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A Constrained Choice: Productivity and Political Activity

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Abstract- Collective choice has been a topic of research for many years. Recent research has focused on individual's trust in government and how a lack of trust can actually lead to an increase in the size of government; and, as the size of government increases, we may again see a further increase in the lack of trust in government. (Garen & Clark, 2011). As I thought about this interesting result I concluded it would be worthwhile to step back and look at this issue through the lens of a constrained optimization problem. In this paper, I solve for an individual making a constrained choice between work and political activity to identify some baseline stylistic characteristics of what may or may not cause increased political activity among individuals.

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A Constrained Choice: Productivity and Political Activity

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Abstract- Collective choice has been a topic of research for many years. Recent research has focused on individual's trust in government and how a lack of trust can actually lead to an increase in the size of government; and, as the size of government increases, we may again see a further increase in the lack of trust in government. (Garen & Clark, 2011). As I thought about this interesting result I concluded it would be worthwhile to step back and look at this issue through the lens of a constrained optimization problem. In this paper, I solve for an individual making a constrained choice between work and political activity to identify some baseline stylistic characteristics of what may or may not cause increased political activity among individuals.

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I. INTRODUCTION

There have been many papers that have focused on various public choice issues. For a small admeasurement we could look at the following: Trust in government (Clark & Lee, 2001), (Garen & Clark, 2011); optimal tax rates and taxation (Mirrlees, 1971), (Abel, 2005); redistribution (Beasley & Coate, 1991); voting issues such as apathy and rational ignorance (Clark & Lee, 2005), (Mcloskey, 2002); thrown away votes (Meehl, 1977); socio-tropic voting (Kinder & Kiewiet, 1979); what goods and levels of provision should be provided by either the government or private markets (Epple & Romano, 1996); or what the state ought to be (Buchanan & Tullock, 1962). Also, there have been many studies such as the effects of political activism and citizen participation (Paloheimo, 2004), (Brady, Verba & Schlozman, 1995), and (Rigolini, 2003). There has also been a measured negative correlation between regulation and trust in government (Aghion et. Al, 2010). In this paper I will not focus on any of these issues per se, although, the resulting model may help to explain further the observed behavior of individuals. Instead, I wish only to focus on determining a set of stylized facts that may help provide insight into individual behavior in response to constrained choices of hours of time spent in political activity, which will almost evidently affect voting behavior, trust and size issues in government, as well as individual's incentives between political activity and work.

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II. MODEL

The model is an expansion similar to Garen & Clark, 2011. Here each individual maximizes the following utility function:

$$MaxU = (1-t)wh + rs - (h^2 + hs + s^2)$$

Subject to

$$twh = Y + rs$$

With the variables being the following:

t = tax rate

w = wage rate

r = return political activity

h = hours of productive activity

s = hours of political support activity

Y = per capita amount of public good

In this case, the agent gets positive utility from productive work or from political support activity and has an opportunity cost to participate that is quadratic in nature. This allows appropriate trade-offs between the two activities that we would expect; that is to say that there is increasing marginal cost to each type of effort which is separate from the agent's budget constraint. In this model I am assuming a hypothetical situation where the agent is constrained to the provision of both a "true" public good as well as political returns due to the amount in which they contribute. Similar to previous research, I am using the term "true" public good to reflect a public good that is the textbook definition of the term, not the public provision of a private good. That is to say, the "true" public good is truly a public good and actually enhances productivity while being both non-rival and non-excludable. This paper will not deal with the metaphysical debate (Dahlman, 1979) upon the terminology of what makes a public good a public good with externalities and the like. This model allows us to see the choice of an agent when faced with the direct trade-off between the two choices of productive work and political support activity (rent seeking). Solving the model, in the standard utility maximizing fashion, yields the following optimality conditions. As a side note, I did not add a second constraint for the number of hours available to individuals per day/week/month etc. to avoid unnecessary complexity in the model. The behavior will be the same. We just may not reach the global maximums inherent in the functions below.

