



# Is There an Optimal Constitution?

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**Abstract.** The optimal constitution is one that protects people from politicians' thirst of power and preserves citizens' civic virtues. This paper presents a model that blends David Hume's (1741) consideration that in politics "every man ought to be supposed a knave," with John Stuart Mill's (1861) conception of self-interested politicians. The optimal constitution is proved to be feasible. However, there are two possible equilibria, the Frey and Brennan-Buchanan equilibrium. It is shown that Bruno Frey's (1997) crowding-in and crowding-out analysis is a particular case of our model. In the Brennan-Buchanan equilibrium there is a long-run neutrality of enforcement on citizens' performance. In general, a trade-off is expected between the optimal number of laws and enforcement. The comparison between the equilibria shows that the Frey equilibrium is the best option to enhance the civic virtues of citizens, while the Brennan-Buchanan equilibrium is the best way to deter the ambitions of self-interested politicians.

**JEL classification:** D79, K42.

## 1. Introduction<sup>1</sup>

What is an optimal constitution? This paper answers this question through a model that blends Mill's ([1861]1946) view of politicians as agents that would abuse their political power to promote their particular interests with Hume's ([1741]1951) consideration that in politics and constitutional matters "every man ought to be supposed a *knave*" (1951:157).<sup>2</sup> An optimal constitution is a constitution that safeguards the civic virtues of the citizens, and at the same time imposes limits on politicians to abuse political power and exploit the citizens.

A constitution is a set of general laws that rules a country establishing the rights and obligations of all citizens. Then, in order to build a model it is necessary to pay attention to three different elements: i) the citizens' "performance" in terms of obeying the laws; ii) the law enforcement, that is, the set of obligations, controls and punishments; and iii) the law-making process.

The model captures the features above in an optimal control framework where the behavior of the citizens is subjected to the law-making process. The citizens are assumed to be knaves, along the lines of Hume (1741). The law-making process reflects J. S. Mill's (1861) view of self-interested politicians. Such view is one of the cornerstones of public choice theorists, as emphasized by Brennan and Buchanan (1983). The model evaluates the effects of enforcement on the optimal performance of the citizens. Moreover, the impact of enforcement on the optimal constitution is investigated. The solution of the model yields the optimal constitution and the optimal behavior of the citizens. Two results can be found as outcome of the comparison: one has the same properties than the Frey equilibrium (1997), and the other one shows the properties of the Brennan-Buchanan equilibrium (1983). Thus the model can be seen as a contribution to positive constitutional economics.<sup>3</sup>

## 2. The Hume-Mill Model of a Constitution

The structure of the model is as follows: The representative agent is a citizen. As in Hume, she is supposed to be a knave in her “public capacity.” Her behavior is measured by her performance. The institutional framework in which she lives is given by the set of laws that rules the country (i.e. the constitution). Laws are enforced, and this affects her behavior. Thus her performance is subject to a dynamic law-making process in which politicians are the prime actors. They are assumed to use their political power to promote their interests, as was already stressed by J. S. Mill (1861).<sup>4</sup> The set-up of the problem as it is analyzed below is given by the maximizing behavior of the citizens subject to the law-making process and to law enforcement. The solution to the problem yields the optimal constitution and the optimal performance of the citizens. However, it should be noted that the interaction between the political process and the law-making process is not considered in this paper.<sup>5</sup> Introduction of this interaction would necessitate a feedback rule in which citizens can control the behavior of politicians through elections thus decreasing the incentives politicians have to pursue their own interests.

We assume, as in Frey (1997), that a representative agent tries to maximize the difference between the benefits ( $B$ ) and costs ( $C$ ) associated to her performance ( $P$ ). This difference can be associated to the principle that citizens are inclined to free-ride as much as they can.<sup>6</sup> We are also assuming that laws are enforced ( $E$ ) through government external interventions:

$$\text{Max}_P \int_0^{\infty} [B(P, E) - C(P, E)] e^{-rt} dt \quad (1)$$

where  $r$  stands for the rate of time preference of the representative citizen.

