The Theory of 'Internal Exit', a Comment on Buchanan and Faith (1987)

Abstract

The purpose of this note is to correct an error in the seminal article on secession by Buchanan and Faith (1987). In their paper, Buchanan and Faith neglected an important effect: political separation affects markets and consequently individual private incomes.

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Following world events such as the break-ups of the Soviet Union and Yugoslavia, separatist movements in Canada, France, Italy and Spain and the formation of the European Union, the issue of political integration and disintegration has recently been the focus of a growing literature.[1] One of the seminal papers dealing with the economic analysis of secession is Buchanan and Faith (1987), which has been widely cited.[2] These authors describe an alternative to 'voting with one's feet' which consists in 'internal exit'. This political mechanism involves, among other things, restrictions on fiscal pressure. Though the secession remains a threat and does not actually happen, Buchanan and Faith's model contributes to one understanding of "how the prospects for removal from authority might exert limits on the taxing proclivity of government."

Buchanan and Faith (1987) define an equilibrium secession-proof tax rate. Their approach has influenced a lot of articles concerning in particular the formation or the break-up of a federation. For instance, Berkowitz (1997) analyses the impact of a peripheral region's threat of secession on welfare and resource allocation in a centralized fiscal federation. Assuming imperfect information about the public good's utility, Bordignon and Brusco (2001) determine the conditions under which an optimal constitution should include rules for secession. Using a political economy approach, Alesina and Spolaore (1997) and Bolton and Roland (1997) show how 'internal exit' is a means of avoiding the tyranny of the majority or, in other terms, of providing a 'government closer to the people'. More recently, Gradstein (2004) considers the secession option in the bargaining between two regions which are part

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[1] This literature is surveyed in Alesina, Perotti and Spolaore (1995) and Bolton, Roland and Spolaore (1996).

[2] Most of the articles cited in this note refer explicitly to the article by Buchanan and Faith (1987). For instance, Young (1998) writes (page 183) :

> "Out of the public-finance and fiscal-federalism traditions, a literature has been built on the original analysis by Buchanan and Faith (1987) of the possibility of 'internal exit' through secession."

of a federation. These papers, which all refer to Buchanan and Faith's article, remain valid in spite of an error in this last model. The purpose of this note is to correct this mistake and extend Buchanan and Faith's analysis.

1   The model

For Buchanan and Faith (1987), "government has a necessary function; it must provide "order", a nonexclusive, lumpy and costly good." The cost of providing this public good to a community of K people is $f(K)$, where $f'(K) \geqslant 0$. Each individual is endowed with private income, denoted $g(K)$. By assumption, the public good can be produced for any size of the community, since they assume that $Kg(K) > f(K)$. Out of a total population of N individuals, M "belong" to the government, a sharing coalition, and $S = N - M$ constitute the potential seceders. The public good is financed by a proportional tax on income, at rate t. Total fiscal surplus (T) results from the difference between total tax revenue $(tNg(N))$ and the cost of providing the public good $(f(N))$. In the absence of secession the potential secessionists receive only their post-tax private income $(P(.))$:

$$P(N) = (1 - t) g(N).$$

If secession obtains, the assumption is that the new government does not exploit its population. The secessionists' earnings are then:

$$P(S) = g(S) - \frac{f(S)}{S}.$$

Each member of the sharing coalition receives post-tax net income $(B(.))$ equal to his post-tax private income $(P(.))$ plus an equitably divided share of the fiscal surplus (T):

$$B(M, N) = P(N) + \frac{T}{M} = (1 - t) g(N) + \frac{tNg(N) - f(N)}{M}.$$

Buchanan and Faith (1987) define the equilibrium secession-proof tax rate $(t^* (M, N))$ as "one which given M and N maximizes the post-tax net income of the sharers without inducing secession." Their error obtains in the direct application of this definition (page 1025):

> "Since the S nonsharers on their own in their new polity realize a post-tax income of $g (S) (1 - t_0 (S))$, the maximum tax rate a sharing coalition of size M in a polity of size N can levy without inducing secession is $t^* (M, N) = t_0 (S) = \frac{f(S)}{Sg(S)}$. Since B is an increasing function of t, the tax rate $t^* (M, N)$ is an equilibrium rate."

