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**HOW TO MAKE A DIS-ENTREPRENEUR OF THE SCHUMPETERIAN  
ENTREPRENEUR. THE IMPACT OF INSTITUTIONAL SETTINGS ON GROWTH  
MODELS.**

by

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**ABSTRACT**

The principle shortcoming in contemporary theory of long run economic growth stems from its failure to incorporate fiscal and monetary institutions into the analysis. We are convinced that any study of long run growth should come to grips with constitutional design as well as constitutional changes. This paper is a first attempt to fill the gap.

An effort is made to show the impact on growth of two very different institutional settings. The first adopts a standard policy-oriented approach; (here denoted as the “long chain” model) where the government exercises discretionary power via a central Treasury whilst the other assumes a constitutional-oriented approach (here denoted as the “short chain” model). The driving force in our model of growth is the Schumpeterian entrepreneur who adopts new technology because its value, according to Tobin's  $q$ , dominates the economic rents of existing capital. When transplanted into public economics, the Schumpeterian entrepreneur's incentives to innovate are contingent upon which of the two institutional settings prevails.

In particular, if the policy-oriented approach prevails, the Schumpeterian entrepreneur's behaviour is driven towards a political dis-entrepreneur's “destructive creation” of new capital. The analysis shows that in a benevolent despot's setting, the methodological and technical linkages between the Schumpeterian entrepreneur and Tobin's  $q$  change into the Gresham's law, with the political dis-entrepreneur acting as a strenuous advocate of the *status quo*.

**KEYWORDS:** Creative destruction, endogenous growth, technological innovations, Tobin's  $q$ , institutions.

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## 1. Introduction.

The paper tries to analyse to what extent and within which limits and with what consequences, it is possible to extend the theory of the Schumpeterian entrepreneur, normally used in economic growth models, to politico-bureaucratic institutions.

Both the Classicists and the Neoclassicists referred to the institutional context to determine long-run economic equilibrium. Yet, they assumed institutions as being among the data of the problem under scrutiny. There was hardly any attempt to link institutional design – and consequently its subsequent changes – to the analysis of economic growth in terms of steady states and transitory dynamics.

It is no wonder therefore that growth models – with very few exceptions – have been developed to describe the economy disentangled from constitutional-institutional settings. To confine institutions among the hypothesis *limbus* is to accept the logic of the *ceteris paribus* and to legitimate the analysis of economic growth in a constitutional vacuum.

It is worth noting that studying growth, so to say, *in vitro* is a procedure inherently unable to understand the impact that public economy institutions have on market institutions. In particular, our attempt at extending the Schumpeterian entrepreneur to the politico-bureaucratic domain highlights the very shortcoming inborn in the assumption that institutions are *neutral vis à vis* economic growth. To gain a better understanding of our theorizing, it may be useful to analyse the impact of such an extension on public goods. As is well known, the standard theory of public goods hinges upon an objective approach: Public goods are those characterised by non-rivalness/<sup>1</sup>non-exclusion so the politico-bureaucratic setting plays no role in their provision. As Public Choice scholars have long ago underlined, and our extension of the Schumpeterian entrepreneur convalidates, it is the encroachment of bureaucratic organisations on the decision-making process of public economy that will determine whether a good is to be provided through the budget or through the market, regardless of its non-rivalness/non exclusion characteristics.

Hence we attempt to construct a model that is chiefly concerned with testing growth within a politico-bureaucratic organisation. This will make clearer how the Classicists and Neoclassicists' assumptions on the institutions' neutrality *vis à vis* growth are inconsistent not only with the theory

of the Schumpeterian political entrepreneur, but also with growth models generally understood. To provide a sounder basis for our conjecture, we develop two alternative politico-bureaucratic models.

Whilst these models are abstract, they are descriptive of antithetic reactions that the Schumpeterian entrepreneur has when transplanted into the institutional settings we analyze here. We define these two stylised models as “long chain” and “short chain” respectively.

In section 2 we show how the “long chain” model annihilates the Schumpeterian entrepreneur’s innovative drive. The decisive role played in such a context by a bureau head, *à la* Niskanen, pushes towards the maintenance of the *status quo*, so making a dis-entrepreneur of the Schumpeterian entrepreneur.

A warning is *de rigueur*. We do not claim that the “long chain” model is *incompatible* with any sort of fiscal constitution, we more simply argue that the weight of a bureaucratic-political organisation is such as to circumvent constitutional provisions. We feel it is more accurate if we use the expression bureaucratic-political organisation, precisely because the bureau head has informational advantages *vis à vis* his political sponsor in a “long chain” model. The reason why a fiscal constitution works much better in a “short chain” than in a “long chain” model lies in the fact that in the former, the bureau head loses much of his informational advantage and the power originating from it.

Why does a “short chain” organisation push the political entrepreneur to perform in ways that are consistent with those of the Schumpeterian entrepreneur? The answer lies in the notion of accountability. He is accountable to the voter/taxpayer rather than the bureau head. As a result, the political entrepreneur has incentives to break the *status quo* and to pursue the innovation route in the public sector, which enhances economic growth.

Section 3 provides a model of the Schumpeterian political entrepreneur in his ideal institutional structure based on a “short chain” organization and speculates on how the Schumpeterian entrepreneur has to abandon the “long chain” environment if he wants to apply his destructive creation in public economics. The disciplining role played by an operational fiscal constitution emerges with strength here.

Finally, section 4 offers some concluding remarks.

