THE IMPACT OF INSTITUTIONAL QUALITY ON STANDARD OF LIVING

By

LISTYAGHI, Hutomo Bayu

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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Committee in charge:

Professor Shun WANG, Supervisor _____

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ABSTRACT

Several prominent studies have been conducted to test the causality of institutional quality on income growth. However, income growth only partially captures the living standard. Many economists, including the noble laureate Amartya Sen, proposed Human Development Index (HDI), as a more comprehensive indicator to capture living standard.

Therefore, this study aimed to examine the impact of institutional quality on HDI. The study tests the causality of Institutional quality on HDI by using cross-countries data time period 2005-2013. Pooled OLS and Fixed Effect estimation methods are employed in the analysis.

The result of this study showed that institutional quality, as indicated by governance and democratic quality are having significance positive impact on HDI. Under the Fixed Effect scenario, 3 years lags governance is employed, and the result show that governance and democratic quality are remain positively significance on HDI.

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Introduction

1. Significance of the Study

Economic has long familiar with income per capita as an indicator of living standard. Nonetheless, further studies have agreed that income per capita only constitutes one aspect of living standard. Noble prize winner, Amartya Sen in his book Development as Freedom (1984) emphasized the role of capability aspects such as health, education and political freedom as determinant of living standard.

From a simple data comparison, we can see that high income per capita does not guarantee decent living standard. For example, Brunei Darussalam which in 2005 stands as the highest-ranking in terms of income per capita had lower life expectancy than Chile. History also tell similar story for apart from its significant increase in income per capita, Britain during industrial revolution did not experienced parallel improvement in life expectancy and mortality rate (Crafts, 1997). India is another case where an economic growth did not correspond with the decrease in mortality rate due to both income and gender inequality (UNDP, 2005).

Efforts have been concerted to investigate factors which account for differences in cross countries income per capita. For example Rodrik et al. (2004) and Acemoglu et al. (2001) suggest that institutional quality is responsible for the differences. However, there are still limited number of studies which try to test causality between institutional quality and comprehensive aspects of living standard. Hence, this study aims to test the effect of institutional quality on composite index of living standard which is reflected in Human

Development Index (HDI). As an addition, rather than using single proxy for institutional quality, this study will employ measurement for both political and governance quality.

1.1.Research Questions

This study attempted to analyze the effect of institutional quality on living standard. Particularly, this paper will examine: 1). How political institutions influence HDI, and 2). How governance influence HDI.

Literature Review

2. Theoretical Framework

Theoretically, variations of income per capita across countries are determined by resource endowment (human capital and physical capital) and productivity. However, resource endowment and productivity are endogenously determined by other fundamental factors. Rodrik et al. (2004) suggested that there are 3 fundamental factors: (1) Institutions, (2) Integration (trade), and (3) Geography. The linkage of those factors to income per capita can be seen in the figure 1.