$$s^* = \frac{(2r + tw)Y - trw^2}{-(2r^2 + 2twr + 2t^2w^2)}$$

$$h^* = \frac{rw}{2r + tw} - s^* \frac{r + 2tw}{2r + tw}$$

From these equations, we can see that the addition to an individual's optimal choice of work also depends on the optimal level of political support activity aside from what we might consider typical such as wages and tax rates. Before we look at some phase diagrams of how the independent variables in the system cause the optimal amounts of productive labor and political activity to change, let us first look at the comparative statics in the system.

$$\frac{\partial s^*}{\partial w} = \frac{(t^3w^2 + 4rt^2w + r^2t)Y + r^2t^2w^2 + 2r^3tw}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (+)$$

$$\frac{\partial h^*}{\partial w} = -\frac{(2t^3w^2 + 2rt^2w - r^2t)Y + r^2t^2w^2 - r^4}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (\pm)$$

$$\frac{\partial s^*}{\partial r} = -\frac{(t^2w^2 - 2rtw - 2r^2)Y - t^3w^4 + r^2tw^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (\pm)$$

$$\frac{\partial h^*}{\partial r} = -\frac{(t^2w^2 - 4rtw + r^2)Y - 2rt^2w^3 - r^2tw^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (+)$$

$$\frac{\partial s^*}{\partial t} = \frac{(t^2w^3 + 4rtw^2 + r^2w)Y - rt^2w^4 + r^3w^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (\pm)$$

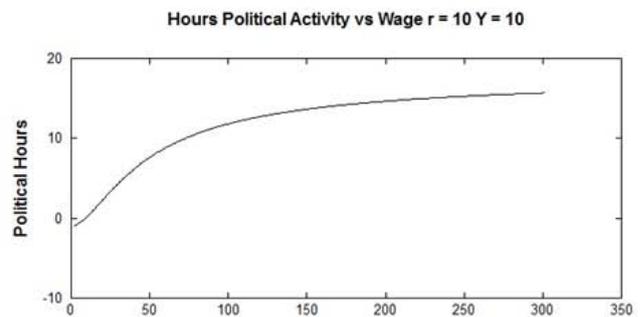
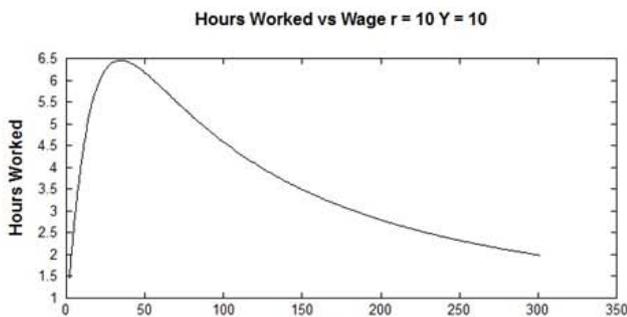
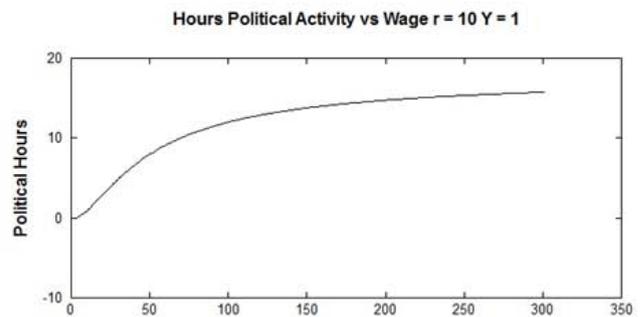
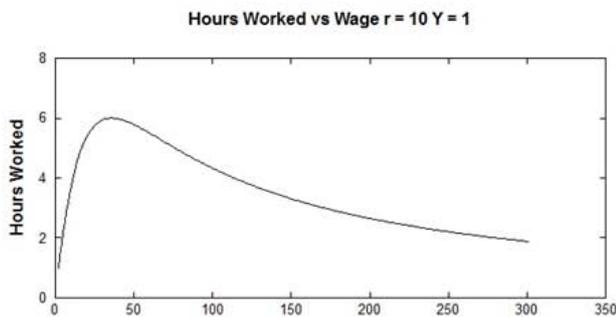
$$\frac{\partial h^*}{\partial t} = -\frac{(2t^2w^3 + 2rtw^2 - r^2w)Y + 2r^2tw^3 + r^3w^2}{2t^4w^4 + 4rt^3w^3 + 6r^2t^2w^2 + 4r^3tw + 2r^4} \quad (-)$$

