



Public, or private, providers of public goods? A dynamic general equilibrium study

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ABSTRACT

We study the differences between public production and public finance of public goods in a dynamic general equilibrium model. Under public production, public goods are produced by the government. Under public finance, the same amount of public goods is produced by cost-minimizing private providers with the government financing their costs. When the model is solved numerically using fiscal data from the UK, a switch from public production to public finance has substantial aggregate and distributional implications. Public providers cannot beat private providers, in terms of productive efficiency, even if they both act as cost minimizers. The following mix of reforms is found to be Pareto improving: (i) a transition to cost-minimizing private providers that allows the government to achieve efficiency savings, (ii) a reduction in distorting income taxes made affordable by these efficiency savings, and (iii) a mechanism to compensate the ex public employees. All these results hold if private producers use a more capital intensive production technology than public producers, or, even in the case in which they use the same technology, if capital is a relatively important productive factor quantitatively.

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1. Introduction

Concerning the provision of public goods, an important distinction is between public production and public finance. In the case of public production, the goods are produced by the government itself. For instance, the government can hire public employees and purchase goods from the private sector to produce public goods. In the case of public finance, the government continues to finance the cost of production of these goods but it contracts out their production to private firms, the so-called private providers. Examples of public goods and services that can belong to either category include health, day and old-age care, television and radio, schools, libraries, fire protection, prisons, environmental protection, and several services provided by the local authorities like refuse collection, etc.¹

The way of provision of public goods has attracted interest in both academic and policy circles. In academia, it is widely recognized that production and finance are two separate issues (see Atkinson and Stiglitz, 1980; Cullis and Jones, 1998; Hillman, 2009).² In policy,

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¹ There are also examples from maritime history of the use of private armed ships during wartime. In the 18th and 19th century England, there was contracting-out of the police force.

² As Atkinson and Stiglitz (1980, p. 482) emphasize that, "the two are often confused, though both logically and in practice they are distinct". There is a rich taxonomy of public goods depending on the way of producing, financing and distributing them (see e.g. Cullis and Jones, 1998, chapter 5; Hillman, 2009, chapter 3). Here, the focus is on the way of provision and, in particular, on public production versus public finance.

many governments move away from public production to private alternatives. For instance, in the UK, there is an ongoing debate on the role of the state and, in particular, on the idea of opening up the production of public services to new providers.³

What are the implications of switching from public production to public finance?⁴ Interestingly, the academic arguments for and against public production are not clear, when one does not want to rely on arguments related to political economy.⁵ Is there anything inherent (namely, something which is in terms of technical or productive efficiency⁶ and which is irrespective of multidimensional objectives and political economy arguments) which makes public providers different from private providers? In this paper, we fill this gap by studying the technical or productive differences between public production and public finance in a dynamic general equilibrium model.⁷ We study issues of both efficiency and redistribution, where efficiency is measured by per capita output and welfare, while redistribution is measured by differences in income and welfare between private and public employees.

We first model the case of public production by following the related literature.⁸ There are two distinct groups of households: those that work in the private sector and those that are employed in the public sector. The latter (called public employees), together with goods purchased from the private sector, are used as inputs in the government production function. Solving the model numerically when the values of fiscal policy instruments are in line with the UK averages over 1990–2008, we specify, among other variables, the time-path of public goods as induced by the existing fiscal policy mix.

In turn, using this “status quo” solution as a point of departure, we study what would change if, other things equal, the same time-path of public goods was produced by private firms, the so-called private providers. These firms produce the amount of public goods ordered by the government by solving a cost-minimization problem with the government financing their total cost (see e.g. Turnovsky and Pintea, 2006). We also study what would change if, again other things equal, the same amount of public goods continues to be produced by the public sector but now public enterprises minimize their costs like their private counterparts do in the case of public finance. These three model economies (namely, the status quo one, the one with cost-minimizing private providers and the one with cost-minimizing public providers) are directly comparable.

We study both the long run and the transition, where the latter means that we depart from the status quo long run solution and travel to a new reformed long run as defined above. There are five main results.

First, a switch from the status quo economy to an economy with cost-minimizing private providers increases the welfare of private employees, but makes public employees worse off. The latter happens because the wages (of those involved in the production of public goods) fall when they turn from public employees into employees at cost-minimizing private providers. Since private providers find it optimal to pay lower wages and hence produce the public good at a lower cost, the switch allows the government to make efficiency savings.

Second, the effect of this switch on per capita output and welfare (i.e. on efficiency) depends crucially on the way that the government uses its efficiency savings. When the efficiency savings achieved by the government – through the use of private providers – are used to cut distorting income taxes, then per capita output and welfare also rise.

Third, for a large range of parameter values, when it is public providers/enterprises that choose inputs in a cost-minimizing way, the numerical solution is very similar to that under the status quo case where the associated variables are exogenously set at their data averages. Thus, one could argue that in the UK, over 1990–2008, the public sector has exhausted its role, at least in terms of aggregate efficiency, as a provider of public goods and services.

Fourth, since the above policy (of switching to private providers and cutting income taxes) allows aggregate efficiency gains, but only at the cost of making those that used to be public employees worse off, there is need to search for Pareto-improving changes. In such a search, we show that everybody can become better off relative to the status quo if this policy is supplemented by redistributive government transfers that compensate the ex public employees, and/or a voluntary reallocation of employees across sectors. Actually, the latter, namely a voluntary reallocation of employees from the production of the public to the production of the private good, is particularly beneficial because it also boosts the supply side of the economy. By contrast, the former, namely redistributive government transfers, works through the demand side of the economy.

Fifth, a rather extensive sensitivity analysis reveals that all the above results go through as long as private producers use a more capital intensive production technology than public producers. They continue to go through, even in the case in which they use the same production technology, as long as capital is a relatively important productive factor quantitatively. Intuitively, the government does not purchase capital at its market price; instead, changes in public capital are financed by government spending on public investment. By contrast, private providers can participate in all factor markets directly and thus purchase their capital input at its market price. As a result, our solutions imply that public producers face a productive or technical efficiency handicap. All this happens irrespectively of political economy issues, which are expected to strengthen the argument for private providers.

³ Opening up new areas for private providers of public goods is a key part of the policy of the current UK government. In particular, reforms are designed to encourage “any qualified provider of public goods” (*The Observer*, 22.05.2011, p. 7) and “across much of the public sector, from health and education to local authorities and prisoner rehabilitation, the provision of public services is increasingly being contracted out to private suppliers” (*The Economist*, January 22nd, 2011, p. 41). At the same time, the British Deputy PM, Mr Nick Clegg, questions private sector involvement saying that the real issue is about “diversifying providers” and that this does not extend to a belief “that private providers are inherently better than public-sector providers” (*The Guardian*, 10 February 2011, p. 15).

⁴ In this paper, we use the terms private providers and public finance interchangeably.

⁵ See Cullis and Jones (1998, chapter 5) for the early literature and Pestieau (2007) for recent work on how the multidimensional objectives of (benevolent or non-benevolent) policymakers make difficult the assessment of public sector performance. See below at the end of this section for further details.

⁶ The meaning of technical or productive efficiency is further clarified below.

⁷ Empirical studies on the relative performance of public and private firms include Atkinson and Halvorsen (1986), De Borger (1995) and Ohlsson (2003).

⁸ See e.g. Finn (1998), Cavallo (2005), Ardagna (2007), Pappa (2009), Linnemann (2009), Forni et al. (2009), and Fernandez-de-Cordoba et al. (2012) and Economides et al. (2013). See below for details.

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