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On the Public Choice Critique of Welfare Economics*

Abstract

The public choice literature urges the welfare economist to anticipate how political forces will shape the levels of new policy instruments when government intervenes in a new way. This paper argues that the welfare economist should also recognize that new interventions may impact the politically determined levels of *existing* policy instruments. It shows how the introduction of a new instrument can lead to shifts in political coalitions or compromises in existing areas of conflict that can produce significant changes in existing policies. Such spillover effects can provide new arguments for introducing particular policy interventions. Even a policy instrument without an obvious welfare economic rationale can change voter coalitions and shift the policy equilibrium in a welfare improving direction.

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1 Introduction

In what ways should the government intervene in the economy? Welfare economics has developed a powerful method for analyzing this question which has generated a set of standard prescriptions for government intervention. These include the provision of public goods and the regulation of externalities and natural monopolies.[1] Not only are these prescriptions influential in class-rooms, they have underpinned the views of generations of policy economists. Its influence notwithstanding, the welfare economic approach has its critics. Perhaps the most important are Buchanan and his followers in the public choice tradition. They argue that the approach is flawed because it ignores policy determination via a political process (see, for example, Buchanan (1962)). Thus, any political ramifications of government intervention are not taken into account. We call this the *public choice critique* of welfare economics.

Buchanan and Vanberg's (1988) analysis of intervention to deal with an externality illustrates the argument. Figure 1 depicts the textbook analysis of a polluting industry. The good is produced at constant cost c and the market equilibrium is Q_m units. A welfare economic approach recommends intervention using a Pigouvian tax z on the grounds that welfare would be higher if the tax were set at z^*, its surplus maximizing level. However, Buchanan and Vanberg argue that intervention should be recommended only if aggregate surplus at the *politically determined level of the tax* is higher than at the market equilibrium. There is no guarantee that this would be the case. Suppose, for example, that a pro-environment lobby group would pressure policy makers to set a tax equal to $\widehat{z}$. Then the intervention would actually reduce surplus. Accordingly, the welfare economist must anticipate the politically determined level and take this into account.[2]

[1] These are traditional prescriptions. Considerations of imperfect information provide a significant addition to the possibilities (see, for example, Greenwald and Stiglitz (1986)).

[2] The conceptual framework underlying the public choice critique is one in which policy making is governed by a constitution (see, for example, Buchanan (1987)). In addition to specifying the process by which policy decisions are made, the constitution restricts the set/form of interventions that government may use. Citizens then work within the rules of the constitution to determine policy. The question of whether government should intervene in some manner is interpreted as whether the constitution should be amended to permit such intervention. The

This leads to more conservative policy advice because political determination of the new policy is a constraint on policy choices that makes intervention less attractive.

This paper points out an additional implication of the public choice critique that seems to have escaped attention. When government intervenes with a new policy instrument, it is necessary to worry not only about the political determination of *that* instrument but also *existing* instruments being determined by government. For example, suppose that in response to rampant market failure in the health care industry, the U.S. government were to socialize health care. The level of support for the health care system would then become a central political issue. This issue would likely cause tension in the Republican base between fiscal conservatives and those with a high personal demand for health care such as the old. This may cause the latter to desert Republican candidates for their Democrat opponents, increasing the probability that policies preferred by the Democratic base, such as minimum wage hikes and affirmative action, would be implemented. In this way, the introduction of a new role for government (public provision of health care) changes the probability distribution over existing policies (minimum wages and affirmative action).

This paper illustrates these spillovers in a simple public finance model where government determines the levels of redistribution and public good provision. In the status quo, the government is only able to redistribute income, with public good provision left to the private sector. Accordingly, political parties are formed around groups with opposing redistributive preferences. It is then shown how augmenting the government's capacities by giving it the right to choose the public good may change the level of redistribution via the political process. Two examples are presented. In the first, disagreement on the optimal level of public good destabilizes pre-existing political coalitions and leads to changes in the base of support for political parties. In the second,

role of normative analysis is to advise on such amendments — recognizing that the levels of policy instruments will be determined by the political process. While this conceptual framework is artificial, it is a useful vehicle for maintaining a role for normative inquiry about the economic role of government when the political process is taken seriously. From a policy analysis perspective, such analysis seems appropriate when the analyst can influence only broad directions of policy, with exact implementation left up to the political process. For example, it would seem the appropriate analytical framework for members of government commissions charged with recommending whether to privatize state owned enterprises or introduce universal public health insurance.

parties compromise their redistributive stances to further their objectives with respect to the new policy. The paper then provides some sufficient conditions to rule out such spillovers.

These spillovers can change the normative force of the public choice critique. In particular, they can provide a justification for interventions that a welfare economist might reject because of the beneficial consequences for other *policy* instruments. The paper illustrates this by showing that allowing the government to provide the public good may increase aggregate utility even when the first best level of the public good is zero. This is because introducing the public good changes the level of redistributive taxation. Thus the conservative bias of the public choice critique suggested by earlier work need not emerge.

The analysis makes use of a novel model of electoral competition.[3] The model features two political parties, comprised of policy-motivated citizens, who compete by selecting candidates. Candidates are characterized by their policy preferences which determine their policy choices if elected (as in Osborne and Slivinski (1996) and Besley and Coate (1997)). Following Baron (1994) and Grossman and Helpman (1996), there are two types of voters: rational and noise voters. The latter vote randomly in a way that is unrelated to the policy preferences of the candidates, which makes election outcomes stochastic. These features of the model make it tractable even though there are multiple policy issues.

The remainder of the paper is organized as follows. The next section outlines the model. Section three investigates political equilibrium pre and post intervention and shows how intervention may change the level of redistribution. Section four shows that these spillover effects can make the case for interventions that the welfare economic approach would reject. Section five contains some further discussion and section six concludes.

[3] This model is also used in Besley and Coate (2000) and (2001).

2 The Model

2.1 Economic environment

There are N citizens and three goods: a private good x, labor ℓ and a public good g. Citizens are endowed with $\bar{\ell}$ units of labor time and can transform this into units of the private good. There are two ability groups; "poor" and "rich", with citizens in ability group $\theta \in \{P, R\}$ producing a_θ units of the private good per unit of labor, where $a_R > a_P$. To produce one unit of the public good costs c units of the private good.

