PCR and Measurement Error

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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 right column I perform the same regression, adding on the first principal component combining 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.

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)
Government Share of Health Expenditure	0.567***	
	(0.019)	
x1		0.328***
		(0.019)
x2		0.286***
		(0.011)
Observations	1,965	1,965
R^2	0.322	0.494
Adjusted R^2	0.322	0.494
Residual Std. Error	0.824	0.712
F Statistic	932.284***	958.990***
Note:		*p<0.1; **p<0.05; ***p<0.01
		All variables are standardized.

Though the coefficients are not readily interpretable, they do differ from each other

ADD TEST to show coefficients differ? I think this also would not be easy to interpret since the independent variables are different...

In both cases, they are significant.

Notably, we demonstrate a higher R^2 using the principal component model.

Appendix

Figure 1: Correlations Between Covariates and Life Expectancy

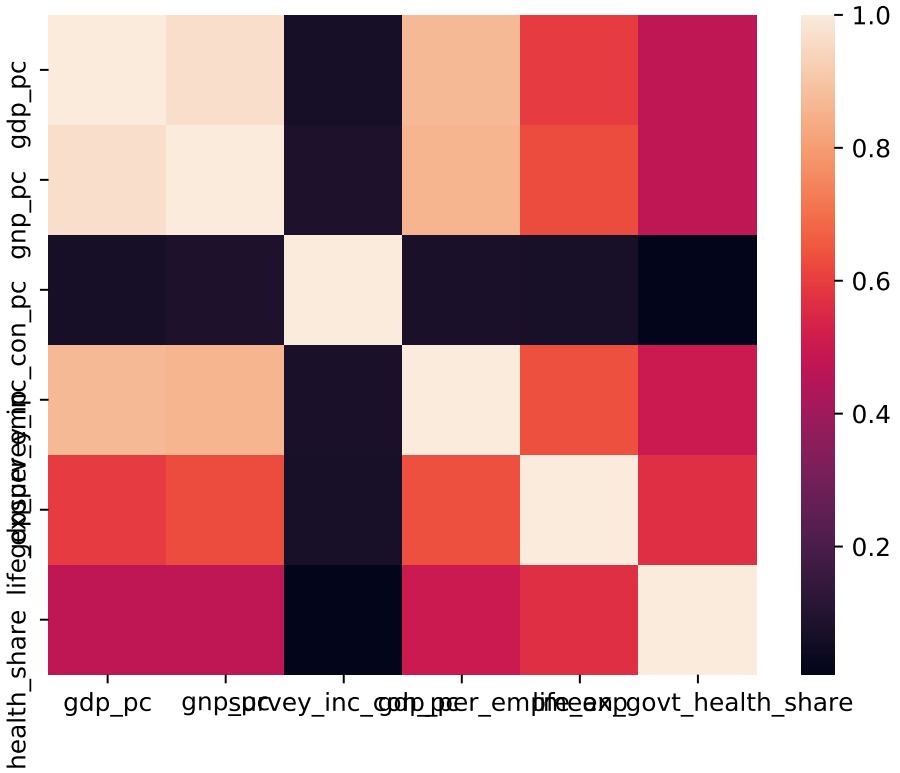

Figure 2: Economic Measures PCA Loadings

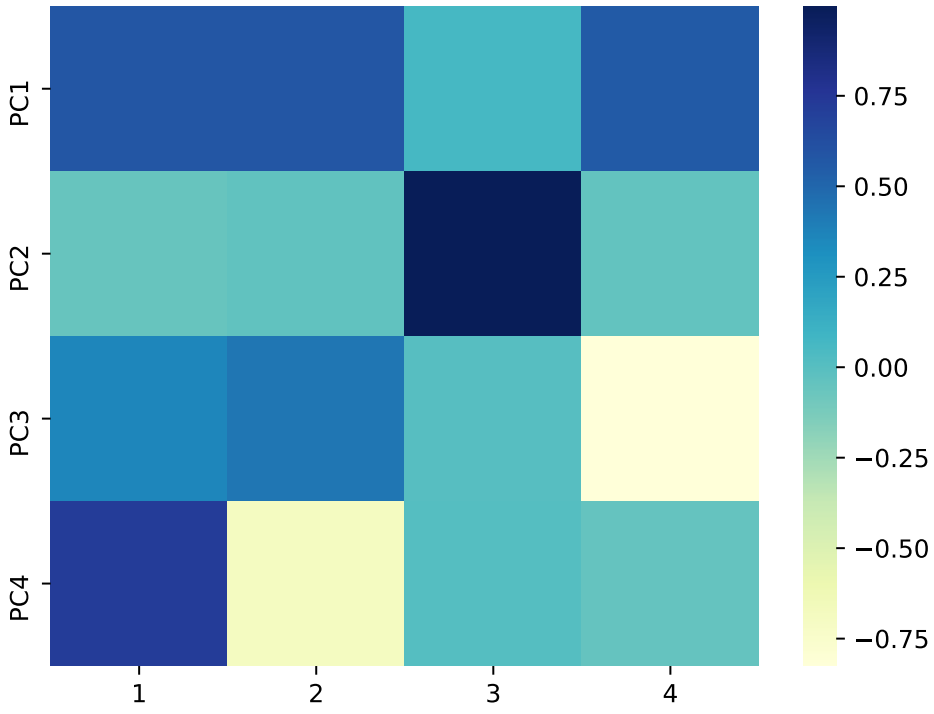

Figure 3: Economic Measures PCA Share of Variance Explained