



## Some Determinants of Income Inequality in Asia and Latin America

Jason Patalinghug<sup>1</sup>, \*

<sup>1</sup> Southern Connecticut State University

\*Correspondence: patalinghuj1@southernct.edu;

### Abstract

*Income inequality has, in recent years, become a serious issue especially in emerging markets. This paper examines the relationship of income inequality in the Asia-Pacific and Latin America regions to several factors such as gross capital formation, corruption, and per capita gross domestic product (GDP). Using a cross-sectional dataset of 36 countries from both regions for the year 2018 and ordinary least squares regression, the paper shows that gross capital formation and the lack of corruption have a negative and significant relationship with income inequality (as represented by the Gini coefficient). In contrast, per capita GDP has a positive and significant relationship with income inequality. Policymakers who want to rein in income inequality should therefore focus on ways to reduce corruption and increase the formation of capital. This study could be of use for those who are interested in discovering and mitigating the factors that cause income inequality in the developing world.*

**Keywords:** *Asia, Corruption, Gross Capital Formation, Income Inequality, Latin America*

**JEL Classification:** *D73, O15*

### Introduction

This paper examines socioeconomic factors that may influence income inequality in Asia, the Pacific, and Latin America. Income inequality is a serious problem that affects many developing nations. Many are worried that the breakneck speed at which many countries in these two regions are growing is leaving millions of people behind as only a privileged elite enjoys the fruits of economic development. This could prove to be dangerous as a wide gulf between rich and poor may result in social tensions as well as political instability. Gupta et al. [2002] found that countries with high inequality have abundant natural resources, low capital productivity, low average secondary schooling and high levels of corruption which are familiar features of many developing nations.

Income inequality is an important matter to cover because this has been growing as the economies of Asia and Latin America quickly develop. Even in a developed nation like the United States, income inequality has become an important topic since over the past several years, the top one percent has seen their incomes grow substantially while most workers have seen stagnant growth in their wages. This has led to calls from some sectors to level the playing field between the rich and the poor.

Some of the policies that they advocate include taxing the rich more, providing universal basic income to everyone, increasing the minimum wage, and eliminating student loans and lowering the cost of healthcare and childcare.

Using ordinary least squares regression on a cross-sectional dataset of 36 countries from Latin America and the Asia-Pacific Region, the paper shows that gross capital formation and the lack of corruption have a negative and significant relationship with income inequality while per capita GDP has a positive and significant relationship with income inequality.

## **1. Review of Related Literature**

There have been several studies that have explored the links between income inequality and other socioeconomic factors. Tridico [2018] examined the determinants of income inequality among member nations of the Organization for Economic cooperation and Development (OECD). He used panel data set for 25 OECD countries from 1990 to 2013 to estimate his model. Using a generalized least squares (GLS) random effects model, he found that inequality, after taxes and transfers, increases when the level of labor flexibility and the level of financialization of the economy increases, and when trade union density and public social spending declines. In short, there is more income inequality when protections for workers (such as unions and labor regulations) and the social safety net decline.

Gyimah-Brempong [2002] uses panel data from African countries to examine the effects of corruption on income distribution and economic growth. He found that a unit increase in corruption lowers GDP and per capita income growth rates by between 0.75 and 0.9 percentage points and between 0.39 and 0.41 percentage points per year respectively. This shows that increased corruption has a positive relationship with an increase in income inequality. His study also found that increased corruption hurts the poor more than the rich in African nations.

Messy [2021] uses a panel data set of 22 Sub-Saharan African countries during the period 1996-2017 to examine the effect of corruption on income inequality in the region. Using Panel Smooth Transition Regression, he found that corruption, past a certain threshold, increases income inequality

Sulemana and Kpienbaareh [2018] used an unbalanced panel data of 48 Sub-Saharan African countries during the period 1996-2016 to examine how income inequality affects corruption. Their findings show that higher levels of income inequality lead to less corruption. Using Ordinary Least Squares (OLS) fixed effects and random effects models, they found that the relationship between income inequality and corruption follows a U-shaped pattern in low-income and lower-middle-income Sub-Saharan African countries.

