What if Output Persistence is Disregarded by an Opportunistic Incumbent?

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Abstract **– This note presents the consequences of output persistence being disregarded by an electorally motivated incumbent. In this case, incumbent's policies are suboptimal not only socially but also from the electoral point of view.**

Keywords *- Electoral cycles, Imperfect modes, Output persistence.*

1. Introduction

The consequences arising from the fact that real variables, such as unemployment or output, exhibit a degree of persistence over time have been analysed since some time ago (see, e.g., Jonsson, 1997; Lockwood, 1997; Svensson, 1997; Caleiro, 2012). A particularly interesting consequence of output persistence is that it may turn upside down the political business cycle, which, in its typical form, is associated with depressions at the beginning of the mandate followed by pre-election inflationary expansions (Gärtner, 1996; Gärtner, 1997; Caleiro, 2009). Somehow related to this result is the fact that, when the rationality of the electorate is bounded, an error on the classification, by the electorate, of the incumbent's behavior, may exist, when the level of output displays persistence (Caleiro, 2013).

A recent observation of reality seems to confirm that the typical pattern of the electoral cycle seems to be so deep-rooted that an electorally motivated government, whose rationality is also bounded, considers that it must implement a (more than socially desirable) contractionary policy at the beginning of the mandate, so that, at the end of the mandate, it has (better) conditions to implement expansionary policies. A behavior of that type by the incumbent also seems to reveal that it may also act under the veil of ignorance (of the persistence in output). In other words, when determining the economic policy the incumbent may use a stylized model, this model being imperfect due to the ignorance of output persistence (Chow, 1977). In this case, incumbent's policies are suboptimal not only socially but also from the electoral point of view.

The rest of the paper is structured as follows. Section 2 offers the correct model, i.e. the one ruling the true functioning of the economy, which is based upon an aggregate supply curve embodying output persistence, as well as the imperfect model, i.e. the one considered by the incumbent, which disregards output persistence. Section 3 concludes.

2. The Models

Recently some authors have assumed an extended version of the standard aggregate supply curve $y_t = \bar{y} + \beta\left(\pi_t - \pi_t^e\right)$, where y_t denotes the level of output, that deviates from the natural level, $\bar{y}$, whenever the inflation rate, π_t, deviates from its expected level π_t^e, by considering

$$y_t = (1-\eta)\bar{y} + \eta y_{t-1} + \delta\left(\pi_t - \pi_t^e\right), \qquad (1)$$

where η measures the degree of output persistence. See Gärtner (1999) for an output persistence case and/or Jonsson (1997) for an unemployment persistence case.

When normalizing the natural level of output such that $\bar{y} = 0$ the aggregate supply curve reduces to:

$$y_t = \phi y_{t-1} + \alpha\left(\pi_t - \pi_t^e\right), \qquad (2)$$

where, following the hypothesis of adaptive expectations,

$$\pi_t^e = \gamma\pi_{t-1} + (1-\gamma)\pi_{t-1}^e, \qquad (3)$$

where $0 \le \phi \le 1$ and $0 \le \gamma \le 1$.

Model (2) is thus the correct representation of the functioning of the economy. When disregarding the existence of persistence in output, an imperfect model is

to be considered, i.e.

$$y_t = \alpha\left(\pi_t - \pi_t^e\right). \quad (4)$$

In what concerns the incumbent's objective function, we make the standard assumption that the incumbent faces a mandate divided into two periods, t = 1,2, such that society's welfare during the mandate, i.e. the benevolent government's objective function is given by:

$$W = W_1 + \rho W_2, \quad (5)$$

where ρ is the social rate of discount, whereas opportunistic government's objective function is :

$$V = \mu V_1 + V_2, \quad (6)$$

where μ is the degree of memory of the electorate. In (5) and (6) we also consider that

$$W_t = V_t = -\tfrac{1}{2}\pi_t^2 + \beta y_t. \quad (7)$$

Considering first the case of a benevolent incumbent, the correct policy and outcomes will be, respectively, the values of inflation and output which result from the maximisation of (5) subject to (2) and (3). This immediately leads to the optimal policies:[1]

$$\pi_1^B = \alpha\beta\left(1 - \rho\left(\gamma - \phi\right)\right), \quad (8)$$

$$\pi_2^B = \alpha\beta, \quad (9)$$

i.e.

$$\pi_2^B - \pi_1^B = \alpha\beta\rho\left(\gamma - \phi\right). \quad (10)$$

In the steady state cycle, i.e. when $\pi_2^e = \pi_0^e$ and $y_2 = y_0$, output levels will be given:

$$y_1^B = \frac{\alpha}{(1+\phi)(2-\gamma)}\left(\pi_1 - \pi_2\right), \quad (11)$$

$$y_2^B = \frac{\alpha}{(1+\phi)(2-\gamma)}\left(\pi_2 - \pi_1\right), \quad (12)$$

i.e.

$$y_1^B = \alpha^2\beta\rho\ \frac{\phi - \gamma}{(1+\phi)(2-\gamma)}, \quad (13)$$

$$y_2^B = \alpha^2\beta\rho\ \frac{\gamma - \phi}{(1+\phi)(2-\gamma)}. \quad (14)$$

[1] From this point onwards, the superscripts *B* and *O* identify an element as, respectively, concerning the benevolent and the opportunistic incumbent.

