 0$ which implies that the level of investment $I_c^{\max}(A)$ must have the property that $P^P(1-\alpha)\tau Ay^0(I_c^{\max}(A))\lambda_2 > 1$ so by the concavity (diminishing marginal productivity) of $y(.)$, $I_c^{\max}(A) < I^3 < I^2 < I^1 < I^e$. This e¤ects

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 increase the comparative political advantage of the incumbent patron. Finally to be in the "clientelistic" regime, the patron has to choose an investment level which ensures his credibility (i.e. $I_c^{\pi} = \min\{I_c^{\max}(A), \bar{P}(A)\} \cdot I_c^{\max}(A)$). From this it follows that $I_c^{\pi} < I^e$. This effects 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,

$$\max_I \quad V_u^P(I, A) = \frac{1}{2}(1 - \alpha)\tau A y(I) - I \tag{11}$$

$$s.t. \quad I > \bar{P}(A) \tag{12}$$

since, when (4) binds the profit from public sector employment is $R(\varepsilon) - \frac{\psi(\varepsilon)}{q_1^P}$ is less than $(1 - \alpha)\tau A y(I)$ which is what the patron would get by leaving the agent in the private sector and tax him than employ him. The first-order condition for (11) is,

$$\frac{1}{2}(1 - \alpha)\tau A y'(I) - 1 = 0, \tag{13}$$

which provides a solution $I_u^{\max}(A)$. Let $\bar{V}_u^P(A)$ be the maximized value of (11) $\bar{V}_u^P(A) = V_u^P(\max\{I_u^{\max}(A), \bar{P}(A)\}, A)$ 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 $I_u^{\pi} = \max\{I_u^{\max}(A), \bar{P}(A)\}$ is smaller than the socially efficient level of provision of the good $I^e$. When $\frac{\psi(\varepsilon)}{q_1^P}(1 - q_1^P)(1 - \lambda_1) < 1/2hs_1$, $I_u^{\pi}$ is greater than $I_c^{\pi}$.

The fact that $I_u^{\pi}$ is smaller than the socially efficient level of provision of the good $I^e$ is immediate. Comparing marginal incentives in (9) and (13), one cannot in general 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 $\frac{\partial P^P}{\partial I}$ ). Also once elected, public investment has a higher marginal return to the "non clientelistic" patron as both agents in group 1 and 2 can be taxed in such a regime. On the other hand, however, the patron discounts more heavily the marginal return of investment $I$ as probability of keeping power

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$\frac{1}{2}$ is less than that $P^P$ under "clientelism". The condition $\frac{\psi(\varepsilon)}{q_1^P}(1 - q_1^P)(1 - \lambda_1) < 1/2hs_1$ ensures that the two first effects dominate the last one. Indeed it is simple to see that, under such a 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 $I$[7], it follows immediately that $I_c^\pi \cdot I_c^{\max}(A) < I_u^{\max}(A) < I_u^\pi$.

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 in the following result :

**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.

## 3.2 Comparative Statics

Two interesting comparative statics can be derived for the level of "clientelistic" regime investment $I_c^\pi$ whenever it is determined by the marginal condition (9) (i.e. $I_c^{\max}(A) < P(A)$[8]).

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

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

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

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

Using the second-order condition we see that,

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

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[7] This will hold under certain technical conditions

[8] This will hold when $A$ is small enough.

Using the second-order condition we see that,

$$sign\frac{dI^{\alpha}}{dh}$$

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

where $x = \left[(1-\alpha)\tau A y(I)\lambda_2 + R(\varepsilon) - w_1^P\right]\lambda_1 > 0$ and $\frac{\partial P^P}{\partial h} > 0$. In general there are two e¤ects of higher $h$. On the one hand, higher $h$ increases the marginal e¤ect of $I$ on $P^P$ which reduces investment. On the other hand, other things equal, a higher $h$ increases the probability that the incumbent will win the election. This increases the expected marginal bene...t from investing and leads to higher $I$. However, using the ...rst-order condition we show in the appendix that the second e¤ect dominates.[9]

# 4  Observable Voting

We now extend the model to allow for voting behavior to be observable. Even when there is a secret ballot this analysis may 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 o¤ers to larger collections of voters. Moreover, secret ballots are not e¤ectively enforced in many developing countries today and electoral corruption has been of great importance historically in most countries.[10] Though as the last section showed, clientelism does not require observable

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[9]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 one can show that

$$sign\frac{dI_c^{\alpha}}{dA}$$

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

An increase in productivity, $A$, has four e¤ects. The ...rst term in the expression is negative since $\frac{\partial^2 P^P}{\partial I \partial A} < 0$. Higher $A$ increases the marginal impact of reducing $I$ on the probability of winning, further encouraging underinvestment. The ...nal term is also negative. This captures the e¤ect that higher $A$ increases the bene...t of being in power which tends to reduce $I$. On the other hand, 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, since from $\frac{\partial P^P}{\partial A} < 0$ the third term tends to increase the under-provision 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.