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<sup>1</sup> See P. Samuelson (1954). A critique of the pure public good theory which draws attention to the political

## 2. The “long chain” model, the political dis-entrepreneur and the *status quo*.

The political entrepreneur as we know him was in a sense a figure created by the Italian scholars in Public Finance at the beginning of last century <sup>2</sup>. Such contributions have long been largely unknown abroad and in Italy, where they were familiar, they have been mostly interpreted as though they were a first step towards a planned economy. However, such an interpretation was rather an *ex post* reconstruction after the events that took place in the Soviet Union only two decades later, and not an attempt at understanding what those Italian economists had in mind.

Today we can read those early Italian contributions, especially Montemartini, as a new conception of the role of the politician. This new conception assigned the politician an innovative role in the decision-provision of local public goods, namely public urban transportation. In the light of our interpretation one could say that the political entrepreneur was born long before the time Schumpeter elaborated his concept of the entrepreneur as being the driving force of innovation, which breaks the *status quo*.<sup>3</sup>

In a nutshell, those early Italian scholars of Public Finance, thought of the political entrepreneur (imprenditore politico) (sic) *qua* provider of local public services as an innovator breaking the organisational techniques of the *status quo*.

The idea of the political entrepreneur as somebody motivated by vote, *prima facie* would seem even correct. Yet, without defining the institutional settings within which the political entrepreneur performs, the extension of the Schumpeterian entrepreneur’s logic to the political scenario not only raises feasibility problems, but also lacks legitimate foundations. And in fact, why in a “long chain” context should this political entrepreneur innovate? Innovation involves a reduction in politico-bureaucratic costs that automatically reduce his rewards.

No more help comes to us from the contributions of the Classicists. To them, given the *appropriate* institutional context (but how to define institutions appropriately without incurring a tautological mistake?), competition guarantees the achievement of the best economic results.

One could say, as of the Classicists – and certainly of the Neoclassicists – that they implicitly assumed that institutions were neutral or irrelevant for the political entrepreneur. Such an approach ignores that the decisions taken by the political entrepreneur have an effect on the entrepreneur’s behaviour on the market as well as on consumers’ request for the mix public/private goods.

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entrepreneur’s scenario can be found in P.R. Jones (1978).

<sup>2</sup>See for example G. Montemartini, (1902) and E. Barone (1908).

<sup>3</sup>J.A. Schumpeter, (1939). The joint role that Schumpeter’s destructive creation and Tobin’s *q* plays, has been analyzed by E.J. Wilson and D.P. Chaudhri (2000). In that context, however, no attention was devoted to the institutional setting.

This is even more apparent in the orthodox tradition, which sees the political entrepreneur in its pure form of omniscient-benevolent governor<sup>4</sup> supported by a bureau head supposed to have a natural bent for the pursuance of the public good by following the dictates of the law rather than his personal interest. Our analysis departs from that of Buchanan (1969) where bureaucrats are viewed as economic eunuchs who follow rules only as automata because decisions are taken in a setting without a market<sup>5</sup>. In our case the political entrepreneur mimics Weber's bureaucrats. However, not all types of institutional settings generate incentives for this kind of "paradoxical" Schumpeterian political entrepreneur. One of us in another work<sup>6</sup> has sketched two polar institutional settings: one defined as "long chain" and another as "short chain". The remaining of this section is concerned with the effects of "long chain" institutions on the incentives of the political entrepreneur.

In a "long chain" context, which is characterized by a centralized tax system and a bureaucratic organization, the political entrepreneur can be regarded as an entrepreneur whose primary strategy is one of maintenance of the *status quo* in order to hold the balance of power between the bureau head and the bureaucratic base rather than one of innovating. Thus it comes as no surprise that the political entrepreneur who is in power is not interested in introducing new technology since innovation is apt to put the *status quo* in jeopardy. Hence the political entrepreneur innovates only if he is pushed by external shocks; though even in this case his reaction is that of reaffirming the *status quo*. But why is this political entrepreneur so interested in maintaining the *status quo*? The reason why a rational political entrepreneur is a strenuous advocate of the *status quo* is fully apparent. It is exactly because he wants to enjoy a quasi-permanent rent as long as he can that he makes the *status quo* his long-run objective. And which institutional setting could be more advantageous for him than that of a "long chain" context? All things considered, one could say that in the "long chain" organization it would be more accurate to talk of a political dis-entrepreneur because of his acting in a setting of institutional and constitutional monopoly where governments (the links of the chain) have exclusive competences over their territories. Under which conditions would the bargaining between the bureau head, who *promises* a certain level of service, and the political entrepreneur, who appropriates fractions of the budget for that service, give rise to innovations?

In our predicament, the institutional setting plays a fundamental role. And in fact we first show that in the "long chain" politico-bureaucratic organization – given the informational advantage that the bureau head, *vis à vis* the politician, has – innovation is feasible only if it does not involve the sacking of bureaucrats. Thus, it is undoubtedly the certainty of bureaucrats' life-long

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<sup>4</sup> See G. Brennan, G. Eusepi, (2004).

<sup>5</sup> J.M. Buchanan (1969), especially chapter VI.

<sup>6</sup> G. Eusepi (2006).

posts that is the cementing element between the base, which assures loyalty and trust, and its head. Clearly, all this does not only lead to a soaring number of offices with the implication of an excessive bureaucratic production (Niskanen's allocative distortion<sup>7</sup>), but such bureaucratic production is supplied by employing an excessive amount of inputs (productive distortion).

In a nutshell, in a "long chain" politico-bureaucratic setting the political entrepreneur has incentives "to innovate" – so to say – only if he can increase budget provisions, which however are used to lower productivity. Again, innovation is aimed at the keeping of the *status quo*. Put another way this means that the object of innovation is to give bureaucracy the capacity to have more leisure at the expense of taxpayers who bear the costs.

