



Universiteit
Leiden

Master Thesis: Probing the impact of social and cultural rights on the economic development through a quantitative approach.

By Ruikun Sun

S1723537

May, 2017

Presenting to the Faculty of Global Governance and Global Affairs of the University of Leiden
for the degree of MSc. in International Relations and Diplomacy

First Supervisor: Dr. J.J. Kantorowicz

Second Supervisor: Dr. M.D. Sampson

Contents

Introduction.....	3
Chapter one	6
Literature Review.....	6
Theoretical Approach, Concepts, and Hypotheses	8
Theoretical approach and concepts	8
Hypotheses.....	10
Chapter Two.....	14
Method and Data.....	14
Introduction.....	14
Use of panel regression analysis	14
Conceptualization on the variables	15
Operationalization.....	16
Population and Sampling Procedure	17
Data Collection	18
De jure IVs.....	19
De facto IVs	23
DVs	25
Data Preparation.....	25
Data Analysis Strategy.....	28
Use of Fixed Effect Model.....	28
Control on Time & Year Effects.....	31
Use of Cluster Effect.....	34
Results.....	35
De jure database.....	35
Result on Labor productivity	37
De facto database.....	40
Result on GDP per capita growth rate	40
Result on Labor productivity	42
Summary.....	43
Chapter Three.....	46
Discussion	46
Part I Discussion on test results	46

Part II Reflection on theory.....	48
Part III Limitations of the research	49
Conclusion	52
Bibliography	55
Appendix.....	60
I. Raw regression results of all three models in Table 1	60
II. Raw regression results of all three models in Table 2	63
III. Raw regression results of all three models in Table 3	66
IV. Raw regression results of all three models in Table 4	69
V. Detailed regression result of de jure respect for environmental rights to GDP per capita growth rate in model 3	72
VI. Detailed results of respect for human rights treaty group as de jure IV	73

Introduction

This paper probes the interaction between human rights and economic development. More specifically, it is focused on the influence of sovereign states' respect for human rights as independent variables (IVs) on the domestic economic development, as the dependent variable (DVs). This paper regards economic development including economic growth¹ related indicators to represent development as the outcome. It looks at not only GDP growth rate, but also considers other economic indexes in order to have a comprehensive view of the economic condition. Thus, this thesis will answer: '*whether the respect for social and cultural rights by countries contributes to domestic economic development?*' The reason for taking such an emphasized angle on social and cultural rights and the one-way influence from rights to economic development, instead of being vice versa, will be explained in the first chapter.

The research topic and research question in this paper are inspired by the argument, made by Seymour & Pincus (2008), that there is a complementary relationship between human rights in general and economics. Specifically, they contend that though human rights studies are more normative and the economic studies are more positive in nature, the disparities between them fill up each other's disadvantages and could contribute to the reality. For example, economists, especially welfare economists, are consequence-oriented and their arguments are criticized by Seymour & Pincus (2008) as unrealistic and lacking moral basis. Thus, the original idea of the research topic derives from their works.

The methodology of this paper is quantitative-based. The author uses panel regression analysis as the main analysis tool in research. In order to secure the accuracy of the regression analysis, the research targets all UN member states, and excludes observing states such as State of Palestine and unrecognized political entities such as Taiwan. The time span of this research is from 1966, the birth year of *International Covenant on Economic, Social and Cultural Rights* (ICESCR), to the current year, 2017.

The panel regression is run on two major parts, which are the de jure database and the de facto database. Each database contains two major regressions on the two dependent variables, namely

¹ There are differences between economic growth and economic development. The latter covers more than economic growth but also elements like life standards.

GDP per capita growth rate and Labor productivity. Following that, in each of these regression on one specific dependent variable, three models are tested. Therefore, totally forty-eight rounds of test, with twenty-four rounds of each database, are implemented in this research paper.

The regression results show that de jure respect and de facto respect for social and cultural rights vastly differ from each other, with regard to the effects on the DVs. Specifically speaking, the de jure respect for social and cultural rights is more closely correlated to the economic development. First, among the twenty-four units of test for each database, ten of them show a statistical significance of correlation between the IVs and the DVs in the de jure one while only four of them show the significance in the de facto one. Second, as to the four categories of IVs per se (Human Rights, Environment, Health, Education & Cultural matters), the de jure respect for human rights category demonstrates a correlation to the DVs in three regression tests while there is no correlation between de facto respect for human rights and the DVs; the de jure respect for environmental rights shows effects on the DVs with statistical significance in four tests while the de facto respect for it only shows half amount of its counterpart; the de jure respect for health rights does not show any correlation with the DVs whereas the de facto respect for it displays one significant effect on the DV; three test results demonstrate a correlation between de jure respect for education & cultural rights where just one such result is observed in the de facto part.

In sum, regardless of the division of the two databases, respect for environmental rights affects the changes in economic development most effectively; the respect for education & cultural rights the second effective on the DV; and the respect for human rights ranks as the third effective one. Respect for health rights casts the least and almost no influence on the economic development.

The rest of this paper contains three chapters. The first chapter includes sections of literature review and theoretical approach, concepts, and hypotheses. The first section explains the academic works that triggered the interest of this paper. It also claims the academic and practical importance of this paper. The second section deliberates on the theoretical base supporting the foundation of this research and carefully explains the theory developed by the author based on

the previous academic works. It also explains the key concepts and the hypotheses of this paper based on these theory.

The second chapter contains sections of method & data and results. The first section, namely method and data, plays one of the most important role in this research paper, aiming to explain the technical issues such as reasons of choosing analysis tools, specific indicators for IVs and DVs, coding, models used in regression, etc. The second section, the result part, demonstrates the regression results with description and explanation on statistical outcomes of all the regressions.

The third chapter obtains two section, discussion and conclusion. The first one provides three parts- the first one with an interpretation of the results, inter alia, the exceptional ones and their implications to the research question; the second one with reflections of the test results on the theory mentioned in chapter one; the third one with discussion on limitations of this research. The second section presents recapitulation on the proposed hypotheses, based on the test results, and thoughts and suggestions to further studies in the same realm in the future.

Chapter one

Literature Review

In their article, Seymour & Pincus (2008) acknowledge that for those who study the relationship between human rights and development, including economic development, the analysis of human rights is usually focused on political and civil rights.² Such an argument is supported by De Kadt's (1979), claiming that the first generation of human rights, namely the political and civil rights, has been more emphasized by scholars. He argues that the natural characteristic of political and civil rights (mainly as negative rights) makes the fulfillment of treaties on such rights easier to be achieved by states. In contrast, the second generation of human rights, including social and cultural rights, are basically positive rights as an "aspiration of humanity".³ De Kadt (1979) implies that for the second generation of human rights there is great leeway for states to achieve them according to their limited resources and capacities. Therefore, there have been more studies on political and civil rights per se than on the second generation of human rights, not to mention the particular realm between human rights and development. In addition, O'Brien (1978) makes similar arguments – that not enough attention was given to the socio-economic rights structure – based on his empirical observations.

Uvin (2002) argues that development practitioners usually ignore human rights. From his justification it shows that he naturally takes it for granted that human rights are supposed to be effected by development.⁴ Besides Uvin (2002), Sykes (2003) also has the same logic issue. He, when referring to the relationship between international trade and human rights, unconsciously follows the idea that human rights is an output. As a result, his conclusion pointed out that trading systems enhance the promotion of human rights. Yet, in his article, he neither considers human rights as an explanatory variable, namely an input, nor makes any specification on the rights he has analyzed.

² See Seymour & Pincus (2008), pp. 393

³ See Kadt (1979), pp. 98

⁴ See Uvin (2002), pp. 1

This paper is designed to argue that first the relationship of influence between human rights and development can be inverted that human rights are able to affect economic development. Second, making one step further, to explore that to what extent do these rights influence on economic development. It also specifies economic development as its dependent variable of the research question, instead of development in general; the reason for this is that development per se is a broad and vague concept, which can be examined from different perspectives and dimensions. Narrowing the scope of research to economic development sets a clearer object that can be empirically measured from data that can be gathered relative easily. Although economic development cannot represent the whole concept of development studies, this study considered economic development as the pivotal component in this research realm.

Slim (2002) concludes that the main argument of Uvin (2002) was criticizing that talks on ‘right-based development’ are nothing more than a repackaged rhetoric for power intention, which in reality is absurd and pointless. He contests such a criticism by arguing that rights-talks could be inspiring and genuine. To agree with Slim’s justification for rights-talks, this paper expects to see that by testing the research question, it would show a positive effect from human rights, specifically social and cultural rights, to economic development. If this expectation is proven true, then rights-talks are not “fluff”, as Uvin claimed, since the talks would be justified by the fact that ‘rights-based development’ is worth advocating, even though its intentions can be manipulated by people.

To sum up, the author realizes there is a research vacuum regarding the relationship between development and social and cultural rights. The research question considers only the analysis of the second generation of social and cultural rights, doing so in order to fill some of the vacuum, and thus, justifying the academic significance of this thesis.

Besides its importance, this paper also possesses significance to the real world. Welling (2008) claims that objective international indicators would help sovereign states to improve their implementation of the ICESCR. This research holds the same advantages, since its outcomes are expected to verify the expected positive influence from the respect for social and cultural rights to economic development, as well as to point out specific rights that have certain effects on

improving economic developments. The author expects the research results to provide a legitimate basis and motivation for states to accomplish their commitment to the fulfillment of social and cultural rights. In addition, by referring to this research in the future, states would have a clearer direction towards achieving their goal of improving social and cultural rights, as well as economic development.

Theoretical Approach, Concepts, and Hypotheses

Theoretical approach and concepts

As the two main subjects of this research are social and cultural rights (representing human rights) and economic development, the most matching theoretical framework is thus the rights-based approaches [to development studies], or say the rights-based development. Though titles of such a framework vary sometimes, they mainly target the same goal of involving human rights into the development studies. The rights-based approach or rights-based development is a type of method to study development, with special focus on the relation between human rights and development. As Ensor et al. (2015) states, the rights-based approaches incorporate and place the concern of human rights at the center of the development.⁵ Jones (2005) points out that rights-based development approaches are beyond the mere reading of legal documents, but also require the social action based on political interpretation.⁶ The logic of thinking about rights-based development approaches is not only normative prescription from relevant law, but also reflects “power relations and rights claims” that certain law on the duty of states could be referred to.⁷ (Ensor et al. 2015; Piron 2005; Uvin; 2004) Based on the logic of Jones (2005), the rights-based approaches are complementary with the legal basis for the concept of human rights in this paper, which will be explained in the conceptualization section. While the legal basis, such as treaties on human rights like ICESCR, secures the legitimacy and legality of exploring the respect for human rights as an input on the effects of economic development in this paper, the rights-based approaches help to clarify that governments are the main actor to fulfill rights since they bear the duties according to the discussion above.

⁵ See Ensor et al. (2015), pp. 39

⁶ See Ensor et al. (2015), pp. 40

⁷ Ibid.

Although such terms as rights-based approaches have only been existing for a few decades, mainly after the breakdown of the Cold War, the development of such a theoretical approach in academia has since been booming. Kindornay et al. (2012) illustrates a boom of academic works on the study of rights-based approaches to development from 1999 to 2008 by calculating the amount of work published in this field. In reality, multiple development actors have also incorporated such a theoretical frame work into their agenda and works. (Kindornay et al. 2012; Cornwall & Nyamu-Musembi 2004) These actors range from the most devout believers of human rights-based approaches as a normative principles such as UNICEF⁸ and UNDP,⁹ to the World Bank, some of which's projects are more profit-oriented, based on the rights-based approach.¹⁰

By adopting the rights-based approaches to development, this paper sees the involvement of human rights to measure development being justified due to both normative and pragmatic reasons, which are shortly explained below.¹¹ First, Hausermann (1998) acknowledges that the unique feature of rights-based approaches can be found in its strong normative basis for rights buttressed by international law in the pursuit for development. It is also the moral and legal basis of the research question here to take the respect for human rights as an input. If such a normative basis is not secured, the research question would not be legitimate, as the necessity for discussing human rights in development would be weakened. Second, as Ferguson (1999) points out, introducing human rights in the discourse on development is a tool to increase countries' accountability to citizens. Following his logic, this paper considered that accountability contributes to the protection and promotion of human rights, thus influencing the development of countries.

⁸ The United Nations International Children's Emergency Fund

⁹ United Nations Development Program

¹⁰ For example, the water partnership programs to developing countries cooperated by the World Bank and Netherlands. See Cornwall & Nyamu-Musembi (2004), pp. 1427

¹¹ There are three categories of justification for talking about rights in development. They are normative, pragmatic, and ethical. See Cornwall & Nyamu-Musembi (2004), pp. 1416

Cornwall & Nyamu-Musembi (2004) discusses four dimensions of the role of human rights in rights-based approaches.¹² It seems that the social and cultural rights in the research question here accord with two dimensions of the role among them. First, they provide “normative principles” for countries in the realization of their development. For example, they indicate realms such as education and public health that countries could plan and implement relevant development projects. Second, these rights per se function as criteria for evaluating the implementation of development. Here, these rights are not simply setting goals for development, but rather working as measures for examining development.

Sen (1999) argues for the importance of not merely focusing on wealth and economic performance indicators when looking at the concept of development, as well as emphasizing the significant role of freedom, which includes various dimensional determinants. Among them, determinants such as “conditions of basic education”¹³, health care, are within the coverage of social and cultural rights in this thesis. The arguments of Sen (1999) indirectly justify the importance and necessity of utilizing the rights-based approaches to development as the theoretical framework.

Hypotheses

Knack & Keefer (1997) probes the effect from social capital to economic performance. They borrow the definition of social capital from Coleman (1990) and Loury (1977), to qualify that trust and norms of civic cooperation (NCC) are the manifestations of social capital. They discovers that higher levels of both trust and norms of civic cooperation contribute to better economic performance.¹⁴ In other words, there is a positive influence from these two manifestations of social capital upon economic performance. By examining the determinants of trust and norms of civic cooperation, Knack & Keefer (1997) then declare that “low social polarization and formal institutional rules”¹⁵ help build trust and norms of civic cooperation. Following this logic, low social polarization and formal institutional rules partly contribute to economic performance. Fukuyama (1995) makes similar arguments when asserting that high-

¹² See Cornwall & Nyamu-Musembi (2004), pp. 1431.

¹³ See Sen, A. (1999), pp. 5

¹⁴ See Knack & Keefer (1997), pp. 1252-1254.

¹⁵ Only formal institutional rules that constrain authorities.

level of trust links to economic efficiency, since the transaction costs, such as financial cost and time cost, are vastly reduced.¹⁶ He also points out that institutions are necessary for the societal prosperity of increased trust, as such trust denotes to the relations between public institutions and civil societies. Sen (1999) states that *transparency guarantees*, as one type of “instrumental freedom”, can help build up the degree of trust within the society and can also reinforce other types of “instrumental freedom” including *social opportunities*.¹⁷ This argument implied a connection between trust and freedoms, namely that the latter might contribute to the former.

Summarizing the logic of the above argument, there is a potentially indirect impact from freedom to economic development appearing. According to Sen (1999), freedom, especially *social opportunity*, obtains social and cultural rights, such as education, health, living standard in general¹⁸. This paper thus proposes an indirect impact of social and cultural rights on the economic development and prosperity.

Since the birth of ICESCR, several international human rights treaties have been designed to protect and promote social and cultural rights of people and to advocate against social inequality which leads to social polarization. For example, as the wording of ICESCR reads: “to ensure the equal right of men and women to the enjoyment of all economic, social and cultural rights...”¹⁹, “without discrimination of any kind as to race, color, sex...”²⁰, the establishment of treaties covering the protection and promotion of social and cultural rights and the enforcement of such implementation also function to eliminate social polarization and set up formal institutional rules.

The Productivity of Nations (1996) claims that elements such as schooling are important, as a contribution to human capital, and higher contribution to human capital gave results of higher output per worker. These social and cultural elements, which indirectly contribute to the output per worker, are defined as rights and are promoted by ICESCR and other international human rights treaties.

¹⁶ See Fukuyama (1995), pp. 151.

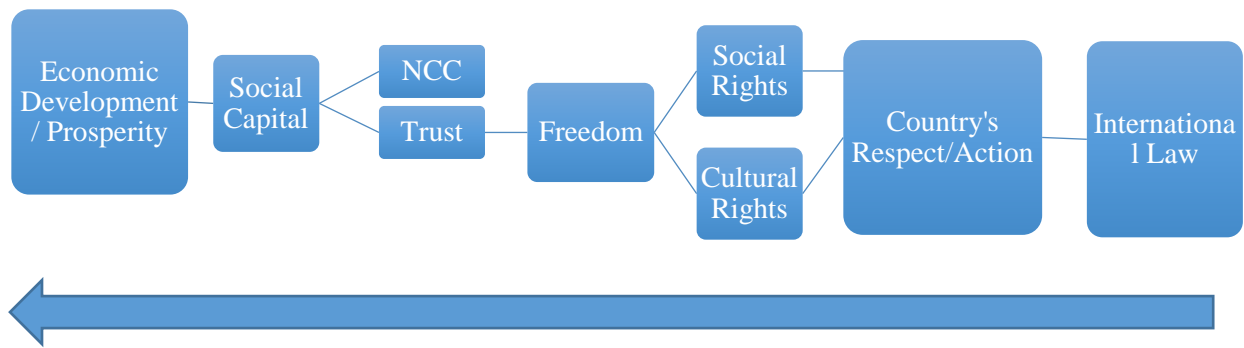
¹⁷ See Sen (1999), pp.39

¹⁸ Ibid.

