E C O N O M I C S B U L L E T I N

Preferences for Government Size and their Effect on Labor−Leisure Decisions

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Abstract

While many economists have theorized and/or empirically demonstrated that labor−leisure decisions are influenced by the rate of taxation, this note introduces a new mechanism in which the collecting of taxes on income may affect such decisions. Although standard models assume that agents have no preference for the size and scope of government activity, recent and past political rhetoric suggests that preferences do exist. We examine how labor−leisure decisions can be affected when taxes are derived from income and agents' utility functions include a preference for government size.

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1. Introduction

In his 1996 State of the Union Address, United States President William J. Clinton proudly proclaimed, "the era of big government is over." This statement, followed by Clinton's reelection later that year, stands as one of the most memorable and defining moments of his presidency. Clinton would surely not have made such a declaration had he felt that his constituents were indifferent to the size and scope of government.

Of course, Clinton's rhetoric was simply following a longstanding tradition of political statesmen to play on a perceived distaste of "big government." At his farewell address, George Washington stated that "Occupants of public offices love power and are prone to abuse it." Washington's contemporary, Patrick Henry, called the U.S. Constitution "an instrument for the people to restrain the government—lest it come to dominate our lives and interests." In "Civil Disobedience," Henry David Thoreau famously noted, "That government is best which governs least."[1] Eighteenth century French philosopher Voltaire said, "A great many laws in a country, like many physicians, is a sign of malady." More recently, at his first inaugural address Ronald Reagan noted that "Government is not the solution to our problems, government is the problem."

While many economists, most recently Prescott (2004) and Gentry and Hubbard (2004), have theorized or empirically demonstrated that labor supply decisions can be influenced by the rate of taxation, this note introduces a new mechanism in which taxation may affect labor supply decisions.[2] Though standard labor supply models assume that agents are indifferent to the overall size and scope of government activity, the aforementioned political rhetoric strongly suggests that the abstract notion of "government size and scope" enters, to some degree, into the utility of its citizens. This note develops a model that incorporates preferences for government size and scope into agents' utility functions—where this variable is independent of the taxes the government takes or the public goods or services it provides—and shows the role that such preferences could play in the labor-leisure decisions of economic agents when taxes are derived from income.

2. Government "Size" and the Labor-Leisure Decision

Could a preference for the size and scope of government enter into an agent's labor-leisure decision? Of course to the extent that "bigger" governments generally require additional funding, standard labor supply models already incorporate the notion that higher taxes on labor, ceteris paribus, reduce utility and hence can influence an agent to choose more leisure. On the other side of the coin, the tax dollars that flow from additional labor can yield enhancements to beneficial government institutions and more production of public goods, which, ceteris paribus, increase utility. Where the model developed in this note diverges from past work, however, is that agents have a preference for the size and scope of government that *goes beyond* both the utility that may be gained from government goods and services and the potential consumption utility lost from the collection of income taxes.

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[1] This quote has also been attributed earlier to Thomas Jefferson.

[2] See also, for example, Fullerton (1982), Gwartney and Stroup (1983), Haverman (1984), Betson and Greenberg (1986), Bosworth and Burtless (1992), and Eissa (1996).

It seems clear in the quotes above that Washington, Voltaire, et. al., were expressing concerns about large government which were less tangible than simply lost consumption from high taxes. Rather, these statesmen imply that agents have a preference for government size and scope for intangible or abstract reasons such as fear of lost economic freedoms or simply a dislike of contributing further to the welfare of those whom they may view as corrupt, self-interested bureaucrats. What we will call "government-loathing" agents—those who think current government size and scope is too big—will lose utility from paying taxes levied on labor effort *in addition* to that utility lost simply from forgone consumption of lost income.

At the same time, what we will call "government-loving" agents—those who think government size and scope should be larger—will gain utility which helps offset some of the utility lost from forgone consumption. This effect may be caused by an agent's feeling that his contribution to the tax revenue is going toward an under-funded worthy cause. The agent, for example, may feel that further contributions such as his support the government's ability to provide valuable institutions and public goods and perhaps can even help ensure that intangible and subjective notions such as fairness will be better attained.