Citizens have identical preferences over the private good and labor supply, but differ in their public good preferences. There are two preference types; low and high, with citizens of preference type $\lambda \in \{L, H\}$ having utility functions $x - \phi(\ell) + b(g, \lambda)$. The function $\phi(\cdot)$ represents the disutility of labor and the function $b(\cdot)$ represents the "willingness to pay" for the public good. We assume that $\phi(\cdot)$ is a smooth, increasing, and strictly convex function such that $\phi'(0) = 0$ and $\phi'\left(\bar{\ell}\right) > a_R$. The function $b(\cdot)$ is assumed to be smooth, increasing, and strictly concave in g, and to satisfy $b(0, \lambda) = 0$. High types have a higher marginal value of public goods; i.e., $b_1(g, L) < b_1(g, H)$ for all g. We assume that $c > b_1(0, H) > c/N$ – the marginal value of a citizen who values public spending highly is below the unit cost of the public good but above its per capita cost.

There are four types of citizens in the economy; poor citizens with low and high public good preferences and rich citizens with low and high preferences. The fraction of citizens of type $(\theta, \lambda) \in \{P, R\} \times \{L, H\}$ will be denoted γ_θ^λ. We also let γ_θ denote the total fraction of type θ citizens and γ^λ the fraction of type λ citizens.

2.2 Policies

In the *status quo*, the policy maker chooses only the level of redistribution via a negative income tax scheme. The rate of income taxation, denoted by t, is chosen with its proceeds being redistributed back to citizens in lump-sum fashion. This scheme permits redistribution from rich to poor.[4] *Post intervention*, the policy maker also chooses the level of the public good g. Spending on the public good must be financed by raising the income tax rate and/or reducing the uniform transfer. We assume the latter can be negative, which permits the public good to be financed in a uniform way; i.e., via a head tax. For notational simplicity, we suppose that the policy maker chooses (t, g) pre and post intervention, but in the status quo is subject to the constraint that $g = 0$.

The policy pair (t, g) is chosen at the beginning of the period, anticipating market behavior. Given (t, g), a citizen of ability type θ will choose to earn income $y(t, a_\theta)$ where $y(t, a) = \arg\max\{(1-t)y - \phi(y/a)\}$. Government revenue will then be $Nt\overline{y}(t) - cg$, where $\overline{y}(t)$ denotes mean earnings at the tax rate t, and each individual will receive a transfer $t\overline{y}(t) - cg/N$.

Private provision of the public good is determined via a voluntary contribution game in which each citizen simultaneously chooses an amount of public good to purchase. Under our assumption that the marginal valuation of a high type is less than the unit cost of the public good, the market will provide none of the public good irrespective of the level provided by the government. Thus, a citizen of type (θ, λ) will enjoy a utility level of

$$t\overline{y}(t) - cg/N + (1-t)y(t, a_\theta) - \phi(y(t, a_\theta)/a_\theta) + b(g, \lambda).$$

Letting $v(t, \theta) = (1-t)y(t, a_\theta) + t\overline{y}(t) - \phi(y(t, a_\theta)/a_\theta)$ and $m(g, \lambda) = b(g, \lambda) - cg/N$, we may write this more succinctly as $v(t, \theta) + m(g, \lambda)$.

Let $g^*(\lambda)$ denote the preferred public goods level of a citizen with public good preference λ; that is, $g^*(\lambda) = \arg\max m(g, \lambda)$. Our assumptions imply that $g^*(L) < g^*(H)$. In addition, let $t^*(\theta)$ denote the preferred tax rate of a citizen with ability type θ; that is, $t^*(\theta) = \arg\max\{v(t, \theta) : t \in [0, 1]\}$. This preferred tax rate must satisfy the following standard condition:

$$\overline{y}(t^*(\theta)) - y(t^*(\theta), a_\theta) \leq -t^*(\theta) \cdot \frac{d\overline{y}(t^*(\theta))}{dt}, \text{with equality if } t^*(\theta) > 0.$$

[4] We follow the literature in supposing that the constitution requires that $t \in [0, 1]$, which prevents the scheme being used to redistribute from poor to rich.

Since average income is a decreasing function of the tax rate, the term on the right hand side is positive for all positive tax rates. The income of the rich exceeds the mean and hence it is clear from this condition that the rich do not desire any redistribution; thus $t^*(R) = 0$. The poor prefer a positive level of redistribution – $t^*(P) > 0$.

2.3 Policy determination

Policy-making is delegated to an elected representative. Representatives are citizens and are characterized by their types (θ, λ). No ex-ante policy commitments are possible, so that a type (θ, λ) representative chooses policies $(t^*(\theta), 0)$ in the status quo and $(t^*(\theta), g^*(\lambda))$ post intervention.

Candidates in the election are put forward by two political parties, denoted A and B. Each party is comprised of member citizens bound together by their views on redistribution. Thus, all members of Party A are poor and all members of Party B are rich. Both parties contain citizens with low and high public good preferences. Let λ_J^* denote the public good preferences of the majority of Party J's members. Each party selects the type of candidate the majority of its members prefer.

There are two types of voters. A fraction μ are *rational voters* who anticipate the policy outcomes each candidate would deliver and vote for the candidate whose election would produce their highest policy payoff. Thus, after intervention, a rational voter of type (θ, λ) who is faced with candidates of types (θ_A, λ_A) and (θ_B, λ_B) will vote for Party A's candidate if $v(t^*(\theta_A), \theta) + m(g^*(\lambda_A), \lambda)$ exceeds $v(t^*(\theta_B), \theta) + m(g^*(\lambda_B), \lambda)$. A rational voter indifferent between two candidates abstains.

The remaining fraction are *noise voters*. A fraction η of these vote for Party A's candidate, where η is the realization of a random variable with support $[0, 1]$ and cumulative distribution function $H(\eta)$. The idea is that noise voters respond to non-policy relevant features of candidates such as their looks, sense of humor, etc. We assume that H is symmetric so that for all η,

$H(\eta) = 1 - H(1-\eta)$. This implies that noise voters are *unbiased* in the sense that the probability that a fraction less than η vote for Party A's candidate equals the probability that a fraction less than η vote for Party B's candidate.