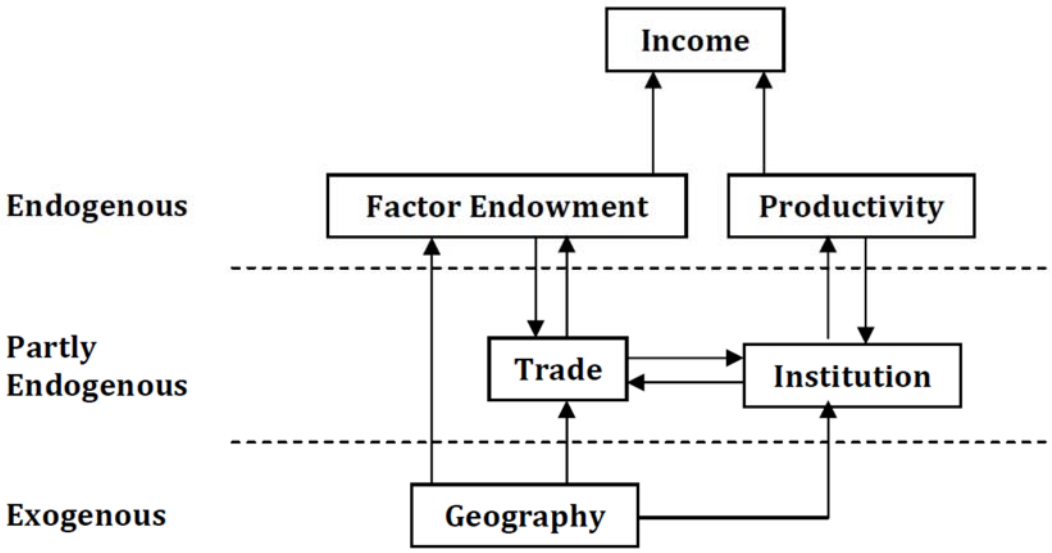

Figure 1. Theoretical Framework

This study will utilize similar theoretical framework to analyze the effect of institutional quality on living standard. Only in this case, instead of having income per capita as output variable, we use HDI.

2.1.Living Standard and HDI

The concept of living standard is broad as it supposed to capture many social aspects. Crafts (1997) suggest that the living standard consist of not only income aspects but more about capability aspect such as education, health, political rights, and civil rights. Amartya Sen (1984) suggest that living standard is about ability to function and capability. He further elaborate that functioning is related to the status quo of what person do or achieves while capability is related to the potency of what person can do or achieve.

Substantial progress has been made on how to measure living standard beyond income per capita. The United Nation Development Program (UNDP) introduced the HDI as comprehensive measurement of living standard.

Basically there are 2 steps to get a HDI value. First, transforming indicators such as life expectancy at birth, mean years of schooling, and GNI percapita into dimension index. Commonly, the indicators mentioned are taken from secondary sources such as UNDESA, UNESCO and IMF. The output of the conversion into dimension index is what makes HDI expressed in term of ratio from 0 to 1. The formula to convert the indicators into dimension index is :

$$Dimension\ Index = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

Second step is, taking the geometric mean of the three dimensional indices that has been calculated. The formula is as follow:

$$HDI = (I\ health\ .I\ Education\ .I\ Income)^{1/3}$$

One drawback of HDI is, it does not account for inequality, and hence, often adjusted by considering the Gini Coefficient and the Gender Development Index. Fully aware of this fact, beginning from 2010, the UNDP introduced the Inequality Adjusted HDI (IHDI). However instead of using both Gini Coefficient and Gender Development Index, it employs Atkinson index. This partial improvement makes IHDI less sensible when it comes to access to capability based on gender. Despite its imperfection, HDI is still widely-used indicator of living standard in many studies.

2.2.Institutions

In its simplest definition, institution is the rule of the game in which society is governed. As it is suggested by North (1990), institution is defined as a man invented rules of the game that shape human interaction. He furthers his definition by elaborating institution as a structure of incentives in human exchange, whether social, economic or political.

The work of Acemoglu et al (2001) has been commonly referred to explain the link between institutional quality and economic growth. On that particular paper, we can also see that an institution that enforced protection of property right will positively influence economics growth. Protection of property right is reflected by the instrumental variable they employed, in which in the area with low settler mortality, more white settlement, the institutions are designed to both protect and accommodated property right.

A more recent research by Rodrik et al (2004) define institutions as the quality of both formal and informal socio-political arrangement ranging from political institution to legal

system. Whereas, the concept of the New Institutional Economics includes contractual relations, corporate governance, political rule, finance, and culture (see Menard and Shirley, 2005).

If we take a look figure 1, institutions have both direct linkage to income per capita and indirect linkage through trade. These relationship become tangle as institutions are endogenously determined by geography. Moreover, reverse causality between income per capita and institutions is believed to exist.

