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Sir W. Arthur Lewis and the Africans: Overlooked Economic Growth Lessons*

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*In 2008 I edited a book manuscript and tentatively named it *Selected Readings on the Anthropological Bases of Economic Behavior, Organization, and Control*. It consists of excerpts from B. Malinowski, M.J. Herskovits, W.A. Lewis, J.V. Robinson, F.H. Knight, and J. Kornai. I peddled the manuscript to two university and two commercial publishers without success. Although all liked the manuscript, they said it has lately become difficult to manage multiple copyrights, and were afraid of laws suits. A side-benefit of the exercise was that it gave me the opportunity to study in depth Lewis's classic *The Theory of Economic Growth* (1955[1965]). Some time this year I came across another of Professor Gustav Ranis's (2004) evaluations of Lewis's influence on development theory and practice, and it is there where this comment starts.

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Abstract: This comment is not a typical outcome of a typical research activity, and it not written like one. For example, although I have a list of references, I do not provide a formal literature review. The list is simply an acknowledge of the work that might have influenced my thoughts on the topic at hand. It is also not a review or any other evaluation of Lewis's work, of which there are many by more eminent and famous friends, colleagues, and students of his. Lewis's impact on Development Economics is well-known and appreciated. Less known and openly appreciated is his economic theory of growth and technological change, but I am not going to stress that either. My maintained claim is that the Newly-Industrialized Asian economies (NIAEs) have read carefully and followed closely and well Lewis's theory in devising their growth and change strategies and policies, with local adjustments, of course. Many African countries on the other hand appear to have followed Lewis halfheartedly and in a helter-skelter way. Consequently, the difference in the performance of the two regions is no longer a matter of contention. The objective of this comment is to restate what I believe are Lewis's key lessons to developing countries, and to show that although Lewis led all developing countries to water, proverbially speaking, some African countries have so far chosen not to drink. I find that there is a deliberateness in the order of the development process as conceptualized in Lewis's theory of economic growth and technological change. First, for a country to grow it has to acknowledge that scarcity is real and to learn to be efficient, to economize. Second, efficiency requires good economic institutions to sustain it. Third, institutions need to not only have knowledge, defined as technological knowledge plus social knowledge, but more importantly such knowledge must grow, spread, and be used. The fourth "proximate cause" of growth in this order of preference is physical capital. Following capital, in the fifth and sixth places, respectively, are population (labor) and other natural resources (land), and government. Lewis is new classical (not to be confused with neo-classical) in that his theory of growth and change takes population and natural resources as given for any developing country, and counts government as a throwback to classical economics to suggest that economies perform best when government's role is well defined and constrained. By implication good government is a function of good institutions, learning and knowledge growth. I conclude from this evidence that some African countries have refused to acknowledge scarcity, paid lip-service to knowledge accumulation, growth, and diffusion, overstressed their need for physical capital and the abundance of their natural resources, neglected their populations, and failed to assign government its proper role. The result, until recently, has been slow growth.

Key Phrases: Economic growth and technological change, Lewis and the Africans, Lewis and growth and change of African countries, lessons for growth and change, deep causes of growth and change of developing countries

JEL Code: O55, O11, O33, O47, P52

Introduction

There is an undying myth that Africa is either always in an immutable state of being, or is rapidly changing backwards. However, L. Dudley Stamp (1953) was correct even then in observing that “there is perhaps no part of the world where the rapid change is so apparent in the middle of the twentieth century as throughout Africa, and particularly in tropical Africa. The change which are taking places are so marked, so fundamental and so rapid that we may properly use the word kaleidoscopic” (p. 517). With 20/20 hindsight one might add that the changes Professor Stamp was remarking on were not only limited to the twentieth century; they are continuing to-date and many are good, if not great.

A calm reflection would show that Africa’s socio-economic history can be represented in six distinct phases. The pre-colonial phase (including ancient Africa) was characterized by thriving civilizations led by renowned kingdoms, see, e.g., Margaret Shinnie (1965). These civilizations rivaled, in some areas even excelled, their contemporaries in other parts of the world. Although it was unevenly distributed and thinly spread, democracy was advancing in African societies even back then. Examples of democratic aspirations abound, but one would be sufficient to point out. The Ombalanhu (Aambalanhu) tribe of northern Namibia overthrew their despotic King Kamphaku, never to be replaced to-date. Elections and electoral rules in the European sense were never instituted as a result of that change. However, political power was decentralized and decision-making moved closer to the people than before. The point: Such a revolutionary change took place around the same time period as the French Revolution and the American Revolutionary War. Unfortunately we will never know the full effects of those changes because they were disrupted prematurely by external forces.

The Trans-Atlantic Slave Trade counts first among external forces and its effects linger (Nunn, 2008, Amavilah, 2014). Whereas slavery focused on human resources “The Scramble for Africa” and colonialism as its by-product, especially during the 1920-1940 years, was concerned with the huge transfer of non-human resources from Africa to other regions (Pakenham, 1991, Rodney, 2011[1972], Mintner, 1986, Cooper, 1982). In the 1920s-1930s the rate of trade far outstrip the rate of domestic investment, suggesting very high returns to capital in mining and quarrying, and in agriculture and fishing (cf., Herskovits and Harwitz, 1964). By 1949 “... expressed in capita terms, ... Africa’s share in world trade [was] higher than in the Far East, though somewhat below Latin America,” and the region was dominating the world production of diamonds, cobalt and gold, and it ranked high in the production of phosphates, chromium, manganese, and copper (Stamp, p. 524). The UN *Review of the Economic Conditions in Africa* (1951) was impressed by “the economic development which had been reached by 1948 or 1949” (p. 523).

