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Stanley L. Winer

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The Political Economy of Taxation: Power, Structure, Redistribution

Abstract

In this chapter I provide an overview of the political economy of taxation in democratic states by considering the three most important issues in the field: (1) the evolution of the power to tax in (what are now) the mature constitutional democracies; (2) the nature and determinants of modern tax structures; and (3) redistribution in pluralistic societies over various horizons and in the face of economic shocks. The discussion considers the ideas and models that have arisen as scholars have grappled with these related issues, and points to some of the outstanding problems that may be worth pursuing in future research.

JEL-Codes: D720, D780, H200, H240.

Keywords: taxation, Oxford Handbook, political economy, public choice, power to tax, tax structure, fiscal redistribution.

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Forthcoming in The Oxford Handbook of Public Choice**,** Roger Congleton, Bernard Grofman and Stefan Voigt (editors).
This paper is dedicated to the memory of Albert Breton. Part of it was written while the author was enjoying the hospitality of the School of International and Public Policy, Hitosubashi University. Toke Aidt, Roger Congleton, Steve Ferris, Walter Hettich and Larry Kenny provided helpful comments.

1. Setting the stage

Taxation must be a central topic in Public Choice. Without the continuous taking of economic resources from the private sector, the modern state and all that comes with it - the maintenance of law and security, collective decision making, public goods and services, redistribution, and international warfare - cannot exist. The centrality of taxation to the study of political economy is compactly embodied in Weber's observation (1919,78) that the state is an institution that successfully claims a monopoly on the legitimate use of force. Such a monopoly substantially reduces the cost of transferring resources from the private to the public sector, just as development of the tax state so empowered insures that conflict over the resources to which it has favored access will always lie at the center of public life.

In this chapter I provide an overview of the political economy of taxation by considering the three most important issues in the field: (1) the evolution of the power to tax; (2) the nature and determinants of contemporary tax structures; and (3) fiscal redistribution. The discussion introduces ideas and models that have arisen as scholars have grappled with these related issues, and points to some of the outstanding problems that may be worth pursuing in future research.

To sharpen the analysis, the chapter is generally focused on taxation in (what have become) the mature democracies, and on the structure of taxation as opposed to its level. The discussion remains quite broad nonetheless, and some attention will necessarily be given to the relationship between democracy and taxation and to the relative size of government.

The discussion emphasizes positive aspects of the major issues. However, at some points it is interesting to consider the normative views of Wicksell (1896), Buchanan and Tullock (1962) and Breton (1996), all of whom advocate the adoption of fiscal structures that are at the same time socially efficient and minimally coercive of individual citizens. A general characteristic of fiscal systems of this kind is that they exhibit what Breton refers to as a Wicksellian connection between public expenditure and taxation. This connection is a behavioral relationship between the quality and quantity of public goods and services governments supply and the tax-prices that individual citizens must pay for them. It is named after Wicksell because he was the first to combine an economic standard of reference for public activity with a concern with how citizens in a democracy ought to stand in relation to the fiscal system. Considering the strength of this relationship for different taxpayers under varying circumstances also proves to be useful in the positive analysis.

Before turning to the analysis of the power to tax, I note that references to the vast literature on the political economy of taxation in the text that follows are necessarily illustrative in nature. Many additional references are provided in other overviews of the field that are pointed to at appropriate points.[1]

[1] A recent annotated bibliography of about 120 items by the author and colleagues (Winer, Profeta and Hettich 2014) in the Oxford Bibliography Online series provides many additional references, including work on related topics that are not dealt with in depth here such as taxation in non-democratic regimes. Winer, Kenny and Hettich (2011) presents an overview of selected empirical questions concerning why tax structures look the way they do with accompanying statistical investigations. These papers are useful companions to the present analysis. In addition, there are different general approaches to the field that the reader may wish to consult, including Gould and Baker (2002), Alt et al (2010) and Profeta and Scabrosetti (forthcoming), as well as surveys on specific topics, especially redistribution, that are

2. The power to tax, fiscal coercion and the Wicksellian connection

How does the power to tax evolve in (what are now) mature democracies? What limits the abuse of that power on behalf of special interests or the state itself while still permitting the productive state to use its authority for socially useful ends?[2] What forces operate to maintain an approximate balance for individuals and groups between the taxes they are required to pay and the valuation of the benefits that they receive in exchange, a question that goes beyond simply asking if the overall budget is balanced? These are, I think, the most important questions concerning the power to tax.

In non-democratic states, coercion in a physical sense is relevant. The state takes resources to maintain and aggrandize itself. This may be done by producing resources, or by seizing them and exchanging them for weapons and other state-sustaining resources (Tilly 2009, 1992). In the absence of natural resources, the waging of wars of survival and the growth of the public sector eventually require the extraction of resources from citizens.[3] Democratization follows if the state is to avoid failing because of resistance to onerous taxation without representation.

Analysis of such a sequence of events is the focus of a large literature on tax history.[4] As Tilly puts it in his 2009 paper comparing Louis XIV and Vladimir Putin as potential progenitors of democracy, stripped of its historical details - to echo Schumpeter 1915 - the path towards democracy and taxation may proceed like this: first comes the state's buildup of power; then it's priority of access to state-sustaining resources; the crowding out of competing centers of power and, finally; increased dependence for support of state activities on citizen compliance. Empirical work by Aidt and Jensen (2014), stimulated by the threat of revolution hypothesis concerning the origins of democratization by Acemoglu and Robinson (2000) and Boix (2003) among others, is consistent with this sort of story.

Congleton (2011, chp. 6) links the rise and maturation of the tax state to a 'quieter' process involving the gradual evolution of legislative institutions. He argues that the rising income of elites, rather than of citizens in general, on whom the sovereign depended for funds exchanged new taxes for increased authority, thereby slowly transforming councils of nobles into legislatures, but without widespread suffrage which expanded slowly afterwards.

Bates and Lien (1985), Boix and others, as part of their own analyses of the development of the tax state and other aspects of democracy importantly draw our attention to the role of the mobility of taxable activity. Mobility leads to bargaining with those who can move their assets internationally, to the shifting of tax burdens to relatively immobile factors and, hence, to less resistance by mobile citizens to democratic reforms.[5]

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referenced below. The reader may also want to look at tax histories, such as Daunton's (2007) study of the United Kingdom or Witte's (1985) study of the United States, among others, to get a sense of how the abstraction in the chapter relates to what others describe as an actual tax system.

[2] The distinction between the productive state that supplies public services and the coercive state is due to Buchanan (1975).

[3] Here lies a reason why some countries with vast access (relative to population) to natural resources are less likely to be become fully democratic if they were not so before these resources were developed.

[4] See the sections on 'The History of Taxation' in Winer et al (2014) for further references.

[5] This can be so even if the owners of capital assets are not active in domestic politics, as Bates and Lien emphasize.

This, still, is not a settled history. For example, in a recent paper Mares and Queralt (2015) point to evidence (see Aidt and Jensen 2009) that states with limited suffrage pioneered the adoption of income taxation. As an explanation, they suggest that landowning elites used taxation of income to shift tax burdens towards the emerging manufacturing sector *despite* the higher mobility of capital investment. [6] This, I add, does not mean that mobility was of no use in restricting the taxation of manufacturing income and assets in whatever equilibrium emerged. But it does point to an interesting complication. The Mares/Queralt argument is consistent with the forces underlying the formation of contemporary tax structures described in the next section, and I will come back to it there.

The democratization that, one way or another, appears to go along with development of the power to tax raises the specter of majorities exploiting minorities and of special interests exploiting the general taxpayer through the fiscal system. So to understand the power to tax, one must also ask how that sort of rent seeking evolves and is constrained, putting us directly in the path of the second major question posed earlier: what limits abuse of the power to tax once it has developed?

While the mobility of taxpayers is a substantial constraint on rent seeking through the public sector, there are also other, perhaps deeper forces at work. One argument is that private ownership of resources limits the kind of outcomes that can emerge from the democratic process (Przeworski and Wallerstein 1988, Przeworski and Sprague 1986). As Przeworski (2016,5) explains, absent revolution, economic compromise with owners of capital by worker's parties was required to insure a high standard of living. Politically compromise was necessary because workers could not win an electoral majority alone and had to seek allies across class lines. Although they are considering socialist economies, I think the argument applies more generally if one allows for some variation across states in the interest groups involved, and analogous models will arise later when long run limits on redistribution are discussed.

Pinning down such an explanation requires an understanding of how private property rights are preserved, an observation that leads to a second major factor limiting abuse of the power to tax: constitutionalism, or what Gordon (1999) in his study of its history prefers to call constitutional democracy and what others refer to as liberal democracy. According to Gordon (p. 361), behind the maintenance of constitutions which help to protect property and other rights necessarily lies (i) a pluralist distribution of political power, as well as (ii) the principle of countervailence, or competition among centers of power. He traces the latter back to ideas of medieval law, Venice, the Dutch Republic and, as do North and Weingast (1989), to the growth of competing centers of power in England in the seventeenth century.

In order to integrate the third major issue - the strength of the Wicksellian connection between what individuals pay and what they get - into the discussion, it is useful to first acknowledge the importance of legally enforced sanctions if taxpayers do not meet their tax obligations. This kind of coercion is regarded as legitimate, despite universal grumbling about the national tax administration, because people know that each of them has an incentive to free-ride on others thus compromising the collective enterprise, and because they also want to be sure that everyone else

[6] Direct tax payments also conveniently provided a filter that could be used to limit the franchise to richer citizens who had more to lose from expropriation of elites.

will be required to carry through with their own tax obligations.[7]

A second form of coercion arises as a by-product of the compromise that all citizens must agree to in a democratic society. It is this kind of coercion that underpins concern with the Wicksellian connection. A simple example illustrates (Winer et al, 2014, 160). Consider a group of people who have come together in a room for a common purpose and who must collectively set the temperature on a thermostat and then pay for the resulting use of energy. Inevitably some will be too hot and some too cold, and even those for whom the temperature is just right may be unhappy with the resulting balance between what they pay and what they get. Individuals can escape the situation if they move to another room or out of the building that represents the collectivity in this example. But if they stay, they must cope with the coercion implied by their assent to the collective decision.

This *fiscal coercion*, as I will refer to it - that is, not getting what you *think you deserve* at the tax-price that you have to pay - cannot be avoided whatever collective choice procedure is adopted.[8] Nor does anyone want to do so if on balance they value the goods made possible by collective action. On the other hand, it is my understanding that as the gap between what citizens get and what they have to pay grows, tax compliance deteriorates and social unrest rises, leading to emigration and eventually to failure of the state itself, with the first of these ills (let alone the others) undermining development as Besley and Persson (2013) explain.

