The Reversal of Fortune Thesis Revisited (Research Proposal)

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Aimed to achieve: Focusing on the *Reversal of Fortune* thesis proposed by AJR (2002), we personally agree with the institution hypothesis which emphasizes the role of institutions of private property in the determination of long-term economic divergence. However, the authors' quantitative methodology in this paper was biasedly implemented and the contribution of *European* settlement is severely overestimated. To better examine the conclusion of "the *British* settlement determines the institutional settings of property protection", we select and discuss three obvious problems appeared in AJR (2002), including the avoidance of the African data, measurement bias of the variable *urbanization in 1500* and conception inaccuracy of the variable *population density in 1500*. Checking these new results, we can better determine whether the original conclusion in AJR (2002) was scientifically reasonable or not.

Keywords: long-term economic divergence, institutions of private property, the geography hypothesis and European settlement in 1900

Motivation

What determines the long-term economic divergence and why do some parts of the world which were economically abundant in 1500 tend to be relatively poor now? The question of "Reversal of Fortune" is systematically proposed by AJR (2002)[1]. The authors propose that the reason why the places where enjoyed economic prosperity five hundred years ago are currently poor is because of the lack of full institutional protections[2].

We personally agree with this proposition of "institution matters" and are determined to extend the original AJR (2002) by solving three problems inside. Firstly, the authors' measure of

[1] Acemoglu, D., Johnson, S., & Robinson, J. A. (2002). Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *The Quarterly journal of economics*, *117*(4), 1231-1294.

[2] In AJR (2002), such an institutional protection is named as *institutions of private property*.

urbanization in 1500 contains no data from Africa and thus only consists of 41 observations. Without the relevant data obtained from the African continent, the authors' *institution matters* arguments, to some extent, lose its theoretical generosity.

Secondly, despite the authors' claims to the contrary, their measurement of *population density in 1500* does not *accurately* take the total amount of arable lands into consideration. AJR (2002) implements data on arable land from Mcevedy and Jones (1978)[3]. However, even a quick glimpse of this arable land dataset generates quite curiosity. For example, as Bandyopadhyay and Green (2012) points out, "Mcevedy and Jones (1978) sometimes present data on arable lands inaccurately. In 86 out of 91 observations used by AJR (2002), they list no data on arable land, leading the authors of AJR (2002) to see all land as arable for these observations"[4].

Thirdly, AJR (2002) overestimates the role of European institutions. We believe that what leads to the authors' proposal that institutions of private property determine the long-term economic divergence is the factual economic prosperity among the *Neo-Europe*. Although European settlement does, to some extent, work as a positive force for better property protection, there is no evidence of a significantly general relation between European colonization, institutions of property rights and long-term economic development. Instead, we agree with the idea that it is *British* settlement that helps explains the core reason why a long-term economic divergence happens. We find that 9 out of 10 highest-score countries which value the protection of property rights are derived from British colonization and four of the top five states are from North America and Australasia[5].

Brief Literature Review

There mainly exist four major schools of thoughts that help to explain why such a long-term economic divergence happens after the *Great Geographical Discovery*. Because of the room limitation. I will intensively discuss the two most influential schools: *Geography V.S. Institution*.

The geography hypothesis claims that differences in economic performance reflect differences

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[3] McEvedy, C., & Jones, R. (1978). *Atlas of world population history*. Penguin Books Ltd, Harmondsworth, Middlesex, England.

[4] Bandyopadhyay, S., & Green, E. (2012). The reversal of fortune thesis reconsidered. *Journal of Development Studies*, *48*(7), 817-831.

[5] Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. *American economic review*, *91*(5), 1369-1401.; Fails, M. D., & Krieckhaus, J. (2010). Colonialism, property rights and the modern world income distribution. *British Journal of Political Science*, 487-508.

in geographic, climate and ecological characteristics across countries. Like what presents in Diamond (1999) and Sachs (2001, 2003)[6], we agree that geographical factors play a significantly important role in the economic development of a pre-modern agricultural society.

However, after the discovery of the New World, consecutive rounds of Industrial Revolution have been witnessed globally. The dominant economic engine of one *modern* country has gradually transitioned from the First Industry to the Second Industry, especially the Heavy Industry. Under this circumstance, natural factors such as arable lands and latitude level are not as important as before. Therefore, it is intuitive that the economic divergence which mainly happened during the intersection of the First Industrial Revolution and the Second Industrial Revolution was not mainly related with the difference of inter-state graphical factors.

According to the institution hypothesis, societies with a social organization that provides encouragement for investment will enjoy long-time economic prosperity. Smith (1937), Hayek (1960) and Locke (1967), together with many other distinguished economic-history papers exemplified by the Douglas North (1991), all extremely value the importance of property rights for the success of the nations[7].

Exclusively among the American continent, what could be immediately discovered is the institutional difference between countries with Spanish colonization history and the northern Neo-Europe states that inherit British institutions of property protection. Let us be crystal clear, the Spanish institutional settings of property preservation were not based upon a whole system of expropriation. Its main problem, as illustrated by North and Weingast (1989)[8], is that unlike the British tradition of developing institutional property protections that covered *each individual* citizen's economic interests, its Spanish counterpart only protected the economic benefit of *the privileged few*, leaving the general mass's incentive of investments not *fully* occupied.

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[6] Diamond, J. (1997). Guns. *Germs and Steel: The Fates of Human Societies, Vintage*.; McArthur, J. W., & Sachs, J. D. (2001). *Institutions and geography: comment on Acemoglu, Johnson and Robinson (2000)* (No. w8114). National bureau of economic research.; Sachs, J. D. (2003). *Institutions don't rule: direct effects of geography on per capita income* (No. w9490). National Bureau of Economic Research.