These developments spurred employment especially in and around resource-rich regions of the Rand (South Africa), Katanga (Congo), and Jos (Nigeria). Employment meant socio-economic mobility, which in turn led to the advancement of human capital, technology, and entrepreneurship. Per capita incomes rose; generation of electricity increased, and during the 1958-1960 years primary and secondary education enrollment skyrocketed, especially in Ghana and Rhodesia. On one hand these

new undertakings disrupted traditional life and caused inter-tribal conflicts. On the other hand development facilitated inter-cultural interactions. Change.

And growth too, and not in insignificant ways. In 1913 there were only two independent African countries, Ethiopia and South Africa, and even though the latter was not really considered by some an African country, because its minority white citizenry controlled (enslaved really) the majority. In 1950, if one counts in Libya, four African countries were independent, representing only one-fifteenth of the mass of the continent and about 170 million people. However, change and development were huge, especially again with regards to mining. Careful observers are not surprised when told that 1000 tons of uranium from the Shinkilobwe mine in the Congo was a significant input in the first atomic bomb. Indeed, nuclear technology and the end of World War II both owe some gratitude to Africa.

Whereas there were only five independent African countries in 1959, there were 20 plus in 1962. Change and growth are signs of development. In 1886 Nairobi (Kenya) and Johannesburg (South Africa) were a railway camp and a mining camp, respectively. Fifty years later both were booming cities attracting more Europeans and Americans than Kenyans and South Africans seeking to go to Europe and/or America. The tallest building in Salisbury (Harare) was only five stories high in 1948. By 1960 most buildings were eight stories and higher. Today, even with the screwed-up policies of the Mugabe administration, it remains nonsensical for anyone to suggest Harare is worse-off than it was in 1960, especially for the black majority in that country.

No-one should apologize for believing that Africa has undergone one of the most rapid and widespread transformations of any continent in a brief period of time. Convinced of the potential of Africa's natural resources, Lord Lugard (a British colonial administrator at the time) is reported to have said that "the material development of Africa may be summed up in one word – transport" (see Stamp, 1953, p. 9, Lugard, 1922). Lugard was a true Rhodesian in that he was simply paraphrasing Cecil Rhodes's "from Cape to Cairo" speech. Notwithstanding, his [Lugard's] statement was incomplete and inaccurate in its implications. 'Material development' is NOT the same thing as human development. Material development is an aspect of human development only inasmuch as it satisfies human primitive (basic) needs. Humans have higher than basic needs as well for which material development is a necessary but insufficient prerequisite. In fact, it may well be that the higher needs drive basic needs in a complementary fashion. For example, some pre-Columbian Europeans had some of their higher needs like freedoms of some sort met, however, their basic needs were not fully met, and Africa and the Americas represented opportunities for improving material conditions. Similarly, Africans had abundant natural resources, but slavery and later colonialism took away their freedoms.

The desire for freedom ushered in a new phase in the socio-economic history of Africa – the independence era. In 1959 there were only five independent African countries; by 1962 there were over 20 – a "wind of change". Thus, those who believe in the myth of an unchanging Africa are change-blind; the evidence of change, even then, was all over the place, see, e.g., Moore (1950), Bell Grosvenor (1953), Kenney and Vaugn (1960), Wentzel, 1961, La Fay and Scherschel (1962), Ross

(1962), and compare them to the September 2005 issue of the same magazine. The myth of undeveloped and un-developing Africa is really a perverse illustration of Kimble's (1951) observation that "... the remarkable thing about tropical Africa is that you can find there almost everything you expect to find" (quoted in Stamp, 1953, p. 517). I conclude from the evidence that today Africa is probably the most Westernized and most Christianized region in the world. The rapidity of such change may well be responsible for the "lonely African" phenomenon Turnbull (1961) describes in his book of the same name. Hence, as Amavilah (2000) points out, the characterization of Africa as either immutable or regressing is simply disingenuous. Of course, there remains a felt need as well as large room for further improvement today. However, from the 1960s going backward to the end of the Trans-Atlantic Slave Trade, there is no doubt Africa developed its human and non-human natural resources, despite colonial, imperial, neo-colonial, and Cold War forces generating equal or greater reaction in the opposite direction. I am yet to see un-politicized evidence suggesting otherwise.

The 1970s-1980s represent another phase in Africa's socio-economic history. Broadly speaking this was the only truly lost decade for the region: rampant coups, mass starvation, frequent civil conflicts, political repressions, and so on (see Kamarck, 1976, 1977, cf. 2000). However, part of the problem was that domestic neocolonial and external forces conspired in over-stressing the importance of material development at the cost of other, and equally important, aspects of human development. Policies by the World Bank and other international bodies, ostensibly designed to alleviate the situation, actually made things worse for many developing countries, not only African ones. While some economists like Bhagwati (1958) correctly reasoned that (neo)liberal policies, whether of a Ricardian or Marxian variety, can lead to "immiserizing growth," it was A. Sen (1966, 1983, 1985, 1999), and Anand and Sen (1994), a good student and colleague of Lewis's, who finally demonstrated out that human development is a multi-dimensional process which makes possible improvements in material conditions (measured by the real GDP per capita), and in non-material capabilities (health, education and so on). Hence, according to Sen's capabilities model, an unhealthy wealthy Westerner might be considered just as well- or worse-off as a healthy but poor and uneducated, African villager.