Ullah and Ahmad [2016] used a panel dataset of 71 developed and developing countries to also explore the relationship between corruption and income distribution. Using Generalized Method of Moments estimation, they found that corruption contributes significantly to income inequality thus corruption is harmful to equity and economic growth.

This implies that policies that help reduce corruption would help in making income distribution more equitable.

Lee et al. [2013] provided an empirical explanation of income inequality in South Korea. Using data from 1980 to 2012, they found that investment (represented by share of investment in gross domestic product) and education (represented by share of middle school students in school-age population) are significant and negatively related to inequality. More investment and education thus help lessen income inequality. They also found that an aging population (represented by the share of the elderly in the working population) and trade (represented by the share of trade volume in gross national income) are significant and positively related to income inequality. This means that an older workforce and the expansion of trade, including free trade agreements, serve to increase income inequality.

Afandi et al. [2017] used a panel data set of 32 provinces as well as fixed effects and random effects models to examine the determinants of income inequality in Indonesia. They found that several factors help decrease income inequality. These include the share of agriculture, livestock, and fishery in gross regional domestic product (GRDP), forestry, the share of the service sector in GRDP, and financialization. They also found that the shares of the construction and transport and communication sectors in GRDP are positively related to income inequality. They also surprisingly found out that falling poverty levels and a higher college participatory rate helps increase income inequality instead of helping to decrease it.

Signor et al. [2019] used data from 1996 to 2015 and a generalized method of moments (GMM) model to estimate the determinants of income inequality in Brazil. They found that most of current income inequality is explained by past income inequality. They also found empirical proof which shows that an increase in the proportion of formal jobs and government aid to the poor can help reduce income inequality in Brazil. They also discovered that rural pensions and government aid to extremely poor families and to people with disabilities will also reduce inequality.

Naschold [2009] examined the determinants of income inequality in Pakistan. Using random effects GLS and panel data from three provinces over the period of 1986 to 1990, he found that income inequality in Pakistan is determined by physical assets (such as land), location, demographic characteristics and level of education.

Gupta et al [2001] wrote that corruption is affected by both supply-side and demand-side considerations. The supply side considerations mentioned are bribery by foreign suppliers and the increased competition for arms sales after the end of the Cold War. The demand-side considerations are: (1) the government is the sole provider of defense services thus there is limited competition which promotes rent seeking, (2) the secrecy surrounding military purchases promotes corruption, (3) the stock of defense assets (such as land) is huge and this creates more opportunity for corruption and (4) military projects tend to be capital-intensive which increases the tendency of firms to bribe officials. Gupta et al [2001] also showed that corruption is associated with higher military spending as a share of gross domestic product (GDP) and total government expenditures, and with larger budget outlays in relation to both GDP and government spending.

Zandi et al. [2022] used panel data on 12 developing Asian countries spanning the years 2006-2020. Using a random effects model and generalized method of moments (GMM), they discovered that corruption, inflation and unemployment have a significant and positive impact on inequality which is represented by the Gini index in this study.

Policardo and Carrera [2018] also found a link between income inequality and corruption. Using a two-step Arellano Bond dynamic GMM model on panel data of 50

countries covering the period 1995 to 2015, they found that income inequality positively affects corruption. However, corruption does not seem to be a significant determinant of income inequality.

Khan and Naeem [2020] studied the relationship between human resource development, corruption and income inequality. They used a simultaneous equations model and three stage least squares (3SLS) regression on a panel data set of 38 developing countries covering the period of 2000 to 2015. They discovered that corruption has a positive effect on income inequality while human resource development has a negative effect on income inequality. They point out that corruption worsens income inequality because corruption skews government spending priorities and the tax system to favor the rich and the powerful.