¹⁹ See Art. 3, ICESCR

²⁰ See Art. 2, ICESCR

Based on arguments in the literature review and the theoretical framework and concepts part of this section, human rights, with rare focus on social and cultural rights, could cast influence on the development and government is seen as the main player. The discussion above then indicates an indirect influence, through several elements, from social and cultural rights upon the economic development. Combining them all together, this paper develops a logic line of the impact process and it is illustrated below:



This graph implies that this paper reckons social and cultural rights of countries based on international law can affect economic development some elements existing in societies and institutions.

To clarify, the interest of this paper only rests on the impact of these two types of rights on the economic development while the elements in between are beyond the scope of this paper and are illustrated to clarify the logic reasoning of the hypotheses only.

Thus, based on the above discussion, this paper proposes the following hypotheses:

H1: The higher degree a country's respect for social and cultural rights, the better its economic development will be.

Yet, Hardin (1992) points out that trust works only with “strong government to enforce contracts”. That said, when countries sign treaties to protect and promote rights without ratifying and/or implemented such treaties, the degree of trust would vary, resulting in differing levels of economic performance.

Based on that:

H2: The de facto respect for social and cultural rights and the de jure respect for social and cultural rights differently contribute to economic development.

In the next chapter, practical issues pertinent to the methods, data, and the operation on the test will be discussed step by step. First, considerations on methods selection are presented. Second, the process of conceptualization on key idea and variables of the research is provided before the data processing stage. Following is the explanation on detailed data management and data handling. Third, the result part will comprehensive description of the test result of each round of regression, accompanied with graphic illustration of the outcomes.

Chapter Two

Method and Data

Introduction

This paper approaches the research topic through quantitative methods with the use of Stata. The use of quantitative approach instead of qualitative is based on two reasons. First, the number of observed subjects; as the research question implies, the use of phrases *country's respect* indicates that countries in general is the population. And the amount of countries existing in the international community is large enough to resort to quantitative approaches. Moreover, based on the population and potential sample size, it would be difficult to exert qualitative measures, such as case study, small N comparisons, etc. As qualitative methods require developing deep understandings of the phenomenon studied, the enormous energy and time needed apparently are beyond the author's capability to apply to the large number of research subjects in this study. By comparison, quantitative methods are good at processing large amount of data with the assistance of statistical techniques. Second, the essence of the research question is more suitable to quantitative method than qualitative method. The research question in this thesis enquires, in essence, a confirmation or denial on the existence of relationships between IVs and DVs. The results should, to some extent, be able to generalize to the majority, if not all, of the population. Ben-Eliyahu (2014) states that observing the "overall pattern" is the advantage of quantitative methods²¹, which matches the core interests of this research. Qualitative methods, on the other hand, are better at providing more accurate analyses, especially on exceptions overlooked by quantitative methods, of single and small sample size cases. Yet, due to the limited amount of cases that could be analyzed by research, the generalization competence of them is weaker than the quantitative ones. Thus, it does not fit the subject of this research, which denotes to countries in a general sense, instead of within pooled categories.

Use of panel regression analysis

Panel regression is utilized to analyze the data among all quantitative research methods. This technique, in essence, is a type of linear regression that is run on the cross-sectional time-series variables.²² It is an ideal tool for researches that contain a fixed number of subjects, such as

²¹ See Rhodes, J. (2014)

²² See Williams, R. (2015).

country, company, organization, etc. within a time period. It also has an advantage to analyze variables that are hard to measure, like cultural factors.²³ As explained earlier, the ICESCR serves as the legal base for the hypotheses in this paper. Thus, there was a time period considered in this research, starting from the birth of this treaty till now. In this case, panel regression is an ideal model for the test. The formula of basic panel regression model is showed below:

$$y_{it} = \mu_t + \beta x_{it} + c_t + \alpha_i + \varepsilon_{it}^{24}$$

Note : y_{it} denotes economic development; x_{it} devotes to respect for social and cultural rights; c_t indicates time effects, α_i means country fixed effects.

It can be seen from the formula that the concerns on both time dimension and cross-section dimension are applied to explanatory element x and the output y .

Stata 13 is chosen as the tool to perform panel regression analysis. This is a professional statistics package that can be used to run regular regression analysis and is commonly used by social scientists. It is combined with the use of Excel. More specifically, Excel works as a data management tool and Stata as the data analysis tool in this research.

Conceptualization on the variables

Different people will have different definitions of social and cultural rights. To clarify, this paper relies on the ICESCR as its legal basis and provision for the coverage of social and cultural rights. The logic to set up both legal basis and conceptual basis is that “[m]onitoring necessitates a conceptual framework to define what to monitor before one can proceed to discuss how and move to de design of indicators”. (Tomasevski 2001; Welling 2008) Utilizing the same logic for this paper works for two reasons. First, since human rights, especially social and cultural rights, are the core independent variables in this research, this paper needs a legal basis to solidify the legitimacy of its arguments on human rights. The ICESCR satisfies both the legitimacy and legality of these arguments. Second, it paves the way for the operationalization of the quantitative analysis in this paper by indicating the specific rights or group of rights that this research should consider. Therefore human rights in this thesis refers to the rights provided by the ICESCR as a framework. This paper takes Sieghart (1983)’ opinion on rights covered by

²³ See Torres-Reyna, O. (2007).

²⁴ Ibid.

ICESCR, which it deems all the rights in this treaty as positive rights, compared to political and civil rights category that belongs to negative rights. In a nutshell, positive rights are rights that are conditional on other persons or group actions, which in this research mainly refers to the actions of the government. Definitions of human rights in this research also fits the legal branch of human rights theory.²⁵ Based on this theoretical foundation, this paper believes rights covered in it will only be understood when they are read in the context of law. Some rights do not fit into this criterion, causing the number of rights covered by this research paper to decrease. However, the paper would retain the legal basis to defend these rights and judge the performance of governments.

Operationalization

One important part of the research question in this paper is the respect for human rights, particularly social and cultural rights. As the range and base of human rights has been explained in the last section, this section is dedicated to explain the way the concept '*respect*' is operationalized.

Saris & Gallhofer (2004), though mainly addressing the operationalization of concepts in surveys and questionnaires, sheds light on the author's thinking of operationalization in this paper. Saris & Gallhofer (2004) proposes two different types of concepts: concepts by intuition and concepts by postulation. The former includes concepts containing secular meaning that can be understood easily, while the latter consists of concepts that are more difficult to comprehend due to the complexity, such as multi-layered concepts from the first type.²⁶ In one example, they categorized an "attitude towards Clinton"²⁷ as a concept by postulation and then declared *attitude* as a concept by postulation. This gives the inspiration of the way to operationalize *respect*. This paper intends to objectify 'respect for human rights' as "attitude towards human rights". Combined with the early discussion on the base of human rights, the thoughts on operationalization then are developed into "attitude towards legal basis of social and cultural rights, namely the international treaties of such rights". Thinking of international treaties on rights as objects, it is easier to link countries' signatures and ratifications as the measure of their

²⁵ There are two branches consisted by the human rights theory, which are ethical and philosophical branch and the legal branch. See Seymour & Pincus (2008), pp. 389.

²⁶ See Saris & Gallhofer (2004), pp. 236

²⁷ See Saris & Gallhofer (2004), pp. 237

willingness to accept and recognize these rights. As ‘willing to’ here is an obvious representation of *attitude*, in the end of the operationalization process, the signatures and ratifications are chosen and justified as the measurable form of ‘respect for human rights’.

Yet, this operationalization result only reflects the nominal side of the respect for human rights, namely the de jure dimension. Armaline et al. (2016) asserts the necessity of considering both the de jure and the de facto dimension when studying human rights. They argue that it is critical to approach human rights from the de jure perspective since it provides guidance on the definition, essence, etc. of rights. Nevertheless, commitment to de jure human rights does not secure the practical implementation and effects of human rights. Thus, it is imperative to assess the respect to human rights in the de facto dimension as well.

The operationalization of the de facto respect to human rights is more straightforward than that of de jure. First, other than relying on written documents or oral commitments, the indicators measured should be practical materials. Among them, statistic outcomes are the most common and accessible choices. Second, to combine this with the research question, in which the respect for human rights is treated as a predictable variable, the statistical outcomes reflect the input, not output, of human rights. Therefore, statistical outcomes related to contributions for human rights is the de facto way to examine the respect of human rights in this paper.

Population and Sampling Procedure

It is obvious to see from the research question that the sample of this paper includes all *countries* in the international community. In the case of this paper, the UN member states, excluding commonly unrecognized political entities and partially recognized states, are selected as the sample. The logic of doing so derives from the constitutive theory of recognition, instead of the declaratory theory. The constitutive theory, summarily, contends that the key qualification for countries to have an international personality as sovereign states is to be recognized by other states, while declaratory theory argues that it is up to the claiming states. Both theories hold pros and cons in terms of explaining the real-world practice and implications for the future.²⁸ There are no agreements yet in either academia or professional sector in regard to the absolute

²⁸ See Worster (2009),pp. 120 (international law)

dominance of these two theories. The decision made in this paper to adopt the constitutive theory of statehood is based on its theoretical advantages and practical convenience.

As to the theoretical advantage, the explanatory variables in this paper are partly based on countries' signing and ratification of the international treaties. Such actions imply the use of sovereign rights of states, and mostly these rights are exerted by generally recognized countries. Compared to the declaratory theory, the constitutive theory has the upper hand when reflecting the state practice of such rights granted through the recognition of the international community.²⁹ Worter (2009) argues that constitutive theory works substantially while the declaratory theory works formally.³⁰ Thus, regarding the very essence of the present research question, the constitutive theory of statehood serves better to this research than the other in terms of sampling.

As for the practical convenience, the main logic for sampling only UN member states is based on the accessibility and comprehensiveness of valid data. There are a few reasons some non-member states and/or unrecognized political entities, reliable data might not be collected. First, as elaborated earlier, this thesis probes states' de jure respect for human rights, where it refers to international treaties. Yet, for political entities like Taiwan, which do not have the international legal personality to sign a UN treaty, their respect for human rights will difficult to measure. Second, for some non-member states, the UN might not be able to provide data for all indicators. Third, both the capability of signing and ratifying international treaties and the economic development in some commonly unrecognized states, like the State of Palestine, could be heavily affected and manipulated other external factors that may or may not change with the passage of time. Therefore, this paper considers these political entities lack not only legitimacy, but also the full capacity to function as a sovereign government, and thus excludes them from the analysis, even when relevant data could be accessed.

Data Collection

This section will explain the collection of data for both IVs and DVs. The first section will explain the data collected for IVs, distinguishing between the de jure and the de facto parts. The second section will discuss the collection of data for DVs. Most data comes from primary

²⁹ See Woster (2009); Caplan (2005)

³⁰ See Woster (2009), pp. 133

sources, in order to maximally secure the reliability of the data per se and to qualify the outcomes of the regressions as proper results.

De jure IVs

Data for the de jure IVs comes from UN Treaty Collection. Specifically speaking, the Status of Treaties section under the UN Treaty Collection provides updated information on the condition (signature, ratification, withdrawal, etc.) of all UN treaties. These treaties are organized into different chapters based on their categories. The main contributors of data regarding de jure IVs are the Chapter of Human Rights, Chapter of Health, Chapter of Educational & Cultural Matters, and Chapter of Environment. The reasoning behind such selection process is that these four categories cover the main areas of social and cultural rights under the framework of ICESCR. Specifically speaking, this paper picks up eight treaties under the chapter of Human Rights (representing both social and cultural rights), nine treaties from the chapter of Environment (representing social rights), three treaties from the chapter of Health (representing social rights), and six treaties from the chapter of Education & Cultural Matters (representing cultural rights). Treaties in the Human Rights chapter are not mere social and cultural rights treaties, due to their generality. For example, treaties such as ICESCR, CEDAW³¹, CRC³², etc. are either comprehensive or social identity-oriented treaties. That said, they cover more than mere social and cultural rights; they also cover economic, political, and civil rights. The following is the illustration of all treaties used for the de jure variables.

Human Rights	Environment	Health	Education & Cultural Matters
International Covenant on Economic, Social and Cultural Rights	United Nations Framework Convention on Climate Change	Agreement on the establishment of the International Vaccine Institute	Convention for the Protection of Producers of Phonograms against Unauthorized Duplication of their Phonograms

³¹ The Convention on the Elimination of all Forms of Discrimination Against Women.

³² The United Nations Convention on the Rights of the Child.

Optional Protocol to the International Covenant on Economic, Social and Cultural Rights	Kyoto Protocol to the United Nations Framework Convention on Climate Change	WHO Framework Convention on Tobacco Control	Protocol to the Agreement on the Importation of Educational, Scientific and Cultural Materials of 22 November 1950
Convention on the Elimination of All Forms of Discrimination against Women	Amendment to Annex B of the Kyoto Protocol to the United Nations Framework Convention on Climate Change	Protocol to Eliminate Illicit Trade in Tobacco Products	International Agreement for the Establishment of the University for Peace
Optional Protocol to the Convention on the Elimination of All Forms of Discrimination against Women	Doha Amendment to the Kyoto Protocol		Statutes of the International Centre for Genetic Engineering and Biotechnology
Convention on the Rights of the Child	Paris Agreement		Protocol of the Reconvened Plenipotentiary Meeting on the Establishment of the International Centre for Genetic Engineering and Biotechnology
Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict	Convention on Biological Diversity		Amendments to Articles 6 (6) and 7 (1) of the Statutes of the International Centre for Genetic Engineering and Biotechnology
Convention on the Rights of Persons with Disabilities	Cartagena Protocol on Biosafety to the Convention on Biological Diversity		
International Convention against Apartheid in Sports	Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety		
	Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety		

Each treaty is chosen because it reflects one area/topic under the relevant treaty category that is emphasized by the ICESCR. For instance, one reason that education & cultural matters treaty group represents cultural rights based on ICESCR is because it is relevant to the area of advocating for “minimum education standards” claimed by Art. 13 ICESCR. And the selection of *Protocol to the Agreement on the Importation of Educational, Scientific and Cultural Materials of 22 November 1950* as one of the indicators under this treaty category reflects such a particular emphasis.

There are two types of potential issues from the selected treaties in the Human Rights chapter that might cause imprecise estimate on the test results. First, the wider range of ICESCR containing elements adulterating respect for economic rights with respect for social and cultural rights into the test. This might be problematic because there could be endogenous processes occurring between the IVs with elements of economic rights and DVs, namely economic development. The logic is simple to be understood. Taking the promotion of right to form and join trade union as an example³³: more respect for such a right might leads to a faster economic development, such as GDP growth caused by higher volume of trade. As a result, the enlarged economy might in return request greater respect for such an economic right. This paper acknowledges the possibility of the endogenous process between part of the de jure IVs and the DVs and the impossibility of deleting the ICESCR from the analysis because of its role as the theoretical base.

Second, the inclusion of elements of respect for political and civil rights in all treaties under the Human Rights chapter. There are treaties protecting and promoting the rights of women, children, and the disabled, included in the regression test in this paper. These treaties, except social and cultural rights, advocate also economic, political, and civil rights. Thus, elements of such rights could also be mixed into the analysis and could make the result deviated. However, they are still selected based on the understanding of the ICESCR. The ICESCR emphasizes the protection of rights for women, mothers, and children in several articles.³⁴ By particularly looking at the entitlement of rights to these groups, the treaty implies that they are vulnerable groups in society that need special attention. The same situation also applies to disabled and

³³ This right is claimed by Art. 8 ICESCR

³⁴ Art. 3,7, 10(2) ICESCR mentioned the rights of women and mothers; Art. 10 (1)(3), 13(3) discussed the rights entitled to children.

racial-minority groups, but in a more implicit way. The use of words *everyone* in Art. 6-13 ICESCR implies the entitlement of equal rights for the disabled, implicitly. In practice, the emergence of various treaties for these vulnerable social groups reflect such implications from ICESCR. Thus, it is necessary to include these treaties, since they together reflect the enormous deliberation on social and cultural rights, in spite of attentions to other rights at the same time.

The problems mentioned above are not unconquerable, at least to some extent. They can be improved by the creation and annexation of treaties from the other three chapters of the UN Treaty Collection as part of the de jure IVs, since they do not contain elements of economic rights and can be tested as independent categories respectively. Moreover, the regression tests between the de facto IVs and DVs also ameliorate issues here by producing results with no other elements, like respect for political and civil rights, involved.

In general, the argument in favor of choosing potentially problematic treaties is that they more or less contain various rights, together accounting to a large representation of social and cultural rights. Therefore, it is still fair to test states' de jure respect for social and cultural rights, because when they sign and/or ratify them, these two rights are in their consideration. This paper also looks at the signature and/or ratification of the optional protocols of certain treaties because the optional protocols usually receive much less signature and ratification. Thus, states' commitment to specific human rights will be better represented in their acceptance of such protocols.

The top criteria of selecting specific treaties under each chapter is *to which extent does a treaty represent the chapter it belongs to in relatively more comprehensive way and represent the rights claimed by the ICESCR in relatively more complete way?* For instance, there are seventeen different treaties in the Environment chapter; most of them have at least one protocol, some have up to twelve protocols. To include all of them is not only unnecessary and time-consuming, but also contains high risk of adding elements beyond the research scope into the analysis. For instance, the *Agreement on the Conservation of Small Cetaceans of the Baltics, North East Atlantic, Irish and North Seas* is relevant to environmental rights, it limits the scope of its state parties geographically. Therefore, it cannot be used by this study. The exclusive nature of this treaty would lead to a more deviated result if being taken into consideration. In addition, the focus of this treaty is too narrow to represent the rights emphasized by the ICESCR. Ignorance

on such treaties is made up by selecting more general treaties that obtain a wider radiation on both regions and types of rights. For instance, by selecting the *Convention on Biological Diversity* as one of the representatives of the environment chapter, the agreement to protect cetaceans is automatically included.

