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Abstract This paper examines the effect of inefficient redistribution in Myerson's (1993) model of redistributive politics. Regardless of the absolute levels of the efficiency of political parties' transfers to different voter segments, parties have incentive to (stochastically) shift resources away from voter segments with large relative efficiency gaps between the two parties' transfers towards voter segments with smaller relative efficiency gaps. Because of this dependence on relative, and not absolute, levels of efficiency, the parties' optimal strategies may lead to large discrepancies between the sum of the budgetary transfers and the sum of the effective transfers. At the extreme, in the spirit of Magee, Brock, and Young (1989), we obtain "black hole" inefficiency. When the model is extended to allow for loyal voter segments and loyalty to a party is positively related to the efficiency of that party's transfers to the segment, the incentives leading to black hole inefficiency become even stronger.

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1 Introduction

This paper examines the effect of inefficient redistribution in Myerson's (1993) model of redistributive politics. In this model, political parties attempt to maximize the proportion of votes that they receive by simultaneously setting offer distributions.[1] These distributions are interpreted as commitments to a schedule of transfers of monetary benefits to the set of voters, each of whom are assumed to be sincere and vote for the party offering the highest utility. The set of voters is represented as a continuum of measure one and, when integrated over this set, each party's offer distribution must satisfy a common aggregate budget constraint, interpreted as the budget available to the ruling party.

We extend Myerson's model by assuming that parties vary in the efficiency with which they are able to target transfers to different groups of voters. Although some subsets of the set of voters may be targeted by efficient means by one or both of the parties (in the sense that \$1 of budgeted allocation yields \$1 of benefit to a voter), the only way in which certain subsets of voters may be targeted with transfers is through inefficient means (\$1 of budgeted allocation yields less than \$1 benefit). Moreover, we assume that the efficiency of transfers may vary across both the subset of targeted voters and the identity of the party making the transfer. Along these lines, we assume that voters may be partitioned into a finite number of disjoint segments $j \in \{1,2,...,n\}$, and define $\theta_i^j \in (0,1]$ to be the effective transfer that a voter in segment j receives when party $i \in \{A,B\}$ transfers \$1 of the budget to that voter. We call θ_i^j the *efficiency of party i's transfers to voters in segment j.* The interpretation of these coefficients is that, although the parties are able to distinguish distinct groups of voters to be targeted, there are constraints on the ability to transfer \$1 directly from the budget to the voter. Often these transfers must be made in a distortionary manner so that the effective benefit to the targeted voter is less than the opportunity cost elsewhere. For instance, anticorruption laws and fairness perceptions of the electorate may make it impossible for a party to promise to take \$1 from the budget and hand it over to a voter in the form of a direct monetary transfer. Instead perhaps, this dollar might be used as a subsidy that provides an indirect benefit, the provision of a good or service that costs more than the benefit derived by the voter, or as payment for goods or services which are not efficient uses of the funds and carry with them a resource cost of provision. Similar constraints on the efficiency of transfers are assumed directly by Dixit and Londregan (1995,1996) and indirectly by Acemoglu and Robinson (2001).

We characterize the unique Nash equilibrium strategies and vote shares of this model and demonstrate that the magnitude of the equilibrium expected budgetary transfers of the two parties to a given set of voters j is determined not by the absolute efficiency of the two parties' transfers, but by the relative efficiency of each party's transfers to each

[1] Offer distributions are probability distributions over the nonnegative real numbers with the interpretation that the measure of a given interval indicates the proportion of voters receiving a transfer in that interval.