For these reasons, fiscal coercion and its mirror image, the Wicksellian connection matter. We can talk about the strength of this connection in a meaningful way even though the fiscal system never achieves the completely efficient and non-coercive ideal advocated by Wicksell (1896) and his student Lindahl (1919).[9] This will not be a discussion about budget balance at the aggregate level.

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[7] This reciprocal nature of coercive taxation in the legal or physical sense described here is also one foundation of what is, and why people obey the law. Rousseau, in his Social Contract, Book IV (1762) writing about 135 years before Wicksell clearly approved of such reciprocal coercion. The importance of reciprocity in taxation is a key factor underlying widespread opposition to tax evasion, including the use of international havens studied by Zucman (2015). A challenge in the study of the political economy of evasion, which is not dealt with here, is to explain the (limited) use of resources to contain evasion in domestic and in international contexts. On coercion, see also Levi (1988).

[8] That is, other than unanimity, which is not feasible. This definition of fiscal coercion is implicit in the work of Wicksell, Buchanan and Tullock and Breton, and is stated formally in Winer et al (2014). Individual coercion could also be defined following Lindahl as the difference between the tax price actually paid and the one that is equal to the individual's marginal evaluation of services at the level of them actually supplied. See Sehili and Martinez-Vazquez (2014) for a model that utilizes this approach to compute the incidence of fiscal coercion in the state of Georgia. Hintermann and Rutherford (forthcoming) explore a third definition based on what the individual would choose for themselves on both sides of the budget. An alternative approach to benefit taxation is provided by Weinzierl (forthcoming) who explores a theory of benefit-based optimal taxation in which benefits are correlated with ability and ability depends in part on public good supply.

[9] The question of whether it is possible to implement an ideal benefit-tax system of the sort advocated by Wicksell and Lindahl, in which the efficient quantity of a public good is provided under conditions in which each individual is completely satisfied with its supply at the tax-prices that must be paid, is as old as Wicksell`s 1896 paper. The answer in the mechanism design literature (see Ledyard 2014 for a recent review) is a qualified yes. It is possible to achieve a solution in which it is as if everyone contributes voluntarily, in the sense that individualized tax-prices are equal to everyone's marginal evaluation of the public good, and the public good is supplied in the efficient amount just as Lindahl sought to achieve (Hurwicz 1979). But the feasibility of this arrangement depends critically on who knows what. The Wicksell-Lindahl solution applies only when there is complete knowledge of everyone's preferences. If each person knows only their own 'type', the answer is that compulsory taxation to deal with free-riders will be necessary, as Samuelson (1954) warned. While later work suggests that in some cases (e.g., with weakest link

Consider, for example, what happens when multinational firms pay only for the services they receive domestically as a result of the public provision of infrastructure, but not more. In that case there is no reason for mobile resources to flee and the tax state faces little resistance. So globalization by itself does not necessarily lead to unduly heavy constraints on the state as a result of international tax competition (Mueller 1998). From this point of view, the role of mobility pointed to earlier is not only beneficial in constraining the power to tax, but at the same time it induces national governments to keep taxes in line with benefits, at least for mobile taxpayers.[10]

Evidence about what may strengthen the Wicksellian connection for less mobile citizens comes from the study of war finance. It is evidently easier to gain compliance with taxation during wartime, which often goes along with extraordinary profits taxes and the purchase of public debt as a matter of solidarity. It is also easier to get the rich to contribute as a matter of patriotism when the country is at war. (It is harder to migrate then too). Scheve and Stasavage (2010, 2011) show that wealth taxation and income tax rates rise and fall with episodes of warfare. Extraordinary levels of taxation evidently require extraordinary circumstances in democratic societies, suggesting (is this overreaching?) that in normal times, competitive politics forces governments to keep tax burdens at least somewhat in line with benefits received for politically influential groups.[11]

The study of tax compliance provides more evidence about the Wicksellian connection if we are willing to make the reasonable assumption that compliance and fiscal coercion are negatively correlated, as Wicksell suggested. Experimental work suggests that compliance is greater when decisions about taxation are made with the participation of taxpayers - that is, democratically (See, for example, Alm et al 1993 and Frey 1998). Moreover, democratic countries rely about twice as heavily on income taxation as do non-democratic regimes (after controlling for the effect of levels of per capita income on the tax mix), a type of tax which is easier to evade than consumption taxation or tariffs (Kenny and Winer 2006).

We can also look at the Nordic countries in the quest for evidence that modern fiscal systems contain a feedback mechanism that maintains connections between taxing and spending for individuals and groups. These small, open (to trade and capital flows) welfare states, with their high tax to gdp ratios relative to the average OECD country, are relatively heavily financed by consumption taxation while taxing mobile capital incomes lightly via dual income tax or similar regimes. Here the primary burden of taxation falls on citizens of the Nordic countries who also

technology for public good supply) the problem of free-riding is not as serious, it is most likely that legal sanctioning of taxpayers and fiscal coercion will always coexist.

[10] This is the 'glass half full' part. The problem with charging multinationals for what they get out of the domestic economy is the fear that the tax-price paid may be bid down by international competition below the cost of infrastructure. It may also be noted here that the tax harmonization literature in public finance, surveyed by Musgrave (1991), can be viewed as an attempt to devise international fiscal structures that limit international competition and thus allow domestic fiscal systems to diverge more than otherwise. From the perspective of Mueller and others, such harmonization leads to fiscal coercion rather than than to satisfying citizens' demands. For further analysis of such matters, see Sinn (2003, Ch. 2)

[11] For further discussion of the relationship between patriotism and taxation, see Geys and Konrad (2016).

benefit from their generous social expenditure.[12] Lindert (2004) argues that such fiscal arrangements are part of the reason why the negative consequences for economic growth of large public sectors have been largely absent in the historical data.

Many questions about the origins and nature of the links between spending and taxing remain. What about the big countries where taxation of capital is relied upon to a greater degree than in some of the Nordic countries and where the relative size of government is not so great? Are they doing worse with respect to the Wicksellian connection, or do they just have the luxury of facing constraints on domestic policy choices that are not as tight and so are led to different equilibria? Are some political systems more conducive to maintaining links between the two sides of the budget for various groups? As Breton argues, are the checks and balances of the Congressional system in fact less successful in this respect than the majoritarian parliamentary systems of the U.K., Canada, and Australia, where both taxation and public expenditure are simultaneously under the control of the Prime Minister and the cabinet?

3. Tax structure, public debt and common pools

Striving for efficiency in public goods supply while approximately tying taxation to benefits received is a worthy objective. There is some evidence that this objective is pursued in mature democracies, at least at some level of aggregation. This perspective, in which the links for individuals and groups between the two sides of the budget matters, is quite different from the standard one used in public economics. In public economics, the starting point is a complete separation of taxation and public expenditure for every taxpayer. Strict separation is responsible for the excess burden of taxation because individuals can then expect to receive the same services even if they act to reduce their tax liabilities.[13] In the Conclusion I will return to the challenge of reconciling the Wicksellian perspective in which the degree of separation is the object of analysis with the standard view in public economics. To focus on the explanation of tax structure here however, it is useful to take the complete separation of spending and taxing as a starting point, and then look carefully at the tax side alone.

What do we have to explain? Tax systems all exhibit the same skeleton, consisting of economic activities grouped into tax bases, various nominal rate structures levied on these bases, with many special provisions such as deductions, exemptions and credits that alter the definition of bases and

[12] Kleven (2014) emphasizes the features of Scandinavian fiscal systems that facilitate tax compliance, discourage avoidance and encourage work, while also suggesting that such systems may result from particular social norms.

[13] Some remarks on connections between political economy and public economics may be of interest at this point, beginning with the observation that in a benefit tax system, just as in a private market, evasion of tax liabilities by substituting towards less valuable but less highly taxed activities will not occur because you always get what you pay for. One may note that there is a tax instrument that removes the individual excess burden of taxation without tying taxes to benefits received, namely a lump sum tax. Political problems arise, however, if a government uses lump sum taxation to finance public services. Such taxes have to be levied on individual characteristics that cannot be changed in order to lower one's tax payments. In practice there are few such characteristics, and payments related to them are generally perceived as unjust, as was revealed by riots during an experiment with head taxes conducted in the United Kingdom in 1989/90**.** Generalizing these observations, one can say that the ability of taxpayers to avoid taxation is a matter of how invasive the government is allowed to become. For this reason, politics is buried in standard optimal tax analysis through the specification of incentive compatibility constraints, the nature of which depend on the public's willingness to put up with restrictions on their liberty. On the role of politics in neoclassical public economics, see Acemoglu and Robinson (2013) and the debate between Boadway (2002) and Hettich (2002).

create divergences between nominal and effective tax rates.[14] The problem is to understand how this tax skeleton emerges in a political and economic equilibrium.

The answers in the literature can be bounded by two approaches, the difference between which involves radically different perspectives on the power to tax. The first is what I will label the competitive equilibrium paradigm. In this view, the one mostly relied upon in what follows, complex tax structures emerge in an equilibrium as a result of electoral pressures and competition between centers of power. The second approach, which also describes a complex pattern of taxation, is the Leviathan model in which democratic constraints on the sovereign's power are absent. The Leviathan model is not intended to describe what actually happens in a constitutional democracy (though some people seem to have forgotten that). Instead it provides a normative framework that can be used to consider the nature of constraints on tax structure that a polity may wish to adopt. In the present context, Leviathan serves as a useful vehicle for furthering the discussion of why tax systems look the way they do.

In constitutional democracies it is reasonable to assume that expected support for a political party will rise with the increase in welfare for voters that can be attributed to its policies. This is a key assumption in the spatial voting approach to political equilibrium about which there is now a substantial literature (e.g., Coughlin and Nitzan 1981, Lindbeck and Weibull 1987, Hinich and Munger 1997 and others). In this framework, each tax instrument, such as a particular tax base or special provision, will have a different loss of expected votes or political cost associated with it, reflecting the costs of organizing opposition to taxation and the welfare losses resulting from economic adjustments to the use of the instrument. Governments that are forced by competition to maximize expected support will thus aim for a tax skeleton that equalizes the marginal political costs of raising another dollar of revenues across tax instruments.[15] In this equilibrium, it will be trying to implement a fiscal system that makes the aggregate excess burden of taxation as small as possible, although even substantial increases in the welfare cost of taxation will be tolerated if this allows for greater satisfaction of politically sensitive or influential groups. This logic will to some extent be familiar to those who adopt the optimal tax approach to fiscal design, as well as to those who adopt a Leviathan perspective as we shall see, although in these frameworks there is no need to incorporate political margins nor to characterize a political equilibrium.

In the competitive equilibrium framework, it is possible to understand how the tax skeleton arises endogenously once we also acknowledge that fiscal systems are costly to administer (Hettich and Winer 1988, Yitzhaki 1979). To economize on the costs of actually operating a tax system, governments must group related activities into composite bases to lower transaction costs for themselves - the costs of becoming informed about taxpayers, of designing tax structures, and of enforcing tax laws. In a similar manner, they combine taxpayers into rate bands, rather than taxing each individual at a unique rate. However, such grouping creates a loss in expected political

[14] Special provisions are often called loopholes, especially when the writer thinks they ought not to exist.