This mechanism is feasible because in a "long chain" context bureaucracy is able to create fiscal illusion<sup>8</sup>. The illusion allows the possibility of vertical imbalances in the form of central government budget deficits, which in turn become intertemporal imbalances through resort to public debt. This can be modeled in terms of a simple flow government budget constraint:<sup>9</sup>

$$\sum_{i=1}^n g_i + rb = \tau + \dot{b} \quad (1)$$

where the sum of the decentralised government expenditure,  $g_i(t)$  for the  $n$  states or regions may be greater than the centralised tax receipts,  $\tau(t)$ . The difference comprises the issue of government

debt,  $\dot{b} = \frac{\partial b}{\partial t}$  by the bureau head which must be sufficient to pay the real interest on the stock of outstanding government debt,  $r(t)b(t)$ . The level of debt is usually constrained by the conditions

of the form:  $\lim_{t \rightarrow \infty} b(t) e^{-\int_0^t r(s) ds} = 0$ , which bounds the solution. However, the presence of fiscal illusion will involve a less constraining requirement. Consider the case where agents expect a balanced budget by the central government:

$$E(t) \sum_{i=1}^n \left[ g_i(t) - \frac{1}{n} \tau(t) \right] = 0$$

<sup>7</sup> W.C. Niskanen, (1994).

<sup>8</sup> The creation of fiscal illusions is made possible by fiscal asymmetries (centralization of taxation and decentralization of spending that characterizes "long chain" organization or unitary states, but also some federal states, e.g. Australia. R. Garnaut and V. FitzGerald, (2002) document the unusually high degree of vertical fiscal imbalance in the Australian federal government's tax collection and distribution to the states). A context of centralized taxation/decentralized expenditure allows bureaucracy to enjoy positional illusion which is mostly sought by politicians, but which assures *positional* advantages to the bureau head as well. A *positional* rent does not involve any costs for the bureau head as happens with the case of an active illusion-seeking bureau head. See G. Eusepi (2006).

This relationship shows that the expected,  $E(t)$ , sum of the regional budgetary positions is zero. The budget position is estimated as the difference between the observed government expenditure,  $g_i$ , and the unobserved tax collection in each region, which is proxied by the average estimate,  $\tau(t)/n$ . Walras law tells us that not all regions have to have a balanced budget, only the regional budget positions must sum to zero. A budget deficit in one region must therefore be equally offset by a budget surplus in one or more other regions. We now assume that rational agents have incomplete information which allows the possibility of vertical imbalances in the form of central government budget deficits. The informational inefficiency is assumed to be in terms of differential information along the lines of Barro (1976). Agents may obtain regional (local) information more accurately and more readily than economy wide (global) information. For example, a household may have relatively more knowledge of the local budgetary conditions affecting the region.

Economy wide information on the stance of the central government budget may be less well known, or obtained with a lag in the form of official periodic announcements. This is particularly relevant for the unobserved central government tax collections. The vertical imbalance is shown as the shift parameter,  $\varphi_i(z)$  which is non-zero in the presence of informational inefficiencies:

$$\sum_{i=1}^n \left[ g_i(t) - \frac{1}{n} \tau(t) \right] = \sum_{i=1}^n \varphi_i(z) \quad (2)$$

This allows the bureau head to issue government bonds,  $b$ , to fund the budget deficit:

$$\sum_{i=1}^n \varphi_i(z) = b(t) > 0 \quad (3)$$

Given the intertemporal imbalance, we restrict the stock of government debt,  $b$ , to be less than capital stock,  $k$ , in net present value terms. This can be shown for the life of the bureau head's informational advantage, from the present (period 0) to period  $T$ :

$$b(t) e^{-\int_t^T r(s) ds} < k(t) e^{-\int_t^T r(s) ds} \quad (4)$$

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<sup>9</sup>We assume zero population growth and drop the time subscript whenever possible, in order to keep the analysis simple.

Solving the budget constraint (1) as a linear, first order differential equation  $\dot{b} - rb + \left( \tau - \sum_{i=1}^n g_i \right) = 0$ , with variable coefficient,  $r$ , gives:<sup>10</sup>

$$b(t) = \int_0^t \sum_{i=1}^n g_i(t) dt - \int_0^t \tau(t) dt + b_0 e^{\int_0^t r(s) ds}$$

This shows that the stock of debt,  $b(t)$  at time  $t$  is equal to the sum of the budget deficits from time zero to  $t$ , plus the initial level of debt,  $b_0$ , exponentiated by the real interest rate,  $r$ .<sup>11</sup> Multiplying both sides by the integrating factor and letting time go to  $T$ , gives the net present value relationship:

$$b(T) e^{-\int_0^T r(s) ds} = \int_0^T \sum_{i=1}^n [g_i(t)] e^{-\int_0^t r(s) ds} dt - \int_0^T \tau(t) e^{-\int_0^t r(s) ds} dt + b_0 \quad (5)$$

This intertemporal fiscal budget constraint clearly shows the net present value of government expenditure is not forced to be equal to the net present value of taxation. The bureau head does not have to balance the budget because government debt can be non-zero (in net present value terms) due to the presence of fiscal illusion. The relationship (5) therefore determines the level of debt the bureau head is able to generate (subject to constraint (4) which requires the level of debt must be less than the stock of capital in net present value terms).

Now let us consider the effect of government debt on the private sector. The representative household is assumed to select the time path of consumption,  $c(t)$ , to maximise intertemporal utility:<sup>12</sup>

$$u(c) = \int_0^{\infty} u[c(t)] e^{-\rho t} dt \quad (6)$$

where  $u(c)$  is a concave instantaneous utility function and  $\rho$  is the household discount rate.<sup>13</sup> The budget constraint for the household is:

$$\dot{b} + \dot{k} + c = wl + rk + rb - \tau \quad (7)$$

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<sup>10</sup>The integrating factor,  $\exp\left(-\int_0^t r(s) ds\right)$  is also the net present value operator.