By ignoring the consequences of secession on individual private gross incomes, the authors use the wrong participation constraint. Since, at the equilibrium, seceders are indifferent between leaving or remaining, we obtain:

$$P^* (N) = P (S) \iff t^* (M, N) = 1 - \frac{P (S)}{g (N)}. \tag{1}$$

Equilibrium incomes are then given by:

$$P^* (S) = g (S) - \frac{f (S)}{S}, \tag{2}$$

$$B^* (M, N) = \frac{W (N) - W (N - M)}{M}, \tag{3}$$

where $W (K)$ is the total income of a group composed of K individuals: $W (K) = Kg (K) - f (K)$. In the presence of agglomeration economies or efficiency losses from separation $(g' (K) > 0)$, secession reduces gross private income. Since by assumption $Sg (S) > f (S)$, it yields:

$$t^* (M, N) = 1 - \frac{g (S)}{g (N)} + \frac{f (S)}{Sg (N)} > t_0 (S).$$

The upshot is that fiscal exploitation is greater than that predicted by Buchanan and Faith (1987) who neglect the negative effect of secession on individual private gross incomes (the 'efficiency effect' in Bolton and Roland's taxonomy).[3]   The equilibrium tax rate proposed

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[3] The conclusion is the opposite if $g' (K) < 0$. For Berkowitz (1997), this hypothesis is realistic when, for example, secession allows a region to gain control over its natural resources.

by Buchanan and Faith remains correct for the very special case where private incomes are exogenous ($g(K) = \overline{g}, \forall K$), or when economic integration between the two new polities is perfect ($g(S) = g(N)$).[4]   The ignored 'efficiency effect' is crucial and is probably just as significant as the losses in public goods production. For Bolton and Roland (1997), it is the centripetal force which allows some solidarity among individuals with different private incomes. Moreover, Alesina, Spolaore and Wacziarg (2000) establish theoretically and empirically that economic integration promotes political fragmentation. In their model, trade openness shrinks the cost of secession by reducing an important advantage of large nations: their wide domestic markets.

As in Buchanan and Faith (1987), we determine the variation in the equilibrium tax rate and in incomes as seceders move into the sharing coalition, for a given value of N:

$$t_M^* \equiv \frac{\partial t^*(M, N)}{\partial M} = \frac{P'(S)}{g(N)}. \tag{4}$$

Under the condition $P'(S) > 0$, the entry of a potential seceder into the sharing coalition reduces the collective fiscal capacity to secede of the remaining non-sharers, allowing sharers to increase their rent. If democratization is equivalent to a transition from an oligarchic regime, in which a small group exploits the rest of the population, to a regime in which the exploitative group is the majority, then it appears in Buchanan and Faith's model that democratization might be more expropriative. This effect, termed 'Tocquevillian wisdom', has been studied by Meltzer and Richards (1981). An original aspect of Buchanan and Faith's model is that this effect appears without reference to the inequality of private incomes.

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[4] If we consider the Buchanan and Faith framework in a dynamic set-up, a problem of credibility might then appear. Indeed, by defining g(S) as the private income of a seceder after break-up, the authors assume that there is no possible trade agreement between the two groups after secession. This hypothesis seems questionable since no group can exert a credible threat of trade retaliations before break-up (see Young (1998) for a game theory approach of this issue). However, a perfect economic integration does not seem realistic, since the setting-up of political borders through secession would noticeably affect the trade-pattern, as McCallum (1995) showed empirically.

By studying the sharers' income variation, we shed light on the stability of the sharing coalition. It yields:[5]

$$B_M^* \equiv \frac{\partial B^*(M,N)}{\partial M} = \frac{MW'(N-M) + W(N-M) - W(N)}{M^2}.$$ (5)

We then deduce the following condition for free entry:

$$B_M \geqslant 0 \iff SP'(S) - \frac{T}{M} \geqslant 0.$$ (6)

Entry entails two effects for the sharers of opposite signs: on the one hand, entry reduces the total wealth of the seceders $(P'(.) > 0)$; on the other, the former members have to share their rent with one additional member $(-\frac{T}{M})$. The first effect decreases the collective capacity to secede and allows the sharers to increase the tax rate. The second effect is obvious and results from a larger sharing coalition. If the function $W(.)$ is concave, condition (6) is always valid.[6]

Since the gain from entering the sharing coalition, denoted $G \equiv B^*(M,N) - P^* + B_M^*$, is positive when $B_M^* \geqslant 0$, the final size of the coalition is then equal to N, all exploitation having disappeared. In contrast to Buchanan and Faith's conclusions, which remain ambiguous, we have a sufficient (and not necessary) condition on the convexity of function $W(.)$ to establish the existence of a stable sharing coalition.[7]

In order to illuminate the consequences of Buchanan and Faith's mistake, we consider an illustrative case, where $f(K) = F$ and $g(K) = K$. It appears that by ignoring the 'efficiency effect', Buchanan and Faith overestimate the impact of a new member in the

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[5] Like Buchanan and Faith, we do not consider the credibility of exclusion when we study the sign of $\frac{\partial B^*(M,N)}{\partial M}$ and $\frac{\partial P^*(M,N)}{\partial M}$ at N given.

[6] By applying the Mean-Value Theorem on the continuous and differentiable function $W(.)$, we establish that:

$$\exists K^c \in \,]N-M, N[\,, \quad \frac{W(N) - W(N-M)}{M} = W'(K^c).$$

Moreover, if the function $W(.)$ is concave, then for every $K^c \geqslant N-M$, we have: $W'(K^c) \leqslant W'(N-M)$ and then $B_M^* \geqslant 0$.

