

Neo-Hobbesian Public Finance^α

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Abstract

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1. The Invisible Hand in Political Economy

In a recent article in this Journal, McGuire and Olson (1996) develop a model of a Leviathan-like government designed to partial "fill what they see as a "great gap in the economics literature".¹ They write:

Yet economists have not asked if those who have coercive power, whether through control of government or by other means, have an incentive to exercise this power in ways partly or wholly consistent with the interests of society and of those subject to this power. Here we shall demonstrate that they do { that whenever a rational self-interested actor with unquestioned coercive power has an encompassing and stable interest in the domain over which he power is exercised, that actor is lead to act in ways that are, to a surprising degree, consistent with the interests of society and those subject to that power. It is as if the ruling power were guided by a hidden hand no less paradoxical for us than the invisible hand in the market was for people in Adam Smith's time. In fact, when an optimizing entity with coercive power has a sufficiently encompassing interest ... the invisible hand will lead it, remarkably, to treat those subject to its power as well as it treats itself. (p73)

McGuire and Olson are too circumspect to suggest that the self interest that guides the invisible hand in political economy is as important as it is in the market economy. However, their work clearly makes the case that understanding why autocrats and majorities are often nurturing and benign is an issue of "first order for social science.

McGuire and Olson's conduct their inquiry in the spirit of the traditional public finance, with one major difference. Government sets the tax rate, provision of the public good and

¹"...elemental incentives facing autocrats and majorities have not been addressed seriously { and certainly not analyzed formally { in the economics literature. This literature has not explained how the incentives facing dictatorial and democratic governments differ, nor how the form of government affects tax rates, income distribution, and the provision of the public goods. There is, in other words, a great gap in the economics literature." (p73)

transfers solely in the interest of a subset of the citizenry which I will term rulers. The rulers are only constrained by a limited tax base. They write: "... the challenge for our analysis is to take account of the deadweight losses from taxation and the productivity of the public goods at the same time" (p75). They show that the rulers have an incentive to provide the public good when it increases productivity. Ruler limit the tax income rate so as not to be on the revenue decreasing side of the Laffer curve. Rulers have a further incentive to lower tax rates if they also are taxed at the same rate as subjects. Indeed, if there are enough taxed rulers, the deadweight losses from self taxation is sufficiently great that rulers choose to spend all tax revenues on the public good and not transfer any revenue to themselves { the subjects are treated as well as the rulers. The surprising result that subjects are treated as well as rulers has the flavor of a folk theorem and will be labelled the Political Invisible Hand Theorem.

This note makes four main points. First, much of the specific ground that McGuire and Olson cover has been perceptively analyzed in Brennan and Buchanan (1977, 1978, 1980, 1985) and the resulting literature. Second, the tax restrictions on rulers must be carefully rationalized. McGuire and Olson analyze the internal solution where the Laffer curve protects subjects. But with a subsistence income requirement, there is a corner solution in which subjects are taxed of all their nonsubsistence income. Untaxed rulers always prefer the corner solution. Third, the analysis can be done in the conventional general equilibrium optimal tax framework. This microeconomic approach has the advantage that the deadweight loss emerges naturally within the maximization process. The framework also allows for a rich analysis of cross substitution effects and is used by Engineer (1989, 1990) to characterize when the Political Invisible Hand Theorem holds. Fourth, this note shows that when the Political Invisible Hand Theorem holds, enfranchisement of subjects into the ruling class may be an utility-increasing strategy for rulers.