<sup>11</sup>The term  $b_0$  is the constant of integration.

<sup>12</sup>We assume a standard utility function with the usual properties  $u(0) = 0$ ,  $u'(c) = \partial u / \partial c > 0$  and  $u''(c) < 0$ .

<sup>13</sup>Given that we are modelling fiscal illusion it is important to allow possibly different discount rates between the household,  $\rho$ , and the bureau head issuing government debt at real return,  $r$ .

where the left hand side shows expenditure and how household income may be consumed,  $c$ , invested,  $\dot{k}$  or used to purchase government bonds,  $\dot{b}$ .<sup>14</sup> On the net income side,  $rk$  and  $rb$  represent the household's income return from holding capital,  $k$ , and government bonds,  $b$  with  $r$  the real interest rate. The real wage rate,  $w$ , is for the household labour,  $l$ , employed, whilst  $\tau$  is the tax paid by the household to the central authorities. We make the simplifying assumption that the central government imposes a fixed proportional tax rate,  $\alpha_\tau$ , which applies to total household income,  $y$ , so that household tax payments are given by  $\tau = \alpha_\tau y$  for  $0 < \alpha_\tau < 1$ . Substituting for  $\tau$  in (7) gives the modified budget constraint:

$$\dot{b} + \dot{k} + c = wl + rk + rb - \alpha_\tau y \quad (8)$$

Household production,  $y$ , is assumed to be a function of household labour,  $l$ , and capital,  $k$ :

$$y = f(A_b, l, k, g_j) \quad \text{for } j \subseteq \{1, 2, \dots, n\} \quad (9)$$

In addition to the factors of production,  $l$  and  $k$ , we include the effect of government expenditure,  $g_j$  for the territories,  $j \subseteq \{1, 2, \dots, n\}$  which are relevant to household production.<sup>15</sup> These expenditure flows are Barro style representations of government activity, which capture externalities to give constant or increasing returns to scale. However, we define the production function to importantly include the effects of total factor productivity,  $A_b$ , which is assumed to be an inverse function of the stock of debt,  $A'_b = \partial A_b / \partial b < 0$  and  $A''_b > 0$ . That is, the increasing level of government debt causes inefficiencies in production.

Now household income from production, in the form of wage income and the return to capital used in production will be equal to household production:

$$wl + rk = y \quad (10)$$

Substituting (10) into (8) with  $\alpha = 1 - \alpha_\tau$  gives the new household constraint:

$$\dot{b} + \dot{k} + c = \alpha y + rb \quad 0 < \alpha < 1 \quad (11)$$

Setting up the Hamiltonian to maximise intertemporal utility defined in (6) with respect to (11) gives:

$$H = u(c) e^{-\rho t} + \xi (\dot{b} + \dot{k})$$

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<sup>14</sup>Household saving is therefore used for investment,  $\dot{k}$ , and purchases of government bonds,  $\dot{b}$ .

<sup>15</sup>The production function is assumed to be well behaved with  $x(0) = x_0$ ,  $f'_x = \partial f / \partial x > 0$  and  $f''_x < 0$ ,  $\forall x \in \{l, k, g_j\}$ .

If we assume that transaction costs in investing are important we can conveniently define the costate variable,  $\xi$ , as the net present value of Tobin's  $q$  at the current time period,  $t$ , that is,  $\xi = qe^{-rt}$ .<sup>16</sup> The Hamiltonian becomes:

$$H = u(c)e^{-\rho t} + q(\dot{b} + \dot{k})e^{-rt} \quad (12)$$

and the costate equation  $\dot{\xi} = -H_k$  gives:

$$\dot{q} = rq - \left[ \alpha f'_k + (rb)_k' \right] \quad (13)$$

where  $f'_k = \frac{\partial f}{\partial k}$  and  $(rb)_k' = \frac{\partial (rb)}{\partial k}$ . Solving for Tobin's  $q$  gives the important result:

$$q(t) = \int_t^{\infty} \left[ \alpha f'_k(t) + (r(t)b(t))_k' \right] e^{-r(s-t)} ds \quad (14)$$

which shows that  $q$  is the sum of the net present values of future marginal products of capital and marginal interest costs of the stock of public debt relative to capital formation. In steady state,  $q = 1$  and  $\dot{q} = 0$ , which when substituted in equation (13) gives:

$$r = \alpha f'_k + (rb)_k'$$

Substituting for  $(rb)_k' = r'_k b + r b'_k$  gives the solution for the steady state real rate of interest:

$$r = \frac{\alpha f'_k + r'_k b}{1 - b'_k} \quad (15)$$

For  $0 < b'_k < 1$ , the interest rate will be above the marginal product of capital (adjusted for tax received by the central government). The size of this wedge is clearly a function of government debt. Unlike other endogenous growth models, the adverse effects of central government debt issue in the form of higher real interest rates represents the rent obtained by the bureau head's as return to his informational advantage. This demonstrates our "long chain" model of fiscal illusion.

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<sup>16</sup>We do not explicitly specify the investment transaction cost function denoted  $\beta$ . The household constraint would become  $\dot{b} + \beta \dot{k} + c = \alpha y + rb$  and the function would require the properties  $\beta(0) = 0$  and  $\beta' > 0, \forall \beta > 0$ . Alternatively, the production function could be defined as  $y = f(A, l, k, g_j) - \eta y$ , where  $\eta < 1$  represents the amount of  $y$  used in investment. The function becomes  $y = (1 - \eta)^{-1} f(A, l, k, g_j)$  which only differs from household production function by the constant of proportionality  $(1 - \eta)^{-1}$ .

