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Understanding Currents of Long-Term Development

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Abstract:

This research work uses Acemoglu, Johnson and Robinson (AJR) seminal finding of reversal in distribution of income across the regions that European overtook as their overseas empire to examine long run growth theories in light of historical evidence. Using this reversal evidence as a benchmark according to which some of the more prosperous regions of non-European world in pre-colonial history have transformed themselves into the poorer societies as of contemporaneous comparison. Even though some of the poorer parts in the pre-1500-time frame are now counted among the most developed economies of today. This study tries to identify which of the deeper determinants of development e.g. geographical, cultural or institutional best explains such an empirical phenomenon in this paper. The research reveals that institutional explanation, due to its dynamism, has much more robust empirical and theoretical support in the literature to explain how the reversal might have taken place as compared to geographical and cultural explanations.

Keywords: Long term Development, Geography, Institution, Culture

I. Introduction

Why are some countries rich and some poor? Why do such vast income disparities exist across countries? What spur growth and prosperity in some regions while poverty and deprivation prevail in others? Above are a few questions that have puzzled the minds of intellectuals, historians, social scientists and layman alike around the globe and across time. The focus of economic theorists and development practitioners has been primarily to inquire about the mechanism of economic growth. The objective of growth research has been to find out the key determinants of the growth process that can sustain high levels of economic development in advanced economies and provide ways to speed up convergence of developing world with incomes of developed world.

In this context the growth theory has traditionally described output growth in terms of capital deepening, human capital accumulation and productivity growth that is in terms of resource endowments and allocative efficiency with which these resources are distributed among various economic activities (Solow, 1956; Romer, 1989; Kyriakopoulos et al, 2020). But can these factors namely *innovation, economies of scale, education, capital accumulation etc* be considered as the fundamental explanation or can there exist

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some other deeper mechanism that work behind the development patterns that exist globally and over time, needs further investigation.

Over the last two decade in perspective of finding deeper determinants of growth three likely possibilities have emerged namely geographical, cultural and institutional explanations for differential development[1] and the debate so far has been on which explanation best explains the global development patterns over time. In this perspective in our current research we have tried to contribute to this debate by providing an empirical and theoretical test using the notion of Reversal of development pattern pre and post 1500 as benchmark to test which theory that is geographical, cultural and institutional can better explain such change in development patterns across time for same regions. As per our analysis, we find that among the three description of fundamental determinants of growth, the one that comes at most promising explanation of reversal is indeed institutional explanation especially in light of evidence given out in Acemoglu, Johnson and Robinson (AJR) research and the research that followed in their food prints.

The idea of reversal of fortune that the countries which are now considered as most developed have not been rich since the beginning of civilization but there exist a transfer of this status quo from regions which were relatively well-off to areas that were not as prosperous in ancient times is introduced in section 2. Section 3 explores the three plausible causes for such a reversal in light of existing literature. The final section concludes the debate.

II. Acemoglu, Johnson and Robinson Thesis of Reversal of Longrun Development Patterns

Acemoglu, Johnson and Robinson thesis of reversal in wealth reflect a historical event of shift in development patterns across the world where some of the richest civilization in ancient history gave away their comparative developmental hold to regions that may have not hosted well developed societies pre-historically but are currently supporting the richest countries in terms of per capita GDP (Acemoglu, Johnson & Robinson, 2001, 2002][2]. Though this pattern of worldwide reversal in overall hierarchy of economic fortunes in due course of history is well documented phenomenon for both social scientists and economic historians, however empirical evidence for such a shift can be observed in the inverse relationship between the indicators of prosperity in 1500 (urbanization rate and population density) and indicator of current level of development (log of GDP per capita in 1995)[3].

Accordingly the regions that were not well performing in terms of economic prosperity in pre-1500 time period showed remarkable increase in per capita incomes surpassing the developmental levels of then well to do regions. On the other hand regions that were among the most civilized societies in ancient history could not find right stimulus

[1] Please refer to Hassan (2007) for a review of these explanation.

[2] Examples of region that relatively were considered as more prosperous globally in pre-1500 time frame includes civilization based in India and China while the civilization based in North America, New Zealand and Australia comparatively were much less developed during that time period.

[3] Urbanization (percentage of population living in town with more than 5000 inhabitants in 1500) and population density (number of inhabitants per square kilometer) can be used as proxy to approximate level of development in 1500 on the rationale that only societies that have achieved certain level of productivity in agriculture and have a well-developed system of transport and commerce can sustain dense population and urban centers.

to push their societies further at higher plane of development post 1500 period[4] and hence could not maintain their ancient economic status in contemporaneous development. Hence historical developmental trends reveal that in regions where reversals have been observed not only the economic losers in initial history were able to catch then economic success (*convergence between countries*) but also out run such economies to become leaders in economic development in the course of history (*divergence across countries*).