2. Neo-Hobbesian Public Finance

Brennan and Buchanan (1977, 1978, 1980, 1985) have developed a body of theory of what could be called "Neo-Hobbesian public finance".² As in McGuire and Olson, government sets tax rates, provision of the public good and transfers to maximize the welfare of a subset of the citizenry, the rulers. Also, as in McGuire and Olson, a small ruling class is constrained only by a given tax base, and a large ruling class is taxed at the same rate as subjects. However, unlike McGuire and Olson, the limited tax base is not just given as a constraint but is an endogenous political restriction { a Tax Constitution for Leviathan. The base is chosen in a constitutional stage according to a maximin rule. The analysis is Hobbesian in the sense that the subjects voluntarily yield authority to the Leviathan who provides order, a public good that is consonant with its own interest. The analysis departs from the Hobbesian perspective in that it assumes that the Leviathan can be partially controlled by the extent of the base it can tax.³

Brennan and Buchanan point out that if the Leviathan is unconstrained in the choice of tax base it can effectively levy a lump sum tax by setting uniform taxes on all goods including leisure. This is not as implausible as it might be supposed. Head taxes were levied and collected in medieval England by well informed tax "farmers". Indeed, much of English history from the Magna Carta on involves encroaching restrictions on the taxing power of the sovereign, including throwing off the hated head tax.⁴

The issue is not whether it is technologically possible to design a perfect tax. Rather, it is whether an autocrat would extract much of the nonsubsistence income from its subjects. McGuire and Olson examine the internal solution in which an autocrat will choose to limit the income tax to the top of the Laffer curve. The implicit assumption is that subjects

²Also see Buchanan (1989) for a selection of his writings on constitutional matters. Sandmo (1990) describes how Buchanan's "Fiscal Economics as Political Economy" fits into his collected works.

Usher (1992) provides a detailed discussion of constrained despotism and the problems of majority rule.
³Hobbes' description can be viewed as an exchange. The subjects exchange their freedom for order. Of course the terms of exchange are extreme with an unlimited Leviathan. But the Hobbesian despot is preferred to the Hobbesian jungle. In this sense, Brennan and Buchanan's work can be seen to be in the fiscal exchange tradition of Wicksell (1896).

⁴The memory of the tax lives on. The attempt of Mrs. Thatcher's government to impose a limited head tax provoked widespread civil disobedience.

can always avoid exorbitant taxation by substituting into the nontaxed sector.

However, with a subsistence income requirement, a corner solution in which subjects are taxed of much of their nonsubsistence income may exist. An example makes this point rigorously. After tax income must satisfy: $w(1 - t)L \geq I^{\min}$, where w is the wage, t is the income tax rate, L is individual labour supply, and I^{\min} is subsistence income. Individual labour supply is bounded from above, $L \leq L^{\max}$: The Leviathan would choose a tax rate t^{\max} to work the subjects to their maximum while maintaining them at subsistence: $wL^{\max}(1 - t^{\max}) = I^{\min}$. Rearranging, $wL^{\max}t^{\max} = wL^{\max} - I^{\min}$, i.e. income taxation captures all nonsubsistence income. As potential income, $wL = wL^{\max}$, is at its maximum, a lump-sum tax could do no better. The Laffer curve may be no defence against an unconstrained Leviathan.⁵

Brennan and Buchanan also show that the Laffer curve protects the subjects. However, in their work the Leviathan is constrained by a tax base that is carefully chosen so that substituting away from taxed goods is possible. The subjects would never cede to a tax base that did not permit such escape.

In Brennan and Buchanan the limited tax base is potentially an endogenous political restriction. In this sense Brennan and Buchanan's work conceptually nests McGuire and Olson's analysis. It reduces to their analysis when subjects have no power in the constitution { the unconstrained Leviathan case. McGuire and Olson's work can also be thought to be analytically nested as the Neo-Hobbesian public finance is solved in two stages: rulers choose taxes for a given tax base; anticipating this behavior, subjects choose the tax base.