[15] In the spatial probabilistic voting models referred to, there is a useful Representation Theorem first noted by Coughlin and Nitzan that can be used to model the equilibrium choice of policy instruments. There is a synthetic political support function, the maximization of which can be used to replicate the non-cooperative Nash electoral equilibrium. Under certain circumstances, the first order conditions for this problem, which describe the Nash strategies of the parties, can be inverted to solve for the relative influence weights on various groups of voters. See the computable spatial voting model (incorporating the Gemtap tax model of the U.S.) by Rutherford and Winer, ch.7 in Hettich and Winer 1999).

support, since differentiated treatment of heterogeneous taxpayers would maximize support in a frictionless world. Governments must balance this loss against the gain in support from spending fewer resources on administrative activities and more on the provision of public services.

By extension, similar arguments can also be used to explain the existence of special provisions. If there is a group which offers effective opposition to the inclusion of a specific activity in a particular base, it may be cheaper to placate it with a special provision, rather than with the creation of a separate base for the disputed item. Thus, capital gains may become part of a broadly defined income tax, while being taxed at a rate that differs from the rate applied to other types of income. It should be noted that in this framework, special provisions are a rational response by governments which expect to compete with opposition parties in the future. They cannot be interpreted as deviations from some ideal tax base designed to satisfy normative criteria, which in actuality may have limited support among voters. Nor are they introduced primarily as a hidden substitute for direct subsidies, as is often argued in the tax-expenditure literature. Special tax provisions would exist even in a world where no attempt is made to give direct subsidies to encourage particular activities.[16]

The tax skeleton thus emerges as a sorting equilibrium that is formed in the face of information and administration costs. It follows that changes in the nature of heterogeneity in voter preferences will alter it. Moreover, since revenue structures are equilibrium outcomes, they should be expected to adjust whenever any significant exogenous shock occurs. If the size of a potential base expands, for example, we may expect the marginal excess burden of relying more heavily on that tax source to fall relative to the burden from using other bases to raise the same revenue. Relying more heavily on the now larger base (the base effect in Kenny and Winer 2006) also disperses political opposition across a wider economic space. From this perspective, the increased reliance on taxation of business income as the manufacturing sector develops that Mares and Queralt (2015) observe is likely to occur to some extent even without direct pressure from landowning elites. It is important to note that such adjustments are not a sign of political instability nor of 'tax reform' in some normative sense.

In the light of the base effect, the worldwide movement to extend consumption taxation to services as that sector of western economies grows in relative size is understandable and, in my view, would have occurred in some form sooner or later even in the absence of explicit normative arguments about tax cascading and the inefficiency of manufacturers sales taxes.[17] The VAT form of consumption taxation that has been widely adopted also maintains taxation of imports as the move to freer trade after the Second World War reduces tariff revenue.[18] In the same light, the taking on of more public debt by hard pressed countries in the E.U. after the reduction in interest rates due to the introduction of the common currency was also to be expected.[19]

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[16] A tax-expenditure (see Surrey 1973) is a deviation of actual tax payments from tax liabilities that would apply if taxation was levied on income from all sources in a broad-based income tax system. Those who advocate the closing of loopholes, as they refer to them, in this tradition think that the transferring of additional revenue thereby raised into direct public expenditure would improve governance generally. One should note that in the competitive model, closing special provisions is likely to increase opposition to taxation and thus lead to a smaller public sector.

[17] Why the degree of coverage across commodities of VAT systems varies across countries remains to be explained.

[18] There always is a danger of expost rationalization in such statements. The general move towards a base that taxes services and imports seems a sensible prediction however.

[19] Predicting the recent debt crises in Greece and other southern E.U. countries is another matter.

In addition to the base effect, there is a scale effect to be reckoned with: as demand for public services grows all revenue sources will be relied upon to a greater extent, depending on the relative political costs associated with each source. But that does not mean that causality goes from government size to tax structure. In the standard competitive framework described above, public spending and the formation of tax structure occur simultaneously. One can ask if an exogenous shock that leads to greater efficiency in taxation (e.g., *invention* of the VAT), leads to bigger government? Or if causality runs from factors underlying the demand for government to tax structure? Folk wisdom holds that tax withholding associated with the income tax was a factor responsible for growth of government in the 20th century. There is some empirical evidence that the adoption of a VAT leads to modest government growth (Keen and Lockwood 2006) and, more generally, that reduction of deadweight costs leads to growth of the public sector (Becker and Mulligan 2003). On the other hand, evidence that the causal effect of tax structure on government size is small compared to the effect on the tax mix of changes in factors determining demands for public services is provided in Lee et al (2013). Defining and determining causality in a fiscal system is difficult, just as in other contexts. Hoover and Sheffrin (1992) discuss some of the technical issues while investigating causality for the United States.

Finally, the general substitution of policy instruments in the competitive framework should be integrated, including the use of regulations and laws that may serve as substitutes or complements to specific tax policies. It follows that a constraint on the use of a particular tax instrument, such as a balanced budget law or imposition of a flatter tax on income, may lead to the introduction of more special provisions in other bases, and to the use of non-tax policy instruments which can have offsetting effects on voters. This is simply the logic of political support maximization by parties in a world where there are multiple policy instruments that can be used to differentiate among heterogeneous taxpayers.

To summarize the main points, the competitive framework shows how the tax skeleton arises as part of an electoral equilibrium. It emphasizes the incentives that governments have to deal with the full welfare costs of taxation, while taking information and administration costs and the relative political influence of various groups of taxpayers into account. Since welfare losses and gains from alternative policies matter, there are reasons for the fiscal system to incorporate reactions by voters to what they think are unwarranted departures of what they get from what they think they deserve to receive. The Wicksellian connection may remain loose in an equilibrium however, and what we can expect at best in this respect in a competitive electoral system is not, in my view, a settled or even a well-studied issue.

The Leviathan approach is a polar opposite to the competitive paradigm. It is a normative framework, and one in which there are no politics of any kind. The public sector is larger as are aggregate excess burdens because there is no need for the sovereign to accommodate opposition to taxation by those who pay. In this framework it can be shown that optimal tax rules are the same as those required for revenue maximization by Leviathan through the equivalent of price discrimination (Brennan and Buchanan 1980, 80-82). Thus tax simplicity, which is evidently incompatible with vigorous electoral competition, is also shown to be incompatible with the unconstrained exercise of state power.

The usefulness of the Leviathan framework is that it helps us to think about what constraints on tax structure might be desirable in a democracy, if they could be adopted. Proposals for uniform tax rates and broad tax bases, much discussed in the normative public finance literature, emerge from application of the Leviathan model as appropriate responses to government predation. Much earlier, Simons (1948) also argued for a broad base tax on income as a precondition for the maintenance of a free society (Hettich 1979), a message later reinforced by Buchanan and Congleton (1998). As Simons reputedly said, it is desirable to prevent the state from dipping into great incomes with a sieve. Broad bases without special provisions reduce opportunities for tax discrimination by political agents, though this proposal does not address the role of regulation as a substitute for taxation.[20]

Consideration of constraints on Leviathan raises the more general issue of the role of quasi-constitutional constraints in liberal democracies, such as balanced budget laws. A sharp debate on the topic in Moore and Penner (1980, part 3) among Buchanan, Downs, Olson and Riker illustrates some of the contending points of view. Budina et al (2012) provide a survey of balanced budget rules that have actually been adopted in different countries, and Debrun et al (2008) for the E.U. countries and Hou and Smith (2009) for U.S. states provide empirical evidence about the impacts of such rules. While these laws appear to have had some effect, it is not obvious whether they increase welfare by effectively limiting government size and scope, or reduce welfare by making it more difficult to implement state-contingent policies. (Azzimonti et al 2016).

Advocacy of budget laws stand in contrast to the arguments for constraints on government that stem from the granting of operational independence to the central bank and the assignment of an inflation target as the central bank's main guiding principle. These constraints are widely accepted in almost all mature democracies as having a beneficial effect on social welfare. One wonders, then, why central banking is so different from 'central taxing'? Blinder (1997) speculates on what central taxing might actually look like in the U.S. But he does not answer that question.[21]

More structure than has been outlined so far can be added in the competitive paradigm, to which I return, if specific features of political institutions are acknowledged. There is the difficulty of enforcing contracts with successive democratically elected governments over time, giving rise to the capital levy or time-inconsistency problem. When investment is first attracted by low taxes and then treated as a “sitting duck” once capital has been sunk, the long run result may be worse that the short term gain in tax revenue. Persson and Tabellini (2002) and Marceau and Smart (2003) consider how the capital levy problem may be attenuated by the operation of particular features of democratic politics. For example, lobbying by those who are the target of predatory capital income taxes, often decried in the normative tax literature, may be beneficial in dealing with the time-inconsistency of elected governments.

Because there is no credible competition regulator for nation states, international tax competition

[20] The views of Simons about broad base taxation have been used by opponents of so-called tax-expenditures mentioned above. Besides miscalculating the revenue implications of forcefully removing special tax provisions, this view ignores Simon's fundamental concern with liberty by assuming that any revenue raised by the closing of loopholes belongs to the government, rather than to the taxpayers from whom the money is taken.

[21] A former high ranking member of a Ministry of Finance, when asked this question in our private conversation, answered that taxation was too powerful to be left in the hands of a 'central banker'.

becomes more intense as transactions and information costs decline. Keen and Konrad (2013) survey work on this this issue, while Sinn (2003) studies competition between states while allowing for the substitution of tax and non-tax policy instruments of various kinds. Earlier it was suggested that international competition tends to forge connections between taxing and spending for mobile taxpayers. Competition between subcentral jurisdictions within states also grows as the costs of migration fall, and this sort of competition may have similar consequences. Salmon (1987) and Besley and Case (1995) argue that yardstick competition, in which voters compare the performance of local politicians with those in neighboring jurisdictions, incentivizes local governments to shape up even when taxpayers do not move.

A complete picture of how contemporary tax structures are formed and what they look like will also incorporate the way in which legislative institutions actually work. I have already alluded to an ability to balance spending and taxing that the Westminster system may give to the Minister of Finance. The doctrines of budget secrecy and cabinet solidarity enhance the Minister's power vis a vis the spending ministers (see again Breton). Steinmo (1993) compares the centralized power of Westminster system in the U.K. with the U.S. congressional system of checks and balances and Sweden's two chamber PR system. For example, he relates what he sees as greater U.S. tax complexity and stability than in the U.K. to the relatively larger number of decision makers of the U.S. system.[22] Ganghof (2006) and Hallerberg and Basinger (1998), following Tsebelis (1995), study the role of veto players whose agreement is needed before the status quo can be legislatively changed in a significant manner. They provide evidence about the role of veto players in the reduction in corporate taxes in OECD countries in the 1980s, disagreeing about whether veto players acted so as to slow corporate tax reductions (H/B) or in fact played no role at all because of the strength of international pressures (G)[23].