To see the effect on investment, remember that Tobin's  $q$  represents the marginal valuation of capital relative to replacement cost. Higher (lower) values of  $q$  will encourage (reduce) investment according to the assumed generic investment function,  $\dot{k} = \Phi(q)$  with  $\Phi' > 0$ . Substituting for  $q$  using (14) gives capital formation as a function of the net present values of the marginal product of capital in production and the effects of the central government's public debt relative to capital:

$$\dot{k} = \Phi \left\{ \int_t^{\infty} \left[ \alpha f'_k + (rb)_k \right]' e^{-r(s-t)} ds \right\} \quad (16)$$

This relationship shows that there are a number of interesting effects operating here. The  $(rb)_k$ ' term indicates a "crowding in" effect on investment. That is, the fiscal illusion encourages capital formation which is the return to the rent seeking behaviour of the bureau head. However there are three offsetting effects to this, the first is the tax effect which reduces investment since  $\alpha < 1$ . The second is the higher level of government debt which reduces total factor productivity because of the assumption of debt based inefficiencies in production,  $A'_b < 0$ . The third is the debt will increase the real interest rate, reducing the net present value of  $q$ , which "crowds out" private investment. These negative feedbacks will tend to negate the illusory investment in new productive capacity and in this sense will enforce the *status quo*.

The fiscal illusion effects on household consumption can also be determined by substituting out the costate variable in the Hamiltonian maximisation to give:

$$\frac{\dot{c}}{c} = \theta \left\{ \left[ \alpha f'_k + (rb)_k \right]' - \rho \right\} \quad (17)$$

The rate of growth in consumption is inversely affected by the rate of time preference,  $\rho$ , and positively by the elasticity of intertemporal substitution,  $\theta$ .<sup>17</sup> There is also the positive effect of the marginal product of capital,  $\alpha f'_k$ , which allows faster growth in real output and consumption.<sup>18</sup> The presence of government reduces the growth in consumption because of the tax leakage on household income for  $0 < \alpha < 1$ . However there is an additional positive effect on the growth in consumption of  $(rb)_k$ ' due to the higher real rate of interest caused by the fiscal illusion allowing

<sup>17</sup>The elasticity of marginal utility with respect to consumption is given by the negative inverse of  $\theta$ , that is,  $-1/\theta = cu''(c)/u'(c)$ . Lower values of  $\theta$  indicate consumers increased preference for consumption smoothing.

<sup>18</sup>An increase in productivity,  $f'_k$  will also increase the valuation of capital and the rate of capital formation via equations (14) and (16) and therefore the growth rate in consumption.

increases in the central government debt. Turning this argument around, the higher real interest rate relative to the household's rate of time preference,  $r > \rho$ , is required to compensate the household for foregoing some present consumption for future consumption. The degree of compensation is given by the elasticity of intertemporal substitution,  $\theta$ . The lower initial level of consumption therefore requires a higher growth rate in consumption,  $\dot{c}/c$ .

**Figure 1**

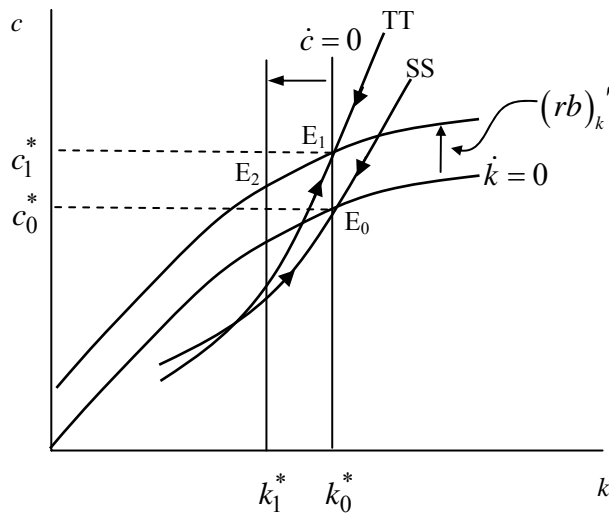


Figure 1 characterises the long run with steady state consumption,  $c_0^*$  and capital,  $k_0^*$ . The transitory dynamics is demonstrated by the saddlepath SS. Schematically, higher fiscal illusion will shift the  $\dot{k}=0$  locus vertically upwards according to the constraint (11). The steady state consumption locus,  $\dot{c}=0$  defined in equation (17) will not shift because of the assumption that the higher value of  $(rb)_k'$  will increase the real interest rate by the same amount so that the marginal product of capital, and therefore the stock of capital, will stay the same. Note that the new saddlepath solution TT to the new steady state  $c_1^*$  is associated with higher levels of consumption.<sup>19</sup> However, the steady state level of capital is unchanged at  $k_0^*$  due to the previously explained offsetting “crowding in” and “crowding out” effects, consistent with our explanation of fiscal illusion maintaining the *status quo* in this “long chain” institutional representation.

Interestingly, if the bureau head's informational advantage allows further rent seeking by forcing the increase in the real interest rate to be more than the increase in  $(rb)_k'$  then the  $\dot{c}=0$  locus will shift to the left. This is because the required increase in the marginal product of capital

will necessitate a lower steady state level of capital at  $k_1^*$ . The outcome for the new steady state consumption level at  $E_2$  is less clear and will not be explored here. On the other hand, political pressure to reduce the real interest rate will shift the steady state level of capital above  $k_0^*$ , which promotes economic growth. This introduces the notion of the “short chain” organisation, which will be considered in the next section.

