Philippine Review of Economics and Business
Volume XXXI, No. 2, December 1994

RENT INTENSITY AND ECONOMIC MEDIOCRITY

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Using the share society as a metaphor for the economic system, we construct a microfoundation for stylized observations about rent-seeking and economic performance. We introduce the concept of rent intensity and show that at symmetric Cournot-Nash equilibrium it falls as value-adding productivity rises, rises with rent-seeking reward and with number of participants. Finally, average output falls with population growth where rent-seeking overwhelms increasing returns to scale.

1. Introduction

Reckoning the social cost of rent-seeking was among the favored fascinations of public choice literature in the '80s, (Tullock, 1981; Hillman and Katz, 1984; Fabella, 1989; Hillman and Riley, 1990; Hillman, 1990). The preferred analytic vehicle was the Tullock dissipation rate d which is the ratio of total spending to total rent. In a good deal of the literature, total rent is fixed and the analysis is focused on a single market. This, together with other assumptions such as Cournot-Nash behavior, symmetry, and risk neutrality, allows an explicit solution for d. Various influences on d in this program have been identified (Fabella, 1992). If one's concern is the impact of rent-seeking on the total economic performance, however, the dissipation rate may not be much help because rent size may depend on economic performance itself. It is true that

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* Professor of Economics, University of the Philippines. Professor José Encarnación, Jr. never wrote on rent-seeking so this paper is not an elaboration on one of his brainchildren. Instead, this paper, as it charts the trajectory to mediocrity of a society taken over by the rent-ethos, celebrates his life defiantly flying the colors of unbending meritocracy in the sea of unabashed rent-seeking.

under a fixed rent assumption, the dissipation rate can give one some idea of the impact on the whole economy of rent-seeking. A d equal to one means that the cost to society is equal to the rent itself, but it fails to indicate how badly off society is in consequence. When the rent is somehow dependent on economic performance, a rise in d does not necessarily imply higher spending on rent-seeking.

There is a long lively economic current relating inferior economic performance with rent-seeking (Myrdal, 1970; Krueger, 1973; Olson, 1984; Brock, Magee and Young, 1989; Baumol, 1990; Murphy, Schleifer and Vishny, 1990). This public-choice theoretic view of economic performance transcends the narrow single market arena lorded over by the Tullock dissipation rate. Economic agents are confronted with two competing opportunities for wealth acquisition: on the one hand, there is the universe of value-adding (also productive) activities where the agent initiates an activity that results in some revenue and lays claim to value not accounted for by the cost of materials of production. On the other, there is the universe of rent-seeking (also unproductive activities) where the object is to snag a prize (rents) available in the economy largely as a result of the state-related activities. Agents allocate resources to these competing activities.

The purpose of this paper is to provide a simple microeconomic foundation for some of the accepted and intuitive observations in the marriage of public choice and economic growth using the machinery underlying the dissipation rate. Most analysis in this literature tend to gloss over the microeconomic underpinning of aggregate or economy-wide claims. Brock, Magee and Young, (1989) are one exception. In their comprehensive inquiry into endogenous protection, they include three models of resource allocation in a rent-friendly economy. The first one has a fraction of capital stock redistributed each period, which quickens the pulse of rent prospectors. The second has an agent's income dependent on his own (positive) and his rivals, (negative) lobbying effort. The third is a neo-classical optimal growth model without technical change, where an agent's share in output is once again subject to lobbying. On the whole, Brock, Magee and Young's results are rather counter-intuitive: (a) possible rise in GNP growth with rent-seeking early in the game, (b) negative association between growth of GNP and rent-seeking among young nations (contra Olson of secure and stable borders) and (c) from the dynamic growth (contra Magee effect). The latter is a common malaise among most neoclassical growth models which fail to relate change in the savings rate or other relevant economic parameters with steady state growth rate. Brock, Magee and Young candidly state that "these theoretical results notwithstanding, the final section of the chapter reports some empirical results showing that GNP growth across 34 countries in the period 1960-1980 is negatively correlated with the ratio of lawyers to physicians' (i.e., the Magee effect). Murphy, Shleifer and Vishny (1990) choose talent allocation as an explanation for weak long-run growth performance of many nations. Technical progress is determined by the best talent in the productive sector. If the unproductive sector is more elastic, its growth will attract the best talent in the productive sector and technical progress declines. If the productive sector is more income elastic than the rent-seeking sector, however, even fairly large changes in the incentive structure do not change the long-run growth picture. Murphy, Schleifer and Vishny, as well as the gamut of the new endogenous growth model , seem to ignore an interesting phenomenon in the last 25 years: negative growth. Summers (1992) has documented the experiences of countries that went the opposite direction. The simple dynamic counterpart of this model, in contrast, tries to relate progressive impoverishment with rent-seeking.

