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The Consequences of Fiscal Illusion on Economic Growth

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Abstract

This work discusses the impact of fiscal illusion on economic growth. Its main contribution highlights the need for reducing the expected return from participating in fiscal illusion practices in order to prevent adverse effects on economic growth. Additionally, this model reinforces the advantages of productive public goods (not deviated for political unproductive rents) in order to mitigate the negative effects of fiscal illusion.

1. INTRODUCTION

This original short article aims at discussing the implications of *fiscal illusion* on economic growth rates. For this purpose, the following section will contextualize the discussion, introduce a model derived upon the original sense of Puviani's (1903) *Fiscal Illusion*, and conclude that higher levels of fiscal illusion decrease growth rates. However, this negative effect is reduced by higher values of productive public consumption.

2. TOWARD A MODEL FOR DISCUSSING THE *FISCAL ILLUSION* CONSEQUENCES ON ECONOMIC GROWTH RATES

When Amilcare Puviani (1903) published *The Theory of Fiscal Illusion* he was founding the economics of illusion – the study of public choices made by some agents characterized by imperfect knowledge. After more than a half of a century, James Buchanan (1960) gave new life to that obscure work and to the fiscal illusion theory.

James Buchanan, influenced by the work of Downs (1957), extended Puviani's approach to analyze the substantial lag between the true intentions of governments and the beliefs of the electorate. This lag is usually manipulated to increase the size of the government through less visible (and less reactive) taxation.

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The original sense of Puviani's ideas suggested fiscal illusion as a solution to a prior question: how can resistance to governmental actions be diminished from the perspective of taxpayers?[1] According to Buchanan (1967), the solution mainly studies fiscal illusion in the revenue side of a budget. Illusion can be inserted into revenues in many ways: obscuration of the individual shares in the opportunity cost of public outlays; utilization of institutions of payments that are planned to bind the requirement to a time period or an occurrence which the taxpayer seems likely to consider cheering; charging explicit fees for nominal services provided upon the occurrence of impressive or pleasant events; levying taxes that will capitalize on the sentiments of social fear, making the burden appear less than might otherwise be the case; use of 'scare tactics' that have a propensity to make the alternatives to particular tax proposals seem worse than they are; fragmentation of the total tax weight on an entity into numerous small levies; and opacity of the final incidence of the tax. The final result of this illusion is always gathering higher amounts of public revenues with a minimum of electorate resistance.

Due to the stimulation from Buchanan's rediscovery, this kind of fiscal illusion can properly be labelled the Puviani–Buchanan (P–B) fiscal illusion.

However, as far as we are aware, there is a very significant absence of studies reporting the consequences of P–B fiscal illusion on economic growth rates. We can point out some studies relating fiscal illusion and Public Finances (Oates, 1988; Rogers and Rogers, 1995; Easterly, 1999), but we have no framework discussing how economic growth will react to different levels of fiscal illusion. This work, more precisely the following section, intends to contribute to this purpose, developing the standard AK model (Barro and Sala-i-Martin, 1995, pp. 152-158).

3.1 FISCAL ILLUSION AND A RENT-SEEKING GOVERNMENT

The production function for a given firm *i* takes an *AK* Cobb-Douglas form

$$Y_i = AL_i^{1-\alpha} K_i^{\alpha} G^{1-\alpha}, \quad (3.1)$$

where $0 < \alpha < 1$, *A* is the level of technology, *L* is labor input, *K* is capital input and *G* is the total of government purchases. Therefore, it is assumed that production for each firm is characterized by constant returns to scale in the private inputs, labor and capital. Additionally, it is also assumed that the aggregate labor force, *L*, is constant. For a fixed *G*, the economy would be characterized by diminishing returns to the accumulation of aggregate capital, *K*. By stating that *G* rises along with *K*, we assume that (3.1) will not be characterized by diminishing returns and that an increase in *G* raises the marginal products of L_i and K_i. Thus, the economy is capable of endogenous growth[2], following the traditional *AK* pattern.

[1] Mourao (2007) is an exhaustive survey on the vast literature that followed the original Puviani (1903)–Buchanan (1960) sense of fiscal illusion.

[2] The equivalence of the exponent on *G* to $1-\alpha$ implies that the constant returns to K_i and *G* generate endogenous growth, i.e., the economy should only increase *G* in a way that it accompanies a rise in *K*.