### 3. The “short chain” model, the Schumpeterian entrepreneur and growth.

In the “long chain” model, the pivotal element is a non-Schumpeterian politico-bureaucratic entrepreneur whose behaviour is accepted by the collectivity due to the information advantages that allow him to create fiscal illusions. Such fiscal illusions are made possible by either the absence of a fiscal constitution or by its circumvention. Hence, the weight of the relationship political entrepreneur/bureau head largely overwhelms that of the political entrepreneur/voter-taxpayer. The changing in behaviour of the political entrepreneur cannot be fully attributable to the creation or the strengthening of the constitutional binding – which safeguards only future generations – but it is rather to be attributable to the “short chain” organisation. It is, in fact, the latter which makes the relationship between voter and political entrepreneur decisive, and which enables to extend the agency contract between voter-political enterprise *lato sensu* to the political sphere. And indeed, it is the different role played by taxpayers/voters that prevents the politician from behaving as a non-Schumpeterian or political dis-entrepreneur. It is precisely this that provides incentives for him to innovate.

In fact, in a “short chain” model only through innovation it is possible that the political entrepreneur secures himself a share of political profits (the political entrepreneur becomes a profit seeker, not a rent seeker.) and he simultaneously reduces taxpayer/voter’s costs, which is the way for him to gain re-election.

Now, this *attenuated* contractual logic, which we could call a quasi-contract, is appropriate to depict the relationships between governments and governed provided that the frame of reference is that of the “short chain” kind. Behavioural attitudes in “long chain” organizations are incompatible with those that the same actors are apt to have in “short chain” organizations. And in fact in the latter setting, possible conflicts between a political entrepreneur, who pursues the *status quo*, and the collectivity, which is interested in pursuing growth, go far beyond the conflicts that are compatible with the quasi-contractual logic.

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<sup>19</sup>Note the possibly lower level of initial consumption for the saddlepath solution TT.

Persistence of the quasi-contractual form involves a prevailing co-operative relationship among all agents within the system. Differently from what happens in the “long chain” organization, in the “short chain” organization the innovative role of the Schumpeterian entrepreneur is partly safeguarded. Innovation assumes the form of profit seeking – as already mentioned and specified below – and not of political rent seeking.

Rigorously speaking, the breach of the *status quo*, not its *persistence*, is also the goal for the political entrepreneur who has to cover costs. Hence, it also follows that what is at stake in the “short chain” model is economic growth and not the *status quo*. It is precisely for this reason that in what follows we have linked the “short chain” model, in which the Schumpeterian political entrepreneur plays a fundamental role, with growth. It is the innovative role that the political entrepreneur plays that makes our model more appropriate in explaining growth than the Classical and Neoclassical models were, having in mind the minimal state.

Hence our attempt of transplanting the Schumpeterian entrepreneur in a “long chain” setting was for sake of mere exercise, nothing else. And, in fact, the prevailing role that the bureau head plays in the “long chain” model works things in such a way that the political entrepreneur has as his long-term objective the maintenance of the *status quo*, so turning the Schumpeterian entrepreneur into a political dis-entrepreneur. And though one could object that entrepreneurial role and *status quo* are mutually exclusive, this is not the least true when the political entrepreneur operates in a “long chain” scenario.

On these grounds, one would conclude that transferring the Schumpeterian entrepreneur into the political sphere *tout-court* is illegitimate, but doing so one would trivialise a matter that is pivotal in our reasoning. Our aim is to search for a more promising politico-constitutional ground, *if any*, able to test the validity of the extension of the Schumpeterian entrepreneur into the political domain. In the remaining part of this section, we seek to demonstrate that the polar case classified as “short chain” is entirely compatible with the concept of the Schumpeterian political entrepreneur. Although his tendency to innovate is partly attenuated because profits come from a political enterprise and not a private one.

We think of a “short chain” model as being governed essentially by a horizontal relationship of a *quasi-contractual* nature. It is the rendering of what in the “long chain” model was the hierarchical or vertical relationship. In sum, a “short chain” model is characterised by two related although separated *quasi-contracts*: That between voter and political entrepreneur, and that between political entrepreneur and bureau head. In this context, the agency relationship is more likely to function at lower costs due to the constitutional budget balance requirements that prevent conflicts

between the political entrepreneur and the bureau head from being solved by resorting to debt illusion.

On the other hand, in a “short chain” model<sup>20</sup> local taxpayers are asked to cover the total cost of each project. A model in which the bureau head behaves as a faithful agent towards the political entrepreneur and in turn the political entrepreneur behaves in the same way towards the taxpayer/voter (his principal), involves a sort of generalised partaking in the enterprise. So what interests the political entrepreneur is to *create* profits.

A “short chain” model, in which the political entrepreneur of the “long chain” model is replaced with as many political entrepreneurs as the governments are, is still in line with the Schumpeterian entrepreneur. Because such governments have also an *exclusive* territorial competence, they are full-fledged monopolist political entrepreneurs<sup>21</sup>.

In deepening this concept we must analyse the context that relates to the positions of the political entrepreneur and the bureau head. Both are worse off compared to those in a “long chain” context exactly because the innovation effects are only partly in the hands of the entrepreneur since they are appropriated to the collectivity. This prevents the bureau head from appropriating resources through the fiscal illusion device.

It is precisely because the political entrepreneur and the bureau head positions would be worse off in the “short chain” model, that their respective activities end up work to both the keeping of the *status quo* in the “long chain” setting<sup>22</sup> and to maintain institutions that make this possible.