The last phase of the development of Africa is the decade of the 1990s to the present. This phase is characterized by significant improvement in the economic performance and well-being of African nations. An astute economic historian, and a keen observer of the present, Lewis predicted this phase for developing countries. In his Nobel Prize Lecture Lewis states that in 1950s less developed countries were thought to be behind because of "... inappropriate attitudes, institutions, climates, [or] the sun was too hot for hard work, or people too spendthrift, the government too corrupt, the fertility too high, religion too other worldly, and so on" (p. 1). However, by the end of the 1970s most of the claims Lewis was talking about have given way to new realities "*as less developed countries demonstrated beyond doubt their capacity to use physical and human resources productively*" (p. 1, emphasis added). For a half century ending in 1973, output growth rates in developed and developing countries were nearly the same, even as per capita output growth rates were lower in the latter group of countries than in the former. Lewis associated this performance with the growth of world trade – exports for developing countries and imports for developed ones.

Lewis estimated that to sustain the growth rates of the 1970s, developing countries would have to grow at rates exceeding 6% per year. Many East Asian countries were able to sustain or beat that rate, and they moved ahead of Africa, creating a class of newly-industrialized economies variously called the Tigers, Dragons, and/or even Miracles. We now know from Lucas (1993) that these were no miracles at all. Thus, the success of these countries makes one wonder: With the exception of the Trans-Atlantic Slave Trade (Thornton, 1998), and in no way dismissing the long-term after-effects of slavery that linger to-date (Nunn, 2008), the injustices Africa has suffered were not peculiar and exclusive to Africa alone. What did Asian countries learn from Lewis that African countries did not? The answer is in Lewis's *Theory of Economic Growth*, and here I am claiming further that Asian countries followed Lewis to the waterhole and chose to drink from his well of wisdom. Many African countries went along to the well, but some refused to drink. This is a claim I now attempt to substantiate with this comment. In what follows below I restate Lewis's well-known lessons to developing nations. My small contribution, if any, is that African countries could have drunk from the fountain of growth and change, but they did not, which explains a significant part of the performance difference between them and the East Asian countries.

2. Lewis and the Africans

W.A. Lewis's contributions to the theories of economic growth and development are well-known, and some have put him on top among the very first who introduced the field of Development Economics (Sen, 1966, Hirschmann, 1982, Meier and Seers, 1985, Tignor, 2006). Unfortunately most economists know Lewis well only through his classic paper, "Development with Unlimited Supplies of Labor" (1954). There is no doubt that the paper was groundbreaking, perhaps even revolutionary, especially in its opposition to some of the more restrictive assumptions of neoclassical economic theory (Ranis, 2004). However, although it was published a year later, and continues to receive less attention than the famous article, Lewis's book, *The Theory of Economic Growth (1965 [1955])*, was, and still is, a powerful intellectual and practical force. Intellectually it is based on the economic history of developing countries and a deep understanding of Adam Smith's classical economic theory, while at the same it broke some key assumptions of its predecessors. For this reason Lewis is often referred to as a *new classical* economist. The practical aspects of *The Theory of Economic Growth* include the fact that Lewis was born in a small country (St. Lucia), which gave his theory a personal touch, if you will. Then there is another point that he was the economic advisor to President Kwame Nkrumah of Ghana in the country's first years of independence. For example, the *Report on Industrialization and the Gold Coast* (1953), and later *Aspects of Tropical Trade 1883-1965* (1969) both are Hamiltonian in their reflex insofar as they hold up, albeit tentatively, support for "import replacement" subsidies, both elements "inward import substitution policies" and the "infant industry hypothesis" (cf. Lewis, 1971, 1977).¹

¹I am referring to Alexander Hamilton's (1791*Report [to US Congress] on the Subject of Manufactures*, as popularized by Daniel Raymond (1820, 1823), List (1841), and later Singer (1950) and Prebisch (1950). I have not read List's and Raymond's books; I refer the reader to Ha-Jon Chang (2002) instead.

3. Lewis's Lessons to Developing Countries

Not only did Lewis articulate the “proximate causes” of economic growth and development in unique ways, he also laid down the order of importance in which such causes maximize outcome.

Lesson 1: Economics of Negative Self-Talk and the Psychology of Losing

Given their particular history of discrimination and oppression, this lesson is the bitterest pill for African countries to swallow, but also the most fundamental prerequisite for sustainable economic development defined as economic growth + technological change. While I do not have empirical evidence at hand, from speeches by African Heads of State to a variety of gatherings including the UN General Assembly, there is anecdotal evidence of these leaders speaking negatively of the abilities of their people and their countries. You will hear them refer to poor skills or lack of skills of their people as if they expect to lose. Then they turn around to blame colonialism and other external forces for why the region lags behind. For a people that has suffered so much humiliation, it may be attractive to lash out to the past without fear of recrimination, but it does not, however, explain why some of these same countries did better prior to the 1970s, why they are doing better in the 1990s-2000s, and why non-African countries have moved so far ahead given similar, though not identical, initial conditions.

Also my crude content analysis of speeches by African leaders reveals that one of the first sentences in these speeches invariably is the claim that “My country X is rich in natural resources.” It is correct that many African countries are rich in natural resources. However, I have worried about the contrast that many natural resource-poor economies have done better than natural resource-rich economies. Look at Hong Kong, Taiwan, Finland, Japan, even tiny Mauritius; they are all resource-poor countries with decent standards of living for their human resources. One of the first sentences in any speech by the leaders of resource-poor countries would invariably acknowledge scarcity. Then these leaders go on to assert firmly that their countries will be able to cope with their poverty of resources by using their only available resource – their people. This contrast suggests clearly that resources *in-situ* are essentially not resources. Hence, there appears to be some truth to the contention that “despite the fervent political nationalism found in many of the African states, Africa has not found a means to achieve economic nationalism” (Fahm, 1964, p. 369). Thus, the economics of negative self-talk underscore the psychology of losing, and together the two have undermined the economic performance of African countries for a long time.