voter segment. The expected budgetary transfers are the highest to those voter segments in which the parties have symmetric efficiencies and are strictly decreasing in the "efficiency gap" between the two parties, which we define by $\gamma(\theta_A^j, \theta_B^j) = \{\max[\theta_A^j, \theta_B^j] - \min[\theta_A^j, \theta_B^j]\}/\max[\theta_A^j, \theta_B^j]$. We use our characterization to provide a set of parameterized examples to demonstrate that the absolute inefficiency of transfers to a given voting block may not serve as a constraint on the equilibrium budgetary transfers made to that block. Indeed,we obtain a type of "black hole" inefficiency, first identified by Magee, Brock, and Young (1989) in in the context of lobbying for protectionist policies. In the context of our model, black hole inefficiency refers to the fact that redistributive competition with inefficient transfers can lead to an environment in which a portion of the budget arbitrarily close to one may be conferred to an arbitrarily small portion of the set of voters with transfers that are arbitrarily inefficient.

We also examine inefficient transfers in our (2008) extension of Myerson's model to allow for heterogeneous voter loyalties to political parties. In that extension, parties may perfectly discriminate across voters by the party to which they identify and the intensity of their loyalty to that party. Parties compete by simultaneously setting offer distributions for each of the finite number of identifiable voter segments under the assumption that all transfers are efficient. By incorporating differences in the efficiency of transfers across parties and subsets of targeted voters, and assuming that parties can perfectly discriminate in transfers by party affiliation, intensity of loyalty to the party, and the efficiency of transfers to the groups in question, we extend Kovenock and Roberson (2008). In this extension, the partition of voters into identifiable groups is the meet of the partition into the two parties' loyal segments of different intensities and the partition into segments by the two parties' efficiency of transfers.

In this context, we show that if the efficiency of party i's transfers to voters in one of its own loyal voter segments is greater than that of its rival then, all else equal, an increase in the efficiency gap for that segment, obtained by either increasing the efficiency of party i's transfers to that segment or decreasing the efficiency of the rival party's transfers, reduces the expected budgetary transfers of each party to that segment. In this sense, when the relative efficiency of transfers to a segment and that segment's loyalty to a party work together to strengthen one party's advantage over the other in that segment, the playing field is made less level and both parties' expected budgetary transfers to the segment are reduced. This contrasts, with the results of Dixit and Londregan (1996), who, in a related setting, find that when a political party's transfers can be more efficiently targeted at their loyal voter segments, political parties have an incentive to target a higher level of resources towards those voters.[2]

[2] In Dixit and Londergan (1996) voters have utilities that are additively separable in transfers and ideological preferrence, whereas our formulation assumes utilities are multiplicatively separable in these variables. Moreover, in their formulation parties are unable to perfectly discriminate across groups by voter attachment or loyalty, but are able to dis-

Section 2 describes the model. In section 3 we characterize the unique Nash equilibrium strategies and vote shares, examine how exogenous redistributive inefficiencies lead the political parties to pursue inefficient redistribution, and provide an example of black hole inefficiency. Section 4 extends the model to include heterogeneous voter loyalties to political parties and demonstrates how the addition of voter loyalties intensifies the incentive to pursue inefficient redistribution. Section 5 concludes.

2 The Model

The voters are partitioned into a finite number n of disjoint segments indexed by $j \in \{1,\ldots,n\}$. For each party $i \in \{A,B\}$, let $\theta_i^j \in (0,1]$, which we term the *efficiency of party i's transfers for voters in segment j*, represent the number of units of the homogeneous good that a voter in segment j receives when party i offers one unit of the homogeneous good. Thus, the effective transfer that a voter in segment j receives when party i targets a transfer of x_i to that voter is $x_i\theta_i^j$. Each voter segment is distinguished by a unique pair of efficiencies from each of the parties, $\{\theta_A^j, \theta_B^j\}$ for each segment $j \in \{1,\ldots,n\}$. The segmentation of voters may be based on characteristics, such as geographic location, which are symmetric to each party. Alternatively, the segmentation of voters may be based on characteristics which may or may not be symmetric to each party. For example it may be the case that one or both of the parties has a finer partition of inefficiencies in some subset of the electorate. The segmentation described above is applicable in both of these cases.