As J. S. Mill (1861) and Brennan and Buchanan (1983) pointed out, self-interested politicians are expected to abuse their political power to exploit citizens. It is assumed that politicians wish to increase their power and control over the performance of the citizens by increasing the number of laws ( $L$ ). The effort to increase their power is reflected by the growing number of laws covering many activities. More laws imply a higher necessity to reinforce them continuously, and mean more intervention in the life of citizens.<sup>7</sup> An interventionist constitution, one where the number of laws is greater than in a constitution that allows for a higher degree of freedom for its citizens, follows from this. The inclination of politicians to increase the number of laws can only be diminished by the performance of the citizens. If they perform well, there is less of a need or motive to create laws. In order to capture these features, the following model of the law-making process is advanced

$$\begin{aligned} \dot{L} &= f(P, E, L), f_P < 0, f_E > 0, f_L > 0, f_{EL} > 0, f_{PL} < 0, f_{LL} > 0, \\ f_{PP} &= f_{EE} = f_{PE} = 0. \end{aligned} \quad (2)$$

It should be noted that our concept of the number of laws assumes that the quality (or intensity) of the laws are the same for a given number of laws.<sup>8</sup> However, by controlling for the quality of laws, our results depend on the way in which law enforcement affects the performance of citizens, and on the number of laws.

The existence of an optimal constitution is given by the solution of the maximization problem in (1) subject to the dynamic restriction given in (2). This problem corresponds to the problem of maximizing the behavior of Hume's knave representative citizen, subject to the further constraint of Mill's self-interested politician. The optimal constitution then is one that is for, and made by knaves and self interested politicians.

From (1) and (2) follows the current value Hamiltonian:

$$H = B(P, E) - C(P, E) + \lambda f(P, E, L) \quad (3)$$

where  $\lambda$  is the co-state variable representing the shadow price of the laws.

The first order conditions are:

$$H_P = 0 \Rightarrow B_P - C_P + \lambda f_P = 0 \quad (4)$$

$$\dot{\lambda} - r\lambda = -H_L \Rightarrow \dot{\lambda} = \lambda[r - f_L] \quad (5)$$

$$\lim_{t \rightarrow \infty} L\lambda e^{-rt} = 0 \quad (6)$$

Differentiating equation (4) in relation to time and using (5) and (2), we arrive at the differential equation for the control variable  $P$ :

$$\dot{P} = \frac{C_P - B_P}{B_{PP} - C_{PP}} \left[ f_L - r - \frac{f_{PL}}{f_P} f \right] \quad (7)$$

The dynamic system formed by equations (2) and (7) presents the relevant information of our problem. The solution of the model provides an optimal constitution, that is, an optimal number of laws ( $L^*$ ), and an optimal performance of the citizens ( $P^*$ ). It must be noted, however, that any feasible optimal constitution is defined between Anarchy and Leviathan. Anarchy occurs when  $L^* = 0$  and Leviathan when  $L^* \rightarrow \infty$ .

The model has two different equilibria. The first one is the Frey (1997) equilibrium, where  $C_P = B_P$ . The second is the Brennan-Buchanan (1983) equilibrium which occurs when  $r = f_L - \frac{f_{PL}}{f_P} f$ , and  $C_P \neq B_P$ . The reason for this classification of the equilibria is given by the impact of law enforcement on the performance of the citizens and on the optimal number of laws, as will become clearer below. Despite the assumption of the same quality of laws for a given number of laws, what really distinguishes Frey's analysis from that of Brennan-Buchanan is the way law enforcement affects the endogenous variables of the model.<sup>9</sup>

The Frey equilibrium can be synthesized in Figure 1.

Notice that the Frey equilibrium is a saddle point ( $L^*$ ,  $P^*$ ) (see Appendix 1). The stable saddle point path ( $SS'$ ) associated to the Frey equilibrium provides the optimal adjustment for the performance of the citizens in relation to the number of laws. The highest performance is associated with the highest civic virtues. As it is an optimal control problem, the representative citizen controls her performance in order to join the stable saddle-point path. The stable saddle-point path relates positively the number of laws to the performance of the citizens. Any other path violates the optimal conditions of the problem.

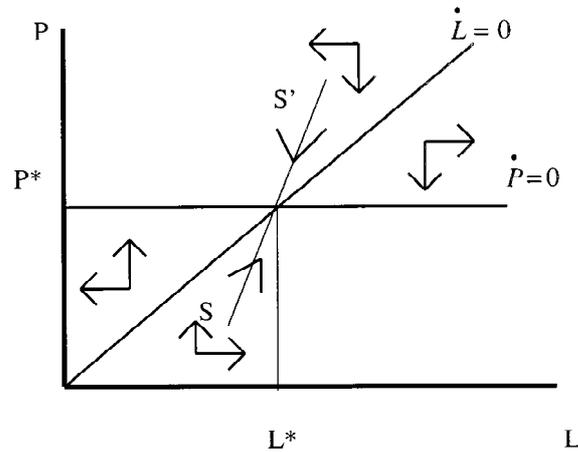


Figure 1. The Frey equilibrium.

