



## Fiscal policy, composition of intergenerational transfers, and income distribution<sup>☆</sup>

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### ABSTRACT

In this paper, we characterize the relationship between the initial distribution of human capital and physical inheritances among individuals and the long-run distribution of these two variables. In a model with indivisible investment in education, we analyze how the initial distribution of income determines the posterior intergenerational mobility in human capital and the evolution of intragenerational income inequality. This analysis enables us in turn to characterize the effects of fiscal policy on future income distribution and mobility when the composition of intergenerational transfers is endogenous. To this end, we consider the following government interventions: a pay-as-you-go social security system, a tax on inheritance, a tax on capital income, a tax on labor income, and a subsidy on education investment.

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## 1. Introduction

The question of how inequality is generated and evolves over time is one of the major concerns in economic analysis. In the last decades a large number of studies have provided evidence supporting the presumption that intergenerational

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transfers are key to explain the empirical distribution of income and wealth.<sup>3</sup> Moreover, as intergenerational transfers could take the form of either physical capital (through bequests) or human capital (through investment in education), there is also empirical evidence documenting that both types of transfers affect the distribution of relevant economic variables among individuals. For instance, the empirical analysis of d'Addio (2007) confirms both the importance of education on mobility and the intergenerational persistence of inequality. In this paper, we follow this line of research and show analytically how the joint initial distribution of bequest and human capital, as well as fiscal policy, determines the average level and the intragenerational distribution of income in the long run.

Investment in education is a key factor of income inequality.<sup>4</sup> As was pointed out by Galor and Zeira (1993), and many other papers, there are two main features that give rise to this relationship. On the one hand, the technology of human capital accumulation exhibits a non-convexity since the investment in education is indivisible. This technological feature implies that access to education by the poorest individuals depends on whether they can borrow or not. On the other hand, when there are capital market imperfections resulting in borrowing constraints, those individuals with an income below some threshold value cannot afford the cost of education.<sup>5</sup> Therefore, the initial distribution of wealth determines the number of individuals who can acquire education and, thus, the aggregate stock of human capital and the rate of economic growth. This mechanism linking education with income distribution and growth was already widely analyzed in the literature by authors like Galor and Zeira (1993), García-Peñalosa (1995), Galor and Tsiddon (1997), and Owen and Weil (1998), among others.

Intergenerational transfers from parents to children account for a part of the observed inequality since these transfers help to ameliorate the negative effects of borrowing constraints on the accumulation of human capital. In an environment with credit market imperfections, only those individuals who receive a sufficiently large inheritance can invest in human capital (see Becker and Tomes, 1976; Eckstein and Zilcha, 1994; or Behrman et al., 1995). Regarding the dynamics of income distribution, Galor and Zeira (1993) show that, if one assumes credit market imperfections and a non-convex education technology, then the inherited distribution of wealth entirely determines the accumulation of human capital and the dynamics of the distribution of income.

The literature that we have reviewed above has not considered simultaneously the two types of intergenerational transfers we have mentioned: (i) transfers of physical capital by means of bequests; and (ii) transfers of human capital by means of the parents' investment in the education of their children. In this paper, we consider the interaction between the composition of intergenerational transfers and income distribution when education is financed by parents.<sup>6</sup> To this end, our paper develops a model of a small open economy populated by overlapping generations of individuals who differ in the amount and composition of inherited transfers from parents. In this economy the disposable lifetime income of an individual is fully determined by the bequest and human capital inherited from his parent. In addition to the imperfection of the capital market and the non-convexity of the education technology, we introduce two crucial assumptions. One is that the intergenerational transfers arise because individuals care about the starting opportunities of their children and thus they take into account the disposable income of their offspring. More precisely, we assume that parents derive utility from their contribution to the future lifetime income of their children without discriminating between the two types of intergenerational transfers used for making such a contribution. The second important assumption is that there exists an asymmetry between the two types of intergenerational transfers as they take place at different moments of individual's lifetime and they exhibit different contributions to the offspring's lifetime income. Individuals can only attend to the school before going to the labor market and receiving a physical inheritance from their parents. Moreover, due to the borrowing constraints, individuals can only have access to education if their parents pay its cost. Finally, as it is standard in the literature, we assume the marginal return on human capital investment is larger than the marginal return on physical capital investment. Given our motive for intergenerational transfers, parents obtain thus larger marginal gains from investing in their children's education than from leaving bequest.

The income of parents then drives the total contribution to the future lifetime income of their children. The composition of this contribution between the two types of transfers is endogenous in our model and depends on the relative returns of these transfers. However, since we assume that the investment in education is indivisible and that parents cannot force their children to give them transfers, if the cost of education is sufficiently large, parents will not finance the cost of education and, thus, they will only leave bequest to their offspring. Obviously, this occurs to parents with an income level below some threshold. In this way, the initial distribution of income drives the evolution of the composition of intergenerational transfers and, thus, the size of the educated population along the equilibrium path. This simple mechanism explains how the initial distribution of income determines the posterior evolution of intragenerational income inequality and of intergenerational mobility in terms of human capital. This dynamics implies that, under reasonable parameter values, non-educated but sufficiently rich parents will educate their descendents and educated parents will always educate their descendents. Therefore,

<sup>3</sup> See, for instance, Becker and Tomes (1986), d'Addio (2007), Gokhale et al. (2001), Gokhale and Kotlikoff (2002), Laitner (2002) or Wolf (2002), among many others.

<sup>4</sup> García-Peñalosa (1994) or Aghion et al. (1999) review the literature that examines the role of education on the link between distribution and growth.

<sup>5</sup> See, for instance, Dynarski (2002) or Keane (2002) for a discussion of the role of borrowing constraints on decisions concerning human capital acquisition.

<sup>6</sup> In a related paper, Zilcha (2003) shows that differences in the composition of intergenerational transfers may partly explain the cross-country differences in growth and inequality. However, he assumes that this composition is exogenously given.

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