Perhaps the best way to express this intangible effect on utility is through an analogy to charitable giving. When agents voluntarily give monies to charity, they clearly receive disutility from forgone consumption; however, they also receive positive utility—albeit for less tangible reasons—from contributing to a cause in which they believe. In the case of voluntary contributions, this intangible effect is so strong, in fact, that it apparently overwhelms the disutility from forgone consumption. The more the agent approves of the mission of the charity, the more "extra utility" he receives. In the case of non-voluntary government contributions through taxes on income, again, it is easy to imagine that there is an "extra" utility effect in contributing based on how the agent feels about the size and scope of government. This effect would be positive if the agent is government-loving, pushing him, at the margin to work *more* so as to contribute more to government funding. Or the effect could be negative if the agent is government-loathing, pushing him, at the margin to work *less* because of his dislike of paying taxes that contribute to a government that he feels is beyond its optimal size and scope.

One important source of utility from charitable giving is the "warm glow" of giving as invoked by Andreoni (1990). Such utility arises from the act of giving and *not from its impact* so it is considered egoistic and not altruistic. Essentially, in the model developed in next section, we incorporate the idea behind this "warm glow" utility of giving and its opposite, the "cold aversion" disutility of being forced to pay taxes levied on income—both of which are separate from the impact giving has on forgone consumption of the agent and on any additional public goods the government may provide from the extra revenue. We will focus primarily on the case of "government loathing" agents, who face the "cold aversion" of contributing to the government. Future expansions of this research will include more thorough examinations of all cases as well as further extensions of the basic model presented here.

3. A Labor Supply Model with a Government Size Preference

We begin by assuming that agents have a utility or disutility of supporting the government via their "contributions" or taxes, c, and that this effect is independent of the associated loss of income or gain from government goods. An agent's utility is given by

$$U = U[y(h), l(h), c(h); g^* - g_a].$$

The agent chooses h, hours worked, to maximize utility. The independent variables are as follows:

Income, $y = w \cdot (1 - t) \cdot h$;

Leisure, $l = K - h$;

and "contributions" to the government, $c = t \cdot w \cdot h$,

where, w = wages, t = constant tax rate on income, and K = constant.[3]

The parameters in the utility function are g^* for the agent's ideal government "size" and g_a for the actual government "size." Agents can have differing preferences regarding g*. Again, what we refer to as "size" of government can be interpreted by agents as the magnitude of the government's budget or the scope of power the government has over the economy and society. Naturally, a government of greater proportionate budget size generally has greater regulatory scope as well.

For simplicity, we assume that the taxes an agent pays have no impact on government size, g_a, or on the amount of public goods provided, as such an effect will be infinitesimally small in societies with large populations.[4] In section four we present a case with two real world examples where this assumption is not appropriate and extend the model to accommodate such a case.

When actual government size, g_a, is *below* an agent's preferred g^* size, let his marginal utility of contributing to the government be positive and increasing at a decreasing rate. That is, when $g_a < g^*$, agents have $\partial U/\partial c > 0$ and $\partial^2 U/\partial c^2 < 0$. In this range agents are "government-loving." They prefer a government of larger scope and power and hence, at the margin, like contributing to the government, independent of other effects. Naturally, the further g_a is below g^*, the more positive this "warm glow" or "government-loving" effect.

When actual government size, g_a, is *above* an agent's preferred g^* size, let his marginal utility of contributing to the government be negative and decreasing at an

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[3] We could include a constant for government produced goods in the utility function, but as it will have no bearing on the results, we keep the model parsimonious.

[4] This also allows the rationale for a fixed preferred government size. An agent in this model cannot influence government size or the amount of public goods so as to increase his utility. Therefore, because those values are given, the agent has a single optimal government size, g*.

increasing rate. That is, when $g_a > g^*$, agents have $\partial U/\partial c < 0$ and $\partial^2 U/\partial c^2 < 0$. In this range agents are "government-loathing." They prefer a government of smaller scope and power and hence, at the margin, dislike contributing to the government, independent of other effects. The further g_a is above g^*, the more negative this "cold aversion" or "government-loathing" effect. We will show that this case can, in fact, lead to a backward bending labor supply curve independent of the usual income effects required for such a phenomenon.

Because the second partial derivative is negative regardless of whether g_a is above or below a specific agent's g^*, we can state that *for any given stock of agents' preferences*, as g_a rises, $\partial U/\partial c$ falls (becomes less positive in the government-loving case or more negative in the government-loathing case), ceteris paribus. Therefore, independent of all other factors, government size preferences will cause a government of larger size and scope to be associated with a more negative (or less positive) aggregate effect from such preferences on labor supply.

