Coercion and Social Welfare in Contemporary Public Finance

A Spatial Model of State Coercion:
Comments on papers by John Wallis and Stergios Skaperdas

Leonard Dudley, Université de Montréal
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Although the presentations by John Wallis on "The Constitution of Coercion" and Stergios Skaperdas on "Proprietary Public Finance" both deal with the use of force to compel citizens to pay taxes, the two papers are quite different. Wallis uses a non-formal approach, focusing on the division of power between groups of violence specialists within states. In contrast, Skaperdas employs formal modeling to examine the degree of competition between states. I will nevertheless show that the two approaches are highly complementary. Borrowing from two German theorists, Walter Christaller (1966) and August Lösch (1954), I will make explicit an element that is implied in each paper, namely, the spatial dimension.

(a) The Demand for Public Services

Wallis's approach to public finance follows Knut Wicksell (1958) in comparing the valuations people place on the public services with they receive with exogenously-set tax rates. In other words, the emphasis is on the demand side. Assume that individuals in the general population are ranked in decreasing order of their willingness to pay taxes, WTP in Figure 1. Here the horizontal axis measures the population of a state and the vertical axis its tax rate (assumed identical for all taxpayers). Add the corresponding marginal willingness to pay schedule, MWP. Finally, assume that the average cost of supplying collective goods, AC, is constant.

Throughout history, Wallis argues, the typical political unit has been the "natural state" in which groups of violence specialists use their power to exploit non-violent subjects. He assumes that military power is held by distinct groups, for example, a king with his followers (X) and a group of nobles (Y). Neither group
has a monopoly on violence. Together, they constitute an adherent organization that is, a coalition that always has an interest in cooperating because of the threat of violence in case of disagreement. These individuals in turn exploit members of the general population who do not have access to military technology, the commons (Z). The latter have contractual relationships – that is relationships that require enforcement by a third party – with both X and Y. Here X enforces Y’s contracts and Y in turn enforces X’s contracts. However, neither X nor Y has a monopoly on the legitimate use of violence. The resulting arrangement is anonymous but not impersonal, since the group to which each individual belongs is common knowledge.

The society Wallis describes is logically consistent, but can it help us understand the history of the West over the last millennium? I would say yes, with one qualification, namely, that there have been long periods in most states when one small group of violence specialists had a monopoly on the legitimate use of military power. Consider, for example, the case of France. Between roughly 1450 and 1870, it was the king or emperor who dominated the nobility, due to the former's command of the tremendous scale economies of gunpowder technology (McNeill, 1982). In England, the story was similar except that the "Glorious Revolution" of 1688 led to a transfer of legitimate power from the monarch to a coalition of landholders – an arrangement that lasted until the Reform Bill of 1832.

Figure 1 illustrates the type of equilibrium just described. The king, who controls the army, is a discriminating monopolist, setting tax rates, \( t_Y \) and \( t_Z \) for the nobles and commons respectively. The nobility have a privileged position in that they pay only the average cost of the collective good, usually in the form of military service. Their situation, explained by the nobility's mobility or its mastery of violence, might be called Tiebout coercion (\( t_Y = AC \)), analogous to a golfer’s membership in a club. However, the unarmed and immobile commoners pay a higher rate, one that maximizes the king's rent. Their situation might be called Cournot coercion, since they pay a tax that is higher than the average cost of public services, but below their willingness to pay (\( WTP > t_Z > AC \)).

Wallis also cites Wicksell to describe what might be defined as Wicksell coercion, where the tax rate is greater than the willingness to pay (\( t > WTP \)). However, if the king attempts to set such a tax (greater than \( t_Z \)), he risks destroying his tax base, since the willingness to pay of the marginal taxpayer at A is
presumably her production less the subsistence wage. In equilibrium, then, we will not observe Wicksell coercion.

The alternative to this vertical structure is what Wallis defines as the "open-access society". In the above model, groups X and Y may be persuaded to give up their privileges if the government allows any organization to form provided that it does not engage in violence or other prescribed activities. The result is a society in which the relation between the state and the individual is impersonal. Taxation must now be based on some impersonal criterion such as the taxpayer’s income rather than on the group to which she belongs.

What Wallis does not explain is the transition from the natural state to the open-access society. Why should group X or Y give up its violence monopoly and allow competing organizations to be formed? To answer this question, it is useful to turn from coercion to consent, making explicit the society's information technology. One of the fundamental transformations in Western societies between 1500 and 1914 was the spread of literacy. Arguably, it was the arrival of near-universal literacy that made it possible for group Z creditably to challenge the political power of X and Z, insisting on the dismantling of the restrictions that limited access to political decision-making.