Noise voters make election outcomes probabilistic. To illustrate, consider an election in which the difference between the fraction of citizens obtaining a higher utility from the policy choices generated by Party A's candidate and the fraction obtaining a higher utility from Party B's candidate is ω. Since μ is the fraction of rational voters and η the fraction of noise voters who vote for Party A's candidate, Party A's candidate will win if $\mu\omega + (1-\mu)\eta > (1-\mu)(1-\eta)$ or, equivalently, if $\eta > \frac{-\mu\omega}{2(1-\mu)} + \frac{1}{2}$. The probability that Party A's candidate will win is thus $\psi(\omega)$ where $\psi(\omega) = 0$ if $\omega \leq \frac{-(1-\mu)}{\mu}$, $\psi(\omega) = 1$ if $\omega \geq \frac{1-\mu}{\mu}$, and $\psi(\omega) = 1 - H(\frac{-\mu\omega}{2(1-\mu)} + \frac{1}{2})$ otherwise.

Party members know the election probabilities associated with different candidate pairs and take them into account when evaluating candidates. We assume that the fraction of noise voters in the population is sufficiently high so that $\left|\gamma^P - \gamma^R\right| < \frac{1-\mu}{\mu}$. This assumption implies that $\psi(\gamma^P - \gamma^R) \in (0,1)$. Hence, in an election between a rich and a poor candidate in the status quo, both candidates would win with positive probability.

Any election generates a *game* between the two parties. Each party's *strategy* is the type of candidate it selects and its *strategy set* is the set of possible citizen types.[5] Each party's *payoff* from any strategy pair is determined by the probability its candidate wins and its objective function, which is the expected utility of its majority members. An *equilibrium* of the game is a pair of candidate choices, one for each party, that are mutual best responses. Any equilibrium pair of candidates gives rise to a probability distribution over outcomes: the policy outcome will be that associated with Party J's candidate with a probability equal to the chance that Party J's candidate wins.

[5] We allow parties to recruit candidates outside of the ranks of their membership.

3 The Spillover Effects of Intervention

We will illustrate the spillover effects of intervention by showing how the probability distribution over redistribution may be changed after the government intervenes to provide the public good. The first step is to understand the status quo. This is extremely simple since voters care solely about a candidate's redistributive preference. Each party has a straightforward choice: run a rich or a poor candidate. Being purely policy-motivated, each party will select a candidate that reflects the redistributive preferences of its members. Poor rational voters will vote for Party A's candidate and rich rational voters will vote for B's candidate. This yields:

Proposition 1 *In the status quo, the level of redistribution is $t^*(P)$ with probability $\psi\left(\gamma^P - \gamma^R\right)$ and $t^*(R)$ with probability $1 - \psi\left(\gamma^P - \gamma^R\right)$.*

The model does not predict that redistribution will always follow the preferences of the median citizen. However, it will tend to favor the preferences of the largest group. The logic here is similar to other models of electoral competition with probabilistic voting and policy motivated candidates (see, for example, Wittman (1983)).

Determining equilibrium post intervention is more challenging given the multi-dimensional nature of the policy space. A voter may not be able to find a candidate who reflects his views on both public goods and redistribution. Indeed, given that there are four groups of voters and only two candidates this has to be true for at least two groups of voters. This implies that some voters will have to make trade-offs across the policy dimensions.

To explore this, it is useful to define for each type of citizen (θ, λ), the gain from achieving their preferred level of redistribution, given by $\Delta v(\theta) = b(t^*(\theta), \theta) - v(t^*(-\theta), \theta)$ and the gain from achieving their preferred level of the public good, given by $\Delta m(\lambda) = m(g^*(\lambda), \lambda) - m(g^*(-\lambda), \lambda)$, where in each case a minus sign in front of a type denotes the "opposite" type. We will say that redistribution is the *politically salient* issue for type (θ, λ) citizens if $\Delta v(\theta) > \Delta m(\lambda)$. Conversely, public spending is the politically salient issue for type (θ, λ) citizens if $\Delta v(\theta) < \Delta m(\lambda)$. The use of the term politically salient is warranted since if redistribution is the salient issue for type (θ, λ) citizens they will vote for a candidate who shares their redistributive preferences against one who does not, *irrespective of their public good preferences.*

Patterns of political salience can potentially be quite complicated. There are four types of citizens and, for each type, either redistribution or public spending can be salient. This means that there are sixteen different cases. To avoid being excessively taxonomic, we will not attempt a full characterization of equilibrium post intervention. Instead, we develop two examples to illustrate the possibility of spillovers whereby the probability distribution over redistribution changes when the public good can be chosen by government. We then present some sufficient conditions to rule out these spillover effects.

3.1 Example 1

Suppose that public spending is salient for citizens with high public spending preferences, while redistribution is salient for those with low public spending preferences. In addition, suppose that a majority of members of Party A prefer high public spending, while a majority of B's members prefer spending to be low. This describes a situation in which public spending is valued most highly by the low income group – as might arise with health care or social housing. The formal assumptions are:

Assumption 1 *(i)* $\Delta m(H) > \max_\theta\{\Delta v(\theta)\}$ *and* $\Delta m(L) < \min_\theta\{\Delta v(\theta)\}$*; (ii)* $\lambda_A^* = H$ *and* $\lambda_B^* = L$.

We look for an equilibrium in which each Party selects the type of candidate that directly represents the preferences of its majority members; i.e., Party A selects a type (P, H) and Party B selects a type (R, L). In this case, the salience of public spending to voters with high spending preferences leads Party A to pick up part of B's support base – rich rational voters who are pro high spending. Party A's candidate would therefore win with probability $\psi\left(\gamma^P + \gamma_H^R - \gamma_L^R\right)$ which increases the probability that the level of redistribution would be $t^*(P)$.