Inefficient Redistributive Competition

A strategy, which we label a *redistributive schedule* (or *offer distribution*), for party i is a set of cumulative distribution functions,[3] $\{F_i^j\}_{j=1}^n$, one distribution function for each segment j of voters. As in Myerson (1993) each $F_i^j(x)$ denotes the fraction of voters in segment j whom party i will offer a transfer less than or equal to x. The only restrictions that are placed on the set of feasible strategies is that each offer must be nonnegative and the set of cumulative distribution functions must satisfy the budget constraint:

$$\sum_{j=1}^{n} m_j \int_0^\infty x dF_i^j(x) \leq 1. \tag{1}$$

criminate by efficiency of transfers. Hence the parties engage in a type of third degree transfer discrimination in determining their redistributive transfers. In contrast, our model assumes first degree transfer discrimination. Parties are able to perfectly discriminate by party affiliation, intensity of loyalty to the party and by the efficiency of transfers.

[3] In this case the focus is on the distributions within each segment (marginal distributions) rather than an n-variate joint distribution. An n-variate joint distribution is trivial to obtain and adds nothing to the problem analyzed here.

Inefficient Redistributive competition is the one-shot game, which we label

$$G\left(\left\{m_j, \theta_A^j, \theta_B^j\right\}_{j=1}^{n}\right),$$

in which parties attempt to maximize their vote share by simultaneously announcing redistributive schedules, subject to a budget constraint.

3 Optimal Strategies

The following theorem characterizes the equilibrium of the inefficient redistributive competition game.

Theorem 1 *The unique Nash equilibrium of the inefficient redistributive competition game* $G(\{m_j, \theta_A^j, \theta_B^j\}_{j=1}^n)$ *is for each party i to choose offers according to the following distributions.*

For party A

$$\begin{array}{lll} \forall\, j|\theta_A^j > \theta_B^j & F_A^j(x) = \frac{x}{z\left(\theta_B^j/\theta_A^j\right)} & x \in \left[0, z\left(\frac{\theta_B^j}{\theta_A^j}\right)\right] \\ \forall\, j|\theta_A^j = \theta_B^j & F_A^S(x) = \frac{x}{z} & x \in [0,z] \\ \forall\, j|\theta_A^j < \theta_B^j & F_A^j(x) = 1 - \frac{\theta_A^j}{\theta_B^j} + \left(\frac{\theta_A^j}{\theta_B^j}\right)\frac{x}{z} & x \in [0,z]. \end{array}$$

Similarly for party B

$$\begin{array}{lll} \forall\, j|\theta_A^j < \theta_B^j & F_B^j(x) = \frac{x}{z\left(\theta_A^j/\theta_B^j\right)} & x \in \left[0, z\left(\frac{\theta_A^j}{\theta_B^j}\right)\right] \\ \forall\, j|\theta_A^j = \theta_B^j & F_B^S(x) = \frac{x}{z} & x \in [0,z] \\ \forall\, j|\theta_A^j > \theta_B^j & F_B^j(x) = 1 - \frac{\theta_B^j}{\theta_A^j} + \left(\frac{\theta_B^j}{\theta_A^j}\right)\frac{x}{z} & x \in [0,z], \end{array}$$

where $z = \frac{2}{1-\sum_{j|\theta_A^j>\theta_B^j} m_j\left(1-(\theta_B^j/\theta_A^j)\right)-\sum_{j|\theta_A^j<\theta_B^j} m_j\left(1-(\theta_A^j/\theta_B^j)\right)}$*. In equilibrium, party A's share of the vote is* $\frac{1+\sum_{j|\theta_A^j>\theta_B^j} m_j\left(1-(\theta_B^j/\theta_A^j)\right)-\sum_{j|\theta_A^j<\theta_B^j} m_j\left(1-(\theta_A^j/\theta_B^j)\right)}{2}$ *and party B's share of the vote is* $\frac{1-\sum_{j|\theta_A^j>\theta_B^j} m_j\left(1-(\theta_B^j/\theta_A^j)\right)+\sum_{j|\theta_A^j<\theta_B^j} m_j\left(1-(\theta_A^j/\theta_B^j)\right)}{2}$.