(b) The Supply of Public Services

At first glance, Skaperdas's model of proprietary rule would seem to be similar to Wallis's natural state. In each case, a rent-maximizing elite uses the fiscal system to exploit the majority of the population. However, whereas Wallis emphasizes the cooperative contractual relations within the elite group, Skaperdas studies the competition between military entrepreneurs, each with his own territorial base. By making explicit the military technology, he is able to model a continuum of state types between absolutism and anarchy. Abstracting from demand considerations, assume that the marginal willingness to pay taxes, MWP in Figure 2, is constant. Imagine, for example, a uniformly fertile plain that stretches far in any direction. A proprietary ruler of a given territory is then able to extract all production greater than the subsistence wage in the form of taxes.

At one extreme is the monopolistic proprietary equilibrium, $E_M$. When military scale economies are high, the marginal cost of holding territory is low, as shown by the curve MC. In this case, there is a single ruler who expands his territory to $s_M$. Note, however, he will not be interested in expanding beyond this
point. Applying the tax rate $t_0 = MWP$, he collects rent equal to the shaded triangle $RE_M S$.

At the other extreme is the *competitive proprietary* equilibrium, $E_C$. Here, because of a fall in military scale economies, the marginal cost curve has shifted upward to position $MC'$. There are now many small states of size $s_C$. The rental share is much smaller: together, the multiple triangles of size $RE_C V$ are smaller than $RE_M S$.

Both of these cases are examples of Olson's (1993) *stationary* bandit, though the scale of the rational tax collecting of course differs. Skaperdas also provides an elegant model of the latter's *roaming* bandit. Imagine a case where military scale economies are non-existent and the marginal cost curve cuts the horizontal axis at $R$. In this case there are no rents. In equilibrium, each bandit pillages wherever and as much as he chooses, not caring about whether the peasants have enough food to survive until the next season. However, as long as military scale economies are positive, such a situation will not occur in equilibrium. It will always be profitable for an entrepreneur to offer to get rid of the bandits in return for a tax level that leaves the peasants a subsistence wage plus $\varepsilon$. For example, in eleventh century Normandy, young duke William ended a state of near-anarchy by persuading a group of like-minded young nobles to follow his leadership (Bates, 2004, 77-82).

**(c) A More General Model**

By combining Wallis's demand-side approach to the public sector with Skaperdas's supply-side approach, we obtain a more general spatial model of state coercion. In Figure 3, assume that individuals are ordered by their willingness to pay taxes, WTP, and that the marginal cost curve, $MC$, has a positive slope. Furthermore, let the rankings of the population by each of these measures be identical. Then in equilibrium, the typical state will have population $s_0$ and tax rate $t_0$. In addition, there will be a triangle of rent, $UEW$, to be distributed among the state's interest groups.

This spatial model includes the "natural state" and the "proprietary state" as special cases. But there are many more possibilities, depending on the homogeneity of population, military and communications technology, and transport costs. For example, if the private sector suddenly becomes more efficient than the public sector at providing public services such as protection, garbage
collection and education, the WTP and MWP curves will shift downward. During the transition to the new equilibrium at F, a considerable portion of the population will experience Wicksell coercion, the tax rate being greater than their willingness to pay – a “Teaparty” situation. At the same time, there will be pressure on the state’s borders – “imperial overextension”, to use Kennedy’s (1987) term.

In conclusion, the theories of state coercion proposed by Wallis and Skaperdas suggest three considerations that must be taken into account when we study the welfare impact of coercion in fiscal systems:

- First, as the synthesis in Figure 3 makes clear, both the absolute size of the state and the relative size of its public sector are endogenous. For a given geography and degree of cultural heterogeneity, Skaperdas’s military-technology variable will play a key role in determining both the frontiers of the state and the public share.

- Second, this approach shows that except in the degenerate case of Olson’s roaming bandits, there will always be rents to be distributed. Therefore, Wallis’s emphasis on the relationships within and between the dominant groups in a society is an essential part of fiscal welfare analysis.

- Third, for any given level of willingness to pay, there are various levels of coercion to be considered. To the extent that voters are immobile, the efficient ideal of Tiebout coercion, where the tax rate is equal to the average cost of public services, will be rare at the level of the sovereign state. However, the other extreme of Wicksell coercion, with tax rates greater than people’s willingness to pay is likely to be an exceptional situation while a society adjusts to a shock. In general, the dominant coalition will tend to set tax rates at the intermediate Cournot level that maximizes its rents.

Ultimately, there is the question of who is supreme, the sovereign or the state. At age sixteen, the impetuous sun king, Louis XIV, uttered his famous pronouncement, "L'État c'est moi". However, sixty years later, on his deathbed, the king was considerable wiser. "Je m'en vais," he wheezed, "mais l'État demeurera toujours". Roughly translated, his last testament becomes, "I'm out of here, but the rest of you guys and your descendants will be paying taxes to the French state forever."
References

Bates, David, William the Conqueror (Stroud, UK: Tempus, 2004).


Figure 1. The natural state
Figure 2. The proprietary state
Figure 3. A spatial model of state coercion