Informal Sector and Real GDP Per-Capita

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Abstract. Informal sector, also called the underground economy, is part of a country's economy that is not recognised as normal income sources, including but not limited to sweatshop labouring, tax avoidance, or any illegal and unregulated sources. These factors have significant impacts on the economy. In this paper I investigate the empirical relationship between informal sector size and several variables, particularly GDP per capita and some proxies of institutional quality. To this end, I gather data from a large number of countries and then run a correlation analysis. I also supplement my empirical study with additional regression analysis. My findings indicate that higher-quality institutions are associated with a smaller informal sector size. On the other hand, there is no significant correlation between informal sector and GDP per capita.

Keywords: Informal sector; GDP per-capita; institutional quality; panel data.

1. Introduction

In this paper I investigate the empirical relationship between informal sector size and GDP per capita. My findings indicate that higher quality institutions are associated with a smaller informal sector size. On the other hand, there is no statistically significant correlation between informal sector and GDP per capita.

There are several pieces of research about potential determinants of informal sector including the real GDP per - capita in the existing literature:

For example, in Dodging the grabbing hand: the determinants of unofficial activity in 69 countries Friedman et al. (2000) argue that entrepreneurs in 69 countries are associated with more underground activities to avoid taxes, bureaucracy and corruption. In other words, the weak legal system is one of the primary causes of informality. The paper convinces readers that high taxes are not the main reason for them to go underground, on the contrary, high taxes are only associated with the smallest portion. Moreover, the paper actually tells about the details and the relationship between the weak legal and feudal government with relation to underground activities.

Ulyssea (2020) is another example. In ''Informality: Causes and Consequences for Development'' he discusses about the causes and the consequences about informality, ranging and including both the micro and macro dimensions. The main argument point is that lowering costs of formality is not a feasible solution to reduce informal sector size. However, it can generate more positive impact such as higher output and increase the total factor productivity, without increasing unemployment.

In a related similar paper on informality and development La Porta and Shleifer (2014) discusses informality in a more controversial and general way. It stays in a neutral point of view without criticising too much about informality. It first lists five indisputable facts about informality to introduce this problem first, then asses each of them with the support of graphs ranging from the size of informality to the graphs that represent the overall economic trend.

Next, Dabla-Norries, Gradstein, and Inchauste (2008) discusses what the main causes of informality are. The paper particularly focuses on the hiding of output and avoiding taxes. Data from significance of taxes, regulations and financial constraints are the main example and focusing points. Furthermore, tax burden, financial market development and the legal system also seem to be among the key causes of informality according to the paper.

In a World Bank policy note (Informality: Why Is It So Widespread and How Can It Be Reduced?) Loayza (2018) discusses what are the basic definition of informality first, then gives causes and effects of informality. It is both a cause and a consequence of the lack of economics institutional department. Then it transforms into the global scale, mentioning how prevalent it is in the whole

world, within the consequences. Then it presents several illustrations toward the informal labor first, following by the ways to address the problem, ending with the global trend of informality.

Finally, Loayza (2016) focuses on one branch of informality, which is the informal labour. And the leading to migration or other economic issues. But at the same time, it mentions some of the economics growths. The essay consists graphs about the production under informality as a comparison to other countries without as well as some formula to interpret the effect of informality.

On top of this already existing research in this paper, we primarily focus on the relationship between informal sector size and real GDP per-capita.

The rest of the paper is organised as follows. The next section uses data and formula to illustrate Then Section 3...Finally, Section 4 provides some concluding remarks and a short discussion.

2. Data and Methods

2.1 Data Description and Sources

We use informal sector size (% GDP), real GDP per – capita, law and order, corruption control, bureaucracy quality and investment profile data series. Informal sector series is obtained from Elgin (2021). GDP per-capita is calculated from the data available on Penn World Tables 10.0. Finally, the four institutional quality variables are taken from the International Country Risk Guide of Political Risk Services.

Table 1. Descriptive Summary Statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Informal Sector (% GDP)	34.96%	34.06%	14.42%	7.88%	112.56%
Real GDP per-capita (000 dollars)	13.71	7.32	16.77	0.29	152.95
Law and Order	3.70	4.0	1.44	0.00	6.00
corruption control	3.00	3.00	1.33	0.00	6.00
bureaucracy quality	2.18	2.00	1.19	0.00	6.00
investment profile	7.50	7.50	2.43	0.00	12.00

Table 1 provides descriptive summary statistics of all variables used in the empirical analysis.

2.2 Empirical Methods

As well known a correlation coefficient between any two variables takes values between -1 and 1. A positive correlation implies that the two variables move in the same direction, whereas a negative correlation suggests that they tend to move into opposite directions. However, a correlation coefficient the absolute value of which is less than 0.1 is interpreted to be not significant.