3.1 Public debt and common pools

A large literature attempts to explain public debt as a part of an electoral equilibrium. See, for example, Tabellini (1991), Alessina and Perotti (1995) and Skilling and Zeckhauser (2002) among many others.[24] I have assigned debt its own subheading because I want to ask if public debt is an essentially different way of transferring resources from the private to the public sector, as much of the literature appears to assume? It is argued by Buchanan and Wagner (1977) and, I think, widely accepted that a nineteenth century predisposition towards fiscal restraint was relaxed after 1945 by the adoption of Keynesian thinking. The influence of this idea on the proclivity of governments to make use of deficit financing was, no doubt, substantial. But does it then make debt qualitatively different as a way of raising revenue?

Issuing public debt is like taxing the future.[25] Since current majorities are not constitutionally bound by future ones, there is an incentive to push the cost of current expenditure towards future taxpayers who do not vote in contemporary elections. However the common pool problem in fiscal

[22] Ehrlich (2006) argues that it is the large number of access points allowing special interests to influence policy makers that leads to complexity in the U.S. tax system. This complements Steinmo's analysis.
[23] Empirical work on veto points in Winer et al (2011) supports the Ganghof conclusion.
[24] Tabellini considers why public debt issued in the present is repaid. Alessina and Perotti explain why Barro's tax smoothing model alone cannot explain deficit financing. Skilling and Zeckhauser investigate empirically the role of political competition as a constraint on the size of the public debt.
[25] Exactly how to measure the tax base of the future is not clear.

politics - that taxpayers are like fish in international waters to different political agents, special interests and governments - is a problem in the present as it is with respect to the future. There is an incentive to 'overfish' in the present too, imposing social costs on others while enjoying private, tax-financed benefits. This tendency to exploit the fiscal commons is present in many dimensions between special interests and the general public, across political districts and across states or provinces in a federation.

Any of these dimensions of the common pool problem can get out of hand, and likely sometimes do. (See von Hagen 2006 for an analysis of common pool problems in fiscal institutions.) However, in all of these dimensions where the problem is present, at some point marginal utilities from additional shifting decline and their marginal political cost counterparts increase. This will happen with respect to the future at least because older voters do care about their children and grandchildren and because younger voters expect, and political parties hope to be around when bond holders have to be compensated.

There will be disagreements between young, the middle aged and the elderly about exactly how much the future should be exploited. As Brennan (2012) points out, since issuing more public debt reduces current tax rates and increases future ones, younger voters who expect higher incomes in the future will probably want less debt to be issued in the current period than would older voters at the peak of their life-time earnings profile. However, political actors must cope with all sorts of essentially similar conflicts among voters, such as disagreement over the importance of medical care versus defense. It is not clear why disagreements about the intertemporal dimension of public policy are qualitatively different from conflicts that arise in other (contemporary) dimensions, nor why 'overfishing' with respect to the future is qualitatively different from other instances of the common pool problem.

Dealing with decision externalities that lead to the common pool problem involves either changing the incentives of decision makers, or bounding the social loss. Altering incentives so that decision makers take all social costs and benefits more fully into account requires changing the nature of political institutions, and is difficult to engineer. So in the case of public debt, for example, we often see devices that try to bound the loss using the balanced budget laws discussed earlier. By bounding the loss, I mean that the original incentive to exploit the future, or whatever margin is open for debate, is not altered, though other aspects of political behavior will change (it is hoped) after the constraint is imposed.

4. Fiscal redistribution in pluralistic societies

What we observe as coercive redistribution at a point in time may actually be part of a grand interpersonal and intergenerational social insurance scheme, a way of thinking suggested by Lerner (1944) as well as by Buchanan and Tullock (1967, 92-95)[26]. In that case, redistribution is a public service for which some sort of Wicksellian connection may be maintained. Perhaps this approach to explaining observed redistribution should be developed more extensively than it has. But this is not how redistribution is treated in most of the public choice literature. Apart from a limited amount that is charitable, whether from utility interdependencies (e.g., Hochman and Rogers, 1969) or for some other reason, it is widely regarded as coercive, necessarily widening the gap

[26] Rawls (1971) presents an alternative and influential perspective of this sort.

between what citizens pay and what they receive. The central task is to explain why this kind of redistribution arises as the fiscal system and the economy come to a political and economic equilibrium, and to describe its structure.[27] Ideas and beliefs held by voters and politicians about distribution may influence the equilibrium. However, they are assumed to be given in this approach, with changes in such beliefs, if they occur, being treated as exogenous shocks.

To consider fiscal redistribution, it is useful to proceed by distinguishing between redistribution at a point in time and what happens in the long run, and then to distinguish between these analyses and a concern with contemporary responses to economic shocks. The workhorse of much of the static analysis of redistribution has been the median voter model, as applied and developed by Romer (1975), Roberts (1977), and especially Meltzer and Richard (1981, 1983). In the Meltzer/Richard version, redistribution and the size of government are codetermined in a unidimensional framework where the model has an equilibrium. It matters who is allowed to vote, and what they know when they do turn out.[28] When the franchise is universal, everyone is well informed and the distribution of income is right skewed, so that mean income is higher than the median, redistribution that maximizes the decisive (median) voter's welfare leads to redistribution to those below the average through the difference between a uniform lump sum subsidy and a proportional income tax. The extent of this redistribution is limited by the fiscal instruments available and, of course, by the the negative effect of taxation on the median voter's net labour income.

Empirical evidence has not been kind to this model. The effect of greater income inequality, which in the model leads to an increase in redistribution and government size, is often found to reduce them or have no significant effect in various contexts. See for example, Perotti (1996), Gouveia and Masia (1998), Iverson and Soskice (2006) and Borck (2007).[29]

In a working paper, Meltzer and Richard (2014) generalize the model to a growth context. Here increasing the tax rate discourages labour supply and growth causing the distribution of pre-tax income to widen. Inequality in after-tax income or consumption may, in contrast, fall. In this framework, the median voter may sometimes vote to reduce taxes and thereby increase his or her wages, thus narrowing pre-fisc inequality as growth rises along with post-fisc inequality. They calibrate the model to U.S. data.

The static median voter model of redistribution is elegant, and it's extension to growth with an emphasis on labour income instead of capital income (as in Piketty's analysis of inequality, 2014)

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[27] In contrast, in the social planning approach to public policy used in public economics, any degree of coercive taxation is desirable as a matter of social solidarity if it allows the planner to transfer more resources from those with low marginal utilities to those with high ones, so that net of the efficiency cost of the transfer, overall social welfare increases.

[28] On specific issues, say local property tax rates, or new school construction, only those directly concerned may turn out to vote. What information voters have also matters as, for example, when voters do not understand the incidence of specific taxes (See Bartels 2005 and Slemrod 2006).

[29] Franchise extension to poorer citizens should also increase redistribution in the median voter framework, and this prediction has also been the subject of some empirical work. The prediction is not confirmed for the particular case studied by Aidt et al (2010). One should also note that evidence regarding the median voter is not strictly one sided. Borge and Rattsø (2004), for example, provide some favorable evidence concerning the role of inequality.

is substantial. But even if we set aside the empirical evidence referred to, a serious conceptual problem with both is that a median vote model cannot deal with the multi-dimensional policy environment of the tax skeleton discussed in the previous section, nor a world where regulation and laws are also employed to alter the distribution of income and wealth. In other words, it cannot inform us about political economies where redistribution among groups of taxpayers in differing dimensions, such as among men and women, among races, immigrants and old stock citizens, and among workers in different sectors of the economy, occurs via a complex tax structure and via regulations and laws favoring producers over consumers, favoring some groups differentiated by income but also by additional characteristics such as race, ethnicity, age, and industry. In a world of pluralism in electoral politics, it is possible that the middle income group, where the largest mass of voters resides, may emerge as net winners in particular cases, as Director's Law predicted in a simpler context (Stigler, 1970), and other patterns are possible.

Despite the fact that income churning among interest groups is embedded in every pluralistic society, we could net out all redistributions, work out the implications for net income and wealth, and model that. But is it net redistribution in the income dimension that is the main focus of electoral competition in such societies? If that is not the case, theorizing about net income will not allow us to understand the structure of redistribution.

In a contribution that is of about the same vintage as the one by Meltzer and Richard, Usher (1977) presents a more general model of redistribution in which heterogeneity of the electorate in two dimensions - income and tastes for private goods that can be socialized - matters. Usher studies how the demand for socialization of goods like housing, medicine and education, which are then supplied in equal per capita amounts (in contrast to the lump sum subsidy in the Meltzer/Richard model) determines the extent of redistribution. ore income inequality leads to a larger government and more redistribution by increasing the fraction of the population voting for socialization. But diversity of tastes for the commodities that might be socialized also matters. If preferences are very diverse, meaning more dispersed, then some of the poor with little taste for socialized goods have common cause with the rich to oppose more government. This implicit coalition - only individual self-interest in fact matters here - limits redistribution and the size of the public sector.

Usher's logic fits easily with the understanding of the tax skeleton outlined above, since heterogeneity of preferences is also a key determinant of the sorting equilibrium. Usher's model also suggests that greater heterogeneity of tastes in an electorate, interacting with the distribution of income, will lead to less redistribution. Independently of his model, this prediction that has been subjected to some empirical investigation (e.g., Alessina et al 2001, Habyarimana et al 2007).

A body of later work adds other important dimensions of heterogeneity to the analysis of redistribution. Roemer (1998) studies situations where voters differ by income but also by a non-economic dimension such as religion. None of the interest groups so defined are necessarily decisive by themselves, requiring majority coalitions be formed. These coalitions will not always favor higher taxes on the rich. Austen-Smith and Wallerstein (2003) construct a model in which voters differ by race as well as by income, while the government has a non-fiscal instrument which can affect distribution, such as affirmative action law which has consequences for wages and taxes. The presence of this non-fiscal instrument has the effect of reducing demand by some voters for redistribution according to income alone.

Beginning with Usher`s model, there is a general message in the line of work pointed to concerning the roles of heterogeneity and the interaction of the various significant dimensions in which taxpayers differ. For this reason, the Appendix presents a model from Winer et al (2009) that is designed to study such interactions directly by simulating electoral equilibria in a spatial voting model under different assumptions regarding the statistical distribution of skills, tastes for public goods, and of political influence. The outcome of the simulations are described by considering how the shapes of these distributions combine to determine the relative importance of income and consumption taxation in the equilibrium, an issue that has generated a large literature in public finance. Questions such as this cannot be studied in a more limited theoretical framework, such as the median voter model.

