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# Quantitative analysis of health insurance reform: Separating regulation from redistribution <sup>☆</sup>

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## ABSTRACT

Two key components of the recent U.S. health reform are a new regulation of the individual health insurance market and an increase in income redistribution in the economy. Which component contributes more to the welfare outcome of the reform? We address this question by constructing a general equilibrium life-cycle model that incorporates both medical expenses and labor income risks. We replicate the key features of the current health insurance system in the U.S. and calibrate the model using the Medical Expenditures Panel Survey dataset. We find that the reform decreases the number of uninsured more than twice and generates substantial welfare gains. These welfare gains mostly come from the redistributive measures embedded in the reform, rather than from the regulatory changes.

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## 1. Introduction

The Patient Protection and Affordable Care Act, which culminated a long and vigorous health reform debate, was finally signed by the President of the U.S. in Spring 2010. This bill introduces a wide range of measures aiming primarily to increase health insurance coverage. In particular, the bill substantially changes the rules under which the individual insurance market operates and introduces penalties for those without insurance. At the same time it contains a set of measures that increase income redistribution in the economy. The goal of this paper is to provide a quantitative analysis of the upcoming reform in order to isolate the welfare effects of the new regulation of the individual market from the effects of the increased income redistribution.

To do this, we construct a general equilibrium life-cycle model where agents face two types of risks: uninsurable labor income risk and persistent medical expenses risk that can be partially insured. People with high medical expenses have

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higher disutility from work and suffer a loss in productivity. We allow agents to be heterogeneous by educational level (exogenously fixed), which affects their ability to generate income and to access employer-based health insurance.

We replicate the key features of the current health insurance system. First, in our model the insurance system consists of three components: individual market, employer-based market, and public insurance. Second, public insurance is available only to the lowest-income individuals, while people with high income are more likely to get employer-based coverage. Third, the majority of the uninsured can obtain insurance only from the individual market because they do not have access to the employer-based market and are not eligible for public insurance. At the same time this group of people tends to have low income. Fourth, public insurance is free and employer-based premiums are community rated. Those who purchase insurance in the individual market face risk-rated premiums that depend on their current medical shock. After calibrating the model to the key facts of the U.S. insurance system using the Medical Expenditures Panel Survey, we introduce the changes specified in the Patient Protection and Affordable Care Act (hereafter called the Bill).

These changes can be broadly divided into two groups. First, there is a new regulation of the individual health insurance market that aims to create a risk-pooling mechanism outside the employer-sponsored market. In particular, insurance companies will be banned from conditioning premiums on individuals' health status or history of claims. The price of an insurance policy can only vary by age. This restriction is known as age-adjusted community rating. To prevent cream-skimming by insurers, another provision in the Bill is guaranteed issue which prevents insurance companies from denying coverage to individuals based on their health status. A possible outcome of a combination of community rating with guaranteed issue is an adverse selection spiral and to prevent this, the Bill requires all individuals without health insurance to pay a penalty unless the insurance premium constitutes too high a proportion of their income.

Second, the Bill includes a set of redistributive measures. In particular, the Bill includes provisions to expand Medicaid. Currently, Medicaid covers several categories of population (for instance, adults with dependent children, pregnant women) with income below a threshold that varies significantly from state to state.<sup>1</sup> After the reform *all* people under 65 years old with income below 133% of the Federal Poverty Line (FPL) will become eligible for Medicaid. Also low-income people will be able to get subsidies when buying insurance in the individual market. The goal of the subsidy is to keep premiums people pay for a standard insurance policy below a prespecified percentage of their income.

When evaluating the welfare effects of the reform, as a welfare criteria we use the average utility of people who are alive at the beginning of the reform and live through the transition period. This welfare function favors redistribution across people with different income net of medical expenses. The reform introduces two additional channels of redistribution in the economy: first, from the healthy to the sick (through community rating in the individual market); second, from the high income to the low income (through subsidies and Medicaid expansion). Since neither of these new redistributive mechanisms is conditioned on income net of medical expenses, the resulting welfare effect of each mechanism is unclear: any redistribution from the healthy to the sick involves some redistribution from the healthy who are poor to the sick who are rich. Similarly every redistribution from the rich to the poor will involve some redistribution from the rich who are sick to the poor who are healthy. To adequately gauge the welfare effects of these redistributive channels we need to carefully capture the correlation between labor income and medical expenses. We do this by explicitly accounting for the fact that people with high medical expenses have lower productivity and lower labor supply.

We find that the reform has a large effect on the fraction of the uninsured in the economy: this number decreases from 19.7% to 8.9%. The reform has the largest effect on young people in the lowest educational group, with the fraction of uninsured among high-school dropouts aged between 25 to 29 years old decreasing from 61.2% to 7.5%. Also the reform induces more participation in the individual market with the fraction of individually insured increasing from 7.3% to 18.5%.

In terms of welfare, we find that the reform brings substantial gains equivalent to 0.64% of the annual consumption. However, these welfare gains mostly come from the redistributive measures embedded in the reform. If the reform is implemented without subsidies and Medicaid expansion, its welfare effects are significantly smaller.

The intuition behind this result is as follows. Welfare gains from the reform are largely driven by the change in the welfare of low-income people. For the majority of this group, insurance premiums constitute a high fraction of income and they gain a lot from having subsidized coverage. On the other hand, the new regulation of the individual market by itself has a limited effect on health insurance affordability for low-income people who often prefer to stay uninsured if not subsidized.

Our paper is related to the literature on dynamic general equilibrium models with heterogeneous agents and incomplete markets (Imrohoroglu, 1989; Hugget, 1993; Aiyagari, 1994). We belong to the branch of this literature that augments the standard incomplete market model with an idiosyncratic health expenditure risk. For example, Attanasio et al. (2011) evaluate general equilibrium effects of different Medicare reforms; Kopecky and Koreshkova (2011) study the effect of medical and nursing home expenses on wealth accumulation over a life cycle. The closest paper to ours is Jeske and Kitao (2009) who study tax subsidies for employer-based health insurance in the environment where private health insurance markets are explicitly modeled. Comparing to Jeske and Kitao (2009), our model introduces endogenous labor supply, public health insurance and also has more dimensions of heterogeneity of individuals: we allow for a full life cycle and different

<sup>1</sup> As of 2009, 17 states had a Medicaid eligibility threshold below 50% of the Federal Poverty Line (FPL), 17 states had it between 50 to 99% FPL, and 17 states had it higher than 100% FPL (Kaiser Family Foundation, 2010).

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