$$\frac{\partial s^*}{\partial Y} = -\frac{tw + 2r}{2t^2w^2 + 2rtw + 2r^2} \quad (-)$$

$$\frac{\partial h^*}{\partial Y} = \frac{2tw + r}{2t^2w^2 + 2rtw + 2r^2} \quad (+)$$

What we see is that there are differing results depending on the type of change. It is notable to see, that while it is possible not to engage in political support activity until a certain wage. Increasing wages lead to increasing political support activity. Often we might conclude the opposite to be true by assuming that agents who earn a lower wage have a lower opportunity cost and are more readily willing to substitute work for political activity. That being said, as we would expect, the hours one works will increase as wages increase over a certain wage range, and then decrease once the wage is much higher. The return to political support activity is ambiguous as we will see. The return to political activity will increase political activity for a while, but will quickly cause a reduction in political activity if the return gets "too" high. It also makes some intuitive sense that as taxes increase, so does political support activity and as taxes rise, hours of work will fall. What is perhaps the most interesting is that, as the public good per capita increases, the hours of political support falls and the hours of productive work rises. Perhaps, this is why we see the proliferation of the public provision of private goods and not as much of "true" public goods as there is no rent seeking behavior for public goods.

In general the shapes of the phase diagrams do not change much based on a time constraint, although they do change in regards to the magnitudes of the numbers.



Hours Worked vs Wage r = 10 Y = 100

Hours Political Activity vs Wage r = 10 Y = 100

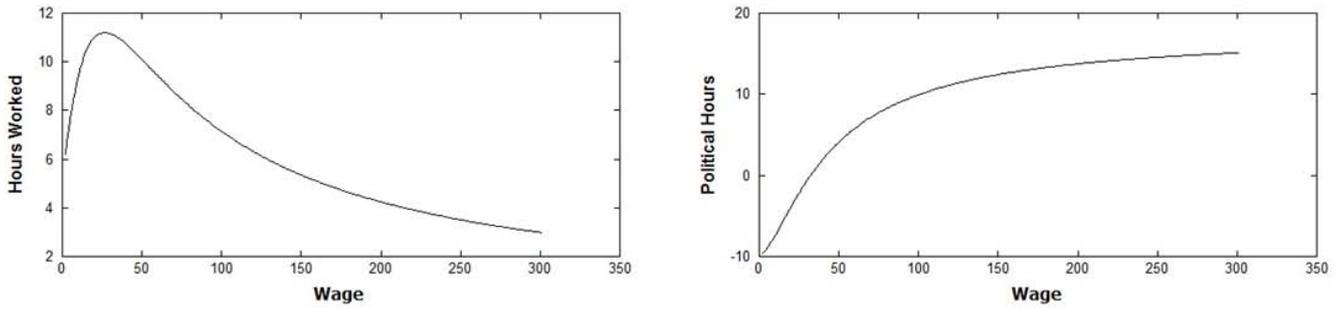


Figure 1 : Phase Diagrams of Varying Wages

Some basic stylistic facts of the model suggest that hours worked will fall as the wage gets high enough, and that political support activity is constantly increasing, but at a decreasing rate. Since Y affects productivity, it does indeed cause a change in the number of productive hours spent working. However, it does not affect the number of political hours as much. The exception being that, as the per capita amount of good public goods increases we see a faster increase in political support activity.

Let us now turn our attention to how the change in tax rates could affect work and political support. As we would expect, an increase in tax rates lowers the amount of productive work. On the contrary, an increase in the tax rate initially increases the amount of political support activity before it falls. Note that, unlike productive work, political support will never go to zero even at a tax rate of 100 percent. This certainly may lend credence to why we see persistence of political support.

