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How unpleasant a result? A comment on Amegashie

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Conventional wisdom in the rent-seeking literature says that total rent-seeking expenditures increase in the number of participants. In a recent paper in this journal, Amegashie (1999) uncovers a result which stands in stark contrast to this. In a version of the Tullock rent-seeking contest, it is shown that total rent-seeking can actually be reduced by adding extra participants. My critique of the model used is twofold. First, I question the amount of rent-seeking which actually takes place in the Amegashie model, and how this varies with the number of participants. Second, I believe that there are grounds to suspect that the prize in the rent-seeking contest is based upon an incredible promise by the rent-setter.

In the Tullock model, each participant, $i = 1, \ldots, n$ seeks to maximize:

$$\pi_i = K_i R/(K_i + \Sigma_{j \neq i} K_j) - K_i$$

by choice of his own rent-seeking expenditure K_i, and taking those of all other players as given. The rent R is usually assumed to be a constant, but in Amegashie's model it is given by $R = V_{min} + bK_i$ where V_{min} is a fixed rent and bK_i is a "refund" granted to the winning competitor. In the symmetric Nash equilibrium, each contestant has an expenditure of

$$K^* = (n-1)V_{min}/[n^2 + (1-2n)b]$$

given that $1 \geq b \geq 0$. Total *gross* rent-seeking is thus given by $T^* = nK^*$. One can then calculate that $T^*(n+1) - T^*(n) < 0$ if $b > (n+1)/2n \equiv b_{min}$.[1] This is Amegashie's unpleasant result.

In the model, however, rent-seeking expenditures can be costlessly transferred between rent-seeker and rent-setter. In other words, there may be grounds to question how much rent-seeking has actually taken place, given that the winning contestant instantly recoups at least part of his expenditure. No deadweight loss occurs in the payment of this refund, so that the total *net* amount of rent-seeking is actually

$$NRS = T^* - bK^* = V_{min}(n-b)(n-1)/[n^2 + (1-2n)b].$$

When $1 > b \geq 0$, it can easily be verified that the net amount of rent-seeking is increasing in n, in line with the bulk of the rent-seeking literature. As n becomes very large, the net amount of expenditure approaches V_{min}.

The expression NRS is also the net income of the rent-setter in this model. A rational rent-setter will set the size of the refund parameter b in order to maximize his income; for $n \geq 2$, his income is strictly increasing in b so that it is rational to set $b = 1$. One can then easily verify that with $b = 1$ the net amount of rent-seeking is V_{min}, independent of the number of participants. Hence, Amegashie's refund system gives the rent-setter the possibility of capturing the whole rent even with a low number of participants!

There appears to be a problem with practicality of the reward structure, however. One should remember that, by its very nature, the rent-seeking contest deals with covert activity. For example, a politician cannot be seen to be selling favours, but lobbyists may attempt different forms of (covert) persuasion. Another possibility is that contest expenditure occurs in the form of a direct bribe to the contest administrator. In the simple Tullock-contest, the administrator holds a rent which is of no value to him, but that can be used to induce expenditure by others. Linking the reward in the contest to an individual's expenditure would not seem to be a credible commitment by a contest administrator. The best strategy for a truly rational contest administrator would be to set $b = 1$ and promise to refund all of the winner's expenditure, but then to renege on the deal *ex post*, after expenditures have been made.[2] This could potentially achieve a net contest income of $V_{min} + K^*$.[3] The winning contestant could of course attempt to enforce his right to a refund through the legal system, but the original payment may well be difficult to verify since it was – by definition – made covertly.

Of course, rational rent-seekers would be aware of the incentives of the contest administrator, and would realize that any promise of a refund is incredible (at least in this static setting). Hence they act as if $b = 0$ which brings us back to the original Tullock game (in which total rent-seeking is increasing in the number of participants).

Notes

1. My expression for b_{min} differs from that obtained by Amegashie since I have treated the number of players as a discrete variable. My argument does not rely on this, however.
2. This holds whether the administrator maximizes net ($T^* - bK^*$) or gross rent-seeking (T^*) since both are maximized when $b = 1$.

3. This of course assumes that rent-seekers do not see through the administrator's plan (see the discussion of this point later in the text).

References

Amegashie, J.A. (1999). The number of rent-seekers and aggregate rent-seeking expenditures: An unpleasant result. *Public Choice* 99(1–2): 57–62.