Impact of Health Care Spending on Health Outcomes

Ethan Maddy*

May 10, 2020

Abstract

A fixed effects model to determine the impact, if any, health spending as a percent of Gross National Income (GNI) has on health outcomes. Data sourced for this research is from the World Bank's Health Nutrition and Population Statistics DataBank. The data used in this research includes information from 259 unique countries from 2001-2020. Findings show that health spending has a significant impact on health outcomes, including death rate, life expectancy, and the prevalence of malnutrition.

*Department of Economics, University of Oklahoma. E-mail address: ethanmaddy@ou.edu

1 Introduction

Empirical evidence has been somewhat inconclusive about the strength of the connection between health care spending and health outcomes. This paper uses the Health Nutrition and Population Statistics data from the World Bank to model the correlation between health expenditure percent of Gross National Income (GNI) and death rate, incidence of HIV, life expectancy at birth, malnutrition prevalence, mortality from CVD, cancer, diabetes, or CRD, number of infant deaths, number of maternal deaths, number of people who are undernourished, and percent of the population that use at least basic sanitation services.

2 Literature Review

In-depth analysis in final paper.

Farag (2013)

Hu and Mendoza (2013)

Martin, Rice, and Smith (2008)

3 Data

The data source for this research is the World Bank's Health Nutrition and Population Statistics DataBank. The data used includes information from 259 unique countries from 2001-2020.

4 Empirical Methods

Unlike most econometric models, this research will explore how one independent variable, health care spending as a perfect of GNI, affects many dependent variables, health outcomes. The empirical model used is depicted by the equation below:

$$Y_i = \beta_0 + \beta_1 \times X_1 + u \tag{1}$$

Where Y_i is a dependent health outcome variable and X_1 is health spending as a percent of GNI. The parameters of interest are Y_i. 9 different models are run with this equation.

X_1 = Health Spending percent of GNI

Y_1 = Death Rate

Y_2 = HIV

Y_3 = Life Expectancy

Y_4 = Malnutrition

Y_5 = Mortality

Y_6 = Infant Deaths

Y_7 = Maternal Deaths

Y_8 = Undernourished

Y_9 = Sanitation

5 Research Findings

TBD

6 Conclusion

TBD

References

Farag, Nandakumar A. K. Wallack S. Hodgkin D. Gaumer G. Erbil C., M. 2013. "Health expenditures, health outcomes and the role of good governance." *International journal of health care finance and economics* :33–52.

Hu, Bingjie and Ronald U. Mendoza. 2013. "Public health spending, governance and child health outcomes: revisiting the links." *Journal of Human Development and Capabilities* :285–311.

Martin, S., N. Rice, and P. C. Smith. 2008. "Does health care spending improve health outcomes? Evidence from English programme budgeting data." *Journal of Health Economics* :826–842.

Figures and Tables

Placement for visualization - not sure what to put here.

Table 1: Health Spending on Y_i

	Death Rate	HIV	Life Expectancy
HealthSpendPCNT	-0.703	1.535	-0.740
	(0.463)	(2.829)	(0.237)
Num.Obs.	638	864	3971
R2	0.980	0.975	0.999
R2 Adj.	0.974	0.966	0.999
R2 Within	0.009	0.001	0.019
R2 Pseudo			
AIC	-263.5	2691.9	-5382.7
BIC	481.1	3758.5	-3842.4
Log.Lik.	298.728	-1121.952	2936.352
FE: 'Country Name'	X	X	X
FE: Year	X	X	X
Std. errors	Clustered ('Country Name')	Clustered ('Country Name')	Clustered ('Country Name')

	Malnutrition	Mortality	Infant Deaths
HealthSpendPCNT	-0.703	1.535	-0.740
	(0.463)	(2.829)	(0.237)
Num.Obs.	638	864	3971
R2	0.980	0.975	0.999
R2 Adj.	0.974	0.966	0.999
R2 Within	0.009	0.001	0.019
R2 Pseudo			
AIC	-263.5	2691.9	-5382.7
BIC	481.1	3758.5	-3842.4
Log.Lik.	298.728	-1121.952	2936.352
FE: 'Country Name'	X	X	X
FE: Year	X	X	X
Std. errors	Clustered ('Country Name')	Clustered ('Country Name')	Clustered ('Country Name')

	Maternal Deaths	Undernourished	Sanitation
HealthSpendPCNT	-0.610	-1.387	31.523
	(0.312)	(0.573)	(9.176)
Num.Obs.	3605	2548	3725
R2	0.998	0.990	0.987
R2 Adj.	0.998	0.989	0.986
R2 Within	0.010	0.017	0.039
R2 Pseudo			
AIC	-3893.1	313.4	20129.1
BIC	-2438.4	1330.0	21641.3
Log.Lik.	2181.536	17.322	-9821.554
FE: ‘Country Name‘	X	X	X
FE: Year	X	X	X
Std. errors	Clustered (‘Country Name‘)	Clustered (‘Country Name‘)	Clustered (‘Country Name‘)