# 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. | 0.564*** | 0.256*** | 0.024*** | 0.298*** | 0.026*** |
| | (0.018) | (0.018) | (0.008) | (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 |
| $R^2$ | 0.319 | 0.573 | 0.987 | 0.518 | 0.987 |
| Adjusted $R^2$ | 0.318 | 0.569 | 0.985 | 0.517 | 0.985 |
| Residual Std. Error | 0.826 | 0.656 | 0.121 | 0.695 | 0.121 |
| F Statistic | 931.676*** | 176.737*** | 2458.091*** | 1069.682*** | 413673698880527.3 |

*Note:* *p<0.1; **p<0.05; ***p<
All variables are standar

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|  | Life Expectancy at Birth (Years) | | | |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| Govt. Share of Health Exp. | 0.973*** | 0.954* | 0.730*** | 1.036* |
|  | (0.150) | (0.426) | (nan) | (0.209 |
| Covariates | None | Ginis | Ginis | PCs |
| Fixed Effects | No | No | Yes | No |
| Observations | 20 | 20 | 20 | 20 |
| $R^2$ | 0.701 | 0.837 | 1.000 | 0.704 |
| Adjusted $R^2$ | 0.684 | 0.612 | nan | 0.670 |
| Residual Std. Error | 0.518 | 0.575 | inf | 0.530 |
| F Statistic | 42.206*** | 3.723** | 2086066891665751200266118914568097890304.000*** | 20.255* |

*Note:* $^*$p<0.1; **

All variable

# Appendix

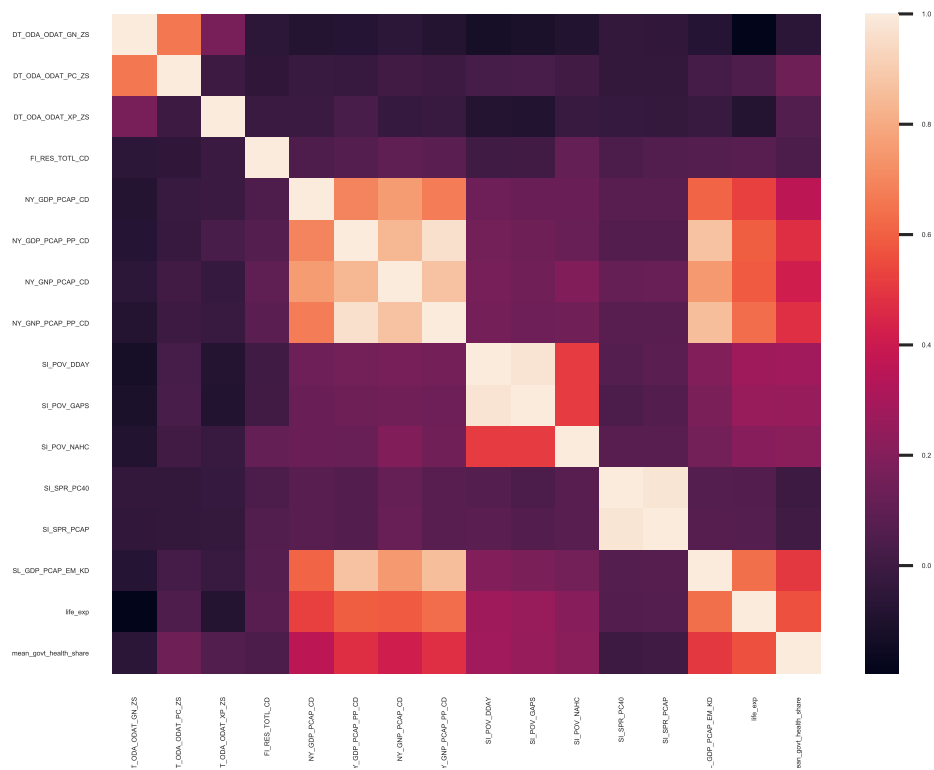Figure 1: Correlations Between Covariates and Life Expectancy
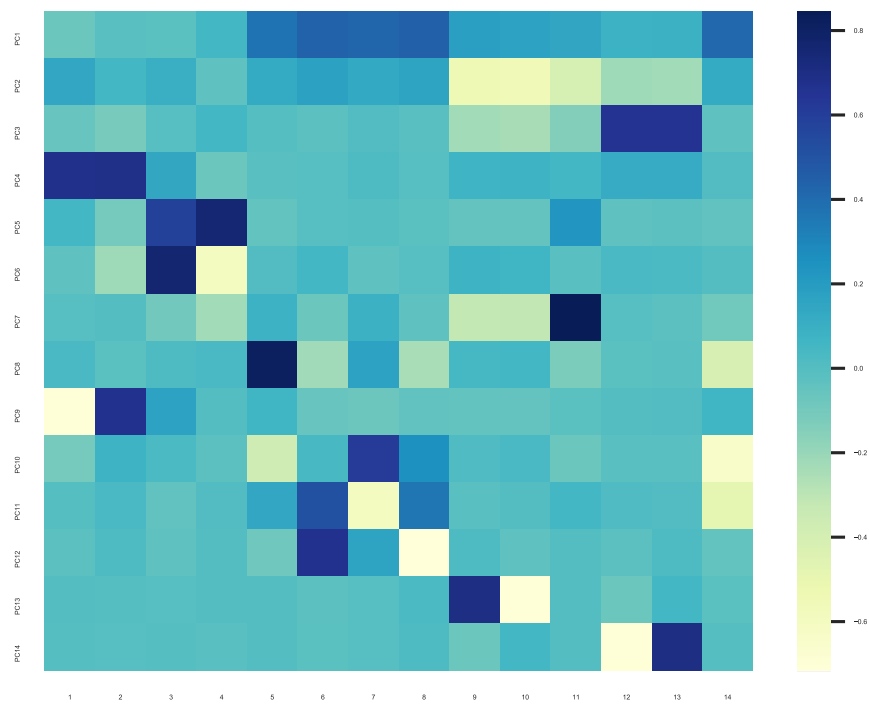
Figure 2: Economic Measures PCA Loadings

Figure 3: Economic Measures PCA Share of Variance Explained