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The role of central bank independence on optimal taxation and seigniorage☆

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ABSTRACT

Should inflation be thought of as "just another tax?" The theoretical basis for doing so dates back to Phelps (1973) and has been greatly refined ever since. Since optimal taxation minimizes the deadweight loss by equalizing the marginal distortions of all available taxes, including the inflation tax, a key distinctive theoretical implication obtained by these models is that inflation and tax rates have a positive relationship. While theoretically appealing, empirical studies find virtually no support for this key implication.
We show that, considering the role of central bank independence (CBI), it is possible to reconcile the main theoretical implications of models of optimal taxation and seigniorage with the empirical evidence. Different degrees of CBI capture the extent to which monetary policy is effectively controlled by the fiscal authority. Our model generates three testable implications: i) if CBI is low, the optimal relationship between inflation and tax rates is positive, ii) such relationship is a decreasing function of the degree of CBI, and iii) the relationship is negative for high levels of CBI. We show that these hypotheses hold for alternative measures of tax policy, seigniorage, and CBI as well as after controlling for several macroeconomic performance, ideology, political instability, governance, and economic structural/development factors.

> The ability of the government to finance expenditures by issuing money is the 'seigniorage' associated with its sovereign monetary monopoly. Both explicit and implicit taxes are distortionary. The distortion of the inflation tax is the diversion of resources or loss of utility associated with the scarcity of money, already mentioned. But there are also distortions in explicit taxes; lump-sum taxes are not available. *The problem is to optimize the choice of taxes, given the necessity of government expenditure. This formulation correctly connects the money-supply process to the government budget.* (*Emphasis added*).
>
> [Tobin (1986, page 11).]

1. Introduction

Should inflation be thought of as "just another tax?" The theoretical basis for doing so dates back to Phelps (1973). Influenced by early theories of optimal taxation in public finance (e.g. Wicksell, 1896; Ramsey, 1927; Boiteux, 1956; Musgrave, 1959), Phelps

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(1973) was the first to point out that if lump-sum taxation is not available, optimal taxation minimizes the deadweight loss by equalizing the marginal distortions of all available taxes, including the inflation tax.[1]

This argument was further developed and refined by Marty (1976), Siegel (1978), Drazen (1979), Chamley (1985), Tobin (1986), Mankiw (1987), Grilli (1988), Poterba and Rotemberg (1990) and Chari and Kehoe (1999), among others. Typically using a neoclassical framework with different model structures and functions for money, the underlying question of these papers is how to optimally finance a certain level of public spending. These studies typically assume a benevolent government that chooses the rates of taxation and inflation to minimize the present value of the distortionary social cost of raising revenue, and that marginal distortions of taxation and seigniorage are increasing in the underlying rates. Given this framework, a key distinctive theoretical implication obtained by these models is that inflation and tax rates have a positive relationship. That is to say, the optimum policy requires “some” use of each of the available distorting taxes, including the inflation tax, in order to reduce the extent to which any of the others must be used.

While theoretically appealing, empirical studies find virtually no support for this key implication. Using United States data from 1952 to 1985, Mankiw (1987) finds a striking positive correlation between inflation and tax burden, measured by government revenue as a percentage of GDP. Subsequent studies suggest that this characterization generally fails to fit the experiences of both developed and developing economies (Roubini and Sachs, 1989; Poterba and Rotemberg, 1990; Edwards and Tabellini, 1991; Roubini, 1991). Roubini and Sachs (1989) find that for 12 out of 15 developed countries, there are no significant relationships, and, in 5 of the countries (France, Austria, Italy, Ireland and Denmark), the relationship is negative. Poterba and Rotemberg (1990) find a positive relationship for Japan and the United States, while the existence of such relationship is not found for France, the United Kingdom and West Germany. In a sample of 21 developing countries, Edwards and Tabellini (1991) find no statistically significant relationship for 17 countries and a statistically significant, but negative, relationship for 4 of them. Roubini (1991) rejects this key theoretical implication for most developing countries. In a sample of 92 developing countries he find that there is a positive and statistically significant relationship for only 15 of them, there is no statistically significant relationship for 37 economies and, notably, such relationship is statistically negative in 40 countries.

This puzzle is extremely relevant for at least two reasons. First, as described above, an important part of the theoretical macroeconomic literature has been built on these types of models. Second, given the absence of readily available cross-country data on tax rates, many empirical papers have relied upon the use of inflation tax as a proxy for tax policy (Talvi and Vegh, 2005; Kaminsky et al., 2004).

This paper shows that, considering the role of central bank independence (CBI), it is possible to reconcile the main theoretical implications of models of optimal taxation and seigniorage with empirical evidence. Previous studies assume that while government policy is executed by different agencies or branches, such as the fiscal authority and central bank, there is no independence of goals in each of these branches. “To the contrary, each agency is conceived as calculating the actions it must take in full knowledge of those actions by the other agencies which are entailed by their concerted pursuit of specific government policy objectives” (Phelps, 1973, page 70). In other words, the fiscal authority and central bank fully cooperate toward the common objective of reducing overall excess burden of taxation.

While it is intrinsic to fiscal authority goals to minimize deadweight loss of taxation, it is less obvious that revenue considerations of seigniorage are a key element in the positive theory of monetary policy. Using a simple optimal taxation and seigniorage model, we show that the optimal relationship between inflation and tax rates crucially depends upon the degree of CBI.

First, if CBI is low, the fiscal authority effectively controls monetary policy and, consequently, selects tax rates and inflation taking into account revenue and distortionary considerations. In this context, inflation can be rationalized as “just another tax.” Equivalent to the current theoretical literature, inflation and tax rates are positively related. That is to say, what the current literature frames as full cooperation of the fiscal and monetary branches toward the common objective of reducing overall excess burden of taxation, we rationalize as a circumstance of low CBI where the fiscal branch captures the central bank.

On the contrary, if CBI is high, then central banks pursue their own monetary policy that is consistent with a certain implicit or explicit inflation target. In this case, inflation and tax rates have a negative relationship. This occurs because an increase in the level of inflation by the monetary authority increases seigniorage revenues. The latter reduces the pressure to collect revenues via regular taxation, optimally inducing the fiscal authority to reduce the tax rate. Lastly, taking into account the theoretical implications associated with these two extreme levels of CBI, we also show that the optimal relationship between inflation and tax rates is a decreasing function of the degree of CBI. That is to say, the optimal relationship between inflation and tax rates becomes less positive or more negative for higher degrees of CBI.

We test the predictions of the model using a sample of 89 countries for the period 1970–2009 and alternative measures of CBI, tax policy, and seigniorage. We first proxy CBI using the yardstick de facto measure which relies on the turnover rate of central bank governor (Cukierman, 1992; Cukierman et al, 1992). The basic presumption of this de facto measure is that, at least above some threshold, a more rapid turnover of central bank governors indicates less CBI. Frequent replacement of the central bank governor may reflect the removal of those who challenge the government which, in turn, also gives political authorities the “opportunity to pick those who will do their will” (Cukierman et al, 1992, page 363). This de facto measure has been frequently used when focusing on the developing world, where there tends to be an important difference between legal frameworks and actual practices. We complement this analysis using legal measures like the ones developed by Cukierman et al (1992) and

[1] Inflation tax is a metaphorical representation of the economic disadvantage suffered by holders of money due to the inflationary effects of expansionary monetary policy, which acts as a hidden tax that subtracts value from those assets.