Another important criterion for choosing the proper treaties for this study is the year of a treaty's birth. Since the major source of legal base for this research is the ICESCR, all observations, whether de jure or de facto, need to come after the birth year of the ICESCR, namely 1966. Thus, for the selection of treaties, those born before 1966 are not considered. Otherwise, the results, even if they could test the hypotheses proposed here, would not be supported by the theoretical framework. The *Constitution of the World Health Organization*, for example, although listed within the Health chapter and highly relevant to social and cultural rights, is not selected because it was born in 1946 and so falls beyond this paper's research scope.

De facto IVs

To facilitate the regressions and the comparability of the results, the de facto IVs are selected according to the form of de jure IVs, so that data only relevant to the four categories of rights is considered³⁵. The data selection of de facto IVs comes from two sources: the World Bank data catalog and the Cingranelli-Richards (CIRI) Human Rights Data Project. Specifically speaking, data for the human rights category is collected from CIRI data project, while data for the other three groups is from the World Bank data catalog. Since the raw data is richer and the fluctuation of the indicators is more obvious in the de facto part, only a few indicators are picked in each category, with two for Human Rights, one for Environment, one for Health, and two for Education & Cultural Matters.³⁶ Indicators of the latter three categories are drawn intentionally from the correspondently classified categories in the World Bank data catalog, for the purpose of securing substantial relevance to social and cultural rights based on ICESCR and circumventing endogenous effects between IVs and DVs. For example, CO2 emission metric per capita is chosen to represent the environment category because it is highly connected to the claim for such rights by the ICESCR in terms of the wording "the right of everyone to an adequate standard of

³⁵ To clarify, these four categories are Human Rights, Environment, Health, and Education & Cultural Matters.

³⁶ The indicators to the de facto IVs are the same as the treaties to the de jure IVs.

living ...improvement of living conditions”³⁷ and to the environmental treaties, which represent social rights since they also aim to improve the living standard of people, are picked for de jure IVs. Governmental expenditure on education of GDP, as an indicator of the Education & Cultural Matters category, which seemingly might have endogenous correlation with the economic performance, does not arouse reverse effects necessarily. The argument here is that better economic development does not assume more investment in the education sector; needless to say, education and human rights generally belong to so-called low politics, which implies that they possess the lower priority than high politics, such as the security affairs. The key motivation for countries to invest in their education might relies on the potential economic benefits, but not as a necessary result of a current prosperous economy. In other words, the respect for social and cultural rights predominate the decisions of budget distribution.

Due to the scarcity of data from the World Bank data catalog on human rights indicators, CIRI data project is considered. However, the credibility of this source has been checked before the extraction of data. In essence, this data project is a database that provides ratings of countries, within a certain time period, based on their practical performance on respecting human rights. The database relies mainly on the US State Department Country Reports as its primary source, supplemented by secondary sources like Amnesty International.³⁸ Yet, since the picked indicators are not based on this secondary source, it’s credibility is beyond the scope of discussion in this paper. Two indicators, *Worker Rights* and *Women’s Social Rights*, are selected from this database to measure the practical respect of countries for social and cultural rights. Both indicators are chosen based on their strong relevance to the essence of the social and cultural rights emphasized by the ICESCR, although there is no information provided to explain their theoretical base. Another reason is that both indicators consist of assessment on several particular rights embedded in the ICESCR. The former one, *Worker Rights*, includes appraisal on the rights claimed by Art. 6, 7, 8, 10(3) ICESCR as well as CRC, whereas the latter one, *Women’s Social Rights*, incorporates evaluation on the rights covered by not only the ICESCR, but also CEDAW. The biggest advantage of these two indicators is that they exclusively cover social and cultural rights.

³⁷ See art. 11(1) ICESCR

³⁸ See Cingranelli et al. (2014), pp. 3.

DVs

Data for DVs are extracted from two different sources, with the *GDP per capita* from the World Bank data catalog and the *Labor productivity per person (LP)* from the Total Economic Database (TED) provided by The Conference Board³⁹. Since the TED is a secondary database, the primary source contributing to the LP will be explained in detail.

The expression of Labor productivity is listed below:

$$y = GDP/L^{40}$$

Note: y represents the LP as output from the division of Labor employed (L) by total GDP.

As different indicators are based on numerous primary sources in TED, only sources of GDP and Labor are considered as sources for the LP, in line with the expression above. According to the *TED: Source and Method*, the composition of primary sources for GDP and Employment is extraordinarily complicated, since the available sources vary in each region, or even in each country and in each year. For instance, the source of the Real GDP of Algeria before 1990 is from the *Maddison Project*, while that after 1990 comes from *International Data Base (IDB)* of the US Census Bureau. As to the employed population of this country, the main sources before 1988 is the *International Labor Organization (ILO) Official Estimates*, while after 1988 they are retrieved from *Have Analytics*, until 2014, when the source again changes back to *ILO Key Indicators of Labor Market*.⁴¹ Despite the complexity of the raw sources used by TED, due to the lack of systematically available data, TED is the only choice, needless to say the primary sources it relied are reputable organizations, which to some extent the credibility of the data was secured.

Data Preparation

Data is prepared for official regression tests in two phases, with the first being building a database in Excel and the second containing variable adjustments in Stata. In the first phase, two separate databases are built up. The first one (de jure database) includes data of the de jure IVs and DVs and the second one (de facto database) contains the de facto IVs and DVs. The use of

³⁹ The Conference Board is an organization of business membership and research in public interest. It is based in New York City and has offices spread in Canada, Europe, and Asia. For detail, see <https://www.conference-board.org/about/index.cfm?id=1980>

⁴⁰ See De Vries, K. & Erumban, A. A. (2016), pp. 14 for the sake of consistency.

⁴¹ For more detail, see The Conference Board. (2017) Output, Labor, and Labor Productivity 1950-2017.

panel regression implies that the formation of the database should be in an order that displays both the cross-section (country) dimension and the time-series (year) dimension. Thus, when building up both databases in Excel, the name of the countries and years are listed in the first two columns in order, and the name of IVs and DVs are placed in the top rows.

In the first phase, namely database building, raw data redrived for de jure IVs needs to be coded and is impossible to be directly placed into the de jure database. Data of countries' signature and ratification conditions of treaties is coded into ordinal variables in the form of 0, 0.5, and 1. The numbers are given in order from the lowest level of respecting for social and cultural rights to the highest level. Specifically speaking, value 0 is given to countries that have not signed a specific treaty; value 0.5 is given to those which have signed but not ratified; value 1 is given to those which have signed and ratified. This procedure applies to data of all four treaty categories in the de jure part. All other data, de facto IVs and the DVs, after being retrieved from sources, are placed in the regular order mentioned above for panel regression and do not need to be coded at this stage.

The data collection section above mentions that treaties in the Human Rights category include respect for rights other than social and cultural rights, and that this situation would result more deviated outcomes; it also provides logical arguments why these treaties are still selected. In this section, it is argued that from the technical perspective it is also not possible to peel political, civil, and economic rights elements out of the social and cultural rights ones, since there is no clear separation of articles regarding different categories of rights.

In the second phase, namely variable adjusting in Stata, some changes are made on a few variables. First, for both de jure and de facto databases, the coded indicators under each treaty category are grouped together as a unified new variable to represent each category and the new category contains averaged value from all original indicators. For instance, indicators reflecting respects for the eight treaties under the Human Rights category are grouped and averaged as one IV named Human Rights, via the command `-generate new Var = (sum of old Vars)/ #of old Vars`. There are four final IVs run by the regression, with the names Human Rights, Environment, Health, and Education & Cultural Matters. Reasons to do so slightly differed for each database.

As for the de facto part, the reason to grouping indicators under one category is for the sake of generality of the results. Since this paper tests the influence of social and cultural rights in

general on economic development, these two categories of rights are expected to have a certain degree of coverage capability. Thus, it is better to group indicators with disparate focuses under the same category in the regression. Otherwise, even a single IV would be statistically significant on its impact to the DVs; and such a result could not be interpreted to represent a whole category, nor, needless to say, social or cultural rights as general concepts.

As for the de jure part, besides the point argued above, here is one more reason concerned: The fluctuation of de jure variables is comparatively subtle, and therefore, the effect of significance of variables representing each single treaty is limited. Once a country signs a treaty, through the whole testing period, there would be only two values, namely 0 and 0.5. Even when the most fluctuating condition happened, the total frequency of change would be merely twice.⁴² By grouping these single indicators together in the order of each treaty category, the fluctuation of IVs was expected to be more obvious and the contribution to the DVs would be easier to detect.

The variable GDP per capita is altered to GDP per capita growth rate as one of the final versions of DVs. Simply speaking, the GDP per capita reflects the living standard of people in a country, while the GDP per capita growth rate tells how fast and broadly to which direction the national economy is heading. Below are the basic calculation formulas of both economic indexes.

$$R / C = \text{real GDP per capita}^{43}$$

$$(\text{GDP per capita}_{t+1} - \text{GDP per capita}_t) / \text{GDP per capita}_t = \text{GDP per capita growth rate}$$

Notes: R denotes to the annual GDP⁴⁴ and C denotes to the population of a country.

There are two reasons to choose GDP per capita growth rate instead of GDP per capita as a DV. First, the GDP per capita growth rate tells the trend of economic performance as well as the living standard, while the GDP per capita does not reflect the later characteristic and the tendency of the big picture. Second, as the formula shows, GDP per capita heavily relies on the *population*. Here, the word *population* denotes the population size, consisting of citizens, of

⁴² From value 0 to 0.5 and from value 0.5 to 1.

⁴³ See Amadeo (2017)

⁴⁴ The discussion of using real GDP or nominal GDP is irrelevant of the research topic of this paper although they give rise to different statistics result due to technical issues. The argument to defend their irrelevance with this paper is that GDP growth rate focuses on the tendency of change. Therefore, no matter whether inflation is included or not, the tendency keeps the same.

countries, instead of the technical concept used in statistics. *Population* could be problematic, since it is not closely relevant to either the respect for social and cultural rights or the mere economic performance. Population change is expected to usually be small in magnitude over time, and this stability therefore is one of the reasons that population is a criteria for statehood recognition under international law⁴⁵. That's been said, the characteristics of being stable and being social & cultural rights-insensitive makes population a dubious element in the calculation for the test on social and cultural rights' impact on economy. The constant status of population is not an effective reflection of the respect of social and cultural rights. Yet, such a concern can be ameliorated by using the GDP per capita growth rate, since the problematic effects of population will be diminished due to the calculation. Although there are inconveniences and the side effects, the GDP per capita growth rate works better than GDP growth rate as a DV for this research because the economic development in this case reaches beyond just economic performance.

Data Analysis Strategy

Use of Fixed Effect Model

In order to run the regression tests on the panel data through Stata, it is necessary to decide whether the Fixed Effect model or the Random Effect Model should be used⁴⁶. Torres-Reyna (2007) indicated that the Fixed Effect Model is used to better probe the exclusive influence from IVs to DVs, in which variables fluctuate in response to the change of time. The rationale behind this statement is that the Fixed Effect model acknowledges the impact of time-invariant elements, such as gender, blood type, race, etc., to the DVs and even IVs. Yet, this model controls and removes effects from these time-invariant elements on the DVs, in the pursuance of showing the mere impact from time-variant IVs to DVs. In contrast, the Random Effect model intentionally allows the inclusion of effects from time-invariant elements in the belief that they would affect the presence of DVs.⁴⁷

⁴⁵ The declaratory theory of statehood recognition argued that entities could claim themselves as sovereign states once they meet the criteria including permanent population. For detail see Worster (2009) pp. 153.

⁴⁶ According to Park (2010), it is impossible to exert both Fixed Effect model and Random Effect model on the same analyzed entities because these two models are opposite to each other on the theoretical level. However, practically speaking, it is possible to combine these two models. See Park (2010), footnote 1.

⁴⁷ See Torres-Reyna (2007), pp. 25.

Applying the concept of these two models to the research question of this thesis, where the main focus is to see the influence of the respect for social and cultural rights on domestic economic developments, the Fixed Effect model is chosen and is more suitable than the Random Effect model. This logic of thinking also supported by Yi (2008), in which she argued that if the conclusion of the impact of variables only applies to the entities within the sample and will not be generalized to the population or the other samples, the Fixed Effect model is ideal. Otherwise, the Random Effect model should be chosen. It should be acknowledged that this paper does generalize the hypotheses and conclusion from the sample to the population, and the sample and population are not absolutely identical. Yet, the sample does account for almost the entire population and the uncovered ones under the international law do not meet the criteria as a proper entity, namely country, in this paper. For instance, the Turkish Republic of Northern Cyprus as a political entity is essentially functioning as a county, but has still not been officially recognized as a country under the international law. Therefore, due to such characteristic of uncovered political entities, the range of the sample equals the population to some extent, and the use of Fixed Effect model is justified according to Yi (2008).

Hausman & Taylor (1981) asserts the importance and necessity of operating the Hausman test to practically decide the use of these two models. For the purpose of the validity of the conclusion of this paper and the sound justification of the use of Fixed Effect model, the Hausman test is run via Stata and, as the diagrams below shows, both de jure and de facto groups pass the test.

Figure 1.1 De jure group: GDP growth rate as the DV

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) FE	(B) RE		
human_rights	-.0600838	-.0437897	-.016294	.0111557
environmen~l	-.0127137	-.0358938	.0231802	.0126557
health	.061937	.0635692	-.0016322	.0081925
cultural	-.0174459	.0126071	-.0300529	.0143676

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 15.10
 Prob>chi2 = 0.0045

Figure 1.2 De jure group: Labor productivity as the DV

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) FE	(B) RE		
human_rights	-15233.22	-16242.4	1009.184	335.3942
environmen~1	23558.58	24200.82	-642.244	244.8236
health	9302.858	9497.15	-194.2923	148.3439
cultural	10430.87	10952.35	-521.4809	554.5371

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 9.66
 Prob>chi2 = 0.0465
 (V_b-V_B is not positive definite)

Figure 2.1 De facto group: GDP growth rate as the DV

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) FE	(B) RE		
Humanrights	-.0772689	-.0451927	-.0320761	.0134559
Environment	.0151809	.0045578	.0106231	.0098728
Health	.0139061	.0110916	.0028145	.0115528
Culture1	-.0089365	-.0013496	-.0075869	.0087814
Culture2	4.45e-12	-2.25e-12	6.71e-12	2.57e-12

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 8.25
 Prob>chi2 = 0.0828
 (V_b-V_B is not positive definite)

Figure 2.2 De facto group: Labor productivity as the DV

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) FE	(B) RE		
Humanrights	-850.4522	977.3277	-1827.78	.
Environment	-173.4298	2283.773	-2457.203	220.8227
Health	1243.772	2327.614	-1083.842	.
Culture1	-903.9065	-831.1871	-72.71948	.
Culture2	7.49e-07	8.23e-07	-7.35e-08	.

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 62.84
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

The four diagrams above illustrate the result of the Hausman test. In theory, there are different interpretations of the null hypothesis of the Hausman test. On one side, it is hypothesized that the Random Effect model is more ideal than the Fixed Effect model. (Torres-Reyna 2007; Greene 2008) Such a belief is also reflected in the Stata manual for guiding the Hausman tests. In the first example in this manual, it stated the original hypothesis as “...effects are adequately modeled by a random-effects model”.⁴⁸ The wording of such a sentence implies that the Random Effect model is supposed to be the “default” choice. On the other side, Park (2010) specifically asserts that it is wrong to assume the Random Effect model as a “better” or more “consistent” model than the Fixed Effect model.⁴⁹ Nevertheless, no matter how opposing interpretations of the null hypothesis of a Hausman test are, the agreement of the no correlation between *effects* or *errors* and the regressors are met. On the practical level, the way to determine which model to use based on the result on Hausman test is also unaffected. In the case of this paper, all four text results show that the P-values (0.0045, 0.0465, 0.0828, 0.0000) are smaller than the threshold of 0.1. This means that the probability of committing Type I error by rejecting the null hypothesis is less than 10%. Thus, it is fair to reject the null hypothesis of the Hausman test and to choose the Fixed Effect model. However, this paper acknowledges that choosing 0.1 as the threshold for statistical significance is not the optimal measure. However, the author still decides to use the Fixed Effect model by setting 0.1 as the verge in this paper simply due to the consideration on convenience that the tests can still continue, but within a legitimate range.

Control on Time & Year Effects

As the regressions base on panel data, *year* is a vital dimension in all regression analyses in this paper, and every regression test has controlled the year effect by the *i.year* command on Stata. It is critical to control the time effect, namely year effect, in this paper, because without it the regression result would be full of serious errors.

Lewis, from Dartmouth College’s Economic Department claims that the year effect should always be controlled as long as time-series variables are run in regression.⁵⁰ His main arguments, accompanied with illustration of empirical exams, are that “aggregate trends” and a lack of

⁴⁸ See Stata Manuals 13: Hausman specification test, pp. 5

⁴⁹ See Park (2010), pp. 2

⁵⁰ See Lewis (2005).

mechanism controlling year effect from panel regression gives rise to inaccurate correlations. Thus, he comes up with the conclusion that a control on year effect should be mandatory. Di Giovanni & Shambaugh (2008) indirectly support such an idea by controlling time effect so that they could examine the net impact of their IV on the DV. Moreover, they see such a control as an asset in their article, compared to preceding studies, which could not manage it.

This thesis also tries to propose a new logic, in the spirit of defending its use of year effect control in the context of the Fixed Effect model. As mentioned above, this paper uses Fixed Effect model to run panel regressions. That said, all the time-invariant elements are given a value of 0 and are removed from the regression, since it is not this model's interest to include their effects in. As a result, all variables in this model are time-sensitive to some extent. Under such circumstances, incidents like "aggregate trends", sudden and exceptional crisis, etc. would easily affect the regression result and examiners would not be able to infer the net connection between the IVs and DVs. In this case, to refine Lewis's argument, operating panel regression via the Fixed Effect model should especially control year effect.