In the frameworks discussed so far, political institutions lie in the background. A fuller understanding of redistribution in mature democracies can be gained by considering the role of electoral systems more directly. Iverson and Soskice (2006), for example, argue and provide evidence that that systems of proportional representation (PR) lead to more redistribution and a larger government than do majoritarian electoral systems. They show that that there are relatively more left wing governments in countries with PR, and that the reduction from pre-fisc to post-fisc Gini coefficients is larger in countries with PR than where a majoritarian electoral system is used. The intuition is that in majoritarian systems, leaders of successful parties can waffle to the left or the right somewhat. If a center-left party goes further left, taxes on the middle class will rise as will redistribution to the poor, so the middle class prefers to support a center-right party which may go further right after the election. Under PR, parties are coalitions formed after the election, each member of which pursues the preferences of its supporters. Here the middle class coalition member prefers to join with the left party in order to exploit the rich.[30]

In the longer run, *the* question about redistribution is the one implicit in the title of Roemer's paper: why don't the poor expropriate the rich? The question is enhanced by contemplating the extensions of the franchise down the income scale that occurred over the nineteenth and early twentieth centuries. In almost any model of electoral equilibrium, extending the franchise shifts political influence downwards.[31]

Roemer provides provides one particular answer to the question, and Austen-Smith and Wallerstein another. Przeworski and Sprague's analysis of what limited the taxation of capital can also be included here, illustrating the connection between the evolution of the power to tax and the analysis of redistribution over long periods. It is important to note that in each of these contributions, the key interest groups involved are different.[32] Further understanding of the long run limits to redistribution comes from looking at exactly how the franchise evolved. Extensions

[30] McGillivray (2004) develops an analysis in which the strength of parties in majoritarian versus PR systems is a key factor shaping redistribution via industrial subsidies. For example, in a majoritarian system, strong parties target politically favored industries concentrated in marginal districts, as is well known. But with weak parties, it is safe districts that get most attention, and favored industries are large and widely dispersed.

[31] In this respect, there is also evidence against the median voter. See Aidt et al (2010) on how spending on sanitation fell when rights in England were extended to the middle class, which also contradicts Director's Law. I note that there is another empirical literature on Director's Law paralleling that on the median voter, which I do not deal with here.

[32] Harms and Zink (2003) survey answers classified according to whether the political process in some manner prevents expropriation, or whether the explanation offered is one where it is in the interests of the poor to avoid

of the franchise were usually conditioned on ownership of wealth, income and property by newly enfranchised voters who were being enlisted by existing political factions as part of contemporary political struggles. (See Plumb 1969 and Wright 1970 on England). This process, along with the development of countervailence discussed by Gordon, helped to maintain the boundary between public and private in what are now the mature democracies. So too did the role of conservative upper chambers in the legislative institutions that emerged, which could be counted on to resist attempts to radically redistribute (Congleton 2011).

Thus there are several reasons that likely combine to explain why the rich are not expropriated in the long run. In addition to (i) the negative effects of taxation of the rich on average incomes and growth, these reasons include (ii) the development of a boundary between what is public and what is private that went along with the rise of market economies and the evolution of the rule of law, (iii) pluralism in electoral politics by which I mean interest group politics that operates in several dimensions besides income, and (iv) elite control or at least influence over the development of democratic political institutions.

The role of institutions in determining the redistributive content of the state over the long run is apparently deeply embedded in social history, as the story of the franchise suggests. Acemoglu and Robinson (2000), referred to earlier, argue that democracy itself served as means by the rich sought to fend off revolt or reduce costs of repression by committing in this way to redistribution towards poorer voters.[33] Sokoloff and Zolt (2006) study how the economic and political forces behind the slow development of political equality and the persistence of inequality in Latin America led to tax structures that are biased towards consumption and away from progressive taxes on income and wealth.[34] (The contrast to what happened in the Nordic countries is dramatic).

To move to the third issue in the analysis of redistribution - contemporary responses to economic shocks - it necessary to leave the origins of democracy for another, even more lengthy chapter. Three questions are of interest: What responsibility for the rise in inequality over the past three or four decades, at least in the Anglo Saxon countries (see Atkinson and Piketty and colleagues 2007, 2010 for individual countries, and Milanovic 2016 in a global context), is due to change in the progressivity of fiscal systems, as opposed to structural economic change? Second, what explains the changes in fiscal redistribution so observed? Finally, and closely related to the second question, why have policy responses to rising inequality not been more forceful?

I will not try to summarize work on the role of changes in progressivity in the fiscal systems of democracies as opposed to structural shocks as causes of more unequal distributions of after-fisc incomes and of consumption. See, for example Duncan and Peter (2016), OECD (2011) and Roine et al (2009) and the references therein. To the extent that trends in fiscal systems are responsible, the task is to explain those developments. Existing models of tax structure may be of help in

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excessive expropriation. Other surveys of work on redistribution include Boadway and Keen (2000) and Acemoglu et al (2015).

[33] In this case, one still needs to explain why democracies will redistribute on balance from rich to poor, as Iverson and Soskice (2005, 167) point out, and this is not obvious as the discussion in this section suggests. For a contrary view to that of Acemoglu and Robinson, see Ansell and Samuels who argue that the threat to incumbent elites came from wealthy, but disenfranchised newly emerging economic groups.

[34] On taxation in developing countries more generally, see Profeta and Scabrosetti (2010) and the references on 'Taxation and Development' in Winer et al (2014)..

tracking down the underlying factors if they can be combined with an understanding of how fiscal structure affects distributional outcomes.[35] A guess often made is that these factors include the declining costs of international transactions, especially for capital investment which leads to reduced taxation of capital incomes, though Roine et al find that trade openness has no clear effect on top incomes in a sample of developed countries over large parts of the 20th century. Acemoglu et al (2015) and Profeta and Scabrosetti (forthcoming) reference additional studies and provide some of their own work. Whatever the answer, it is more complicated than the election of particular governments led by particular personalities.

A good answer to the second question will also carry with it an answer to the third. In the median voter model, more inequality leads unambiguously to more redistribution and a larger public sector. Those who think that model is useful in answering the second and third questions will want to ask why the median voter appears to have been asleep, or why lower income voters have not voted their interests or not voted at all (Bonica et al 2013, Erikson 2015). From the perspective of the competitive paradigm, it is not obvious what will happen as pre-tax inequality increases as a result of economic shocks. It depends on the nature of interest groups and the specific reasons why inequality has grown. If the decisive shocks are the loss of employment opportunities and of relative standing by middle and lower income factory workers due to globalization, technical change and shifting patterns of demand, we should not expect more progressive redistribution to those in the lowest quintiles of the income distribution. But here too, as with median voter models, the relatively poor growth of net, after tax and transfer incomes in the middle remains to be explained.

Bonica et al attribute a failure of the U.S. to respond more forcefully to growing inequality to low turnout of the poor (noted also by Erikson), the corrupting role of money in politics, gerrymandering (emphasized by Ardanaz and Scartascini 2011 in an international context), and political polarization among other factors that contribute to policy gridlock.[36] If one looks at the OECD countries as a whole, there does appear to have some response to rising inequality in proportion to the increase in inequality (Kenworthy and Pontussen 2005), though a closer look at selected countries in the European Union will likely suggest that these responses have been heterogeneous and not uniformly in one, always progressive direction.

Perhaps we are seeing the effects of the forces that restrain the power to tax over the longer run, because the redistribution required was large enough to effectively alter property rights underpinning the market economy. Perhaps it is the special interests who benefit from ongoing structural shifts in the economy that are blocking more progressive public policies of various kinds, especially regulation, to prevent the watering down of their opportunities. Emphasizing the importance of redistribution as social insurance, Alt and Iverson (2016) point to increasing labor market segmentation to explain widespread resistance to more redistribution by middle class voters who think they have less to fear with respect to their future employment prospects. It might be that narrower political factors, such as those pointed to by Bonica et al, but which work differently in different places, are important in explaining why countervailing political forces that favor more

[35] A reduced form approach combining the two issues will always leave doubts about the role of the fiscal system.
[36] For more contributions in this vein, see the bibliography by Faricy (2016) on the politics of income inequality in the United States.

redistribution have not yet been more successful. Or all of these factors and forces in some combination.

A useful step would be to understand the redistributive actions that have been taken. The theory essentially deals with the longer run, so perhaps a dynamic analysis is required where theory can inform the specification of a cointegrating relationship, including the systemic effects of globalization, longer run structural change and the aging of electorates, with a host of possible factors vying for attention as determinants of shorter run developments. As a practical matter, explanation of the difference between pre and post fisc Gini's may have to be the object of the investigation even though, as I have suggested, the general distribution of net income is not the immediate target to which government policy is often directed.[37]

5. Conclusions

In this chapter I explore three central issues in the political economy of taxation: the evolution of the power to tax in (what are now) the mature, constitutional democracies; the origins and structure of the tax skeleton that characterizes modern tax systems; and redistribution in pluralistic societies over various horizons and in the face of economic shocks. To conclude this overview and analysis of these issues, I offer some observations and pose some questions that may be of interest in thinking about further research on fiscal systems in competitive political systems:

- *Taking the links between spending and taxing seriously:* Even though taxes are, in the first instance, levied independently of the delivery of public services, it is important to keep both sides of the budget in mind when studying taxation. Taxes are used for something, and people care about the balance between what they actually get and what they think they ought to get at the socially determined tax-prices they pay. The determinants and strength of the Wicksellian connection between spending and taxing for individuals and groups deserves further study. In particular, what we can expect at best in this respect in a competitive electoral system is not known and deserves to be investigated. The focus of such work will extend beyond the question of budget balance at an aggregate level.

- *Reconciling ideas about the long run and the short run:* In discussing the long run evolution of fiscal systems, the links between taxing and spending for individuals and groups inevitably arises. On the other hand, to understand the tax skeleton - the combination of bases, rate structures and special provisions that characterize modern tax systems - it is convenient to start with an assumption that taxing and spending are strictly separated, and then proceed to analyze tax structure independently from what happens on the other side of the budget. The disconnect here between the long run analysis and the static explanation of the tax skeleton is obvious. Reconciling the long run study of the evolution of fiscal systems and the static analysis of tax structure is a worthy task. One can ask, for example, how the longer run evolution of the power to tax shapes the contemporaneous choice of fiscal systems, and how the factors underlying the formation of the tax skeleton affects the nature or efficacy of what we think of as constraints

[37] A problem that is known about but usually ignored in studying the difference or ratios of pre and post fisc Gini coefficients is that observations on the distribution of earned or pre fisc incomes is not independent of government policy. Many public policies are aimed at labor markets, or have substantial effects on them. Uncovering the distribution of earned incomes in the absence of government is a difficult general equilibrium problem.

on that power.

