

# Income differences, trade and institutions: empirical evidence from low and middle-income countries

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# Income differences, trade and institutions: empirical evidence from low and middle-income countries

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**Abstract:** Many developing countries attained high growth rates in different periods but income differences did not reduce significantly in these periods due to increase in income inequalities. Therefore, the key objective of this study was to analyze the relationship between income differences, trade and institutions in developing countries. This study has used panel data of the year 2000 to 2014 to explore the relationship between these variables. This study is based on sampling of two groups; 25 middle income countries and 24 low income countries. Pooled OLS, panel fixed effect and Driscoll and Kraay techniques were used in this study. The results showed the negative relations of imports, a significant role of political institutions and insignificant role of economic institutions in income distribution with GDP per capita among low income and middle-income countries. Moreover, the current study suggested that governments in developing countries should focus upon improving the performance of political and economic institutions in order to improve their prospects of getting investment opportunities.

**JEL Classifications:** E64, F4, F33

**Keywords:** Investment, political institutions, human development index, economic institutions, GDP

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## 1. Introduction

In general, the two terms, economic growth and economy development, are used synonymously to express the same idea i.e., economic advancement. But economic development is broader in its scope. In the past two decades, numerous authors have tried to establish a relationship between economic growth and income differences (Abidin, Bakar, & Haseeb, 2014; 2015; Stiglitz, 2012). In the same way, conventional approaches suggest that income difference is conducive to economic growth because it provides incentives for investments (Bakar, Abidin, & Haseeb, 2015; Berg & Osrty, 2013).

Income differences among nations are caused by a number of factors including economic institutions since the growth factor has clear empirical evidence about a direct relationship between income differences and political stability. Undoubtedly, political stability impairs sustainable economic development when investments are a priority. In this context, an unstable political situation creates uncertainty and hence might minimize the incentives for investment. In the same way, high income differences have a negative impact on the capability of a political system to restructure itself (Abidin, Haseeb, Azam, & Islam, 2015; Berg & Osrty, 2013). Income differences also increase political instability and hence lower the capacity of the political institutions to react effectively to external economic shocks in the same manner in which income differences hamper the growth of economic

institutions. Economic institutions, also determine the quality of performance of the contractual institutions, property rights, rule of law as major factors of economic performance (Suryanto, 2016; Suryanto & Ridwansyah, 2016). Therefore, it is quite conventional for institutions to explain income differences between countries. Moreover, institutions play a central role and improve the performance of various sectors of the economy such as trade. Such countries that possess better institutions and trade grow more rapidly. Better institutions, in fact, increase the trading capacity of countries (Dollar & Kraay, 2003).

From 1981 to 2008, exports and imports in the East had increased from 8,564 million dollars to 2,289,189 million dollars (International Trade Center, 2010). However, on the other hand, statistics reveal that despite the development of the trading volume poor families have received a relatively small percentage of the turnover of trade in less developing countries and in most cases they have been declined of their due share since the global liberalization in 1990 (International Trade Center, 2010).

There are several reasons for such a low proportion to the poor and the underprivileged. One of the reasons is institutional. It has been generally expected that more openness improves the quality of institutions through a variety of channels like reduced yields including circuits for restructurings and induced specialization in sectors that good institutions require (Acemoglu, Johnson, & Robinson, 2005). While trade openness is linked with good institutions in a cross section of countries in practice, the relationship between the institutions and the trade is to be much more nuanced. Historians and economists have documented that international trade is much contributed by the concentration of political power in the hands of groups that were interested in setting up bad institutions. Therefore, it is important to understand that when trade openness results not in the deterioration of institutions but rather for their better. The empirical support for the idea that free trade promotes economic growth has appeared in a number of studies; however, trade has not appeared as a robust predictor of economic growth (Bittman et al., 2017; Ravallion, 2004; Tarman, 2010).

Previous reviews of free trade and current popular discussion suggest that an income gap is often created by international trade when it happens between unequal countries. Berg & Krueger (2003) propose two basic statements: First, that trade liberalization between countries lead to an increased growth and the second, there is nothing special about trade led growth. In fact, income distribution gets deteriorated by the growth of trade. But if there is a systematic income distribution, it enables income circulation but weaken the effect of trade which is very helpful to reduce poverty and ensure a high growth. It is also observed that income differences create political conflicts; the higher are income differences, the lesser is the economic growth. This is detrimental to a reduction in income differences. Many developing countries have attained high growth rates in different periods but income differences did not reduce significantly during these periods owing to the increase in income inequalities. Therefore, the core objective of this study is to investigate the effect of international trade, political institutions and economic institutions on GDP per capita among selected countries of the world.