The other 'time' control in this paper on the operationalization level was the use of lagged effects through the command of *l. # of years*. Specifically speaking, the de jure group of IVs is composed of data of the signature and/or ratification on international treaties. Thus, it is legitimate to expect lagged effects from the signing and ratifying stage to economic performance as a result for several reasons. To list a few, first, the insincere motivation or the intention to sign and/or ratify a treaty by countries may result in lagged effects. Some countries, especially developing countries, in order to build up better international reputation, will sign and even ratify treaties without actually thinking of implementing them. This logic of thinking makes sense given that developing countries have been commonly criticized by others for their problems of pernicious contribution to the environment, violations of human rights, tarnished social welfare system, etc. Compared to their counterparts, namely developed countries, which enjoy relatively higher international reputation, developing countries have greater motivation to improve their standing in the world community. Signing and ratifying some international treaties would be a cost-effective way to do so and the reasoning for this will be provided in the second point. Also, some countries might not voluntarily join a treaty family but were 'forced' to by others or were because of a package deal with other countries. Thailand, for example, was pushed to develop its

protection of intellectual property due to the ‘peer pressure’ from its western counterparts, since it had a serious violation in that area of the international standard.⁵¹

A second reason to expect that effects on economic development will delay after the signing and ratifying of treaties is the slow fulfillment of some international treaties due to the tolerant clauses in the treaties. This answers the argument of a ‘cost-effective’ choice for some developing countries to promote their reputation. One obvious example is the ICESCR. This treaty gives a large space to state parties by allowing them taking their own pace in the process of fulfilling the treaty duties. The wording in Part IV ICESCR allows state parties to take progressive steps towards realizing the treaty. Despite the responsibility to file reports periodically, state parties are still given much leeway in conforming to its obligations, such as justifying “factors and difficulties affecting the degree of fulfillment...”⁵²

Third, for technical reasons, it naturally takes time for most international treaties to actually come into force after signature and ratification. The time horizons in between vary according to specific conditions, ranging from a few years to more than a decade.⁵³ The de facto IVs, although consisting of statistics happened in reality, also might have a lagged effect. For example, the governmental expenditure on public health would not be reflected in economic development instantly because it requires time to prepare, implement, etc.

Based on various reasons, such as those mentioned above, as well as running basic panel regressions, this paper lags the effects from IVs in the de jure group for five periods, namely five years, while lags the effects from IVs in the de facto group for three periods. The logic to choose five-years is that a five-years plan is usually a mid-term plan for goals on national economy.⁵⁴ Borrowing this economic idea, this paper uses a five-year-lagged effect for de jure IVs. Since the effect of de facto IVs is expected be faster, the period of lag effect for them is reduced to three years. By doing the lag effect, this paper aims to achieve two goals: First, to provide a relatively more accurate estimation on the net impact of the IVs on the DVs, second, to present a dynamic

⁵¹ See Kuanpoth (2010), pp.84.

⁵² See Art. 17(2) ICESCR.

⁵³ For example, the time span between signature/ratification and entry into force of Convention on the Elimination of All Forms of Discrimination against Women was three years while that of ICESCR was ten years. For detail see <https://treaties.un.org/pages/Treaties.aspx?id=4&subid=A&clang=en>

⁵⁴ See Five-Year Plans (n.d.) by Encyclopædia Britannica.

observation of the relation between IVs and DVs. First, as justified above, the effects of signing and ratifying treaties cannot be observed immediately sometimes on economic performance because both are impacted by subjective reasons, such as a country's motivation, and objective reasons, such as the bureaucracy happened during treaty implementation. Without control on lagged effects, results would be imprecise and dubious. Second, by adding the control on lagged effects, such outcomes from the regression will be compared with those from basic regressions and the disparity representing the effects of lagged effects of IVs will easily be noticed.

Use of Cluster Effect

This paper clusters countries when running regressions in order to produce an unbiased Standard Error (SE); it is also necessary to have such a use of cluster effect. The main practical reason of exerting such an effect is to prevent the situation of autocorrelation and heteroscedasticity from happening. The occurrence of them would apparently underestimate the SE of the regression. Peterson (2009) already challenges that many academic papers approach the SE in the wrong way. As a consequence, he points out that other scholars have been misled by those papers and have taken such erroneous ways of pairing models with particular situations for granted.⁵⁵ Gow et al. (2010) similarly claim that measures coping with SE, such as Fama-MacBeth, have problems producing accurate SE for panel data variables. This paper tries not to make the same mistakes as others and takes the guidance of Peterson about panel data regressions. The sample in this thesis meets the rule that there are more countries than years. Thus, time-series variable here are controlled as dummies and country variables are clustered, a "common rule" to deal with such a situation. (Anderson & Reeb 2004, Faulkender & Petherson 2006, Gross & Souleles 2004, Lamont & Polk 2001, Peterson 2009, Sapienza 2004) Peterson (2009) proves that industry-clustered SE (country-clustered in this paper) are more unbiased than other measures.

Moreover, Peterson (2009) states that the Fixed Effect model provides unbiased SE when *firm effect*⁵⁶ is permanent, while country-clustered SE is unbiased whether permanent or not. Therefore, country-cluster SE is still chosen in this paper, and the results of regression with such an effect will be compared with basic regressions results.

⁵⁵ See Peterson (2009), pp. 451.

⁵⁶ (Fixed) Firm effect indicates that there are unique traits in each firm or industry that can impact the explained variables and there is no cross-section influence on these unique traits.

Results

This section presents the outcomes of the panel regression analysis by Stata. It is divided into two main parts as the first one being the de jure database and the second one being the de facto database. As there are two DVs, namely GDP per capita growth rate and Labor productivity, each part contains two result tables on these DVs.

De jure database

Table 1.

GDP per capita growth rate as the DV			
	(1)	(2)	(3)
	Basic	Cluster effect	Cluster & Lag effect
Human Rights	0.0806*** (0.022)	0.0806** (0.030)	
Environment	-0.0355 (0.034)	-0.0355 (0.037)	
Health	-0.0323 (0.023)	-0.0323 (0.028)	
Education & Cultural matters	0.0404* (0.017)	0.0404* (0.020)	
L5. Human Rights			0.0514 (0.031)
L5. Environment			-0.115** (0.041)
L5. Health			0.0210 (0.034)
L5. Education & Cultural matters			0.0311 (0.019)
_cons	0.0571*** (0.014)	0.0571*** (0.010)	0.0863*** (0.008)
N	7652	7652	7222
R2	0.218	0.218	0.221
SE in parentheses			
="* p<0.05 ** p<0.01 *** p<0.001"			

Before looking at the results table, first it should be made sure that this panel regression model is statistically significant in terms of explaining the research. Prob> F of all three models summarized in Table 1 is infinitely close to 0.0000.⁵⁷ That means the probability that null hypothesis is true is almost 0, by which the null hypothesis is rejected. In other words, the panel regression model per se fits to the research. Moving to Table 1, the variables were run in three models, with the first one a basic model; the second one a country-clustered effect; the third one a lag effect based on the second model. In total, 7652 objects are observed in the first two models, while only 7222 are observed in the third, due to the lagged effects. As L5. in the first column indicates a five-period lagged effect, no effect of the IVs on the DV in the first five years can be showed. The R^2 for all three models is also provided. It should be noted that the R^2 in the above table denotes within-group R^2 .⁵⁸ This is because the Fixed-effects model estimates the effects of IVs on DVs within each section (country, in this case). Therefore, only the R^2 is needed for interpretation. R^2 , simply speaking, implies the coverage of the statistic model over the change of the DV that can be explained by the IVs. Applied to Table 1, it indicates that the panel regression can explain 21.8% of the changes between IVs and the DV in the first two models, while 22.1% of changes can be explained in the third model by the panel regression. Though the difference is slight, this panel regression fits the third model better since it explains the variety within it. The R^2 here also tells that a large percent of the changes of variables cannot be explained by this regression, implying that there are many potential explanatory variables that are not considered and/or included in this regression. Based on the fact that the difference in R^2 occurs only between model 3 and model 1&2, the lagged effect is seen to positively contribute to the fitness between the regression and the variables. This fact also justifies the previous argument for choosing lagged effects.

Looking at the main part of the Table 1, Model 1 and 2 illustrate a consistent outcome, namely that respect for human rights and respect for education & cultural matters are strongly correlated to economic development, despite a slight difference in the degree of significance to the respect for human rights. Model 2 indicates that with signature/ratification of all treaties under the

⁵⁷ See the Appendix I.

⁵⁸ For all information on the R^2 , see Appendix I on original regression results.

human rights category by a country, its GDP per capita growth rate will rise by 8.06% points, whereas for signature/ratification of all treaties under the education & cultural matters category, the GDP per capita growth rate will increase by 4.04% points. On the other hand, neither the environment and health categories are statistically significant. In the context of this research, the results show that there is no proven correlation between the impact of respect for environment and health treaties on economic development. Moving to model 3, the outcomes differ considerably from the previous two. After adding the lag effects, the statistical significance of human rights and education and cultural matters category disappears. That said, after five years of signature/ratification of these two treaties, the GDP per capita growth rate is no longer related to the respect of them. In contrast, environment category comes to show a moderate significance on the regression. However, such a correlation exists negatively between respect for environment rights and the GDP per capita growth. This outcome suggests that with signature/ratification on all treaties by a country under the environment treaty category, its GDP per capita growth rate will decrease by 11.5% points. The standard errors of each IV are displayed as the parentheses in this table. All coefficients have smaller standard errors compared with their statistical significance. This means that the estimates of these coefficients are greatly accurate.

Result on Labor productivity

Table 2.

Labor Productivity as the DV			
	(1)	(2)	(3)
	Basic	Cluster effect	Cluster & Lag effect
Human Rights	29435.5*** (6660.095)	29435.5 (28991.26)	
Environment	89660.0*** (10719.01)	89660.0* (38175.37)	
Health	7857.0 (6667.629)	7857.0 (8818.879)	
Education & Cultural matters	15592.3*** (4700.402)	15592.3 (16901.6)	
L5. Human Rights			34907.1 (24092.77)
L5. Environment			93518.0* (36913.21)
L5. Health			7700.4 (7999.325)
L5. Education & Cultural matters			11995.6 (15038.76)
_cons	40629.5*** (3842.757)	40629.5*** (6744.454)	47325.0*** (8557.168)
N	5909	5909	5408
R2	0.039	0.039	0.046
SE in parentheses			
	="* p<0.05	** p<0.01	*** p<0.001"

In this regression, the Prob>F for all three models is infinitely approaching 0.0000,⁵⁹ showing that this regression model is fitting the research. There are 5909 objects in the first two models and 5408 in the third, due to the lag effects. The within-group R² of this table shows that, as to

⁵⁹ See Appendix II.

the first two models, only a 3.9% change in Labor productivity could be explained, while 4.6% of the changes to the DV can be covered by the third model. This implies that, compared to the regression model on the last DV, there are more potential explanatory variables that have been left out of this regression model. That said, this panel regression model works better when explaining the GDP per capita growth rate than the Labor productivity.

As to the main part, model 1 shows that a majority of IVs significantly correlate to Labor productivity; the number largely decreases in the next two models, with only one statistically significant correlation in each. Specifically speaking, as in model 1, signature/ratification on all human rights category treaties of a country brings an increase of 29435.5 dollars in its labor productivity per person annually; signature/ratification on all environmental treaties raises 89660 dollars in the country's labor productivity; signature/ratification on all treaties under the education and cultural matters category by a country increases such a DV by 15592.3 dollars.

In the second model, after clustering countries, only the environment treaty group remains a correlation with the growth in labor productivity at a significant level. Obviously, the cluster effect causes the disappearance of the significance of human rights and education & cultural matters categories. The result in the third model is the same as the second. After being lagged for five years, the environment category still affects labor productivity, with even greater magnitude. With signature/ratification of all the environmental treaties by a country, labor productivity per person each year increases by 93518 dollars. The increase in R^2 from model 1 and 2 to 3 again suggests a positive impact from the use of lagged effect to the degree of fitness of the regression model. The lagged effects of IVs in this regression have no major influence on the result, since the significance stays the same (recall that in the last table it changed drastically). This means not that there is no lagged effect because the coefficients of all treaty categories have changed, but that the changes are not great enough to be reflected at the significant level in general. It should be noted that the environment treaty category significantly contributes positively to labor productivity in all models in this regression model. Therefore, it is safe to say that respect specifically for environment treaties or environmental rights contributes to the economic performance in the form of labor productivity. Again, all standard errors under the coefficients with significance are smaller than the coefficients, indicating the precise prediction of this regression model.

De facto database

Result on GDP per capita growth rate

Table 3.

GDP per capita growth rate as the DV			
	(1)	(2)	(3)
	Basic	Cluster effect	Cluster & Lag effect
Human Rights	-0.0103 (0.016)	-0.0103 (0.016)	
Environment	0.00777 (0.008)	0.00777 (0.006)	
Health	-0.0122 (0.010)	-0.0122 (0.016)	
Education & Cultural matters	-3.14e-12 (5.58e)	-3.14e-12 (3.45e)	
L3. Human Rights			0.00995 (0.015)
L3. Environment			-0.0169* (0.008)
L3. Health			- 0.0322** (0.012)
L3. Education & Cultural matters			-4.35e-12 (3.19e)
_cons	0.173*** (0.050)	0.173** (0.051)	0.171** (0.059)
N	634	634	636
R2	0.362	0.362	0.259
SE in parentheses			
	**	***	
	** p<0.05	p<0.01	p<0.001"

The result of Prob >F in this section is abnormal. It can be seen from the Appendix III that model 1's result is close to 0.000 as usual, while the other two models' Prob >F is missing. The most

possible explanation of this is that there are too many clustered groups, considering the total number of cases observed. As the Appendix III shows, there are 120 country clusters, while the number of observed cases is 634 for model 2 and 636 for model 3. The author does not see this as a crucial problem because model 1 proves that this regression model still fit the research design. The disappearance of the Prob >F and F values accord with the disproportionate cluster-total observed cases ratio, which to some extent testifies to the reliability of this regression model.

Moving to the R^2 statistics, the coverage of this regression model over the changes of GDP per capita growth rate is better than the de jure part. Model 1 and 2 present an explanatory radiation of 36.2%, while the third model shows 25.9%, which is still much higher than the corresponding model in the de jure GDP per capita growth rate. This phenomenon testifies that the explanatory capability of IVs in the de facto database is better in this model than that of IVs in the de jure database. Yet, it still present the existence of a large percent of hidden explanatory variables that are capable of affecting the DVs.

The results of the main part of Table 3 provide totally different outcomes to those of the de jure part. First, as to model 1 and 2, for both DVs in the de jure part, there is at least one IV that is significantly correlated to the DV on a significant level. Yet, Table 3 shows that all IVs in model 1 and 2 have no statistical significance, implying that there is no correlation between the IVs and the GDP per capita growth rate. It is notable that this result confirms that, even considering the country cluster effect, non-significance still occurred in this table. This implies that potential issues, such as *heteroscedasticity* and *autocorrelations*, did not impact the regression result; no matter whether they were controlled, the results on significance remain the same somewhat solidifying the thought that there is no correlation between IVs and the DV. Second, all IVs that are significantly affecting the performance of DVs in the de jure part demonstrate a positive relationship. Nevertheless, the only two correlations in this table, which both appear in model 3 with a three-period lagged effect, display negative relationships. Specifically speaking, with every unit increase in respect for the environmental rights (in the form of reducing the CO2 emissions per metrics) the GDP per capita growth rate is expected to decrease by 1.69% points after three years. Also, every one more point in the form of governmental expenditure on public health to GDP ratio in a country, its GDP per capita growth will decline by 3.22% points three

years later. In sum, statistics results in Table 3 reveal that respect for social and cultural rights do not contribute to the growth in GDP per capita immediately while respect for environmental and health rights will hamper the economic development after a couple of years. The standard errors under the statistically significant variables imply that the estimates could be precise when generating to the population.

Result on Labor productivity

Table 4.

Labor productivity as the DV			
	(1)	(2)	(3)
	Basic	Cluster effect	Cluster & Lag effect
Human Rights	785.1 (525.782)	785.1 (563.777)	
Environment	-836.3** (271.010)	-836.3 (1428.797)	
Health	-608.7 (331.077)	-608.7 (640.689)	
Education & Cultural matters	0.000000639*** (1.78e)	0.000000639 (4.36e)	
L3. Human Rights			761.7 (-608.777)
L3. Environment			-1278.0 (1395.975)
L3. Health			-547.1 (582.924)
L3. Education & Cultural matters			0.000000410 (3.79e)
_cons	38933.3*** (1770.996)	38933.3*** (6566.666)	44230.4*** (6619.949)
N	532	532	532
R2	0.549	0.549	0.518
SE in parentheses			
*** p<0.05	** p<0.01	*** p<0.001"	

Table 4 shows the regression results of the influence of de facto respect for social and cultural rights on labor productivity as a representation for economic development. Statistics on Prob > F

in all three models are infinitely approaching but never reaching 0.000.⁶⁰ This indicates a good match between this panel regression model and the research design. Overall, 532 cases are observed from each model. It is outstanding, compared to all three tables above, that all models in this regression have an R^2 above 0.5. This means they are all be able to explain more than 50% in the fluctuations in the labor productivity of each model. According to the performance of other regression models analyzed above, this is the strongest figure in terms of R^2 . The basic model presents two significant IVs: respect for environmental rights and respect for education and cultural rights. The former shows the negative correlation between this IV and labor productivity on a moderate significant level (0.01). It indicates that every metric of increase in CO2 emission gives rise to an 836.3 dollar decline in labor productivity per person per year, and the probability of this to not happen could be less than 1%. The latter, respect for education and cultural rights, meanwhile, reveals a positive correlation with labor productivity, with limited effects on the DV. For every point increase of governmental expenditure on education-GDP ratio and one more dollar spent on the use of Intellectual Property (IP), labor productivity will raise merely 0.0000639 dollars per person annually. Moving to the results from model 2 and 3, besides the consistence of the insignificant IVs in model 1, also to be noted is that these two originally significant IVs also lose their insignificance. In sum, this implies that for respect for environmental and education & cultural rights, first, heteroscedasticity and/or autocorrelation are potential issues, which after being fixed by country cluster, lead to the insignificance, and ; second, that respect for these two categories of rights might only affect labor productivity immediately and have no lagged effects. Last, standard errors under the significant variables is smaller than them, indicating a nice potential of generality.