In analyzing the effect of institution on other component of living standard, such as education and health, we can make use the similar theoretical framework. Klomp and de Haan (2008) suggest that low quality of governance will cause what they call 'well-intentioned spending' to have scant effect due to corruption and miss-procurement. This finding is intriguing as government in many cases plays critical role in financing, enact regulation, and monitor the health and education sectors. Low governance quality will negatively influence the quality of health and education.

2.3.Trade

This study refer to trade as the cost and benefit of participating in international exchange of goods, services, capital and labor (see Rodrik et al., 2004). Many studies have examined the positive impact of trade on income per capita (see Dollar and Kraay, 2003; Rodrik et al., 2004; Acemoglu et al., 2004). Figure 1 shows that trade has both a direct and an indirect linkage on income per capita. Trade has the property of endogeneity as it is determined by

other factor which in this case is geography. Both trade integration and liberalization are positively influenced the level of poverty alleviation (see Winters et al., 2004). A common indicator used to measure the degree of integration is the ratio of import to GDP and the ratio of trade to GDP.

Owen and Wu (2002) in their paper explain several channels of how trade openness positively influences health. First is the international cross borders movement of medical technologies, know-how and doctors. As an addition, people can also go abroad to receive either better or cheaper medical care. The second channel is through the increase volume of medical supplies.

Many studies explore the effect of trade liberalization on education. To cite one of them, Robbins and Gindling (1999) found that trade liberalization creates spillover effects from the physical capital imports. This physical capital in turn demand complementarity of labor skill, hence, increase demand for higher education. The international cross borders movement of student, teachers and curriculum will also increase education quality.

On the other hand, trade has the potency to degrade health quality by facilitating transfer of cross borders diseases, dangerous consumer goods, even dangerous know-how. The most recent example is the MERS outbreak in South Korea. The liberalization of education sector also face fierce objection, especially in developing countries, as it is suspected to increase the education cost hence further the inequality.

2.4.Geography

The concept of geography covers both human and physical geography. Human geography is defined as process of interaction which by the time embedded and becomes traditions, norm, culture and institutions. Physical geography relates to physical location (climate, population, surface area).

Geography determines endowments of natural resources, disease burden, and diffusion of knowledge and technology (see Rodrik et al., 2004). It is commonly understood that a country that is geographically rich in natural endowment will have high economic growth. The case is apparent in oil exporting countries where oil revenue is used to finance infrastructure and other social program to improve living standard. However, since natural resources are finite, more populated countries lead to lower living standard, particulary in agricultural area (see Ogburn, 1951).

A more recent study corroborates the argument that resource abundant country will have lower economics growth. This argument is widely known as the resource curse. Sachs and Warner (1995) elaborate the mechanism in which natural resource tends to raise the potency of conflict among parties within the government to get a share of revenue. In other words, country which relies much on natural resource will give more room for corruption. The Dutch disease phenomenon can also provide alternative point of view of resource curse.

Related to diffusion of knowledge and technology, geography represented by surface area per population affects the cost of distance. A high surface area per population will increase

the transportation costs and constraint the dispersal of knowledge and technology. A more densely populated country will also have higher probability for innovation.

If we see figure 1 above, geography also has an indirect effect on income per capita through integration and institutions. Therefore, geography is treated as an instrumental variable in estimations. On the other hand, some studies asserted that geography itself has a direct impact on economic performance (see Gallup et al., 1999; Easterly and Levine, 2003; Sachs, 2003).

Methodology

3. Model Estimation

In order to examine the effect of institutions on the living standard, this study follows Rodrik's theoretical framework as presented in the previous part. However, we will make three extensions:

1. Rather than using income per capita as the indicator of living standard, we use the HDI instead.
2. Include comprehensive indicators of institutions such as political institutions, and governance. It is based on the definition of the New Institutional Economics which includes written rules and agreements that govern contractual relations and corporate governance; constitutions, laws and rules that govern politics, government, finance, and society; unwritten codes of conduct, norms of behavior, and beliefs (see Menard and Shirley, 2005).