[10]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

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political behavior, nevertheless, it has also thrived in such circumstances. We therefore 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 will now show that this leads to inefficient underinvestment of a qualitatively similar sort to the last section. 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 get 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 $P^2$ be the analogous probability when $i$ does not support the patron. In this case, given the policies offered by the incumbent patron and potential patron, a voter $i$ in group 1 (to whom the incumbent patron can credibly offer employment) supports the patron if

$$P^1(w_1^P - \psi(\varepsilon)) + (1 - P^1)\alpha Ay(I) + \delta^i + \theta \geq P^2\alpha Ay(I) + (1 - P^2)\alpha Ay(I) \quad (14)$$

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

$$P^e\left[w_1^P - \psi(\varepsilon) - \alpha Ay(I)\right] + \delta^i + \theta \geq 0 \quad (15)$$

Note how similar (15) is to (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 brings in the payoff from being punished which has very similar qualitative effects on the efficiency of investment.

>From the above calculations this case is pretty easy to analyze. We again have that the probability that the patron stays in power, namely the probability $\Pr\left[\sum_g N_g \geq \frac{1}{2}\sum_g \lambda_g\right] \equiv P^P(I,P^e)$. Simplifying, this probability is,

$$P^P(I,P^e) = \Pr\left(\theta \geq \frac{-\lambda_1 s_1\left(w_1^P - \psi(\varepsilon) - \alpha Ay(I)\right)P}{\sum_g \lambda_g s_g}\right) =$$
$$\frac{1}{2} + h\lambda_1 s_1\left(w_1^P - \psi(\varepsilon) - \alpha Ay(I)\right)P^e$$

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(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).

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 will consider only the case in which it is ex post credible for the patron to offer public sector jobs and a "clientelistic" regime prevails.[11] 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 (9).

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

However, we now have,

$$\frac{\partial P^P}{\partial I} = - h\lambda_1 s_1 \alpha Ay'(I)P^e < 0 \qquad (16)$$

To determine the equilibrium $I$ and its comparative statics we now 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 $\frac{\partial P^P}{\partial I}$, becomes,

$$\frac{- h\lambda_1 s_1 \alpha Ay'(I)\left[(1 - \alpha)\tau Ay(I)\lambda_2 + \left(R(\varepsilon) - w_1^P\right)\lambda_1\right] + (1 - \alpha)\tau Ay'(I)\lambda_2}{2(1 - h\lambda_1 s_1(w_1^P - \psi(\varepsilon) - \alpha Ay(I)))} = 1 \qquad (17)$$

Clearly, (17) looks very similar to (9). 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.

# 5    Extension to Three Groups

We now extend the basic model of section 3 to allow for three groups. In addition to the two groups there we now allow for a third group which are 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, 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

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[11]Again this will be the case when $A$ is small enough.

of group 3 and drop the subscript on $w_1^P$. We assume that it is always pro…table for the potential patron to o¤er all members of group 3 employment. In group 3 therefore, where only the potential patron can credibly make job o¤ers, voter $i$ supports the patron if

$$\alpha Ay(I) + \delta^i + \theta \, \ge \, w^N \, \text{¡} \, \psi(\varepsilon). \tag{18}$$

(18) 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 formulas for $N_1$ and $N_2$ we now have,

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

since in this case we must have, $\delta^i \, \ge \, w^N \, \text{¡} \, \psi(\varepsilon) \, \text{¡} \, \alpha Ay(I) \, \text{¡} \, \theta$. We now have,

$$P^P(I) = \frac{1}{2} + \left[ \frac{h}{\sum_g \lambda_g s_g} \right] \left( \lambda_1 s_1 \mathbb{C} U^P + \lambda_3 s_3 \mathbb{C} U^N \right)$$

with $\mathbb{C} U^P = w^P \, \text{¡} \, \psi(\varepsilon) \, \text{¡} \, \alpha Ay(I) > 0$ and $\mathbb{C} U^N = \alpha Ay(I) \, \text{¡} \, (w^N \, \text{¡} \, \psi(\varepsilon)) < 0$. Hence,

$$P^P(I) = \frac{1}{2} + h \left[ (\alpha Ay(I) + \psi(\varepsilon)) (\lambda_3 s_3 \, \text{¡} \, \lambda_1 s_1) + \lambda_1 s_1 w^P \, \text{¡} \, \lambda_3 s_3 w^N \right] \tag{19}$$