Examining the shifting from a “long chain” to a “short chain” organization is far from being unproblematic and would require another paper. We confine, thus, our investigation on the Schumpeterian entrepreneur regardless of the process that has led to the “short chain” organization. The distinctive feature of this model is the partial socialisation of the profits stemming from a “short chain” model, which lead to a greater economic growth. Indeed, the political entrepreneur is compatible with the Schumpeterian entrepreneur because he risks loosing his capital (i.e. *the status quo*) since the innovation/growth strategy employed by the political entrepreneur is an instrument to build his electoral victory. Of course, since we are assuming the rational individual considered by standard Public Choice, we are aware that working from this position one might run up against theoretical and feasibility limits<sup>23</sup>.

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<sup>20</sup>The “short chain” model is internally consistent and descriptive of the real world settings only if also the fisc has a “short chain” organization.

<sup>21</sup> The “short chain” model, however, does drastically reduce the political entrepreneur’s supply power for reasons that are too obvious to be mentioned here. See among others C. Tiebout (1956), M. Olson (1969). For a critique of the territorial dimension as an optimizing criterion see G. Eusepi (2000).

<sup>22</sup> Although there may appear to be a semantic dissonance between entrepreneur and *status quo*, there is a perfect logical compatibility in the “long chain” model.

<sup>23</sup> See G. Brennan, L. Lomasky (1993).

This paper is only a first attempt to link alternative institutional settings with growth. Institutional economics and growth economics are fields which have worked separately until now. Our purpose here is to move matters slightly further forward and to overcome that sort of mutual “segregation” which characterizes the two research areas. To this end we modify the assumptions used to develop the model in the previous section in order to convert it from a “long chain” to a “short chain” model. Central to this is the removal of the possibility of fiscal illusion caused by the political entrepreneur and bureau head having an informational advantage over the private sector. The fiscal constitution removes the informational inefficiency so that agents know the taxation receipts for each region.<sup>24</sup> The previously estimated unobserved tax collected by the central government,  $\frac{1}{n}\tau(t)$ , is replaced by the actual tax receipts,  $\tau_i(t)$ , for each region  $i$ . The budget (2) becomes:

$$\sum_{i=1}^n [g_i(t) - \tau_i(t)] = \sum_{i=1}^n \varphi_i(z) \quad (18)$$

which removes the vertical imbalance in the form of government debt issue. We therefore specify the standard condition on the stock of debt:

$$\sup \left\{ \lim_{t \rightarrow \infty} b(t) e^{-\int_0^t r(s) ds} \right\} = 0 \quad (19)$$

Note that this frequently misunderstood condition simply requires the net present value of government debt to be zero. It therefore allows the possibility of government debt, provided it is matched by future budget surpluses which balance out this debt, in net present value terms. This transforms the net present value budget relationship (5) to:

$$\int_0^T \sum_{i=1}^n [g_i(t)] e^{-\int_0^t r(s) ds} dt - \int_0^T \tau(t) e^{-\int_0^t r(s) ds} dt + b_0 = \lim_{t \rightarrow \infty} b(t) e^{-\int_0^t r(s) ds} = 0 \quad (20)$$

which rules out the possibility of fiscal illusion creating additional debt as specified in (3).

The new constraint is of the Ricardian Equivalence influence in that agents realise that current debt must be paid for in the future.<sup>25</sup> Consistent with this, we force the household to fully discount the interest payments on debt holdings as argued by Barro (1974, 1989) and Buchanan (1976). The household budget constraint (11) reduces to:

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<sup>24</sup>We continue to assume they accurately observe the level of regional government expenditure.

$$\dot{b} + \dot{k} + c = \alpha y \quad 0 < \alpha < 1 \quad (21)$$

and the Hamiltonian which maximises intertemporal utility defined in (6) with respect to (21):

$$H = u(c)e^{-\rho t} + q(\dot{b} + \dot{k})e^{-rt} \quad (22)$$

derives:

$$\dot{q} = rq - \alpha f'_k \quad (23)$$

The solution for Tobin's  $q$  is:

$$q(t) = \int_t^{\infty} \alpha f'_k(s) e^{-r(s-t)} ds \quad (24)$$

and the steady state solution for the real interest rate is now:

$$r = \alpha f'_k \quad (25)$$

When compared with the result (15) it shows that the absence of fiscal illusion removes the wedge between the real interest rate and the marginal product of capital (net of the tax effect). Remember this difference, equal to  $(rb)_k'$ , represents the rent previously obtained by the bureau head due to the informational advantage. However, the “crowding in” effect of this fiscal illusion in terms of higher value of Tobin's  $q$  and investment will also be removed.<sup>26</sup> Balancing this is the lower real interest rate, which will reduce the previous “crowding out” of private investment. In addition, the reduction in government debt will reduce the debt based inefficiencies in production which will result in an increase in total factor productivity ( $A'_b < 0$ ). This is consistent with the explained change in the institutional setting away from the bureau head's attempts to maintain the *status quo* to the political entrepreneur who wishes to pursue economic growth. Indeed the impetus to innovate can be modeled more explicitly using Tobin's  $q$  in a Schumpeterian “creative destruction” explanation of economic growth. This will demonstrate our “short chain” model of the profit seeking political entrepreneur.

Consider the general investment equation which is function of Tobin's  $q$ :

$$\dot{k} = \Phi(q), \quad \Phi' > 0 \quad (26)$$

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<sup>25</sup> This is a much broader interpretation of Ricardian equivalence which allows the substitution of taxes and debt, holding the level of government expenditure fixed.

<sup>26</sup> Remember that investment is a positive function of Tobin's  $q$ , with  $\dot{k} = \Phi \int_t^{\infty} \alpha f'_k(s) e^{-r(s-t)} ds$ .