From the global viewpoint, the source of rent must itself be the value generated in the productive sector of the economy—the economic pie. Thus, there is a natural connection between the productive and the unproductive sector which is bound to affect individual agents' decisions to allocate resources. In a stylized feudal society, for example, the levies on the produce of the various feudal estates also form the spoils of feudal warfare. Peasants (in a limited way) and feudal lords (in a big way) decide the allocation of resources either to production or to the bearing of arms in pursuit of spoils. To the victors go the spoils—land and the corresponding rent. The picture was certainly more confused in historical feudal societies but ample traces of this dilemma surface (cf. Sansom, 1958, on feudal Japan). In G. Myrdal's "soft states" (1970), the state functions as a conduit for rents which engage legions of rent-seekers. In many LDCs, state-sponsored rent cows are the biggest, if not the only, game in town and they engage the best minds and considerable resources. While pronounced in LDCs, this is true as well of developed countries (Vishny, Schleifer, Murphy, 1990; Olson, 1984). In pre-1989 Eastern Europe, the avowed allocation principle was "to each according to his work" but the economic system retreated in time to the principle of "to each according to his party connections," with the *nomenklatura* system being the incarnation of this allocation principle (Haitani, 1986). Eventually the system failed to carry its own weight and collapsed in 1989.

There are two stylized views concerning the relation between rent-seeking and economic performance in most of the literature. First and more in currency, rent-seeking results in inferior long-run economic performance. One can view the Philippines, most of pre-1990 Latin America, and a lot of Sub-Saharan Africa in the last quarter century through this lens. Second and less articulated is the idea that inferior economic performance itself intensifies rent-seeking. Prolonged economic stagnation becomes self-perpetuating. This second view is also the flipside of the claim that Japan (e.g.) has avoided many developed country problems and conflicts by growing so fast. With slower growth, social conflicts will intensify, making faster growth more difficult. Third, larger institutions tend to exhibit more rent-seeking, thus causing slower growth. To cover this ground, we introduce the idea of rent intensity, which seems more appropriate than the dissipation rate for endogenous rent models.

In this paper, we will use the share society as a metaphor of the economic system. Bigman (1991) has also suggested the metaphorical usefulness of the share society. At the enterprise level, the share society has a lot in common with cooperative teams (Holmstrom, 1982; Fabella, 1988) or with the cooperative labor enterprise (Guttman and Schnytzer, 1989; Sen, 1968). First, everyone is in fact at once an agent and a principal. There is no one pure principal. Although enterprises in the economy may operate as so many manifestations of the principal-agent contract, the whole economy itself which operates perhaps by a constitution and a system of laws promulgated by persons elected by the general public is harder to characterize as such. People in this ideal setting have the capacity to affect the rules under which they operate. This is the ideal of the democratic slogan "government of the people, by the people and for the people." It is this abstract liberal democratic system for which the share society is being proposed as a metaphor. The gut of the share society, as is well-known, is a sharing rule which is exhaustive, (no residual claimant) and makes it apt as a parable of this economic system.

In the next section, we focus on the formal structure of the share society incorporating rent-seeking as a metaphor for liberal democratic systems. Assuming symmetry and Cournot-Nash agents, we generate the Nash equilibrium intensity of rent-seeking and generate the stylized observations.

2. The Share Society

Let me begin by saying that the "share society" in focus here is not M. Weitzman's (1982) "share economy," where profit sharing is the dominant contract among productive enterprises. The share society applies to the whole economy rather than to firms and assumes that society produces a single aggregate good x using an aggregate input I, the relation being given by $F(I)$. There are n members of society and $I = \overset{n}{\Sigma} I_i$ where I_i is the ith member contribution. $F(I)$ is nondecreasing, twice differentiable and homogeneous of degree h. Each member i is entitled to a share s_i of F and $\overset{n}{\Sigma} s_i = 1$. Thus, in the share society there is no room for a residual claimant or capitalist. This feature it has in common with teams and cooperative labor enterprises (Sen, 1966; Holmstrom, 1982; Fabella, 1988). The problem in this latter literature is the attainment of Pareto efficiency under either moral hazard (nonobservable effort) or adverse selection (observable effort but nonobservable capacities). In the latter, the interplay of scale economies and the design of the effort-based allocation plays a crucial role (Fabella, 1991). Our concern in this paper, in common with a lot of the rent-seeking literature (Tullock, 1980; Fabella, 1992), is the relative level of resources marshalled for redistributive activity. In contrast to the prevalent literature, however, the rent is not some fixed value distinct from the aggregate output. Members of the share society are each confronted with the choice of using their initial resources S_i either as I_i or R_i and $S_i = I_i + R_i$. We call I_i the ith member's "value-adding investment" and R_i his "value-redistributing investment." Both I_i and R_i are costlessly observable. The share of i, s_i in total output $F(I)$ is partly defined over the R_i's and partly over the I_i's namely,

