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When greed brings peace**

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Rent seekers in rentier states: When greed brings peace*

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Abstract

Are natural resources a source of conflict or stability? Empirical studies demonstrate that rents from natural resources, and in particular oil, are an important source of civil war. Allegedly, resource rents attract rent seekers, which destabilize society. However, there is a large literature on how so-called rentier states manage to pacify opposition groups by handing out special favors. The present paper attempts to bridge the gap between the rent-seeking view of resource rents as a source of conflict and the rentier state view which emphasizes the role of resource rents in promoting peace and stability, and show how one may lead to the other. The mechanism that we highlight relies on the notion that higher rents may activate more interest groups in a power struggle. We demonstrate that the associated increased cost of conflict may in fact promote social stability. The peaceful solution is upheld by a self reinforcing transfer program, in the form of patronage employment. The chance of conflict and rent dissipation in our model is highest for intermediate levels of resource rents, where the government cannot make credible commitments to the opposition groups.

JEL classifications: D74, Q34

Keywords: Rent seeking, rentier states, resource rents, conflict, patronage employment

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1 Introduction

A number of empirical papers, pioneered by Collier and Hoeffler, show that the risk of civil war increases with natural resource endowment.¹ The main argument is that income from natural resources provides greedy rent seekers with both the means and the motive to fight.² In contrast to these findings, however, there is a large literature on how rentier states have been able to pacify opposition groups by targeted transfer programs.³ There is thus a tension between the rent-seeking and the rentier state views on how resource rents shape societies.

Surprisingly, we are not aware of any theoretical paper addressing this tension, and the present paper aims at bridging this gap in the literature. We propose a very simple, yet, we believe, intuitively appealing mechanism, which incorporates both the conflict-triggering and the cooperation-inducing effects of resource rents. In fact, we show how the greed mechanism of the “rent seeking thesis” may itself generate the patronage-based regime stability of the “rentier state thesis” for high levels of rent.

The core causal mechanism underlying our results is based on the assumption that the incumbent government cannot make binding commitments on transfers to the opposition (Azam, 1995, Fearon, 1995, Powell, 2006). An increase in resource rents may lend credibility to the transfer program by making it more costly for the government to renege on its promises. This takes place when increased resource rents induce more groups to enter a power struggle with the incumbent government. In this way, depending on the circumstances, resource rents can both trigger conflict by greedy rent seekers

¹See Collier and Hoeffler (1998, 2004) and Collier, Hoeffler, Rohner (2009). Fearon and Laitin (2003) have challenged the robustness of the findings by Collier et al, but do find that oil rents are robustly linked to civil war.

²For an overview of the mechanisms proposed in the literature on resource rents and civil war, see Ross (2004) and Humphreys (2005).

³Important contributions here include Beblawi and Luciani (1987), Karl (1997), Herbst (2000), Le Billon (2003), Bueno de Mesquita et al. (2003), Smith (2004), Fjelde (2009). Consistent with this literature, Collier and Hoeffler (1998, 2004) and Collier, Hoeffler, Rohne (2009) find that resource rents beyond a certain threshold level reduce the risk of conflict. Elbadawi and Sambanis (2000) and Basedau and Lay (2009) find a similar, hump-shaped relation between conflict and resource dependence and oil wealth, respectively. Similarly, Ross (2004) concludes that resource rents in some cases have facilitated cooperation between interest groups.

and promote peace by lending credibility to a program of patronage payments.

In terms of modelling strategy, our paper is related to Aslaksen and Torvik (2006), who consider the choice between war and peace in a society consisting of two interest groups. As in our study, peace is the result of a self-reinforcing equilibrium, supported by a trigger strategy in case of deviation, and war is specified as a standard rent-seeking contest. But while we focus on redistribution in the form of patronage employment, Aslaksen and Torvik let income distribution in the peaceful equilibrium be defined by a democratic process, with election outcomes determined by probabilistic voting. Most importantly, resource rents in their model monotonically reduce the chance of peace, while the main ambition of our paper is to demonstrate that resource rents in some cases may promote peace.

