E C O N O M I C S B U L L E T I N

The theory of `Internal Exit', a comment on Buchanan and Faith (1987)

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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 the effect of political separation affects on markets, and consequently on individual private incomes.

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I. Introduction

Following world events 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 desintegration has recently been the focus of a growing literature[1]. Main examples of which are Alesina and Spolaore (1997), Bolton and Roland (1997)... One of the seminal work is Buchanan and Faith (1987), which is quoted a numerous time[2]. Behind an economic analysis of secession, these authors describe an alternative to the "voting with their feet", the "internal exit". This political mecanism involves some particular rectrictions on fiscal pressure. This note attempts to correct a mistake contained in Buchanan and Faith (1987) and recasts some recent researches from the point of view of this article. We shall fisrt recall Buchanan and Faith's model and notation.

II. 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 has a private income, noted $w(K)$ [3]. By assumption, the public good can be produced for every size of community, $K.w(K) > f(K)$. The authors distinguish N individuals, M belong to the government, a sharing coalition, and $S = N - M$ are the potential seceders. The public good is financed by a nondiscriminatory tax rate (t). Total fiscal surplus (T) results from the difference between the tax revenue ($t.N.w(N)$) and the cost of the public good ($f(N)$). Each member of the sharing coalition receives an equal fraction of the fiscal surplus (T). He (or she) has the following post-tax income :

$$B = P + \frac{T}{M} = (1-t).w(N) + \frac{1}{M}\left[t.N.w(N) - f(N)\right]$$

The others get only

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

Buchanan and Faith (1987) define the equilibrium tax rate ($t^*(M,N)$) as ‹‹one which given M and N maximizes the post-tax net income of the shares whithout inducing secession ››. An error occurs in their direct application of this definition (page 1025) :

> ‹‹ Since the S nonsharers on their own in their new polity realize a post-tax income of $w(S)(1-t_0(S))$, the maximal tax rate a sharing coalition of size

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

[2] Most of the articles cited in this note refer explicitly to the article of Buchanan and Faith (1987). By example 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.

[3] In the original model, Buchanan and Faith (1987) noted individual private income $g(K)$. We use rather $w(K)$.

M in a polity of size N can levy without inducing secession is $t^*(M,N) = t_0(S) = \frac{f(S)}{S.w(S)}$ ››.

The authors ignored here the consequences of secession on the individual private gross incomes[4]. Owing to B is strictly increasing with t, the equilibrium tax rate binds the participation constraint of the nonsharing group ($P \geqslant P^S$). In other terms, at the equilibrium seceders must be indifferent between leaving or remaining. That means :

$$P^* = P^S \Longleftrightarrow [1 - t^*(M,N)].w(N) = \left(1 - \frac{f(S)}{S.w(S)}\right).w(S)$$

Thus

$$t^*(M,N) = 1 - \frac{w(S)}{w(N)} + \frac{f(S)}{S.w(N)} \tag{1}$$

We remark[5] that

$$t^*(M,N) = \frac{f(S)}{S.w(S)} \Longleftrightarrow w(S) = w(N)$$

which is a very particular case[6] or the consequence of an implicit specific assumption: inter-polity trade is possible after secession[7].

Equilibrium incomes are then

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

$$B^* = \frac{1}{M}[N.w(N) - S.w(S) + f(S) - f(N)] \tag{3}$$

If we assume as Bolton and Roland (1997) the presence of agglomeration economies or efficiency losses from separation ($w'(K) > 0$), secession reduces private income. We get:

$$t^*(M,N) > \frac{f(S)}{S.w(S)}$$

We deduce that fiscal exploitation is more important than predicted by Buchanan and Faith (1987)[8]. Indeed these authors neglected the negative effect of secession on individual private gross incomes (the 'efficiency effect' in Bolton and Roland's taxonomy). This cost is crucial and probably as significative as the sole fiscal effect. Alesina, Spolaore and Wacziarg (2000) establish theorically and empirically that economic integration involves political fragmentation. In their model trade openess shrinks the cost of secession by reducing an important advantage of large nation: their large national markets.

[4] Moreover with Buchanan and Faith's results we remark that $M.B^* + S.P^*$ differs from $N.w(N) - f(N)$, the wealth of the wholly community.

[5] The assumption advanced by Buchanan and Faith (1987), $Kw(K) > f(K)$, implies that the equilibrium tax rate ($t^*(M,N)$) is always less than unity. If $w(S) < w(N)$, the equilibrium tax rate is positive.

[6] The first illustrative case given by Buchanan and Faith (1987) respects this condition ($w(K) = \overline{w}$, $\forall K$).

[7] This hypothesis is definitly rejected by the authors (page 1027).

[8] The conclusion is opposite if $w'(K) < 0$. For Berkowitz (1997), this hypothesis isn't irrealistic when by example secession allows a region to gain control over its natural ressources.

As Buchanan and Faith (1987), we determine the variations of the equilibrium tax rate and incomes when seceders move into the sharing coalition at N given.

$$t_M^* = \frac{\partial t^*(M,N)}{\partial M} = \frac{1}{w(N)}.\frac{\partial P^*}{\partial S} \tag{4}$$

where

$$\frac{\partial P^*}{\partial S} = w'(S) - \frac{S.f'(S) - f(S)}{S^2} \tag{5}$$

The post-tax income is obviously increasing with the size of the nonsharing if the marginal productivity of this group is greater than the marginal variation of the average public cost. From (4), we deduce that the equilibrium tax rate (t_M^*) is increasing with the size of the sharing coalition if and only if the post-tax private income (P) is increasing with the number of seceders (S). Bigger is the sharing coalition, less is the fiscal capacity of the nonsharers to do secession and thus more exploitable they are.