Plainly, in the case of output persistence being disregarded, inflation rates will be

$$\pi_1^B = \alpha\beta\left(1 - \rho\gamma\right), \quad (15)$$

$$\pi_2^B = \alpha\beta, \quad (16)$$

i.e.

$$\pi_2^B - \pi_1^B = \alpha\beta\rho\gamma. \quad (17)$$

Given that the economy functions in accordance to the correct model (2), the imperfect policies (15) and (16) give rise to output levels being:

$$y_1^B = -\frac{\alpha^2\beta\rho\gamma}{(1+\phi)(2-\gamma)}, \quad (18)$$

$$y_2^B = \frac{\alpha^2\beta\rho\gamma}{(1+\phi)(2-\gamma)}. \quad (19)$$

Finally, it matters to present the differences between the use of the correct (*c*) and the imperfect (*i*) model by the benevolent incumbent. In terms of the inflation rates,

$$\pi_1^i - \pi_1^c = -\alpha\beta\rho\phi < 0, \quad (20)$$

$$\pi_2^i - \pi_2^c = 0, \quad (21)$$

whereas, in terms of output levels,

$$y_1^i - y_1^c = -\beta\rho\phi\alpha^2 < 0, \quad (22)$$

$$y_2^i - y_2^c = -\beta\rho\phi\alpha^2\left(\phi - \gamma\right), \quad (23)$$

which, in the stationary cycle situation, are given by

$$y_1^i - y_1^c = -\frac{\alpha^2\beta\rho\gamma}{(1+\phi)(2-\gamma)} < 0, \quad (24)$$

$$y_2^i - y_2^c = \frac{\alpha^2\beta\rho\gamma}{(1+\phi)(2-\gamma)} > 0. \quad (25)$$

Considering now the case of an opportunistic incumbent, the correct policy and outcomes will be, respectively, the values of inflation and output which result from the maximisation of (6) subject to (2) and (3). The optimal policies are:

$$\pi_1^O = \alpha\beta\left(1 - \frac{\gamma - \phi}{\mu}\right), \quad (26)$$

$$\pi_2^O = \alpha\beta, \quad (27)$$

i.e.

$$\pi_2^O - \pi_1^O = \frac{\alpha\beta(\gamma - \phi)}{\mu}. \quad (28)$$

In the case of output persistence being disregarded by the opportunistic incumbent, inflation rates will be

$$\pi_1^O = \alpha\beta\left(1 - \frac{\gamma}{\mu}\right), \quad (29)$$

$$\pi_2^O = \alpha\beta, \quad (30)$$

i.e.

$$\pi_2^O - \pi_1^O = \frac{\alpha\beta\gamma}{\mu}. \quad (31)$$

The differences between the use of the correct (*c*) and the imperfect (*i*) model by the benevolent incumbent are as follows. In terms of the inflation rates,

$$\pi_1^i - \pi_1^c = -\frac{\alpha\beta\phi}{\mu} < 0, \quad (32)$$

$$\pi_2^i - \pi_2^c = 0, \quad (33)$$

whereas, in terms of output levels,

$$y_1^i - y_1^c = -\frac{\beta\phi\alpha^2}{\mu} < 0, \quad (34)$$

$$y_2^i - y_2^c = -\frac{\beta\phi\alpha^2(\phi - \gamma)}{\mu}, \quad (35)$$

which, in the stationary cycle situation, are given by

$$y_1^i - y_1^c = -\frac{\alpha^2\beta\gamma}{(1+\phi)(2-\gamma)\mu} < 0, \quad (36)$$

$$y_2^i - y_2^c = \frac{\alpha^2\beta\gamma}{(1+\phi)(2-\gamma)\mu} > 0. \quad (37)$$

3. Concluding Remarks

This note presents the consequences of output persistence being disregarded by the incumbent, being of special importance the case where the incumbent is electorally motivated. In this case, the typical pattern of the political business cycle may, indeed, lead the incumbent to consider that, in all circumstances, should implement contractionary policies at the beginning of the mandate, followed by expansionary policies at the end of the mandate. This behaviour implies that the incumbent may be disregarding output persistence, i.e. the consideration of an imperfect model. If this is the case, incumbent's policies are suboptimal not only socially but also from the electoral point of view.

In particular, when output persistence is disregarded, a sub-utilisation of inflation rates is to be observed at the beginning of the paper, which, in the steady state cycle, leads to an over-depression of output, followed by an over-expansion of output at the end of the mandate. Figure 1 shows the evolution of short term political business cycles in output to the steady state cycle when the correct – i.e. taking into account output persistence – and the imperfect – i.e. when output persistence is disregarded – as models are considered .

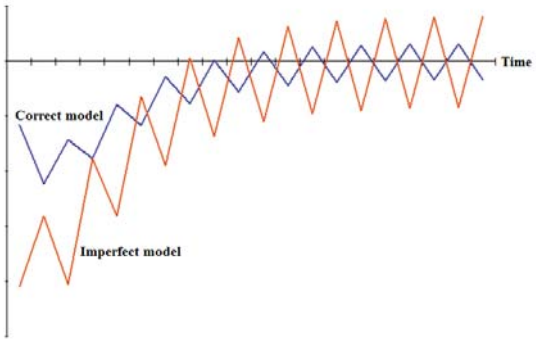

Figure 1 – The evolution of political business cycles

As a direction for future improvements we would like to proceed with an empirical test of the results, for instance following the approach in Caleiro (2012).

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