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Macroeconomic effects of Medicare ☆

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ABSTRACT

This paper develops an overlapping generations model to study the macroeconomic effects of an unexpected elimination of Medicare. We find that a large share of the elderly respond by substituting Medicaid for Medicare. Consequently, the government saves only 46 cents for every dollar cut in Medicare spending. We argue that a comparison of steady states is insufficient to evaluate the welfare effects of the reform. In particular, we find lower ex-ante welfare gains from eliminating Medicare when we account for the costs of transition. Lastly, we find that a majority of the current population benefits from the reform but that aggregate welfare, measured as the dollar value of the sum of wealth equivalent variations, is higher with Medicare.

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1. Introduction

Medicare is one of the largest health insurance programs in the world. In 2015 it provided health insurance to about 52 million Americans and comprised 17.3 percent of federal outlays, or 3.6 percent of GDP. This paper aims to improve our understanding of the role of Medicare in the macroeconomy. To do this, we develop a general equilibrium overlapping generations model with incomplete markets and heterogeneous consumers. In the model, consumers differ along the dimensions of age, education, health status, labor productivity, assets, and health insurance status. The consumers are subject to idiosyncratic uncertainty on their labor productivity and health, the latter of which determines their medical expenses. While shocks to labor productivity are uninsurable, medical expenses are partially insurable in the form of Medicare, Medicaid, private, and employer-provided health insurance. We use the model to calculate the effects of an unexpected elimination of Medicare. This numerical experiment enables us to capture the effects of Medicare on macroeconomic aggregates, insurance enrollment, government spending, and welfare.

We start by comparing the steady state of the economy with and without Medicare. Eliminating Medicare leads to a 2.7 percentage point reduction in payroll taxes and a 1.3 percent increase in wages. Wages increase because capital increase as consumers raise their saving to finance the higher cost of medical expenses in old age. The combination of higher wages and lower payroll taxes raises labor supply and generates an increase in output per capita of 2.0 percent.

We then compare the insurance distribution in the two economies. Our results show that a large share of the elderly respond by substituting Medicaid for Medicare. This increases spending on

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Medicaid from 3.6 to 5.3 percent of GDP. Spending on Social Security benefits also increases from 4.7 to 4.8 percent of GDP because wages surge following the rise in capital. As a result, government spending as a share of GDP only declines by 1.5 percentage points following the elimination of Medicare. We thus find that the government saves only 46 cents for every dollar it cuts on Medicare due to offsetting spending on Medicaid and Social Security.

Next, we examine the ex-ante welfare effects of the reform on unborn consumers under the veil of ignorance. We find that ex-ante welfare is higher in the steady state without Medicare. In particular, we find that consumption has to increase by 3.6 percent in all periods and contingencies in the economy with Medicare to make an unborn consumer under the veil of ignorance indifferent between the two steady states. This follows from the observation that the reform leads to lower taxes and higher wages, both of which facilitate higher consumption and saving.

We then examine the ex-post welfare effects of the reform on the current cohorts. To do this, we first solve for the transition path between the economy with and without Medicare. This enables us to account for the costs of transiting between the steady states. In particular, it enables us to account for the costs of accumulating assets to finance the higher cost of medical expenses in old age.

We start by examining the ex-post welfare effects on consumers in different age brackets. Our estimates show that the majority of the young would benefit from the policy change due to the reform's effect on payroll taxes and wages. The majority of the elderly, on the other hand, are better off in the economy with Medicare. After summing across all age brackets, we find that 56.8 percent of the population alive in the period of the reform would benefit from the elimination of the program.

Next, we quantify the ex-post welfare effects on those that benefit and lose from the reform by computing the dollar value of how much wealth must change in the initial steady state to make the consumers weakly better off in the economy with Medicare than in the transition to the economy without Medicare. We find that those that benefit from the reform experience an average welfare gain that is equivalent to receiving $3,600 higher wealth in the steady state with Medicare. In contrast, those that lose from the reform experience an average welfare loss that is equivalent to at least a $27,700 reduction in wealth. As a result, we find that the elimination of Medicare lowers aggregate welfare, and that the per capita welfare loss of the reform is equivalent to at least a $9,900 reduction in wealth in the initial steady state. Note that this is a lower bound for the welfare loss of the reform. This follows from the fact that consumers are not allowed to borrow in our model. Consequently, some consumers will be strictly better off in the economy with Medicare even if they forfeit all of their current wealth. In this case, we find that the constraint binds for 9.4 percent of the population.