The rest of the paper is organized as follows. Section 2 presents the model, starting with describing the conflict equilibrium and then moving on to cooperation. We then analyze the equilibrium outcome of the model. Section 3 adds extensions to the basic model. Section 4 concludes.

2 The Model

There are three groups in society, a , b , and c . We can think of the groups as ethnic groups, geographically concentrated in different parts of the country. Group a is the incumbent, controlling the rents (R) and the transfer policy. The opposition can be involved in one out of three activities: private sector employment, which gives an exogenously given income w , rent-seeking, with profit ρ , and public sector employment, with a compensation g determined by the government.

The government jobs are entirely unproductive, and serve only a political purpose, namely the transfer of resources to the opposition groups to ensure their loyalty.⁴ We do not consider simple cash transfers as they can be used by the opposition to finance a rebellion. In contrast, by accepting a public sector job, opposition leaders are physically placed under the scrutiny of the incumbent government and thereby commit themselves not to challenge the incumbent as long as they remain public sector employees. In contrast, if the leaders of the opposition groups are not employed by the

⁴Patronage employment in the bureaucracy or parastatals has been used extensively in developing (and developed) countries, see the cases mentioned in Robinson et al (2006) and for a more in depth study of Africa, see Tangri (1999).

government, they may choose to challenge the incumbent. In that case, there is conflict, modelled as a standard rent seeking contest à la Tullock (1980). We can think about conflict as a “winner takes all” game, or the fight over shares of the rent. Since rebellions rarely lead to revolutions, we prefer the latter interpretation.

The sequence of moves is as follows. First, the government decides on whether or not to offer public sector employment to the opposition. Second, the opposition groups decide on whether to work in the private sector, to rebel, or to accept public sector employment (if such is offered). Since profits under rent-seeking depend on the number of rent-seekers, it may be profitable for one opposition group to rebel but not for both. Since the two opposition groups are identical, it is immaterial who rebels and who stays out. For concreteness, without loss of generality we can assume that group b moves before group c . Third, the government decides on whether or not to actually pay public sector employees. Fourth, if the public sector employees are not paid, this triggers conflict in all subsequent periods.

Using the logic of backward induction, we first calculate profits under conflict, and then move on to the government’s decision on whether to pay the transfers or not.

2.1 Conflict payoffs

The income in the rent-seeking scenario depends on whether one or both opposition groups challenge the incumbent. In case only one chooses to battle (say group b), the profit of each fighting party i is given by:

$$\rho_i^d = \frac{q_i}{q_a + q_b} R - q_i, \tag{1}$$

where q_i is the rent seeking effort by group $i = a, b$. If both opposition groups challenge, the profit of each fighting group $i = a, b, c$ is given by:

$$\rho_i^d = \frac{q_i}{q_a + q_b + q_c} R - q_i. \tag{2}$$

Maximizing with respect to q_i , and using the symmetry of the groups, we find that each fighting group's rent-seeking effort in the duopoly is given by:

$$q^d = \frac{1}{4}R, \quad (3)$$

which, using $q_i = q^d$ in (1), results in equilibrium duopoly profits:

$$\rho^d = \frac{1}{4}R. \quad (4)$$

If both groups challenge, the equilibrium rent seeking effort is

$$q^t = \frac{2}{9}R, \quad (5)$$

which, using $q_i = q^t$ in (1), results in equilibrium triopoly profits:

$$\rho^t = \frac{1}{9}R. \quad (6)$$

Evidently, profits are lower under triopoly competition than under duopoly competition ($\rho^t < \rho^d$) for any given level of rents R . This observation is key for our analysis. It implies that the market structure of conflict depends on the level of the resource rent. In particular, an opposition group will only be willing to challenge the incumbent if the payoff from conflict exceeds the private sector income w . The observation that the intensity of rent-seeking depends on the number of rent-seeking groups is of course a standard result from the rent-seeking literature. However, its role in providing credibility to a government's transfer program, which is our main concern here, is novel.