We also complement correlation analysis with some regression analysis. Particularly, we estimate the below given five equations

Regression 1: Informal Sector = a + b * Real GDP Per-capita+e*

Regression 2: Informal Sector = a + b * Real GDP Per-capita + c* Law and Order+e*

Regression 3: Informal Sector = a + b * Real GDP Per-capita + c* Law and Order + d*Corruption Control+e*

Regression 4: Informal Sector = a + b * Real GDP Per-capita + c* Law and Order + d*Corruption Control + e* Bureaucracy Quality

Regression 5: Informal Sector = a + b * Real GDP Per-capita + c* Law and Order + d*Corruption Control + e* Bureaucracy Quality + f* Investment Profile

3. Empirical Results

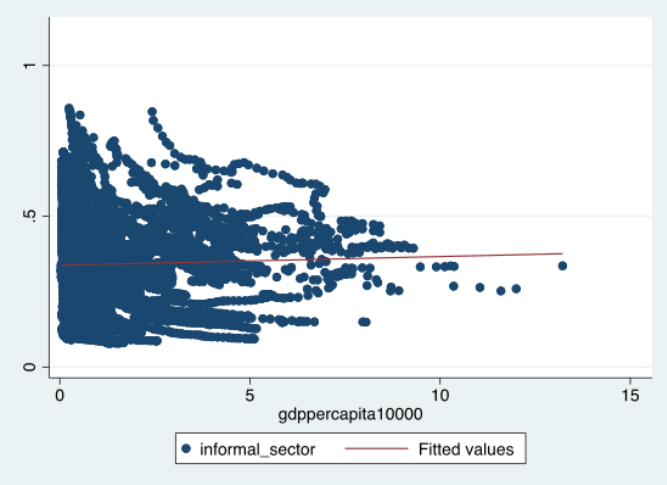


Figure 1. Scatter Plot Informal Sector vs. Real GDP per-capita
Correlation is 0.04

Figure 1 illustrates the scatter plot diagram between informal sector (on the y-axis) and GDP per capita (on the x-axis). The correlation coefficient between the two variables is equal to 0.04 and it also appears from the figure that this correlation is not really significantly different from zero. This suggests that the two variables do not really have a particularly strong relationship.

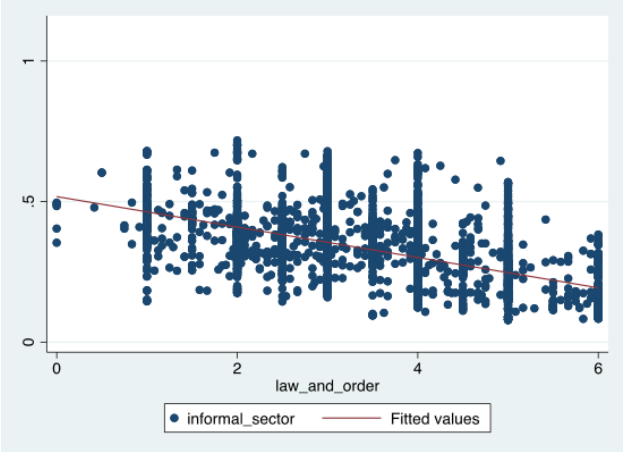


Figure 2. Scatter Plot Informal Sector vs. Law and Order
Correlation is -0.61

Figure 2 illustrates the scatter plot diagram between informal sector (on the y axis) and Law and order(On the x axis). The correlation coefficient between these two variables is -0.61, and it also appears on the figure that this correlation has a slight difference from zero, indicating that these two variables have a really slight negative correlation relationship.

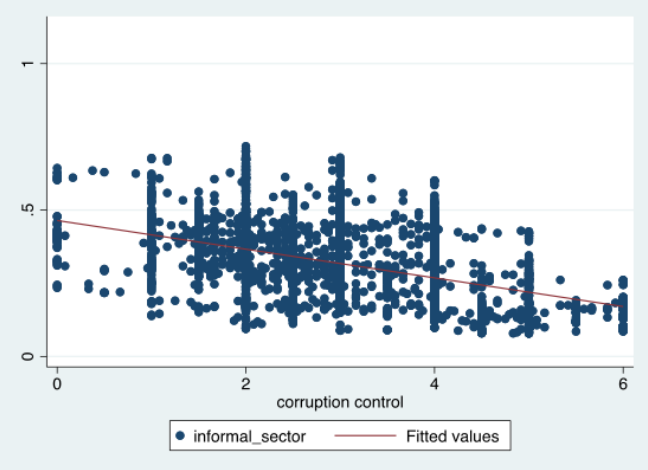


Figure 3. Scatter Plot Informal Sector vs. Corruption Control
Correlation is -0.51

Figure 3 illustrates the scatter plot diagram between informal sector (on the y axis) and Corruption control (On the x axis). The correlation coefficient between these two variables is -0.51, and it also appears on the figure that this correlation has a slight difference from zero, indicating that these two variables have a small negative correlation relationship.