$$(1) \qquad S_i = \alpha \left(\frac{R_i}{\Sigma_j R_j}\right) + (1 - \alpha)\left(\frac{I_i}{\Sigma_j I_j}\right), \quad 0 < \alpha < 1.$$

Farrel and Lander (1989) used a similar sharing scheme. The rent structure constant, α, gives the conduciveness of the share society to rent-seeking. As $\alpha \to 1$, only value-redistributing investment matters in the allocation. This is the pure connections-defined allocation. As $\alpha \to 0$, the share society reduces to a cooperative team with natural team sharing (Fabella, 1989). Pie share equals effort share and the rent-seeking problem is nonexistent. α can also be endogenous, a case we don't treat here. Note that

$$(2) \qquad \sum_{i=1}^{n} S_i = \alpha \left(\frac{\Sigma_j R_i}{\Sigma_j R_j}\right) + (1 - \alpha)\left(\frac{\Sigma_j I_i}{\Sigma_j I_j}\right) = 1.$$

Thus, exhaustiveness is assured. Substituting $(S_i - R_i) = I_i$ for all i, the problem of member i is

$$(3) \qquad \max_{R_i} \left[\alpha \left(\frac{R_i}{\Sigma_j R_j}\right) + (1 - \alpha)\left(\frac{S_i - R_i}{\Sigma_j S_j - R_j}\right)\right] F(\Sigma_j (S_j - R_j))$$

Notice that nowhere in (3) does the rent figure as a fixed quantity $\cdot$ $\alpha\,(R_i/\overset{n}{\Sigma}_j R_j)\, F(\cdot)$ is the expected rent for i but its size depends on $\{R_i\}$ and $\{I_i\}$. Thus rent is endogenous and dissipation rate d is not very meaningful. We propose a simple analytic tool.

<u>Definition 1</u>: The "rent intensity" of rent-seeking is the ratio of $\overset{n}{\Sigma}_i R_i$ to $\overset{n}{\Sigma}_i S_i$, i.e., $\Sigma_i(R_i/S_i)$ when $R_i = R$ and $S_i = S$, $\forall\, i = 1, 2, \ldots, n$. Then rent intensity is (R/S).

Its advantage over the dissipation rate lies in the denominator being clearly exogenous and the share in total budget being a more common instrument in economics. The first-order condition, assuming that i= 1,2,...n is a Cournot-Nash behaving agent, is:

$$(4)\qquad \left\{ \alpha \left(\frac{\sum_{j\neq i}^{n-1} R_j}{\left(\sum^{n} R_j\right)^2} \right) - (1-\alpha)\ \frac{\sum_{j\neq i}^{n-1} (S_i - R_i)}{[\Sigma\,(S_j - R_j)]^2} \right\} F' + S_i\, F'\,(-1) = 0.$$

$$i = 1,2,\ldots n.$$

These can be solved for $\{ R_i^* \}$, $i = 1,2,\ldots n$. Let us assume symmetry, or that all members are identical, i.e., $S_i = S_j = S$ and $R_i^* = R_j^* = R^*$, $\forall\, j, = 1,2,\ldots n$. Then (4) simplifies into

$$(5)\qquad \left\{ \alpha \left(\frac{(n-1)}{n^2 R^*} \right) - (1-\alpha) \left(\frac{(n-1)}{n^2\,(S-R^*)} \right) \right\} F - \frac{F'}{n} = 0$$

which can be solved for a lone R^*. Simplifying (5), we get

$$(6)\qquad \left(\frac{(n-1)}{n^2} \right) \frac{[\,\alpha\,(S-R^*) - (1-\alpha)R^*\,]}{R\,(S-R)} = \frac{F'}{nF}$$

or

$$(7)\qquad \frac{(n-1)}{n}\ \frac{[\,\alpha\,(S-R^*) - (1-\alpha)\,R^*\,]}{R^*} = \frac{F'n\,(S-R^*)}{nF}$$