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 o¤ers to group 3 tends to reduce it. What is critical for the e¢ciency results is the sign of $\frac{\partial P^P(I)}{\partial I}$. This is determined by the term $\lambda_3 s_3 \, \text{¡} \, \lambda_1 s_1$. This term generates underinvestment if $\lambda_1 s_1 > \lambda_3 s_3$ so that $\frac{\partial P^P(I)}{\partial I} < 0$. In this case, as before, the desire to reduce what the potential patron can o¤er 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 o¤er to members of group 3, thus narrowing the potential patron's advantage with this group. Indeed, $\lambda_3 s_3 \, \text{¡} \, \lambda_1 s_1 > 0$ this second e¤ect dominates, $\frac{\partial P^P(I)}{\partial I} > 0$ 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 so that they can be easily swayed by o¤ers 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,

$$\delta^i + \theta \, \ge \, (1 \, \text{¡} \, P) \left[ w^N \, \text{¡} \, \psi(\varepsilon) \, \text{¡} \, \alpha Ay(I) \right] \tag{20}$$

Compare this to (18). When $\lambda_3 s_3 (1 \, \text{¡} \, P) \, \text{¡} \, \lambda_1 s_1 P < 0$ this term again generates under-investment.

# 6    Inequality

We now extend the model of section 2 to investigate the implications of inequality for clientelism. To see the implications of this we assume that there are three groups, 1, 2 and 3 where the incumbent patron can make credible job o¤ers to groups 1 and 2 but not to group 3. As in section 2 we assume for simplicity that the potential patron can make no credible o¤ers. Let the ...rst 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 e¢ciency 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 equal to $\lambda Ay(I)$, we should have, given that the two groups are of equal size $\lambda/2$, $\sigma^1 \lambda/2 + \sigma^2 \lambda/2 = \lambda$ or, $\sigma^1 + \sigma^2 = 2$. It is convenient then to reparametrize $\sigma^1$ and $\sigma^2$ as:

$$\sigma^1 = 1 + x \; ; \; \sigma^2 = 1 ¡ x \text{ with } 0 \cdot x \cdot 1 \tag{21}$$

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

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

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

$$(1 ¡ \alpha)\sigma^g \tau Ay(I) \cdot R(\varepsilon) ¡ w^P \qquad \text{for } g = 1, 2 \tag{22}$$

Let $I_1(x)$ and $I_2(x)$ denote the levels of investment over which the incumbent patron cannot make credible o¤ers respectively to agents of group 1 and group 2. Using (22), these are given by:

$$\begin{aligned} y(I_1(x)) &= \frac{R(\varepsilon) ¡ w^P}{A(1 ¡ \alpha)\tau} \frac{1}{1 + x} \\ y(I_2(x)) &= \frac{R(\varepsilon) ¡ w^P}{A(1 ¡ \alpha)\tau} \frac{1}{1 ¡ x} \end{aligned} \tag{23}$$

Note that $I_1(0) = I_2(0) = \bar{I}(A)$ and $I_1(x) < I_2(x)$ for $x \, 2 \, (0, 1]$ as the opportunity cost of o¤ering public sector jobs to the richer and more productive agents of group 1 is higher

than to the poorer and less productive agents of group 2. From this it follows that there are three regimes. For $I \cdot I_1(x)$, the patron can make credible o¤ers to both groups 1 and 2, a regime we refer to as "complete clientelism". For $I_1(x) < I \cdot I_2(x)$, the patron can only make o¤ers 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 (the "non clientelistic" regime). The three regimes are easily represented in Figure II in terms of the level of inequality $x$ and 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 gets larger as it becomes cheaper to provide public jobs to the poor and more expensive to do the same to the rich. Overall clientelism (complete and incomplete) increase at the expense of the "non clientelistic" regime.

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

$$P^P(I) = \frac{1}{2} + h\lambda s^{\mathbf{i}} w^P \mathbf{i} \; \psi(\varepsilon) \mathbf{i} \; \alpha A y(I)^{\mathbf{¢}} \quad \text{when } I \cdot I_1(x)$$

$$= \frac{1}{2} + h\frac{\lambda}{2} s^{\mathbf{i}} w^P \mathbf{i} \; \psi(\varepsilon) \mathbf{i} \; \alpha(1 \mathbf{i} \; x) A y(I)^{\mathbf{¢}} \text{ when } I_1(x) < I \cdot I_2(x),$$