Lesson 2: Acknowledging Scarcity and Confronting It

Lesson 1 above is my interpretation of Lewis, reading between the lines. The current lesson is really Lewis's Lesson 1, “The Will to Economize.” It is over 30 pages of thoughtful writing. This is an important lesson, because

growth is the result of human effort. *Nature is not particularly kind to man; left to*

herself she will overwhelm with weeds, with floods, with epidemics and with other disasters which man wards off by taking thought and action. It is by accepting the varied challenges presented by his environment that man is able, in innumerable ways, to wrest from nature more product for less effort (added emphasis). [Moreover,] to accept the challenge of nature is to be willing to experiment, to seek out opportunities, to respond to openings, and generally to manoeuvre. The greatest growth occurs in societies where men have an eye to the economic chance, and are willing to stir themselves to seize it (p. 23).

Where there is no scarcity, life would be effortless, and perhaps very dull. Life being what it is, the desire for material rewards can be achieved in a number of ways. One is through “asceticism”, i.e., the ability to minimize desire so that if less is needed, less effort is also needed to acquire it. Second, desire for rewards can be achieved by the desire for wealth, power, and associated social status. However, achievement of wealth, power, and status may lead to conspicuous consumption; in other words, the acquisition of wealth may have an effect opposite to the use of wealth, and the use of wealth is important to attitude. As Lewis put it “... *it makes a great difference to the rate of economic growth whether the rich spend their incomes on keeping retainers and on building monuments, or whether they invest it in irrigation works, or mines, or other productive activities. It is the habit of productive investment that distinguishes rich from poor nations, rather than differences in equality of income, or differences in the respect accorded to wealthy men. Again, in so far as there are differences in prestige attaching to wealth, what matters is the relative status of those whose wealth is made or represented by productive investment, as compared with those whose wealth springs from ownership or inheritance of land. The really significant turning point in the life of a society is not when it begins to respect wealth, as such, but when it places in the forefront productive investment and the wealth associated therewith*” (p. 28, italics here and above added). And, finally, in Lewis’s mind the desire for goods and services can be constrained by limited wants. Wants are limited by the availability of goods and services, cultural capital, habits and taboos, and sheer ignorance.

A strong desire for goods and services is not a sufficient criterion for material wealth unless it is matched with a proportionate opportunity cost. This suggests that the opportunity cost of material wealth is the sum of the value of material wealth, leisure wealth, and social wealth. The cost of effort and the willingness and ability to pay it is associated with work attitude and innovations. The desire for material wealth and its opportunity cost are functions of available resources and how economic agents respond to change as they economize. Adds Lewis, “... when we say that a country is rich in resources the statement has meaning only in relation to contemporary knowledge and techniques. Similarly, a country which is considered to be poor in resources today may be considered very rich in resources at some later time, not merely because unknown resources are discovered, but equally because new uses are discovered for the known resources” (p. 52). In this sense, Lewis is correct to conclude that “... there is no direct correlation, positive or negative, between resources and human behavior. Some people (countries) with superior resources (USA) make more effort than some with inferior resources (Haiti); while some other people (countries) with inferior resources (Japan) make more effort than some others with superior resources (Congo).” Thus, the response to change depends neither on resources nor on innate intelligence. It depends on leadership; leadership is

reared, not born, and relative to Asian countries, African countries have neglected investing in essential leadership (America, 2013). Robert Lucas (1993) is correct that the Asian miracle was a man-made miracle (cf. Barbier, 2001).

Lesson 3: Building Economic Institutions Necessary for Economic Performance

Efficiency (the act of economizing) depends on the desire for material wealth, the ability and willingness to pay for the material wealth, available resources, and how economic agents involved respond to changing circumstances. Before Lewis, MJ Herskovits (1950[1940] showed that “the will to economize” is a common property of the microeconomic behavior of individuals; it is based on private self-interests. The relevant question is how private self-interests become social interests in ways that sustain economic growth and technological change.² The key is economic organizations (institutions), see, e.g., Knight (1951[1933], Weber (1947), and Mbaku (2004). Here is one of Lewis’s renditions: “*Institutions promote or restrict growth according to the protection they accord to effort, according to the opportunities they provide for specialization [and trade], and according to the freedom of manoeuvre they permit*” (p. 55, my italics). How do institutions do such a thing? They protect the right to reward, and rewards can be material and non-material. Lewis tells us that the latter is very important, but the former dominates, and he knows that from historical evidence as in the case of the USSR, where when “the state was created, its leaders believed that effort would not be reduced if earnings were equalized, and if orders and decorations were substituted for differences in pay” (p. 58). But, alas, events soon proved them wrong, as events were also to prove Mao’s Great Leap Forward wrong, and more recently the whole socialist experiment.

Institutions are also essential for managing property and property rights, which is necessary for human and physical capital formation. In this role institutions are complex, both in terms of structure and functions, as relates to private versus public institutions and capital, and management versus ownership. Institutions provide, at least sanction, incentives and authority. All of this has both benefits and costs.

Besides associated rewards, incentives, and authority, institutions also give rise to opportunities for specialization on the basis of a comparative advantage, trade, and the static (income) and dynamic (learning) gains from trade. Linearly speaking, comparative advantages give rise to specialization, which increases productivity, which enables trade, which increases the gains from trade. The advantages of specialization have been known to economists since Adam Smith’s division of labor. Trade extends markets, while necessitating complex and interdependent organization of money, markets, and production scale. Succinctly, “growth requires specialization, specialization requires co-ordination by a price mechanism, and this co-ordination is effective only in proportion to the response of individuals to change in prices. Now the degree of this response is largely a matter of habit” (p. 75), that is conditional on the economic freedom of individual and collective action, social mobility, and market freedom from natural and/or artificially-induced failures. Here Lewis lists some examples

²Sustainability is a key concept in this because the USSR did grow and change, but we now know that such growth and change was not to be for long.

of institutions: religion, slavery, the family, and agricultural and industrial organizations. In the end economic growth and change are really functions of institutional change. Institutions change quickly by changing their processes, slowly by completing their life-cycles, or both.

