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# Minimum consumption and transitional dynamics in wealth distribution <sup>☆</sup>

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## Abstract

This paper investigates quantitatively how initial wealth holding differences across households are propagated through time in a one sector growth model economy. A key feature of the model is that household consumption cannot fall below a positive level each period. The existence of a minimum consumption requirement implies that the Intertemporal Elasticity of Substitution not only differs across households but also changes differently over time. This model is calibrated to match some key aggregate statistics of the U.S. economy. We find that, as in the data, the wealth distribution in our benchmark model economy exhibits a (brief) period of increasing inequality, a short period in which inequality diminishes and a steady level of inequality along the balanced growth path. However, our model illustrates that the evolution of inequality is very sensitive to the length of the transition path. Additionally, our model predicts an upsurge in wealth inequality following the productivity slowdown in the 1970s.

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## 1. Introduction

There is an extensive literature that investigates the relationship between inequality and growth. The interest in this issue started with Kuznets (1955) who stated his famous conjecture on the non-monotonic relationship between income inequality and level of per capita income. Since then, a host of researchers have explored various channels through which growth affects inequality and vice versa.<sup>1</sup> In this paper we contribute to the literature that examines the effects of growth on inequality. We study quantitatively the importance of differences in saving rates across households in driving changes in wealth inequality.

To analyze this channel we build a one sector growth model economy in which there is no uncertainty and capital markets are perfect. Households do not differ in labor earnings. The key feature we add to this otherwise standard neoclassical model is that household consumption cannot fall below a positive level in any period, i.e., we assume a minimum consumption requirement. The existence of this requirement implies that the intertemporal elasticity of substitution (IES) not only differs across households with different levels of wealth but also changes differently over time. This different behavior of the IES governs the evolution of saving rates and drives all changes in wealth inequality in our model economy. The existence of perfect capital markets and the quasi-homotheticity of preferences imply that the Engel curves are affine functions of the level of wealth. This property of the model ensures that the distribution of wealth does not affect the aggregate dynamics of the model—provided that no household's income falls below the consumption requirement—, whereas the wealth distribution does change along the transition path.

To assess the quantitative significance of this channel we focus our study on observed patterns of wealth inequality in the U.S. during the period 1870–1970. The model is calibrated to match some key aggregate statistics of the U.S. economy. Wealth distribution in the initial period is set to match historical data from the U.S. for that period. We simulate our model economy and compare the evolution of the wealth distribution of our model with that experienced in the U.S. We find that, as in the data, the wealth distribution in our benchmark model economy exhibits a (brief) period of increasing inequality, a short period in which inequality diminishes and a steady level of inequality once the economy reaches its balanced growth path. The intuition of these results is as follows: for low levels of aggregate income (therefore, of earnings) the existence of a minimum consumption level implies that poor households not only have smaller saving rates but also increase their savings more slowly than wealthy households decrease theirs. This implies a rise in wealth inequality. As aggregate income rises the behavior of the saving rates is reversed. Poor households increase their savings at a faster rate and inequality diminishes. Once the economy reaches its balanced growth path there are no changes in inequality.

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<sup>1</sup>see Benabou (1996) or Aghion et al. (1999) for a survey of the literature.

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