Empirically reversal has been documented in countries that have history of being under colonial rule[5]. This is consistent with the notion that the cause of this growth reversal can be related to how colonization impacted these countries. But since such shifts have come about hundreds of years later into colonial rule[6], hence it suggests that it is coming from some structural transformation within these colonies and not merely through their colonial experience. Also different regions under same colonial rule have shown different trends some towards deterioration and some towards prosperity again emphasize to look deeper into dynamic within their colonial heritage (Reynolds, 1986). Hence to see how this phenomenon of great shift in relative fortunes across these colonies, one needs to analyze the structure of technological revolution that took place over the course of history and around the time of reversal in such regions before and after European conquest and what role agricultural and industrial revolution has in determining these varied developmental patterns over time and across such regions.

To put discussion into right perspective, one should note that per capita GDP has fairly grown at constant rate for most of the history of human civilization in which population growth has trended equivalently to GDP growth termed as period of extensive growth (ibid). The period of intensive growth that started to take place around late eighteenth century in the world and was led by the Western European powers both in their mother country and then into their controlled territories is a recent phenomenon of last 270 years or so and is very much connected to reversal itself. This is so because this pattern of relative transformation in standard of living where GDP per capita growth showed a sustained increasing trend in some colonies and while stagnated in others under European rule may very well be linked with their ability (or lack of it) to undertake the developmental process that has led to initiation of intensive growth.[7]

If the above hypothesis that reversal may have occurred because of ability to take on intensive growth is true then it implies that what mattered was not whether those societies were rich or poor but how endowed they were so as to effectively participate in such a process of change. This disconnect between level of prosperity in historical evolution of a

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[4] This could be because of such societies became either trapped into their already attained equilibrium (which could be high state by prehistoric standard but not by modern standard) due to them not acquiring or adopting forces that led to modern development or their populations being decimated in due course of time.

[5] The inverse relationship of the urbanization and population density in 1500 with per capita GDP in 1995 for a country was estimated only among the colonized countries but a positive correlation is found for non-colonies (Acemoglu, Johnson & Robinson, 2001, 2002).

[6] Colonization started in sixteenth century and reversals were observed in end of eighteenth century.

[7] The timing of reversal has been empirically documented to have taken place around late eighteenth and early nineteenth century as can be seen in figure below that countries with low urbanization rate in 1500 overtook countries with high urbanization rate in 1500 sometime between 1750 and 1850 (see appendix: figure A.1 (Acemoglu, Johnson & Robinson, 2002) which very much coincides with onset of sustained rise in per capita GDP.

country and its ability to take on intensive growth may have led to shift in developmental trends in some regions is a plausible hypothesis. Hence one needs to analyze how European colonization may have played its role in such a developmental transformation through defining differed ways in which regions under their influence participated in this remarkable growth takeoff in per capita GDP. Further to place things in above context, one should also try to assess what role did cultural, geographical and institutional endowments both of colonies and colonial rulers and their mutual interaction played in defining the historical origins of such initial diversity of developmental pathways that finalized into great reversal.

III. Assessment of Deeper Determinant of Longrun Development through Lense of Reversal

In this section we will analyze three possibilities that have come out in literature to explain disparity in developmental experience that have been observed across various regions around the world and will try to assess how well such paradigms explain the above phenomenon of historic reversal. First approach attributes the prevailing pattern of development across the world due to geographical heritage of countries. The second school of thought explores how cultural and religious factors can lead to different equilibrium across societies, has also been proposed as one possible explanation of differential development in literature. Finally the third approach seeks explanation in the institutional differences between countries. All of these views are reviewed to analyze whether they can explain the reversal in growth experience over time across countries as follows:

A. Assessment of Geographical Differences as a Deeper Determinant:

The school of thought that emphasize on the role of geography as the defining determinant for cross-country growth differences gives more importance to the constraints imposed on human interactions by nature in form of physical, climatic and ecological endowment as opposed to man-made construct of culture and institutions through incentives they provide for organization. The detailed discussion of how geographical heritage can create diversity in the growth trajectory across region is as follows:

Climatic Differences

The idea that climate has direct effect on work incentive and productivity of the labor force has been first proposed in writing of famous French philosopher Montesquieu (1752) and then appeared in writings of Huntington (1915) (Hassan, 2007). The main idea that had been propagated in this school of thought is that people that live in colder climates have more vigor and self-discipline as opposed to people living in much warmer climates.

