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Capital Accumulation in an Economy with Dynasties and Uncertain Lifetimes

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This paper studies how the lack of an annuities market affects savings behavior and intergenerational transfers in a dynastic overlapping generations economy. I find that the answer to this question depends crucially on altruism. On the one hand, if the altruistic bequest motive is operative, then the lack of annuity markets enhances capital accumulation. On the other hand, if the altruistic bequest motive is not operative, the absence of annuity markets can either increase or decrease aggregate savings. I characterize under which conditions capital accumulation is enhanced. I also prove that an overlapping generations economy with altruism and uninsurable lifetime risk faces capital overaccumulation relative to the modified Golden Rule. The efficient allocation corresponding to the modified Golden Rule can be decentralized as a competitive equilibrium by a pay-as-you-go social security system, and this can only be done if individuals are altruistic.

Key Words: capital accumulation; uncertain lifetimes; altruism; annuities market; wealth distribution.

1. INTRODUCTION

The precautionary demand for savings that arises in an economy with no annuities market and lifetime uncertainty has received a great deal of attention since the seminal work of Yaari (1965). For instance, Davies (1981) has shown that uninsurable lifetime risk may be important in

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understanding the life-cycle savings behavior of households. Abel (1985) has argued that accidental bequests may explain a sizeable fraction of the large inherited wealth that Kotlikoff and Summers (1981) have measured for U.S. economy.[2] Most analyses in this literature have ignored the role of altruism in motivating the savings behavior of individuals. This paper shows that this is an important omission in studying the impact of lifetime uncertainty on capital accumulation and wealth distribution.

This paper studies how the lack of annuity markets affects savings behavior and intergenerational transfers in an overlapping generations economy with uncertain lifetimes and altruism. I find that the answer to this question depends crucially on altruism. On the one hand, if the altruistic bequest motive is operative, the lack of annuity markets enhances capital accumulation. On the other hand, if the altruistic bequest motive is not operative, the absence of annuity markets can either increase or decrease aggregate savings.

I prove that an economy with uninsurable lifetime uncertainty faces capital overaccumulation in relation to the modified Golden Rule. I also show that annuity insurance eliminates capital overaccumulation when the bequest motive is operative. In this case optimal capital holdings are perfectly elastic at the modified Golden Rule interest rate, and therefore, there is no capital overaccumulation. Annuity insurance, however, does not eliminate capital overaccumulation when the bequest motive is not operative. In this case, aggregate savings are not perfectly elastic and can be an increasing or a decreasing function of the interest rate. Hence, it is possible that annuity insurance enhances capital accumulation. I demonstrate that this can only occur if aggregate savings are an increasing function of the interest rate.

While annuity insurance does not always lead the economy to the modified Golden Rule allocation, there exists a pay-as-you-go social security system that decentralizes the modified Golden Rule as a competitive equilibrium. Furthermore, this paper demonstrates that in an economy with accidental bequests, a pay-as-you-go social security system can decentralize the socially optimal allocation only if individuals are altruistic. The intuition behind this finding is very simple. At the socially optimal allocation, individuals' consumption is independent of the mortality history of their dynasty. This is possible in a competitive equilibrium only if there are

[2] Friedman and Warshawsky (1990) have shown that a bequest motive and yield differentials between individual lifetime annuities and alternative investments can account for the thinness of the private annuity market in the U.S. economy.