It is useful to distinguish between three cases, defined by the level of rents relative to private sector income:

Definition 1 *Let $\rho^d < w \Leftrightarrow R < 4w \equiv R^d$ denote the "low-rents" case, characterized by an unchallenged incumbent.*

If the private sector income is higher than the profits that can be made by challenging the incumbent, the opposition groups will remain passive. Next, there is an intermediate level of rents

where it is profitable for one, and only one, group (say, group b) to challenge the government, resulting in duopoly conflict:

Definition 2 Let $\rho^d > w > \rho^t \Leftrightarrow R \in (4w, 9w)$ denote the "intermediate-rents" case, characterized by duopoly conflict.

Finally, the case where both groups would find it profitable to challenge the incumbent, leading to triopoly conflict, is given by the "high rents" case:

Definition 3 Let $\rho^t > w \Leftrightarrow R > 9w \equiv R^t$ denote the "high-rents" case, characterized by triopoly conflict.

From the above discussion we can conclude that:

Lemma 4 Higher rent leads to entry of more contenders in the battle for resources, and increases the intensity of conflict for any given market structure of conflict.

Proof. This follows directly from $R^d < R^t$, $\frac{\partial g^i}{\partial R} > 0$ obtained from Definitions 1-3, and from (3) and (5). ■

Note that different rent-regimes defined above always consider rents relative to private sector income levels. Hence, a poor country with a very low w can be considered a high rent country even if its resource rents in absolute terms are lower than those in a wealthy country.

2.2 The credibility of transfers

For low rents ($R < R^d$), the incumbent is unchallenged, captures the entire rent and a peaceful solution prevails. For rents above this level, the incumbent depends on transfers to avoid conflict. These transfers, in the form of patronage employment, must match the groups' profit from conflict, that is $g^d = \rho^d$ and $g^t = \rho^t$ for intermediate rents (duopoly) and high rents (triopoly) respectively. Note that the patronage jobs must be offered to both groups in all cases, even when there is only room for profitable entry by one under intermediate rents, in order to prevent entry by the second group. Finally, since $\rho^d > \rho^t$ public sector payments as a share of rents are in fact higher in the intermediate rents-scenario than in the high rents-scenario.

The government may promise lucrative jobs in the public sector, but does not necessarily have an incentive to live up to its promises. In the absence of a credible commitment technology, the patronage employment program must be self-reinforcing. Only if the short-term gain from deviation is dominated by the long term loss of conflict, will the transfers be credible and hence relevant for promoting peace. In the model, a government that reneges on its promised redistribution program unchallenged keeps all rents for one period, but automatically faces a rent seeking challenge in all subsequent periods (Garfinkle,1990).

To determine whether the incumbent has an incentive to deviate from the announced transfer scheme or not, we need to investigate the cost of deviation, which in turn depends on the rent seeking market structure. Will deviation lead to a challenge from both opposition groups or only one group? As explained above, the answer to this question depends on the size of the rent relative to the income level in the private sector. For low rents, no transfers are needed, so we need only focus on the case of intermediate and high rents.

2.2.1 Intermediate rents

In this scenario, patronage employment must be rewarded at $g^d = \rho^d$. Ex ante, the incumbent clearly prefers transfers to fight. This can be seen from the fact that his income net of transfers (ρ^d to each opposition group) is given by $R - 2\rho^d$ while conflict leads to profits ρ^d . Given (4), transfers therefore give a net benefit of $\frac{1}{4}R$. Adhering to the transfer program gives the incumbent a net present value of profits given by:

$$\pi^d = \frac{1}{1 - \delta} (R - 2\rho^d). \quad (7)$$

However, the transfer program is not necessarily credible. To demonstrate this, note that the incumbent's profits from reneging on the promise, once the opposition groups have chosen public sector employment (and therefore cannot organize any opposition or, for that matter, carry out private sector work in that period), is R in the first period, and then the rent seeking payoff ρ^d in all remaining periods. The net present value of profits to the incumbent from deviation is thus:

$$\pi_{dev}^d = R + \frac{\delta}{1-\delta}\rho^d. \quad (8)$$

We observe that:

$$\pi_{dev}^d = \pi^d \Leftrightarrow \delta = \frac{2}{3} \equiv \delta^d. \quad (9)$$