## 2. Literature review

Literature review is an essential part of research process. It brings clarity to research problems and helps in determining the research problems and improving research methodology. It also helps to explain the relationship between research problem and body

of knowledge in the area under study. There are broad empirical studies which show how economic growth is affected by relationship between different variables like GDP per capita, trade, political and economic institutions, HDI, investment and population.

With the development of econometrics, a number of complex methods based on mathematical model have been introduced to check the relationship between trade and economic growth. These methods emphasize upon the causal relationship between international trade and economic growth to find out whether the economic growth is pushed by trade or not. These studies have also debated mainly about the contribution of foreign trade to improve economic growth. Abidin, Haseeb, & Islam (2016) conducted a study on the impact of trade on the average income population. According to the results, the elasticity of international trade 0.2, was found statistically significant.

Moreover, Zouhaier & Karim (2012) investigated the effect of economic growth and investment in the period 2000-2009 by using panel data. Their study has discussed the role of institutions and the contribution of investment to economic growth. The results show a significant relationship between the institutions and investment variables; a positive relationship between political institutions and investment and a negative relationship between investment and political stability.

Mehmood (2012) has also examined the relationship between imports and income of Pakistan. He suggested that by using imports as an additional variable in the observed model, a researcher can better considerate the effect of export on economic growth. However, this study did not find any proof to support export-led and import-led growth in short run but found its evidence in long run. This study also suggested that the exports and imports are important to refuel economic growth of Pakistan.

Furthermore, Dobler (2009) investigated the effects of integration, institutions and geography on GDP per capita. Regarding theoretical reasoning, this study gave importance to the rise of organizations and their belongings on economic growth. Not only institutions seem to have altered their forms, the governmental, lawful and economic limitations have also affected the human life. Rules and regulations only restrict probable activities. Consequently, it becomes possible to differentiate between official and unofficial institutions. The reverse outcomes confirm a vital part of unofficial and official organizations regarding economic growth.

Similarly, Haq, & Zia (2009) explored the relationship between economic growth and pro poor governance in Pakistan during the period 1996 to 2005. The study expressed that poverty and income inequality were made as a measure of pro-poor government. It provided empirical evidence that good governance in Pakistan can lead to reducing poverty and income inequality. The study also recommended that Pakistan needs to implement good governance policies and assets in order to achieve the goals of a higher growth and development.

Cotet & Tsui (2009) examined whether the results of the oil outcomes affected the health conditions and population of the country. Variations were found in these results in the countries compared with and without large oil discoveries until 1960. The study discovered that the oil producing countries practice high population growth and declining child mortality. The study also found that the impact on GDP growth was not significant and it varied from zero but not in long run. Moreover, Uddin & Joya (2007) focused on the importance of good authority in the development. They reiterated that if there was no improvement in good governance, it would be difficult to obtain a rapid per capita income or to develop social indicators. Furthermore, it was concluded that strong and effective

political institutions were necessary that could promise a sustainable and long-term growth by good governance and by technical assistance to make government support reforms.

### 3. Data and methodology

<sup>1</sup> This study has used panel data of the period from 2000 to 2014 in order to investigate the relationship between trade institutions and income differences. The data was obtained from World Development Indicators (WDI) and KOF Globalization Index. This study estimated the relationship of GDP per capita with explanatory variables including imports, human development index, population, political institutions and economic institutions. The study sampled two groups, the first group was based on 25 low income countries and the second group was based on 24 middle income countries. The Panel data technique was applied in this study which dealt with person, country, states etc. This technique is a combination of time series and cross section data which give more informative and more efficient data (Abidin et al., 2016). It is a technique which deals with two and more dimensional panel data. For the estimation of panel data various techniques were applied namely, Pooled OLS, Fixed Effect, Hausman Test, Driscoll and Kraay test and Ramsey test.

### 4. Results and discussion

<sup>1</sup> This study explored the relationship between income differences, trade and institutions. It was found out that income differences increased political instability and hence lowered the capacity of political institutions to react adequately to external economic destabilization. In the same way, income differences affected the growth of economic institutions. The impact of trade on the level and distribution of income had been a topic of considerable debate among academics and policy makers, especially in developing countries. Also, Panel quantitative and descriptive approaches have been used in this study.