[7] Locke, J. (1967). *Locke: Two treatises of government*. Cambridge University Press.; Smith, A. (1937). The wealth of nations. modern library. *New York*, *423*.; Von Hayek, H. (1960). *The human lung*. Hafner Publishing Company.; North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge university press.

[8] North, D. C., & Weingast, B. R. (1989). Constitutions and commitment: the evolution of institutions governing public choice in seventeenth-century England. *Journal of economic history*, 803-832.

This difference in terms of institutional setting, to some extent, explains why most Latin American countries, although periodically becoming leading states of economic growth, were gradually lagged behind in terms of economic abundance when comparing with the wealth condition of Canada and the United States. From this limited comparison studies, there is no wonder why we generally agree with the idea proposed by AJR (2002) that different institutions of property right determined long-term economic divergence.

Research Design

A. Regression Equation

Our paper will adopt the same setting of regression equations just like AJR (2002). The whole regression estimation will be based upon an ordered combination between OLS and IV 2SLS analysis. Again, the puzzle of this paper is to re-estimate the institution hypothesis which claims that the institution of property right determines the long-term economic divergence between 1500 and current days.

Among the regular OLS estimation, our regression equation will be presented as follow:

$$y_{it} = \mu_t + \delta_i + \pi * X_{it} + Z_{it} + \epsilon_{it}$$

Here y_{it} is the outcome variable of current economic prosperity in country *i* at date *t*. δ_i and μ_t represents the country fixed effect and the time effect, respectively. X_{it} is our focused target, represented by *institution* measurements, which is defined as the measurement of institutions of country *i* at date *t*. Z_{it} stands for one combination of the controlled variables, which represents included variables like *urbanization in 1500* and *log population density in 1500.*

Among the IV 2SLS estimation, our combined set of regression equations is presented as follow:

$$First - stage\ regression: X_{it} = \gamma * \mathrm{IV}_{it} + Z_{it} + v_{it}$$

$$Second - stage\ regression: y_{it} = \mu_t + \delta_i + \tilde{\pi} * \hat{X}_{it} + Z_{it} + U_{it}$$

Here IV_{it} represents the presented IV variable in country *i* at date *t.* Our main focus is the direction and the statistical significance of coefficient $\tilde{\pi}$.

B. Data for Correction and Identification

To correct the measurement bias problem (*Problem 1*), we implement Chandler (1987)'s data on

cities with a population of more than 2000 among the continent of Africa and America as an alternative variable measurement[9]. The implementation of this new dataset has two advantages. Firstly, all of this new dataset comes from a single source, which drastically decreases the potential error generated by the merge transformation. Secondly and more importantly, this new dataset allows us to include much detailed information with regard to African pre-modern population, 43 cities in Africa for 1500 according to the cited information in Chandler (1987), despite AJR (2002)'s claims that they need to exclude African data because such a population measurement is not "detailed" enough.

To correct the measurement inaccuracy problem (*Problem 2*), we implement data from FAO (2000)[10]. Austin (2008)[11] suggests that "FAO (2000) is the first-time estimated global dataset for land that is potentially arable for growing any one of the 21 major crops under rain-fed conditions", which makes it possible for us to get access to the pre-modern agricultural societies where modern agriculture technology has not been adopted yet. One advantage of FAO (2000)'s implementation is that this data source allows us to *exclude* the amount of non-arable land, exemplified by the land of deserts, mountains, frozen areas and so on, that was mistakenly calculated in the measurement of arable land in AJR (2002). After the re-measurement of substituting Mcevedy and Jones (1978)'s measurement with the corresponding figures of FAO (2000), we are confident that the measurement accuracy of variable *population density* in 1500 improves significantly.

In order to deal with the overestimation problem (*Problem 3*), we create a dummy variable *Britain* to represent whether one targeted state receives British colonization in the past history or not. If the answer is Yes, then variable *Britain* is coded as 1, otherwise it is 0. In this case, we will reorganize the base OLS regression equation as follow:

$$y_{it} = \mu_t + \delta_i + \beta * Britain_{it} * X_{it} + Z_{it} + \epsilon_{it}$$

where $Britain_{it}$ represents whether one state I receives British colonization or not at year t. Our focus is the *direction* of coefficient β.

Then we will delete all the data collected from the *Neo-Europe* countries on the measurement of

[9] Chandler, T. (1987). *Four thousand years of urban growth: An historical census*. Mellen.

[10] Bot, A., Nachtergaele, F., & Young, A. (2000). *Land resource potential and constraints at regional and country levels* (No. 90). Food & Agriculture Org.

[11] Austin, G. (2008). The 'reversal of fortune' thesis and the compression of history: perspectives from African and comparative economic history. *Journal of International Development: The Journal of the Development Studies Association*, *20*(8), 996-1027.

institutional settings for property protection and redo the original AJR (2002)'s base-line testing. These two robustness checks are designed to illustrate one conclusion that it is *only* in British colonies that settlement had a positive effect and that such a significantly positive effect of property-protection institutions was only restricted to four countries: The United States, Canada, Australia and New Zealand.

Time Table

We plan to finish the writing process of the research proposal before March 18th. Then we will move on the recalibration of our merged dataset and decide to generate preliminary empirical result before March 26th. Our goal is to finish the first draft of the whole written-up paper before April 1st so that we still have time to polish the quality of this final project.