Now, assume that the government has a balanced budget. This balanced budget is financed by a proportional tax at rate *t* charged on the aggregate of gross output

$$G = tY \; . \tag{3.2}$$

We also suppose that *t* and, hence, the expenditure ratio, *G/Y*, are constant over time.

In our first case, it is assumed that there is only fiscal illusion perceived by firms, that is, firms know there is an announced proportional tax rate *t*, however due to the level of fiscal illusion *f*[3], firms actually pay an effective tax rate (1+*f*)*t*. In this first situation, we assume that the government achieves political rents (*ft)* used for private and unproductive ends, and although firms pay the effective tax rate, the balanced budget only incorporates *t*.

The firm's after-tax profit is given by

$$L_i\left[(1-(1+f)t)*Ak_i^{\alpha}G^{1-\alpha} - w - (r+\delta)k_i\right]$$

where $k_i \equiv K_i/L_i$, *r is* the rate of return on capital, *w* is the wage rate and δ is the depreciation rate of capital. The wage rate equals the after-tax marginal product of labor because we assume that firms follow the assumptions of profit maximization and the zero-profit condition. Additionally, we also obtain that the gross rental rate $r+\delta$ equals the after-tax marginal product of capital. Therefore, if we assume $k_i = k$ the rental price is given by

$$r+\delta = \left[1-(1+f)t\right]\frac{\partial Y_i}{\partial K_i} = \left[1-(1+f)t\right]\alpha A k^{\alpha-1}G^{1-\alpha} \tag{3.3}$$

Using (3.1) and (3.2), we find an expression for *G*:

$$G = (tAL)^{1/\alpha}.k \tag{3.4}$$

Substituting (3.4) into (3.3) we obtain

$$r+\delta = \left[1-(1+f)t\right]\alpha A^{1/\alpha}(Lt)^{\frac{1-\alpha}{\alpha}} \tag{3.5}$$

On the right-hand side of (3.5), the after-tax marginal product of capital plays the same role in the growth process that the constant *A* played in the standard *AK* model.

[3] Following Puviani (1903), the final consequence of inserting fiscal illusion in the process of tax collection is an increase of the amount actually paid by tax-payers and a minimization of their resistance. For convenience, we assume that $f \in [0,1]$ where a higher *f* characterizes a higher degree of fiscal illusion.

As there are no transitional dynamics, the growth rates of c, k[4], and y all equal the same constant, $\gamma_{de,rs}$[5].

$$\gamma_{de,rs} = \frac{1}{\theta}\left[\alpha A^{\frac{1}{\alpha}}(Lt)^{\frac{1-\alpha}{\alpha}}\left[1-(1+f)t\right]-\delta-\rho\right]. \quad (3.6)$$

The effects of government on growth are obtained through two channels: the term $1-(1+f)t$ represents the negative effect of effective taxation on the after-tax marginal product of capital, and the term $t^{\frac{1-\alpha}{\alpha}}$ represents the positive effect of G, the public services, on the marginal product.

Computing $\frac{\partial\gamma}{\partial t}$ we get

$$\frac{\partial\gamma_{de,rs}}{\partial t} = -\frac{A^{\frac{1}{\alpha}}L(Lt)^{\frac{1}{\alpha}-2}(\alpha+ft+t-1)}{\theta}. \quad (3.7)$$

Therefore, the golden rule for the size of the government finds a maximum[6] at

$$t = \frac{1-\alpha}{1+f}. \quad (3.8)$$

The condition (3.8) corresponds to the natural efficiency condition for the size of the government $\frac{\partial Y}{\partial G} = 1+f$, i.e., as the social cost of a unit of G is $1+f$ and the benefit is the marginal product of public services, the efficiency condition equates the marginal cost to the marginal benefit.

Following (3.8), we can observe that the golden-rule growth rate is

$$\gamma^*_{de,rs} = \frac{1}{\theta}\left[\alpha^2 A^{\frac{1}{\alpha}}\left(\frac{L(1-\alpha)}{1+f}\right)^{\frac{1-\alpha}{\alpha}}-\delta-\rho\right]. \quad (3.8')$$

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[4] In our case, we assume that infinite-lived households maximize utility, as given by $U=\int_0^{\infty}e^{-(\rho-n)t}\left[\frac{c^{1-\theta}-1}{1-\theta}\right]dt$, subject to the constraint $\dot{a}=(r-n)a+w-c$, where c is consumption per person, a is assets per person, and n is the growth rate of population. Assuming it is a closed economy, $a=k$ may hold (Barro and Sala-i-Martin, 1995: 140-141).