In similar fashion, Andres and Ramlogan-Dobson [2011] examined the link between corruption and income inequality in Latin America. They used panel data from 19 countries in the region over the period 1982-2002. They discovered that inequality and corruption are inversely related which seems to be at odds with the empirical literature. However, the authors point out that this result is not a surprise for Latin America since this region has a large informal sector. More corruption leads to the rise of the informal sector which provides jobs and lessens income inequality. The lessening of corruption however means that a lot of jobs in the informal sector become part of the formal sector. Once these jobs become formal, they become costlier for firms and some of these jobs will be lost to cost-cutting leading to increased unemployment and income inequality.

Perera and Lee [2013] investigated the impact of several factors of institutional quality on income inequality in nine developing countries in Asia. Using a dataset for the period of 1985-2009 and system GMM estimation, they found that economic growth as well as improvements in law and order and government stability help in reducing poverty. However, they also found that reducing corruption and improvements in bureaucratic quality and government accountability lead to an increase in both poverty and income inequality.

Abbas et al. [2023] looked at the relationship between institutional quality and income inequality in the economies of the South Asian Association for Regional Cooperation (SAARC) particularly the countries of Bangladesh, India, Pakistan and Sri Lanka. Using a dataset that spans from 2000 to 2021 and a Fully Modified OLS model, they found that improved institutional quality help reduce income inequality while corruption has a positive and significant impact on income inequality. Batabyal and Chowdhury [2015] looked at the impact of corruption on the returns from financial development and income inequality in several Commonwealth nations. They found that corruption crowds out the returns from financial development.

## **2. Data and Methods**

This paper will use income inequality as the dependent variable and three socioeconomic factors as independent variables. The socioeconomic factors that will be used in this paper are gross capital formation, per capita gross domestic product (GDP) and corruption. This paper uses the Corruption Perceptions Index (CPI) formulated by Transparency International (TI) as its measure for corruption.

Microsoft Excel was used to organize the data downloaded from The World Bank's websites. The statistical analysis of the data in this paper used the Analysis ToolPak feature of Excel. This feature was utilized in obtaining the descriptive statistics as well as in performing regression analysis.

Income inequality in this paper will be measured by the Gini index. The Gini index is a measure of statistical dispersion, commonly used as a measure of inequality of income distribution or inequality of wealth distribution. It goes from 0 to 100 with 0 being the most equal and 100 being the most unequal.

Gross capital formation (GCF) is measured by the total value of the gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables for a unit or sector. It is basically a measure of the amount of new investment a country receives within a given period. GCF serves as a proxy for investment.

This paper uses cross-section data for the year 2018 which covers 36 countries in Latin America and the Asia-Pacific region. Data for gross capital formation, per capita GDP and the Gini index were obtained from the World Development Indicators database of The World Bank. Data on corruption was obtained from the website of Transparency International. Table 1 shows the descriptive statistics of the dataset while Table 2 shows the list of countries used in this paper.

Table 1.

**Descriptive statistics (n = 36)**

|       | RANGE         | MINIMUM | MAXIMUM       | MEAN        | STANDARD DEVIATION |
|-------|---------------|---------|---------------|-------------|--------------------|
| GCF   | 1,461,988,966 | 436,767 | 1,462,425,733 | 147,466,762 | 300,536,664        |
| CPI   | 57            | 20      | 77            | 39.97       | 14.76              |
| Gini  | 25.2          | 28.7    | 53.9          | 40.44       | 6.32               |
| GDPPC | 55,992.16     | 839.89  | 56,832.05     | 8,795.29    | 12,168.94          |

(Source: author's calculation)

The model for our paper is shown below:

$$\ln GINI = \beta_0 + \beta_1 \ln GCF + \beta_2 CPI + \beta_3 \ln GDPPC + \varepsilon \quad (1)$$

where

GINI = income inequality (Gini index)

$\beta_0$  = constant

GCF = gross capital formation (in constant 2010 \$US, thousands)

CPI = corruption perception index score

GDPPC = per capita gross domestic product (in constant 2010 \$US)

$\varepsilon$  = error term

This equation shall be estimated using the ordinary least squares (OLS) method. Our dependent variable will be the Gini index while corruption, per capita GDP and gross capital formation will be the independent variables. The Transparency International Corruption Perceptions Index scores range from 0 to 100 with 100 meaning that a country has the least amount of perceived corruption and 0 meaning that a country has the highest amount of perceived corruption.