We may also write down the problem of the incumbent patron in the three regimes. As compared to section 2, only the intermediate case of "incomplete clientelism" has di¤erent …rst order conditions. In such a regime, the problem can be stated as:

$$\max_I \; V_{ic}^P(I) = P^P(I) \; (1 \mathbf{i} \; \alpha)\tau Ay(I)(1 \mathbf{i} \; \frac{\lambda}{2} + \frac{\lambda}{2}x)) + {}^{\mathbf{i}} R(\varepsilon) \mathbf{i} \; w^{P \mathbf{¢}} \frac{\lambda^{\mathbf{°}}}{2} \mathbf{i} \; I \quad (24)$$

$$\text{s.t. } I_1(x) < I \cdot I_2(x), \quad (25)$$

and the …rst order condition becomes :

$$\frac{\partial P^P}{\partial I} \; (1 \mathbf{i} \; \alpha)\tau Ay(I)(1 \mathbf{i} \; \frac{\lambda}{2} + \frac{\lambda}{2}x)) + {}^{\mathbf{i}} R(\varepsilon) \mathbf{i} \; w^{P \mathbf{¢}} \frac{\lambda^{\mathbf{°}}}{2}$$

$$+ P^P(1 \mathbf{i} \; \alpha)\tau Ay^{\mathbf{0}}(I)(1 \mathbf{i} \; \frac{\lambda}{2} + \frac{\lambda}{2}x) \mathbf{i} \; 1 = 0 \quad (26)$$

where now:

$$\frac{\partial P^P}{\partial I} = \mathbf{i} \; h\frac{\lambda}{2} s\alpha(1 \mathbf{i} \; x)Ay^{\mathbf{0}}(I). \quad (27)$$

$I_{ic}^{\max}(x)$ denotes the solution of (??) 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 $I_{ic}^{\mathbf{¤}}(x) = \min[\max(I_{ic}^{\max}(x), I_1(x)), I_2(x)]$ in the "incomplete clientelistic" regime is less than the socially optimal one $I^e$. One can also

see immediately that as $x$ goes up the left hand side of (??) moves also upward 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 of staying into power of the patron (i.e. $\frac{\partial^2 P^P}{\partial I \partial x} > 0$). Hence the patron is more likely to invest in $I$. Second, the rich agents become also more productive. This increases the tax base of the private sector, increasing in turn the marginal return of $I$ from the patron point of view. It follows that $I_{ic}^{\max}(x)$ is increasing with $x$. This does not necessarily imply that the optimal provision of the incumbent patron $I_{ic}^{\pi}(x)$ is increasing in $x$ as, from (23), $I_1(x)$ is decreasing in $x$. Indeed, consider the case where productivity $A$ is small enough that $I_{ic}^{\max}(0) < I_1(0) = \mathring{P}(A)$. Then, clearly for some range of $x$ in an interval $[0, \overline{x}]$, $I_{ic}^{\max}(x) < I_1(x)$ and $I_{ic}^{\pi}(x) = \min[\max(I_{ic}^{\max}(x), I_1(x)), I_2(x)] = I_1(x)$ is decreasing in the level of inequality $x$.

We may 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 in the level of inequality $x$, at least when $x$ is not too big.

# 7   Discussion and Interpretation of the Model

We have now shown how socially ineﬃcient oﬀers of employment in the bureaucracy or public sector arise as a credible way for politicians to transfer rents to voters. Employment is part of an incentive compatible political exchange. This is directly ineﬃcient and it also induces ineﬃciencies in the policy variable $I$. There are two interpretations of what $I$ is. In the models of sections 3 and 5 the reason that $I$ is undersupplied is that providing $I$ increases the utility of all agents, including those who do not support the incumbent. Thus higher $I$ increases the relative bene...t to a citizen of supporting the potential patron and reduces the extent to which the incumbent can punish a client who deviates on an agreement to support him. From the incumbents point of view, the problem with $I$ is that it is a non-excludable policy such as a public good. There is another interpretation of this however; $I$ is chosen before the election, so we can therefore also think of it as representing public investment which is irreversible. In this light the problem with $I$ is that it cannot be reversed. In any case $I$ is undersupplied in order to make the oﬀers that the incumbent can make more attractive.

The idea that clientelism leads to an undersupply of public goods is widespread in the informal literature. Zuckerman articulates the standard view when he notes (1977, p. 64); "Political clienteles...will rarely act so as to obtain goals of value to those who are not members of the group, 'collective goods'." Robert Bates's analysis of agricultural policy in Africa provides a classic statement of the idea that clientelistic redistribution via public goods is politically inefficient since it does not provide an incentive compatible way for patrons to control clients. He argues (Bates 1981, p. 114)

> "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."