Lesson 4: Knowledge: Growth, Applications, and Sources

Although I list it here as a fourth lesson, knowledge, increasing knowledge to be specific, is Lewis's third "approximate cause" of economic growth and technological change. "*Economic growth depends on upon technological knowledge about things and living creatures, and also upon social knowledge about man and his relations with his fellowmen. The former is often emphasized in this context, but the latter is just as important since growth depends as much upon such matters as learning how to administer large scale organizations, or creating institutions which favor economizing effort, as it does upon breeding new seeds or learning how to build bigger dams*" (p. 164, added stress). The growth of knowledge is determined historically by inventions, chief among them writing and the Scientific Method (cf. Amavilah, 2009). In pre-scientific societies without writing and the Scientific Method, scientific knowledge still existed but its growth was limited. Here is Lewis: "Broadly speaking, the rate of growth of knowledge in literate, pre-scientific societies seems to have depended upon their philosophical attitudes, and upon their class structure" (pp.165-166). Two key aspects of the attitudes which favor knowledge growth are reasoning and the enquiring curiosity of man, coupled with the class structure that allows incentives for growing knowledge. These were possible only in fairly open societies, especially "where religion was competitive, in the sense that there were many religious cults, between which the citizen was free to choose ..." (p.166, cf. Weber, 1958[1930]). In other words, "knowledge does not grow rapidly if it is kept as secret for the few" (p. 167, cf. Rogers, 2003; Mansfield, 1971).

In scientific societies the Scientific Method dominates both reasoning and inquiry, and the class structure is much more liberal. Invention and research are keys to knowledge growth in liberal societies, because invention and research depend on changes in intellectual activity, and freedom from constraining attitudes and class structure of the pre-scientific economies. History shows that invention does not always require science, but during the 20th Century science has become linked to industry and the lone crazy scientist has been replaced by the team scientist; the former now "seeks employment by others, who will provide a laboratory and a salary with perhaps a share of royalties" (p. 169). This new collaboration has the advantage of fostering pure science, applied science, and commercialization of inventions in ways that have changed the structure of the industry resulting in a monopoly, or certainly a monopoly-like structure of property rights. While developing countries need not reinvent the wheel, and they can in most practical ways skip attempts to generate the pure science aspects of knowledge growth, unfortunately they can skip the application and commercialization only at their own cost as the productivity of inventions is often country-specific

The preceding statement refers to technological knowledge. Since knowledge is the sum of technological knowledge and social knowledge, it can grow if and when social knowledge grows, even if the technological aspect of it is held constant. Social knowledge is driven by the political process dominated by interest groups. It differs from technological knowledge in that "... if the

technological scientist sells his interested supporter a formula which is false, in the sense that it will not do technically what it is required to do, he is soon found out. Whereas the social scientist can get away with selling formulae which are false in the sense that they give an untrue picture of the world, but which are nevertheless highly successful in the sense that they enable the interested supporter to fulfil his political ambitions. The moral is that while it may be safe to leave the promotion of technological knowledge to interested parties, it cannot be safe to leave the extension of social knowledge primarily to interested parties” (pp.176-177).

The application of new knowledge also grows the volume of existing knowledge by adding to its quantity and quality dimensions over time and in time (Arrow, 1969, Amavilah, 2014). “It is not enough that knowledge should grow; it should also be diffused, and applied in practice, [and] the rate at which knowledge is taken up depends partly on the receptiveness of the people to new ideas, and partly on the extent to which institutions make it profitable to acquire and apply new ideas” (p. 177-178, cf. Sowell, 1996). According to Lewis two key factors underscore the spread of knowledge. First is the attitude towards innovations, itself a function of the openness of society, the appropriateness of the new idea, the effect of new ideas on the socio-economic structure of the society, prevailing taboos and doctrines, the source of new ideas, and the respectability of leaders who sanction the new ideas (cf. Mansfield, 1971, Arrow, 1969, Amavilah, 2007, 2008, Young, 2004, 2005, 2007, Rogers, 2003). Second, the spread of knowledge depends on profit expectations. As expected profits rise, knowledge application follows suite, as long as society accepts associated risk and uncertainty. In other words, the application and diffusion of knowledge have institutional requirements driven by the demand for skills and organization. Such demand raises wages and increase the quantity supplied of skills available. Institutional factors that come into play are that higher wage income would mean a growing middle class, and to sustain the growth of the middle class its skills much grow, too. Education is one mechanism for growing skills (human capital). Education is a unique good, because it must be consumed to be produced, and both consumption and production have their own opportunity costs (cf. Schultz, 1979, 1981). Another ways to keep wages in line with the growth of the middle class may be legislative such as minimum wage increases or the bargaining power of labor unions. The first-order effect of the former is unemployment; for both the former and the latter wage increases may lead to substitution of labor by machines. In the event of a fall in profit, knowledge application will be affected adversely as well.

The big point in all of this is that an economy needs skills to stimulate economic growth and technological change, and it needs even more skills to sustain it. There is thus a need, suggests, Lewis, for “priorities,” for “agricultural extensions,” “industrial aptitudes,” and “business administration.” These in turn imply competition, and competition is “the most powerful positive incentive” as well as “the most powerful negative incentive” of all (p. 200).