[5] Some inequality conditions are required for the growth rate to be positive and for utility to be bounded: $\left[1-(1+f)t\right]\frac{\partial Y_i}{\partial K_i}-\delta>\rho$ and the transversality condition $\left[(\theta-1)/\theta\right]\left[1-(1+f)t\right]\frac{\partial Y_i}{\partial K_i}-\delta+\frac{\rho}{\theta}>0$.

[6] $\frac{\partial^2\gamma_{de,rs}}{\partial t^2}=\frac{(\alpha-1)A^{\frac{1}{\alpha}}(Lt)^{\frac{1}{\alpha}-1}(2\alpha+ft+t-1)}{\alpha t^2\theta}$ is negative as $t>\frac{1-2\alpha}{1+f}$, particularly at $t^*=\frac{1-\alpha}{1+f}$.

If we want to check the effects of fiscal illusion on the optimal decentralized growth rate, we calculate its partial derivative:

$$\frac{\partial \gamma^{*}_{de,rs}}{\partial f} = -\frac{\alpha A^{\frac{1}{\alpha}}\left(\frac{L(1-\alpha)}{1+f}\right)^{\frac{1}{\alpha}}}{\theta L} \quad (<0).$$

Therefore, we conclude that higher levels of fiscal illusion decrease the growth rate in a decentralized economy under the previous assumptions.

For the moment, we have shown that (3.8) is the government's best policy, given that the growth rate is the result of the decentralized choices of households and firms in accordance with (3.6). Now, it is time to observe whether the outcomes are Pareto optimal by solving the social planner's problem.

The planner determines the time paths *G(t)* and *c(t)* in order to maximize the consumer's utility $U = \int_0^{\infty} e^{-(\rho-n)t}\left[\frac{c^{1-\theta}-1}{1-\theta}\right]dt$. The planner is constrained by the production function (3.1) and the budget constraint

$$Y = C + G + \dot{K} + \delta K \ . \qquad (3.9)$$

It is not difficult to set up a Hamiltonian expression to reach the conditions for dynamic optimization in the social planner's problem. This case will result in a different growth rate chosen by the social planner:

$$\gamma_{sp,rs} = \frac{1}{\theta}\left[\alpha A^{\frac{1}{\alpha}}\left[(1-\alpha)L\right]^{\frac{1-\alpha}{\alpha}} - \delta - \rho\right]. \qquad (3.10)$$

The social planner satisfies the condition $\frac{\partial Y}{\partial G} = 1$. The key distortion in the decentralized model is that investors consider the private marginal product of capital $\left[1-(1+f)t\right]\frac{\partial Y_i}{\partial K_i}$ because of the effective tax rate $(1+f)t$, which is slightly different from $\frac{\partial Y_i}{\partial K_i}$. This difference between social and private returns produces a shortfall of the growth rate of (3.6). The difference is also explained because in (3.10), the negative effect of the effective taxation is replaced by 1 and the size of government is given by $1-\alpha$.

Consequently, we conclude that higher levels of fiscal illusion may magnify the distortion promoted by taxation in this economy.

3.2 FISCAL ILLUSION AND A BENEVOLENT GOVERNMENT

In this case, (3.1) retains the same production function, but (3.2) is now modified into (3.11):

$$G = (1+f)tY. \tag{3.11}$$

Therefore, we are assuming that the total of government purchases react positively to the level of fiscal illusion, which can be viewed by incumbents as a way of wasting more public resources (Buchanan, 1960; Buchanan and Wagner, 1977). In this case, we follow the assumption of a benevolent government: this government uses all the collected effective taxation in order to stimulate the economy, not hiding values for opportunistic directions.