Summary

To summarize, the regression results indicate that both de jure and de facto respects for environmental rights basically negatively impact, with hysteresis, on the GDP per capita growth rate as a representation of the economic development. Besides the influence of the above rights, respect for human rights in general, education & cultural rights, and health rights also contribute to the fluctuation of this type of economic development. On one side, the de jure respect for the human rights category and education & cultural rights specifically positively impact this kind of

⁶⁰ See Appendix IV.

economic development, without lagged effects. On the other side, de facto respect for health rights, though displaying no instant impact, belatedly and negatively influences economic development.

As to the effects on labor productivity per person as the representation of economic development, the de jure and de facto respects for environmental rights give wholly opposite results. The de jure respect for this type of right positively contributes to economic development, with both instant and lagged effects. In contrast, de facto respect for environmental rights shows a negative impact on economic development, yet only in the basic model. This implies that its influence might suffer heteroscedasticity or autocorrelation issues and has no hysteresis. Besides that, respect for education & cultural rights might have positive affect on the economic development since both de jure and de facto respects for such rights are significant in model 1. However, neither of them passed the country cluster test, which implies a strong potential heteroscedasticity or autocorrelation problem. In addition, de jure respect for human rights in general also positively contributes to this type of economic development, yet with a failure in the country cluster effects test.

The table below provides a brief illustration on the impact of both de jure and de facto respects for all categories of rights on the economic development

	De jure database		De facto database	
	GDP per capita growth rate	Labor productivity	GDP per capita growth rate	Labor productivity
Respect for human rights	Positive effects	Positive effects	No effect	No effect
Respect for environmental rights	Negative effects	Positive effects	Negative effects	Negative effects
Respect for health rights	No effect	No effect	Negative effects	No effect
Respect for education & cultural rights	Positive effects	Positive effects	No effect	Positive effects

The author recognizes a positive or negative effect of a certain IV to the DV as long as one outcome of this IV among the three models shows a positive or negative effect with statistical

significance. For example, de jure respect for human rights shows positive impacts on GDP per capita growth rate with significance only in model 1 and 2, but not in model 3. It is still regarded as having positive impact on the DV.

In chapter 3, two main parts will be displayed with one discussing the regression results and the other concluding this research paper. The first one, discussion part, mainly explain the statistic outcomes and the implication of such outcomes to the research. Actually impacts of different models and effects applied in the tests to the research question are demonstrated. This part also reflects the test outcomes back the theories referred in chapter 1 and admits certain limitations of the tests. The second part, conclusion, starts with a discussion around the hypotheses based on the regression results and ends up with suggestions to further studies.

Chapter Three

Discussion

Chapter Three provides discussion and analyses of the results of the regressions illustrated above and will be divided into three parts. The first part elaborates on the discussion of these abnormal and outstanding statistics results. The second part provides the author's thoughts on the reflection of the test results to the theory discussed earlier in the theoretical framework section. The third part brings up limitations and loopholes of the research design and this panel regression, and reflects on directions for future research.

Part I Discussion on test results

It is noticeable that in all four regression tests, the R^2 is relatively small, with the largest being 0.549 and the smallest being 0.039. It was argued that any model with an R^2 smaller than 0.7 is not functional.⁶¹ This paper argues that R^2 is a vital index to see the coverage of the model for the explanation of the fluctuation of DVs. Yet, a small R^2 does not imply the poor explanatory quality of this model. In the context of the research topic, although the research focused on the contribution of the respect for social and cultural rights on economic development, it is self-evident that human rights are neither the only explanatory variables nor even the major ones when checking economic performance. Thus, it is appreciable that the coverage of the regression model would not include the major explanatory variables affecting economic development. However, this does not discredit the precision of the estimate of model of the respect for social and cultural rights particularly. Such situations are not uncommon; there are cases that model with R^2 at 0.04 which produce a workable model in terms of the predicting ability on its IVs and DVs.⁶²

It is also apparent that country cluster effects turn some originally significant statistics into insignificant ones. Cluster effects usually are employed to fix the problem of a violation of the classical assumption that entities within a group are unique and independent, in order to secure a stronger SE result.⁶³ The violation of the classical assumption could be the result of the

⁶¹ See Martin (2012).

⁶² Ibid.

⁶³ See Nichols & Schaffer (2007).

occurrence of heteroscedasticity and autocorrelation mentioned in the last section, with the former pertinent to the violation of the feature of entities and the latter related to time effects. Either one might happen in the context of this research. Autocorrelation can be seen, for instance, in the euro crisis, where many EU members' economic development have greatly slowed for a while, causing disturbances correlating to each other in a time series, violating the classical assumption. Heteroscedasticity, meanwhile, mostly occurs under two conditions: first, under the lack of certain explanatory variables; second, under extreme situations like war, crises, etc. According to the small R^2 , it is reasonable that some non-included variables would create different impacts on different countries. Due to the use of the cluster effect together with time control, all these potential issues were fixed.

As to those IVs that negatively contribute to economic development, analysis is given in the following order. For the de jure part, the respect for environmental rights in model 3 is the only IV that significantly shows a negative influence on economic development, represented by GDP per capita growth rate. The composition of this category of rights is large, with nine environmental treaties as indicators. Yet, regression run specifically on this treaty group shows that no treaty by itself is proven negatively impacting economic development.⁶⁴ Among these nine indicators, five of them show statistical insignificance, regarding effects on GDP per capita growth rate. The other four have no results observed. Thus, the outcome that de jure respect for environmental rights hampers the economic development actually cannot be explained respectively by each treaty under this treaty category. For the de facto part, the respect for environmental rights again hinders economic development, represented by both DVs. Since de facto environmental rights has only one indicator, namely CO2 emission per metric, it is easy to understand such a result. Applying this result to the context of developing countries, CO2 emission is closely related to industrial development, so that the emissions of developing countries will be artificially much higher than that of developed countries.⁶⁵ It is also known that most developing countries lack the capability to supplying vast renewable energies. Thus, following this logic, if CO2 emission is treated as a respect for environmental rights, the industrial productivity, which heavily relies on the it, shrinks. Such shrinking of the industry and

⁶⁴ See Appendix V.

⁶⁵ See Volcovici (2013).

slow-down in the market will doubtless be reflected in all GDP-related economic indexes, including the two DVs selected in this thesis.

In the de facto group, respect for health rights, represented by government expenditure on public health, also diminishes economic development in the form of lagged GDP per capita growth rate. One possible justification for this could be that more expenditure on public health improves other metrics, such as mortality and life expectancy. Thus, the population sizes of countries, which serves as the denominator in the GDP per capita calculation, enlarge. As a result, the GDP per capita growth rate showed a mathematical decrease when expenditure on public health grows. Such logic is theoretically possible. Farahani M. et al. (2010) proved that there is a positive correlation between spending on public health and the control of death rate in India.⁶⁶ Although this empirical result is from the case study of a single country, it still partially buttresses the reasoning above since the possibility of the argument is proven to exist.

Part II Reflection on theory

The regression results to some extent reflect the arguments referred to in chapter 1 of scholars in this field with opposite thoughts. Jones (2005)'s argument that rights-based development is nothing less than the reading of documents can be partly verified by comparing the outcomes of de jure and de facto databases. If the de facto outcomes are no worse or are even better than the de jure outcomes, Jones' argument can be proved right. Comprehensively, Jones' argument is undermined by the result that the negative contribution of IVs and non-correlated relationships can be found more in the de jure database than in the de facto database. This means that countries may be leaning more to the side of the 'mere reading of documents' than to the side of taking practical actions to fulfill their legal obligation. The statements of Uvin (2002), that the rights-based approach could be nothing more than rhetoric, were enhanced by the result.

Yet, the superficial failure of Jones' theory (2005) and success of Uvin's (2002) can be rejected by the following arguments. The worse performance of de facto respect for social and cultural rights than de jure ones does not necessarily mean that countries are purely 'reading documents'. The outcomes of tests on de jure respect per se can prove actions taken by countries. Simple signatures and ratification do not automatically arouse better economic development if no

⁶⁶ Farahani M. et al. (2010) in their *Abstract* suggested that every 10% increase in the spending on public health leads to 2% decrease in the probability of death rate.

specific course of actions is carried out. The statistically significant positive correlations between IVs and DVs in the de jure part itself could reflect the efforts made by countries. Since the ICESCR allows countries to take progressive approach to achieve its goals, it is understandable that outcomes from the de facto part might be worse than that from the de jure part, since practical actions take time and won't be reflected immediately.

The regression outcomes of the de jure database also buttress Hausermann (1988)'s arguments. He claims that, when playing a role in development studies, human-rights approaches find their ground in international law. Though not all, many outcomes in the de jure part show a positive correlation between IVs and DVs, especially the effects on labor productivity. Such results might not be able to prove that international law can secure the role of all rights in the context of development studies, but the effects of international law on human rights development discourse, in the form of treaties, is evident.

Regression results vary largely with the manipulation of different models, DVs, and types of IVs, which seemingly weaken the influence of respect for social and cultural rights on economic development. Yet, appearance of some positive correlations between them presented that the function as normative guidance of social and cultural rights, proposed by Cornwall & Nyamu-Musembi (2004), cannot be denied just because of the fluctuation of their effects.

Part III Limitations of the research

It is acknowledged that the tests within this thesis face limitations and constraints. Some of these are unavoidable but trigger deliberate thoughts for future studies. Below, some main limits concerned in this paper are discussed.

First, due to practical concerns, the research design and the variables selected imply imperfections in the regressions. This paper tries to include as many elements as possible to represent each group of specific rights. However, it is impossible to include all areas of a category of rights, maybe even not all major ones. For example, during the de jure IV selection, even though several treaties were chosen under each category, some important ones were not able to be included. Some of them disqualify the legal basis of this paper, namely the ICESCR, in terms of their birth years, while others lack enough data to meet the criteria. Even for the selected indicators, many of them had incomplete data. For instance, when the de jure database was established, the scarcity of data in the environment and cultural treaty categories caused the

occurrence of *insufficient observations* in the trial regression test. In order to have enough cases for observation, the missing data, originally left blank in cells, was coded as 0, being treated as being neither signifying nor ratifying treaties. Although objectively speaking, the missing of data equals not signifying/ratifying, there is a difference from the perspective of countries' attitudes to the treaties between them not captured by the 0 value.

There also could be controversies from the use of the Fixed Effect model, even though both theoretical arguments and the Hausman test point out the Fixed Effect model as the ideal choice for this research. Bell & Jones (2015) claim that even when a Hausman test shows a result in favor of using the Fixed Effect model, it nevertheless proves misleading.⁶⁷ They argue that the Fixed Effect model is disadvantaged by "correlating lower-level covariates and higher-level residuals", which removes many beneficial explanatory variables in the model.⁶⁸

Second, as mentioned and explained in the Data collection part and Data preparation part, the choice of human rights treaty categories in the de jure database is problematic, yet inevitable. The main flaw is that treaties selected under this category contain elements beyond the scope of this research, which includes only social and cultural rights. Although it is argued that the use of other right categories containing only social and cultural rights indicators in the de jure part, combined with the use of de facto IVs reflecting only respect for social and cultural rights reduces the problem created by the human rights treaty group, it does not comprehensively solve this flaw.

Unsurprisingly, the de jure respect for human rights treaties did not perform well with regard to the appearance on its significant contribution to economic development. It is shown to positively contribute to GDP per capita growth rate in model 1 & 2, and to labor productivity in model 1 with statistical significance. However, even these already unsatisfying results can be weakened by further detailed analysis, followed by proper logical reasoning: Appendix VI shows that respect for the human rights treaties positively correlated to both DVs with statistics significance in most cases. However, it is impossible to tell what convinced countries to sign/ratify treaties (e.g. for the sake of social rights, cultural rights, economic rights, a combination of these?) in the

⁶⁷ See Bell & Jones (2015), pp.148.

⁶⁸ See Bell & Jones (2015), pp. 133.

regression model. Also, the treaty against discrimination on women (CEDAW 1979) displayed the same regression result for both DVs as the ICESCR did. Yet, it is insurmountable to discern why countries sign/ratify it. (e.g. for the sake of women's political and civil rights, for their social and cultural rights, for all these?)

Third, these selected IVs also obtained disadvantages that would harm the accuracy of the result. First, as to the treaties selected as indicators in the de jure part, they cannot precisely reflect countries' attitude towards human rights. As acknowledges above, some treaties are not chosen because they had existed before the birth of ICESCR. Yet, countries might have signed and/or ratified those non-selected treaties as their respect for relative rights, which is not measured in this paper. Following the same logic, it can be said that for treaties in the de jure part that countries did not sign or ratified, unrespect for such rights of these countries cannot be declared since they could have showed it in other treaties beyond the range of this research. Second, as to the de facto indicators, the same logic discussed in the first part also applies. For example, this paper only uses CO2 emission per metric to represent for respect for environmental rights. Yet, several other indicators, such as PM2.5 air pollution and renewable energy consumption⁶⁹, measures attitudes towards environmental rights of countries as well. For those which perform unsatisfactorily on the CO2 emission per metric could score higher than other potential indicators.

Last but not the least, the regressions at most can only prove the existence of correlations between respect for social and cultural rights and the economic development in certain conditions. For example, more de jure respect for environmental rights, as a representation of social rights, of a country is proven to arouse certain increase in its labor productivity. Yet, this only shows the correlation that change in this IV is expected have a large chance to predict the change in this DV. It is impossible to claim that the change of the DV is caused by the IV because some other variables not included in the model might also have the same impact on the change of DV. Therefore, the causality cannot be presented by using this method.

⁶⁹See The World Bank. *Data by Indicators*: Environment.

Conclusion

The regression results answered the two hypotheses to various extents. The first hypothesis, claiming a positive contribution from the respect for social and cultural rights and the economic development, was ambiguously answered by the test results. Because three different models were applied in the regression, their various and even opposing outcomes make it difficult to definitively confirm or deny this hypothesis. Generally speaking, the majority of the explanatory variables, except respect for health rights, confirmed the first hypothesis that positive correlations between IVs and DVs exist. Yet, the question of how strong and how consistent these correlations are cannot be answered within the limited focus of this research.

With regard to the second hypothesis, it is more apparent that this hypothesis is essentially, though not absolutely, true. Most outcomes of the regression support the hypothesis by showing discrete results of the two databases. Two differences between the respect to de jure rights and to the de facto rights were observed. The first is the disparity between the positivity and negativity of the contribution of the IVs. Effects on labor productivity, for instance, showed a positive influence of the de jure respect for environmental rights, yet a negative impact of the de facto part respect. The second is the disparity among tests of statistical significances. For example, de jure respect for the human rights category has a positive correlation with the economic development, while the de facto respect for it proved irrelevant. Thus, it can be declared that there is a different contribution to the DVs between de jure respect and de facto respect.

In addition, one common problem for the response to both hypotheses is that the regression cannot comprehend the specific conditions in different regions. The outcome that de jure respect for environmental rights positively correlates to growth in labor productivity might not be a one-for-all result. It might work in one region but not to another.

Regardless of the results, this paper presents an innovative attempt at picturing the relationship between second generation human rights and development that is rarely paid attention. As a pioneer of such a research realm, this paper cannot avoid disadvantages from various perspectives. Technological issues, from hypothesis building to regression implementation, might affect the reliability and validity of the results of this paper. Yet, this research does not expect to produce an absolutely black and white answer to its research question. The purpose of initiating this research is to set up an empirical foundation for further studies, including receiving

criticisms and doubts. Further studies in this field could build upon this paper by improving two points.

First, they could look into specific situations, by dividing countries into regions and conducting a comparison. This would produce a more accurate observation, including more explanatory variables, as the respect for rights vastly vary in regions. Scholars could, for instance, choose the same IVs and DVs, to run regressions on EU members and ASEAN⁷⁰ members separately and compare the results of these two groups. The foreseeable advantage is that test result of one group is based on countries with more or less the similar ideologies and political agenda. Their agendas to some extent are guided by the unified transnational organization, namely EU or ASEAN. Therefore, with regard to human rights issues, they should have larger ground of consensus than non-organization members. Test results under such circumstances, would be more accurate to reflect the reality due to the a smaller sample for each regression and similar conditions of political basis.

Second, they could take a qualitative methodology, such as single-case studies or small-N comparison studies, to explore the particular relationship between IVs and DVs in one country or small groups of comparable countries. As observed in the result section and recognized in the part I of discussion section, the low coverage is a concern for this paper when it comes to the results interpretation. By taking a qualitative research method based on this paper, the problem of lacking enough coverage could be solve because such methods look into the details of each case. That's been said, other factors that play more important roles in affecting economic development would be considered and perhaps explained, besides studying the impact of respect for social and cultural rights on development. Moreover, the qualitative methods could also provide clear answers and justifications of reasons countries chose one specific ways to show their respect for human rights that method in this paper cannot. Building up on the result of this paper, future studies by qualitative methods could inquire why, for instance, Afghanistan ratified the ICESCR but has not even signed the International Convention against Apartheid in Sports yet? Or what made this country decide to ratify the CEDAW from its signing status?

