# 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 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*** | 0.271*** | 0.022*** | 0.289*** | 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 | 1,994 | 1,994 | 1,994 | 1,994 | 1,994 |
| $R^2$ | 0.302 | 0.546 | 0.987 | 0.510 | 0.987 |
| Adjusted $R^2$ | 0.301 | 0.543 | 0.985 | 0.510 | 0.985 |
| Residual Std. Error | 0.836 | 0.676 | 0.120 | 0.700 | 0.121 |
| F Statistic | 859.952*** | 198.486*** | 1460.518*** | 1037.286*** | 4740.757*** |

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

# Appendix

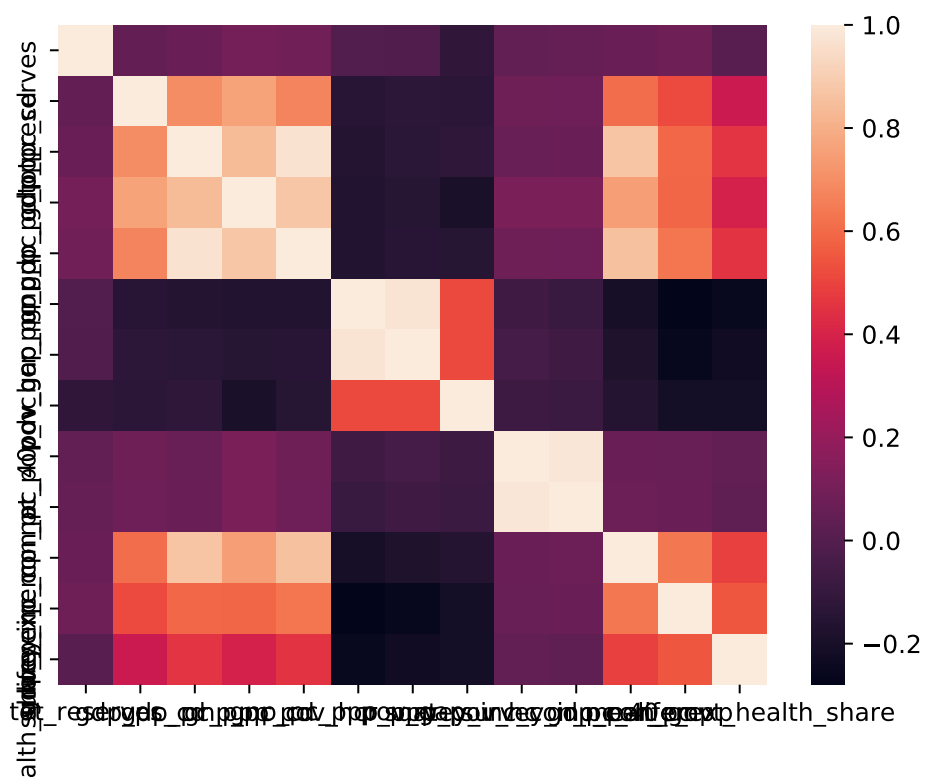Figure 1: Correlations Between Covariates and Life Expectancy
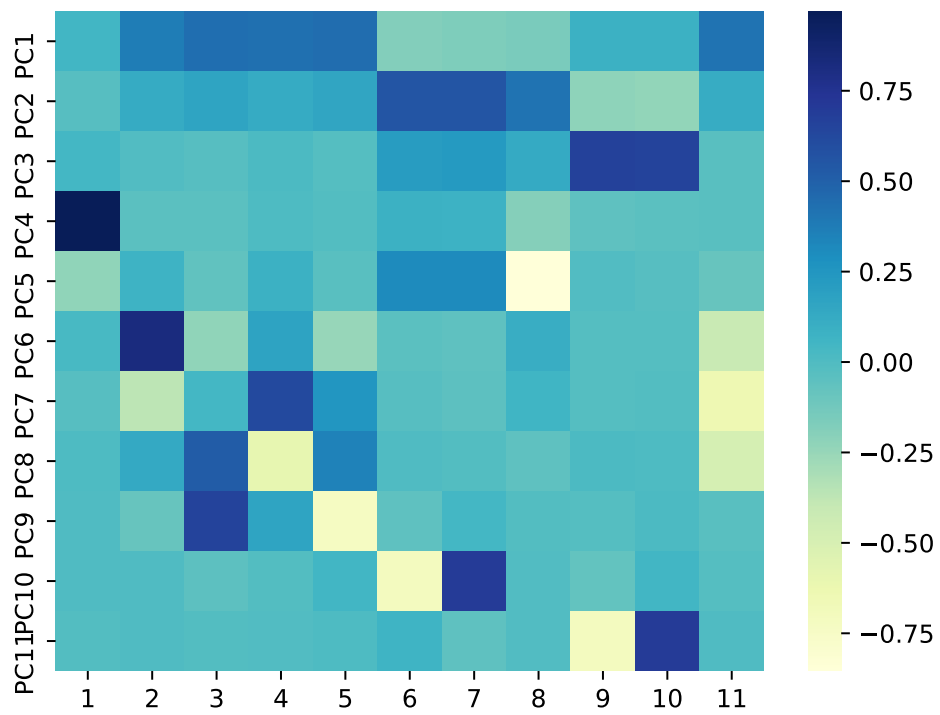
Figure 2: Economic Measures PCA Loadings

Figure 3: Economic Measures PCA Share of Variance Explained



Cumulative explained variance
6 Principal Components explain [95.0%] of the variance.