The proof of Theorem 1 follows along lines drawn by Kovenock and Roberson (2008) which establishes a strategic equivalence between two-party games of redistributive politics with segmented voters and a unique set of appropriately chosen independent and simultaneous two-bidder all-pay auctions. The proof of uniqueness then follows from the arguments appearing in Hillman and Riley (1989) and Baye, Kovenock and de Vries (1996).

For intuition on the existence of this equilibrium, note that party A's vote share from an arbitrary redistributive schedule, $\{\bar{F}_A^j\}_{j=1}^n$, is

$$\pi_A\left(\left\{\bar{F}_A^j, F_B^j\right\}_{j=1}^n\right) = \sum_{j=1}^n m_j \int_0^\infty F_B^j\left(\frac{x\theta_A^j}{\theta_B^j}\right) d\bar{F}_A^j(x).$$

If Party B is playing the equilibrium redistributive schedule, then it is never a best response for a party A to provide offers outside the support of the equilibrium redistributive schedule. Thus, $\pi_A(\cdot)$ simplifies to

$$\pi_A\left(\left\{\bar{F}_A^j, F_B^j\right\}_{j=1}^n\right) = \frac{1}{z}\sum_{j|\theta_A^j>\theta_B^j} m_j \int_0^{z\left(\theta_B^j/\theta_A^j\right)} x d\bar{F}_A^j(x) + \sum_{j|\theta_A^j>\theta_B^j} m_j \left(1-\frac{\theta_B^j}{\theta_A^j}\right)$$
$$+\frac{1}{z}\sum_{j|\theta_A^j=\theta_B^j} m_j \int_0^z x d\bar{F}_A^j(x) + \frac{1}{z}\sum_{j|\theta_A^j<\theta_B^j} m_j \int_0^z x d\bar{F}_A^j(x).$$

But from the budget constraint given in (1) it follows that

$$\pi_A\left(\left\{\bar{F}_A^j, F_B^j\right\}_{j=1}^n\right) \leq \frac{1+\sum_{j|\theta_A^j>\theta_B^j} m_j\left(1-(\theta_B^j/\theta_A^j)\right) - \sum_{j|\theta_A^j<\theta_B^j} m_j\left(1-(\theta_A^j/\theta_B^j)\right)}{2},$$

and, thus, party A's vote share cannot be increased by deviating from the equilibrium redistributive schedule.

For each segment j in which party i has an efficiency advantage (i.e. $\theta_i^j > \theta_{-i}^j$), an important set of terms that appears in Theorem 1 is $\{(1-(\theta_{-i}^j/\theta_i^j))\}_{j|\theta_i^j>\theta_{-i}^j}$. In each of these segments, the term $(1-(\theta_{-i}^j/\theta_i^j)) \in [0,1)$, which we label *party i's efficiency gap* in segment j, provides a measure of the asymmetry in the parties' efficiencies. Theorem 1 demonstrates that in the game of inefficient redistributive politics the efficiency gaps determine the nature of redistribution in equilibrium. In particular, the parties concentrate their resources, by targeting higher expected budgetary transfers, in those segments of voters in which the parties' efficiencies are the most symmetric.

