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Monetary and fiscal policy interactions with central bank transparency and public investment

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ABSTRACT

In this paper, we study how the interactions between central bank transparency and fiscal policy affect macroeconomic performance and volatility, in a framework where productivity-enhancing public investment could improve future growth potential. We analyze the effects of the central bank's opacity (lack of transparency) according to the marginal effect of public investment by considering the Stackelberg equilibrium, where the government is the first mover and the central bank the follower. We show that the optimal choice of tax rate and public investment, when the public investment is highly productivity enhancing, eliminates the effects of distortionary taxation and fully counterbalance both the direct and the fiscal-disciplining effects of opacity, on the level and variability of inflation and the output gap. In the case where the public investment is not sufficiently productivity enhancing, opacity could still have some disciplining effects as in the benchmark model, which ignores the effects of public investment.

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1. Introduction

Over the past two decades, an increasing number of central banks have become more transparent about their objectives, procedures, rationales, models and data. This has stimulated intensive ongoing research about the effects of central bank transparency.[2] Most economists agree that openness and communication with the public are crucial for the effectiveness of monetary policy, because they allow the private sector to improve expectations and hence to make better-informed decisions (Blinder, 1998). Counterexamples have been provided, with addition of distortions, where information disclosure reduces the ability of central banks to strategically use their private information, and therefore, greater transparency may not lead to welfare improvement (e.g., Sorensen, 1991; Faust and Svensson, 2001; Jensen, 2002; Grüner, 2002; Morris and Shin, 2002).[3] In effect, according to the second-best theory, the removal of one distortion may not always lead to a more efficient allocation when other distortions are present.

Typical models on monetary policy transparency usually consider two players: the monetary authority and the private sector. Departing from this approach, several authors introduce monetary and fiscal policy interactions.[4] In a framework

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[2] Pioneered by Cukierman and Meltzer (1986), the transparency issue has been examined both theoretically and empirically by Nolan and Schaling (1998), Faust and Svensson (2001), Chortareas et al. (2002), Eijffinger and Geraats (2006) and Demertzis and Hughes Hallet (2007), among others. See Geraats (2002) and Eijffinger and van der Cruijsen (2010) for a survey of the literature.

[3] See Dincer and Eichengreen (2007) for a short survey about these models including distortions.

[4] Some researchers study the relationship between central bank transparency and the institutional design (Walsh, 2003; Hughes Hallett and Weymark, 2005; Hughes Hallett and Libich, 2006, 2009; Geraats, 2007).

where the government sets a distortionary tax rate, it was shown that uncertainty (or opacity) about the "political" preference parameter of the central bank, i.e., the relative weight assigned to inflation and output gap targets, could reduce average inflation as well as inflation and output variability (Hughes-Hallett and Viegi, 2003; Ciccarone et al., 2007; Hefeker and Zimmer, forthcoming). Higher distortionary taxes necessary for financing higher public expenditure will induce a lower output gap and higher unemployment. Thus, the central bank increases the inflation rate and workers claim higher nominal wages. In terms of macroeconomic volatility, less central bank political transparency has a disciplining effect on the fiscal authority, which could dominate the direct effect of opacity when the government cares less about public expenditure and the central bank is quite populist, whilst the initial degree of central bank opacity is sufficiently high.[5]

However, the aforementioned studies do not distinguish the different components of public expenditure by separating public consumption (e.g., public sector wages and current public spending on goods) from public investment (e.g., infrastructure, health and education). Substantial theoretical and empirical research has been directed towards identifying the components of public expenditure that have significant effects on economic growth since the seminal contribution of Barro (1990). Through the introduction of both public capital (infrastructures) and public services (education) as inputs in the production of final goods, theoretical models suggested that public investment generates higher growth in the long run through raising private sector productivity (e.g., Futagami et al., 1993; Cashin, 1995; Glomm and Ravikumar, 1997; Ghosh and Roy, 2004; Hassler et al., 2007; Klein et al., 2008; Azzimonti et al., 2009). In addition, empirical studies confirm the positive impact of public investment on productivity and output (e.g., Aschauer, 1989; Morrison and Schwartz, 1996; Pereira, 2000; Mittnik and Neumann, 2001).

Usually, the frameworks used in theoretical studies on public investment ignore the effects due to monetary and fiscal interactions. Cavalcanti Ferreira (1999) examined the interaction between public investment and inflation tax and found that the distortionary effect of inflation tax is compensated by the productive effect of public expenditure. Ismihan and Ozkan (2004) consider the relationship between central bank independence and productivity-enhancing public investment, and argue that, although central bank independence delivers lower inflation in the short term, it may reduce the scope for productivity-enhancing public investment and so harm future growth potential. Ismihan and Ozkan (2007) extended the previous model by taking into account the issues of public debt, and found that, under alternative fiscal rules (balanced-budget rule, capital borrowing rule), the contribution of public investment to future output plays a key role in determining its effects on macroeconomic performance.

The distinction between public consumption and public investment could allow us to introduce in the literature of central bank transparency the effects of public investment on the aggregate supply. These effects could correct the distortionary effects of taxation and therefore interact with central bank transparency. For this purpose, we re-examine in this paper the interaction between central bank political transparency and fiscal policies in a two-period model, similar to Ismihan and Ozkan (2004), where the public investment is productivity enhancing and could compensate, partially or totally, the distortions generated by the taxes on revenue. The aim of the paper is to investigate to what extent the disciplining effect of opacity could be generalized to a framework where the government has more than one policy instrument.

The paper is organized as follows. The next section presents the model. Section 3 presents the benchmark equilibrium where there is no productivity-enhancing public investment. Section 4 examines how the inclusion of public investment affects the effects of opacity according to the marginal effect of public investment on the aggregate supply. Section 5 summarizes our findings.

2. The model

The two-period model of discretionary policy making is similar to the one presented by Ismihan and Ozkan (2004). To model the effects of distortionary taxes and public investment on the supply, we consider a representative competitive firm, which chooses labor to maximize profits by taking the price (or inflation rate π_t), wages (hence expected inflation π_t^e), and tax rate (τ_t) on the total revenue of the firm in period t as given, subject to a production technology with productivity enhanced by public investment in the previous period (g_{t-1}^i). The normalized output-supply function is

$$x_t = \pi_t - \pi_t^e - \tau_t + \psi g_{t-1}^i, \quad t = 1, 2, \tag{1}$$

where x_t (in log terms) represents the normalized output (or output gap). Eq. (1) captures the effects of supply-side fiscal policies on the aggregate supply of output, with the effect of distortionary taxes being clearly distinguished from that of public investment.[6]

The public expenditure is composed of public sector consumption ($g_t^c > 0$) and investment ($g_t^i \geq 0$), both expressed as percentages of the output. The public investment consists of productivity-enhancing expenditure on infrastructure, health,

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[5] The term "political transparency" used here corresponds to the information disclosure about the weights assigned by the central bank to the output gap and inflation stabilization. Five motives for central bank transparency (i.e., political transparency, economic transparency, procedural transparency, policy transparency and operational transparency) are defined in Geraats (2002).

[6] The variable τ allows covering a whole range of structural reforms. In effect, τ could also represent non-wage costs associated with social security (or job protection legislation), the pressures caused by tax or wage competition on a regional basis or the more general effects of supply-side deregulation (Demertzis et al., 2004).