The relevant dynamic equations which describe the evolution of  $k$  and  $q$  are given by (23) and (26). Linearising these equations of motion around the steady state values,  $k = k^*$  and  $q_a = 1$  gives the system of equations:

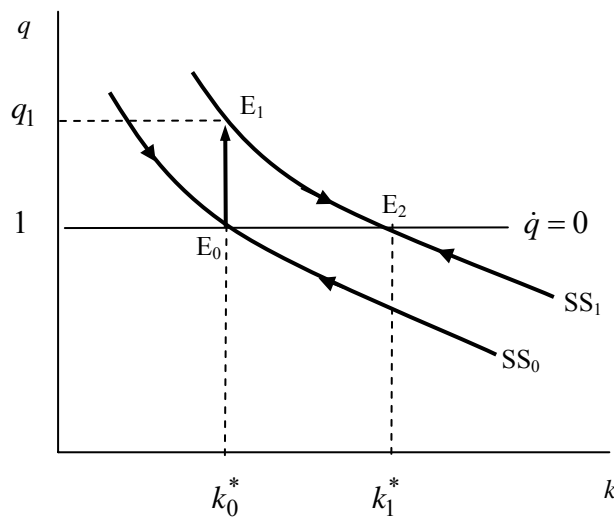
$$\begin{bmatrix} \dot{k} \\ \dot{q} \end{bmatrix} = \begin{bmatrix} 0 & \left. \frac{\partial \dot{k}}{\partial q} \right|_{q=1} \\ -f_k''|_{k=k^*} & r \end{bmatrix} \begin{bmatrix} k - k^* \\ q - 1 \end{bmatrix} \quad (27)$$

The general solution for initial values  $k_0$  and  $q_0$  are given by the relationships:  $k - k^* = (k - k_0)e^{\gamma t}$  and  $q - 1 = (q - q_0)e^{\gamma t}$ . Solving (27) and selecting the negative characteristic root,  $\gamma$ , gives the locally stable, globally unstable saddlepath solution:

$$q = 1 + \left( \frac{k - k^*}{r - \gamma} f_k'' \right) \quad (28)$$

This is shown as the  $SS_0$  saddlepath in Figure 2. If the capital stock is below the steady state level,  $k < k_0^*$ , then from (28),  $q > 1$ , which causes the capital stock to grow,  $\dot{k} > 0$ . The economy will therefore move along the locally stable saddlepath,  $SS_0$ , in the direction of the arrow until the steady state is reached where  $k = k_0^*$  and  $q = 1$  at  $E_0$ .

**Figure 2**



Given this dynamic explanation of economic growth it is now easy to incorporate the effects of a political entrepreneur who attempts to innovate in order to increase profits. The innovation, in the form of increased marginal productivity of capital, will increase  $f_k''$  in (28) which will cause the saddlepath solution to shift vertically up to  $SS_1$ . The value of Tobin's  $q$  will increase to  $q_1 > 1$  and the growth process, as indicated by the dynamic movement down along  $SS_1$ , will increase the capital stock until it reaches the new steady state at  $E_2$  with  $k_1^*$  with  $q = 1$  again. Of course the process does not need to end there because there is the continuing incentive for the political entrepreneur to further innovate. This describes a Schumpeterian process of "creative destruction" in that higher profits associated with the new technology at  $E_1$  "destroys" the previous profits and existing technology at  $E_0$ . This is reflected in the higher shadow price, in the form of Tobin's  $q$  which is greater than unity,  $q_1 > 1$ .

In summary, the "short chain" model described here characterises quasi-contractual relationships which encourages the Schumpeterian political entrepreneur to continually innovate. This ongoing incentive to exploit profits is the driving force of economic growth in this model. As explained earlier, economic growth is further encouraged by the lower real interest rate in the absence of fiscal illusion and the removal of the production inefficiencies due to lower levels of fiscal debt. These drivers of economic growth contrast strongly with the "long chain" version where the rent seeking central authority uses its informational advantage to maintain the *status quo*.

#### 4. Conclusions.

We have shown using standard Public Choice concepts that the political entrepreneur responds to incentives offered by the constitutional-institutional setting.

Namely, we have developed two alternative theoretical models: the "long chain" model without an explicit fiscal constitution and the "short chain" model with a fiscal constitution. We have indicated the reasons why in the "long chain" model there is no possibility to shift the logic of the Schumpeterian entrepreneur from the economic domain to the politico-bureaucratic environment. This is so because incentives push the political entrepreneur to seek political rents that the existing *status quo* allows him to secure.

The "long chain" model, thus, favours an adverse selection among potential political entrepreneurs. They, in fact, follow Gresham's Law whose effect is that of originating the "maximal" state which in turn gives rise to something resembling the so called stationary state *à la* Ricardo where political rents are rising and economic profits tend to zero, which is a situation incompatible with growth.

Conversely, we have contended that the “short chain” model allows, at least to a certain degree, the Schumpeterian entrepreneur to be transplanted into the political arena. In fact, the *status quo* here is only a point of departure for the political entrepreneur, never a goal.

In this connection, it should be emphasised that our purpose was not that of showing that the “short chain” model and the connected fiscal constitution originate the *minimal state*, nor that of showing that the minimal state is the institutional setting allowing for the *maximal* economic growth. We have simply sought to demonstrate that the “short chain” model, where innovation becomes a *survival* threshold for the political entrepreneur, ensures a higher growth rate *vis à vis* the “long chain” model.

The contribution of this paper is the demonstration that in a “long chain” model there is room only for the political dis-entrepreneur whose main interest is that of keeping obsolete techniques, which are instrumental to the maintenance of the *status quo*.

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