The firm's after-tax profit is again:

$$L_i\left[(1-(1+f)t)*Ak_i^{\alpha}G^{1-\alpha} - w - (r+\delta)k_i\right]$$

The rental price is now:

$$r+\delta = \left[1-(1+f)t\right]\alpha A^{1/\alpha}\left[Lt(1+f)\right]^{\frac{1-\alpha}{\alpha}} \tag{3.12}$$

And the growth rates of *c, k,* and *y* are given by $\gamma_{de,b}$:

$$\gamma_{de,b} = \frac{1}{\theta}\left[\alpha A^{\frac{1}{\alpha}}\left[(1+f)Lt\right]^{\frac{1-\alpha}{\alpha}}\left[1-(1+f)t\right]-\delta-\rho\right]. \tag{3.13}$$

Maximizing the growth rates to *t* leads again to $t = \frac{1-\alpha}{1+f}$. Therefore, the maximum growth rate is

$$\gamma_{de,b}^{*} = \frac{1}{\theta}\left[\alpha^{2}A^{\frac{1}{\alpha}}\left[L(1-\alpha)\right]^{\frac{1-\alpha}{\alpha}}-\delta-\rho\right].$$

We can check that $\gamma_{de,b}^{*}$ could be achieved in (3.8') if there was no fiscal illusion, *f=0*. It is straightforward to conclude that $\gamma_{de,b}^{*} > \gamma_{de,rs}^{*}$. At this point, we can state that a benevolent government can minimize the harm of fiscal illusion on the growth rates. In this case, we can no longer point out that fiscal illusion is a negative determinant of economic growth because its capability of attrition was reduced by the "benevolence" of the government, which released all monies obtained by the effective taxation into the economy.

In this second case, the planner is constrained by the production function and a new budget constraint:

$$Y = C + (1+f)G + \dot{K} + \delta K\ . \tag{3.14}$$

These changes will lead to a different growth rate:

$$\gamma_{sp,b} = \frac{1}{\theta}\left[\alpha \ A^{\frac{1}{\alpha}}\left[\frac{L(1-\alpha)}{1+f}\right]^{\frac{1-\alpha}{\alpha}} - \delta - \rho\right]. \tag{3.15}$$

Checking what happens to the social planner's problem of a benevolent government, we find that the differences between the social planner's solutions and the decentralized solutions are smaller in this second case, indicating a proximity (smaller wedge) between the Pareto solution and the rational choices of households and firms.[7]

With few assumptions[8], it is straightforward to conclude that

$$\gamma_{de,rs} < \gamma_{de,b} < \gamma_{sp,b} < \gamma_{sp,rs} .$$

These inequalities show that a higher level of P–B fiscal illusion originating in political rents used for private and unproductive directions generates low growth rates. When fiscal illusion is characterized by smaller values or when the political rents are being invested in the economy (becoming productive), we face increasing rates.

Therefore, we have shown that the P–B fiscal illusion can be a significant determinant in the process of economic growth, functioning as a source of attrition: higher levels of fiscal illusion prejudice the economic growth rates. Therefore, fighting fiscal illusion, making public finances more transparent, is important for a healthy budget composition and for the overall economic growth.

4. CONCLUSION

This work demonstrated that the controversial question involving the role of fiscal illusion practices on public finances is not recent, but can be thought of as deriving from the discussion invoked by Puviani (1903) and substantially enriched by Buchanan (1960).

In spite of the fact that the 'Fiscal Illusion' School of Buchanan and Wagner (1977) identifies higher levels of fiscal illusion promoting increasing increments in the size of the public sector, this work developed a model that predicts higher levels of fiscal illusion also decrease national economic growth rates.

This model has had further and important implications. Mainly, it highlighted the need for reducing the expected return of incurring in fiscal illusion practices in order to prevent adverse effects on economic growth. Additionally, this model reinforced the advantages of productive public goods (not deviated for political unproductive rents) in order to mitigate the negative effects of fiscal illusion.

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[7] If fiscal illusion is too high, i.e, if $\ln(1+f) \geq \frac{\alpha}{\alpha-1}\ln\alpha$ holds, $\gamma_{sp,b}$ is smaller than $\gamma_{de,b}$. This can be thought as a disadvantage of a too heavy public sector because the social planner satisfies the pro-leviathan condition $\frac{\partial Y}{\partial G} = 1+f$ in this case.

[8] We follow the assumptions that all the parameters of the equations have significant values and that $\ln(1+f) < \frac{\alpha}{\alpha-1}\ln\alpha$.

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