⁷⁰ ASEAN denotes to Association of Southeast Asian Nations.

Methods suggested in the last paragraph can be combined with the first point of dividing countries into certain groups for tests and the combination would work better than each of these two. By conducting the first one of reducing the sample for regression, aiming to improve the coverage and the accuracy of the regression result at a systematic level, the second one assist to provide specific interpretations according to the unique conditions of each research subject.

Bibliography

Amadeo, K. (2017, March 13). Real GDP Per Capita: How to Calculate, Data Since 1946. *The Balance*. Retrieved from <https://www.thebalance.com/real-gdp-per-capita-how-to-calculate-data-since-1946-3306028>

Armaline, W.T. & Glasberg, D.S. & Purkayastha, B. (2016). De Jure vs. De Facto Rights: A Response to “Human Rights: What the United States Might Learn from the Rest of the World and, Yes, from American Sociology”. *Sociological Forum*, 32(1), 220-224. DOI: 10.1111/socf.12303

Bell, A. & Jones, K. (2015). Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data. *Political Science Research and Methods*, 3(1), 133-153. Retrieved from <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/S2049847014000077>

Cornwall, A. & Nyamu-Musembi, C. (2004). Putting the ‘Rights-Based Approach’ to Development into Perspective. *Third World Quarterly*, 25 (8), 1415-1437.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital, *American Journal of Sociology*, XCIV, 95-S120.

Caplan, R. (2005). *Europe and the Recognition of New States in Yugoslavia*. New York: Cambridge University Press.

Cingranelli, D. L. & Richards, D. L. & Clay, K. C. (2014). *CIRI Human Rights Data Project Coding Manual*. Retrieved from <http://www.humanrightsdata.com/p/data-documentation.html>

De Kadt, E. (1979). Some Basic Questions on Human Rights and Development. *World Development*, 8, 97-105.

De Vries, K. & Erumban, A. A. (2016). Total Economy Database : Sources & Methods. *The Conference Board*. Retrieved from https://www.conference-board.org/retrievefile.cfm?filename=TED_SourcesMethods_nov20161.pdf&type=subsite

Di Giovanni, J., & Shambaugh, J. C. (2008). The impact of foreign interest rates on the economy: The role of the exchange rate regime. *Journal of International Economics*, 74(2), 341-361.

- Ensor, J. et al. (2015). A rights-based perspective on adaptive capacity. *Global Environmental Change*, 31, 38-49.
- Farahani, M. & Subramanian, S.V. & Canning, D. (2010). Effects of State-level Public Spending on Health on the mortality Probability in India. *Health Economic*, 19(11), 1361-1376. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3095580/>
- Ferguson, C. (1999). *Global Social Policy Principles: Human Rights and Social Justice*, London: DFID.
- Fukuyama, F. (1995). *Trust: the social virtues and the creation of prosperity*. New York etc. : The Free Press.
- Five-Year Plans. (n.d.). In Encyclopædia Britannica online. Retrieved from <https://www.britannica.com/topic/Five-Year-Plans>
- Gow, I.D. & Ormazabal, G. & Taylor, D.J. (2010) Correcting for Cross-Sectional and Time-Series Dependence in Accounting Research. *The Accounting Review*, 85(2), pp. 483-512. Retrieved from <http://aaapubs.org/doi/10.2308/accr.2010.85.2.483?code=aaan-site>
- Gordan, R.A. (2010). *Regression Analysis for The Social Science*. Abingdon, Oxon: Routledge.
- Greene, W.H. (2008). *Econometric analysis*. Upper Saddle River, NJ: Prentice Hall.
- Hausermann, J. (1998). A Human Rights Approach to Development, London: Rights and Humanity. This is a discussion paper commissioned by the Department for International Development of the UK Government in preparation of the Government White Paper on International Development.
- International Covenant on Economic, Social and Cultural Rights*, New York, 16 December 1966, *United Nations, Treaty Series*, vol. 993, p. 3. Retrieved from https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3&chapter=4&clang=_en
- Jones, P.S. (2005). A Test of Governance: rights-based struggles and the politics of HIV/AIDS policy in South Africa, *Political Geography*, 24, 419-447.
- King EN, Ryan TP. 2002. A preliminary investigation of maximum Report January 1995 High School and Beyond: 1992 Descriplikelikelihood logistic regression versus exact logistic regression.

tive Summary of 1980 High School Sophomores 12 Years Later. *American Statistician* 56(3): 163-70.

Kindornay, S. et al. (2012). Rights-Based Approaches to Development: Implications for NGOs. *Human Rights Quarterly*, 34 (2), 472-506.

Knack, S. & Keefer, P. (1997). Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *The Quarterly Journal of Economics*, 112 (4), 1251-1288.

Kuanpoth, J. (2010). *Patent Rights in Pharmaceuticals in Developing Countries: Major Challenges for the Future*. Cheltenham, UK: Edward Elgar Publishing Ltd.

Lewis, E.G. (2005). Always Control for Year Effects in Panel Regressions!. [PDF documents] Retrieved from <https://www.dartmouth.edu/~ethang/Lectures/Class17/Always%20Control%20for%20Year%20Effects%20in%20Panel%20Regressions.pdf>

Loury, G. (1977). *A Dynamic Theory of Racial Income Differences*, in P. A. Wallace, and A. Le Mund, eds., *Women, Minorities and Employment Discrimination* (Lexington, MA.: Lexington Books.

Martin, K. G. (2012). Can a Regression Model with a Small R-Squared Be Useful? [Web log] Retrieved from <http://www.theanalysisfactor.com/small-r-squared/>

Nichols, A. & Schaffer, M. (2007). *Clustered Errors in Stata* [PowerPoint slides]. Retrieved from http://www.stata.com/meeting/13uk/nichols_crse.pdf

Park, H. M. (2010). *Practical Guides To Panel Data Analysis* [PDF document]. Retrieved from http://www.iuj.ac.jp/faculty/kucc625/writing/panel_guidelines.pdf

Peterson, M.A. (2009). Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. *The Review of Financial Studies*, 22(1), 435-480. Retrieved from <http://www.jstor.org/stable/40056916>

Piron, L.H. (2005). Rights-based approaches and bilateral aid agencies: more than a metaphor?, *IDS Bull*, 36(1), 19-30.

Pohlman, J.T. & Leitner, D.W. (2003). A Comparison of Ordinary Least Squares and Logistic Regression. *The Ohio Journal of Science*, 103 (5), 118-125.

Rhodes, J. (2014, October 13). On Methods: What's the difference between qualitative and quantitative approaches?. *The Chronicle of Evidence-Based Mentoring*. Retrieved from <http://chronicle.umbmentoring.org/on-methods-whats-the-difference-between-qualitative-and-quantitative-approaches/>

Saris, W. & Gallhofer, I. (2004). Operationalization of Social Science Concepts by Intuition. *Quality & Quantity*, 38, 235-258. doi: 10.1023/B:QUQU.0000031328.25370.e9

Seymour, D. & Pincus, J. (2008). Human Rights and Economics: The Conceptual Basis for their Complementarity. *Development Policy Review*, 26(4): 387-405.

Sen, A. (1999). *Development as Freedom*. New York: Oxford University Press.

Stata Manual 13. *Huasman- Hausman specification test*. Retrieved from <http://www.stata.com/manuals13/rhausman.pdf>

Sykes, A. (May, 2003). International Trade and Human Rights: An Economic Perspective. *John M. Olin Law & Economic Working Paper No. 188, The University of Chicago Law School*.

Sieghart, P. (1983). *International Law of Human Rights*. Oxford: Clarendon Press.

Slim, H. (2002). Making Moral Low Ground: Rights as the Struggle for Justice and the Abolition of Development. *The Fletcher Journal of Development Studies, Praxis XVII*.

The Conference Board. (2017) *Output, Labor, and Labor Productivity 1950-2017*. Retrieved from <https://www.conference-board.org/data/economydatabase/index.cfm?id=27762>

The Conference Board. (2017) *Total Economy Database*. Retrieved from <https://www.conference-board.org/data/economydatabase/index.cfm?id=27762>

The World Bank. *Data by Indicators*. Retrieved from <http://data.worldbank.org/indicator>

The Productivity of Nations. (1996). Cambridge, Mass: National Bureau of Economic Research.

Torres-Reyna, O. (2007). *Panel Data Analysis Fixed and Random Effects using Stata (v.4.2)* [PowerPoint slides]. Retrieved from <https://www.princeton.edu/~otorres/Panel101.pdf>

United Nations Treaty Collection. *Status of Treaties*. Retrieved from https://treaties.un.org/pages/ParticipationStatus.aspx?clang=_en

- Uvin, P. (2002). On High Moral Ground: The Incorporation of Human Rights by the Development Enterprise. *The Fletcher Journal of Development Studies, Praxis XVII*.
- Volcovici, V. (July 25, 2013). Developing countries to vastly outpace OECD in carbon emissions – U.S. EIA. *Reuters*. Retrieved from <http://www.reuters.com/article/usa-energy-carbon-idUSL1N0FU2FM20130725>
- Welling, J. (2008). International Indicators and Economic, Social, and Cultural Rights. *Human Rights Quarterly, 30(4)*, 933-958.
- William, R. (2015). *Panel Data: Very Brief Overview* [PDF document]. Retrieved from <https://www3.nd.edu/~rwilliam/stats2/Panel.pdf>
- Worster, W.T. (2009). Law, Politics, and the Conception of the State in State Recognition Theory. *Boston University International Law Journal, 27(1)*, 116-168. Retrieved from <http://www.bu.edu/law/journals-archive/international/volume27n1/documents/worster.pdf>
- 易,丹辉 [Yi, D.H.] (2008). *数据分析与EViews应用* [Data Analysis and the Application of EViews]. 中国人民大学出版社[China Renmin University Press].

Appendix

I. Raw regression results of all three models in Table 1

Model 1 of Table 1

```

. xtreg gdp_growth_rate human_rights environmental health cultural i.year, fe

Fixed-effects (within) regression              Number of obs   =       7652
Group variable: country1                      Number of groups =        192

R-sq:  within = 0.2176                        Obs per group:  min =         2
        between = 0.0237                       avg =        39.9
        overall = 0.2062                       max =         49

corr(u_i, Xb) = -0.0989                       F(52,7408)      =       39.62
                                                Prob > F        =       0.0000

```

gdp_growth_~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
human_rights	.0805591	.0215024	3.75	0.000	.0384083 .1227098
environmental	-.0354506	.0338515	-1.05	0.295	-.1018092 .0309079
health	-.032285	.022932	-1.41	0.159	-.0772383 .0126683
cultural	.0404039	.0170681	2.37	0.018	.0069457 .0738622
year					
1968	-.0183301	.0192281	-0.95	0.340	-.0560227 .0193625
1969	.0221246	.0191453	1.16	0.248	-.0154055 .0596548
1970	.0223381	.0192774	1.16	0.247	-.0154511 .0601272
1971	.0271131	.0189163	1.43	0.152	-.0099681 .0641944
1972	.0681602	.0188069	3.62	0.000	.0312932 .1050271
1973	.1760248	.0188089	9.36	0.000	.139154 .2128955
1974	.2437956	.0188123	12.96	0.000	.2069183 .280673
1975	.0548893	.0188536	2.91	0.004	.0179309 .0918477
1976	.0022628	.0187564	0.12	0.904	-.034505 .0390306
1977	.0631216	.0187234	3.37	0.001	.0264183 .0998248
1978	.0702466	.018671	3.76	0.000	.0336461 .1068471
1979	.1156162	.0186743	6.19	0.000	.0790093 .1522231
1980	.0926409	.0186727	4.96	0.000	.0560371 .1292446
1981	-.0614219	.0183957	-3.34	0.001	-.0974827 -.0253611
1982	-.0864683	.0183735	-4.71	0.000	-.1224857 -.050451
1983	-.0912475	.0183679	-4.97	0.000	-.1272537 -.0552412
1984	-.0718829	.0184353	-3.90	0.000	-.1080214 -.0357444
1985	-.0769147	.0184389	-4.17	0.000	-.1130601 -.0407692
1986	.0326875	.0185053	1.77	0.077	-.0035881 .0689631
1987	.0313996	.0185238	1.70	0.090	-.0049123 .0677115
1988	-.0099576	.0184902	-0.54	0.590	-.0462036 .0262885
1989	-.069461	.0184802	-3.76	0.000	-.1056875 -.0332345
1990	.0174042	.0188887	0.92	0.357	-.019623 .0544313
1991	-.0498634	.0187033	-2.67	0.008	-.0865272 -.0131996
1992	-.0702084	.0188716	-3.72	0.000	-.1072021 -.0332146
1993	-.0928898	.0191549	-4.85	0.000	-.1304389 -.0553408
1994	-.0428093	.019457	-2.20	0.028	-.0809507 -.0046668
1995	.0364813	.0197093	1.85	0.064	-.0021545 .0751172
1996	-.0242113	.0196865	-1.23	0.219	-.0628025 .0143799
1997	-.062128	.0197652	-3.14	0.002	-.1008733 -.0233826
1998	-.0987104	.020037	-4.93	0.000	-.1379886 -.0594321
1999	-.0783016	.0202543	-3.87	0.000	-.1180059 -.0385974
2000	-.0439084	.0209655	-2.09	0.036	-.0850068 -.0028101
2001	-.0782798	.0212476	-3.68	0.000	-.1199311 -.0366285
2002	-.036798	.0219059	-1.68	0.093	-.0797398 .0061438
2003	.0519359	.022374	2.32	0.020	.0080765 .0957952
2004	.0622631	.0230061	2.71	0.007	.0171646 .1073616
2005	.0402762	.0235933	1.71	0.088	-.0059734 .0865258
2006	.0400141	.0239915	1.67	0.095	-.0070161 .0870443
2007	.0733702	.024622	2.99	0.003	.025304 .1218364
2008	.063533	.0251114	2.53	0.011	.0143075 .1127584
2009	-.1533734	.0255637	-6.00	0.000	-.2034855 -.1032613
2010	.0007574	.0257618	0.03	0.977	-.049743 .0512578
2011	.0247408	.0264257	0.94	0.349	-.027061 .0765427
2012	-.076027	.0269289	-2.82	0.005	-.1288152 -.0232388
2013	-.0582756	.0274243	-2.12	0.034	-.1120351 -.0045161
2014	-.0779662	.0281738	-2.77	0.006	-.1331948 -.0227376
2015	-.1797751	.0289194	-6.22	0.000	-.2364654 -.1230848
_cons	.0570628	.0137477	4.15	0.000	.0301133 .0840122
sigma_u	.03487233				
sigma_e	.14027455				
rho	.05820504				(fraction of variance due to u_i)

F test that all u_i=0: F(191, 7408) = 1.40 Prob > F = 0.0003

Model 2 of Table 1

```
. xtreg gdp_growth_rate human_rights environmental health cultural i.year, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =    7652
Group variable: country1              Number of groups =    192

R-sq:  within = 0.2176                 Obs per group:  min =     2
      between = 0.0237                 avg =            39.9
      overall  = 0.2062                 max =            49

                                     F(52,191)       =    29.56
corr(u_i, Xb) = -0.0989                Prob > F        =    0.0000
```

(Std. Err. adjusted for 192 clusters in country)

gdp_growth_~e	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
human_rights	.0805591	.0296674	2.72	0.007	.0220413 .1390769
environmental	-.0354506	.0374443	-0.95	0.345	-.1093054 .0384042
health	-.032285	.0275331	-1.17	0.242	-.086593 .0220231
cultural	.0404039	.0204703	1.97	0.050	.0000271 .0807808
year					
1968	-.0183301	.0103406	-1.77	0.078	-.0387265 .0020664
1969	.0221246	.0105652	2.09	0.038	.0012851 .0429641
1970	.0223381	.0159498	1.40	0.163	-.0091223 .0537985
1971	.0271131	.010792	2.51	0.013	.0058262 .0484
1972	.0681602	.0175187	3.89	0.000	.0336051 .1027152
1973	.1760248	.0156529	11.25	0.000	.14515 .2068995
1974	.2437956	.0342323	7.12	0.000	.1762738 .3113174
1975	.0548893	.0169513	3.24	0.001	.0214536 .088325
1976	.0022628	.0142008	0.16	0.874	-.0257478 .0302733
1977	.0631216	.0142685	4.42	0.000	.0349775 .0912657
1978	.0702466	.0154913	4.53	0.000	.0396907 .1008025
1979	.1156162	.0140309	8.24	0.000	.0879408 .1432916
1980	.0926409	.0156158	5.93	0.000	.0618393 .1234424
1981	-.0614219	.0142513	-4.31	0.000	-.089532 -.0333118
1982	-.0864683	.0143075	-6.04	0.000	-.1146892 -.0582474
1983	-.0912475	.0151297	-6.03	0.000	-.1210902 -.0614047
1984	-.0718829	.0156475	-4.59	0.000	-.1027469 -.0410188
1985	-.0769147	.0145647	-5.28	0.000	-.105643 -.0481864
1986	.0326875	.0218868	1.49	0.137	-.0104833 .0758584
1987	.0313996	.0177151	1.77	0.078	-.0035428 .066342
1988	-.0099576	.0166969	-0.60	0.552	-.0428916 .0229764
1989	-.069461	.0168232	-4.13	0.000	-.1026441 -.0362779
1990	.0174042	.0205001	0.85	0.397	-.0230314 .0578398
1991	-.0498634	.0188678	-2.64	0.009	-.0870795 -.0126474
1992	-.0702084	.0181282	-3.87	0.000	-.1059655 -.0344512
1993	-.0928898	.0179742	-5.17	0.000	-.1283433 -.0574364
1994	-.0428093	.0217965	-1.96	0.051	-.0858022 .0001835
1995	.0364813	.0191427	1.91	0.058	-.0012769 .0742396
1996	-.0242113	.0178194	-1.36	0.176	-.0593594 .0109368
1997	-.062128	.0172947	-3.59	0.000	-.0962411 -.0280149
1998	-.0987104	.0184458	-5.35	0.000	-.1350941 -.0623266
1999	-.0783016	.0185257	-4.23	0.000	-.1148428 -.0417605
2000	-.0439084	.0252503	-1.74	0.084	-.0937137 .0058969
2001	-.0782798	.0200922	-3.90	0.000	-.1179109 -.0386487
2002	-.036798	.0220371	-1.67	0.097	-.0802654 .0066694
2003	.0519359	.0219289	2.37	0.019	.008682 .0951898
2004	.0622631	.0212158	2.93	0.004	.0204157 .1041105
2005	.0402762	.0209428	1.92	0.056	-.0010326 .081585
2006	.0400141	.0222056	1.80	0.073	-.0037856 .0838138
2007	.0735702	.0226034	3.25	0.001	.0289859 .1181545
2008	.063533	.0221822	2.86	0.005	.0197794 .1072865
2009	-.1533734	.0265254	-5.78	0.000	-.2056938 -.101053
2010	.0007574	.025186	0.03	0.976	-.048921 .0504358
2011	.0247408	.0243736	1.02	0.311	-.0233351 .0728167
2012	-.076027	.0251992	-3.02	0.003	-.1257314 -.0263226
2013	-.0582756	.026178	-2.23	0.027	-.1099108 -.0066404
2014	-.0779662	.0266052	-2.93	0.004	-.1304439 -.0254886
2015	-.1797751	.0282362	-6.37	0.000	-.2354698 -.1240803
_cons	.0570628	.009868	5.78	0.000	.0375984 .0765271
sigma_u	.03487233				
sigma_e	.14027455				
rho	.05820504	(fraction of variance due to u_i)			