In order to address the effect of external intervention of the government (the variable  $E$ ) in our model, the following explicit function for  $f$  is assumed:

$$f(P, E, L) = \frac{a}{2}EL^2 - bPL, \quad a > 0, b > 0 \quad (8)$$

Using (8), the comparative-static analysis of the optimal solutions of the model can be made.

The effect of a variation in the external intervention ( $E$ ) over the optimal performance ( $P^*$ ) of people is given by

$$\frac{dP^*}{dE} = \frac{B_{PE} - C_{PE}}{C_{PP} - B_{PP}}. \quad (9)$$

By no coincidence this equation is equal to equation (4) in Frey (1997). By noticing that  $C_{PP} > 0 > B_{PP}$ , and that the disciplining effect of an external intervention is negative,  $C_{PE} < 0$ , we are actually applying the same procedure used by Frey.

Frey (1997) identifies two different kinds of constitutions. The first one assumes that human beings, on average, are reasonable enough to follow the laws, while the second constitution assumes that all citizens act as free riders. The latter type of constitution used to be more interventionist than the first. According to Frey, the first type of constitution generates a crowding-in effect of civic virtues, while the latter tends to crowd out civic virtues. The consequence of the crowding-out effect is somewhat perverse since “the citizens exploit all legal opportunities to the fullest and the constitution is less observed” (Frey 1997:1044). Frey argues that an interventionist constitution leads to a crowding-out ( $B_{PE} < 0$ ) effect, while a constitution supportive of the citizens’ virtues leads to a crowding-in ( $B_{PE} > 0$ ) effect. In the crowding-in case,  $dP^*/dE > 0$ , while in the crowding-out case the sign of  $dP^*/dE$  can be negative.

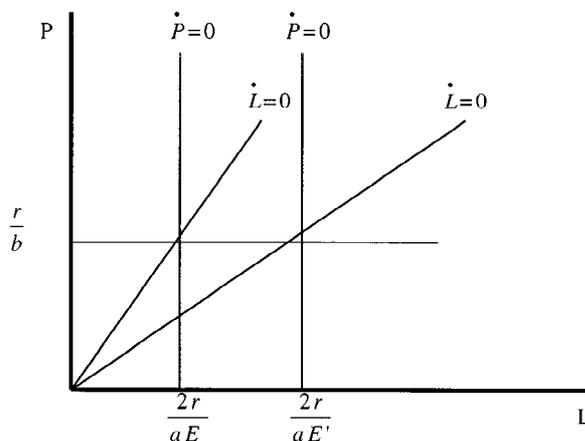


Figure 2. The effect of  $E$ . The case when  $E > E'$ .

Also, the present model can be used to investigate the impact of  $E$  on the optimal constitution ( $L^*$ ). The comparative statics result is:

$$\frac{dL^*}{dE} = \frac{2b}{aE} \left( \frac{B_{PE} - C_{PE}}{B_{PP} - C_{PP}} \right) + \frac{L}{E}. \tag{10}$$

The sign is undetermined and depends on the crowding-in or crowding-out effects. If the crowding-out effect prevails, it is likely that there is a negative impact of enforcement on the number of laws. On the other hand, in the presence of the crowding-in effect, a positive impact of  $E$  is expected. These are interesting conditions that show how sensitive laws and politicians can be in relation to the failure of their intervention.

The Brennan-Buchanan equilibrium is also a saddle point (see Appendix 2). It has the same stability properties as the equilibrium examined above. It also provides the positive correlation between citizens' performance and the number of laws. The important result in this equilibrium is that there is no effect of  $E$  on the optimal performance  $P^*$ , ( $dP^*/dE = 0$ ). As a consequence there is a long-run neutrality of enforcement in relation to the performance of citizens! We name it the Brennan-Buchanan equilibrium, since this is an outcome of a constitution for knaves that does not crowd out civic virtues. The effect of an increase in the law enforcement is illustrated in Figure 2.

Figure 2 shows that an increase of external intervention provokes a decrease in the optimal number of laws. As the performance of citizens is not affected by the enforcement of laws, there is a trade-off between enforcement and the number of laws. This means that if the performance of the citizens is inelastic in relation to the number of laws, the cost of enforcing the laws will act as a force to decrease their number.<sup>10</sup>

The results of the model are quite clear. In the Frey equilibrium, law enforcement affects the performance of the citizens, and in the Brennan-Buchanan equilibrium, law enforcement has no impact on the performance of the citizens. Furthermore, in the Frey equilibrium law enforcement can have positive (crowding-in), or negative (crowding-out) effects on the number of laws, while in the Brennan-Buchanan equilibrium there are only negative effects.