Another important example of the same phenomenon comes from the politics of land reform in Mexico after the revolution. During the 1930's the ruling party, the PRI, engaged in mass land reform but re-created many aspects of the system of communal tenure. An important objective of this seems to have been to allow the PRI to control access of land as a way of maintaining political control over the peasants (see Powelson and Stock, 1987). Cornelius (1977, p. 348) studied this process at work, concluding,

> "official recognition of land tenure rights and subdivision of the land into individual parcels may be especially damaging to the cacique's[12] influence in the community, for such acts simultaneously deprive him of important coercive resources (i.e. those deriving from control over the allocation of land within the community) and satisfies the single most deeply felt need of his followers."[13]

The comparative static results are very helpful in helping to understand the incidence of inefficient redistribution and clientelism. They show that, even if the institutional set-up allows for this type of political exchange, the incidence of it depends on the structure of the economy, the level of development, and the nature of politics. The results suggest

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[12] The generic name for a local PRI political boss.
[13] Coatsworth (1982) shows that similar mechanisms of control were used by the Spanish during the colonial period in Latin America.

that clientelistic redistribution, with its associated inefficiencies, tends to be worse in situations where productivity is low, the desire to hold political power is high ('rents' are large), where money is relatively un-important compared to ideology in determining political preferences, and where inequality is high.

There are several interesting interpretations of what rents might be. Note that though we conducted the comparative statics by varying $R(\varepsilon)$ we could have simply added an extra term $\rho$ to capture extra benefits from being in office. They 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 may help to explain why clientelistic politics seems to be endemic in developing countries. They may also help to explain why as productivity grows, as private sector economy develops, a more materialistic preferences develop, and as inequality falls, the extent of clientelism falls, and the efficiency of government policies improves.

# 8    Conclusion

In this paper we have argued that trying to understand what types of policies politicians can actually commit to provides 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 was to conceptualize redistributive politics as an exchange between politicians and voters and to emphasize that the issue of credibility is two-sided. We then studied the circumstances under which such exchanges may 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 showed that other types of policies are inefficiently under-supplied 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 making political exchanges incentive compatible.

Such relationships are called "clientelism" in the political science literature and our model provides a formalization of some key ideas in this informal literature. Consistent with some of the claims in this literature, our model also had several implications which

help to understand why clientelistic politics and consequent inefficient redistribution may be endemic to developing countries. We showed that such characteristics as low productivity and inequality make clientelism relatively attractive to politicians.

# Appendix

## Ex post unemployment in the public sector :

In the main text we assumed that the patron had access to an alternative technology which generates rents $\mid ´ R(\varepsilon) ¡ \psi(\varepsilon)/q_1^P$. The role of this alternative technology, which gives exactly the same amount of rents to the patron as a voter employed at the e¢ciency wage, was to ensure a credible threat for the patron ex post not to employ a deviating voter. In this Appendix, we sketch a more realistic alternative model where some potential employees are left unemployed so as to make the threat of non-employment credible. We assume that the technology of production of the public sector is characterized by decreasing returns $Q = R(en_g)$ where $e$ 2 f0, $\varepsilon$g is the e¤ort level of an employed civil servant, $n_g$ is the number of employed individuals in the public sector and $R(.)$ is an increasing concave function with $R^0(.) > 0, R''(.) < 0$ and the conditions $R(0) = 0$, $\epsilon R^0(\epsilon\lambda_1) = 0$ and $Ay(0) > R^0(0) ¡ \psi(\varepsilon)$ (ine¢ciency of the public sector).

Clearly, applying a similar reasoning to that employed in the maintext, the public sector wage o¤er of the incumbent patron is given by

$$w_g^P \text{ , } \max f \frac{\psi(\varepsilon)}{q_g^P}, \ \psi(\varepsilon) + \alpha Ay(I)g \tag{28}$$

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

$$\epsilon R^0(\varepsilon n_g) ¡ w_g^P = (1 ¡ \alpha)\tau Ay(I). \tag{29}$$

The marginal net bene...t $\epsilon R^0(\varepsilon n_g) ¡ w_g^P$ that the incumbent patron derives from providing a public sector job to one of his clients should be higher than $(1 ¡ \alpha)\tau Ay(I)$, the tax revenue he can extract from having that client work in the private sector. Equation (29) determines an equilibrium ex post public employment level $n_g(I, w_g^P)$. This level is obviously decreasing in the public wage o¤er $w_g^P$. It is also decreasing in the investment level $I$. A larger value of $I$ increases both the productivity of the private sector and the tax revenue from having the marginal client work in the private sector. Considering (28), we may even be more precise. Denoting $I_0^¤$ 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 :

$$n_g(I) = n_g^O(I) = n_g(I, \frac{\psi(\varepsilon)}{q_g^P}) \text{ when } I · I_0^¤$$

$$n_g(I) = n_g^1(I) \qquad\qquad \text{when } I > I_0^¤$$

with $n_g^1(I)$ determined implicitly by the following equation:

$$\epsilon R^0(\varepsilon n_g^1) = \psi(\varepsilon) + [\alpha + (1 - \alpha)\tau]Ay(I)$$

