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The effects of health shocks on life insurance consumption, economic growth, and health expenditure: A dynamic time and space analysis

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ABSTRACT

Using 2004–2013 annual data from 22 countries, this study empirically tests whether changes in perceived health status (i.e., "health shocks") can affect the impacts otherwise made by economic growth and life insurance growth on health expenditures. We applied the structural time-varying parameter panel vector autoregression model to establish a multinational empirical model and derived four main results. (1) The health shocks variable, represented by perceived health by socioeconomic status, has positive dynamic effects on economic growth, insurance consumption growth, and health expenditure growth. (2) As for the impact of the gross domestic product variable, insurance was found to finance health expenditures in the short term. (3) Under dynamic conditions, at high-income levels, health shocks stimulate economic growth, but at low-income levels, health shocks can make economic growth stagnant; it can also reduce health expenditures. (4) At low-income levels, insurance cannot diversify health shocks. On account of financial crises, there have been structural changes in the global economy, and they affect the relationships among economic growth, insurance consumption, and health expenditures.

1. Introduction

The impacts of health shocks on economic activities have recently received considerable attention. Regarding their general effects on householders, health shocks usually produce two economic costs—namely, an increase in health expenditures due to disease, and a decrease in national income due to reducing both productivity and labor force size. Today, insurance is used to hedge these two costs, but the hedging effects are uncertain. Increases in the two costs would give rise to information asymmetry, which would in turn erode the pricing mechanism inherent in insurance markets and generate further economic effects. Hence, health shocks would generate impulsive connections among health expenditures, national income, and insurance markets, and the connections would change over time. The authors of most previous studies made considerable effort to use microeconomic concepts to analyze the impacts of health shocks on national income, labor forces, health expenditures, and insurance; at present, however, there is a conspicuous lack of empirical research that examines the effects of health shocks on international health expenditures, based on macroeconomic and finance concepts.

To address this research gap, the current study makes use of an insurance market factor, and also uses macroeconomic concepts to examine whether health shocks would affect the impacts of insurance consumption and economic growth on health expenditures. Furthermore, it tests whether those effects would change over time. First, this study leverages health expenditure data to delineate the effects of health shocks on those expenditures (i.e., consumption of healthcare goods and services, investments healthcare facilities). Attaining a better understanding of health expenditure trends is useful for governments as they formulate medical care, public health, and prevention policies. Most research on international healthcare expenditures focuses on Organization for Economic Co-operation and Development (OECD) countries while discussing the effects of growth on government medical care expenditures. As shown in panel A of Table 1 and Fig. 1, the ratio of private and public health expenditures to gross domestic product (GDP) in OECD countries has seen a substantial growth trend over the last 10 years. However, regarding private spending, most countries have seen stagnation and decreases, largely due to the recent global economic recession (panel B of Table 1). In general, countries vary regarding how they finance healthcare expenditures, given their differing healthcare resource priorities.

There are two concepts inherent in measuring and determining

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Table 1
The ratios of public and private expenditure to GDP among 40 countries.
Source: OECD Facebook 2014: Economic, Environmental and Social Statistics − © OECD 05/05/2014.