Now that both equilibria have been examined, it is worth making some comparisons between them. Since both the Frey and the Brennan-Buchanan equilibrium yield an optimal constitution, and since both can differ from each other, one must address the question which of these optimal constitutions is better? This is a typical exercise for constitutional economics as developed by Buchanan (1991). Our criteria are the following: on the one hand, the best optimal constitution is the one that maximizes  $P^*$  for a given  $L^*$ , that is, the constitution that encourages the civic virtues of citizens. On the other hand, the best optimal constitution is the one that minimizes  $L^*$  for a given  $P^*$ , that is, the one that minimizes the harm caused by politicians' self-interest.

These criteria can be easily applied to our model. First notice that substitution of (8) into the saddle-point condition of Appendix 1, (A.3) yields an inequality for the Frey equilibrium (denoted by the index  $F$ ):  $P_F^* > \frac{r}{b}$ , which implies, by equation (A.2), that:  $L_F^* > \frac{2r}{aE}$ . These inequalities can be compared with the optimal Brennan-Buchanan equilibrium given by equations (A.4) and (A.5). It is easy to see that the Frey equilibrium yields the highest performance of citizens with the greater number of laws, while the Brennan-Buchanan equilibrium gives the smallest number of laws combined with the lowest performance of citizens.

Unfortunately, our criteria cannot identify the best option. What we can actually say is that the Brennan-Buchanan equilibrium will be preferred if one wants to deter the abuses of politicians. On the other hand, the Frey equilibrium will be the best option if one wants to encourage the civic virtues of the citizens.

### 3. Conclusions

This paper has blended J. S. Mill's (1861) conception of politicians with Hume's (1741) consideration that every man is a knave. An optimal control problem that takes into account the propensity of citizens to free-ride and the inclination of politicians to widen their power, yielded many insightful results. An optimal constitution is proven to be feasible, namely a constitution that defends the civic virtues of the citizens, and imposes limits to politicians' self-interests. We have shown, however, that there are two possible equilibria in the model: the Frey and the Brennan-Buchanan equilibrium. For both equilibria, there exists a stable saddle path with the same properties. The Frey crowding-in and crowding-out results are proven to be particular cases of our model. In the Brennan-Buchanan equilibrium there is a long-run neutrality of enforcement on citizens' performance. The model is also useful to address the impact of enforcement on the number of laws by showing that there is a trade-off between them. Additionally, the paper has compared both equilibria and has demonstrated that the Frey equilibrium is the best option to enhance the civic virtues of the citizens, while the Brennan-Buchanan equilibrium is the best option to deter the ambition of self-interested politicians.

#### Appendix 1:

The steady state solutions ( $P^*$ ,  $L^*$ ) of Frey's equilibrium are:

$$\dot{P} = 0 \Rightarrow C_P(P^*, E) = B_P(P^*, E) \quad (\text{A.1})$$

$$\dot{L} = 0 \Rightarrow P^* = \frac{aE}{2b}L^* \quad (\text{A.2})$$

By analysing the Jacobian matrix below:

$$A = \begin{bmatrix} \frac{\partial \dot{P}}{\partial P} & \frac{\partial \dot{P}}{\partial L} \\ \frac{\partial \dot{L}}{\partial P} & \frac{\partial \dot{L}}{\partial L} \end{bmatrix} = \begin{bmatrix} r + \frac{f_{PL}}{f_P}f - f_L & 0 \\ f_P & f_L \end{bmatrix}_{(P^*, L^*)}$$

The determinant of  $A$  is negative if and only if:

$$f_L > r + \frac{f_{PL}}{f_P}f \quad (\text{A.3})$$

when calculated at  $(P^*, L^*)$ . This is the saddle point condition for the Frey equilibrium.