The null and alternative hypotheses are listed below:

$H_0: \beta_1 = 0, \beta_2 = 0, \beta_3 = 0$

$H_a$ : any of the betas are not equal to zero.

Table 2.

**List of countries used in this paper classified by region**

| COUNTRY                         | REGION        |
|---------------------------------|---------------|
| Argentina                       | Latin America |
| Australia                       | Asia-Pacific  |
| Bangladesh                      | Asia-Pacific  |
| Bhutan                          | Asia-Pacific  |
| Bolivia                         | Latin America |
| Brazil                          | Latin America |
| Chile                           | Latin America |
| Colombia                        | Latin America |
| Costa Rica                      | Latin America |
| Dominican Republic              | Latin America |
| Ecuador                         | Latin America |
| El Salvador                     | Latin America |
| Guatemala                       | Latin America |
| Haiti                           | Latin America |
| Honduras                        | Latin America |
| India                           | Asia-Pacific  |
| Indonesia                       | Asia-Pacific  |
| Jamaica                         | Latin America |
| Japan                           | Asia-Pacific  |
| Korea, Republic of              | Asia-Pacific  |
| Lao Peoples Democratic Republic | Asia-Pacific  |
| Malaysia                        | Asia-Pacific  |
| Mexico                          | Latin America |
| Mongolia                        | Asia-Pacific  |
| Myanmar                         | Asia-Pacific  |
| Nicaragua                       | Latin America |
| Pakistan                        | Asia-Pacific  |
| Panama                          | Latin America |
| Paraguay                        | Latin America |
| Peru                            | Latin America |
| Philippines                     | Asia-Pacific  |
| Sri Lanka                       | Asia-Pacific  |
| Thailand                        | Asia-Pacific  |
| Timor-Leste                     | Asia-Pacific  |
| Uruguay                         | Latin America |
| Vietnam                         | Asia-Pacific  |

(Source: The World Bank World Development Indicators)

### 3. Results

The results of the paper are summarized in Table 3. We use the natural logarithms of GINI, GCF and GDPPC in our equation. The results show that the gross capital formation and the corruption variables are negative and significant. This means that a one percent increase in gross capital formation leads to a decrease in the Gini index of approximately - 1.2 percent. It shows that there is a negative relationship between investment and inequality. Higher inequality leads to lower amounts of new investment coming to a country. This might

be since in countries with high inequality, asset ownership would be concentrated in the hands of the elite. The elite thus have the power to lobby the government for policies that are favorable to them. Low investment affects the ability of the poor to borrow and increase their income thus perpetuating poverty and inequality. The null hypothesis for gross capital formation (investment) is thus rejected.

In our model, the higher the corruption score, the less corruption there is thus there is a negative relationship between income inequality and the lack of corruption. Less corruption thus leads to lower income inequality. A one-point increase in the corruption perceptions index score will reduce the Gini index by 33 percent. The null hypothesis for corruption is rejected. The variable for per capita GDP is positive and significant at the 1% level. This means that a one percent rise in per capita GDP results in an increase of 5.8 percent in the Gini index. We also reject the null hypothesis for per capita GDP. The F-statistic for the model is also significant at the 1% level.

Table 3.

**OLS estimates (Dependent variable: Gini index)**

| INDEPENDENT VARIABLES   |                       |
|-------------------------|-----------------------|
| Constant                | 32.969***<br>(11.280) |
| Gross Capital Formation | -1.178**<br>(0.549)   |
| Corruption              | -0.331***<br>(0.087)  |
| GDP per capita          | 5.764***<br>(1.440)   |
| R <sup>2</sup>          | 0.365                 |
| Number of observations  | 36                    |
| F-statistic             | 6.132***              |

*Standard errors are shown in parentheses.*

*\*\*\*Significant at 1% level; \*\* significant at 5% level; and \*significant at 10% level.*

*(Source: author's calculation)*

#### 4. Limitations of the Study

This study has several limitations. First, it only looks at 36 countries in the Asia-Pacific and Latin America regions. It would be better if data is available for more countries from these regions. The scope of the paper could also be widened to include countries from Africa. Second, the paper only looks at cross-sectional data from the year 2018 thus it only peeks at a snapshot in time. The study would benefit much from using panel data which monitors how these factors affect individual countries over several years. The use of panel data would require the use of different statistical techniques such as fixed effects regression. Lastly, the study could benefit from adding more variables into the model.