#### 4.1 Low income countries

Following models were used for low income countries

$$\text{LogGDDP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogPOP}_{it} + \text{LogCAP}_{it} + \mu_{it} \quad \text{Model I}$$

$$\text{LogGDDP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogECO}_{it} + \text{LogPOP}_{it} + \mu_{it} \quad \text{Model II}$$

$$\text{LogGDDP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogPOL}_{it} + \text{LogGPOP}_{it} + \mu_{it} \quad \text{Model III}$$

Where GDPP - GDP per capita, IMP - Trade, POP - Population, CAP - Investment, POL - Political Institutions, HDI - Human Development Index, ECO - Economic Institutions.

#### 4.1.1. Model I for low income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogPOP}_{it} + \text{LogCAP}_{it} + \mu_{it} \quad \text{Model I}$$

In the Model I, income differences are measured by the GDP per capita (GDPP) which is a function of Imports (IMP) Population (POP) and Investment (CAP).

TABLE 1. LONG RUN RELATIONSHIP RESULTS OF LOW INCOME COUNTRIES (MODEL I)

	OLS	Fe	D & K
LogIMP	0.000* (-2.447)	0.000* (-0.1073)	0.000* (-0.1073)
LogPOP	0.000* (-0.5374)	0.000* (0.5846)	0.000* (0.5846)
LogCAP	0.000* (0.5677)	0.000* (0.0635)	0.007* (0.0635)
_cons	0.000* (3.9185)	0.000* (-4.3873)	0.000* (-4.3873)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.000*	0.000*	0.000*

In the estimates of fixed effects model imports, population and investment are statistically significant at 5% level of significant. The coefficient sign of imports is negative whereas the coefficient sign of population and investment is positive. These findings are in line with standard theoretical and empirical literature. The negative relationship between imports and GDP per capita is due to high imports. In order to select fixed effect or random effect model, Hausman test is applied. The results reveal that there is no significant change in imports and population while investment is insignificant in this relation. For model specification, Ramsey test is applied and the model is fit. Moreover, result of Wooldridge test for serial correlation and modified Wald test for group-wise heteroscedasticity shows that there is no issue of autocorrelation and heteroscedasticity.

#### 4.1.2. Model II for low income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogECO}_{it} + \text{LogPOP}_{it} + \mu_{it} \quad \text{Model II}$$

Here income differences are measured by the GDP per capita (GDPP) which is a function of Imports (IMP) Economic institutions (ECO) and Population (POP).

TABLE 2. LONG RUN RELATIONSHIP RESULTS OF LOW INCOME COUNTRIES (MODEL II)

	OLS	Fe	D & K
<i>LogIMP</i>	0.030* (-0.1365)	0.000* (-0.0887)	0.000* (-0.0887)
<i>LogECO</i>	0.000* (0.7118)	0.000* (0.0630)	0.000* (0.0630)
<i>LogPOP</i>	0.000* (0.1476)	0.000* (0.7155)	0.007* (0.7155)
<i>_cons</i>	0.000* (0.4886)	0.000* (-5.5031)	0.000* (-5.5031)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.0000*	0.0000*	0.0000*

In the estimates of fixed effect model imports and population are statistically significant at 5% level of significance, while economic institutions are insignificant statistically. The coefficient sign of imports is negative whereas the coefficient sign of population is positive. Population has positive relationship with GDP per capita and economic institutions are not performing well. These findings are in line with existing literature and an equal increase in imports shall decrease GDP per capita. Hausman specification test results indicate the appropriateness of fixed effects model; therefore, Driscoll and Kraay test is applied. The results reveal that there is no significant change in both approaches. For model specification, Ramsey test is applied and the model is good fit. Result of Wooldridge test for serial correlation and modified Wald test for group-wise Heteroscedasticity show that there is no issue of autocorrelation and heteroscedasticity.

#### 4.1.3. Model 3 for low income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogPOL}_{it} + \text{LogGPOP}_{it} + \mu_{it} \quad \text{Model III}$$

Here income differences are measured by the GDP per capita (GDPP) which is a function of Imports (IMP), political institutions and Population (POP).

In the estimates of fixed effect model, imports and population are statistically significant at 5% level of significance, while economic institutions are insignificant statistically. The coefficient sign of imports is negative whereas the coefficient sign of population is positive. Population has positive relationship with GDP per capita and economic institutions are not performing well. These findings are in line with existing literature and an equal increase in imports shall decrease GDP per capita. Hausman specification test results indicate the appropriateness of fixed effects model; therefore, Driscoll and Kraay test is applied. The results reveal that there is no significant change in both approaches. For model specification, Ramsey test is applied and the model is good fit. Result of

Wooldridge test for serial correlation and modified Wald test for group-wise Heteroscedasticity show that there is no issue of autocorrelation and heteroscedasticity.