Only if the degree of patience exceeds the critical level δ^d will the incumbent choose to live up to its promise given by the compensation scheme ρ^d to each opposition party under patronage employment. We can therefore conclude that:

Lemma 5 *For intermediate rents ($R^d < R < R^t$), for all $\delta \geq \delta^d$ the transfer program is credible, resulting in an equilibrium with social stability. For $\delta < \delta^d$, the program is not credible and will be rejected, leading to (duopoly) conflict.*

2.2.2 High rents

In this scenario, public sector pay is given by $g^t = \rho^t$. The ex ante gains to the incumbent of pacifying the opposition through patronage employment is now even larger than in the intermediate rent-case as $R - 2\rho^t - \rho^t$ given (6) results in a net benefit of $\frac{2}{3}R$. Recall that since rent seeking now involves all three parties, transfers as a share of rents are lower in the triopoly case than in the duopoly case; $\rho^t < \rho^d$. This fact, together with lower profits under conflict, increase the incumbent's incentives to stick to the transfer program. Adhering to the program gives the incumbent a net present value of profits given by:

$$\pi^t = \frac{1}{1-\delta} (R - 2\rho^t). \quad (10)$$

Deviating from the promise now gives the incumbent discounted profits of:

$$\pi_{dev}^t = R + \frac{\delta}{1-\delta}\rho^t. \quad (11)$$

It is straightforward to demonstrate that:

$$\pi_{dev}^t = \pi^t \Leftrightarrow \delta = \frac{1}{4} \equiv \delta^t. \quad (12)$$

Hence, we can conclude that:

Lemma 6 *For high rents ($R > R^t$), for all $\delta \geq \delta^t$ the transfer program is credible, resulting in an equilibrium with social stability. For $\delta < \delta^t$, the program is not credible and will be rejected, leading to (triopoly) conflict.*

3 Analysis

3.1 Conflict and peace

The key finding of our analysis is that although resource rents induce conflict by creating more challenge to the incumbent, encouraged entry by more opposition groups could also bring stability by making a peaceful transfer program credible. Hence, the main result, namely that "greed can bring peace", can be stated as:

Proposition 7 *There exist levels of δ for which an increase in resource rents leads to a change in equilibrium from conflict to peace. The change occurs as the (threat of) entry of more rent-seeking groups makes the transfer program credible, and thereby capable of sustaining a peaceful solution.*

Proof. This follows immediately from the observation that $\delta^t < \delta^d$, together with Lemmas 2 and 3. ■

Given intermediate levels of patience, defined by $\delta \in (\delta^t, \delta^d)$, we know that for low levels of rent $R < R^d$, the incumbent is unchallenged, and there is peace. An increase in rents up to R^t instigates conflict, with the intensity of conflict, captured by q^d , increasing in R . For large enough rents $R > R^t$, potential entry by more contestants promotes cooperation and results in peace. In this way, the same forces that bring about conflict, namely the "greed" of rent-seeking groups, can also shift the equilibrium from conflict to peace. Thus, our model can be said to represent a synthesis between the rent-seeking view of resource wealth as a source of conflict and the rentier state view as resource wealth a source of patronage, stability, and peace. We also observe that

Corollary 8 *For high levels of patience, defined by $\delta > \delta^d$, there is never conflict. For low levels of rent $R < R^d$, the incumbent is unchallenged. For intermediate and high levels of rent $R \geq R^d$, the incumbent pacifies the opposition with patronage employment.*

and

Corollary 9 For low levels of patience, defined by $\delta < \delta^t$, there is always conflict for intermediate and high levels of rent $R \geq R^d$. For low levels of rent $R < R^d$, the incumbent is not challenged.