Model 3 of Table 1

```
. xtreg gdp_growth_rate l5.( human_rights environmental health cultural ) i.year, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =      7222
Group variable: country1              Number of groups =      192

R-sq:  within = 0.2211                Obs per group:  min =      2
      between = 0.0257                  avg   =      37.6
      overall  = 0.2138                  max   =      45

                                     F(48,191)       =      30.06
corr(u_i, Xb) = -0.0551                Prob > F        =      0.0000
```

(Std. Err. adjusted for 192 clusters in country)

gdp_growth_~e	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
human_rights L5.	.0513801	.0311887	1.65	0.101	-.0101385	.1128987
environmental L5.	-.1145873	.0409073	-2.80	0.006	-.1952754	-.0338992
health L5.	.0209521	.0336501	0.62	0.534	-.0454215	.0873257
cultural L5.	.0311142	.019266	1.61	0.108	-.0068872	.0691156
year						
1972	.0414265	.014942	2.77	0.006	.011954	.0708991
1973	.1491817	.0135108	11.04	0.000	.1225321	.1758314
1974	.2171053	.0354169	6.13	0.000	.1472467	.2869638
1975	.0285867	.0175553	1.63	0.105	-.0060403	.0632138
1976	-.0237216	.0127308	-1.86	0.064	-.0488325	.0013893
1977	.0369073	.011513	3.21	0.002	.0141984	.0596163
1978	.0447848	.0136917	3.27	0.001	.0177784	.0717911
1979	.0901271	.0121682	7.41	0.000	.0661259	.1141284
1980	.0702225	.0146354	4.80	0.000	.0413546	.0990903
1981	-.082345	.0139688	-5.89	0.000	-.1098978	-.0547922
1982	-.1066465	.0123257	-8.65	0.000	-.1309585	-.0823346
1983	-.1105058	.012242	-9.03	0.000	-.1346527	-.0863589
1984	-.0895261	.0137933	-6.49	0.000	-.1167328	-.0623194
1985	-.0952524	.0135346	-7.04	0.000	-.1219488	-.0685559
1986	.0157689	.0185346	0.85	0.396	-.0207899	.0523277
1987	.0151516	.0154003	0.98	0.326	-.0152249	.045528
1988	-.026559	.0144142	-1.84	0.067	-.0549905	.0018725
1989	-.0865959	.0145916	-5.93	0.000	-.1153774	-.0578145
1990	.0060591	.0174854	0.35	0.729	-.0284301	.0405484
1991	-.0620415	.0164683	-3.77	0.000	-.0945246	-.0295583
1992	-.0849211	.0146683	-5.79	0.000	-.1138538	-.0559883
1993	-.1064799	.0157321	-6.77	0.000	-.1375109	-.0754489
1994	-.0570696	.0181495	-3.14	0.002	-.0928689	-.0212704
1995	.019553	.0166261	1.18	0.241	-.0132412	.0523473
1996	-.0426726	.0152635	-2.80	0.006	-.0727792	-.012566
1997	-.0708653	.0153228	-4.62	0.000	-.1010891	-.0406416
1998	-.1068482	.0161416	-6.62	0.000	-.1386869	-.0750096
1999	-.082145	.0152604	-5.38	0.000	-.1122455	-.0520445
2000	-.0437091	.0210855	-2.07	0.040	-.0852994	-.0021188
2001	-.0757178	.01808	-4.19	0.000	-.11138	-.0400556
2002	-.0332607	.0178565	-1.86	0.064	-.0684819	.0019605
2003	.0560827	.0179713	3.12	0.002	.020635	.0915304
2004	.0647207	.0165898	3.90	0.000	.0319979	.0974434
2005	.0421073	.0174691	2.41	0.017	.0076501	.0765645
2006	.0424526	.0193842	2.19	0.030	.0042179	.0806872
2007	.0818061	.0199495	4.10	0.000	.0424565	.1211557
2008	.0735174	.0198446	3.70	0.000	.0343747	.11266
2009	-.1432037	.0242786	-5.90	0.000	-.1910923	-.0953151
2010	.0126754	.0228935	0.55	0.580	-.0324812	.0578319
2011	.036275	.0219702	1.65	0.100	-.0070604	.0796103
2012	-.0659845	.0246576	-2.68	0.008	-.1146206	-.0173483
2013	-.0493364	.0263523	-1.87	0.063	-.1013152	.0026424
2014	-.0703656	.0267045	-2.63	0.009	-.1230392	-.0176919
2015	-.1732095	.0283313	-6.11	0.000	-.2290918	-.1173271
_cons	.0862653	.0080576	10.71	0.000	.0703719	.1021587
sigma_u	.03326938					
sigma_e	.14245086					
rho	.05172421	(fraction of variance due to u_i)				

II. Raw regression results of all three models in Table 2

Model 1 of Table 2

```
. xtreg LaborProductivity human_rights environmental health cultural i.year, fe

Fixed-effects (within) regression              Number of obs   =       5909
Group variable: country1                     Number of groups =       122

R-sq:  within = 0.0389                      Obs per group:  min =        27
        between = 0.0378                    avg =             48.4
        overall = 0.0001                    max =             51

                                                F(54,5733)      =        4.30
corr(u_i, Xb) = -0.1810                    Prob > F        =       0.0000
```

LaborProduc-y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
human_rights	29435.45	6660.095	4.42	0.000	16379.15 42491.76
environmental	89660	10719.01	8.36	0.000	68646.68 110673.3
health	7856.993	6667.629	1.18	0.239	-5214.08 20928.07
cultural	15592.26	4700.402	3.32	0.001	6377.696 24806.82
year					
1967	957.947	5426.482	0.18	0.860	-9680.009 11595.9
1968	2225.424	5427.198	0.41	0.682	-8413.934 12864.78
1969	2447.995	5428.163	0.45	0.652	-8193.256 13089.25
1970	4261.767	5415.385	0.79	0.431	-6354.435 14877.97
1971	5819.904	5415.634	1.07	0.283	-4796.784 16436.59
1972	6717.954	5416.678	1.24	0.215	-3900.781 17336.69
1973	7665.813	5417.715	1.41	0.157	-2954.955 18286.58
1974	5896.74	5418.901	1.09	0.277	-4726.354 16519.83
1975	3726.759	5419.935	0.69	0.492	-6898.361 14351.88
1976	4623.953	5422.534	0.85	0.394	-6006.262 15254.17
1977	3345.288	5423.357	0.62	0.537	-7286.541 13977.12
1978	3002.452	5426.539	0.55	0.580	-7635.616 13640.52
1979	3920.07	5427.9	0.72	0.470	-6720.664 14560.8
1980	1226.817	5238.174	0.23	0.815	-9041.984 11495.62
1981	-1662.965	5248.948	-0.32	0.751	-11952.89 8626.956
1982	-4034.415	5256.644	-0.77	0.443	-14339.42 6270.594
1983	-5747.086	5266.071	-1.09	0.275	-16070.58 4576.404
1984	-6250.262	5280.775	-1.18	0.237	-16602.58 4102.052
1985	-7749.045	5285.248	-1.47	0.143	-18110.13 2612.039
1986	-9852.557	5318.696	-1.85	0.064	-20279.21 574.0969
1987	-10554.71	5337.86	-1.98	0.048	-21018.93 -90.48516
1988	-11014.62	5349.043	-2.06	0.040	-21500.77 -528.4765
1989	-11152.92	5357.797	-2.08	0.037	-21656.22 -649.6101
1990	-13659.49	5451.682	-2.51	0.012	-24346.84 -2972.132
1991	-15718.82	5509.185	-2.85	0.004	-26518.9 -4918.733
1992	-24749.3	5589.11	-4.43	0.000	-35706.06 -13792.53
1993	-28649.32	5697.963	-5.03	0.000	-39819.48 -17479.16
1994	-32967.79	5825.431	-5.66	0.000	-44387.84 -21547.75
1995	-34681.15	5898.55	-5.88	0.000	-46244.54 -23117.77
1996	-35527.57	5947.009	-5.97	0.000	-47185.95 -23869.18
1997	-35196.41	5976.183	-5.89	0.000	-46911.98 -23480.83
1998	-37156.75	6066.597	-6.12	0.000	-49049.58 -25263.93
1999	-38333.78	6136.76	-6.25	0.000	-50364.15 -26303.41
2000	-42024.15	6392.394	-6.57	0.000	-54555.66 -29492.65
2001	-44009.22	6504.068	-6.77	0.000	-56759.65 -31258.79
2002	-47916.47	6740.477	-7.11	0.000	-61130.35 -34702.59
2003	-50846.52	6936.131	-7.33	0.000	-64443.96 -37249.08
2004	-52434.89	7156.063	-7.33	0.000	-66463.47 -38406.3
2005	-54565.45	7368.135	-7.41	0.000	-69009.77 -40121.12
2006	-54815.32	7480.155	-7.33	0.000	-69479.25 -40151.39
2007	-56687.04	7703.255	-7.36	0.000	-71788.33 -41585.74
2008	-58396.84	7853.682	-7.44	0.000	-73793.02 -43000.65
2009	-61724.87	8021.722	-7.69	0.000	-77450.48 -45999.27
2010	-61348.87	8084.98	-7.59	0.000	-77198.49 -45499.26
2011	-64425.93	8327.316	-7.74	0.000	-80750.62 -48101.25
2012	-66348.16	8482.412	-7.82	0.000	-82976.9 -49719.43
2013	-67751.26	8655.405	-7.83	0.000	-84719.13 -50783.4
2014	-70320.03	8873.466	-7.92	0.000	-87715.38 -52924.69
2015	-72768.48	9077.184	-8.02	0.000	-90563.19 -54973.77
2016	-81755.78	9763.998	-8.37	0.000	-100896.9 -62614.65
_cons	40629.53	3842.757	10.57	0.000	33096.27 48162.78
sigma_u	54191.568				
sigma_e	38370.619				
rho	.66607072	(fraction of variance due to u_i)			

F test that all u_i=0: F(121, 5733) = 94.00 Prob > F = 0.0000

Model 2 of Table 2

```
. xtreg LaborProductivity human_rights environmental health cultural i.year, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =    5909
Group variable: country1              Number of groups =    122

R-sq:  within = 0.0389                Obs per group: min =    27
      between = 0.0378                avg =            48.4
      overall  = 0.0001                max =            51

                                          F(54,121)      =    5.75
corr(u_i, Xb) = -0.1810                Prob > F       =    0.0000
```

(Std. Err. adjusted for 122 clusters in country)

LaborProduc~y	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
human_rights	29435.45	28991.26	1.02	0.312	-27960.39	86831.3
environmental	89660	38175.37	2.35	0.020	14081.78	165238.2
health	7856.993	8818.879	0.89	0.375	-9602.305	25316.29
cultural	15592.26	16901.6	0.92	0.358	-17868.91	49053.43
year						
1967	957.947	800.4074	1.20	0.234	-626.6706	2542.565
1968	2225.424	1256.534	1.77	0.079	-262.2165	4713.065
1969	2447.995	1425.371	1.72	0.088	-373.9037	5269.894
1970	4261.767	2453.196	1.74	0.085	-594.9815	9118.515
1971	5819.904	2425.417	2.40	0.018	1018.15	10621.66
1972	6717.954	2487.239	2.70	0.008	1793.81	11642.1
1973	7665.813	2632.843	2.91	0.004	2453.406	12878.22
1974	5896.74	2010.488	2.93	0.004	1916.449	9877.031
1975	3726.759	3004.881	1.24	0.217	-2222.196	9675.714
1976	4623.953	3441.895	1.34	0.182	-2190.186	11438.09
1977	3345.288	4494.573	0.74	0.458	-5552.906	12243.48
1978	3002.452	5191.052	0.58	0.564	-7274.606	13279.51
1979	3920.07	5381.395	0.73	0.468	-6733.821	14573.96
1980	1226.817	7278.767	0.17	0.866	-13183.42	15637.06
1981	-1662.965	8880.45	-0.19	0.852	-19244.16	15918.23
1982	-4034.415	10342.12	-0.39	0.697	-24509.36	16440.53
1983	-5747.086	11319.61	-0.51	0.613	-28157.24	16663.07
1984	-6250.262	12081.26	-0.52	0.606	-30168.3	17667.77
1985	-7749.045	12980.15	-0.60	0.552	-33446.67	17948.58
1986	-9852.557	14469.88	-0.68	0.497	-38499.5	18794.39
1987	-10554.71	15080.52	-0.70	0.485	-40410.57	19301.16
1988	-11014.62	15472.72	-0.71	0.478	-41646.95	19617.7
1989	-11152.92	15690.33	-0.71	0.479	-42216.06	19910.23
1990	-13659.49	17484.5	-0.78	0.436	-48274.66	20955.68
1991	-15718.82	18455.54	-0.85	0.396	-52256.43	20818.79
1992	-24749.3	21300.08	-1.16	0.248	-66918.43	17419.84
1993	-28649.32	23071.28	-1.24	0.217	-74325.01	17026.38
1994	-32967.79	24805.25	-1.33	0.186	-82076.33	16140.75
1995	-34681.15	25722.35	-1.35	0.180	-85605.34	16243.03
1996	-35527.57	26381.24	-1.35	0.181	-87756.19	16701.06
1997	-35196.41	26621.31	-1.32	0.189	-87900.31	17507.49
1998	-37156.75	27477.09	-1.35	0.179	-91554.9	17241.39
1999	-38333.78	28259.76	-1.36	0.177	-94281.44	17613.87
2000	-42024.15	30595.06	-1.37	0.172	-102595.1	18546.84
2001	-44009.22	31741.24	-1.39	0.168	-106849.4	18830.95
2002	-47916.47	33651.6	-1.42	0.157	-114538.7	18705.74
2003	-50846.52	35016.67	-1.45	0.149	-120171.2	18478.21
2004	-52434.89	36142	-1.45	0.149	-123987.5	19117.73
2005	-54565.45	37430.69	-1.46	0.147	-128669.4	19538.47
2006	-54815.32	38039.08	-1.44	0.152	-130123.7	20493.08
2007	-56687.04	39946.36	-1.42	0.158	-135771.4	22397.32
2008	-58396.84	41049.47	-1.42	0.157	-139665.1	22871.42
2009	-61724.87	42441.82	-1.45	0.148	-145749.7	22299.91
2010	-61348.87	42990.38	-1.43	0.156	-146459.7	23761.92
2011	-64425.93	44296.86	-1.45	0.148	-152123.3	23271.39
2012	-66348.16	45161.59	-1.47	0.144	-155757.4	23061.12
2013	-67751.26	45917.89	-1.48	0.143	-158657.8	23155.3
2014	-70320.03	47098.24	-1.49	0.138	-163563.4	22923.36
2015	-72768.48	48115.18	-1.51	0.133	-168025.2	22488.21
2016	-81755.78	51347.68	-1.59	0.114	-183412	19900.49
_cons	40629.53	6744.454	6.02	0.000	27277.1	53981.95
sigma_u	54191.568					
sigma_e	38370.619					
rho	.66607072	(fraction of variance due to u_i)				

Model 3 of Table 2

```
. xtreg LaborProductivity L5.( human_rights environmental health cultural ) i.year, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =    5408
Group variable: country1              Number of groups =    122

R-sq:  within = 0.0462                Obs per group:  min =    27
      between = 0.0341                    avg   =    44.3
      overall  = 0.0000                    max   =    46

                                     F(49,121)       =    8.03
corr(u_i, Xb) = -0.1733                Prob > F        =    0.0000

                                     (Std. Err. adjusted for 122 clusters in country)
```