To solve the model, assume an interior solution, and assume the second order condition holds. Equation 1 is the first order condition of the utility maximization problem.

$$\frac{\partial U}{\partial h} = \frac{\partial U}{\partial y}\frac{\partial y}{\partial h} + \frac{\partial U}{\partial l}\frac{\partial l}{\partial h} + \frac{\partial U}{\partial c}\frac{\partial c}{\partial h} = 0 \tag{1}$$

Substituting $\partial y/\partial h = w\cdot(1-t)$, $\partial l/\partial h = -1$, and $\partial c/\partial h = w\cdot t$, the result is equation 2.

$$\frac{\partial U}{\partial h} = \frac{\partial U}{\partial y}\cdot w\cdot(1-t) - \frac{\partial U}{\partial l} + \frac{\partial U}{\partial c}\cdot w\cdot t \tag{2}$$

Totally differentiating the equation $\partial U/\partial h = 0$ and setting the differentials except dh and dw to zero results in the following.

$$\frac{\partial^2 U}{\partial h^2}dh + \frac{\partial^2 U}{\partial h \partial w}dw = 0 \tag{3}$$

This yields equation 4, the static labor supply curve.

$$\frac{dh}{dw} = -\frac{\partial^2 U/\partial h \partial w}{\partial^2 U/\partial h^2} \tag{4}$$

The second order condition for a utility maximum is that $\partial^2 U/\partial h^2 < 0$. Therefore, to determine the sign of dh/dw, we must determine the sign of $\partial^2 U/\partial h \partial w$. To do this, differentiate equation 2 with respect to w, which gives the following.

$$\frac{\partial^2 U}{\partial h \partial w} = \frac{\partial U}{\partial y} \cdot (1-t) + w \cdot (1-t)\left(\frac{\partial^2 U}{\partial y^2} \cdot \frac{\partial y}{\partial w} + \frac{\partial^2 U}{\partial y \partial c} \frac{\partial c}{\partial w} \right) - \left(\frac{\partial^2 U}{\partial l \partial y} \cdot \frac{\partial y}{\partial w} + \frac{\partial^2 U}{\partial l \partial c} \frac{\partial c}{\partial w} \right) + \frac{\partial U}{\partial c} \cdot t + w \cdot t \cdot \left(\frac{\partial^2 U}{\partial c \partial y} \cdot \frac{\partial y}{\partial w} + \frac{\partial^2 U}{\partial c^2} \frac{\partial c}{\partial w} \right) \quad (5)$$

Here, $\partial y/\partial w = (1 - t) \cdot h$ and $\partial c/\partial w = h \cdot t$. Let $\partial^2 U/\partial c \partial y = \partial^2 U/\partial l \partial c = 0$ for simplicity.

$$\frac{\partial^2 U}{\partial h \partial w} = \frac{\partial U}{\partial y} \cdot (1-t) + \frac{\partial^2 U}{\partial y^2} \cdot w \cdot (1-t)^2 \cdot h - \frac{\partial^2 U}{\partial l \partial y} \cdot (1-t) \cdot h + \frac{\partial U}{\partial c} \cdot t + \frac{\partial^2 U}{\partial c^2} \cdot w \cdot t^2 \cdot h \quad (6)$$

If we divide equation 6 by $-\partial^2 U/\partial h^2$, the first three terms on the right hand side of this equation represent the traditional labor supply curve. Because $\partial^2 U/\partial y^2$ is always negative while $\partial^2 U/\partial l \partial y$ can be positive or negative, $\partial^2 U/\partial h \partial w$ can be negative if $\partial U/\partial y$ is small enough. Therefore, dh/dw can be negative, yielding the well established income-effects driven backward bending labor supply curve.

However, our model with preferences for government size includes two additional terms, $(\partial U/\partial c) \cdot t$ and $(\partial^2 U/\partial c^2) \cdot w \cdot t^2 \cdot h$. For a utility maximum, the latter term must be negative, while the marginal utility of supporting the government, $\partial U/\partial c$, can be either positive or negative as discussed above. Agents whose ideal government size is smaller than the actual government size have $\partial U/\partial c < 0$. Therefore, for these government-loathing agents, the last two terms in equation 6 must be negative. Thus, independent of other effects, preferences over the size and scope of government can make a labor supply curve bend backwards. Of course, our intention here is not necessarily to highlight the idea of a government size preference driven backward bending labor supply curve, but rather, to provide a simple model of the effect that agent's preferences for government size may have on labor-leisure decisions.