For this to be an equilibrium, Party B must not want to compromise on the public spending dimension by selecting a type (R, H) candidate. This compromise might be worthwhile if the benefits from an increased probability of its preferred redistributive outcome exceeded the costs of having its least preferred spending outcome. It must also be true that Party B must not wish to compromise on the redistributive dimension by selecting a type (P, L) candidate. This might be attractive if the party is at a significant electoral disadvantage in the status quo and/or a large fraction of citizens prefer low public spending. The following assumption gives the conditions under which such compromises will not be attractive for Party B.

Assumption 2 *(i)* $\psi\left(\gamma_L^R - \gamma^P - \gamma_H^R\right)\Delta m(L) > (\psi\left(\gamma^P + \gamma_H^R - \gamma_L^R\right) - \psi\left(\gamma^P - \gamma^R\right))\Delta v(R)$; *(ii)* $\psi\left(\gamma_L^R - \gamma^P - \gamma_H^R\right)\Delta v(R) > (\psi\left(\gamma^P + \gamma_H^R - \gamma_L^R\right) - \psi\left(\gamma_H - \gamma_L\right))\Delta m(L)$.

Under these conditions, Party A selecting a type (P, H) and Party B selecting a type (R, L) is an equilibrium under intervention. Thus we have[6] :

Proposition 2 *Suppose that Assumptions* 1 *and* 2 *are satisfied. Then, post intervention, there exists an equilibrium in which the level of redistribution is* $t^*(P)$ *with probability* $\psi\left(\gamma^P + \gamma_H^R - \gamma_L^R\right)$ *and* $t^*(R)$ *with probability* $1 - \psi\left(\gamma^P + \gamma_H^R - \gamma_L^R\right)$.

This illustrates a case where allowing the government to provide the public good increases the probability of redistributive taxation. Disagreement on the optimal level of the public good destabilizes Party B's base: rich voters with high public spending preferences desert Party B to support the high spending candidate of Party A. This in turn increases the probability that Party A's core policy (redistribution) is implemented. Party B is deterred from running a pro high public spending candidate by the fact that a majority of its core base of support prefers low spending.

The fact that public spending is salient for voters who prefer high spending is the key to this example. In *any* equilibrium where the parties choose not to compromise on public spending, there will be an impact on the probability of having high or low redistributive taxation. This is likely

[6] The proofs of this and the next two propositions can be found in the Appendix.

to extend well beyond the specific case described in Assumption 2. Salience of public spending is not, however, the *sine qua non* of spillover effects as the next example illustrates.

3.2 Example 2

Suppose now that redistribution is salient for all citizens – they all prefer to get their optimal level of redistribution than their optimal level of public goods. In contrast to Example 1, this describes a case where, on the surface, public spending seems rather unimportant. Nonetheless, we show that redistributive outcomes may still be affected by allowing the public good to be provided.

Suppose, as in the last example, that a majority of the members of Party A prefer high public spending, while a majority of B's members prefer low spending. In addition, assume that a majority of the population is rich and that a majority prefers high public spending. The formal assumptions are:

Assumption 3 *(i)* $\max_{\lambda}\{\Delta m(\lambda)\} < \min_{\theta}\{\Delta v(\theta)\}$*; (ii)* $\lambda_A^* = H$ *and* $\lambda_B^* = L$*; (iii)* $\gamma^P < \gamma^R$ *and* $\gamma_H > \gamma_L$*.*

If each Party were to select a candidate that directly represents the preferences of its majority members, then Party A would field a type (P, H) and Party B a type (R, L). Rational voters would vote on the basis of candidates' redistributive preferences and Party A would win with probability $\psi\left(\gamma^P - \gamma^R\right)$ just as in the status quo. If a significant majority are rich, Party A would be unlikely to win in this case.

It may be in the interest of Party A to compromise on the redistributive dimension by running a type (R, H) candidate. In this case, the election effectively becomes a referendum on public spending. Party A now wins with probability $\psi\left(\gamma_H - \gamma_L\right)$ which significantly exceeds $\psi\left(\gamma^P - \gamma^R\right)$. This compromise may, therefore, look attractive even though party members care more about redistribution than spending because they have a greater chance of achieving their preferred public spending outcome.

Thus, we consider an equilibrium where Party A selects a type (R, H) and Party B selects a type (R, L). The following assumption embodies the condition under which Party A will seek this compromise in the redistributive dimension.

Assumption 4 $(\psi(\gamma_H - \gamma_L) - \psi(\gamma^P - \gamma^R))\Delta m(H) > \psi(\gamma^P - \gamma^R)\Delta v(P)$.

We now have:

Proposition 3 *Suppose that Assumptions* 3 *and* 4 *are satisfied. Then, post intervention, there exists an equilibrium in which the level of redistribution is* $t^*(R)$ *with probability* 1.

Thus, allowing the government to provide the public good eliminates redistributive taxation entirely! The fact that the parties disagree on the optimal level of public spending is essential here. Assumption 4 can also be read as saying that Party A has a sufficiently small chance of winning in the status quo. Indeed the assumption is bound to hold as $\psi(\gamma^P - \gamma^R)$ gets close to zero. Unlike the previous example, it is not the salience of the new issue that counts. At the core of this example is the fact that a party with an ailing fortune can exploit an issue on which the parties have different views to shift the axis of political competition in its favor.

3.3 Ruling out spillover effects

While the above Propositions are only highly stylized examples, they illustrate well why spillover effects are likely to be a pervasive consequence of changing the dimensionality of policy outcomes. Each example illustrates a mechanism by which this happens when the parties disagree about the level of public spending.

In the first example, the disagreement in party preferences lead the minority members of Party B to switch their allegiance to Party A, giving an electoral advantage to that party. Key to this is the asymmetry in the response of the minority members of the two parties due to the different intensity of preference between those who prefer low and high spending levels.

In the second example, one party chooses to exploit the fact that its stance on public spending is electorally more popular than its stance on redistribution. There is no change in voter allegiance – the augmented policy space simply gives a richer strategic set of possibilities to the parties. This is most plausible in situations where one party faces a major electoral disadvantage in the status quo.