Corollary 1 *In the inefficient redistributive politics game, $G(\{m_j, \theta_A^j, \theta_B^j\}_{j=1}^n)$, the expected budgetary transfers are the highest in those segments of voters in which the parties have symmetric efficiencies and are strictly decreasing in the efficiency gap.*

Proof From Theorem 1, the equilibrium expected budgetary transfer, from each party, for the segments of voters in which the parties have symmetric efficiencies (i.e. $\{j|\theta_A^j = \theta_B^j\}$), denoted by $E^{S_j}(\cdot)$, is

$$E^{S_j}\left(\left\{m_j, \theta_A^j, \theta_B^j\right\}_{j=1}^n\right) = \frac{1}{1-\sum_{j|\theta_A^j>\theta_B^j} m_j\left(1-(\theta_B^j/\theta_A^j)\right) - \sum_{j|\theta_A^j<\theta_B^j} m_j\left(1-(\theta_A^j/\theta_B^j)\right)}.$$

For each segment j of voters in which party A has an efficiency advantage (i.e. $\{j|\theta_A^j > \theta_B^j\}$) the equilibrium expected budgetary transfer from each party, denoted by $E^{A_j}(\cdot)$, is

$$E^{A_j}\left(\left\{m_j,\theta_A^j,\theta_B^j\right\}_{j=1}^n\right)=\frac{1-\left(1-(\theta_B^j/\theta_A^j)\right)}{1-\sum_{j|\theta_A^j>\theta_B^j}m_j\left(1-(\theta_B^j/\theta_A^j)\right)-\sum_{j|\theta_A^j<\theta_B^j}m_j\left(1-(\theta_A^j/\theta_B^j)\right)}.$$

Similarly, for each segment j of voters in which party B has an efficiency advantage (i.e. $\{j|\theta_A^j < \theta_B^j\}$) the equilibrium expected budgetary transfer from each party, denoted by $E^{B_j}(\cdot)$, is

$$E^{B_j}\left(\left\{m_j,\theta_A^j,\theta_B^j\right\}_{j=1}^n\right)=\frac{1-\left(1-(\theta_A^j/\theta_B^j)\right)}{1-\sum_{j|\theta_A^j>\theta_B^j}m_j\left(1-(\theta_B^j/\theta_A^j)\right)-\sum_{j|\theta_A^j<\theta_B^j}m_j\left(1-(\theta_A^j/\theta_B^j)\right)}.$$

It follows directly that the expected budgetary transfers are the highest in those segments of voters in which the parties have symmetric efficiencies and are strictly decreasing in the efficiency gap. Q.E.D.

This result on the expected budgetary transfers extends only partially to the expected effective transfers. That is, while the expected effective transfers are also the highest in those segments in which the parties have symmetric efficiencies, it is not the case that the expected effective transfers are strictly decreasing in the efficiency gap. However, given that within each voter segment the expected budgetary transfer from each party is the same, it follows directly that in each voter segment the expected effective transfer is higher for the party with the efficiency advantage.

Given that the optimal strategy for each party depends only on the efficiency gaps and not the absolute levels of efficiency, it is clear the incentives of inefficient redistributive politics may lead the parties to adopt offer distributions which result in unnecessarily large discrepancies between the sum of the budgetary transfers and the sum of the effective transfers. The following example demonstrates the extent to which the parties are willing to forgo the available efficiency in the pursuit of their electoral goals.

Black Hole Inefficiency

Recall that for each party the sum of the budgetary allocations to each of the voters in each of the segments, referred to as *the sum of party i's budgetary transfers*, is 1 ($\sum_{j=1}^n m_j \int_0^\infty x dF_i^j = 1$). In the discussion that follows, the sum of the transfers from party i that would actually be received by the voters, $\sum_{j=1}^n m_j \int_0^\infty x\theta_i^j dF_i^j \leq 1$, is referred to as *the sum of party i's effective transfers*.

Black Hole Example: Assume that there are only three types of voters: voters for whom party A has an efficiency advantage, voters for whom party B has an efficiency advantage, and voters for whom the parties have symmetric efficiencies.