However for our analysis, this insight is not helpful in explaining reversal of fortune as early urban centers of civilization were those that emerged in tropic regions for example Egypt in the third millennium BC had an average temperature of 74˚F. Similarly India and China also located in tropical regions which enjoyed economic prosperity in pre-modern times while the countries located in Australia, New Zealand, North America that are considered among the economic leader now were at one point in time under-developed irrespective of their climatic advantage.

Technical Limits in Agricultural Sphere

This school of thought emphasize on role of geographical factors such as climate and presence of certain ecological advantage that gave some region technological edge over the others. The proponent of this view includes primarily (Diamond, 1999).

In Diamond (1999) the author argues that differential geographical heritage of continents has shaped the diversity in development across them. The author points out the advantage of Euro-Asia (regions in Europe and Asia including northern parts of Africa) over other continents: Africa, America and Australia because of certain ecological factors, which it possessed as contrast to other continents. First the presence of more domesticable species of plants and animals in Fertile Crescent led to development of sedentary life style due to food production. This enabled the Euro-Asia landmass to sustain higher population growth leading to evolution of new diseases, centralized economies and ability to sustain larger armies. Relatively lesser extent of domesticable species of plant and animals in Africa, Australia and America resulted in prevalence of mostly nomadic hunter lifestyle and low population density, however the settled life did emerge wherever farming was possible but to lesser extent in these continents as compared to Euro-Asian region.

However, this approach is silent on reversal. According to this explanation the countries in Africa, America and Australia that had an initial disadvantage should fall behind the Euro-Asian countries. Though this fact is observed in growth in per capita GDP of African countries but is not an empirical fact in countries of North America and Australia that are currently much more prosperous than many countries in Euro-Asian region. Also the technological innovations that gave Euro-Asia edge in effective colonization of other regions cannot be linked to reversal, as reversal in patterns came much later into colonial rule and was more linked to industrial revolution than agricultural revolution.

Differential Development by Tropic and Temperate Division

This line of research follows the writings of Jeffery Sachs and his colleagues Sach (2001), Radelet & Sach (1998) and Gallup (1998). This school of thought builds the case for geography having a significant role in explaining the development pattern across world. In series of papers authors have tried to explain the prevalent developmental pattern across the globe of the countries that lie in tropics being proportionately much less developed compared to the countries that are in temperate zone by linking various measures of prosperity to geographical and ecological measures (climatic conditions, disease ecology and distance from coast etc) and have tried to attribute tropical under-development to variation in agricultural productivity, health status, natural reserves availability and transportation costs across tropic and temperate zones.

Sach (2001) builds case for much higher agricultural productivity in temperate zone compared to tropics on ground that the soil nutrients are well embedded under soil in temperate regions so leveling of the land for farming does not deprive soil of the nutrients beneficial for crops while the nutrients are just above the land surface in tropics, hence not suitable for regular farming of stable crops. Also crop productivity is lowered because of the high rates of plant respiration and water shortages due to evaporation caused by high heat in tropical areas; further high occurrence of pests and parasites due to warm weather in tropics also become additional source of damage to crops (Sach, 2001). Above argument is also supported by empirical findings in Gallup (1998) that show agricultural productivity to be 30-35% lowers in tropics as compared to temperate zones.

Also warm tropical climate being favorable for the diseases like malaria, helminthes infections and yellow fever has been shown as source of lower productivity of workers in these regions which has negative impact on growth prospects of tropical areas (Gallup & Sach, 2001). Finally evidence of the shipping costs being much higher in tropic zone compared to temperate (the proportion of land locked area being much higher in the tropical region) has negative consequence for growth has been estimated in Radelet & Sach (1998) further validates the importance of tropic and temperate divide in context of differential development.

However there is a circular reasoning, which could go against the above argument of the Sachs and his colleagues in context of contemporary development. As the countries that are located in temperate zone that now show much higher contemporary standard of living are the countries that have high per capita income than the countries in tropics, hence they have more available resources to improve the agricultural productivity and health services, control disease environment and discover natural resources in contrast to much poorer countries located in tropical zone as examined in Acemoglu, Johnson & Robinson (2002).

