PCR and Measurement Error

Isaac Liu

May 12, 2021

Application: Government Share of Healthcare Spending and Life Expectancy

In the left column in the table below I first regress the life expectancy at birth for all individuals in a given country and year on a measure of government spending as a share of total health expenditure. In the middle column I include the economic controls/covariates of GDP per capita (PPP), GNI per capita (PPP), Survey Mean Income/Consumption Per Capita, ILO GDP per person employed, and Net Foreign Assets Per Capita, all from the World Bank. In the rightmost column I instead use the first principal component combining these covariates.

I standardize all variables by subtracting the mean and dividing by the standard deviation, linearly interpolate data between known observations, and remove country-years with missing values for any of the economic indicators.

	Life Expectancy at Birth (Years)				
	(1)	(2)	(3)	(4)	(5)
Govt. Share of Health Exp.	0.549***	0.248***	0.022***	0.287***	0.024***
	(0.019)	(0.018)	(0.007)	(0.018)	(0.007)
Covariates	None	Econ Indicators	Econ Indicators	PCs	PCs
Fixed Effects	No	No	Yes	No	Yes
Observations	1,995	1,995	1,995	1,995	1,995
R^2	0.301	0.571	0.987	0.515	0.987
Adjusted R^2	0.301	0.568	0.985	0.514	0.985
Residual Std. Error	0.836	0.657	0.121	0.697	0.121
F Statistic	859.741***	175.773***	1665.195***	1055.924***	5935.195***

Note: *p<0.1; **p<0.05; ***p<0.01
All variables are standardized.

Appendix

Figure 1: Correlations Between Covariates and Life Expectancy

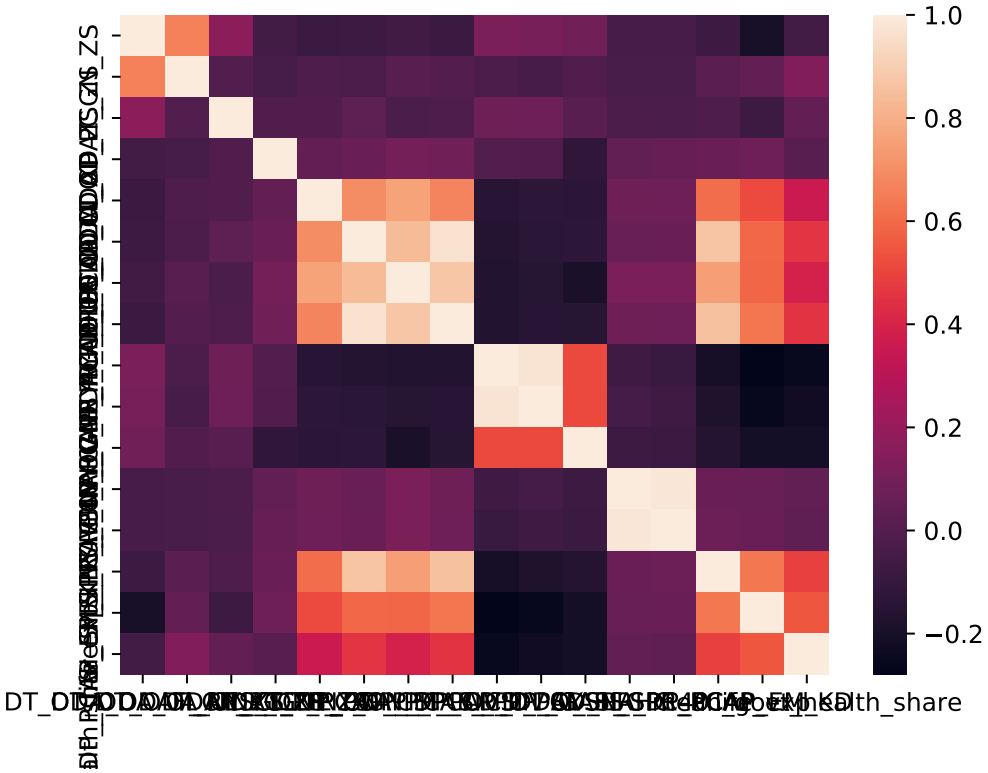

Figure 2: Economic Measures PCA Loadings

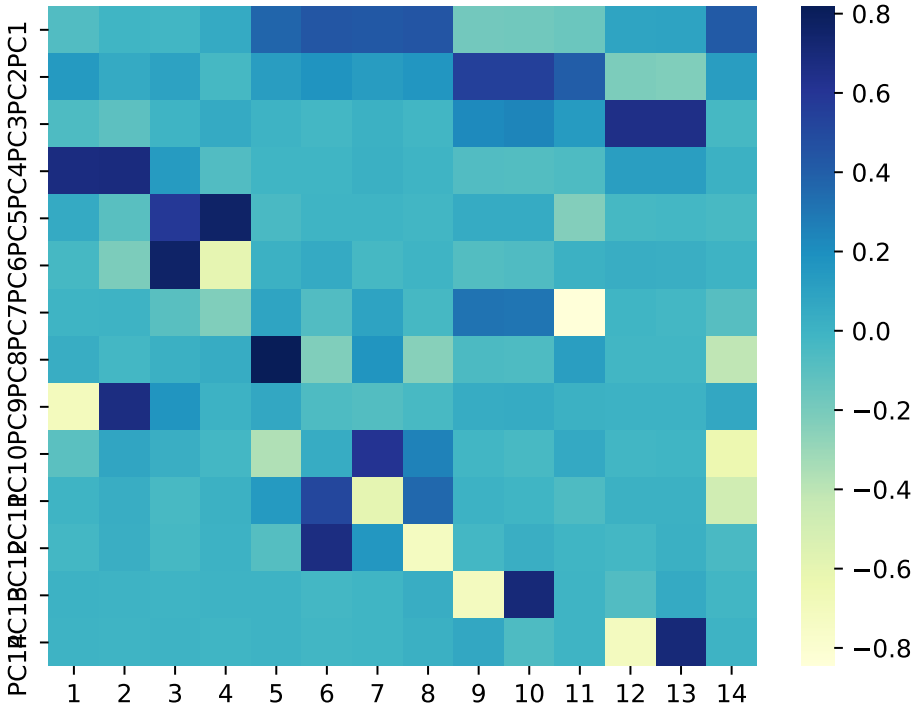

Figure 3: Economic Measures PCA Share of Variance Explained