LaborProduc-y	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
human_rights						
L5.	34907.08	24092.77	1.45	0.150	-12790.9	82605.07
environmental						
L5.	93518.03	36913.21	2.53	0.013	20438.6	166597.5
health						
L5.	7700.351	7999.325	0.96	0.338	-8136.424	23537.13
cultural						
L5.	11995.64	15038.76	0.80	0.427	-17777.54	41768.83
year						
1972	998.8692	510.3984	1.96	0.053	-11.599	2009.337
1973	1787.592	1704.333	1.05	0.296	-1586.583	5161.768
1974	-32.61115	2369.784	-0.01	0.989	-4724.224	4659.002
1975	-2146.461	3344.017	-0.64	0.522	-8766.825	4473.902
1976	-1195.869	3605.817	-0.33	0.741	-8334.535	5942.798
1977	-2604.165	4842.998	-0.54	0.592	-12192.16	6983.827
1978	-2834.871	5154.125	-0.55	0.583	-13038.82	7369.078
1979	-1989.438	5375.343	-0.37	0.712	-12631.35	8652.471
1980	-3849.889	6846.775	-0.56	0.575	-17404.89	9705.108
1981	-6355.193	8192.312	-0.78	0.439	-22574.04	9863.649
1982	-8451.081	9391.26	-0.90	0.370	-27043.56	10141.4
1983	-9957.28	10062.54	-0.99	0.324	-29878.73	9964.172
1984	-9990.936	10390.92	-0.96	0.338	-30562.49	10580.62
1985	-12294.07	11588.27	-1.06	0.291	-35236.11	10647.97
1986	-14016.62	12604.11	-1.11	0.268	-38969.78	10936.55
1987	-14525.4	12978.23	-1.12	0.265	-40219.23	11168.42
1988	-15119.46	13439.04	-1.13	0.263	-41725.59	11486.66
1989	-15612.47	13910.76	-1.12	0.264	-43152.48	11927.54
1990	-16613.99	14404.26	-1.15	0.251	-45131.03	11903.04
1991	-18893.12	15294.13	-1.24	0.219	-49171.88	11385.64
1992	-18985.3	15486.82	-1.23	0.223	-49645.54	11674.95
1993	-19257.98	15735.07	-1.22	0.223	-50409.7	11893.73
1994	-19253.78	15940.11	-1.21	0.229	-50811.44	12303.88
1995	-21308.34	17477.76	-1.22	0.225	-55910.18	13293.49
1996	-21594.15	18135.18	-1.19	0.236	-57497.52	14309.22
1997	-30305.39	20646.08	-1.47	0.145	-71179.76	10568.98
1998	-33861.67	22156.95	-1.53	0.129	-77727.19	10003.85
1999	-38284.5	23798.07	-1.61	0.110	-85399.05	8830.058
2000	-39258.16	24535.34	-1.60	0.112	-87832.33	9316.015
2001	-40721.31	25216.5	-1.61	0.109	-90644.02	9201.404
2002	-41225.8	25647.07	-1.61	0.111	-92000.94	9549.334
2003	-42975.27	26462.49	-1.62	0.107	-95364.74	9414.211
2004	-43036.92	27029.49	-1.59	0.114	-96548.93	10475.08
2005	-47619.7	29405.05	-1.62	0.108	-105834.8	10595.35
2006	-48697.92	30338.85	-1.61	0.111	-108761.7	11365.84
2007	-52263.63	32172.34	-1.62	0.107	-115957.3	11430
2008	-56021.52	33448.07	-1.67	0.097	-122240.8	10197.77
2009	-60335.96	34719.61	-1.74	0.085	-129072.6	8400.67
2010	-62167.33	35833.82	-1.73	0.085	-133109.8	8775.171
2011	-62811.7	36287.59	-1.73	0.086	-134652.5	9029.152
2012	-65772.97	37903.95	-1.74	0.085	-140813.8	9267.883
2013	-67510.24	38920.33	-1.73	0.085	-144563.3	9542.828
2014	-69698.81	40088.27	-1.74	0.085	-149064.1	9666.493
2015	-70211.89	40567.53	-1.73	0.086	-150526	10102.24
2016	-73825.56	41960.24	-1.76	0.081	-156896.9	9245.797
_cons	47325.01	8557.168	5.53	0.000	30383.84	64266.18
sigma_u	49614.664					
sigma_e	34042.847					
rho	.6799045	(fraction of variance due to u_i)				

III. *Raw regression results of all three models in Table 3*

Model 1 of Table 3

```
. xtreg gdp_growth_rate Humanrights Environment Health cultural_all i.year, fe
```

```
Fixed-effects (within) regression                Number of obs    =    634
Group variable: country1                        Number of groups =    120

R-sq:  within = 0.3618                          Obs per group:  min =     1
        between = 0.2520                          avg   =     5.3
        overall = 0.3212                          max   =    11

                                                F(14,500)        =    20.24
corr(u_i, Xb) = -0.1060                          Prob > F         =    0.0000
```

gdp_growth~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Humanrights	-.0102793	.0155754	-0.66	0.510	-.0408805	.020322
Environment	.0077688	.0084818	0.92	0.360	-.0088955	.0244331
Health	-.0121739	.0099865	-1.22	0.223	-.0317945	.0074468
cultural_all	-3.14e-12	5.58e-12	-0.56	0.574	-1.41e-11	7.81e-12
year						
1996	-.1001841	.0241157	-4.15	0.000	-.1475647	-.0528036
1997	-.126204	.0322499	-3.91	0.000	-.189566	-.062842
1998	-.156203	.0238251	-6.56	0.000	-.2030127	-.1093933
1999	-.1622881	.0221936	-7.31	0.000	-.2058923	-.1186839
2000	-.1361318	.0218776	-6.22	0.000	-.1791151	-.0931485
2001	-.1444914	.0218497	-6.61	0.000	-.1874199	-.1015629
2002	-.1075988	.0218448	-4.93	0.000	-.1505178	-.0646798
2003	-.0029623	.022421	-0.13	0.895	-.0470134	.0410887
2004	-.0016404	.0225088	-0.07	0.942	-.0458639	.0425832
2007	.030543	.0228779	1.34	0.182	-.0144055	.0754916
_cons	.1729748	.0503457	3.44	0.001	.0740596	.2718899
sigma_u	.06724384					
sigma_e	.09934915					
rho	.31418411	(fraction of variance due to u_i)				

```
F test that all u_i=0:      F(119, 500) =    1.38      Prob > F = 0.0092
```

Model 2 of Table 3

```
. xtreg gdp_growth_rate Humanrights Environment Health cultural_all i.year, fe c
> luster(country)
```

```
Fixed-effects (within) regression      Number of obs   =      634
Group variable: country1              Number of groups =      120

R-sq:  within = 0.3618                Obs per group:  min =      1
      between = 0.2520                    avg =      5.3
      overall  = 0.3212                    max =      11

corr(u_i, Xb) = -0.1060                F(13,119)      =      .
                                          Prob > F       =      .
```

(Std. Err. adjusted for 120 clusters in country)

gdp_growth~e	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
Humanrights	-.0102793	.0158103	-0.65	0.517	-.0415852	.0210266
Environment	.0077688	.0058892	1.32	0.190	-.0038925	.0194301
Health	-.0121739	.0164607	-0.74	0.461	-.0447676	.0204199
cultural_all	-3.14e-12	3.45e-12	-0.91	0.365	-9.98e-12	3.70e-12
year						
1996	-.1001841	.0274701	-3.65	0.000	-.1545776	-.0457906
1997	-.126204	.0308792	-4.09	0.000	-.1873478	-.0650602
1998	-.156203	.026898	-5.81	0.000	-.2094638	-.1029422
1999	-.1622881	.0283282	-5.73	0.000	-.2183808	-.1061953
2000	-.1361318	.0254822	-5.34	0.000	-.1865891	-.0856745
2001	-.1444914	.0244977	-5.90	0.000	-.1929993	-.0959836
2002	-.1075988	.0255502	-4.21	0.000	-.1581907	-.0570069
2003	-.0029623	.024888	-0.12	0.905	-.052243	.0463183
2004	-.0016404	.0236531	-0.07	0.945	-.0484758	.0451951
2007	.030543	.0231095	1.32	0.189	-.015216	.0763021
_cons	.1729748	.0515858	3.35	0.001	.0708297	.2751199
sigma_u	.06724384					
sigma_e	.09934915					
rho	.31418411	(fraction of variance due to u_i)				

Model 3 of Table 3

```
. xtreg gdp_growth_rate l3.( Humanrights Environment Health cultural_all ) i.yea
> r, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =      636
Group variable: country1              Number of groups =      120

R-sq:  within = 0.2586                 Obs per group:  min =      1
      between = 0.0257                  avg =      5.3
      overall  = 0.0580                 max =      11

                                         F(13,119)      =      .
corr(u_i, Xb) = -0.8255                 Prob > F       =      .
```

(Std. Err. adjusted for 120 clusters in country)

gdp_growth~e	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
Humanrights L3.	.0099479	.0150561	0.66	0.510	-.0198646	.0397605
Environment L3.	-.0168576	.0076238	-2.21	0.029	-.0319536	-.0017616
Health L3.	-.0322342	.0121771	-2.65	0.009	-.0563461	-.0081223
cultural_all L3.	-4.35e-12	3.19e-12	-1.36	0.175	-1.07e-11	1.96e-12
year						
1999	-.0090217	.021438	-0.42	0.675	-.0514712	.0334277
2000	.0351584	.0251639	1.40	0.165	-.0146687	.0849854
2001	.0197626	.0220296	0.90	0.371	-.0238581	.0633834
2002	.0641237	.0341751	1.88	0.063	-.0035464	.1317938
2003	.1460405	.0254266	5.74	0.000	.0956932	.1963878
2004	.1514801	.0220859	6.86	0.000	.1077478	.1952125
2005	.1255173	.0242414	5.18	0.000	.077517	.1735176
2006	.1339863	.0257477	5.20	0.000	.0830033	.1849694
2007	.1970941	.0232138	8.49	0.000	.1511283	.2430598
2010	.0984964	.0280283	3.51	0.001	.0429974	.1539953
_cons	.1705394	.0590074	2.89	0.005	.0536988	.2873799
sigma_u	.13438117					
sigma_e	.10388206					
rho	.62594234	(fraction of variance due to u_i)				

IV. *Raw regression results of all three models in Table 4*

Model 1 of Table 4

. xtreg LaborProductivity Humanrights Environment Health cultural_all i.year, fe

```

Fixed-effects (within) regression      Number of obs   =   532
Group variable: country1              Number of groups =    93

R-sq:  within = 0.5486                 Obs per group:  min =    1
      between = 0.4155                                     avg  =    5.7
      overall  = 0.2702                                     max  =   11

                                          F(14,425)      =   36.90
corr(u_i, Xb) = -0.6282                 Prob > F       =   0.0000

```

LaborProdu-y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Humanrights	785.1266	525.7824	1.49	0.136	-248.331	1818.584
Environment	-836.2612	271.0096	-3.09	0.002	-1368.947	-303.5751
Health	-608.6961	331.0769	-1.84	0.067	-1259.448	42.0558
cultural_all	6.39e-07	1.78e-07	3.59	0.000	2.89e-07	9.89e-07
year						
1996	2019.802	772.5616	2.61	0.009	501.2844	3538.319
1997	3656.697	1034.49	3.53	0.000	1623.343	5690.052
1998	3801.204	755.7602	5.03	0.000	2315.711	5286.698
1999	4177.582	720.9266	5.79	0.000	2760.556	5594.607
2000	5101.695	701.758	7.27	0.000	3722.346	6481.043
2001	5801.34	702.4381	8.26	0.000	4420.655	7182.025
2002	6524.482	702.8714	9.28	0.000	5142.945	7906.019
2003	7622.919	728.2926	10.47	0.000	6191.415	9054.423
2004	9026.449	728.5025	12.39	0.000	7594.532	10458.37
2007	12668.33	733.8128	17.26	0.000	11225.98	14110.69
_cons	38933.32	1770.996	21.98	0.000	35452.32	42414.32
sigma_u	35050.208					
sigma_e	3144.3581					
rho	.99201635	(fraction of variance due to u_i)				

F test that all u_i=0: F(92, 425) = 137.91 Prob > F = 0.0000

Model 2 of Table 4

```
. xtreg LaborProductivity Humanrights Environment Health cultural_all i.year, fe
> cluster (country)
```

```
Fixed-effects (within) regression      Number of obs   =    532
Group variable: country1              Number of groups =    93

R-sq:  within = 0.5486                Obs per group:  min =    1
      between = 0.4155                    avg   =    5.7
      overall  = 0.2702                    max   =   11

                                          F(14,92)       =    8.18
corr(u_i, Xb) = -0.6282                Prob > F        =    0.0000
```

(Std. Err. adjusted for 93 clusters in country)

LaborProdu-y	Robust					[95% Conf. Interval]
	Coef.	Std. Err.	t	P> t		
Humanrights	785.1266	563.7774	1.39	0.167	-334.584	1904.837
Environment	-836.2612	1428.797	-0.59	0.560	-3673.975	2001.453
Health	-608.6961	640.6894	-0.95	0.345	-1881.161	663.7683
cultural_all	6.39e-07	4.36e-07	1.47	0.146	-2.27e-07	1.50e-06
year						
1996	2019.802	703.5088	2.87	0.005	622.5724	3417.031
1997	3656.697	802.5681	4.56	0.000	2062.728	5250.667
1998	3801.204	666.9876	5.70	0.000	2476.509	5125.899
1999	4177.582	686.4494	6.09	0.000	2814.234	5540.929
2000	5101.695	801.8615	6.36	0.000	3509.129	6694.261
2001	5801.34	844.6667	6.87	0.000	4123.759	7478.921
2002	6524.482	958.8887	6.80	0.000	4620.047	8428.918
2003	7622.919	1073.546	7.10	0.000	5490.765	9755.074
2004	9026.449	1228.152	7.35	0.000	6587.233	11465.66
2007	12668.33	1700.256	7.45	0.000	9291.478	16045.19
_cons	38933.32	6566.666	5.93	0.000	25891.35	51975.28
sigma_u	35050.208					
sigma_e	3144.3581					
rho	.99201635	(fraction of variance due to u_i)				

Model 3 of Table 4

```
. xtreg LaborProductivity l3.(Humanrights Environment Health cultural_all) i.yea
> r, fe cluster(country)
```

```
Fixed-effects (within) regression      Number of obs   =      532
Group variable: country1              Number of groups =      93

R-sq:  within = 0.5184                Obs per group:  min =      1
      between = 0.5584                    avg =      5.7
      overall = 0.4360                    max =      11

                                          F(14,92)       =      7.23
corr(u_i, Xb) = -0.7577                Prob > F        =      0.0000
```

(Std. Err. adjusted for 93 clusters in country)

LaborProdu-y	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
Humanrights L3.	761.6813	608.777	1.25	0.214	-447.4024	1970.765
Environment L3.	-1277.982	1395.975	-0.92	0.362	-4050.508	1494.544
Health L3.	-547.1143	582.9236	-0.94	0.350	-1704.851	610.6224
cultural_all L3.	4.10e-07	3.79e-07	1.08	0.282	-3.43e-07	1.16e-06
year						
1999	1517.145	725.5264	2.09	0.039	76.18675	2958.103
2000	3125.373	863.6905	3.62	0.000	1410.009	4840.737
2001	3287.883	661.7179	4.97	0.000	1973.654	4602.112
2002	3446.657	731.2284	4.71	0.000	1994.374	4898.94
2003	3850.507	824.9282	4.67	0.000	2212.128	5488.886
2004	5723.03	907.9216	6.30	0.000	3919.819	7526.241
2005	6926.521	1027.622	6.74	0.000	4885.575	8967.467
2006	8329.974	1141.154	7.30	0.000	6063.543	10596.4
2007	9353.25	1248.692	7.49	0.000	6873.239	11833.26
2010	10569.86	1494.61	7.07	0.000	7601.433	13538.28
_cons	44230.41	6619.949	6.68	0.000	31082.62	57378.2
sigma_u	38118.567					
sigma_e	3088.5701					
rho	.99347771	(fraction of variance due to u_i)				

V. *Detailed regression result of de jure respect for environmental rights to GDP per capita growth rate in model 3*

De jure respect to Environment rights to GDP per capita growth rate

	(1) gdp_growth_rate
L5.UNFCCC1992	-0.0362 (-1.15)
L5.KyotoProtocoltoUNFCC1997	-0.0119 (-1.15)
L5.AMTtoAnnexBofKyotoProtocol	-0.0232 (-1.46)
oL5.DohaAMTtoKyotoProtocol2012	0 (.)
oL5.ParisAgreement2015	0 (.)
L5.CBDbiodiversity1992	0.0320 (1.25)
L5.CartegenaprotocolonBiosafety	-0.0131 (-1.26)
oL5.NagoyaProtocoltoCBD2010	0 (.)
oL5.NagoyaKualaLumpurProtocol201	0 (.)
_cons	0.0853*** (10.61)
N	7222
t statistics in parentheses	

*** p<0.05

** p<0.01

p<0.001"

VI. *Detailed results of respect for human rights treaty group as de jure IV***Detailed results of respect to Human Rights group as de jure IV**

	(1) GDP per capita growth rate	(2) Labor Productivity
ICESCR1966	0.0276*** (3.61)	7923.7*** (3.91)
OptionalProtocoltoICESCR2008	-0.0118 (-0.66)	3037.4 (0.66)
CEDAW1979	0.0202* (2.08)	18260.3*** (7.48)
OptionalProtocoltoCEDAW1999	-0.00910 (-1.00)	18456.4*** (7.92)
CRCchild1989	-0.00985 (-0.53)	6107.4 (1.42)
OptionalProtocoltoCRCarmed	0.00978 (1.03)	6540.0* (2.10)
CRPDdisabled2006	0.00151 (0.13)	-3835.4 (-0.91)
CASaparteidsport1985	0.0249** (2.92)	-24652.0*** (-11.53)
_cons	0.0564*** (5.77)	40064.7*** (10.60)
N	7652	5909
t statistics in parentheses ="* p<0.05	** p<0.01	*** p<0.001"