3. Incorporating other factors which probably determine the living standard as control variables, for instance integration (trade) and geography as suggested by Rodrik et al. (2004). Regarding the estimation of health, we include immunization as a control variable (based on Klomp and de Haan, 2008). In addition, macroeconomic variable such as inflation is also considered in the estimation. The main advantage of including control variables is to minimize the omitted variable bias problem.

For the estimation purposes, I use panel data. In order to the check robustness of the model, I employ two estimation methods, OLS and Fixed effect (FE) models. Meanwhile, to capture the lag effect of institution toward HDI, I also create lag variable of 3 years for governance in both models. The fixed effect method with 3 years lag for governance is the main model used in this study.

The model for OLS with no lag is as follows;

$$\mathrm{HDI} = \alpha + b1Democracy_i + b2Governance_i + b3logintegration_i + b4immunization_i + b5geography_i + b6inflation_i + b7dummy_i + e_i$$

The model for OLS with governance 3 years lag is as follows;

$$\mathrm{HDI} = \alpha + b1Democracy_i + b2Governance_{it-3} + b3logintegration_i + b4immunization_i + b5geography_i + b6inflation_i + b7dummy_i + e_i$$

Meanwhile, the model for Fixed Effect estimations in this study is as follows;

$$\text{HDI} = \alpha + b1Democracy_{it} + b2Governance_{it} + b3logintegration_{it} + b4immunization_{it} + b5geography_{it} + b6inflation_{it} + b7dummy_{it} + \alpha_i + e_{it}$$

Fixed effect with governance 3 years lags;

$$\text{HDI} = \alpha + b1Democracy_{it} + b2Governance_{it-3} + b3logintegration_{it} + b4immunization_{it} + b5geography_{it} + b6inflation_{it} + b7dummy_{it} + \alpha_i + e_{it}$$

Where i and t denote countries and time respectively, and ε denotes error terms. This model assumes the coefficients of institutions for all countries (b) are the same across countries. However, the heterogeneity of each country can be captured through its different intercept (αi), the so-called individual specific effect. The individual specific effect captures components that are unobserved by the econometrician. In order to assess the effect financial crisis in 2008, time dummy will also be employed.

A main problem which possibly emerges in the estimations is the endogeneity problem since institutions and the other control variables are not exogenous. To solve this problem, we can apply two stage least squared method (2SLS), in which geography is treated as instrumental variable (see Rodrik et al. 2004). In this paper however, we are not going to do that because it is difficult to find a convincing instrumental variable and it will significantly reduce the number of observations.

3.1. Hypotheses

Based on the theoretical explanations in the previous section, there are 6 hypotheses going to be addressed, which are:

1. Governance has a significant and positive effect on the HDI.
2. Political Institution (democracy) has a significant and positive effect on the HDI.
3. Integration (trade) which is approximated by the ratio of import to GDP will have a significant and positive effect on the HDI.
4. Geography which is represented by population density will also have a significantly negative effect on the HDI.
5. Immunization is also expected to have a significantly positive effect on the HDI.
6. The other control variables such as inflation will reduce the HDI since a higher inflation leads to higher costs of living.
7. The 2008 Global financial crisis has negative effect on the HDI.

3.2. Data

The living standard indicators which are represented by HDI is provided by the UNDP. We have an unbalanced data set of 214 countries for the years 2005-2013. We define institutions as the combination of two components: (1) political institutions; and (2) governance. The political institution data is provided by The Center of Systemic Peace dataset from 2005 to 2013 for 214 countries. The political institutions are the polity index in which it measures the democratic quality of a particular country. The more democratic a country is, the higher the index value, the more progressive it is in the HDI.