For the post-tax income (B^*) we find[9]

$$B_M^* = \frac{\partial B^*}{\partial M} > 0 \Longleftrightarrow \frac{\partial P^*}{\partial S} > \frac{1}{S}.\frac{T^*}{M} (> 0) \tag{6}$$

with

$$T^* = N.\left[w(N) - \frac{f(N)}{N} - \left(w(S) - \frac{f(S)}{S}\right)\right]$$

A sharer is prone to accept a new member if and only if the reduction of seceders wealth is sufficiently important[10]. Then the entry involves a potential impoverishment of the seceders allowing the sharing coalition to raise significantly the tax rate.

Following Buchanan and Faith (1987) we define now the gain to enter in the sharing coalition:

$$G = B^* + B_M^* - P^* = \frac{T^*}{M}.\frac{M-1}{M} + \frac{S}{M}.\frac{\partial P^*}{\partial S} \tag{7}$$

We obtain the subsequent condition[11]

$$G < 0 \Longleftrightarrow \frac{\partial P^*}{\partial S} < \frac{1-M}{S}.\frac{T^*}{M}$$

Seceders don't try to become member if their income (P^*) decreases sufficiently with the size of their group (S).

A conflict emerges between the two groups when

$$\left\{ \begin{array}{c} G > 0 \\ B_M^* < 0 \end{array} \right. \Longleftrightarrow \frac{1-M}{S}.\frac{T^*}{M} < \frac{\partial P^*}{\partial S} < \frac{1}{S}.\frac{T^*}{M} \tag{8}$$

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[9]

$$\begin{aligned} B_M &= \frac{1}{M^2}\left[M.(S.w'(S) - f'(S)) - N.w(N) + f(N) + N.w(S) - f(S)\right] \\ &= \frac{1}{M}\left(S.\frac{\partial P}{\partial S} - \frac{T}{M}\right) \end{aligned}$$

[10] We recall at N given, that M and S vary in opposite direction.

[11] If $\frac{\partial P^*}{\partial S} > 0$, the gain ($G$) is obviously positive.

At this point we can ask how the members can deter any entry. Buchanan and Faith (1987) don't explain the origin of the sharers power. Austin (1995) focuses on this weakness and establish that the presence of exclusionary mechanisms is a necessary condition for a credible secession's threat.

We now analyse the impact of immigration when new citizens enter the polity as nonsharers (S and N vary identically, M is fixed). Relation (5) gives us the income's variation for the nonsharers and we get for the others

$$\frac{\partial B^*}{\partial S} = \frac{1}{M}\left[w(N) + Nw'(N) - f'(N) - (w(S) + Sw'(S) - f'(S))\right]$$

The two groups will favor immigration if

$$\begin{cases} \frac{\partial P^*}{\partial S} > 0 \\ \frac{\partial B^*}{\partial S} > 0 \end{cases}$$

$$\Longleftrightarrow \frac{S.f'(S) - f(S)}{S^2} < w'(S) < \frac{1}{S}\left[w(N) - w(S) + N.w'(N) - f'(N) + f'(S)\right] \quad (9)$$

Under the condition (9) immigrants are welcomed. Their entry increases the total income. This advantage outweighs the cost of additional public good although the tax rate's variation is ambiguous[12].

III. Conclusion

The behaviors of the two groups described by Buchanan and Faith (1987) are often compared to these of regions which form (or leave) a federation. Berkowitz (1997) analyses the impact of peripheral region's threat of secession on welfare and ressources allocation in a centralized fiscal federation. In some situations the periphery which has no taxing power earns a fiscal surplus. Bordignon and Brusco (2001) assume information imperfections on the public good utility. They determine under which conditions an optimal constitution should incorporate secession rules. Alesina and Spolaore (1997) or Bolton and Roland (1997) adopt a political economy approach to study integration and desintegration. With the introduction of vote in political decisions these authors assimilate nonsharers to a minority group. Then the 'internal exit' is a means to avoid majority tyranny or in a less emphatic style to take advantage of a 'government closer to the people'[13].

The approach of Buchanan and Faith (1987) remains powerfull due to their definition of the equilibrium tax rate. Secession's threat adds a participation constraint in

[12] Indeed we have

$$\frac{\partial t^*}{\partial S} > 0 \Longleftrightarrow \frac{\partial P^*}{\partial S} > \frac{w'(N)}{w(N)}.\left[w(S) + \frac{f(S)}{S}\right]$$

We can refer to Jehiel and Scotchmer (2001). These authors define more precisely constitutional rules which govern immigration.

[13] For Alesina and Spolaore (1997) secession reduces the average distance between individuals and the place where the sole local public good is provided. Bolton and Roland (1997) distinguish individuals by their incomes. Secession lets the regional median voter to decide the tax rate instead of the national median voter.

the fiscal program of the political deciders. It explains the existence of some 'accomodating' tax rates or at least the presence of an upper bound on fiscal burden and suggests a stabilizing role to decentralized fiscal systems.

Most of the articles derived from Buchanan and Faith (1987) remain valid. These works are built on utility functions which incorporate public and private consumptions. Moreover in a lot of contributions individual incomes are fixed by assumption. The others as Bolton and Roland (1997) determine explicitly the 'efficient effect'. This note showed the impact of secession on markets and thus on individual incomes. Economic integration reduces this cost as Alesina, Spolaore and Wacziarg (2000) established. But also we might deduce that non-sharers would support economic integration if it improves their ability to form a new jurisdiction.

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