- *Coming to terms with the tax skeleton, and with the substitution of governing instruments:* The tax skeleton is an equilibrium structure consisting of of tax bases, rate structures for those bases, and special provisions that alter the precise definition of the bases and create divergences between nominal and effective tax rates. Studying the connection among all three of these elements in the same empirical model has not been accomplished, likely because of the complexity of special provisions. It is also desirable to broaden the study of taxation to incorporate theories of governing instruments, including regulation and law. How can we fully understand taxation without taking important substitutes for fiscal instruments into account?

- *Understanding constraints on tax policy making:* Constraints on the tax skeleton have often been suggested, including broad base tax bases that prevent tax discrimination as well as balanced budget laws. Balanced budget laws are often adopted, perhaps with some effect. But constraints on contemporary tax bases are almost never observed. We may see base broadening as part of so-called 'tax reforms', but these are most probably equilibrium responses to structural change in the economy or to other shocks. Why then are balanced budget laws different in kind from constraints on tax bases? We should also ask why 'central taxing' is different from the adoption of quasi-independent central banking with inflation targeting, which has occurred in almost all mature democracies. Is it because taxation is too complex and too powerful an instrument to be delegated?

- *Modelling redistribution in a pluralistic society:* The central task is to explain why redistribution arises as the fiscal system and the economy come to a political and economic equilibrium, and to describe its structure taking changes in the structure of the economy and in the beliefs of voters as exogenous shocks. Understanding why governments have not responded more forcefully over the past few decades is an obvious focus for such research, as is explanation for observed international variation in such responses as have occurred. At the conceptual level, there appears to be a tendency to simplify the study of coercive redistribution by treating it as working directly on net income inequality. But can an adequate understanding be developed in this way? Or, instead, is it necessary to study redistribution in a pluralistic society as an equilibrium outcome of various types of fiscal *and* non-fiscal policy actions targeting different groups, some of which are not defined by income alone?

- *Investigating moments in the political economy of fiscal systems:* In the discussion of redistribution, the reader will have observed the importance of the mean and skewness of the distribution of pre-tax income (in the median voter model), the mean and variance of the distribution of tastes for public goods (in the extension to include socialization of commodities), and the distribution of political influence generally. It seems a good bet that all three first moments - mean, variance and skewness - of the distribution of productivities, tastes for public goods and political influence will play significant roles in the determination of equilibrium tax structures, and of fiscal systems generally. They will determine the economic and political responses to taxation and voting behavior of citizens located at different parts of the distribution of political influence. Investigating the role of all these moments in a unified model of tax structure and redistribution should be on the research agenda. One approach to such an investigation is outlined in an Appendix.

The political economy of taxation is an essential field in Public Choice. It is essential because if we cannot understand something that is so central to the existence and operation of the state, the claim that Public Choice has to the attention of social scientists is weak. Work on the political economy of taxation is important, and there is much to do.

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Appendix:
Consumption versus Income: Three Moments in the Political Economy of Fiscal Choice

This appendix presents a computable spatial voting model designed to explore the determinants of the tax mix when there are two tax bases: consumption and income. Although the choice between these two bases is an important and longstanding normative tax policy issue, the investigation here is strictly positive in nature. A second purpose of the Appendix is to show how a computable model of the tax mix can be constructed. The model presented below is taken from Winer, Warskett and Hettich (2009) with permission of the journal.

The determinants of the revenue mix emphasized in the model are the first three moments - the mean, variance and skewness - of the distributions of pre-fisc income or skills, tastes for public goods and effective political influence. The mean relative to the median as a measure of the skewness of income, the mean and variance of tastes for public goods, and the distribution of political influence generally, arose singly or in some particular combination as determinants of tax structure and of redistribution at various points in the main text. The model presented below is more general than the discussion in the text because it allows all three moments of the distributions to jointly determine the structure of taxation, the size of government and the extent of fiscal redistribution. On the other hand, specific political institutions are implicit in the model; tax structure is regarded as an equilibrium outcome of political competition, and the key distributions in the model are present because politics as well as economics matters. The model is intended to apply to any competitive political system regardless of the specific electoral system that may exist.

Only the basic model and a summary of the results of a set of experiments with it concerning the income/consumption tax mix are presented here.

1. Setting up the model

There are three policy instruments, a proportional tax an labor income, a proportional consumption tax, and one pure public good. Fiscal policy choices in this framework reflect the balancing of the heterogeneous and sometimes opposing interests of the voters. Voters (indexed by h) are defined by their skill level or gross income (s), rentier income (ω), tastes for a single pure public good (α_1), private consumption (α_2) and leisure (α_3), and their political influence $\chi(s,\omega)$. The latter is assumed to be associated with income. Preferences are Cobb-Douglas, and the presence of an exogenous amount of rentier income from a fixed capital stock insures that labor supply is elastic with respect to taxation, falling when the tax rate on labor income rises.

The aggregate supply of labor determines the size of economic activity. Proportional taxes on labor (t_l) and on consumption (t_c) in part determine the demand for leisure (x_l) and private consumption (x_c), and the supply of labor to the public (H_g) and private (H_c) sectors. Production in the public sector (x_g) uses only labor and is subject to diminishing productivity, while production of private goods uses both labor and the exogenous stock of capita or endowments.

The aggregate supply of labor determines the size of economic activity. Proportional taxes on labor (t_l) and on consumption (t_c) in part determine the demand for leisure (x_l) and private consumption (x_c), and the supply of labor to the public (H_g) and private (H_c) sectors. Production in the public sector (x_g) uses only labor and is subject to diminishing productivity, while production of private goods uses both labor and the exogenous stock of capita or endowments.

Using equilibrium conditions for labor and goods markets, the zero profit condition for firms and the government budget restraint, and given tax rates and the size of public output, we

can solve (after some work) for the indirect utility function of any voter *h*. This is then fed into the political sector of the model that determines equilibrium tax rates, with the level of public output then following from application of the government budget restraint.

The political system is assumed to be fully competitive. There are two parties facing voters whose decisions at the ballot box depend on which party's fiscal platform promises the greater level of individual (indirect) utility, as well as on a valence term that depends on the party's credibility, the 'look' of the candidate, or other matters that are unaffected by policy choices. Parties are uncertain about the nature of these valences for any voter, but they do have common knowledge of how proposed policies affect voter utility. All citizens vote sincerely.

This probabilistic spatial voting setup allows us to formulate the expected vote function (defined over all voters) for each party, which each party is assumed to want to maximize by choice of its proposed fiscal platform. These expected vote functions are assumed to be symmetric, one being the number of voters less the other. Since the expected vote functions are symmetric, party platforms converge in the Nash equilibrium of the electoral contest.

To simulate the equilibrium, the Representation Theorem is used. (See Coughlin 1992 for discussion of this theorem and proofs). This theorem tells us that the equilibrium will be one which maximizes a synthetic political support function which is a particular weighted sum of the indirect utilities of the voters. The intuition behind the theorem is that expected vote maximizing parties will want to propose a policy platform such that the opposition cannot counter with a proposal that makes at least some voters better off without making some other voter worse off. Otherwise, the opposition will be able to increase its expected vote and thus its chances of winning the election. Competition insures that in an electoral equilibrium, no such platforms remain to be found.

This doesn't mean that all votes have equal political weight however, and consequently, the parties may favor some voters over others in moving towards the Pareto frontier. In the present model, the effective influence weights assigned to each voter are exogenous to the political process, and the effects of changes in the distribution of them are explored using numerical simulation.

1.1 The individual voter-taxpayer

Each individual $h \in R_+$ has two attributes, skill *s*, and endowment or capital income ω, over which voters $h = h(s,\omega)$ are distributed according to the function F.[38] We denote by $m_s = \int s dF^s(s)$ the mean of skills, and by $m_\omega = \int \omega dF^\omega(\omega)$, the mean of endowments.

Governing instruments include a uniform tax at rate t_l on labor income and a tax at rate t_c leveled on consumption of the private good x_c. The resulting tax revenue is used to provide a pure public good x_g.[39] The wage rate for a taxpayer with attribute *s* is denoted by *w(s)* and $x_l^h \equiv x_l^h(s,\omega)$ is the leisure he or she takes out of available time T. (We let *w* be the basic hourly wage and think of *s* as effective hours so that $w(s) = w \cdot s$).

After tax income for a person of type h then is $Y(t;h) \equiv (1-t_l)(T - x_l(h))w \cdot s + \omega$, and

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[38] In the simulations the endowment ω will be correlated to s, for example as $\omega = \omega_o \sqrt{s}$.

[39] $t_c < 0$ represents a subsidy.

average total income for the population is

$$\bar{y} = \int_R \int_R y(s,\omega) dF^s(s) dF^\omega(\omega) = m_s w T (1-t_l) + m_\omega .$$ [40]

Utility is Cobb-Douglas. For type *h* this is $u^h = x_g{}^{\alpha_1} (x_c^h)^{\alpha_2} (x_l^h)^{\alpha_3}$ where $\alpha = (\alpha_1, \alpha_2, \alpha_3)$ is the taste vector, and $\sum_{i=1}^{3} \alpha_i = 1$, x_g is the public good, x_c^h is the private good, and x_l^h is leisure.

Each individual taxpayer-citizen maximizes this utility subject to their own budget

$$y(t,h) \equiv (1-t_l) T s w + \omega = (1+t_c)\, p_c x_c^h + x_l^h (1-t_l) s w \tag{1}$$

with market prices $p = (p_c, w)$ and tax rates given. This leads to the usual demand equations:

$$x_c^h(s,\omega) = \frac{\alpha_2}{1-\alpha_1} \frac{y(t,h)}{p_c(1+t_c)} \tag{2a}$$

and

$$x_l^h(s,\omega) = \frac{\alpha_3}{1-\alpha_1} \frac{y(t,h)}{sw(1-t_l)} = \frac{\alpha_3}{1-\alpha_1} \left(T + \frac{\omega}{sw(1-t_l)} \right) \tag{2b}$$

where hours of work are given by

$$l^h = T - x_l^h = \frac{1}{1-\alpha_1} \left(\alpha_2 T - \alpha_3 \frac{\omega^h}{sw(1-t_l)} \right). \tag{3}$$

Note that the presence of endowment income ω in the budget restraint (1) insures that labor supply is elastic, so that $dx_l(s,\omega)/dt_l > 0$, $dx_l(s,\omega)/dw < 0$, and $dx_l(s,\omega)/ds < 0$ and hours of work T - l^h rises with wages and skill, and falls with the tax on labor income.[41]

Using these demands, we see that indirect utility for voter h is:

$$\begin{aligned} v^h(t, p_c) &= \left(\frac{\alpha_3}{1-\alpha_1} \right)^{\alpha_3} x_g{}^{\alpha_1} \left(\frac{\alpha_2}{1-\alpha_1} \frac{y(t,h)}{p_c(1+t_c)} \right)^{\alpha_2} \left(\frac{y(t,h)}{ws(1-t_l)} \right)^{\alpha_3} \\ &= \left(\frac{\alpha_3}{1-\alpha_1} \right)^{\alpha_3} x_g{}^{\alpha_1} \left(\frac{\alpha_2}{1-\alpha_1} \frac{1}{p_c(1+t_c)} \right)^{\alpha_2} \frac{y(t,h)^{1-\alpha_1}}{(ws(1-t_l))^{\alpha_3}} \end{aligned} \tag{4}$$

2. General equilibrium economic structure

In the above presentation of individual demand, a major concern was to achieve simplicity without losing sight of the essentials. This principle also colors the presentation of the supply side of the economy below. We begin by stating key market equilibrium clearing equations:

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[40] We will work extensively with total after tax income, $y(t; s, \omega) = Tw(s)(1-t_l) + \omega$.