Brennan and Buchanan's modeling is similar to McGuire and Olson. Both postulate demand curves and deadweight loss functions and work out the implications. Of course, the shortcoming of models not solidly rooted in individual microeconomic behavior is that something important might be missed. McGuire and Olson use functions that ignore cross effects. In contrast, Brennan and Buchanan provide a characterization of how excise taxes

⁵Engel (1990) notes that if any good is needed for subsistence and that good is taxed (salt tax), then the autocrat will extract the full nonsubsistence endowment from subjects. I would like to thank Dan Usher for the following comment: "The real 'salt' throughout most of history was land. A small upper class was able to do very well for itself by appropriating a significant proportion of the rent, and the rewards of office have been enormous by comparison with the incomes of ordinary folk."

affects substitution across goods and how the choice of excise tax base can be used to promote the provision of public goods.⁶

Though Brennan and Buchanan's work doesn't always specify individual microeconomic behavior, their work is consistent with it. Engineer (1989, 1990) shows that Brennan and Buchanan's Neo-Hobbesian public finance can be characterized in a generalization of the standard general equilibrium optimal tax framework of Atkinson and Stern (1974). The conclusions from both approaches are essentially the same.

3. Leviathan Models and Encompassing Interest

Olson (1982) provides a rich vocabulary and characterization of the ruling group and concludes that the more encompassing are the activities of its members. McGuire and Olson's work is an attempt to model this behavior. Three sources of encompassing interest are stressed. Rulers have an incentive to: (1) provide the public good to generate more taxes from subjects, (2) provide the public good to make themselves happier or more productive, (3) lower taxation to lower the excess burden of taxation on themselves. All three sources of encompassing interest are present in Brennan and Buchanan's work.

There are at least three different types of Leviathan governments analyzed in Brennan and Buchanan's work. Engineer (1990) dubs these Untaxed Foreign Rulers, Untaxed Domestic Rulers and the Excise Taxed Domestic Rulers.⁷ Untaxed Foreign Rulers, like McGuire and Olson's autocrat, do not pay excise taxes or benefit directly from the pres-

⁶All other things equal, the subjects will cede to a tax on goods that are complements with the public good. A gasoline tax is a good example. The Leviathan will build more roads if they lead to substantially higher gasoline consumption which it can tax. Leviathan can be further tamed if the further restriction that all gasoline taxes are earmarked for roads is imposed.

Brennan and Buchanan explore the implications of several other restrictions. For example, the model of budget maximizing government is a Leviathan model in which rulers (bureaucrats) can not make direct cash transfers to themselves.

⁷The Untaxed Foreign Rulers case subsumes Brennan and Buchanan's treatment of "government as a revenue-maximizer" when provision of the public good is fixed (Brennan and Buchanan (1977, 1980 pp.34-54)) and also subsumes government as a "surplus-maximizer" when the public good is variably provided (Brennan and Buchanan (1978, 1980 pp. 55-82, 135-152)). The Untaxed Domestic Ruler's case corresponds to a king who consumes the public good directly as a "nonsurplus-maximizer" (Brennan and Buchanan (1978, 1980 pp.135-152)). Brennan and Buchanan (1980, pp. 153-167) also look at the choice of tax rates under majority rule which corresponds to the Excise Taxed Domestic Rulers' case without the public good.

ence of the public good. Hence, they simply choose to maximize net tax revenues. With a restricted tax base (which excludes all subsistence goods), foreign rulers will set tax rates lower than the maximum that will drive their subjects out of the market. The public good is provided only if it stimulates more than enough revenue to pay of itself. Untaxed Domestic Rulers directly consume the public good and therefore provide more public goods than similarly situated Untaxed Foreign Rulers.⁸ Engineer (1990) shows that subjects do better under the Untaxed Domestic Rulers reign. Finally, subjects do best under similarly situated Excised Taxed Domestic Rulers who face the same rates of taxation as subjects. This is because taxed rulers have an incentive to keep tax rates relatively low to reduce the excess burden of taxation on themselves. For a given tax base, subject usually prefer domestic to foreign rulers, taxed to untaxed rulers, and more rulers to less rulers.⁹

The result that rulers treat the subjects as well as themselves { the Political Invisible Hand Theorem { emerges in the analysis of the Excise Taxed Domestic Rulers case. The "Theorem" corresponds to the Kuhn-Tucker condition on nonnegative transfers to rulers binding at zero for a given tax base (Engineer, 1989, p24, 26-28). This occurs when the excess burden on rulers of raising taxes, for the purpose of transferring the additional proceeds to themselves, exceeds the benefit of the transfer. As agents have identical preferences and endowment in Engineer (1989), this situation occurs when rulers comprise a sufficiently large proportion of the population.¹⁰

⁸The public good is modelled as a consumption good in the utility function. Engineer (1989, 1990) shows that this yields a rich variety of cross effects as well as allows for a comparison with the traditional Pigouvian public finance. In contrast, McGuire and Olson (1996) model the public good as a public input. In this regard their model is much like Findlay and Wilson's (1987) Leviathan model.