Lastly, we consider an additional ex-post welfare measure that quantifies the welfare effect by computing the average consumption equivalent variation across consumers. We show that our finding that aggregate welfare declines following the elimination of Medicare is robust to using this alternative welfare measure.

The paper is organized as follows. The next section relates our contribution to the literature. In Section 3 we lay out the environment of our economy and set up a quantitative life cycle model. This section also presents the different types of health insurance that are available in the economy. After calibrating the model in Section 4, we turn to the policy experiments. Section 5 starts by studying the macroeconomic effects of eliminating Medicare. The section also considers an alternative reform where we eliminate both Medicare and Medicaid. Section 6 discusses the robustness of our results to alternative parameterizations of the model. Lastly, Section 7 concludes and gives directions for future research.

2. Relation to the literature

This paper is related to several strands of the literature. Our framework is similar to the one Conesa and Krueger (1999) use to study the aggregate effects of Social Security reforms. Their model has two essential features for our analysis. First, it takes a life cycle perspective on consumption, assets, and labor decisions. Second, it accounts for general equilibrium feedback effects. We extend their model by incorporating idiosyncratic risk to health and by allowing consumers to enroll in private and public health insurance programs.

We build on the literature that uses overlapping generations models to study the macroeconomic effects of health and aging. Attanasio et al. (2010) study the implications of an aging population for the financing of Medicare, but they do not explicitly model Medicaid, a program that we show is essential to determine consumers' saving and insurance behavior upon changes to Medicare. Pashchenko and Porapakkarm (2013) study the welfare effects of the Patient Protection and Affordable Care Act (ACA). Our model is closely related to theirs, except that we endogenize the retirement decision, since 20 percent of the population aged 65 and older are still active in the labor market. Jung and Tran (2016) use a model with endogenous health to quantify the effects of ACA. They do not, however, study transitional dynamics. Conesa and Krueger (1999) and Krueger and Ludwig (2016) argue that a full characterization of the transition path is crucial for policy evaluation. Comparative statics exercises fail to account for potentially large transitional costs, and hence give at best a partial picture of the effects of policy reforms. Bairoliya et al. (2017) and İmrohoroğlu and Zhao (2017) develop overlapping generations models to study health insurance and social security reforms in China. McGrattan and Prescott (2017) propose an overlapping generations model to study the impacts of fiscal policies in economies that are undergoing a demographic change. Lastly, Borella et al. (2017) examine the importance of including gender and marriage in structural life cycle models.

We also contribute to the literature on precautionary saving and its interaction with medical expenditure shocks. Hubbard et al. (1994) and Palumbo (1999) study the role of out-of-pocket medical expenditure risk in life cycle models. De Nardi et al. (2010) find that accounting for medical expense risk is important in explaining the observed saving of the elderly.

Lastly, our paper is related to the empirical literature studying social insurance programs. Finkelstein (2007) and Finkelstein and McKnight (2008) estimate the impact of Medicare on insurance coverage, health care utilization, and spending. They find that the introduction of Medicare increased the share of elderly with insurance coverage by 75 percentage points and led to a significant reduction in the elderly's exposure to out-of-pocket medical expenditure risk. Finally, Michaud et al. (2017) examine the impact of demographic changes on Social Security Disability Insurance trends.

3. Model

The following subsections present the benchmark model used in the analysis. The model is a discrete time, general equilibrium, overlapping generations model with ex-ante heterogeneous consumers, where consumers differ in age, educational level, health status, labor productivity, assets, and health insurance status.

3.1. Consumers

The economy is populated by a continuum of ex-ante heterogeneous consumers. Consumers are indexed by type $s = (j, e, h, \eta, a, i)$,

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