Under what conditions can we rule out such shifts? Since both examples rely crucially on disagreement on the optimal level of the public good among the majority members of both parties, we will require that $\lambda_A^* = \lambda_B^*$. Then, we can prove;

Proposition 4 *Suppose that the majority members of both parties agree on the optimal level of the public good and that* $|\gamma_H - \gamma_L| < \frac{1-\mu}{\mu}$. *Then, if either (i) redistribution is the politically salient issue for all citizens or (ii) public spending is the politically salient issue for all citizens, introducing the public good does not change the expected level of redistribution.*

To establish the proposition, we show that under condition (i) the only equilibrium involves the two parties choosing candidates of types (P, λ_A^*) and (R, λ_B^*) respectively. Under condition (ii), there may also exist an equilibrium in which the two parties choose candidates of types $(P, -\lambda_A^*)$ and $(R, -\lambda_B^*)$, but this produces the same probability distribution over redistribution.

These sufficient conditions are the best we can do. In particular, the assumption of agreement among the majority members of the two parties is not, by itself, sufficient. Even with such agreement, spillover effects can arise when there are differences in intensities of preference across the preference groups. This would be true, for example, if public spending is salient for citizens with high public spending preferences, while redistribution is salient for those with low public spending preferences. If a majority of members of both parties have low public spending preferences, then there are conditions under which an equilibrium exists where one party (say Party A) runs a candidate with high public spending preferences to attract the high spenders in the opposing party's base. It does this in order to increase its chances of its preferred level of redistribution. This strategic choice then increases the probability of redistributive taxation.

The difficulty of ruling out spillovers is symptomatic of the general (in)stability issues that arise in studying multi-dimensional political competition. Hence such spillovers are likely to be the rule rather than the exception when assessing the force of the public choice critique. There is an analogy here between partial and general equilibrium analysis in the study of policy incidence in markets. Ruling out spillovers is analogous to a partial equilibrium policy analysis where we only worry about policy determination in the new policy dimension whereas taking spillovers into account is analogous to a more general equilibrium form of analysis. Our analysis illustrates well why the usual separability assumptions that permit partial equilibrium analysis of markets are not sufficient to justify partial equilibrium analysis of policy determination.

4 Spillover Effects and the Case for Intervention

The spillover effects identified in the previous section may be consequential for studying the case for government intervention. In particular, they can generate a case for intervention that the welfare economic approach would reject.

Government intervention will be justified if social welfare at the politically determined policy choices post intervention will be higher than that in the status quo. To make our point, we work with a Utilitarian social welfare function: $W = N\sum_{(\theta,\lambda)} \gamma_\lambda^\theta [v(t,\theta) + m(g,\lambda)]$. Under this specification of social preferences, the socially optimal level of income redistribution is zero. This is because redistribution generates a deadweight loss and, with quasi-linear utility, the value of a dollar of private consumption is the same to any citizen. Following the usual Samuelson condition, a welfare economic approach recommends intervention to provide the public good if the sum of marginal benefits of the good at $g = 0$ exceeds its marginal cost; i.e., $N\sum_\lambda \gamma_\lambda m_1(0;\lambda) > 0$.

Consider the world of Example 2 and suppose that the Samuelson condition is not satisfied $(N\sum_\lambda \gamma_\lambda m_1(0;\lambda) \leq 0)$ so that there is no welfare economic case for intervention. This implies that the optimal level of the public good is zero for type L citizens and that $N\sum_\lambda \gamma_\lambda m(g^*(H);\lambda) < 0$. By Proposition 1, aggregate welfare in the status quo is given by

$$N[\psi\left(\gamma^P - \gamma^R\right)\sum_\theta \gamma^\theta v(t^*(P),\theta) + (1-\psi\left(\gamma^P - \gamma^R\right))\sum_\theta \gamma^\theta v(t^*(R),\theta)].$$

Assuming that the post intervention equilibrium is as described in Example 2, welfare will be

$$N[\sum_{\theta}\gamma^{\theta}v(t^{*}(R),\theta)+\psi\left(\gamma_{H}-\gamma_{L}\right)\sum_{\lambda}\gamma_{\lambda}m(g^{*}(H),\lambda)].$$

Differencing these expressions, welfare will be higher post intervention if

$$\psi\left(\gamma^{P}-\gamma^{R}\right)\left[\gamma^{R}\Delta v(R)-\gamma^{P}\Delta v(P)\right]>\psi\left(\gamma_{H}-\gamma_{L}\right)\left[\gamma_{L}\Delta m(L)-\gamma_{H}\Delta m(H)\right].$$

The term on the left hand side is the expected reduction in the excess burden of the tax resulting from the possible change from rate $t^{*}(P)$ to $t^{*}(R)=0$. The term on the right hand side is the expected reduction in aggregate surplus resulting from providing the public good at the preferred level of the high spending citizens. It is quite possible for this inequality to be satisfied, in which case intervention is desirable on the grounds of its beneficial redistributive consequences.[7]

This example shows that accounting for the public choice critique need not dampen the case for intervention relative to a welfare economic approach. This is because intervention may impact the politically determined levels of existing policy instruments and the political process does not select socially optimal levels of these instruments prior to intervention. While state provision of a public good may seem like a rather blunt instrument for reducing redistributive taxes, it is the only feasible way of doing so given that policy outcomes are determined via the political process. The reasoning has a Machiavellian ring to it. However, it is a consequence of incorporating political economy concerns into the welfare economic framework in this way.[8] The analysis suggests also that there could be dynamic advantages to manipulating the fiscal constitution to change future political outcomes by incumbents.

[7] The inequality is more likely to hold as the deadweight loss of redistributive taxation gets larger.

[8] The particular conclusion that *reduced* redistribution is good is an artifact of our specification of individual and social preferences. One could equally construct examples where interventions are supported for their political consequences because they increase the level of welfare enhancing redistribution.