Figure 1 illustrates the equilibria of the model.⁵

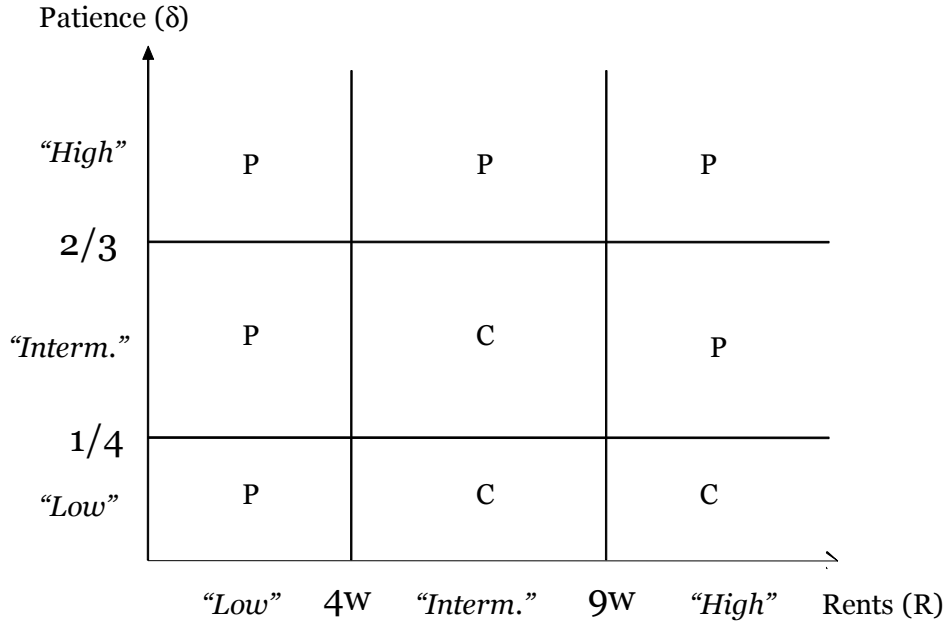


Figure 1: Rents, patience, conflict and peace

The most interesting feature of Figure 1 is the case of intermediate levels of patience, where an increase in rents starting from a low level leads to conflict as we move into the range of intermediate rents, and then to peace as we move into high rents. This occurs due to the change in the conflict structure. In other words, patronage employment is credible if the alternative is triopoly conflict, whereas it is not credible and rejected if duopoly is the outside option.

3.2 Aggregate income

We now use the model to look at the effect of increased rents on aggregate income I^k , which is the sum of private earnings from the productive sector and total resource rent revenues. Superscript $k =$

⁵In Figure 1, $w = \frac{1}{4}$.

$P1, C, P2$ stands for peace without transfers, duopoly conflict, and peace with transfers, respectively. When the incumbent is unchallenged, government revenues are R , while each opposition group earns private sector income w :

$$I^{P1} = R + 2w. \quad (13)$$

When duopoly conflict is the equilibrium outcome, each fighting party makes a profit $\rho^d = \frac{1}{4}R$, whereas the opposition group not involved in conflict earns the private sector income w :

$$I^C = \frac{1}{2}R + w, \quad (14)$$

Finally, when a peaceful equilibrium is sustained by (unproductive) patronage employment, aggregate income is equivalent to total available resource rents in the economy:

$$I^{P2} = R. \quad (15)$$

Figure 2 illustrates how aggregate income varies with resource rents, for $\delta \in (\delta^t, \delta^d)$.⁶ We also illustrate the income gap, defined as aggregate income minus potential income under peace and a fully active productive sector given by equation (13).