Lesson 5: Capital: Conversion Rate of Saving, Investment, and Related Conditions

Lewis’s capital theory, rather his application of capital to developing countries, is not different from his contemporaries. In fact, he admits that he relies heavily on Kuznets and Clark. He accepts the positive correlation between economic growth and per capita capital. However, he holds up firmly

on average “institutions which give incentive to effort, attitudes which value economic efficiency, growing technical knowledge, and so on” (p. 201). Assuming a constant capital (K)-output (Y) ratio, Lewis characterizes an endogenous relationship between capital and output. This understanding is consistent with then dominant growth theories.

Lewis suggests that on average the K/Y of developing countries can be larger or equal to the K/Y of developed countries, because of inefficiencies and the low rate of technical knowledge in the former group of countries then in the latter. It might also be that K/Y of less developed countries is smaller or equal to that of developed countries for a variety of reasons including population growth, increase in and discovery of natural resources, the importance of the agricultural and public sectors, and the large share of production coming from the non-capitalist sector, of less developed economies.

The rest of Lewis’s application of capital theory to developing countries is conventional: capital comes from investment and investment from saving. He observes that that savings, forgone consumption, is needed in less developed countries is a trivial issue. The real question is how much to save and invest, and what factors determine both. Regarding how much to save and investment, Lewis thought that a rate below five percent would not lead to economic growth. The rate of conversion from no growth to sustainable growth would be in the range of six per cent to 12%. The first domestic source of savings would be thrift, just to consume less and to save more. The second domestic source of saving is expected gains/profit from saving, i.e., increasing the profit-to-income ratio as “profit is the major source of saving” (p. 233). The problem with this approach is that as share of profit-to-income rises, it is possible the shares of wage, rent, and interest of total income fall, resulting in unequal personal and functional distributions of income. Functionally, different factor owners save for different reasons and invest in different things; “traditional rent income are used to buy more land, to carry a large number of retainers,..., to build churches, temples, tombs and monuments, to extend charity, and to entertain lavishly” (p. 227). Personal distribution of income has larger social implications in terms of poverty and other ills. In this sense “an increase in the thriftiness of landlords cannot be used to explain why the community changes from a 5% to a 12% saver” (p.227), and hence to a rate of investment necessary for sustained growth. On the other hand, “peasants also like to invest in cattle, but the attitude of peasants in Asia and in Africa to cattle is not commercial, so that in many cases this investment is a burden [on growth] rather than a source of profit” (p. 227).

How are we to increase the profit-income ratio? Lewis advises that “... by the growth of the capitalist sector of the economy, relative to the rest, resulting from the continuous reinvestment of capitalist profits” (p. 233). The mechanics of such growth are the subject of Lewis’s (1954) seminal paper too familiar to economists for review here. The growth of the capitalist sector of the economy is a function of the political security of capital investment, and the rates of capital formation and inflation in the country. In other words, it depends on the existence of a capitalist class, with few exceptions like the Japanese “swift transformation of landowners in to capitalists,” which allowed profit-income ratio to increase. The USSR created “state capitalists”, and other countries used government saving and borrowing. USSR state capitalism was characterized by significant inefficiencies, and government

deficits and savings are sources of the so-called crowding-out effect, with or without their Ricardian equivalence. And so, profit-motivated savings are the major source of investment.

Because the capitalist class is small in developing countries, and the profit-income ratio is low, external financing makes sense for these countries. This source of investment is no stranger; “nearly every developed state has had the assistance of foreign finance to supplement its own meagre savings during the early stages of its development. England borrowed from Holland in the seventeenth and eighteenth centuries, and in turn came to lend to almost every other country in the world in the nineteenth and twentieth centuries. The United States of America, now the richest country in the world, borrowed heavily in the nineteenth century, ... was called upon to become the major lender of the twentieth” (p. 244), and is again at the moment a borrower. Thus, loans and grants from external sources are important “savings.” However, the responsiveness of external sources to domestic needs depends on at least five factors. The amount of loans and grants is affected by private and social rates of return to such financing. The rate of returns are a function of expected profits and technical change. Other conditions of loans and grant making are important as well and among these are issues like default, actions of foreign countries, nationalization on the part of aid recipients, and the world economic condition.

Savings and their sources are one thing; investment another. The investment function is influenced heavily by public financial institutions, by the legislature, by the culture regarding whether or not it supports relevant institutions and the liability such institutions may impose on both individual and social investors.

Theoretically, “once a country has grown to investing net 12 per cent of national income, [*ceteris paribus*], it is easy enough to see why it continues to do so” (p. 274); it ignites a cumulative effect which signals the turning point toward accelerated economic activity (investment, employment, production, domestic and foreign markets). Practically, developing countries produce and trade mainly raw commodities, their deficient domestic markets, “either in total demand, or in the response of important sectors, or in the attitude towards a competitive struggle for markets, resulting from innovation, explain why it usually falls to foreign trade to give an economy that upward twist which sets it on the progressive road” (pp. 279-280).

In the early stages of economic growth, less developed countries are mainly agricultural countries. Suppose the productivity of the main sector, agriculture, lags, then profit would fall. Falling profit would mean declining investment and exports. With exports revenue down, imports of manufactured goods will decrease also, and agricultural productivity is adversely affected even more. So the expansion of agricultural exports would increase productivity as long as there is no “over-concentration upon exports [as it] is just as disadvantageous as over-concentration on any other sector. ... It is just as much an error to neglect exports as to concentrate excessively on exports, for it is quite possible for exports to be the laggard which holds up development” (pp. 281-282).