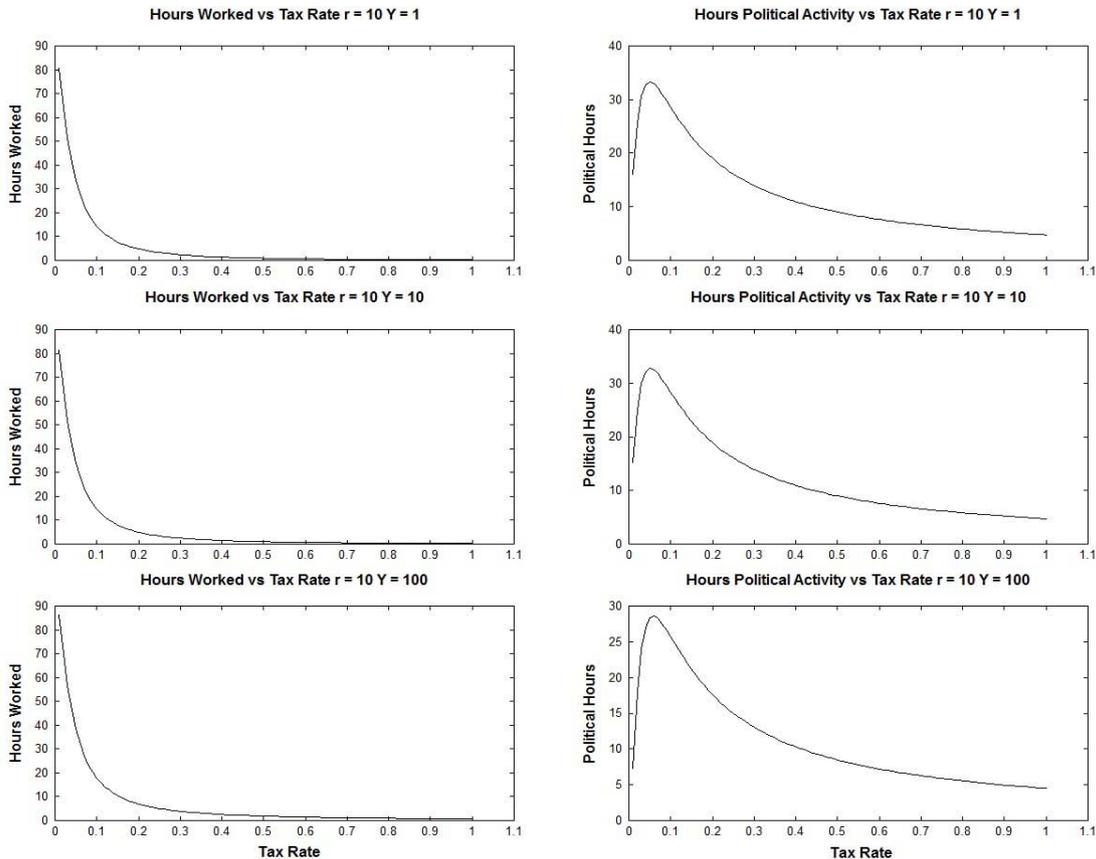


Figure 2 : Phase Diagrams of Varying Tax Rates.

Finally, we will turn our attention to how the political return affects the hours spent on either activity. I have fixed the tax rate at 28 percent and the wage at \$50 for this scenario. This leads us to a surprising result. As the political return increases we find that hours of

productive work increases. On the other hand, we find that as the return to political activity increases, we see that the hours spent on political activity will fall. Again, one might ask the question “Is there an incentive, for the return to political activity, not to get “too” great?”