5 Discussion

The point of our analysis is to show that introducing an additional policy instrument can lead to changes in the levels of existing instruments with significant redistributive consequences. We have demonstrated this in a model in which the two instruments in question are separable — citizens' willingness to pay for the public good is independent of the income tax rate. In a world in which policies are related through non-separabilities in preferences, the same phenomenon can arise for a different reason.[9] To illustrate this, consider an environment with public provision of a private good studied, for example, by Epple and Romano (1996), Fernandez and Rogerson (1999), and Gouveia (1997). Suppose that there are two homogeneous groups — rich and poor, with a single publicly provided private good, such as health care, financed by a proportional income tax. Suppose further that the constitution bans the private purchase of health care, meaning that citizens cannot "top-up" the publicly provided quantity. Consider the policy question of whether the constitutional ban should be lifted and the government should be granted the discretion to decide whether or not to impose the ban.

Suppose that the rich are in a majority so that a rich citizen typically makes policy choices. In the status-quo, when topping up is banned, the rich desire a positive amount of publicly provided health care. This notwithstanding, the income tax finance of this will mean that the rich will pay a higher share of the cost than the poor. Thus, the public program will disproportionately benefit the poor. If the government is given the right to lift the ban, rich citizens will want to exercise this right and their demand for state funded health care will be diminished, even eliminated. Thus, the introduction of the new instrument (the ability to relax the ban) leads to a dramatic change in the level of another policy, namely, publicly provided health care. This change can be expected to have significant adverse consequences for the poor which must be weighed when considering

[9] We thank Raquel Fernandez for drawing our attention to this possibility and suggesting the example to follow.

lifting the ban.

While this result has a similar flavor, its logic is quite different from that developed in this paper. The key assumption is that the level of the new policy (i.e., whether or not the ban is in place) alters the demand for the other policy (publicly provided health care). Notice that this change occurs without any shift in the political equilibrium: the same type of candidate holds office throughout. It is purely a consequence of the non-separability of preferences with respect to the two policy instruments: the demand of the rich for publicly provided health care depends on the level of the new policy (i.e., whether or not the ban is in place). Thus non-separabilities in preferences provide an additional, more direct, reason why introducing an additional policy instrument can lead to changes in the levels of existing instruments.

The idea that new interventions can have spillovers on existing policies is not an artifact of our particular model of policy determination. Rather it is a feature of multi-dimensional political competition in representative democracies. From the considerable literature on multi-dimensional collective choice problems, it is clear that there are no good reasons for supposing that existing dimensions of policy should remain stable when the portfolio of available policies is expanded. Thus, spillover effects would be expected in any model which attempted to deal squarely with the multi-dimensional nature of political competition.[10] Only if policies were determined with separate elections on each issue might we not expect the kind of spillovers that we have identified.

Finally, we note that the lessons of our model for the analysis of the case for government intervention may apply more generally to the comparison of policy regimes. For example, Cremer and Pestieau (1998) compare two regimes for social security provision assuming that the policy parameters are determined in political equilibrium by the median voter. This analysis implicitly assumes that other policies are unaffected by which ever social security regime is in place. However,

[10] Earlier versions of this paper have made the point in a pure citizen-candidate model and in a Downsian model in which parties compete by selecting candidates.

one could imagine shifts in voter coalitions on redistribution of the kind illustrated here. Similar issues might arise in discussing means testing versus universal provision in anti-poverty programs and different regimes for education finance.

6 Conclusion

When policies are determined in political equilibrium, evaluating the case for the government to use a particular policy instrument should involve a consideration of the political consequences of introducing that instrument. This is a central insight of the public choice literature. Existing attempts to consider the implications of political determination for policy analysis have taken a one-dimensional view, focusing solely on determination of the new instrument. Here we have argued that the introduction of a new instrument can lead to shifts in political coalitions or compromises in existing areas of conflict which can lead to significant changes in existing policies. Moreover, these spillover effects can provide new arguments for introducing particular policy interventions. Even a policy instrument without an obvious welfare economic rationale can change voter coalitions and shift the policy equilibrium in a welfare improving direction.

Much remains to be done in terms of understanding the political consequences of new or changed roles for government. Theoretically, the model of political competition presented here might usefully be applied to analyze the choice between alternative policy regimes in other contexts. It would also be interesting to explore such effects empirically. There are many instances in which technological or constitutional changes have changed the role of government and it would be interesting to investigate whether these changes could be shown to have had significant spillover effects of the sort identified here.

References

Baron, David, [1994], "Electoral Competition with Informed and Uninformed Voters," *American Political Science Review*, 88, 33-47.

Besley, Timothy and Stephen Coate, [1997], "An Economic Model of Representative Democracy," *Quarterly Journal of Economics*, 112(1), 85-114.

Besley, Timothy and Stephen Coate, [2000], "Issue Unbundling via Citizens' Initiatives," NBER Working Paper #8036.

Besley, Timothy and Stephen Coate, [2001], "Elected versus Appointed Regulators: Theory and Evidence," typescript.

Buchanan, James M., [1962], "Politics, Policy, and the Pigouvian Margins," *Economica*, 17-28.

Buchanan, James M., [1987], "Constitutional Economics," in *New Palgrave Dictionary of Economics*, (London: Macmillan and Co).

Buchanan, James M. and Viktor J. Vanberg, [1988], "The Politicization of Market Failure," *Public Choice*, 57(2), 101-13.

Cremer Helmuth and Pierre Pestieau, [1998], "Social Insurance, Majority Voting and Labor Mobility," *Journal of Public Economics,* 68(3), 397-420.

Epple, Dennis and Richard Romano, [1996], "Public Provision of Private Goods," *Journal of Political Economy*, 104(1), 57-84.

Fernandez, Raquel and Richard Rogerson, [1999], "Education Finance Reform and Investment in Human Capital: Lessons from California," *Journal of Public Economics*, 74(3), 327-50.

Gouveia, Miguel, [1997], "Majority Rule and the Public Provision of a Private Good," *Public Choice*, 93(3-4), 221-44.

Greenwald, Bruce and Joseph E. Stiglitz, [1986], "Externalities in Economies with Imperfect Information," *Quarterly Journal of Economics*, 101, 229-264.

Grossman, Gene and Elhanan Helpman, [1996], "Electoral Competition and Special Interest Politics," *Review of Economic Studies*, 63, 265-286.