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

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

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

Compared to equation (5) in the main text, this equation differs because it takes into account that ex post, not all clients will get a public sector job. With probability $\frac{n_g}{\lambda_1}$ a client will receive such a position and get a net utility $w_1^P - \psi(\varepsilon)$. With the residual probability $\left(1 - \frac{n_g}{\lambda_1}\right)$, he will not get 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 then supports the incumbent patron if,

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

The probability that the patron stays in power will then become:

$$\mathbf{P}^P(I) = \frac{1}{2} + hs_1n_g(I)\left[w_1^P - \psi(\varepsilon) - \alpha Ay(I)\right]^\mathbb{C} \tag{30}$$

which is clearly a decreasing function of $I$ as

$$\frac{\partial \mathbf{P}^P}{\partial I} = - hn_g(I)s_1\alpha Ay^0(I) + hs_1n_g^0(I)\left[w_1^P - \psi(\varepsilon) - \alpha Ay(I)\right]^\mathbb{C} < 0. \tag{31}$$

In the "clientelistic" regime (ie. when $I \leq I_0^\pi$), ex ante the patron will now maximize,

$$\mathbf{P}_c^P(I,A) = \mathbf{P}^P(I)\left[(1 - \alpha)\tau Ay(I)[\lambda_2 + \lambda_1] + \left[R(\varepsilon n_g(I)) - [w_1^P + (1 - \alpha)\tau Ay(I)]\,n_g(I)\right]^{\mathbb{C}\pi}\right] - I$$

while he will obviously use the same function $V_u^P(I,A) = \frac{1}{2}(1 - \alpha)\tau Ay(I) - I$ in the "non clientelistic" regime. The analysis of the main text can then be performed with the new value functions $\mathbf{P}_c^P(I,A)$ and $V_u^P(I,A)$ and yields similar qualitative results although the details are more complex.

## Equilibrium Regimes

**Proof of proposition** 3 : We now prove some of the results used in the text.

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

i) We first 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,

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

where $D = \left[(1 - \alpha)\tau A y(I_c^{\max})(1 - \lambda_1) + \lambda_1\left[R(\varepsilon) - w^P\right]\right]$. Or, using the first-order conditions, (9) and (13), and simplifying,

$$\frac{y(I_u^{\max})}{y^0(I_u^{\max})} > \frac{y(I_c^{\max})}{y^0(I_c^{\max})}\left(1 - \frac{\partial P^P}{\partial I}D\right) + A\frac{\partial P^P(I_c^{\max})}{\partial A}D$$

$$\Rightarrow \frac{y(I_u^{\max})}{y^0(I_u^{\max})} > \frac{y(I_c^{\max})}{y^0(I_c^{\max})} + D\left(\frac{y(I_c^{\max})}{y^0(I_c^{\max})}\frac{\partial P^P}{\partial I} + A\frac{\partial P^P(I_c^{\max})}{\partial A}\right)$$

However, since, $\frac{\partial P^P}{\partial I} = - h\lambda_1 s_1\alpha A y^0(I_c^{\max})$ and $A\frac{\partial P^P(I_c^{\max})}{\partial A} = - h\lambda_1 s_1\alpha A y(I_c^{\max})$, it is immediate that $\frac{y(I_c^{\max})}{y^0(I_c^{\max})}\frac{\partial P^P}{\partial I} + A\frac{\partial P^P(I_c^{\max})}{\partial A} = 0$. Thus $\frac{\partial V_u^P(I_u^{\max}, A)}{\partial A} > \frac{\partial V_c^P(I_c^{\max}, A)}{\partial A}$ if $\frac{y(I_u^{\max})}{y^0(I_u^{\max})} > \frac{y(I_c^{\max})}{y^0(I_c^{\max})}$ which follows from the standard assumptions we made on $y(.)$ and the fact that $I_u^{\max} > I_c^{\max}$.

