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Economic Growth Theory

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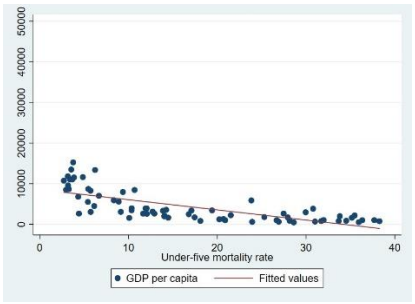
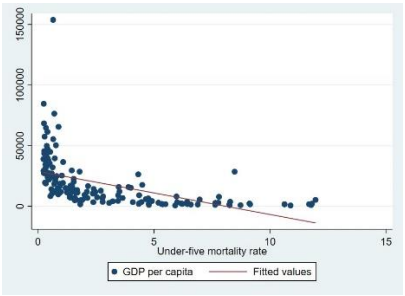
Intro and Hypothesis

Infant mortality is a problem in developing countries but what is it correlated with. Well, this is an observable statistic and has had findings in the past where negative trends have been seen between infant mortality and GDP so as GDP increases infant mortality decreases. This is seen in observable data as seen in the graphs pictured below this paragraph. My study in this project is to measure how living standards and infant mortality are correlated and causal. My hypothesis is, I expect there to be a high significant level seen between infant mortality rate decreasing as standard of living increases representing a causal relationship.



1950 Infant Mortality Rate VS GDP



2018 Infant Mortality Rate VS GDP

I choose to use 1950 and 2018 in this study to compare the oldest age to the newest age showing a trend, as well as the graphs being much easier to read since if extracted for all time it is hard to see a trend.

Importance of study

This study holds importance globally for two main reasons. One is that it allows us to assist countries with high infant mortality rates by finding out what causes their rates to be higher on average. Two, it allows other countries with these high infant mortality rates to be able to grow and develop technologically and academically allowing for better societal growth in scale. By allowing these other countries to grow and develop and can encourage innovation in sciences, reading, philosophy, etc. as seen in trends in the past in previous revolutions. This study aims to pinpoint a reason why infant mortality rates are so high in certain countries, hopefully inspiring these countries to better the causations that are found to be significant in the study.

Variables

Infant Mortality: Mortality rate for children under 5 years old.

GdpPerCapita: Countries GdpPerCapita level.

Edu: Countries average combined average years of education.

LifeExpectancy: The average life expectancy in a country (male and female).

Urban: The percentage of the population living in urban areas in a country.

Design

In this study I will be conducting an OLS regression using three models with three similar but different equations.

Model 1: $Infant\ Mortality = \beta_0 + \beta_1 GdpPerCapita$

Model 2: $Infant\ Mortality = \beta_0 + \beta_1 GdpPerCapita + \beta_2 Edu$

Model 3: $Infant\ Mortality = \beta_0 + \beta_1 GdpPerCapita + \beta_2 Edu + \beta_3 LifeExpectancy + \beta_4 Ubran$

` In this regression I will be using GDPpercapita instead of LogGDPpercapita, this is because the reason I use GDPpercapita is because I am looking at a total effect (volume) rather than percentage. We are also comparing Infant Mortality to total living standards in a country not just GDP by interpreting using a increase of GDP by 1 instead of 1 percentage point it shows a higher volume of impact for a smaller change.

In order to determine the significance of the models I will be looking for the relatively high r squared value (above 25%) as well as using the significance levels for all variables in the regression determining if its significant a 10%, 5%, or 1%.

Results

	Model 1	Model 2	`
GDP per capita	-0.000***	-0.001***	-0.001***
	0	0	0
Combined - average years of education for 15-64 years male and female youth		0.044	0.034
		0.044	0.043
Life expectancy - Type: period - Sex: both - Age: 0			-0.092***
			0.013
Urban population (% of total population)			-0.033***
			0.007
Constant	12.403***	14.554***	21.817***
	0.099	0.267	0.871
r2	0.255	0.366	0.392
N	9761	1964	1964

Model 1 – We can determine model 1 is significant in the 1% level. This means that GDP has extreme negative effect when it comes to the growth of infant mortality meaning that as GDPpercapita increases infant mortality rate will be expected to decrease on average. This r

squared value in this model shows that about 25.5% of the variance in infant mortality is explained by this regression.

Model 2 – Model 2 only holds significance in GDPpercapita which is significant at the 1% level. However, in this instance where we also model education of a country, we can see that there is not a significant effect at any percent level. Using the r squared value from the model we can also conclude that model 2 represents 36.6% of the variance in infant mortality.

Model 3 – Model 3 is the best model of the three. This is because it is observable that GDPpercapita, life expectancy, and urban population all have significant effects in the 1% level on the infant mortality rate of a country. It, however, is also seen that the average years of education for a country does not have a significant effect on the infant mortality rate of a country, meaning this variable is not applicable. The model also explains the highest amount of variance in infant mortality rate explaining a total of 39.2% of the variance.

Using the findings in the models I determined that when estimating infant mortality rate Model 3 would be the best model to use because it represents the highest amount of variance in infant mortality.

Interpretation of variables from Model 3

β_1 GdpPerCapita: All else equal on average when GdpPerCapita increases by 1 there is a decrease to infant mortality by 0.001. Significant at 1%.

β_2 Edu: All else equal on average when average years of education increases by 1 year there is a 0 effect on life expectancy. Not significant.

β_3 LifeExpectancy: All else equal on average when life expectancy increases by 1 year there is a decrease of 0.092 in infant mortality.

β_4 Ubran: All else equal on average when the population living in urban areas increases by 1 percentage point there is a decrease in infant mortality by 0.033.

β_0: When there is a GdpPerCapita of 0, no years of education, a life expectancy of 0, and 0 people living in urban areas, the expected infant mortality is 21.817.

Conclusion

Based on the findings in the ran regressions I can determine that there is indeed a causal relationship between the standard of living and the infant mortality rate. This conclusion can be determined because of the previous significance test. What this means is that as the standard of living increases the infant mortality rate will decrease on average. Despite these findings though I would run more regressions in the future to explain a higher variance with a goal of obtaining a R^2 value greater than .50 or 50% this is because if we are able to pinpoint what explains the infant mortality rate the most, we would better be able to help countries grow and develop. Overall the study has allowed us to determine that infant mortality does highly rely on the living standards in a country.