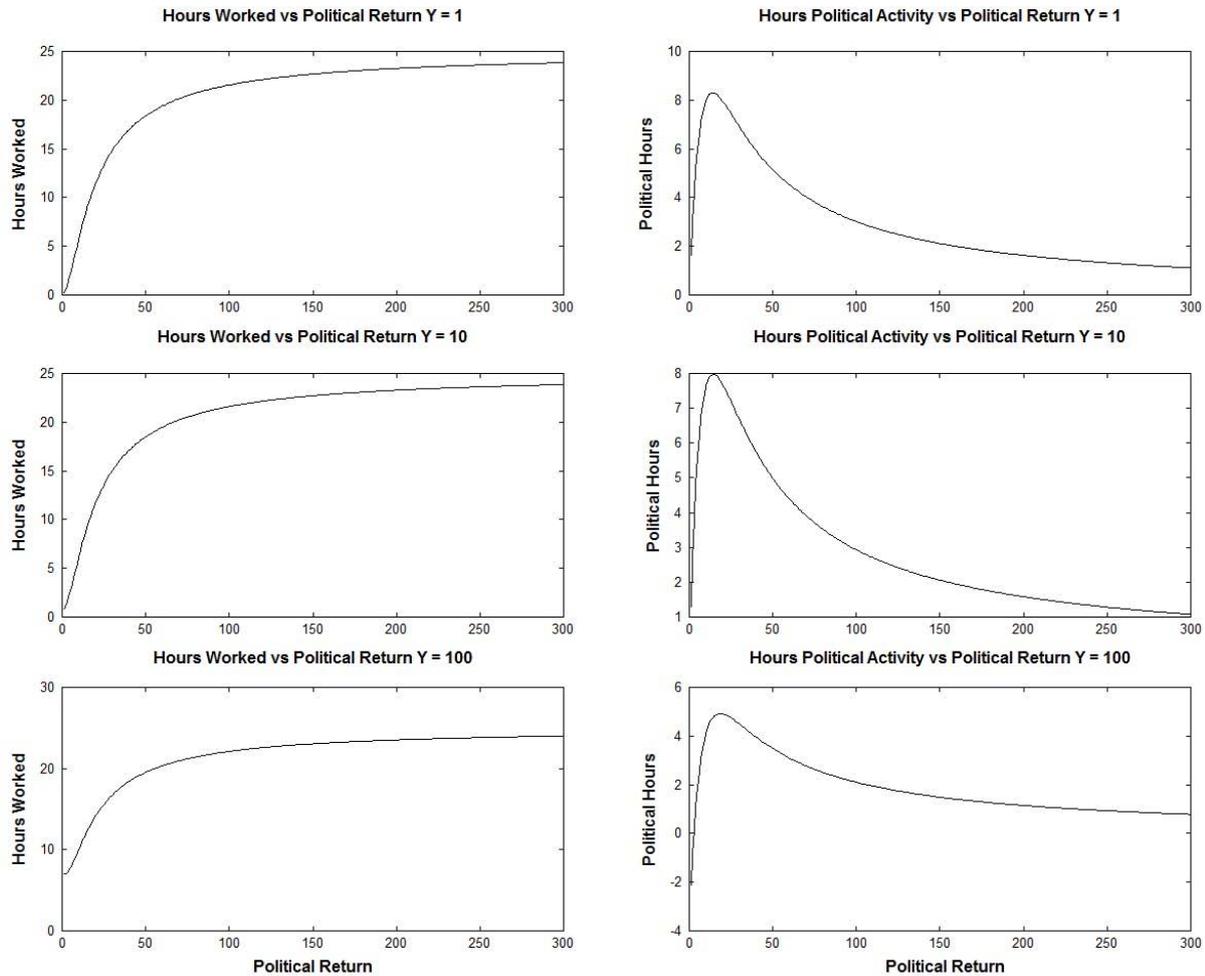


Figure 3: Phase Diagrams of Varying Political Return

III. CONCLUSION

Looking at political choice through the lens of utility and constrained choice may give us a valuable insight to how individuals choose between productive work and political activity. The model suggests that contrary to what may be popular opinion, increases in the wage rate can lead to more political activity. Also, what seems evident is, that as the return to political activity increases we will see fewer hours devoted to political activity. Also, “true” public goods reduce rent seeking so we may not see political support activity for public goods. Does this incentivize a political structure of promising much and offering little? There may be a theoretical case that it does.

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