ii) There exists an $\overline{A}$ such that, when $A \in [0, \overline{A})$, $V_c^P(I_c^{\max}, A) > V_u^P(I_u^{\max}, A)$ while for $A \in [\overline{A}, 1)$, $V_u^P(I_u^{\max}, A) \geq V_c^P(I_c^{\max}, A)$. Indeed $V_u^P(I_u^{\max}(0), 0) = 0$ while $V_c^P(I_c^{\max}(0), 0) > 0$ since a clientelistic patron makes rents from employing members of group 1. Now note that as $A$ gets very large, $\lim_{A\to 1} V_u^P(I_u^{\max}, A) > \lim_{A\to 1} V_c^P(I_c^{\max}, A)$. This follows from L'Hopital's 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 $\hat{I}(A)$ is decreasing in $A$ with $\lim_{A\to 0} \hat{I}(A) = +1$. Also there is $A_0$ such that $y(0) = \frac{R(\varepsilon) - w^P}{A_0(1 - \alpha)\tau}$ which means that $\hat{I}(A) = 0$ for all $A \geq A_0$.

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

Also for $A$ large enough (ie. larger than $\max\{A_0, \overline{A}\}$), $P(A) = 0$ and $P_c^P(A) = V_c^P(0, A) < V_u^P(I_u^{\max}, A) = P_u^P(A)$ and the "non clientelistic" regime dominates the "clientelistic" one. $\blacksquare$

## Comparative Statics

We show that, $\frac{dI^{\alpha}}{dh} > 0$. To see this we note,

$$sign\frac{dI^{\alpha}}{dh} \tag{32}$$

$$= sign\left[-s_1\alpha Ay^0(I)x\lambda_1 + \frac{\partial P^P}{\partial h}(1-\alpha)\tau Ay^0(I)\lambda_2\right].$$

where $x = \left[(1-\alpha)\tau Ay(I)\lambda_2 + \left(R(\varepsilon) - w_1^P\right)\lambda_1\right] > 0$. Now the first-order condition can be written,

$$-s_1\alpha Ay^0(I)\lambda_1 = \frac{1 - P^P(1-\alpha)\tau Ay^0(I)\lambda_2}{h}$$

and using this to substitute $-s_1\alpha Ay^0(I)\lambda_1$ out of (32) and simplifying shows that, $\frac{dI^{\alpha}}{dh} > 0$ if and only if $1/2h > 0$ which is true.