Governance represents the strength and expertise of the government to govern without drastic changes in policy or interruptions in government services. Corruption proxies actual or potential corruption in the form of excessive patronage, nepotism, job reservations, secret party funding, and suspiciously close ties between politics and business. The variable use in the regression is the sum average between governance effectiveness and control of corruption. Data for governance and corruption control are taken from the World Governance Index (WGI), World Bank.

Integration (trade) as a control variable is measured by the ratio of import to GDP. A higher value of the ratio indicates that a particular country is more integrated to the international markets. The data is provided by World Development Indicator (WDI), World Bank.

In addition, geography is approximated by population density (in squared kilometers per person). This data is also provided by WDI. Immunization is measured by the percentage of children aged between 12-23 months which receive DPT immunization in a year. Inflation as a representation of a macroeconomic variable is measured by the percentage change in the consumer price index (CPI). Inflation data is provided by the WDI.

I also put time dummy to observe the effect of 2008 financial crisis. I put value of 1 for all countries at year 2008, while for the other years (2005-2007 and 2009-2013) I put 0. I intentionally control dummy variable only in the year 2008 as an effort to capture very specific effect the financial crisis considering before and after that particular year, other factors might be captured within regression. The financial crissis mainly influences the rate

of inflation and integration as it is measured by trade. The effects toward these two variables in the end determine the level of Human Development Index. Below is the summarize statistic for all variables used:

Variable	Source	Observation	Mean	Std. Dev	Min	Max
Year		1935	2009	2.58	2005	2013
HDI	UNDP	1232	.165	.29	.94	.16
Governance	WGI	1865	-.008	.99	-2.45	2.43
Democracy	Polity Index	1152	3.51	7.89	-10	10
Integration	WDI	1143	46.65	28.05	11.14	228.74
Immunization	WDI	1926	.78	.31	0	0.99
Inflation	WDI	1593	5.97	6.07	-10.07	59.22
Geography	WDI	1827	304.8	1430.89	.14	18915.5
Time Dummy	-	1926	.67	.472	0	1
Countries			214			

Table. 1

Discussion and Conclusion

4. The General Picture of the Living standard and Institutional Development across Countries

Income per capita cannot fully reflect the extent of the living standard. Cross country data in 2014 showed that high income per capita countries does not always guarantee high living standard and also low income per capita countries do not necessarily have a low living

standard. For instance Brunei Darussalam and United Arab Emirates as the two highest income per capita countries did not reach the highest positionin living standard. Brunei Darussalam and UAE were 30th and 40th respectively on HDI rank. On the other hand, Netherland didn't make it to the top ten in term of GDP per capita but had a higher living standard as indicated by the HDI rank of the 4th.

In other case, Chile, which is categorized as a developing country, was only one rank behind of UAE in term of HDI. The extreme case related to human rights is Argentina which had a low income per capita but it achieved a high score in human rights. All of those examples show that income per capita is only a narrow measurement of the living standard. Furthermore, a low income is not a barrier to the development of the other aspects of living standard. Brunei Darussalam and United Arab Emirates as oil producing countries are the extreme case. As expected by Ades and Tella (1999), oil producing countries with natural rents foster corruption, and it causes low living standard.

With respect to the trend of income per capita across time, the average income per capita of countries in the world increase approximately 24 times (from USD 450.58541 in 1960 to USD 10803.5004 in 2013) in 20 years. Nevertheless, the gaps of average income per capita between developed and developing countries still exist. Several factors such as the quality of human capital (see Barro, 1991), the extent of institutional development and trade integration (see Rodrik et al., 2004 and Acemoglu et al., 2004), and geography (see Sachs, 2003), account for the gaps.

In general, the living standard which is represented by HDI tended to improve from 1980 to 2013 both in developed and developing countries (see figure A1 in appendix). However, the gaps of HDI between developing and developed countries are persistent. This is supported by Hobijn and Franses (2001) who found that the living standard did not converge across countries. According to the UNDP, the overall rate of convergence of human development is slowing down and the speed of the living standard development in developing countries is reducing.