#### Conclusion

There are many factors that are involved in explaining income inequality. Paweenawat and McNown [2014] cite education, number of children and number of earners

as important factors in determining income inequality. Ponce et al. [2023] state that areas with democratic systems of government tend to have lower income inequality. Hailemariam et al. [2021] found that higher levels of educational attainment and financial development lower income inequality but increases in real GDP per capita will lead to increased income inequality. Khan [2022] used data on 23 emerging countries during the period 1996-2017 and a system GMM model and discovered that higher income inequality leads to less corruption. Gupta et al [2002] use other measures like abundance of natural resources, per capita income, education inequality and mean years of secondary schooling. They found that high corruption increases income inequality by reducing economic growth, the progressivity of the tax system, the level and effectiveness of social spending and the formation of human capital. Meanwhile. There is a lot that needs to be done to further refine this paper. As stated earlier, further research could add more countries to the dataset as well as add more explanatory variables in the model.

The negative relationship between investment and inequality is an indication that access by the poor to capital enables them to borrow funds which can be used for their businesses or other endeavors. The returns from these businesses increase the income of the poor and enable them to catch up with those who are more affluent thus decreasing income inequality. The success of microfinance in several developing nations is proof that letting the poor invest reaps dividends and raises people's income. The negative relationship between the lack of corruption and income inequality and the positive relationship between per capita GDP and income inequality show that developing countries need to strengthen their institutions for most of their populations to enjoy the fruits of their economic growth.

### References

1. Abbas, F., Shahzad, B., & Raees, S. (2023). Institutional quality, corruption, and income inequality-A panel study of selected SAARC economies. *American Journal of Economics and Business Innovation*, 2(3), 68-76.
2. Afandi, A., Rantung, V. P., & Marashdeh, H. (2017). Determinants of income inequality. *Economic Journal of Emerging Markets*, 9(2), 159-171. <https://doi.org/10.20885/ejem.vol9.iss2.art5>
3. Andres, A. R., & Ramlogan-Dobson, C. (2011). Is corruption really bad for inequality? Evidence from Latin America. *Journal of Development Studies*, 47(7), 959-976. <https://doi.org/10.1080/00220388.2010.509784>
4. Batabyal, S., & Chowdhury, A. (2015). Curbing corruption, financial development and income inequality. *Progress in Development Studies*, 15(1), 49-72. <https://doi.org/10.1177/14649934145469>
5. Furceri, D., & Ostry, J. D. (2019). Robust determinants of income inequality. *Oxford Review of Economic Policy*, 35(3), 490-517. <https://doi.org/10.1093/oxrep/grz014>
6. Gupta, S., Davoodi, H., & Alonso-Terme, R. (2002). Does corruption affect income inequality and poverty? *Economics of Governance*, 3, 23-45. <https://doi.org/10.1007/s101010100039>



