



Price elasticity of expenditure across health care services[☆]

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ABSTRACT

Policymakers in countries around the world are faced with rising health care costs and are debating ways to reform health care to reduce expenditures. Estimates of price elasticity of expenditure are a key component for predicting expenditures under alternative policies. Using unique individual-level data compiled from administrative records from the Chilean private health insurance market, I estimate the price elasticity of expenditures across a variety of health care services. I find elasticities that range between zero for the most acute service (appendectomy) and -2.08 for the most elective (psychologist visit). Moreover, the results show that at least one third of the elasticity is explained by the number of visits; the rest is explained by the intensity of each visit. Finally, I find that high-income individuals are five times more price sensitive than low-income individuals and that older individuals are less price-sensitive than young individuals.

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1. Introduction

U.S. policymakers are debating health care reform options to reduce the large and growing cost of medical care. The Medicare Modernization Act of 2003 and the Affordable Care Act of 2010 both attempt to address this issue, relying crucially on assumptions regarding consumer responsiveness to out-of-pocket costs. To evaluate the potential benefit of different health care reform options in reducing costs, policymakers need a better understanding of expenditure elasticity, i.e., the ways in which consumer demand for

health services changes in response to differences in out-of-pocket costs (referred to as “price” in this paper). Consumers hoping to limit their own out-of-pocket costs respond to price in two ways: by changing the frequency of service or by changing the quality of care to reduce per-visit costs. Understanding how individuals’ trade off frequency and quality is thus crucial for policymakers seeking to control costs.

Unfortunately, there is little empirical evidence on how consumers respond to differences in price and the ways in which this varies by type of health service (e.g., emergency room care, routine visits) and by individual characteristics (e.g., income, age, education, socioeconomic status). This lack of research is primarily due to the difficulty of identifying exogenous, or externally caused, variation in prices. In health insurance markets, individuals select their plans using information that they – and not the provider or insurer – possess about their health status. This “information asymmetry” can lead to selection bias in those individuals who expect to use more services than the average person or the ones that are risk-averse. Thus, any type of health event or shock that is related to the individual’s health status will therefore be correlated with the coin-
surance rate of the chosen plan, creating an endogeneity problem that biases estimates for price elasticity.

Only a few studies have been able to identify sources of exogenous price variation in health care usage, and they have been able to

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do so only in limited settings. For example, using the RAND Health Insurance Experiment of the 1970s, Manning et al. (1987) randomized consumers into health insurance plans with varying levels of generosity. Kowalski (2009) and Eichner (1998) used health shocks to individuals with large families who shifted their coinsurance rates (i.e., the percentage of medical expenses, beyond the deductible, that must be covered by the patient) from a fixed amount to zero to estimate the impact of such a change on individual's total expenditures. In these papers, researchers focused on total expenditures but were not able to examine how sensitivity to price varied across different types of health services or different individual characteristics.

In the literature of price elasticity, this is the first paper, to my knowledge, that estimates elasticities in a context of a middle-income country, like Chile. Therefore this could be a good starting point for future research. Moreover, the estimates are comparable to the ones found in the literature for high-income countries, like the U.S.

In this study I use a unique and detailed data set to describe new evidence on how health care consumers respond to changes in the price of care. I describe the ways in which price elasticities vary both by type of health service and consumer demographics. This study uses individual-level census data from the Chilean private health insurance market. Several features of the Chilean data make it useful for understanding the price elasticity of health expenditures in the United States. First, the health care system in Chile incorporates several policy mechanisms currently under debate in the U.S., such as health insurance exchanges, individual mandates, and regulations on the private health insurance system (e.g., premiums based on community ratings and minimum levels of benefits). Second, as in the United States, the private insurance market is a significant part of health care system in Chile. Third, detailed information from five datasets is available concerning patient characteristics, family member characteristics, plan characteristics, and prices (e.g., claims and out-of-pocket expenditure by individual and health care service). I combine these data to construct a panel of plan choices, fees for services at service providers, coinsurance rates and insurer payment caps for all participants in private sector plans. The Chilean health care system is thus an interesting case to study on several levels, and access to the complete private-sector administrative records allows me to analyze the entire population insured under the private system. Finally, the coverage and richness of the data allow me to examine the heterogeneity of price responses, allowing for a richer understanding of consumer behavior in response to differences in price.

