

The Distributional Effect of Public Subsidization Among Graduates and Non-Graduates—The Life-Cycle Perspective

6.1 Introduction

In this chapter, we will use an amended version of the Creedy-François model in order to discuss our point. In our model, a tax is levied on agents' income, thereby assuming a constant tax rate to be exogenously given. The resulting revenue is spent on redistribution and subsidization purposes. Each agent receives an identical lump-sum transfer, whose amount depends on the tax base, the tax rate, and the amount of costs devoted to finance higher-education subsidies. At this point, the trade-off becomes evident. The more is spent to support higher education through an unconditional grant, the lower the proportion of the whole revenues devoted to redistribution. On the other hand, the tax base might be positively affected by subsidization so that two effects work in an opposite direction. If no subsidization takes place, however, the entire revenue is earmarked uniformly among all individuals.

Such a redistribution policy is progressive, because it rewards the low-ability agents while the mean earner neither gains nor loses in contrast to those with an income above the mean who are the losers. The assumption of a lump-sum transfer towards all agents simplifies the analysis, because it has no impact on the educational-choice margin.

In contrast to the lump-sum transfer, the effect of income taxation is twofold. It allows it to finance the described redistribution policy, but it distorts the choice between education and work in the first period. According to the recent literature (see Section 5.3), this distortion calls for efficiency-enhancing subsidies. The efficiency gains created by a (partial) subsidization are potentially Pareto superior.

This chapter is organized as follows. Section 6.2 presents a general framework in which our analysis is put forth. Section 6.3 discusses the distortionary effects of taxation and analyzes the amount of subsidization which is required to counteract the efficiency loss. Section 6.4 then deals with the question whether the efficiency gains can be used to compensate the non-graduates

for their renouncement of a higher transfer and highlight the role of windfall profits.

6.2 The Model

To make our point, we use an amended version of the model presented by Creedy and François (1990). Their model consists of a population of agents who differ with respect to their innate endowment. It is a two-period model. In the first period, all agents face the decision of whether to enroll in a degree program or not. In the second period, all agents work, either as graduates or as non-graduates. The government is assumed to raise taxes. The entire public revenue is spent financing subsidies to higher education, and for a publicly-provided good. The graduation rate depends on the tax rate, the rate of subsidization, and on an externality created by those who attend higher education (see the preceding section).

Our framework differs from the model of Creedy and François (1990) in two respects. First, we neglect the existence of externalities. A justification for fiscal activities is given by a distortion created by income taxation according to the recent literature cited in Subsection 5.3.2. Secondly, in our model a tax is levied on agents' incomes, thereby assuming a constant tax rate to be exogenously given. The resulting revenue is spent on redistribution and subsidization purposes. Each agent receives an identical lump-sum transfer, denoted by $\aleph \in \mathbb{R}_+$, whose amount depends on the tax base, the tax rate, and the amount devoted to financing higher-education subsidies. At this point, a trade-off becomes evident. The more is spent to support higher education through an unconditional grant, the lower the proportion of all revenue devoted to the redistribution policy. On the other hand, the tax base might be positively affected by subsidization so that the two effects work in opposite directions. If no subsidization takes place, however, the entire revenue is distributed uniformly among all individuals.

In contrast to the lump-sum transfer, the effect of income taxation is twofold. It allows the described redistribution policy, but it distorts the choice between education and work in the first period. This distortion calls for efficiency-enhancing subsidies. The efficiency gains created by a (partial) subsidization are potentially Pareto-superior. We do not ask why a distortionary taxation exists. We instead assume that a non-distortionary tax system is politically not feasible, so that policy aim is to implement a second-best means to offset the distortion.

Assume that a population is heterogeneous with respect to the innate endowment $y_i \in [0, \hat{y}] \subset \mathbb{R}$. Population size is normalized to unity. As in Creedy and François (1990), we consider that the cohort lives in two periods. In the first period, each agent can choose between higher education and work. In the second period, the entire population works. An individual's gross income is determined by her individual innate endowment and her return from