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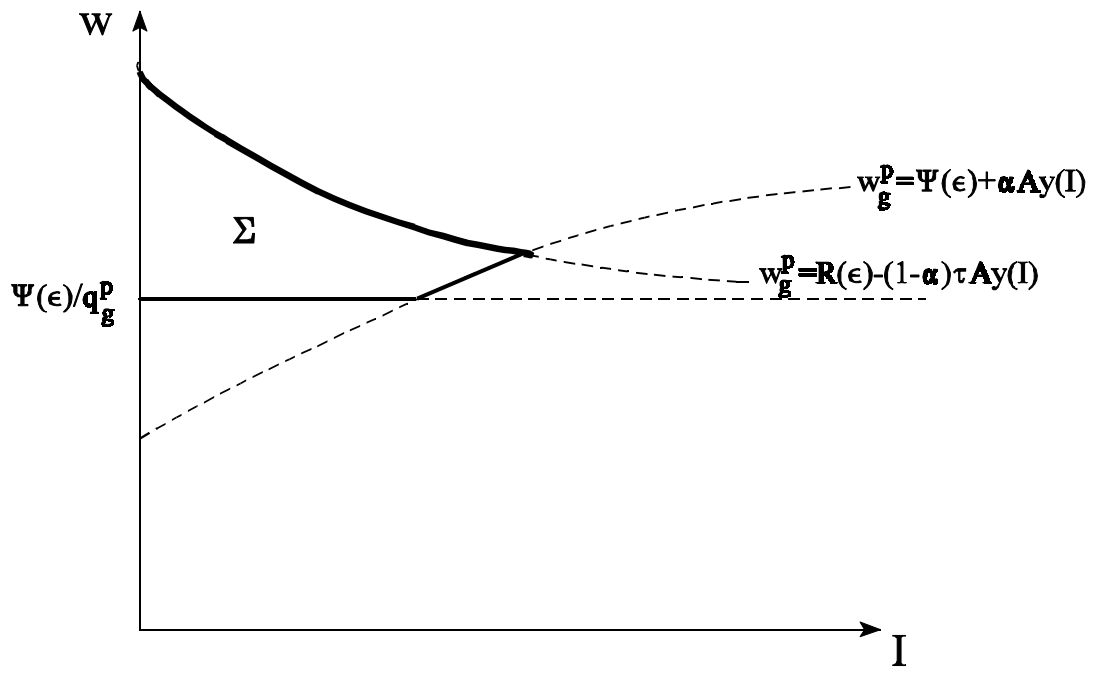
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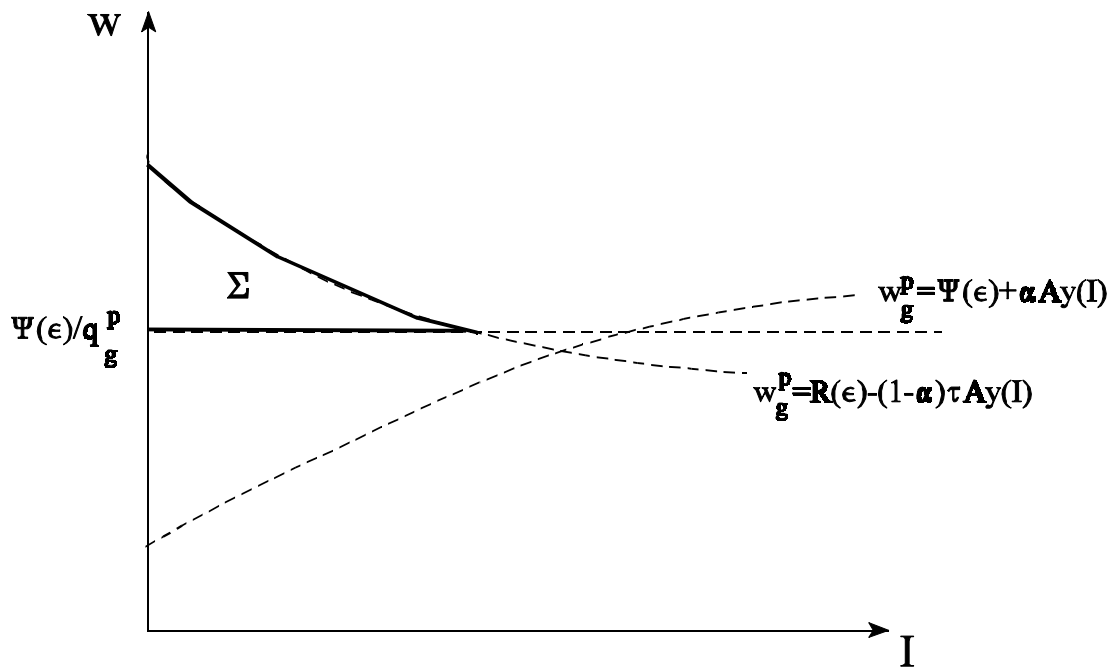
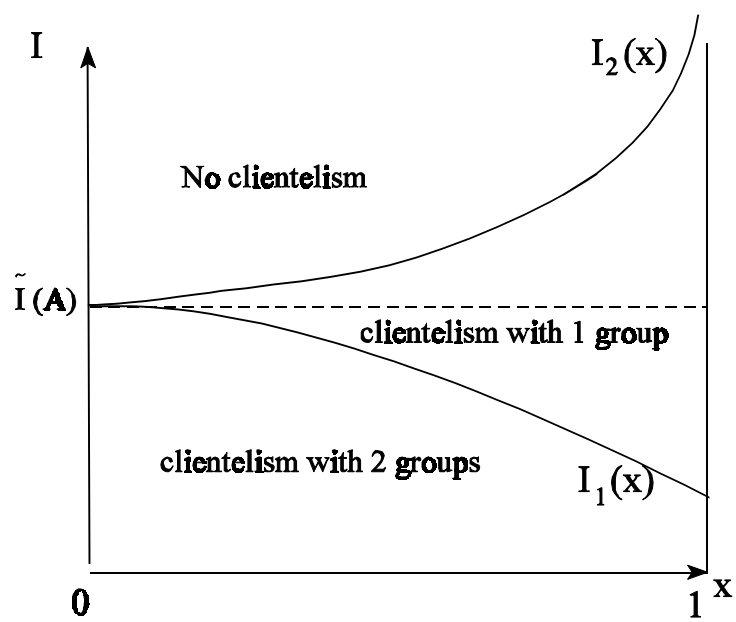$$\Psi(\epsilon)/q_g^p$$

$$w_g^p = \Psi(\epsilon) + \alpha A y(I)$$

$$w_g^p = R(\epsilon) - (1-\alpha)\tau A y(I)$$

$$I$$

Figure I a)



$$W$$

$$\Sigma$$

$$\Psi(\epsilon)/q_g^p$$

$$w_g^p = \Psi(\epsilon) + \alpha A y(I)$$

$$w_g^p = R(\epsilon) - (1-\alpha)\tau A y(I)$$

$$I$$

Figure I b)

Figure II