Osborne, Martin J. and Al Slivinski, [1996], "A Model of Political Competition with Citizen Candidates," *Quarterly Journal of Economics*, 111(1), 65-96.

Witman, Donald, [1983], "Candidate Motivation: A Synthesis of Alternative Theories," *American Political Science Review*, 77, 142-57.

7 Appendix

Proof of Proposition 2: To prove the proposition it suffices to show that, under Assumptions 1 and 2, Party A selecting a type (P,H) and Party B selecting a type (R,L) is an equilibrium post intervention. We first show that Party A selecting a type (P,H) is a best response to Party B selecting a type (R,L). The payoff to the majority members of Party A from selecting (P,H) is

$$\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right)[v(t^*(P),P)+m(g^*(H),H)]$$
$$+(1-\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right))[v(t^*(R),P)+m(g^*(L),H)].$$

Assumption 1 (i) implies that Party A receives the support of all the poor and the rich with high public good preferences. If Party A were to deviate to selecting a type (P,L) it would lose the support of the rich high spenders and its payoff would decrease since it would enjoy a lower probability of achieving a less preferred outcome. If Party A were to deviate to selecting a type (R,H), the election would be a referendum on the public good and Party A would lose the votes of the poor low spenders. Its payoff would again decrease since it involves a lower probability of achieving a less preferred outcome.

We now show that Party B selecting a type (R,L) is a best response to Party A selecting a type (P,H). The payoff to the majority members of Party B from selecting (R,L) is

$$\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right)[v(t^*(P),R)+m(g^*(H),L)]$$
$$+(1-\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right))[v(t^*(R),R)+m(g^*(L),L)].$$

If Party B were to deviate to selecting a type (R,H) it would gain back the support of the rich high spenders and its payoff would be

$$\psi\left(\gamma^P-\gamma^R\right)v(t^*(P),R)+(1-\psi\left(\gamma^P-\gamma^R\right))v(t^*(R),R)+m(g^*(H),L).$$

Subtracting this from the proposed equilibrium payoff yields:

$$(1-\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right))\Delta m(L)-[\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right)-\psi\left(\gamma^P-\gamma^R\right)]\Delta v(R)$$

This is positive by Assumption 2 (i) (note that $1-\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right)=\psi\left(\gamma_L^R-\gamma^P-\gamma_H^R\right)$). If Party B were to deviate to selecting a type (P,L), the election would be a referendum on the public good and Party B would gain the votes of the poor low spenders. Its payoff would therefore be:

$$\psi\left(\gamma_H-\gamma_L\right)m(g^*(H),L)+(1-\psi\left(\gamma_H-\gamma_L\right))m(g^*(L),L)+v(t^*(P),P).$$

Subtracting this from the proposed equilibrium payoff yields:

$$(1-\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right))\Delta v(R)-[\psi\left(\gamma^P+\gamma_H^R-\gamma_L^R\right)-\psi\left(\gamma_H-\gamma_L\right)]\Delta m(L).$$

This is positive by Assumption 2 (ii). ■

Proof of Proposition 3: To prove the proposition it suffices to show that, under Assumptions 3 and 4, Party A selecting a type (R,H) and Party B selecting a type (R,L) is an equilibrium post intervention. We first show that Party A selecting a type (R,H) is a best response to Party B selecting a type (R,L). The payoff to the majority members of Party A from selecting (R,H) is

$$\psi\left(\gamma_H-\gamma_L\right)m(g^*(H),H)++(1-\psi\left(\gamma_H-\gamma_L\right))m(g^*(L),H)+v(t^*(R),P).$$

If Party A were to deviate to selecting a type (P,H), Assumption 3(i) implies that it would receive the support of all the poor rational voters. Its payoff would therefore be

$$\psi\left(\gamma^P-\gamma^R\right)[v(t^*(P),P)+m(g^*(H),H)]+(1-\psi\left(\gamma^P-\gamma^R\right))[v(t^*(R),P)+m(g^*(L),H)]$$

Sunstracting this from the proposed equilibrium payoff, yields:

$$(\psi\left(\gamma_H-\gamma_L\right)-\psi\left(\gamma^P-\gamma^R\right))\Delta m(H)-\psi\left(\gamma^P-\gamma^R\right)\Delta v(P).$$

This is positive by Assumption 4. If Party A were to deviate to selecting a type (P, L), it would again receive the support of all the poor and its payoff would be

$$\psi\left(\gamma^P - \gamma^R\right) v(t^*(P), P) + (1 - \psi\left(\gamma^P - \gamma^R\right)) v(t^*(R), P) + m(g^*(L), H).$$

This is strictly lower than the payoff from selecting a type (P, H) and hence dominated by the proposed equilibrium payoff.

We now show that Party B selecting a type (R, L) is a best response to Party A selecting a type (R, H). The payoff to the majority members of Party B from selecting (R, L) is

$$\psi\left(\gamma_H - \gamma_L\right) m(g^*(H), L) + (1 - \psi\left(\gamma_H - \gamma_L\right)) m(g^*(L), L) + v(t^*(R), R).$$

If Party B were to deviate to selecting a type (R, H) it would simply eliminate any chance of receiving its preferred level of public spending and hence could not be better off. If it were to deviate to selecting a type (P, L), all the rich would vote for Party A and all the poor for Party B. Its payoff would therefore be:

$$\psi\left(\gamma^R - \gamma^P\right)\left[v(t^*(R), R) + m(g^*(H), L)\right] + (1 - \psi\left(\gamma^R - \gamma^P\right))[v(t^*(P), R) + m(g^*(L), L)].$$

Subtracting this from the proposed equilibrium payoff yields:

$$[1 - \psi\left(\gamma^R - \gamma^P\right)]\Delta v(R) - [\psi\left(\gamma_H - \gamma_L\right) - \psi\left(\gamma^R - \gamma^P\right)]\Delta m(L).$$