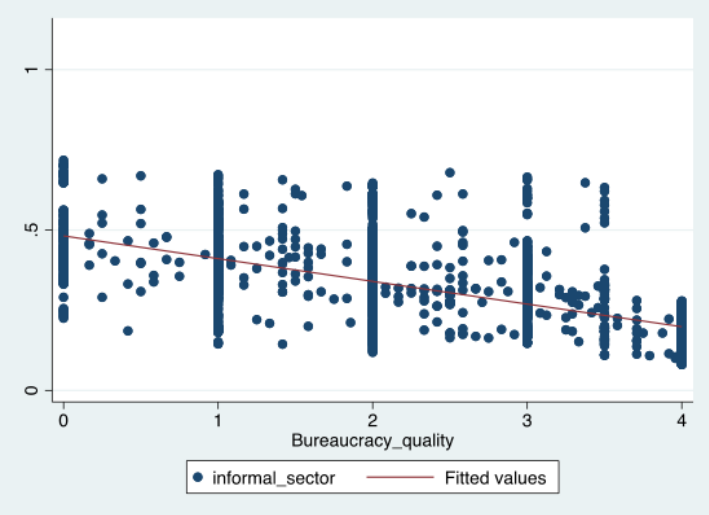


Figure 4. Scatter Plot Informal Sector vs. Bureaucracy Quality
Correlation is -0.64

Figure 4 shows the scatterplot diagram between informal sector (on the y axis) and Bureaucracy quality (on the x axis). The correlation coefficient between these two variables is -0.64, which has a slight difference from zero. This means that these two variables have a small negative correlation relationship.

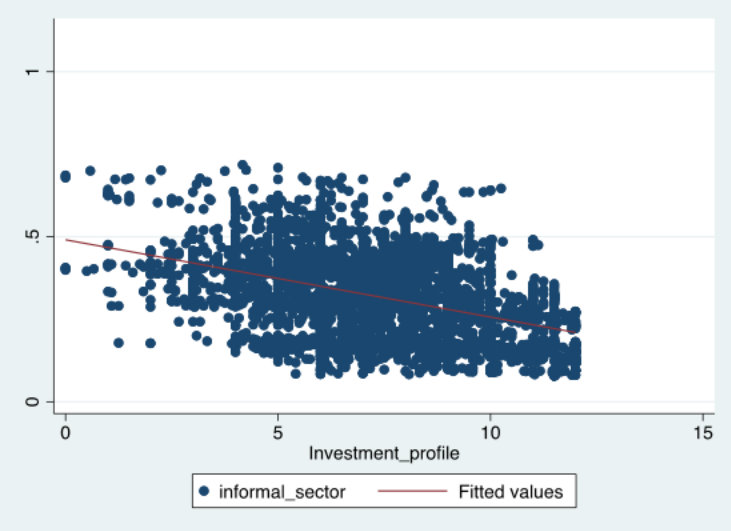


Figure 5. Scatter Plot Informal Sector vs. Investment Profile
Correlation is – 0.45

Figure 5 shows the scatterplot diagram between the informal sector (On the y axis) and the investment profile (on the x axis). The correlation coefficient between these two variables is -0.45, which has a slight difference from zero. This means that the relationship between these two variables have a really small negative correlation.

Below the plots talk about the figures and we will also report the correlation coefficients

Table 2. Regression Results

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5
Real GDP per-capita	0.003	0.0007	0.0006	0.002	-0.001
Law and Order		-0.05*	-0.04*	-0.03*	-0.02*
Corruption Control			-0.02*	-0.005*	-0.006*
Bureaucracy quality				-0.05*	-0.04*
Investment Profile					-0.004*
Constant Coefficient	0.34*	0.52*	0.54*	0.54*	0.55*

*indicates an estimated regression coefficient that is significantly different from zero.

Table 2 reports the estimated coefficients of the explanatory variables in the five equations listed above. The results of these regressions are very much in line with what we observe in the scatter plot diagrams. Particularly, we observe that the estimated coefficient of real GDP per-capita is not significantly different from zero in any of the five regressions. On the other hand, the estimated coefficients of the four institutional quality variables, namely law and order, corruption control, bureaucracy quality and investment profile are all significantly negative. This is a very similar result of what we see in Figures 2 to 5.

4. Conclusion

I could further have two things in this paper: 1. A more comprehensive literature review that would more deeply review the potential factors associated with informality. 2. Inclusion of several additional macroeconomic variables (in addition to GDP per capita and four institutional quality variables we used) to our empirical analysis. These we leave to future research.

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