B. Assessment of Cultural Differences as a Deeper Determinant:

The second explanation for differential growth across societies is based on how varied cultural belief leads to different equilibrium. Many theorists have proposed that societies may coordinate on different equilibrium depending on the varied set of beliefs they have as presented in Grief (1993) and also within society there can exist dual preferences leading to multiple equilibrium as proposed in Kuran (1995). In these models shift between two equilibrium comes through shift in beliefs and preferences that are largely generated through changes in social norms and culture. Moreover the system may adjust to an equilibrium which may lead to inefficient outcome through coordination of society on persistent self-fulfilling ideologies which are socially damaging (Romer, 2003). In this sense two economies may follow divergent path to varied equilibrium depending on their societal culture and structure of beliefs formation. The cultural explanation was first proposed in Weber (2009) that explained origin of industrialization in Western Europe through certain believes in Protestantism faith of predestination for individuals. According to this thesis such ideology in Protestant faith encouraged using one's time productively and aiming for economic success as being man's salvation in life after as opposed to other religious doctrine for example Catholicism which blocked capitalism. Similarly certain society may have more social capital and hence prosperity than others can also be linked to their respective cultural endowments (Knack & Keefer, 1997).

The neat example of culture playing an important role in differential development with colonialism can be seen from the divide between North America and South America in prosperity. Whereby, the development in North American countries is attributed to culture that came from Britain through colonization while underdevelopment in South American countries is attributed to Spanish influence in colonization (Ve′liz, 1994). Hence pre-colonial societies which were culturally complex and were able to withstand in face of European imperialism could confine European penetration into their system to much larger extent in contrast to societies which were simpler in construction (Mohaney, 2010).

However if cultural elements are to be blamed for under-performance in socio-economic sphere for certain regions, then question arise that why such countries remained trapped in that bad equilibrium for so long and not adapt in face of economic failures? Answer to above inquiry leads us to another facet of critical importance: whether the cultural differences as a result of varied colonial exposure should be considered as fundamental cause for differential patterns of development in post-colonial era or does there exist some other intermediary causal process that locks in a society into certain state of affair? More clearly, does cultural values directly shape level of development or is the institutions that came along as a result of certain beliefs with colonization and their path dependency that are the key to growth outcomes? For example, there is empirical evidence that colonization by British has much stronger impact on legal system of the country than any other colonial power (Rappas, 2018; Horvat et al, 2021). Hence one need to go deeper into explanation of how culture correlates with development of legal, political and economic institutions to infer about the causal determinants in development process, a point that we will discuss in much more detail in coming section.

C. Assessment of Institutional Difference as a Deeper Determinant:

Third school of thought emphasizes on the institutional heritage as a key determinant of development. Proponent of this line of thinking give more credit to incentives that are generated through various forms of organization in economic, social and political spheres as opposed to natural endowment of a country. In case of missing markets and economy where people do not have the rights to protect their own properties, the resources will not be properly invested and neither will there be any incentive to innovate as patents to such innovation will be meaningless.

The idea of reversal in long run development patterns first appeared in seminal work of Acemoglu, Johnson & Robinson (2001, 2002)[8] who explained this reversal of prosperity in the countries under study in terms of their institutional reversal as a result of European colonization[9]. Notion of this great reversal in development trend has been thoroughly discussed among writings of economic historians, however AJR thesis is unique in the sense that it brings forth first rigorous quantitative analysis on colonial-institutional causes of diversity in development trends that had been observed both globally and historically. A few such papers that have tried to link post-colonial outcomes to its colonial origins include Banerjee and Iyer (2005) Engerman & Sokoloff. (1997), Grier (1999), Mohoney (2010), Rappas (2018). So before we dwell comprehensively into institutional elements in long-term history, we first will analysis the causal pathways that have come out from AJR work and then will enrich our understanding of complex historical processes through expanding AJR thesis to include other possible dimensions.

The question that AJR research raises is that if this reversal that came through how different colonies took advantage of opportunities for industrialization then why were some colonies quick to industrialize than others considering that industrial techniques can apply equally well in any environment? According to Acemoglu, Johnson & Robinson

[8] From now onwards we will refer to Daron Acemoglu, Simon Johnson and James A. Robinson as AJR to save space and repetition.

[9] The term institutional reversal in. Acemoglu, Johnson & Robinson (2002) has been used to indicate emergence of better institution in previous poor regions which provided protection for private property ownership rather than deterioration of institutions in then prosperous societies; the regions which supported relative prosperity in 1500 were generally based on hierarchical system of governance which was already extractive in nature.

(2001, 2002) what determines this growth takeoff depended on what type of institutional set-up was present at the time of industrial revolution across these countries. The colonies which had evolved institutions that protected against government expropriation by encouraging private property security and promoting civil freedom were the ones that provided the right incentives for industrialization to take place. On the other hand colonies which were based on extractive system through which the colonizer could increase their take on resources whether in form of gold, silver, agricultural produce like sugar or slave labor developed an environment not conducive to technological innovation and proper functioning of markets[10].