In the segment of voters for whom party A has an efficiency advantage, denoted as segment A, let $m_A = \frac{1-\varepsilon}{2}$, $\theta_A^A = 1$, and $\theta_B^A = \theta$. Similarly for the segment of voters for whom party B has an efficiency advantage, denoted as segment B, let $m_B = \frac{1-\varepsilon}{2}$, $\theta_B^B = 1$, and $\theta_A^B = \theta$. Finally, for the segment of voters for whom the parties have symmetric efficiencies, denoted as segment S, let $m_S = \varepsilon$, and $\theta_A^S = \theta_B^S = \theta$.
For $i = A, B$, party i's effective transfers are given by

$$\sum_{j \in A,B,S} m_j \int_0^\infty x\theta_i^j dF_i^j = \frac{1-\varepsilon}{2}\left(\frac{\theta}{1-(1-\varepsilon)(1-\theta)}\right) + \varepsilon\left(\frac{\theta}{1-(1-\varepsilon)(1-\theta)}\right) + \frac{1-\varepsilon}{2}\left(\frac{\theta^2}{1-(1-\varepsilon)(1-\theta)}\right) < \frac{\theta}{1-(1-\varepsilon)(1-\theta)}$$

Remarkably, the black hole inefficiency example shows that — even if each party has a set of voters, arbitrarily close to half of the voter population, to whom transfers are perfectly efficient — the parties optimally pursue unnecessarily inefficient redistribution even to the point that the sum of the effective transfers goes to zero. That is, for all $\varepsilon > 0$, the sum of both parties' effective transfers become arbitrarily small as θ becomes arbitrarily small.

4 Inefficient Redistributive Politics with Party Loyalty

The game of inefficient redistributive politics with party loyalty is a straightforward extension of the game of inefficient redistributive politics. Let $\lambda_i^j \in (0,1)$ represent the number of units of the homogeneous good that party i must offer to a voter in one of its own segments of loyal voters in order to make that voter indifferent between the two parties when party $-i$ offers one unit of the homogeneous good and the parties have symmetric inefficiencies.[4] Thus, the effective transfer that each loyal voter in party i's segment j receives from an offer of x_A from party A is $x_A\theta_A^j$ if $i = B$ and $x_A\theta_A^j/\lambda_A^j$ if $i = A$. For each segment j of voters loyal to party i, let $\tilde{\theta}_i^j \equiv \theta_i^j/\lambda_i^j$ denote the *effective efficiency of party i's transfers to loyal voter segment j*. Similarly, for each segment j of voters which are not loyal to party i, let $\tilde{\theta}_i^j \equiv \theta_i^j$ denote the *effective efficiency of party i's transfers to non-loyal voter segment j*. It seems reasonable to assume that each party has an effective efficiency advantage in each of its own loyal voter segments (i.e., for each segment j of voters loyal to party i $\tilde{\theta}_i^j > \tilde{\theta}_{-i}^j$). While it is possible that the parties have asymmetric effective efficiencies in the segments of voters which are not loyal to either party (henceforth the swing voter segments), the following analysis focuses on the case in which the parties have symmetric effective efficiencies in the swing voter segments. Lastly, let $(1-(\tilde{\theta}_{-i}^j/\tilde{\theta}_i^j)) \in [0,1)$, denote the *effective efficiency gap* in segment j of party i's loyal voters.

[4] This type of effectiveness advantage is frequently used in the literature on unfair contests, see for example Lein (1990), Clark and Riis (2000), Konrad (2002), and Sahuguet and Persico (2006).

One possible outcome of the game of inefficient redistributive politics with party loyalty is a 'machine politics' outcome in which each party's expected budgetary transfers are the highest in their own loyal voter segments and are in increasing in the effective efficiency gap. If a party's core loyal voters have the largest effective efficiency gaps, then this outcome may be interpreted as an effort by the parties to reward their core loyal voters. An alternative outcome is a 'swing voter' outcome in which each party's expected budgetary transfers are the highest for the swing voters and are decreasing in the effective efficiency gap. In this outcome the parties leverage the loyalty of their core loyal voters in an effort to win over swing and, to some extent, the opposition party's loyal voters.