7. Gupta, S., de Mello, L., & Sharan, R.. (2001). Corruption and Military Spending. *European Journal of Political Economy* 17(4), 749-777. [https://doi.org/10.1016/S0176-2680\(01\)00054-4](https://doi.org/10.1016/S0176-2680(01)00054-4)
8. Gyimah-Brempong, K. (2002). Corruption, economic growth, and income inequality in Africa. *Economics of Governance*, 3(3), 183-209. <https://doi.org/10.1007/s101010200045>
9. Hailemariam, A., Sakutukwa, T., & Dzhumashev, R. (2021). Long-term determinants of income inequality: evidence from panel data over 1870–2016. *Empirical Economics*, 61(4), 1935-1958. <https://doi.org/10.1007/s00181-020-01956-7>
10. Khan, R. E. A., & Naeem, H. M. (2020). Corruption, income inequality and human resource development in developing economies. *Asian Journal of Economic Modelling*, 8(4), 248-259. <https://doi.org/10.18488/journal.8.2020.84.248.259>
11. Khan, S. (2022). Investigating the effect of income inequality on corruption: New evidence from 23 emerging countries. *Journal of the Knowledge Economy*, 13(3), 2100-2126. <https://doi.org/10.1007/s13132-021-00761-6>
12. Lee, H. Y., Kim, J., & Cin, B. C. (2013). Empirical analysis on the determinants of income inequality in Korea. *International Journal of Advanced Science and Technology*, 53(1), 95-109.
13. Messy, M. A. (2021). Threshold effect of corruption on income inequality in sub-Saharan Africa. *Journal of Business Studies Quarterly*, 10(3), 11-26.
14. Naschold, F. (2009). Microeconomic determinants of income inequality in rural Pakistan. *The Journal of Development Studies*, 45(5), 746-768. <https://doi.org/10.1080/00220380902753193>
15. Paweenawat, S. W., & McNown, R. (2014). The determinants of income inequality in Thailand: A synthetic cohort analysis. *Journal of Asian Economics*, 31, 10-21. <https://doi.org/10.1016/j.asieco.2014.02.001>
16. Perera, L. D. H., & Lee, G. H. (2013). Have economic growth and institutional quality contributed to poverty and inequality reduction in Asia?. *Journal of Asian Economics*, 27, 71-86. <https://doi.org/10.1016/j.asieco.2013.06.002>
17. Policardo, L., & Carrera, E. J. S. (2018). Corruption causes inequality, or is it the other way around? An empirical investigation for a panel of countries. *Economic Analysis and Policy*, 59, 92-102. <https://doi.org/10.1016/j.eap.2018.05.001>
18. Ponce, P., Yunga, F., Larrea-Silva, J., & Aguirre, N. (2023). Spatial determinants of income inequality at the global level: The role of natural resources. *Resources Policy*, 84, 103783. <https://doi.org/10.1016/j.resourpol.2023.103783>
19. Samadi, A. H., & Farahmandpour, B. (2013). The effect of income inequality on corruption in selected countries (1995-2007). *Journal of Emerging Issues in Economics, Finance and Banking*, 1(3), 214-231.
20. Signor, D., Kim, J., & Tebaldi, E. (2019). Persistence and determinants of income inequality: The Brazilian case. *Review of Development Economics*, 23(4), 1748-1767. <https://doi.org/10.1111/rode.12598>
21. Sulemana, I., & Kpienbaareh, D. (2018). An empirical examination of the relationship between income inequality and corruption in Africa. *Economic Analysis and Policy*, 60, 27-42. <https://doi.org/10.1016/j.eap.2018.09.003>

22. Tridico, P. (2018). The determinants of income inequality in OECD countries. *Cambridge Journal of Economics*, 42(4), 1009-1042. <https://doi.org/10.1093/cje/bex069>
23. Ullah, M. A., & Ahmad, E. (2016). Inequality and Corruption: Evidence from Panel Data. *Forman Journal of Economic Studies*, 12, 1-20. <https://doi.org/10.32368/FJES.20161201>
24. The World Bank World Development Indicators. Available online: <https://datatopics.worldbank.org/world-development-indicators/> (accessed on 27 September 2023).
25. The World Bank Worldwide Governance Indicators. Available online: <https://www.worldbank.org/en/publication/worldwide-governance-indicators> (accessed on 27 September 2023).
26. Zandi, G., Rehan, R., Hye, Q. M. A., Mubeen, S., & Abbas, S. (2022). Do corruption inflation and unemployment influence the income inequality of developing Asian countries. *International Journal of Applied Economics, Finance and Accounting*, 14(2), 118-128. <https://doi.org/10.33094/ijaefa.v14i2.688>