[7] Even if the sharers would improve their welfare with a smaller coalition $(B_M^* \leqslant 0)$, no member has the power to exclude another member.

sharing coalition on the tax rate (t^*) and then on the rent (T), which conducts them to an opposite final effect on the sharers' payment (B).[8] While these authors conclude that exploitation would disappear with the dissolution of the sharing coalition, we observe that the sharers have no interest in accepting new members.

Finally, we analyze the impact of immigration, that is, a situation in which new citizens enter the polity as nonsharers (S and N vary identically, while M remains constant). We have already established that under the concavity of $W(.)$, sharers will always accept new members. A necessary and sufficient condition for the sharers to accept immigrants among the potential seceders is the convexity of function $W(.)$.[9] Nonsharers will also favor immigration if their net income increases $(P'(S) > 0)$. While immigration improves nonsharers' capacity to secede and thus reduces the equilibrium tax rate, it also increases the total income $(W(N))$. For the sharers, this advantage outweights the first effect as long as the function $W(.)$ is convex.

2   Conclusion

The approach of Buchanan and Faith (1987) remains powerful due to their definition of the equilibrium tax rate. The threat of secession adds a participation constraint to the fiscal program of political decision makers. Their approach explains why the fiscal burden is bounded from above. It also suggests that decentralized fiscal systems may play a stabilizing political role. The aim of Buchanan and Faith (1987) was to provide an alternative to the external exit developed in Tiebout (1956). While 'voting with their feet' creates competition

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[8] Applying Buchanan and Faith's reasoning (statements 3 and 8, pages 1025-6) yields to $B^*(M, N) = N + \frac{F}{N-M}$ and $B_M^* > 0$, while using the correct participation constraint involves $B^*(M, N) = 2N - M$ and $B_M^* < 0$.

[9] Differentiating equation (3) with respect to N at M given yields to:

$$\frac{\partial B^*(M, N)}{\partial N} = \frac{W'(N) - W'(N - M)}{M} > 0 \iff W''(K) > 0, \quad \forall K \in [0, N].$$

among local governments, the 'internal exit' also induces a fiscal competition between the incumbent government and the government of the potential jurisdiction, which would be composed of the nonsharers in the case of secession. However, Buchanan and Faith (1987) have neglected the influence of secession on the gross private income. This note has shown the relevance of this effect and its consequences on the sharers' behavior. Moreover, beyond the original analysis, one can deduce that nonsharers would support economic integration since it reduces the 'efficiency effect' and thus the relative attractiveness of the undivided society.

References

Alesina, A., Perotti, P., and E. Spolaore (1995), "Together Separately? Issues on the Costs and Benefits of Political and Fiscal Unions," *European Economic Review, Papers and Procedings*, 39(3-4), 751-758.

Alesina, A., and E. Spolaore (1997), "On the Number and Size of Nations," *Quarterly Journal of Economics*, 112(4), 1027-1056.

Alesina, A., Spolaore, E., and R. Wacziarg (2000), "Economic Integration and Political Disintegration," *American Economic Review*, 90(5), 1276-1296.

Berkowitz, D. (1997), "Regional Income and Secession: Center-periphery Relations in Emerging Market Economies," *Regional Science and Urban Economics,* 27(1), 17-45.

Bolton, P., and G. Roland (1997), "The Break-up of Nations: a Political Economy Analysis," *Quarterly Journal of Economics*, 112(4), 1057-90.

Bolton, P., Roland, G., and E. Spolaore (1996), "Economic Theories of the Break-up and Integration of Nations," *European Economic Review,* 40(3-5), 697-705.

Bordignon, M., and S. Brusco (2001), "Optimal Secession Rules," *European Economic Review*, 45(10), 1811-1834.

Buchanan, J. M., and R. L. Faith (1987), "Secession and the Limits of Taxation: Toward a Theory of Internal Exit," *American Economic Review,* 77(5), 1023-1031.

Gradstein, M. (2004), "Political Bargaining in a Federation: Buchanan meets Coase," *European Economic Review*, 48(5), 983-999.

McCallum, J. (1995), "National Borders Matter: Canada-U.S. Regional Trade Patterns," *American Economic Review*, 85(3), 615-623.

Meltzer, A. H., and S. F. Richard (1981), "A Rational Theory of the Size of Government," *Journal of Political Economy*, 89(5), 914-927.

Tiebout, C. (1956), "A Pure Theory of Local Expenditures," *Journal of Political Economy*, 64, 416-24.

Young, R. (1998), "Games of Secession" in P. Newman (ed), *The New Palgrave Dictionary of Economics and the Law*, Stockton Press: New York, 183-187.