With respect to institutional development, the quality of institutions in the world had been improving from 2005 to 2013. The critical part of the institutional development however, took place during the 1990s which was associated with more market-oriented policy in economy and democratic systems in politics. The new institutional building in economy and politics requires a well-functioning government, the so-called good governance. Kaufman et al. (1999) includes three core dimensions of governance, namely (1) the process by which authority is selected, monitored, and replaced, (2) the government's capacity to effectively manage its resources and implement sound policies, and (3) the respect of citizens and the state for the country's institutions. Here, the institutions used in the analysis are the combination of political institution as indicated by democratic quality and governance. From the scatter plot between institutions and each component of the living standard, we can see that a high living standard is associated with well-developed institutions

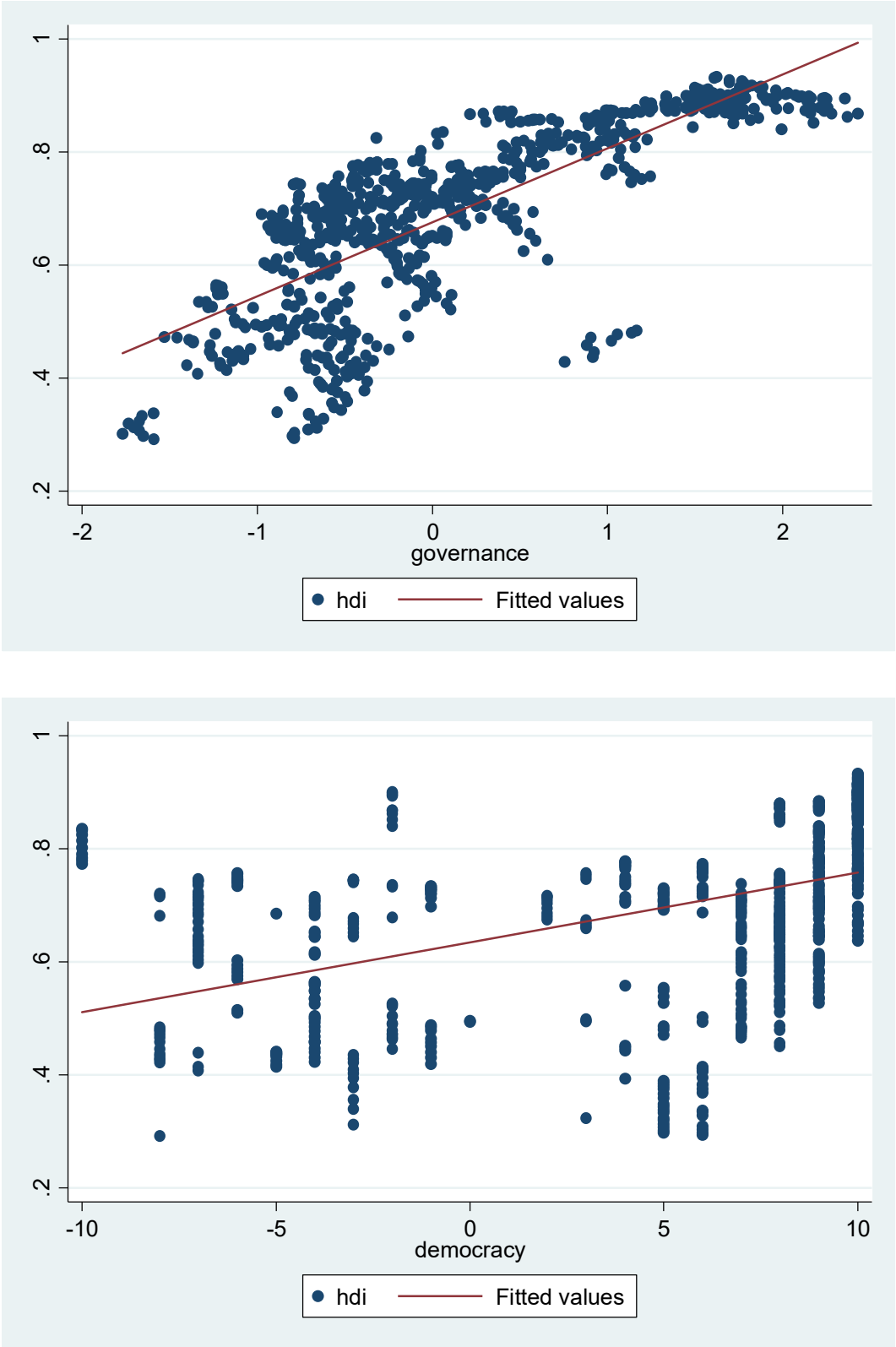

Figure 2. Correlation Between Institution and HDI

However, in the extreme cases, a high extent of the institutional development is inconsistent with achievements in the living standard. For instance, in 2005, the quality of institutions in Namibia was much better than that in Algeria, while the level of human development represented by HDI in Namibia was lower than that in Algeria. This phenomenon is also visible when we relate the quality of institutions with human rights.

In the next section, we will examine extensively the effect of institutions on the living standard by employing econometric methods. For estimations, we will consider the other variables which possibly affect the living standard such as trade, geography, and macroeconomic variables.

4.1. Estimation Result

Based on table 2, we can see that, under OLS method, governance has a very significant positive impact on HDI. The result is robust even when we use 3 years lag variable for governance. I decide to use 3 years lag of governance after trial and error of all combination of lag variable for both governance quality and democratic quality. In the end it reaches to the point of governance 3 years lag where it posits the best combination of results (level of significance) for both the main explanatory and control variables.

With 0.1% significance level, holding the other variables constant, an increase in governance quality by one point score improves HDI by 14.35 point respectively. As we employ the lag variable for governance, the results remain significant with governance