The approaches are easily reconciled in a micro model. When the input has no cross effects (as in McGuire and Olson), it will simply increase the output of labour time. Other than accounting for additional funds for public goods the analysis is unaffected.

⁹It is difficult to compare the subject's optimal choice of tax base across ruling classes. Engineer (1990) argues in a fairly general framework that subjects are usually inclined to grant a larger, more efficient base to domestic than foreign rulers, to taxed than untaxed rulers and to the larger ruling class.

¹⁰Engineer (1989, 1990) has two homogenous classes, rulers and subjects. The distribution of income among rulers and among subjects is ignored.

Equation (11) in Engineer describes the deadweightloss in terms of the opportunity cost of funds for rulers. This depends in a complex way on the tax base, different excise taxes, the public good, cross elasticities, the level of transfer, and the number of rulers. The opportunity cost of funds for rulers is monotonically increasing in the number of rulers, ceteris paribus. When the opportunity cost of funds for rulers becomes too great they cease to transfer funds to themselves.

The Political Invisible Hand Theorem in McGuire and Olson emerges in their analysis when the encompassing interest is a majority. The "Theorem" corresponds to when the Kuhn-Tucker condition on nonnegative transfers to the majority is binding. However, the specific number of rulers is not detailed. Instead, the model uses the fraction of the total income earned by the redistributive ruling interest. When this fraction becomes sufficiently large then the Theorem obtains. This formulation is more general in that it breaks the direct link with number of rulers driving the result in Engineer.¹¹ However, the analysis is less rigorous in that the same deadweight loss rate is assumed for subjects as for rulers and that rate is not derived from utility.

4. The Continuum from Tax Constitution for Leviathan to the Conventional Public Finance

McGuire and Olson state that "... as long as there is rational and self interested behavior, all possible social orders or regimes may be arrayed along a single continuum".¹² Such an exercise is detailed by Engineer (1989) for the Excised Taxed Domestic Rulers case. This case yields a continuum which encompasses both the Tax Constitution for Leviathan and the Conventional Public Finance as end cases, and contains much of McGuire and Olson's analysis in the middle ground.

To detail this continuum two dimensions are examined. First, the proportion of rulers in the population is varied for a given base. If the ruling class encompasses the entire population, the problem reduces to the standard second best public finance of Atkinson and Stern (1974) when the tax base does not include all goods. At the other extreme when there is only one excise taxed ruler the problem yields the same result as for the Untax Domestic Rulers. Excise taxation does not distort the lone ruler's (or autocratic monolith's) decision because he is able to internalize the effect of the taxation. Of course,

¹¹Engineer's formulation could capture this aspect by altering the endowments of rulers and subjects. However, equal endowments seems like a reasonable benchmark for the analysis of majorities. Imposing differences in endowments begs the question of where they came from. Which came first power or wealth? Differences in wealth should be modelled in a dynamic context and should be done with reference to a capital taxation. Brennan and Buchanan (1980, ch. 5) discuss taxation of wealth.

¹²McGuire and Olson (1995) is mentioned in the text as using the concept of social order, presumably to describe the continuum. However, this paper is not found in the References.

the lone ruler will take everything unless the tax base is limited.