Note that by the homogeneity of F, we have $hF = F'n(S-R)$. Thus, $F'n(S-R)/F = h$. We also have $[\alpha(S-R) - (1-\alpha)R]/R = \alpha(S/R) - 1 = nh/(n-1)$. Thus, $(S/R) = (nh/(n-1)\alpha) + (1/\alpha) = [nh + (n-1)]/(n-1)\alpha$. The first-order condition (5), can be written as

$$(8) \qquad \frac{S}{R^*} = \frac{[h + (n - 1)]}{(n - 1)\alpha}$$

and the second derivative is clearly negative. Finally, we have

$$(9) \qquad \left(\frac{R^*}{S}\right) = \frac{(n\text{-}1)\alpha}{[nh + (n\text{-}1)]}$$

(R^*/S) is the optimal individual rent seeking allocation at the symmetric Cournot-Nash equilibrium. The following properties of (R^*/S) are of interest and obvious:

Proposition 1: At symmetric Cournot-Nash equilibrium, (R^*/S) (i) falls as h rises, (ii) rises as n rises and (iii) rises as α rises.

The more society rewards rent-seeking (the higher is α), the more resources will be deployed in that sector and the less will be available for value-adding activities (P1.iii). Economic performance is therefore inferior. (P1.ii) says that the larger the societies that have the features of a share society with rent-seeking ($\alpha < 0$) the more prone they are to the rent malaise and the worse is economic performance. Free-riding rises with larger membership and hamstrings performance. This may help explain why the four Asian dragons are relatively small. Both (P1.ii) and (P1.iii) are similar to Farrel and Lander's (op. cit.). Finally, the more productive is the society (h high), the less temptation there is for rent-seeking among its members (less R^*/S) and the larger is the total output (P1.iii). Thus, we have stylized observations well covered. To get at the impact on economic growth, note that this economy grows only if population grows. We have the following:

Proposition 2: Let $h = 1 + e$, $e \geq 0$. Then, there exists an $e^* > 0$ such that for every $e < e^*$, $[F/n]$ falls as n rises.

Proof: From (9), we know that $(S\text{-}R^*)/S=[h+(n\text{-}1)\ (1\text{-}\alpha)]/nh + (n\text{-}1)] = H$. Thus, $n\Gamma^* = nSH$. Differentiating with respect to n gives $[nS(\partial H/\partial n)] + SH$. But $(\partial H/\partial n) = -\alpha\ [h +(n+1)]^2 <$ 0. Thus, we have $\partial(n\Gamma^*)/\partial n$ being

$$\left[\frac{S}{nh+(n\text{-}1)}\right]\left[\frac{-n\alpha h}{[nh+(n\text{-}1)]}+nh+(n\text{-}1)\,(1\text{-}\alpha)\right]=$$

$$\left[\frac{S}{nh+(n\text{-}1)}\right]\left[\left(\frac{\alpha}{nh+(n\text{-}1)}\right)+(n\text{-}1)(1\text{-}\alpha)\right].$$

Since F is homogeneous of degree h, we have at Cournot-Nash equilibrium, $hF = nSHF'$ and $[F/n] = SHF'/h$. ò$[F/n]$òn gives

$$\frac{SF'\left(\frac{\partial H}{\partial n}\right)+SHF''\left(\frac{\partial(nSH)}{\partial n}\right)}{h}$$

But $nHSF'' = (h\text{-}1)F'$ since F' is homogeneous of degree $(h\text{-}1)$. Thus $HSF'' = (h\text{-}1)F'/n$, so

we get

$$(10)\qquad [\cdot]\,F'\left\{-\frac{\alpha}{h+(n\text{-}1)}\left(1+\frac{(h\text{-}1)}{n}\right)+\frac{(h\text{-}1)}{n}h+(n\text{-}1)(1\text{-}\alpha))\right\}$$

where $[\cdot] = [SF/[nh+n\text{-}1]nh] > 0$. Now $h = 1 + e$, $e \geq 0$. For $e = 0$, $\{\cdot\} < 0$ in (10). There is a small enough $e = e^* > 0$ so that $\{\cdot\}$ in (10) remains negative.

P.2 says that where there is rent-seeking ($\alpha > 0$), there are always small enough increasing returns to scale in F so that the average output falls with population growth. Note that this cannot happen with $\alpha = 0$. If $\alpha = 0$, (10) is always nonnegative if $h = 1 + e$, $e > 0$. Thus, average output increases with population without rent-seeking. Increasing returns can be nullified by rent-seeking. The higher α, is the larger the scale economies it nullifies. Negative growth is a possibility. The following gives the limiting values of (R^*/S) and are obvious:

Proposition 3: (i) $(R^*/S) \rightarrow 0$ for $\alpha \rightarrow 0$; (ii) $(R^*/S) \rightarrow (n\text{-}1)/[nh + (n\text{-}1)]$ for $\alpha \rightarrow 1$; (iii) $(R^*/S) \rightarrow \alpha$ as $n \rightarrow \infty$.