quality having significance level of 0.1%. Under this scheme, an increase in governance quality by one point improves HDI by 14.58 point.

Under the FE method with no lag, governance loses its significant on HDI. When the lag governance is employed however, it again becomes significant. At 5% confident level, an increase in one point of governance quality, will improve HDI by 0.95 point.

Meanwhile, democracy only shows significant result under FE method. Under this method, democratic quality has positive coefficients on HDI of 0.13 at 1% level of significance. Once we employ the lag variable for democratic quality, the result becomes even stronger. The democratic quality is significance at the level of 0.1% with coefficient of correlation of 0.14. Under this scenario, one point increase in democratic quality increase HDI by 0.14 point.

This findings support the hypothesis that a good quality of institutions increases the living standard. Based on the theoretical framework in the previous part, good governance such as transparency, accountability, and bureaucracy quality will increase the government spending effectiveness on both education and health sectors as they minimize the extent of corruption and miss-procurement. Whereas, democracy ensures protection of property right, thus, provide incentive for investment and create income growth. Another thing to consider is that in some cases, public policies related to both governance and democracies are lagging in effect.

Integration (trade) represented by the ratio of import and GDP has weak mixed effects on

the improvement of HDI. The OLS estimation shows that integration negatively influences HDI insignificantly. The result remains consistent when governance lag variable is used in the estimation.

Meanwhile, under the FE methods, the coefficient of integration on HDI becomes positive but remains insignificant. Even when lag variable of governance is employed in the estimation, integration is positively insignificant on HDI. It is to some extent in line with Rodrik et al's (2004) results, when institution is employed to control openness (along with it IV to treat endogeneity), integration has insignificant effect on income growth or in several cases even negatively influenced.

This study suggests that there is no evidence that trade liberalization contribute to the improvement of HDI. It defies common believe, as it is elaborated in the literature review, that liberalization of trade helps to improve HDI mainly because of the free flow of resources. Only when it works parallel with institutional quality that trade contribute to HDI.

