



## On the optimal progressivity of the income tax code<sup>☆</sup>

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### Abstract

This paper computes the optimal progressivity of the income tax code in a dynamic general equilibrium model with household heterogeneity in which uninsurable labor productivity risk gives rise to a nontrivial income and wealth distribution. A progressive tax system serves as a partial substitute for missing insurance markets and enhances an equal distribution of economic welfare. These beneficial effects of a progressive tax system have to be traded off against the efficiency loss arising from distorting endogenous labor supply and capital accumulation decisions.

Using a utilitarian steady state social welfare criterion we find that the optimal US income tax is well approximated by a flat tax rate of 17.2% and a fixed deduction of about \$9,400. The steady state welfare gains from a fundamental tax reform towards this tax system are equivalent to 1.7% higher consumption in each state of the world. An explicit computation of the transition path induced by a reform of the current towards the optimal tax system indicates that a majority of the population

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currently alive (roughly 62%) would experience welfare gains, suggesting that such fundamental income tax reform is not only desirable, but may also be politically feasible.

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## 1. Introduction

Progressive income taxes play two potentially beneficial roles in affecting consumption, saving and labor supply allocations across households and over time. First, they help to enhance a more equal distribution of income, and therefore, possibly, wealth, consumption and welfare. Second, in the absence of formal or informal private insurance markets against idiosyncratic uncertainty progressive taxes provide a partial substitute for these missing markets and therefore may lead to less volatile household consumption over time.

However, progressive taxation has the undesirable effect that it distorts incentives for labor supply and saving (capital accumulation) decisions of private households and firms. The policy maker thus faces nontrivial trade-offs when designing the income tax code.

On the theoretical side, several papers characterize the optimal tax system when two of these effects are present. The seminal paper by Mirrless (1971) focuses on the traditional tension between equity and labor supply efficiency, whereas Mirrlees (1974) and Varian (1980) investigate the trade-offs between labor supply efficiency and social insurance stemming from progressive taxation. Aiyagari (1995) shows that, in the presence of uninsurable idiosyncratic uncertainty the zero capital tax result by Judd (1985) and Chamley (1986), derived from the desired efficiency of capital accumulation, is overturned in favor of positive capital taxation. That positive capital income taxes may be optimal in the presence of capital market imperfections was first shown by Hubbard and Judd (1986) for the case of liquidity constraints. Golosov et al. (2003) present a model with idiosyncratic income shocks and private information where positive capital taxes, despite distorting the capital accumulation decision, are optimal because they improve the allocation of income risk by alleviating the effects that the informational frictions have on consumption allocations. Albanesi and Sleet (2003) take a similar approach as Golosov et al. (2003) in characterizing (analytically and computationally) efficient allocations in a private information economy and show how to decentralize these allocations with income- and wealth-specific taxes.

Common to these papers is that, in order to insure analytical tractability, they focus on a particular trade-off and derive the qualitative implications for the optimal tax code. In contrast, in this paper we *quantitatively* characterize the optimal progressivity of the income tax code in an economic environment where *all three* effects of progressive taxes (the insurance, equity and efficiency effects) are present simultaneously.

In our overlapping generations economy agents are born with different innate earnings ability and face idiosyncratic, serially correlated income shocks as in Huggett (1993) and Aiyagari (1994). These income shocks are uninsurable by assumption; the only asset that is being traded for self-insurance purposes is a one-period risk-free bond which cannot be shortened. In each period of their finite lives agents make a labor-leisure and a

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