Panel A: Public and private expenditure on health

	Public expenditure				Private expenditure				Total			
As a percentage of GDP	1980	1990	2000	2011 or latest available year	1980	1990	2000	2011 or latest available year	1980	1990	2000	2011 or latest available year
Australia	3.9	4.5	5.4	6.1	2.3	2.3	2.7	2.9	6.1	6.8	8.1	8.9
Austria	5.1	6.1	7.6	8.2	2.3	2.3	2.4	2.6	7.5	8.4	10.0	10.8
Belgium	..	..	6.1	8.0	0.0	0.0	2.1	2.5	6.3	7.2	8.1	10.5
Canada	5.3	6.6	6.2	7.9	1.7	2.3	2.6	3.3	7.0	8.9	8.8	11.2
Chile	..	..	3.4	3.5	0.0	0.0	3.1	4.0	..	..	6.4	7.5
Czech Republic	..	4.3	5.7	6.3	0.0	0.1	0.6	1.2	..	4.4	6.3	7.5
Denmark	7.9	6.9	7.3	9.3	1.1	1.4	1.4	1.6	8.9	8.3	8.7	10.9
Estonia	..	..	4.1	4.7	0.0	0.0	1.2	1.2	..	..	5.3	5.9
Finland	5.0	6.3	5.1	6.8	1.3	1.5	2.1	2.2	6.3	7.7	7.2	9.0
France	5.6	6.4	8.0	8.9	1.4	2.0	2.1	2.7	7.0	8.4	10.1	11.6
Germany	6.6	6.3	8.3	8.7	1.8	2.0	2.1	2.7	8.4	8.3	10.4	11.3
Greece	3.3	3.6	4.8	5.9	2.6	3.1	3.2	3.2	5.9	6.7	8.0	9.1
Hungary	..	..	5.1	5.1	0.0	0.0	2.1	2.8	..	..	7.2	7.9
Iceland	5.5	6.8	7.7	7.3	0.7	1.0	1.8	1.8	6.3	7.8	9.5	9.0
Ireland	6.7	4.3	4.6	6.0	1.5	1.7	1.5	2.9	8.1	6.0	6.1	8.9
Israel	..	..	4.7	4.7	0.0	0.0	2.8	3.0	7.7	7.1	7.5	7.7
Italy	..	6.1	5.8	7.2	0.0	1.6	2.0	2.0	..	7.7	7.9	9.2
Japan	4.5	4.5	6.1	7.9	1.8	1.3	1.5	1.7	6.4	5.8	7.6	9.6
Korea	0.8	1.5	2.2	4.1	2.8	2.3	2.1	3.3	3.6	3.9	4.3	7.4
Luxembourg	4.8	5.0	6.4	5.6	0.4	0.4	1.1	1.1	5.2	5.4	7.5	6.6
Mexico	..	1.8	2.4	2.9	0.0	2.6	2.7	3.3	..	4.4	5.1	6.2
Netherlands	5.1	5.4	5.0	..	2.3	2.6	2.9	..	7.4	8.0	8.0	11.9
New Zealand	5.1	5.6	5.9	8.5	0.7	1.2	1.7	1.8	5.8	6.8	7.6	10.3
Norway	5.9	6.3	6.9	7.9	1.0	1.3	1.5	1.4	7.0	7.6	8.4	9.3
Poland	..	4.4	3.9	4.8	0.0	0.4	1.7	2.0	..	4.8	5.5	6.9
Portugal	3.3	3.7	6.2	6.7	1.8	2.0	3.1	3.6	5.1	5.7	9.3	10.2
Slovak Republic	..	..	4.9	5.6	0.0	0.0	0.6	2.3	..	..	5.5	7.9
Slovenia	..	..	6.1	6.5	0.0	0.0	2.1	2.3	..	..	8.3	8.9
Spain	4.2	5.1	5.2	6.8	1.1	1.4	2.0	2.5	5.3	6.5	7.2	9.3
Sweden	8.2	7.4	6.9	7.7	0.7	0.8	1.2	1.7	8.9	8.2	8.2	9.5
Switzerland	..	4.2	5.5	7.1	0.0	3.8	4.4	3.9	7.2	8.0	9.9	11.0
Turkey	0.7	1.6	3.1	..	1.8	1.1	1.8	1.6	2.4	2.7	4.9	..
United Kingdom	5.0	4.9	5.6	7.8	0.6	1.0	1.5	1.6	5.6	5.8	7.0	9.4
United States	3.7	4.9	5.9	8.5	5.3	7.5	7.8	9.2	9.0	12.4	13.7	17.7
EU 28	..	..	..	6.4	..	..	..	2.2	..	..	..	8.6
OECD	4.8	5.0	5.5	6.7	1.1	1.5	2.2	2.6	6.6	6.9	7.8	9.4
Brazil	..	..	2.9	3.1	..	..	4.3	5.8	..	..	7.2	8.9
China	..	..	1.8	1.6	..	..	2.9	3.5	..	..	4.6	5.2
India	..	..	1.1	1.1	..	..	3.2	2.8	..	..	4.3	3.9
Indonesia	..	..	0.7	1.0	..	..	1.2	1.8	..	..	2.0	2.7
Russian Federation	..	..	3.2	3.3	..	..	2.2	2.9	..	..	5.4	6.2
South Africa	..	..	3.4	3.5	..	..	4.9	5.1	..	..	8.3	8.5

Panel B: Categories for high and modest cuts to health expenditure growth

High cuts to health expenditure growth countries				Modest cuts to expenditure growth countries[a]			
	Annual average growth rate in current health expenditure per capita, in real terms		Drop in growth		Annual average growth rate in current health expenditure per capita, in real terms		Drop in growth
	2000–09	2009–11			2000–09	2009–11	
Greece	5.3	−11.1	−16.5	Australia	3.0	0.0	-3.0
Ireland	7.0	−6.6	−13.6	Austria	2.2	0.2	−2.0
Iceland	1.6	−3.8	−5.4	Norway	2.8	0.5	−2.3
Estonia	7.2	−3.0	−10.2	Belgium	3.7	0.6	−3.2
Portugal	1.8	−2.2	−4.0	Mexico	3.1	0.7	−2.3
United Kingdom	5.3	−1.8	−7.1	France	2.1	0.7	−1.3
Denmark	3.3	−1.8	−5.0	Canada	3.5	0.8	−2.8
Slovenia	3.8	−1.2	−5.0	New Zealand	4.5	0.8	−3.7
Czech Rep.	5.9	−0.8	−6.8	United States	3.4	1.3	−2.1
Spain	4.1	−0.5	−4.6	Switzerland	1.9	1.4	−0.5
Italy	1.6	−0.4	−1.9	Finland	3.9	1.6	−2.3
Netherlands	5.5	1.0	−4.5	Sweden	3.4	1.8	−1.6
Poland	7.1	1.2	−5.9	Germany	2.1	2.1	0.0
Slovak Rep.	10.9	2.8	−8.1	Hungary	3.1	2.6	−0.5
				Israel	1.3	3.4	2.1
				Japan	2.8	4.9	2.1

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