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Optimal long-run fiscal policy: Constraints, preferences and the resolution of uncertainty

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Abstract

We construct a computational dynamic stochastic overlapping generations general equilibrium model with uncertain lifetimes and explore the impact of policy stickiness (specifically, a major reform will preclude future reforms for a generation) on optimal long-run fiscal policy. Under such circumstances, entitlement reforms exhaust a valuable option to move in the future. We explore the conditions under which the gain to waiting is large enough to induce optimizing policymakers to delay reforming a suboptimal system. We also allow for the uncertainty to have ARCH characteristics and explore the impact of time-varying uncertainty on the optimality of delayed policy action.

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1. Introduction

A growing share of government expenditures, in the United States and in other developed countries, is devoted to transfer programs benefiting the elderly. These

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programs involve substantial and very long-term commitments to members of the current labor force. Combined with aging populations, this spending pattern has led to serious questions about the viability of current fiscal policy, both in the United States and in other developed countries (e.g., Auerbach et al., 1999). But how and when to deal with these apparent fiscal imbalances is very difficult to ascertain, even if one's social objectives are clearly specified. With considerable uncertainty about future mortality, productivity and other factors affecting fiscal balance, the plausible range of outcomes under current policy is enormous (e.g., Lee and Tuljapurkar, 2001). The political difficulty of changing such well-established programs imparts a further brake to the policy reform process. Policy-makers shy away from touching the 'third rail' of politics, as the U.S. social security system has been called in graphic commemoration of its popularity.

This paper investigates the nature of optimal fiscal policy, in an environment endowed with many of the important characteristics of the current fiscal climate. Using an infinite horizon, overlapping-generations model, we estimate the optimal levels of taxes, transfers and debt when there is population uncertainty and restrictions on the government's ability to change policy. We also consider how optimal policy is influenced by household attitudes toward risk, and how the prospect of resolving uncertainty may affect actions today. This last point, in particular, is of interest, because it addresses the point one frequently hears in the policy debate, that with such enormous uncertainty about future circumstances, it is better to wait until more information is available. Clearly, the desirability of waiting depends on whether the future brings a resolution of uncertainty or simply new shocks to replace the old.

This paper builds on our previous work on the subject (Auerbach and Hassett, 2001). In that paper, we provided a theoretical analysis of optimal fiscal policy in an overlapping-generations model with several sources of uncertainty, and then provided simulations of the model, with and without restrictions on government policy, to estimate the effects of imposing these constraints. The current paper extends our previous analysis in a number of important ways. Most fundamentally, using an alternative simulation technique, we are now able to derive optimal government policies in an infinite horizon setting, rather than in the short-horizon case to which the previous paper's simulations were limited. This change, in turn, means that we are now able to examine the stochastic steady states under different policy rules, to trace out not only the impact effects of government policies, but also the long-run effects. In addition, we consider variations in preferences and in the environment of uncertainty. We estimate the sensitivity of optimal policy to the degree of household risk aversion, and replace the assumption of stationary shocks to life expectancy with an ARCH model in which the current environment can either be more or less uncertain than the environment expected for the future.

The remainder of the paper is organized as follows. The next section sets up the basic model and reviews the results of the previous literature. Section 3 describes the simulation techniques we use to solve for the government's value function and optimal policy in different environments, based on the use of neural networks. Section 4 presents our basic results for optimal policy and considers the impact of