How colonizer chose to establish what types of institutions should be placed in their colonies according to AJR explanation depended on the extent to which they could immigrate their own native people into their occupied foreign territory. Hence areas which provided environment where European could settle in huge number resulted in development of extensive "*neo-European or inclusive institutions*". Such institutional make placed checks and balances on concentration of power and guarantied protection against expropriation risks so as to give incentive to people from Europe to settle and thrive in new lands. On the other hand regions where Europeans could not establish their settlement, they turn to development of "*extractive institutions*", which could transfer as much resources from the native people to colonizers as possible (Acemoglu, Johnson & Robinson, 2001, p. 1370). To establish their claim that degree of European settlements has consequential impact on the institutional action taken by colonial administrations, AJR thesis builds their theory around the two key factors. First pathway focuses on the kind of disease environment European settler faced in foreign land as stressed in Acemoglu, Johnson & Robinson (2001)[11]. While the second causal element considered in AJR writings is the strength of population density of indigenous people encountered by European colonist at time of conquest as stressed Acemoglu, Johnson & Robinson, (2001)[12]. Both these channel of impact defined the net profitability and potential future stakes for the European colonists in deciding whether to indulge in large-scale settlement policy for their immigrants and installment of European style institutions accordingly as against establishment of or endorsement of already existing exploitative institutional framework. Hence this line of thinking indicate that wherever settler faced higher mortality risks or wherever they found denser indigenous population being a useful source for forced

[10] The importance of the institutions that protect private property rights has been documented as much more relevant to growth objective than contracting institutions in AJR writings on the notion that former stops diversion of one resources to the mere protection of one's property and provides incentives to engage in productive activities by ensuring credible reward to one's investments and hence has direct implication for growth while latter impacts through enforcement of contracts; societies with weak legal institutions can also function smoothly through repute based enforcement mechanism and hence contracting institutions may have lesser consequences for growth than property rights preserving institutions.

[11] The empirical findings in Acemoglu, Johnson & Robinson (2001) provides evidence for above hypothesis and estimates robust negative and significant impact of settler mortality on the indicators of good institutional performance in 1900 and explains this phenomenon of reversal through impact of colonization on the institutional set up of the regions depending on the mortality they faced during colonization.

[12] Both these channels are much more related than it seems as we know from work on historical conditions of development in Diamond (1999) that areas with sparse population neither had the capacity to develop diseases that could adversely impact possibilities of European settlement nor the strength to withstand European military might while areas with denser native inhabitants had the ability to sustain more complex societies with much more internal strength to survive even in face of colonialism on one hand and much more adverse disease environments for the European immigrants making settlements much harder to come by on the other hand.

labor or for extensive tax base, European favored extractive colonialism in contrast to inclusive social and cultural organizations in their respective colonies.

The AJR hypothesis that extractive policies of European colonist emerged where they could not settle or where their rule was short termed is very similar to theoretical concept of "*Roving and Stationary Bandits*" advocated by Olson (2000). According to this theoretical abstraction, a ruler attempts to extract as much as he can from his subjects if his rule is on temporary basis for a short period of time *(roving bandit)* in contrast to a situation where a ruler is there to settle down for a long period of time *(stationary bandit)*. This is so since in long-term arrangement those in power develop encompassing interest and have an incentive to protect the interest of their subjects by extracting less as compared to their roving counterpart. Similar theoretical account of how reversal of fortune could have occurred in Africa is modeled in Nunn (2008a) into a low or a high production equilibrium state. Such multiple equilibrium may arise through colonist's decision of how much resources to be devoted to security of local property rights and how much to be expropriated from the economy: a decision which ultimately also rests on time horizon of their colonial rule is also very much in line with AJR explanation o f reversal hypothesis (Nunn, 2008).

IV. Conclusion

Our analyses divulge one historical fact that regions that were rich in 1500 became poorer over the course of next five centuries and vice versa for the regions that were poorer before 1500 became rich. The development viewpoints; geographical, cultural or institutional best explain this empirical fact as deeper determinants of growth. The research also reveals that institutional explanation due to its dynamism has much more robust empirical and theoretical support in explaining how reversal may have taken place in the literature. Geographical explanation being time invariant in nature cannot account for such a shift in development trends in such colonies while the cultural explanations also fail to explain reversal on its own but can only attribute appearance of such a pattern through its impact on institutional development. Hence, the key distinguishing feature of the economies that have achieved unprecedented growth in post 1500 era, because of the industrial revolution was due to their institutional edge rather than any geographical or cultural advantages. The, the key to resolution of growth issues in today's developing economies would be to focus on resolving how their institutional and organizational lapses can be eliminated and improved.

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