The preceding is what can happen in the beginning stages of economic growth. “In the later stages of economic growth the dynamic role ceases to be monopolized by foreign trade, and may even pass

from it altogether to the home [as it happened in the USA] about the end of the nineteenth century, [because] with the passage of time the growth of home demand, first stimulated by exports, encourages domestic entrepreneurship, and after a while investment for home consumption may become the pillar of economic growth” (p. 282). This is indeed what happened in Asian Tiger/Dragon countries, and is currently happening in China. Thus, “... in development programmes all sectors of the economy should grow simultaneously, so as to keep a proper balance between industry and agriculture, and between production for home consumption and production for exports” (p. 283). Both ‘liberal’ economists who advocate that developing countries concentrate only on agriculture, and Marxist economists who over-emphasize industrialization are so incorrect that “... it seems almost cowardly to take the line that the truth is that all sectors should expand simultaneously, but the logic of this proposition is as unassailable as its simplicity” (p. 283).

Investment is, but stable. As Lewis puts it, “an important characteristic of private investment is its irregularity, which in turn produces wide fluctuations in income and employment, [and] every country has its own domestic sources of instability, in addition [to those] fluctuations reaching it from outside through its foreign trade” (p. 283), and other external links. Examples of exogenous sources of domestic fluctuations are obvious (see a list of some of them on p. 283). Endogenous sources, both domestic and foreign, would include trade cycles, as evidenced by unfavorable terms of trade, or the “irregularity of innovations,” that is the tendency of “innovations to bunch together” (p.284). Also the relationship between investment and income produce exaggerated fluctuations due to the “acceleration principle” (p. 292). Another source as well as consequence of fluctuations is income inequality. Since investment require a high profit-income ratio, and economic growth is driven by a high I/Y ratio, alternatively a constant K/Y ratio, if incomes to other factors of production (wage, rent, interest) do catch-up with the rise in profit, aggregate demand may fall leading to wide swings in both the investment and production functions of developing countries.

Instability is a characteristic of economic change, both positive and negative. Where such change depends on the capitalist class, instability is in the nature of capitalism. However, economies sometimes find themselves experiencing “secular stagnation”, that is, long periods of no significant economic growth or significant economic decline. Lewis surmises that a number of reasons has been offered as explanations for secular stagnation, chief among them: technological change or lack of it, psychological factors, emergence of monopoly, population growth, and international cooperation or absence of it. However, Lewis is unconvinced about any of these as being insurmountable problems unless they are simply “a symptom of a more general social malaise” (p. 294).

Before moving on to the next lesson, let us summary this lesson on capital with the following excerpt from Lewis:

There are thus many pits into which a country may fall, as a result of prolonged growth: it may weary of material things, its entrepreneurs may behave less competitively, its public may create barriers to change, the distribution of income may alter unfavourably, it may exhaust its natural resources, it may its place in the international trade, or it may run out of innovations. In addition, it may be a victim of natural disaster, or it may be ruined by war, by civil strife, or by misgovernment. None

of these is inevitable. On the other hand, when there are so many pits into which a country may fall, it is not in the least surprising countries have fallen into one or more of these pits in the past. One cannot predict when the rate of investment in any particular country will begin to slow down – that a long period of growth is in due course succeeded by slower growth, by stagnation, or even by decline seems fairly well supported by the little we know of the economic history of the past four thousand years (p. 302).

In short, for developing countries foreign direct investment, aid, and remittances are necessary, but not adequate sources of capital, and most certainly not dominant drivers of economic growth.

Lesson 6: Human and Non-human Natural Resources

This of Lewis's lessons is the most classical; every country has some population and land. The importance of population growth has been a subject in economics since Malthus's (1798) hypothesis in which economic growth leads to a better standard of living, and a healthier population begins to procreate faster than it produces food. Agricultural productivity peaks at the subsistence level and population growth and economic growth both "collapse", and there is nothing that can be done to stop that curse. There is no technology to increase factor productivity or control population growth. Besides the "positive checks" on population like disease epidemics, the "preventive checks" on population like late marriages, no marriages, and sexual abstinence are unreliable because of the "passion between the sexes". Neo-Malthusian population dynamics allowed for fertility checks and other population and family size management techniques to lower populations growth as well as increase in the level of subsistence wage, but those only postpone the doomsday; they do not eliminate it (Ehrlich and Ehrlich, 1990). Thus, "... it is economic growth which brings down the birth rate and so restores the equilibrium which economic growth itself originally destroyed" (p. 313). There is an inverse correlation between fertility rate and income. However, it still "is obviously a sham controversy" to claim that "the way to bring down the birth rate is to concentrate on economic development [alone]. One needs to put all ingredients into the pie: to convert social leaders into seeing the dangers of a high birth rate, so that the taboos and religious sanctions turn against it, instead of in its favour; to raise standards of living and of education rapidly, so that women find it convenient to have fewer children; and to make wide-spread propaganda about birth control techniques. Action is needed on all fronts simultaneously" (p. 314).

Moreover, there are a number of arguments against and for population reduction. Some have argued that a reduction in population is a decrease in its average intelligence level. Other have said a small population implies low savings. Eugenists are fine with high death rates because survivors are likely to be of higher intelligence than those who perished. Still for others the opportunity cost of low death rate is a high old-to-young dependency ratio. The truth is, says Lewis: "The human race may die out because we fail to have enough children, or it may breed itself, subsistence permitting, into a stage where there would be standing room only if we were confined to living upon this planet. In which of these directions we shall travel no one knows" (p. 319).