## Appendix 2:

The steady state solutions  $(P^*, L^*)$  of the Brennan-Buchanan equilibrium are:

$$\dot{P} = 0 \Rightarrow L^* = \frac{2r}{aE} \quad (\text{A.4})$$

$$\dot{L} = 0 \Rightarrow P^* = \frac{r}{b} \quad (\text{A.5})$$

By analyzing the Jacobian matrix of this system:

$$A' = \begin{bmatrix} \frac{\partial \dot{P}}{\partial P} & \frac{\partial \dot{P}}{\partial L} \\ \frac{\partial \dot{L}}{\partial P} & \frac{\partial \dot{L}}{\partial L} \end{bmatrix} = \begin{bmatrix} 0 & \frac{C_P - B_P}{B_{PP} - C_{PP}} \left( \frac{aE}{2} \right) \\ \frac{-2br}{aE} & r \end{bmatrix}_{(P^*, L^*)}$$

The determinant  $A'$  is negative if and only if:

$$C_P(r/b, E) > B_P(r/b, E) \quad (\text{A.6})$$

which is the saddle-point condition for the Brennan-Buchanan equilibrium.

## Notes

1. I would like to thank, without implicating, F. G. Carneiro, H. Hille, K. Hussein, J. Sánchez-Fung, R. Peñaloza, and two anonymous referees for useful comments.
2. It is important to note that both principles are at the core of constitutional economics as stressed by Buchanan (1991).
3. See Voigt (1997) for a complete survey on the subject.

4. Bailey (1997) points out that professional politicians are subject to rent-seeking pressures. In the present context they just care about their own interests.
5. Note that our departure point is different from the classic approach of Buchanan and Tullock (1962). In their generalized economic theory of constitutions the representative agent tries to choose a decision-making rule to minimize the present value of the expected external and decision-making costs functions.
6. Notice that such view is common in the principal-agent setting. Becker (1968) proposed what was essentially an early principal-agent model, which saw criminals as rational agents whose behavior is understood as an optimal response to the law enforcement set by the government (principal).
7. Berggren (1996) stresses the point that a constitution also enables politicians to produce public goods. In our context the public goods produced by the state are the ones that protect rights and enforce the obligations of the citizens. For example, a system of courts, a police force, and national defense. By considering the benefits provided by the existence of these public goods one can assume that it would be in the interest of the citizens to have more public goods, which would imply more laws. However, on the one hand such implication ignores the costs involved in providing these public goods, and on the other hand, the increase in public goods which enforce laws can imply more regulation and intervention in the citizen's life. So, it is implicitly assumed in our model that there is an optimum amount of public goods that maximizes the protection of rights and the enforcement of obligations of the citizens.
8. The quality of the law makes an enormous difference. For example, imagine that there are two constitutions with just one law (the number of laws is the same), one person says: everybody is free, and the other person says: everybody should obey the dictator. As we can see, the assumption of the same intensity of laws for a given number of laws is essential for our analysis.
9. One of the referees is quite critical about this point. He stresses that it "is exactly the *differences* among the laws which determine the way law enforcement affects an individual's behavior," and concludes: "what really distinguishes Frey's analysis from that of Brennan and Buchanan is a difference in the *quality* of the constitutional rules required in both approaches." These remarks point out a direction for further research, that is, to capture the quality of laws as an endogenous variable in our set up.
10. Friedman (1997), for example, proposes a reduction in the number of activities considered illegal in order to fight crime. In our context it implies a reduction in the number of laws.

## References

- Bailey, M. J. (1997) "Toward a New Constitution for a Future Country." *Public Choice* 90: 73–115.
- Becker, G. (1968) "Crime and Punishment—An Economic Approach." *Journal of Political Economy* 76: 169–217.
- Berggren, N. (1996) "Social Order through Constitutional Choice: A Contractarian Proposal." *Public Choice* 89: 339–61.
- Brennan, G., and Buchanan, J. M. (1983) "Predictive Power and the Choice Among Regimes." *Economic Journal* 93: 89–105.
- Buchanan, J. M. (1991) "Constitutional Economics." In: Eatwell, J., Milgate, M., and Newman, P. (eds.) *The New Palgrave: The World of Economics*, pp. 134–42. London: Macmillan.
- Buchanan, J. M., and Tullock, G. (1962) *The Calculus of Consent*. Ann Arbor, Mich.: University of Michigan Press.
- Frey, B. S. (1997) "A Constitution for Knaves Crowds Out Civic Virtues." *Economic Journal* 107: 1043–53.
- Friedman, M. (1997) "Economics of Crime." *Journal of Economic Perspectives* 11: 194.
- Hume, D. (1741[1951]) "Of the Independency of Parliament. Essays, Moral, Political and Literary." In: *Theory of Politics*. Edited by F. Watkins. Nelson, Edinburgh.
- Mill, J. S. [1861(1946)] *Considerations on Representative Government*. Edited by R. B. McCallum. Oxford: Basil Blackwell.
- Voigt, S. (1997) "Positive Constitutional Economics: A Survey." *Public Choice* 90: 11–53.