4. An Extension of the Model

While the model above makes an explicit assumption that an individual agent's tax dollars cannot influence the "size" of government—since at the margin any one agent's changed tax bill from a change in his labor-leisure decision would only infinitesimally add to or subtract from the overall size of government—this assumption may not be appropriate in all cases. We can allow agents to influence the size of the "government" though their labor-leisure decision since the more they work, the more tax dollars the government receives. Rather than simply receiving utility or disutility from his contributions to the government, an agent can affect his utility by changing the size of government. Formally, we can let $U = U[y(h), l(h), g^* - g_a(h)]$. The actual government size becomes $g_a = g_0 + T$, where g_0 is the absolute government budget size absent the given agent's taxes, T, which are $t \cdot w \cdot h$.[5]

[5] Note that while we allow the size of government to rise, we do not allow the quantity of government produced public goods to which the agent has access to vary. This assumption seems in line with the two examples we cite at the end of this section. Again, because the amount of public goods does not vary, an agent faces no tradeoff between

We again assume that agents have an unambiguously diminishing marginal utility of contributing to a "bigger" government, which implies $\partial^2 U/\partial(g^* - g_a)^2 < 0$. We also assume for the case of $g_a > g^*$, whereby agents prefer a smaller government, that $\partial U/\partial(g^* - g_a) > 0$, so that as $g^* - g_a$ decreases (or g_a increases), utility decreases. In a given agent's utility function, g^* and g_0 are constants; therefore, we can dispense with them, and let $U = U[y(h),l(h),-T(h)]$. Of course, T is simply analogous to c from the main model. Comparing the labor supply results of this utility function to its analog of equation 6, we have the following for the case of $g_a > g^*$. The term $\partial U/\partial c < 0$ above is replaced by $-\partial U/\partial T = -\partial U/\partial(g^* - g_a) < 0$; if the agent works less and pays fewer taxes, the government grows smaller, which adds to the agent's utility. Additionally, $\partial^2 U/\partial c^2 < 0$ above is replaced by $\partial^2 U/\partial(g^* - g_a)^2 < 0$. Essentially, the mathematical results of the new utility function replicate the results of the main model and, again, if agents can influence the size of the government, preferences for "government size" can make their labor supply curves bend backwards independent of other effects.

Where could such a case with individual agents influencing government size be relevant? Consider a society where the formal government has been largely replaced by small-scale private protection rackets. For example, accounts from Russia circa the year 2000 suggested that around three-quarters of businesses were "taxed" at rates sometimes exceeding half of profits by the Russian mafia in exchange for "protection"—not setting fire to the business owner's property or causing physical harm to the owner or the owner's family.[6] In such a case it is easy to envision individuals and business owners encountering clear disincentives to supply labor which go beyond traditional labor supply models. This ability to influence "government size" only strengthens the government size preference effect modeled in section three.

Likewise, dynamics similar to those incorporated in our model may have played a role in the labor supply decisions of sharecroppers. Since the sharecropping farmer had to turn over a "taxed" portion of his crop—generally around 50 percent—to the landowner, his personal views of the owner certainly played some role in the sharecropper's labor-leisure decisions. More generally, for any situation in which pay is tied to quantity of work, but a portion of that pay goes to a third party, the agent's views of that third party, positive or negative, could enter into the labor supply decision of the agent.

5. Conclusions

The purpose of this note is to provide an initial step for economists to model that which seems clear in an increasingly politicized society—people have fundamental preferences for the size and scope of government. These preferences could either exacerbate or help offset the disutility they receive from paying taxes and hence can play

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utility from government size and utility from public goods, so we can assert that a fixed preferred government size exists.

[6] See for example, the testimony of Fritz W. Ermarth, former CIA chief and Russian analyst on the National Security Council to the United States House Committee on Banking and Finance, September 21, 1999.

a role in labor-leisure decisions. The more an agent dislikes the government, the more disutility he gets from having to contribute to it, ceteris paribus.

To model this effect, we have borrowed from economic models of charitable giving such as Andreoni (1990). Just as contributors to charity receive "extra" utility or a "warm glow" from giving that helps offset the forgone loss of income—an effect that clearly rises the more the agent approves of the mission of the charity—contributors to government will feel a similar effect—either a positive "warm glow" or a negative "cold aversion"—on their utility. Assuming contributions to the government are tied to labor supply, this government size preference effect will influence labor-leisure decisions.

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