Geography also posits mixed results. Geography which is denoted by the population density has a significant negative effect on HDI under OLS methods. The result is consistent even when the lag variable for governance is used within the estimation. This finding seems to support the arguments that limited natural resources in more sparsely populated countries lead to lower living standard (see Ogburn, 1951). It also confirms the resource curse hypothesis.

Interestingly, under the FE method, the coefficient for geography change to become positive at 0.1% significance with or without lag variable. This study takes the FE methods with lag variable as its main result. Hence, the result of this study aligns with argument that suggests geography is related to the cost of distance or the cost of transportation which restraint the diffusion of knowledge and technology in less densely populated countries.

Immunization as a control variable in health model is always having significant impact on HDI. Only after lag variable for governance employed under FE method that immunization lose its significant on HDI. This finding is supported by evidences that the global immunization program could reduce the mortality rate and improve life expectancy (UNDP, 2005).

In order to assess the effect of global financial crisis on HDI, this paper control global financial crisis using dummy variable. The result shows no evidence that the global financial crisis affect the HDI. Only after lag variable for governance under FE method is employed that it gives very significant result. The estimation results under this scenario show that the effect of global financial crisis on HDI is significant at 0.1% level. Moreover, increases in one point score of dummy variable negatively influence HDI by -0.67.

The result shows that the global financial crisis influences the living standard negatively. As the crisis struck, there will be slow down in income growth, moreover medical and education cost become more expensive. The global financial crisis also results on massive unemployment all over the world.

	OLS	OLS	FE	FE
	HDI			
Quality of Governance	14.35***		0.16	
	(20.90)		(0.18)	
$Quality\ of\ Governance_{it-3}$		14.58***		0.95*
		(18.24)		(1.96)
Quality of Democracy	-0.063	-0.074	0.13**	0.14***
	(-0.60)	(-0.57)	(3.12)	(3.46)
Integration	-0.02	-0.03	0.031	0.002
	(-1.07)	(-1.36)	(1.57)	(0.23)
% Children Immunization	17.85***	15.65**	6.877**	2.42
	(4.01)	(2.94)	(2.88)	(1.81)
Inflation	-0.125	-0.07	-0.03	-0.04*
	(-0.86)	(-0.04)	(-0.88)	(-2.24)
Population Density	-0.001**	-0.001*	0.005***	0.005***
	(-2.95)	(-2.28)	(5.67)	(5.41)
Time Dummy	-0.33	-0.65	0.14	-0.67***
	(-0.20)	(-0.37)	(1.22)	(-8.1)
N	934	621	934	621

t statistics in parentheses

* P<0.05 **p<0.01 ***p<0.001

Table 2

It can be concluded that good governance and democratic quality are essential for the improvement of the living standard as suggested by UNDP. In addition, geography represented by surface area per population also gives a significant impact on the living standard. However, integration or trade in this study is insignificant on HDI. Again, a main problem which possibly shows up in the estimations is the endogeneity problem since institutions and the other control variables are not exogenous as explained in the theoretical part.

4.2. Conclusion

The living standard is a broad concept. Many studies show that having a high income per capita does not guarantee that countries have a good quality of life. Moreover, both income per capita and other aspect of living standard between developed and develop countries tend to diverge.

The differences of the living standard across countries are significantly affected by the quality of institutions, which are the combinations of Democracy and governance. The results are robust when I include the other control variables such as trade, geography, and inflation. However, the estimation results possibly face endogeneity problems since institutions are not exogenous.

Under Pooled OLS method, governance has a very significant effect on HDI. Meanwhile, under Fixed Effect method with no lag, democratic quality has positive significant effect on HDI. Only after 3 years lag variable for governance is employed in the Fixed Effect

estimation, both governance and democratic quality have positive significance effect on HDI. It confirms the lag nature of public policy, especially related to institution.

Overall, this study concludes that the institutional development in term of good governance and democracy are essential for the improvement of living standard as it is measured by HDI.

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