The equilibrium of the game of inefficient redistributive politics with party loyalty is a straightforward extension of Theorem 1 in which for each party i and segment j θ_i^j is replaced by $\tilde{\theta}_i^j$. As highlighted in the following Corollary, the equilibrium of the game of inefficient redistributive politics with party loyalty is consistent with the swing voter outcome.

Corollary 2 *In the inefficient redistributive politics game with party loyalty, the expected budgetary transfers are the highest in the swing voter segments and are strictly decreasing in the efficiency gap.*

The proof of Corollary 2 follows directly from Corollary 1 in which each θ_i^j is replaced by $\tilde{\theta}_i^j$. As was the case with Corollary 1, this result on the expected budgetary transfers extends only partially to the expected effective transfers. Within each segment of loyal voters, the affiliated party's expected effective transfer is higher than that of the opposition party. In addition, across the voter segments loyal to given a party, the affiliated party's expected effective transfers are strictly increasing in the opposition party's effective efficiency.

Dixit and Londregan (1996) examine a related model in which parties are unable perfectly discriminate across groups by voter attachment or loyalty, but are able to discriminate by efficiency of transfers. Hence the parties engage in a type of third degree transfer discrimination in determining their redistributive transfers. In that setting, Dixit and Londregan (1996) find that when a political party can more efficiently target transfers to their loyal voter segments than to the swing or opposition party's loyal voters, political parties have an incentive to pursue a 'machine politics' outcome (i.e., target a higher level of resources towards their own loyal voters).

In contrast, our model assumes first degree transfer discrimination. Parties are able to perfectly discriminate by party affiliation, intensity of loyalty to the party and the efficiency of transfers. We find that comparisons of the absolute efficiency of transfers across segments are irrelevant. Instead, it is the effective efficiency gaps that determine the nature of redistribution in equilibrium. Furthermore, under the assumption that each party's core loyal voters have the highest effective efficiency gaps, political parties have an incentive to target a lower level of resources towards these core loyal voters. That is, effective efficiency gaps create an incentive for political parties to (stochastically) shift resources away from their own loyal voters towards the swing voters. The intuition for this result is straightforward. Larger effective efficiency gaps in a party's own loyal voter segments make it more difficult for the opposing party to steal voters away. As the level of the opposition party's stealing, or 'poaching', of a party's own loyal voters decreases, resources can be (stochastically) shifted away from that party's own loyal voters to the swing voter segments, in which the parties have symmetric efficiencies. Lastly, it is important to note that when party loyalty is positively correlated with the efficiency of transfers the incentives leading to black hole inefficiency may be exacerbated: both parties target most of their resources to the most hotly contested segments, which are both less loyal and involve less efficient transfers.

5 Conclusion

This paper examines the effect of inefficient redistribution in a simple model of redistributive politics. In equilibrium, we find that, regardless of the absolute levels of the efficiency of transfers to different voter segments, political parties have incentive to (stochastically) shift resources away from voter segments with large relative efficiency gaps towards voter segments with smaller relative efficiency gaps. A large relative efficiency gap makes it more difficult for the party with the efficiency disadvantage to win votes in that segment of voters and, as a result, both parties (stochastically) shift resources to the more competitive segments in which the efficiency gaps are smaller. Because of the dependence on relative, and not absolute, levels of efficiency, the parties' optimal strategies may lead to large discrepancies between the sum of budgetary transfers and the sum of the effective transfers. At the extreme, a "black hole" inefficiency example (in the spirit of Magee, Brock, and Young, 1989) shows that — even though each party may have a set of voters arbitrarily close to half of the electorate to whom transfers are perfectly efficient — the sum of effective transfers in each party's optimal redistribution schedule may be arbitrarily close to zero. Furthermore, when the model is extended to allow for loyal voter segments and a segment's loyalty to a party is positively related to the efficiency of that party's transfers to the segment, the incentives leading to black hole inefficiency become even stronger.

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