[41] In the model, $l^h \geq 0$ implies $\sqrt{s}(1-t_l) \geq (\alpha_3/\alpha_2)(\omega_0/T)$. This imposes a minimum on s given t_l. Also note that under the condition $\alpha_i = 1/3,\ i = 1,2,3,$ at least one half of time available for work is reserved for leisure.

Equilibrium	***Quantities***	***Price***
Labor	$H^d = H^s$	w
Private Good	$X_c^d = X_c^s$	p
Zero Profit	$p_c X_c = wH_c + rK$	r

In the following discussion, the supply of labor (given tax rates), total economic activity, the supply of the consumption good, and the equilibrium price level are determined. With this and other required information, the rental rate *r* is then solved for on entering the fixed value of capital (which can be identified with the total endowment) in the zero profit condition.

The aggregate level of economic activity is determined by total effective hours of work. In the case where tastes are the same[42], we obtain total mean (effective) hours supplied by totaling over the population where l^h is replaced by $l(s) = l^h$ for voters with skills

$$H^s = \int sl(s)dF(h(s,\omega)), \tag{5}$$

giving

$$H^s = \frac{1}{1-\alpha_1}\left(\alpha_2 m_s T - \frac{\alpha_3 m_\omega}{w(1-t_l)}\right) \quad or \quad H^s = \frac{\frac{\alpha_2}{1-\alpha_1}\overline{y} - m_\omega}{w(1-t_l)}. \tag{6}$$

We see that the offer of labour depends on the value of the vectors α and t. The requirement for it to be positive imposes an upper limit on the tax rate $t_l < 1 - \frac{\alpha_3}{\alpha_2}\frac{m_\omega}{m_s T}$. From (3) and (4) it can also be seen that $dl^h / d\omega < 0$ and $dH / dm_\omega < 0$.

2.1 The allocation of labor to public and private sectors

As shown above, total labor supply H^s depends on the tax system and individual preferences. Once this is determined, the government budget restraint (7) then allows the determination of labor demanded by the public sector, H_g, which, it is assumed, alone determines output of the public good. (One should note that H_g is sensitive to the wage rate through the effect of the wage on tax bases.) The labor left over is made available to the private sector, H_c^s.

The government budget restraint is written as

$$wH_g = t_c p X_c^d + t_l wH, \tag{7}$$

where X_c^d is the total mean demand for the private good.

To determine the supply of labor to the private sector using (7), it is necessary to obtain the mean demand for the consumption good. This is achieved by first integrating over (3) so that

$$X_c^d = \frac{\alpha_2}{1-\alpha_1}\frac{\overline{y}(t)}{p_c(1+t_c)}. \tag{8}$$

Using (7), the equation for the wage bill (8) then is

[42] When tastes are subdivided into J groups, (5) will be the sum of J parts each defined by the corresponding values of α_1 and α_2.

$$wH_g^s = \frac{\alpha_2}{1-\alpha_1}\frac{t_c}{1+t_c}\bar{y}(t) + t_l wH, \tag{9}$$

and the supply of work in the private sector can be calculated as

$$\begin{aligned} H_c^s &= H^s - H_g^s = (1-t_l)H - \frac{\alpha_2}{1-\alpha_1}\frac{t_c}{1+t_c}\frac{\bar{y}(t)}{w} \\ &= \frac{\alpha_2}{1-\alpha_1}\frac{1}{1+t_c}\frac{\bar{y}(t)}{w} - m_\omega. \end{aligned} \tag{10}$$

(10) shows that labour supply declines with tax rates: $dH_c^s / dt_l < 0$ and $dH_c^s / dt_c < 0$.

2.2 Public sector output

Output of the public sector is strictly a function of labor inputs. It is also assumed to be subject to diminishing productivity: $x_g = \left(H_g\right)^i$ where $i \le 1$. Employing (6) and (9),

$$x_g = \left[\left(\frac{\alpha_2}{1-\alpha_1}\right)\left(\frac{t_c}{1+t_c} + \frac{t_l}{1-t_l}\right)\frac{\bar{y}(t)}{w} - \frac{t_l}{1-t_l}m_\omega\right]^i. \tag{11}$$

The relative size of government measured in terms of expenditure then can be written as

$$e = \frac{t_c p_c X_c + t_l wH}{p_c X_c + (t_c p_c X_c + t_l wH)} = \frac{t_c p_c X_c + t_l wH}{(1+t_c)p_c X_c + t_l wH},$$

which is the same as

$$e = (1-t_l)\ \frac{t_c p_c X_c + t_l wH}{\left(\frac{\alpha_2}{1-\alpha_1}\bar{y} - t_l m_\omega\right)}. \tag{12}$$

Here we see that relative government size increases with mean income as in Wagner's law.

2.3 Private sector output

The private good is produced through a CES production function, the output of which represents production for the entire sector. Production requires a fixed level of capital *K*, and labor. Thus,

$$X_c^s = \left[\beta K^{-b} + (1-\beta)\left(\frac{\alpha_2}{1-\alpha_1}\frac{\bar{y}(t)}{(1+t_c)} - m_\omega\right)^{-b}\right]^{-\frac{1}{b}} \tag{13}$$

with $0 < \beta < 1$. Note that $dX^s / dm_s > 0$ and $dX^s / dm_\omega < 0$. The price level for the private good is obtained from the equilibrium condition $X_c^s = X_c^d$, so that

$$p_c = \frac{\frac{\alpha_2}{(1-\alpha_1)}\int y(t,h)dF(h)}{(1+t_c)X_c^s} \tag{14}$$

where X^s is defined above in (4.8). Thus consumption of any voter *h* is given as a share of total private consumption,

$$x_c(h) = \frac{y(t,h)}{\bar{y}(t)}\left[\beta \bar{K}^{-b} + (1-\beta)\left(\frac{\alpha_2}{1-\alpha_1}\frac{\bar{y}(t)}{(1+t_c)} - m_\omega\right)^{-b}\right]^{-\frac{1}{b}}. \tag{15}$$

Note that consumption rises with increases in wages and with individual endowments.

It is now possible to write utility in its indirect form as a function of the tax vector alone, with the public good left as a residual that can be determined from the government budget restraint:

$$v^h(t) = \left(\frac{\alpha_3}{1-\alpha_1}\right)^{\alpha_3} \frac{x_g(t)^{\alpha_1}}{\bar{y}(t)^{\alpha_2}}\left[\beta \bar{K}^{-b} + (1-\beta)\left(\frac{\alpha_2}{1-\alpha_1}\frac{\bar{y}(t)}{(1+t_c)} - m_\omega\right)^{-b}\right]^{-\frac{\alpha_2}{b}} \tag{16}$$
$$\times \frac{y(t;h)^{1-\alpha_1}}{\left[s(h)(1-t_l)\right]^{\alpha_3}}.$$

This indirect utility function is used in specifying the political equilibrium.

3. Competitive political equilibrium: Using the Representation Theorem

There are two vote maximizing political parties, denoted by 1 and 2. By assumption, there always is a positive probability of voting by person *h* for the platform of either party 1, where $t^1 = (t_l^1, t_c^1)$ is the vector of tax rates for party 1. (Similarly for party 2.) As is common in the literature, this probability is assumed to be a function of the difference in utilities received from the promised platform of the two parties: $f(v^h(t_1) - v^h(t_2))$.

The expected number of votes for party 1 then is given by the expectation

$$EV_1 = \int [f(v^h(t_1) - v^h(t_2)]dF^h.$$

In the absence of abstention, the expected vote for party 2 is $EV_2 = N - EV_1$.

The parties choose platforms to maximize expected votes, given the platform of the opposition, in a non-cooperative Nash electoral equilibrium. Party 1's platform in this equilibrium must satisfy the first order condition:

$$\frac{\partial EV_1}{\partial t} = \int \left(\frac{\partial f}{\partial v^h}\right)\frac{\partial v^h}{\partial t}dF^h = 0. \tag{17}$$

Since the same conditions apply to party 2 because $EV_2 = N - EV_1$, the platforms of the parties will converge in the equilibrium.

As noted earlier, to actually simulate the nature of policy instruments in the equilibrium under various parameter values, the Representation Theorem for such political economies is employed. In the present context, on considering the political support function

$$S = Max\left[\int \chi_h v^h(t)dF^h\right],$$

where $\chi_h = \partial f / \partial v^h$ is the sensitivity of the probability of voting to a change in individual welfare taken from the Nash equilibrium, it can be seen that that the first order condition for maximizing

this support function

$$\frac{\partial S}{\partial t} = \int \chi_h \frac{\partial v^h}{\partial t} dF^h \tag{18}$$

is identical to condition (17). Hence choosing policy instruments to maximize *S* will generate the equilibrium policy platform provided that second order conditions are satisfied.

Concerning the second order conditions, the Representation Theorem requires concavity of the support function *S* with respect to policy instruments, which is equivalent to assuming that the parties can each choose expected vote maximizing platforms. This property is considered further in Winer et al (2009).

Given our assumptions about the political weights, the following proposition gives the form of the support function that is actually maximized after the appropriate parameter values have been specified.

Proposition 1:

$$S(t) = \iint \chi(s,\omega) \frac{\alpha_3^{\alpha_3}}{(1-\alpha_1)^{1-\alpha_1}} x_g^{\alpha_1} X_c^{\alpha_2} \frac{\left[(Ts(1-t_l)+\omega)\right]^{1-\alpha_1}}{\bar{y}(t)^{-\alpha_2}\left[s(1-t_l)\right]^{\alpha_3}} dF^s dF^\omega \tag{19a}$$

$$= k \iint \chi(s,\omega) \frac{\left[(Ts(1-t_l)+\omega)\right]^{1-\alpha_1}}{\left[s(1-t_l)\right]^{\alpha_3}} dF^s dF^\omega$$

where $k = \frac{\alpha_3^{\alpha_3}}{(1-\alpha_1)^{1-\alpha_1}} \left\{ \left(\frac{\alpha_2}{1-\alpha_1} \right) \left(\frac{t_c}{1+t_c} + \frac{t_l}{1-t_l} \right) \bar{y}(t) - \frac{t_l}{1-t_l} m_\omega \right\}^{i\alpha_1} \times \left[\beta K^{-b} + (1-\beta) \left(\frac{\alpha_2}{1-\alpha_1} \frac{\bar{y}(t)}{(1+t_c)} - m_\omega \right)^{-b} \right]^{-\frac{\alpha_2}{b}} \bar{y}(t)^{-\alpha_2}$ (19b)

is independent of skills *s* (but dependent on *t*), and $\bar{y}(t) = \int_R \int_R y(t,s,\omega)\, dF^s(s) dF^\omega(\omega) = m_s wT(1-t_l) + m_\omega$.