This is positive by Assumption 3 (i). ■

Proof of Proposition 4: (i) Suppose that $\lambda_A^* = \lambda_B^*$ and that redistribution is the politically salient issue for all citizens. We can prove the result by showing that Party A selecting a type (P, λ_A^*) and Party B selecting a type (R, λ_B^*) is the only equilibrium under intervention. We first demonstrate that $(\theta_A, \lambda_A) = (P, \lambda_A^*)$ and $(\theta_B, \lambda_B) = (R, \lambda_B^*)$ is an equilibrium. We show only that Party A selecting a type (L, λ_A^*) is a best response to Party B selecting a type (R, λ_B^*). The converse argument is similar. Party A's payoff from selecting a type (L, λ_A^*) is

$$\psi\left(\gamma^P - \gamma^R\right) v(t^*(P), R) + (1 - \psi\left(\gamma^P - \gamma^R\right)) v(t^*(R), R) + m(g^*(\lambda_A^*), \lambda_A^*).$$

If it were to select a type $(P, -\lambda_A^*)$ it would attract exactly the same number of votes because redistribution is the salient issue. All it would achieve would be to reduce the probability of achieving its preferred level of spending. If it were to select a (R, λ_A^*) it would lose the chance of obtaining its preferred level of redistribution. Thus, selecting a type (L, λ_A^*) is optimal.

We next demonstrate that this is the only equilibrium. Note first that each Party will compromise in at most one dimension. Accordingly, if $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\}$ is an equilibrium then $(\theta_A, \lambda_A) \neq (R, -\lambda_A^*)$ and $(\theta_B, \lambda_B) \neq (P, -\lambda_B^*)$. Moreover, we know that (P, λ_A^*) is the best response to (R, λ_B^*) and vice versa. Thus, if $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\} \neq \{(P, \lambda_A^*), (R, \lambda_B^*)\}$, then $(\theta_A, \lambda_A) \in \{(P, -\lambda_A^*), (R, \lambda_A^*)\}$ and $(\theta_B, \lambda_B) \in \{(P, \lambda_B^*), (R, -\lambda_B^*)\}$.

Suppose first that $(\theta_A, \lambda_A) = (P, -\lambda_A^*)$. Then, Party B must be choosing (P, λ_B^*) since $(R, -\lambda_B^*)$ cannot be a best response to $(P, -\lambda_A^*)$. But then $(P, -\lambda_A^*)$ is only a best response to (P, λ_B^*) if $(P, -\lambda_A^*)$ would lose with probability one. This is inconsistent with the assumption that $|\gamma_H - \gamma_L| < \frac{1-\mu}{\mu}$ which implies that $\psi(\gamma_H - \gamma_L) \in (0, 1)$. Now suppose that $(\theta_A, \lambda_A) = (R, \lambda_A^*)$. Then, Party B cannot be choosing (P, λ_B^*). Moreover, it can only be choosing $(R, -\lambda_B^*)$ if its candidate would have zero probability of winning, which is not the case.

(ii) Suppose now that public spending is the politically salient issue for all citizens. We first claim that Party A selecting a type (P, λ_A^*) and Party B selecting a type (R, λ_B^*) is always an equilibrium under intervention. We show only that Party A selecting a type (P, λ_A^*) is a best response to Party B selecting a type (R, λ_B^*). The converse argument is similar. Party A's payoff from selecting a type (P, λ_A^*) is

$$\psi\left(\gamma^P - \gamma^R\right) v(t^*(P), P) + (1 - \psi\left(\gamma^P - \gamma^R\right)) v(t^*(R), P) + m(g^*(\lambda_A^*), \lambda_A^*).$$

If it were to select a (R, λ_A^*) it would lose the chance of obtaining its preferred level of redistribution.

If it were to select a type $(P, -\lambda_A^*)$ its payoff would be

$$\psi\left(\gamma_{-\lambda_A^*} - \gamma_{\lambda_A^*}\right)[v(t^*(P), P) + m(g^*(-\lambda_A^*), \lambda_A^*)] + (1 - \psi\left(\gamma_{-\lambda_A^*} - \gamma_{\lambda_A^*}\right))[v(t^*(R), R) + m(g^*(\lambda_A^*), \lambda_A^*)]$$

Subtracting this from the payoff from selecting a type (P, λ_A^*) yields

$$(1 - \psi\left(\gamma_{-\lambda_A^*} - \gamma_{\lambda_A^*}\right))\Delta m(\lambda_A^*) - (\psi\left(\gamma_{-\lambda_A^*} - \gamma_{\lambda_A^*}\right) - \psi\left(\gamma^P - \gamma^R\right))\Delta v(P).$$

This is positive since $\Delta m(\lambda_A^*) > \Delta v(P)$.

We next claim that if $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\}$ is an equilibrium under intervention, then either $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\} = \{(P, \lambda_A^*), (R, \lambda_B^*)\}$ or $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\} = \{(P, -\lambda_A^*), (R, -\lambda_B^*)\}$. Again, each Party will compromise in at most one dimension, so we know that $(\theta_A, \lambda_A) \neq (R, -\lambda_A^*)$ and $(\theta_B, \lambda_B) \neq (P, -\lambda_B^*)$. Moreover, we know that (P, λ_A^*) is the best response to (R, λ_B^*) and vice versa. Thus, if $\{(\theta_A, \lambda_A), (\theta_B, \lambda_B)\} \neq \{(P, \lambda_A^*), (R, \lambda_B^*)\}$, then $(\theta_A, \lambda_A) \in \{(P, -\lambda_A^*), (R, \lambda_A^*)\}$ and $(\theta_B, \lambda_B) \in \{(P, \lambda_B^*), (R, -\lambda_B^*)\}$.

Suppose first that $(\theta_A, \lambda_A) = (P, -\lambda_A^*)$. Then, Party B must be choosing $(R, -\lambda_B^*)$ since (P, λ_B^*) cannot be a best response to $(P, -\lambda_A^*)$. But in this case our claim holds. Now suppose that $(\theta_A, \lambda_A) = (R, \lambda_A^*)$. Then, Party B cannot be choosing (P, λ_B^*). Moreover, it can only be choosing $(R, -\lambda_B^*)$ if its candidate would have zero probability of winning, which is not the case under our assumption that $|\gamma_H - \gamma_L| < \frac{1-\mu}{\mu}$. ■