TABLE 3. LONG RUN RELATIONSHIP RESULTS OF LOW INCOME COUNTRIES (MODEL III)

	OLS	Fe	D & K
<i>LogIMP</i>	0.000* (0.0465)	0.000* (-0.0848)	0.000* (-0.0848)
<i>LogPOL</i>	0.000* (0.1137)	0.000* (0.1258)	0.000* (0.1258)
<i>LogPOP</i>	0.000* (0.1371)	0.000* (0.6420)	0.007* (0.6420)
<i>_cons</i>	0.000* (2.3354)	0.000* (-4.5880)	0.000* (-4.5880)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.0000*	0.0000*	0.0001*

#### 4.2 Middle income countries

Following models are used for low income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogCAP}_{it} + \text{LogHDI}_{it} + \mu_{it} \quad \text{Model I}$$

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogECO}_{it} + \text{LogIMP}_{it} + \text{LogPOP}_{it} + \mu_{it} \quad \text{Model II}$$

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogHDI}_{it} + \text{LogPOL}_{it} + \text{LogGCAP}_{it} + \mu_{it} \quad \text{Model III}$$

##### 4.2.1. Model 1 for middle income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogIMP}_{it} + \text{LogCAP}_{it} + \text{LogHDI}_{it} + \mu_{it} \quad \text{Model I}$$

Here income differences are measured by the GDP per capita (GDPP) which is a function of Imports (IMP), Investment (CAP) and Human Development Index (HDI).



TABLE 4. LONG RUN RELATIONSHIP RESULTS OF MIDDLE INCOME COUNTRIES (MODEL I)

	OLS	Fe	D & K
<i>LogIMP</i>	0.242* (0.1064)	0.000* (-0.3095)	0.000* (-0.3095)
<i>LogCAP</i>	0.000* (-0.0103)	0.000* (0.3529)	0.000* (0.3529)
<i>LogHDI</i>	0.000* (3.1998)	0.000* (1.7754)	0.000* (1.7754)
<i>_cons</i>	0.000* (9.6660)	0.000* (1.4705)	0.312* (1.4705)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.0000*	0.0000*	0.0001*

In the estimates of fixed effect model imports and population are statistically significant at 5% level of significance, while economic institutions are insignificant statistically. The coefficient sign of imports is negative whereas the coefficient sign of population is positive. Population has positive relationship with GDP per capita and economic institutions are not performing well. The results show that imports have negative relationship with GDP per capita, however, Investment and HDI have negative relationship with GDP per capita for middle income countries. These findings are in line with existing literature and an equal increase in imports shall decrease GDP per capita. Hausman specification test results indicate the appropriateness of fixed effects model; therefore, Driscoll and Kraay test is applied. The results reveal that there is no significant change in both approaches. For model specification, Ramsey test is applied and the model is good fit. Result of Wooldridge test for serial correlation and modified Wald test for group-wise Heteroscedasticity show that there is no issue of autocorrelation and heteroscedasticity.

#### 4.2.2. Model 2 for middle income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogECO}_{it} + \text{LogIMP}_{it} + \text{LogPOP}_{it} + \mu_{it} \quad \text{Model II}$$

Here income differences are measured by the GDP per capita (GDPP) which is a function of Imports (IMP), Economic institutions (ECO) and Population (POP).

In the estimates of fixed effect model imports and population are statistically significant at 5% level of significance, while economic institutions are insignificant statistically. The coefficient sign of imports is negative whereas the coefficient sign of population and economic institutions are positive. The results show that population has positive relationship with GDP per capita and economic institutions are not playing any role in middle income countries. These findings are in line with existing literature and an equal increase in imports shall decrease GDP per capita. Hausman specification test results indicate the appropriateness of fixed effects model. Therefore, Driscoll and Kraay test is applied. The results reveal that the economic institutions are statistically significant at 10% level of significance while imports and population are significant at 5 % level of

significance. For model specification, Ramsey test is applied and the model is good fit. Result of Wooldridge test for serial correlation and modified Wald test for group-wise Heteroscedasticity show that there is no issue of autocorrelation and heteroscedasticity.