Proof: By straightforward if somewhat tedious substitution from the conditions stated earlier. Note that the public good does not appear here. Given the tax rates, public output can be derived using the production for public services and the government budget restraint.

The general equilibrium of the competitive political economy being modeling is found by actually maximizing the reduced form (19) for assumed parameter values. Expression (19) contains all the market adjustments that individuals and the economy will make in response to changes in policy instruments (the vector *t*) as well as to changes in the key parameters including the vector α among others. The first term in the rather complicated expression (19b) following the constant shows this transfer from the private sector to the public sector. The second term represents aggregate private consumption, and being an aggregate it is independent of skills *s*. The fact that the labor income tax leads to an increase in leisure is shown in the denominator of the integral in (19a).

Allowing tastes to be variable from one person to the next complicates the notation. Once the population of voters are partitioned into J taste groups, in a way described in Winer et al (2009),

(19a) becomes the weighted sum, $S(t) = \alpha_{3,j}{}^{\alpha_{3,j}} \sum_{j=1}^{J} c_j \cdot (x_g^j)^{\alpha_{1,j}} q^{\alpha_{2,j}} \overline{y}^{\alpha_{2,j}} I_j$.[43]

4. Exploring the tax mix and the size of government in balanced and asymmetric societies

To select meaningful combinations of the moments of the key distributions for investigation, two basic types of societies are defined. In the *balanced* society, the distributions are generally symmetrical around the mean, and experiments isolate the effects of changes in selected means and variances. In the *asymmetric* society, skewness in the distributions of skill and influence are introduced. Results with these skewed distributions are then compared to results of the balanced case.

The economy, as embodied in Proposition 1, is defined by the parameters that fix the Cobb-Douglas preferences (the α's), the production functions, and a coefficient of endowment with respect to skills *c* in $\omega = c\sqrt{s}$, a simplifying relation used in the simulation model to specify the distribution of endowments and its relation to individual skill levels.[44] The parameters for the production functions are fixed and that for the coefficient of endowment left free, in order to find a set of values of the taste parameters that yield concavity for the political support function (19a) with positive tax rates.

The simulations were conducted using the non-linear optimization package and the three-dimensional plotting package of Maple 10. With the help of its plotting package, it is possible to verify by a visual examination the existence of concavity of the support function with the vector $(\alpha_1, \alpha_2, \alpha_3) = (0.3, 0.3, 0.4)$ and with tax rates in the region $[0,1)\times[0,1)$ of t for a range for the parameter *c* mentioned above. A final consideration for calibrating the free parameter *c* is that the model was adjusted by altering *c* so that the size of government relative to aggregate income in initial solutions for the balanced society is approximately 50% . It turns out that when this is done, there is an interior solution for both tax rates in most, but not all, instances. Again see Winer et al (2009) for details about how the distributions are actually specified numerically. Only the results of the experiments are reported here.

4.1 Specifying the distributions of skills, tastes and political influence

Skills: In the standard balanced society, all distributions are assumed to be normal. Since the normal distribution has the property of tailing off to infinity in both directions, the mean of skills has to be sufficiently above the origin to prevent a tail from attributing negative skills to a significant part of the population. For the same reason, changes in the variance of skills has to be limited. We consider changes in mean skills, where an increase leaves everyone better off. This affects the overall size of the economy and the demand for leisure. Changes in the variance of the

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[43] Here: $c_j = \frac{1}{(1-\alpha_{1,j})^{1-\alpha_{1,j}}}$; $x_g^j = \left\{ \left(\frac{t_c}{1+t_c} + \frac{t_l}{1-t_l} \right) \sum_{r=1}^{3} \left(\frac{\alpha_{2,r}}{1-\alpha_{1,r}} \right) \overline{y}_r(t) - \frac{t_l}{1-t_l} m_\omega \right\}^i$;

$q = \left[\beta K^{-b} + (1-\beta) \left(\frac{1}{(1+t_c)} \sum_{r=1}^{3} \frac{\alpha_{2,r}}{1-\alpha_{1,r}} \overline{y}_r(t) - m_\omega \right)^{-b} \right]^{-\frac{1}{b}}$; $I_j = \iint \chi(s,\omega) \frac{\left[(Ts(1-t_l)+\omega) \right]^{1-\alpha_{1,j}}}{\left[s(1-t_l) \right]^{\alpha_3}} dF_j^s dF_j^\omega$.

[44] This parameter thus fixes the mean value, m_ω, of the endowments.

skills of some voters are then considered. This again affects the overall demand for leisure, x_l , *a* factor that has a significant influence on the equilibrium tax mix when we consider variations in the moments of the distribution of skills.

For the asymmetric society, the distribution of skills is specified by a Gamma distribution, where the distribution of skills is skewed to the right, so that there is a high population of lower skilled and a smaller population of higher skilled people, and the same experiments described above are repeated and augmented by changes in skewness in the skill distribution.[45] Political influence is also asymmetric between 'rich' and 'poor' in these experiments in a manner described below. One should note that for an independent change in skewness, we need a 3-parameter distribution. This is not available in the typical 2-parameter empirical distributions, including the Gamma distribution, that is used here. So changes in skewness, when they are introduced in the asymmetric society, are accompanied by movements in variance that need to be taken into account.

Tastes: Two approaches to the question of the distribution of tastes are considered. The first is that applicable to the balanced society in which symmetry is achieved by assigning the same tastes to everyone, at a point located at the (α_1, α_2, α_3) = (0.3, 0.3, 0.4) noted earlier. This is more than simply balanced or symmetrical, and we may refer to it as a situation of *homogeneous* tastes. Second, a symmetric but non-homogeneous distribution is defined over a field of five different taste groups of voters as follows.

Assuming five groups, the following population weights are fixed: $w_j\}$ = (0.1, 0.2, 0.4, 0.2, 0.1), reading from low to high skills. One may think of these groups as: *1= the poor; 2 = lower income citizens; 3 = middle income citizens; 4 = upper income citizens; and 5 = the rich*. The distribution is constructed to be symmetrical about the largest, middle income group. These skill groups lead to a taste matrix of parameters form a taste matrix for the (α_1, α_2, α_3) in which the groups thus differ only in their relative preference for the public and private goods, such that a low preference for the public good goes along with a high preference for the private good, and vice versa. By assumption, the poorest have the greatest taste for the public good, while the rich have the weakest.[46] The numerical values for the rows have averages equal to (0.3, 0.3, 0.4), the values for the third group and the ones used in the homogeneous taste case.

It should be noted that when the distribution of skills in the simulations is changed, this is done in a manner such that the partition of the population over the five taste groups remains the same even though it may imply that the lower end of the skill distribution will include (or exclude) progressively poorer voters and the rich end will include (or exclude) richer voters.

Political influence: In a balanced society, the (normal) distribution of skills also represents the number of individuals in each income group, so that the distributions of individuals and of the effective influence of each group are centered on mean skills and are symmetric. The distribution of political influence, $\chi(s)$ in (19a), can in principle be different than the distribution of skills or the number of voters. However everyone regardless of income level must have, and in the simulations does have some degree of (positive) influence, even if it is small. Otherwise a vote-cycle rather than an equilibrium may emerge.

In the balanced society, relative political influence is symmetrical and changes in influence have effects that are similar but opposite in direction to changes in the variance of the distribution

[45] For an independent change in skewness we need a 3-parameter distribution. This is not available in the typical 2-parameter empirical distributions, including the Gamma distribution, so changes in skewness will be followed by movements in variance.

[46] This assumption seems reasonable to us. But we know of no empirical evidence on the matter.

of skills. To investigate the consequences of political influence for the tax mix, it is necessary to go beyond symmetry. Accordingly, we consider a step function over a Gamma skill distribution in which a certain degree of influence is given to all voters. One should note that the effects of alteration in the distribution of influence cannot be considered in a median voter model of direct democracy where each citizen has one effective vote.

4.2 A summary of experiments concerning the consumption/income tax mix

A useful way to summarize the outcome of the experiments is to list the circumstances that give rise to increasing reliance on consumption taxation relative to the taxation of labour income. Since tax rates and tax revenues are always monotonically related, only tax rates are referred to in what follows.

In the balanced society, the tax rate on consumption is higher in relation to the rate on income in the following circumstances: (i) when average income is low, so that the base for the income tax is relatively small; (ii) when tastes for the public good are homogeneous; (iii) when the preference for the public good is high on average, resulting in a tax elasticity of the consumption base that is relatively lower; and (iv) when there is more income equality, or if the distribution of influence is concentrated in the middle income group. If the variance of skills is very low while the preference for the public good is high, consumption may be the only tax base that is used. In this case, it is as if voters want income diverted as directly as possible from private to public use without distorting labour/leisure choices.

In the balanced society, diversity of tastes for public and private goods influences not just the level of public services, but also tax structure. The key is how such diversity interacts with the distribution of skills to affect work effort and the elasticity of tax bases. In Usher (1977), diversity of tastes for public services determines whether a private good is brought within the public sector. The observation that heterogeneity in tastes also influences tax structure appears to be new to the taxation literature.

These results carry over to varying extents to the *asymmetric society*. A reduction in the degree of asymmetry in the distribution of skills also leads to increasing reliance on consumption taxation. The opposite case leads to increased reliance on income taxation, replicating the usual median voter experiment of increasing income inequality, here extended to include the tax mix as well as the size of government. When political influence is skewed towards the poor with a relatively high preference for the public good, with the distribution of skills given, consumption taxation again becomes more important in the equilibrium tax mix. This result especially may depend on the specification of policy instruments, which in the present model rules out a steeply progressive tax system that can be used to single out the incomes of the very rich for special treatment.

The last observation deserves emphasis. The choice of model specification is not innocent in driving the results of the simulations. This lesson, also drawn by Deaton (1987) in his survey of empirical work on optimal tax structures, suggests caution when models appear to guide us in certain directions. Nonetheless, it does appear to be the case that a full investigation of the equilibrium tax mix will have to take into account more aspects of the distributions of income, preferences for public goods and of political influence than have heretofore been considered. Put differently, one can say that a more synthetic approach to the political economy of taxation, incorporating insights from different studies where one or more of the moments included here have been investigated, may be useful.