The second dimension that is examined is the extent of the tax base. If all goods are in the tax base, a uniform tax is nondistortionary.¹³ If, in addition, rulers encompass the entire population, we get the Samuelson rule for provision of the public good. If rulers comprise less than the full population they will extract the full nonsubsistence income of subjects by imposing a sufficiently high uniform tax on goods. In this case the Theorem never holds. Subjects prefer that all subsistence goods are removed from the tax base and that goods that are complements with the public good are included in the tax base and goods that are substitutes are removed.

Thus, the conventional Pigouvian public finance, in which a benevolent government chooses policy, is the case when rulers encompass the entire population. Accordingly, there should be no constitutional restrictions on a truly benevolent government.¹⁴ In contrast, whenever rulers are a proper subset of the population a Tax Constitution for Leviathan protects subjects.

An example from Engineer (1989) allows us to concretely identify the subjects' optimal tax base and also identify when the Political Invisible Hand Theorem applies.¹⁵ In the example, the population of society is 1000; there are 100 private goods and 1 public good, and utility is Cobb-Douglas.¹⁶ Figure 1 maps the Optimal Tax Base, the base that makes subject best off given the number of rulers. In the region to the right of (and including)

¹³It is assumed that it is technologically possible to tax all goods or equivalently levy an appropriate lump-sum tax if there are no constitution limitations in place.

¹⁴Here issues of dynamic inconsistency incomplete information and heterogeneity are ignored.

¹⁵McGuire and Olson mention that Bozzo (footnote 35) has computed examples where the Political Invisible Hand Theorem applies. However, there is no mention of Bozzo in the References.

¹⁶The last private good is labour. Each agent has an endowment of 100 hours of labour time. One hour of labour is required to produce one unit of any private good. The public good has a unit price of 1000. Finally, all utility functions, for both rulers and subjects, are Cobb-Douglas:

$$U^h = \prod_{i=1}^{100} (x_i^h)^{0.1} G^{0.5},$$

where x_i^h is the consumption of the private good by individual h . All goods are zero gross substitutes implying that optimal tax rates are the same for all goods. This makes the analysis straightforward as it makes no difference to the rulers which particular goods are included in the tax base. The public good is provided only for the consumption benefit of rulers. This incentive is enough to generate the Theorem result in the example.

the Equality Boundary, rulers and subjects are treated equally (zero transfers to rulers) and receive the same utility, $U^r = U^s$. This region corresponds to The Political Invisible Hand Theorem for an exogenous tax base.

(Figure 1 here)

When the tax base is chosen by the subjects in a constitution, the Theorem corresponds to the range $R \leq 170$ where the Equality Boundary coincides with the Optimal Tax Base.¹⁷

Eventually a point is reached where it is optimal for rulers to spend all tax revenues on the public good. Thereafter, as the number of rulers increase, the subjects optimal tax base increases in a way that maintains the equality of treatment of rulers and subjects. The example demonstrates that equality of treatment can result from limited technological or 'political' restrictions on the taxing powers of rulers than from utilitarian policies. (Engineer 1989, p20)

Though the utilities of rulers and subjects are the same beyond $R \leq 170$, the tax base is not broadened because the subjects know that rulers would use the broadened base to exploit them. This is an example of what Faith and Thompson (1981) call a 'paradox in the theory of the second-best'.

5. Rulers Enfranchising Subjects

The above example brings out another important point, one not made in my 1989 paper. Beyond 170 rulers, the optimal tax base increases with the number of rulers (because more rulers have a greater incentive to lower taxes and provide the public good). Since a more efficient base is used, the utilities of rulers and subjects increase with the number of rulers. Thus, greater enfranchisement is in the interest of rulers, as it yields base concessions from the subjects. Thus, when the Political Invisible Hand Theorem applies, enfranchisement may be an utility-increasing strategy for rulers. In the example the result is even stronger. Even when the Theorem does not apply, the rulers may be best off[®] enfranchising all their

¹⁷Over the region from 10 to 170 rulers, subjects yield a larger tax base to a smaller ruling class because they value very highly the additional public good that would be provided.

subjects into the ruling class { when the ruling class exceeds 110 rulers. Thereafter, a benevolent government in the interest of all would reign.