To sum up, given intermediate levels of patience $\delta \in (\delta^t, \delta^d)$, aggregate income for low rents $R < R^d$ equals I^{P1} in equation (13) since the incumbent is unchallenged and the private sector fully active. For intermediate rents $R \in (R^d, R^t)$, aggregate income drops to half of its potential level I^C given by (14), due to resources wasted in conflict and the reallocation of one group's activities from the productive to the unproductive sector. Finally, for high rents $R > R^t$, aggregate income jumps to I^{P2} in (15) as conflict is prevented and the productive sector shuts down.

The fall in aggregate income due to increased rents in our model is an example of the resource curse (Sachs and Warner, 2001, Hodler, 2005). However, the present paper also shows that resources can be as much a blessing as a curse: By giving credibility to a transfer program, increased rents can prevent rent seeking and thereby increase aggregate income in society, as shown by the move from the intermediate-rents to the high-rents regime. This can be seen in Figure 2 from the fact that as rents increase from “intermediate” to “high” at R^t , aggregate income jumps from $I^C = 5.5w$ to

⁶In Figure 2, $w = 1$.

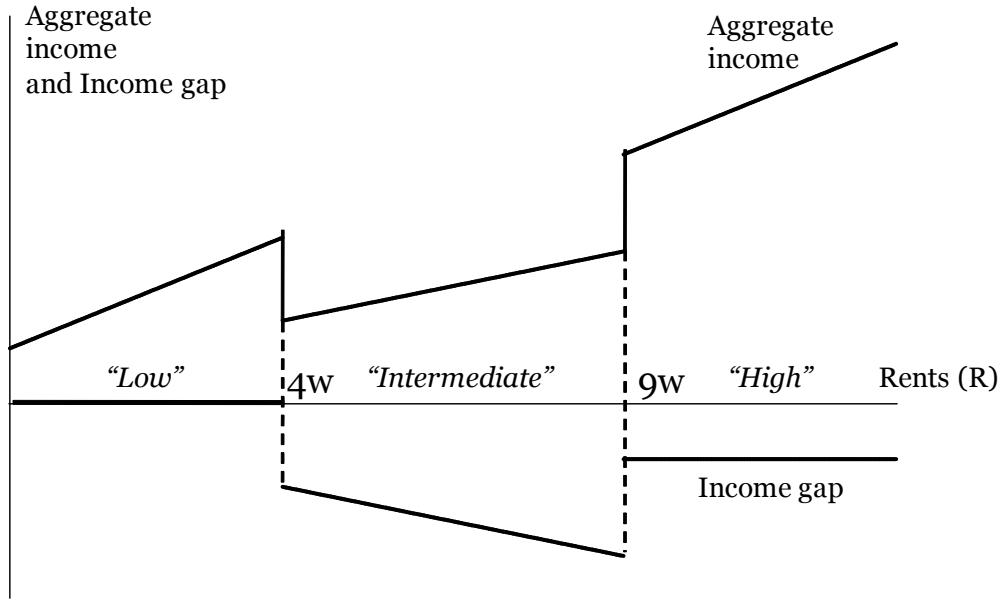


Figure 2: Income and rents

$I^{P2} = 9w$ due to the prevention. While I^{P2} is necessarily higher I^C , it is still lower than its potential level due to the transfer program which ties the opposition groups to the unproductive government sector.

4 Extensions

4.1 Polarization

So far, we have assumed that the interest groups only care about income. But the literature on conflict also points to social tensions, based on ethno-linguistic or religious differences, as sources of conflict. The empirical evidence is mixed. For instance, while Collier and Hoeffler in earlier work found a hump shaped relationship between fractionalization and the risk of conflict, in their newer work (Collier, Hoeffler, Rohner, 2009) they find the effect of fractionalization on conflict to be monotonically increasing. However, Fearon and Laitin (2003) argue that factors such as poverty and political instability rather than ethnicity explain civil war.