The paper is organized as follows. Section 2 provides a brief literature review. Section 3 presents background information on the health insurance system in Chile. Section 4 describes the econometric approach and instrumental variable strategy used in this study. Section 5 describes the data and sample selection. Section 6 outlines concerns with the approach. Section 7 shows the results of the main regressions across health care services for two main types of health services: urgent (acute) health care services and elective health care services, while Section 8 presents a deeper analysis of the price elasticity across age and income. Section 9 outlines the checks for robustness. Section 10 is the conclusion.

2. Literature review

Many researchers have tried to quantify the impact of information asymmetry, e.g., the differences between an individual's and a provider's knowledge of the individual's health status, on consumer welfare. Akerlof (1970) and Rothschild and Stiglitz (1976) were the first to formalize the idea of asymmetric information and its impact on insurance markets. Several studies (Einav et al., 2008;

Cohen and Einav, 2007; Finkelstein and Poterba, 2004; Lusting, 2007; Bajari et al., 2006) have examined the presence of asymmetric information in different markets, either testing for adverse selection or quantifying the implications of asymmetric information. Some researchers have attempted to measure moral hazard in insurance markets, e.g., an individual's tendency to take undue risks because he or she is not bearing the cost of those risks (Chiappori et al., 1998; Kaestner and Dave, 2006; Vera-Hernandez, 2003).

Other papers have explored price elasticity in health markets. Using data from the RAND Health Insurance Experiment of the 1970s, Manning et al. (1987) found a price elasticity of -0.2 . Categorizing the sample as nonusers, users only of outpatient services, and users of both inpatient and outpatient services, they found that consumer use of medical services responds to changes in out-of-pocket costs. Furthermore, they found that cost-sharing affects primarily the number of medical visits, rather than the intensity of each of those visits, i.e., the price of each visit. They found similar results for use of outpatient services for both acute and chronic conditions.

The research to date has been unable to address the different types of reactions people have when faced with health shocks, such as car accidents, appendectomies, etc. Furthermore, they have not estimated price responsiveness for different types of health services or for individuals with different demographic backgrounds. Eichner (1998) estimated a basic relationship between total expenditure and out-of-pocket costs using the minimum-distance method.¹ To avoid the selection problem, he incorporated the idea that identical families face different marginal costs as their expenditure suddenly reaches the deductible. He found an elasticity of -0.7 . Kowalski (2009) estimated the price elasticity of expenditure for medical care across groups with varying levels of medical expenditures. In her paper, she addressed three of the main problems present in this market: censoring at zero, the selection problem and the lack of variation across the distribution of expenditures. She used the differences in marginal prices between individuals who have an injured family member and individuals who do not as in Eichner (1998). She found price elasticities to be stable at -2.3 across the 0.65–0.95 quantiles of the expenditure distribution. These two papers share the same limitations: They estimate price elasticity only over total expenditure, focus on subsamples of population, and focus on specific events or changes in price.

In this paper, I address both sets of issues. First, I explore the relationship between individual behavior and both type of health shock (and thus type of health service) and demographic background. Second, I draw on data regarding the entire population of Chileans insured in the private market,² not just one particular sub-population or one specific event.

Finally, to my knowledge there is no research on low and middle-income countries on price elasticity of expenditure. However, there are some papers that study income elasticity of health care spending. Musgrove (1983), Hitiris and Posnett (1992) and DiMatteo (2003), studied this elasticity for a group of countries, Latin American countries, OECD countries and US and Canada. All of them found similar results, with elasticities ranging from 1 to 1.5. Also, DiMatteo (2003) found that income elasticities are higher at low-income levels and lower at higher income levels.

¹ This method is described in Newey (1987).

² Several papers study the Chilean health insurance market. Some focus on policy (Ferreiro, 2000; Aedo and Sapelli, 1999), others focus on collusion (Agostini et al., 2004), and others study how public and private systems interact (Sapelli and Torche, 2001; Hoffer, 2006; Sanhueza and Ruiz-Tagle, 2002). Few of these papers give a detailed explanation of how the market works, and none of them study asymmetries of information or, in particular, the price elasticity of expenditure on medical care.

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