If no influence is allowed for redistributive effort ($\alpha \rightarrow 0$), (R^*/S) will be zero. If redistributive effort alone determines allocation ($\alpha \rightarrow 1$), allocation for this activity still falls short of S as long as value-adding investment is productive ($F' > 0$ or $h > 0$). As n rises without limit, redistributional effort will approximate α of total resources.

If $h = 1$, $\alpha \neq 0$ or $h = 1 + e$, $e < e^*$ people become progressively poorer as n rises; if $h < 0$, impoverishment follows even if $\alpha = 0$. Yet the share society is unable to stop the slide. Everyone knows the situation is remarkably silly with everyone scrambling ever harder for a bigger slice of a slow-growing pie. But nobody stops because if one stops, he/she falls behind the others and the added misery is not shared. This is the special feature of Cournot-Nash equilibrium. The downward spiral should settle at a point where n no longer rises because of absolute poverty. The share will stay there and in poverty, indefinitely.

Output Loss

The total product in the share society at symmetric Cournot-Nash equilibrium is $F(nSH)$, $H < 1$. Had α been zero, then the total product $F(nS)$, would be since $\partial(s_i F)/\partial I_i > 0$ where $s_i = (I_i/\Sigma_j I_j)$. Therefore the total output foregone (or the cost of allowing rent-seeking for some reason or other) is

$$(11) \quad \ell^* = F(nS) - F(nSH)$$

The following follows readily from previous discussion.

Proposition 4: ℓ^* (i) rises with a rise in α, (ii) falls with a rise in h and (iii) rises with a rise in n if $h \geq 1$.

As we would expect, the output loss behaves very much like rent intensity itself, i.e., rising rent intensity leads to rising output loss. Output loss and rent intensity are two sides of the same coin which recommends rent intensity over the dissipation rate for this type of model.

Affluence and Performance: A Parable

Let there be two societies sharing the same technology (same h) and exactly the same number of members n. Let the initial individual endowment in society *1*, S_1, be larger than that of society 2, S_2, $S_2 = \lambda S_1$ $0<\lambda<1$. Let α_1 be the rent-seeking conduciveness of society 1. Total output in society 1 at symmetric Cournot-Nash equilibrium is $F(nSH)$. Society 2 has a choice of α. What should α_2 be for society 2 to outperform society 1? Total value-adding investment in 2 should equal or exceed that in 1, i.e.,

$$\frac{n\lambda S_1(h + (n-1)(1-\alpha_2))}{[h + (n-1)]} \geq \frac{nS_1(h + (n-1)(1-\alpha_1))}{[h + (n-1)]}$$

which collapses into

$$\alpha_1 - \lambda\alpha_2 \geq (1-\lambda)\left[\frac{h + n-1}{n-1}\right]$$

Thus we have:

Proposition 5: With identical technology and population size, initially poorer S_2 outperforms S_1 if and only if

$$\alpha_2 \leq \frac{\alpha_1}{\lambda} - \frac{(1-\lambda)}{\lambda}\left(\frac{h + n-1}{n-1}\right) \tag{12}$$

(12) gives the range of α_2 for 2's output to equal or exceed S_1's. If simple equality obtains, α_2 rises with λ, increases with h, and falls with n. More productive deployment of smaller resources allows the initially poorer society to match or outperform the initially affluent one.

The share society is extreme in its assumption of there no possibility of isolating individual output and thus avoiding shirking via adverse selection (in the case of complete observability). The other extreme is the atomistic society where individual output is perfectly observable. Then rent is financed through an imposition on individual value-adding income which the state enforces as a tax. No adverse selection or moral hazard is possible.

Conclusion

In this paper, we have attempted to provide a microfoundation for many aggregate observations in the growth-rent seeking nexus. The same model allows for negative per capita growth, a phenomenon hardly explained even in the astronomically expanding endogenous growth literature. In the global setting, the idea of endogenous rent comes naturally and makes the Tullock dissipation rate unworkable. We, therefore, introduce and use the idea of "rent-intensity" for our analysis. "Rent intensity" is the ratio of rent spending to initial resources. At the symmetric Cournot-Nash equilibrium of the share society (used here as a metaphor), rent intensity rises with rent reward, falls with productive sector's efficiency and rises with population (P_1). More importantly, output per person falls with population growth if increasing returns are small or absent. Falling output per head does not occur under these circumstances without rent-seeking.

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