One reason why the empirical evidence is not clear on this issue could be that ethno-linguistic or

religious diversity under some conditions promote conflict and under other conditions discourages conflict. It is straightforward to demonstrate that this is a likely outcome of incorporating social tensions in the present model. Assume that groups experience a disutility from being ruled, based on, say, the exposure to social or cultural policies which do not harmonize with the ideals of the opposition groups. Assume that the disutility is symmetric across groups, and given by γ . The higher is γ , the more polarized is society. The group in power implements its preferred policy and experiences a zero policy-loss.

Groups now fight not only for the ability to control rents, but also to control policies. The payoff from duopoly rent seeking in this case needs to be modified to $\hat{\rho}^d = \frac{1}{4}(R + \gamma)$, implying that for $w > \hat{\rho}^d \Rightarrow R < 4w - \gamma$, the incumbent faces no opposition. Similarly, triopoly rent seeking gives payoff $\hat{\rho}^t = \frac{1}{9}(R + \gamma)$, with $w < \hat{\rho}^t \Rightarrow R < 9w - \gamma$.

In Figure 1, introducing $\gamma > 0$ implies a leftward shift in the two vertical lines, from $R = 4w$ to $R = 4w - \gamma$, and from $R = 9w$ to $R = 9w - \gamma$. Interestingly, for the levels of patience of our interest $\delta \in (\delta^t, \delta^d)$, we observe that the effect of polarization on conflict depends on the level of resource rents. For low levels of rent, increased polarization increases the likelihood of conflict. This is because the added social tensions makes it more attractive for the opposition groups to challenge the incumbent. And since the incumbent cannot offer a credible patronage employment program to pacify the opposition, duopoly rent seeking will result. For higher levels of rent, on the other hand, increased polarization has the opposite effect, reducing the likelihood of conflict. It does so by making triopoly rent seeking sustainable for lower levels of resource rents, which in turn lends credibility to the transfer program and hence leads to a peaceful equilibrium.

4.2 Fractionalization

In the above analysis, we have considered a situation with only two opposition groups. What happens if there are more than two opposition groups in the society? We can interpret an increase in the number of groups as increased fractionalization. Let n be the number of groups. Clearly, the more opposition groups, the more expensive is the patronage employment scheme for the incumbent. For

instance, when the relevant rent seeking market structure is duopoly, i.e., for $\rho^t < w < \rho^d$, the incumbent has to make total transfers of $(n-1)\rho^d$ to prevent conflict. The critical level of δ above which the transfer program is credible is now:

$$\pi_{dev}^d = \pi^d(n) \Leftrightarrow \delta = \frac{1}{3}(n-1) \equiv \delta^d(n), \quad (16)$$

which reduces to δ^d in (9) for $n=3$. Note that $\delta^d(n)$ is increasing in n :

The more groups in society, the more likely is conflict in equilibrium. Indeed, $n=4 \Rightarrow \delta^d(n)=1$ implies that there will be conflict even in the absence of discounting. The same logic applies for the case of triopoly rent seeking, etc. Still, while fractionalization makes conflict more likely, the core mechanism highlighted in this paper survives: An increase in rents such that the market structure of conflict changes, may switch the equilibrium from conflict to peace by making the transfer program credible.

5 Conclusion

We have built a simple theoretical model to show that resource rents can have complex effects on conflict in society. Increasing rents starting at a low level can change the scenario from an unchallenged dictatorship to conflict, as the rent seeking market structure changes from monopoly to duopoly. While the incumbent would like to prevent conflict *per se*, the patronage employment transfer program that would pacify the opposition is not self sustained, and hence not effective. Increased rents given this market structure intensifies the rent seeking contest.

This may change radically as the increase in rent changes the rent seeking market structure. At some point, increased rents will attract more rent seekers. By making conflict more costly to the incumbent, and by reducing the share of rents needed for transfers required to pacify the opposition, the transfer program could now be self sustained, ensuring a peaceful solution. In this way, increased rents, starting from a higher level, may promote peace. In other words, the greed mechanism can itself trigger stability in states that are highly dependent on resource rents.

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