Hence, the analysis not only provides a description of the continuum but also provides an important motivation for enfranchisement of subjects into government. This motivation could be described as the "invisible hand" behind the apparently inexorable historical march from Leviathan to universal enfranchisement.¹⁸

6. Conclusion

This note has endeavored to show that though the vocabulary and notation are different, the concerns, methods and conclusions of McGuire and Olson's work are surprisingly similar to the Neo-Hobbesian public finance. Both groups could learn from each other. Olson and McGuire provides a rich discussion and characterization of the behavior of the ruling interests. The Neo-Hobbesian public provides an rich analysis of the restrictions on the behavior of the ruling interests.

What is one to make of the "Political Invisible Hand Theorem" { the result that rulers treat subjects as well as themselves { or the related cases in which subjects are treated surprisingly well? The Neo-Hobbesian public finance is very clear that the tax base may have to be severely restricted to eliminate all subsistence goods from the tax base. Further, high taxes must be imposed on rulers as well as subjects for substantial coincidence of treatment.¹⁹ Tax technology may inhibit the Leviathan but it is unlikely to tame it.

However, the Political Invisible Hand Theorem has a very interesting corollary: when (subjects have already fought and won restrictions on rulers so that) the Theorem holds, then rulers may be better off enfranchising subjects. In the example, universal enfranchisement is optimal because then all inefficient constitutional restrictions would then be removed.

¹⁸See Usher (1992, ch.6) for a discussion of the relative importance of force versus deadweight loss in the extension of franchise.

¹⁹Hayek (1960) very strongly argues that general uniformity in taxes is an almost necessary condition for a free society. If discrimination were possible, the Theorem would almost certainly be violated. History is replete with examples of majorities exploiting minorities. The taxation of Jews in medieval Europe and Black slavery in American are two well known cases.

Brennan and Buchanan stress the role of the Tax Constitution for Leviathan.²⁰ Though the Neo-Hobbesian public finance appears to describe much history, a deep puzzle remains to be explained. How can a mere constitution restrain the Leviathan? After all, there may be no third party to enforce a constitution. Brennan and Buchanan (1980) write: "...our whole construction is based on the belief, or faith, that constitutions can work...". But if any constitution can work, a constitution with efficient fiscal arrangements would be chosen: tax rates on the broadest base would be restricted in a constitution rather than the base being restricted. This is at odds with much of the historical record. The puzzle for theory is not only why do constitutions work but also why do they embed inefficient restrictions?

One explanation has to do with the use of force. To give the Leviathan a nearly efficient tax base is to give it control over many or all activities. A sovereign who can levy a nearly efficient head tax would have too much enforcement power and knowledge for his subjects liking. This power and knowledge could be used against subjects. If the sovereign were to violate the constitution by raising tax rates, the subjects may not be able to rebel in order to enforce the constitution against such a powerful sovereign. If, instead, the sovereign were given only taxing powers on activities for which subjects could escape, then subjects might be able to mount a successful rebellion in response to a grab for a bigger tax base. This type of constitutional restriction affects the ability of the subjects to enforce it. Modelling force as the ultimate arbitrator of constitutional terms remains for future research.²¹

²⁰Indeed, their work speaks to the need for constitutional checks and limits on government as a contingency against possible future Leviathans. West and Corke (1980) look at constitutional choice from an expected utility perspective. Engineer (1989) briefly examines the case where the ruling class is chosen randomly after the constitution has been set. Even a modest degree of risk aversion can result in a substantial restriction in the tax base.

²¹This might be modelled in repeated game context. An unconstitutional attempt by the sovereign to expand a restricted base would cause the subjects to revert to the grim strategy of anarchy, Hobbes' war of all against all. However, if the base were unrestricted such a grim strategy would be infeasible as the ruler has complete control.

Usher and Engineer (1987) provide a general equilibrium model which describes the distribution of income in a deposit society as determined by an equilibrium of violence. However, they do not look at the tax base as a strategic variable.

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