TABLE 5. LONG RUN RELATIONSHIP RESULTS OF MIDDLE INCOME COUNTRIES (MODEL II)

	OLS	Fe	D & K
<i>LogECO</i>	0.000* (2.2155)	0.282* (-0.0630)	0.096* (0.0630)
<i>LogIMP</i>	0.000* (-0.2980)	0.000* (-0.0887)	0.000* (-0.0887)
<i>LogPOP</i>	0.000* (-0.0463)	0.000* (0.7155)	0.000* (0.7155)
<i>_cons</i>	0.145* (0.7677)	0.000* (-5.503)	0.000* (-5.5031)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.0000*	0.0000*	0.0001*

#### 4.2.3. Model 3 for middle income countries

$$\text{LogGDPP}_{it} = \alpha_0 + \text{LogHDI}_{it} + \text{LogPOL}_{it} + \text{LogGCAP}_{it} + \mu_{it} \quad \text{Model III}$$

Here income differences are measured by the GDP per capita (GDPP) which is a function of Human Development Index (HDI), Political institutions (POL) and Investment (CAP).

TABLE 6. LONG RUN RELATIONSHIP RESULTS OF MIDDLE INCOME COUNTRIES (MODEL III)

	OLS	Fe	D & K
<i>LogHDI</i>	0.000* (3.2284)	0.000* (1.4104)	0.000* (1.4104)
<i>LogPOL</i>	0.001* (0.3879)	0.000* (0.5057)	0.000* (0.5057)
<i>LogCAP</i>	0.069* (-0.483)	0.000* (0.2525)	0.000* (0.2525)
<i>_cons</i>	0.000* (8.5268)	0.605* (0.3332)	0.795* (0.3332)
Autocorrelation	Ramsay Test	Heteroscedasticity	Hausman Test
0.000*	0.0000*	0.0000*	0.0001*

In the estimates of fixed effect model human development index, political institutions and investment are statistically significant at 5% level of significance. The coefficients sign of human development index, political institutions and investment are positive in fix effect model. The results show that political institutions have positive relationship with GDP per capita and are playing important role in middle income countries. These findings are in

line with existing literature and an equal increase in imports shall decrease GDP per capita. Hausman specification test results indicate the appropriateness of fixed effects model. Therefore, Driscoll and Kraay test is applied. For model specification, Ramsey test is applied and the model is good fit. Result of Wooldridge test for serial correlation and modified Wald test for group-wise Heteroscedasticity show that there is no issue of autocorrelation and heteroscedasticity

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## 5. Conclusion and recommendations

This study discussed the role of trade and institutions to determine the income differences among low income and middle-income countries and is based on secondary data collected from the WDI. The key findings of the study are as follows:

In order to find the relationship between income differences, trade and institutions, 6 models were used. In this study, two samples of low income countries and middle-income countries were used with 25 and 24 countries respectively. Model 1 showed that the income differences were measured by the GDP per capita, which was a function of imports, population and investment. In this model imports, population and investment were statically significant at 5% level of significance. Moreover, Model 2 showed the role of economic institution in income differences. Here, income differences were measured by the GDP per capita which was a function of imports, economic institutions and population. The results showed that imports and population were significant at 5 % level of significance while economic institutions were insignificant. It elaborated that economic institutions have no significant role in explaining the income differences among countries especially in low income countries. In Model 3, the role of political institutions in income differences was analyzed. In this model, income differences were measured by GDP per capita which was a function of imports, political institutions and population. In this model imports, population and political institution were statistically significant at 5 % level of significance. The coefficient sign of imports was negative whereas the coefficient sign of population and political institution was positive. Population was found having a positive relationship with GDP per capita and political institutions were performing well and played significant role in income distribution.

On the other hand, in middle income countries, Model 1 showed that income differences were measured by the GDP per capita which was a function of imports, investment and human development index. All of these are significant at 5 % level of significance. Where, imports were negatively related with GDP per capita and human development index and investment were positive. Moreover, Model 2 shows the role of economic institutions in income differences of middle income countries. In this model income differences were measured by GDP per capita which was a function of imports, economic institutions and population. Population and imports were significant at 5 % level of significance while economic institution was not performing any role to reduce unequal income differences in middle income countries. The coefficient sign of population showed the positive relationship of population with GDP per capita. The results indicated the positive role of population to generate more income. So, the countries have high fertility rates and high per capita income which leads to generate more income different among countries among nations because population may be a reason of high GDP per capita of countries. Furthermore, Model 3 in middle income countries showed the role of political institutions in income differences. Here, income differences were measured by GDP per capita which was a function of human development index, political institutions and investment. All

these variables are significant at 5 % level of significance. It shows that the political institutions play significant role regarding income distribution in middle income countries. Thus, on the bases of these empirical findings, the current study suggested that government should focus to improve the performance of political and economic institutes. Moreover, the developing countries can also improve their investment opportunities.

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