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# Employment-based health insurance and aggregate labor supply<sup>☆</sup>

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## ABSTRACT

We study the impact of the U.S. employment-based health insurance system on the employment rate, the shares of full-time/part-time workers, and aggregate hours worked in a general equilibrium life cycle model with incomplete markets and idiosyncratic risks in both income and medical expenses. In contrast to most Europeans, who get universal health insurance from the government, most working-age Americans get health insurance through their employers. We find that the employment-based health insurance system provides Americans with an extra incentive to work and work full-time. In a calibrated version of the model, we assess the extent to which the different health insurance systems account for the differences in employment rate and full-time/part-time shares of workers between the U.S. and European countries. Our quantitative results suggest that the different health insurance systems can account for a significant fraction of the differences in employment rate and full-time/part-time shares of workers between the two regions. In addition, we find that the employment-based health insurance system is one of the reasons why many Americans work more than Europeans.

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## 1. Introduction

There are substantial differences in the labor supply behaviors of Americans and Europeans. For instance, using data from the OECD Labor Market Database (2000), we find that the employment rate for the working-age population in the United States is 76.9%, while it is only 66.8%, on average, in major European countries (see Table 1).<sup>1</sup> In addition, among the American workers, 91.1% of them are working *full-time*, while this number is only 84.0% in these European countries. These facts together imply that the share of the working-age population that is working *full-time* in the U.S. is much higher than

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<sup>1</sup> Here the major economies include France, Germany, UK, and Italy, which are the four largest economies in Europe. As shown in Table 15 in the appendix, the statement remains true when the comparison is extended to include other developed European countries.

**Table 1**  
Employment rate and the full-time share: U.S. vs. major European countries.

	Employment rate (%)	Full-time workers (as % of all workers)	Full-time workers (as % of the working-age popu.)
U.S.	76.9	91.1	70.1
France	67.3	85.8	57.7
Germany	68.7	82.6	56.8
Italy	57.6	88.4	50.9
UK	73.7	79.2	58.4
Average(Major 4)	66.8	84.0	55.9

Data source: OECD labor market data (2000).

that in European countries: 70.1% versus 55.9%. On the other hand, it is well-noted that there exists significant difference between the U.S. and European countries regarding how health care is delivered, especially for the working-age population. In this paper, we quantitatively evaluate the extent to which the different health care systems can account for the different employment rates and full-time/part-time shares between the U.S. and Europe.

The U.S. features a unique employment-based health insurance system for its working-age population (hereafter EHI).<sup>2</sup> In contrast to most Europeans, who get universal health insurance from the government, most working-age Americans get health insurance through their employers. Since medical care expenses are quite sizable and volatile, and there is no good alternative health insurance available in the private market, EHI can be highly valuable to risk-averse agents (much more than its actuarially fair cost). In addition, the value of EHI is amplified by a unique feature of U.S. tax policy—its cost is exempted from income taxation. Since, for the most part, only full-time workers are offered EHI, working-age Americans have a stronger incentive than Europeans to work and to work full-time.<sup>3</sup>

What are the effects of EHI on worker's decision of working or not and the choice between working full-time and part-time? Can the different health insurance systems account for the different employment rates and full-time/part-time shares between the U.S. and Europe? To address these questions, we develop a general equilibrium life-cycle model with endogenous labor supply and idiosyncratic risks in both income and medical expenses.<sup>4</sup> In terms of modeling, this paper is closely related to a number of recent papers that study an extended incomplete-markets model with uncertain medical expenses.<sup>5</sup> We calibrate the model to the key moments of the current U.S. economy. In particular, our benchmark model economy captures the key feature of the U.S. health insurance system: EHI for the working-age population and the universal government-provided public health insurance for the elderly. Then, we construct a counterfactual economy by replacing EHI in the benchmark model with a government-financed universal health insurance program that mimics the European system.<sup>6</sup> We find that when EHI is replaced by a universal health insurance system financed by additional lump-sum taxes, the model-generated changes in the employment rate and the full-time/part-time shares of workers are fairly consistent with the empirical regularities documented for the U.S. and European countries. That is, as the health insurance system is changed, the employment rate decreases by 5%, and the share of workers that are working full-time drops by 5%. These changes together imply that the full-time employment rate declines by 8% in the model.

Our paper is related to a recently growing literature that uses quantitative macroeconomic models to account for the different aggregate hours worked in the U.S. and Europe.<sup>7</sup> It is well known that there is a substantial difference in aggregate hours worked between the US and Europe (see Prescott, 2004; Rogerson, 2006). For instance, the aggregate hours worked per person (aged 20–64) in the United States are approximately a third higher than in the major European economies (see Table 2).<sup>8</sup> Why do Americans work so much more than Europeans? This question has attracted increasing attention from macroeconomists, partly due to the importance of aggregate labor supply in the macroeconomy. While our analysis focuses on the cross-country differences in employment rate and full-time/part-time share of workers, it is worth noting that our findings also contribute to the understanding of the cross-country difference in aggregate hours worked. This is because the employment rate and the full-time/part-time share often play an important role in shaping the aggregate labor supply of

<sup>2</sup> Note that this paper focuses on the U.S. economy before the Affordable Care Act reform.

<sup>3</sup> For instance, Farber and Levy (2000) estimate that the chance of being provided with employer-sponsored health insurance was less than 10% for new jobs that require less than 35 hours of work per week.

<sup>4</sup> A contemporary paper by Laun and Wallenius (2013) also captures the role of health in understanding the cross-country difference in labor supply, but it features a very different model and, thus, emphasizes different mechanisms. In it, Laun and Wallenius develop a life-cycle model with endogenous health investment and study how public health insurance affects the level of health investment and, thus, the labor supply decision. In contrast, we emphasize the uncertainty of medical expenses in an incomplete market model with medical expense shocks, and we focus on the insurance value of EHI and its link to labor supply decisions.

<sup>5</sup> Such as Jeske and Kitao (2009), De Nardi et al. (2010), Kopecky and Koreschkova (2014), Hansen et al. (2014), Pashchenko and Porapakarm (2013), Janicki (2014) Nakajima and Tuzemen (2014), and Jung and Tran, 2016.

<sup>6</sup> In the U.S., over 90% of insured working-age people obtain health insurance from their employer. In Europe, while health care is provided through a wide range of different systems across countries, these systems are primarily publicly funded through taxation, which are in spirit similar to a universal health insurance system (Hsiao and Heller, 2007).

<sup>7</sup> (Chakraborty et al., 2015; Erosa et al., 2012; Gunner et al., 2012; Ohanian et al., 2008; Prescott, 2004; Rogerson, 2006; 2007; Wallenius, 2013), etc.

<sup>8</sup> As shown in Table 14 in the appendix, the statement remains true when the comparison is extended to include other developed European countries.

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