The Malthusian debate on the growth of population raises a different question: What is the optimal size of the population relative to available resources? There is not one answer to this question, although there are many interpretations of the concept of over-population (cf. Ehrlich and Ehrlich, 1990). However, ultimately the value of resources are not in their availability as such since

it is true that the rapid using up of minerals in the past two centuries has stood behind enormous increase of our knowledge and of our productive capacity; future generations would not have been advantaged if we had bequeathed them with the minerals in the ground without knowledge of how to use them or all the other scientific knowledge which they inherit. But what use will they find in a great deal of knowledge if they do not also get the resources to which to apply it? It is possible also that this knowledge may enable them to discover new resources, or new new uses for what was previously useless (bauxite and uranium were until recently just types of ‘stone’). It may even enable them to synthesize all their need from the air, building it up from atoms of hydrogen. In other words, it is difficult to assess just how of a bad turn, if any, we do to our descendants by using up resources now. They may be better off, because of the knowledge and other capital which we are thus enabled to bequeath them in exchange; or alternatively they may curse us for our improvidence, just as some Middle Eastern and North African peoples may now feel inclined to curse their ancestors for destroying the forests which were once there, and whose removal has so extended the area of the desert” (pp. 321-322, cf. Solow,).

The cost of using up resources also determines the rate of resource depletion and exhaustion. The cost of exhaustion is really a question about whether the present generation owes resource or knowledge inheritance to future generations and how much. Lewis asserts that “the relationship between population and output per head is a matter of the advantages of specialization and the economies of large scale production on the one hand, and the diseconomies of more intensive and extensive use of natural resources on the other hand” (p.323). Also besides the size of the population, natural resources, real income per capita, the age structure of the population, and urbanization determine occupations a country can pursue, with changes in the former leading to changes in the latter.

Natural resources along with prevailing policy influence international trade. In the early stages of growth foreign trade increase faster than output per capita, but as the ratio of trade to income increases, foreign trade slows. Besides trade, there is a dynamic relationship between economic growth and migration. Internal migration affects human capital formation, external migration can be either a cost or benefit depending on specific circumstances. For developing countries remittances, knowledge and technology transfers may be a benefits, while the so-called ‘brain drain’ (cost) is a “brain circulation” (gain) for some researchers like Bill Easterly and Yaw Nyarko (2008).

Finally population and natural resources are important to economic growth to the extent to which they are associated with economic imperialism (cf. Boulding and Mukerjee, 1972). Economic imperialism is a function of the desire for better lands, or desire for export markets. These desires may cause wars, and wars can have both growth promoting and growth retarding consequences. There are thus plenty of economic reasons for imperialism and war, ranging from ‘necessity’ – famine, the need for land, markets and primary products – to ‘greed’ – envy, the desire to exploit or search more and more profitable outlets” (p. 369).

Lesson 7: Good Government

The following excerpt from Lewis about the role of government in economic growth is noteworthy:

The behaviour of governments plays an important a role in stimulating or discouraging economic activity as does the behaviour of entrepreneurs, or parents, or scientists, or priests. It is, however, harder to get into perspective because of political prejudice. On the one side are those who distrust individual initiative, and are anxious to magnify the roel of government. On the other side are those who distrust governments, and are anxious to magnify the role of individual initiative. ... Sensible people do not get involved in arguments about whether economic progress is due to government activity or to individual initiative; they know that it is due to both, and *they concern themselves only with asking what is the proper contribution of each* (p. 376, italics added).

One can summarize the role of government in three broad functions: Providing an enabling environment for the entrepreneurial activity to occur; providing public goods and services; and providing stable political framework of operation. Government services of particular significance to an enterprising environment include, but not restricted to, (a) public services like law and order, roads, public health; (b) leadership of all kinds which uphold and even create productive attitudes about work, saving, profit, business communication, and international etiquette; (c) legislation, regulation, and anti-non-competitive laws which promote effective economic institutions; (d) functioning price mechanisms that permits efficient resource allocation; (e) reasonable income distribution; (f) money and banking; (g) economic stability; (h) full employment; and (i) investment for development. The latter is often essential for production projects for which there is a need for capital, skilled labor and/or foreign exchange. However, government also undertakes public sector expenditures, and deals with fiscal problems (cf. Lee, 1996).

The role of government confers large political power that Lewis fears it often lead to stagnation because of any one, or combination of the following: failure to maintain law and order; stealing from the populace; class or ethnic exploitation; unproductive international interactions or lack thereof; negligence of public goods and services; premature and excessive *laissez-faire* approach; repression;

excessive spending; and costly conflicts either domestically or across borders. However, the ability to avoid these problems or to resolve them depends on its “statemanship”, which is a function of the quality of its population, governance, cultural dynamics, and independence. All of these depend on history, and “history is only the record of how individuals respond to the challenge of their times. All nations have opportunities which they may grasp if only they can summon up the courage and the will” (p. 418).

Lesson 8: Can Economic Growth be Both Efficient and Desirable?

The last of Lewis’s lesson is a question, and it may be an imposition on my part, because it is an appendix in *The Theory of Economic Growth*. Even so, it is important to ask whether or not the emphasis nations place on economic growth is worth the costs. Why costs and benefits? – because growth is change, and change is 50-50 ugly and pretty. Hence, decisions about whether or not to pursue growth are best arrived at by comparing costs and benefits.

One key benefit of growth is that it creates wealth. Wealth opens up choices. Wealth does not lead to happiness automatically, unless scarcity does not exist, and that is impossible. Says Lewis:

Wealth would increase happiness if it increased resources than it increased wants, but it does not necessarily do this, and there is no evidence that the rich are happier than the poor, or that individuals grow happier as their incomes increase. Wealth decreases happiness if its the acquisition of wealth one ceases to take life as it comes, and worries more about resources and the future. There is indeed some evidence that this is the case; in so far as economic growth results from alertness in seeking out and seizing economic opportunities, it is only to be expected that it should be associated with less happiness than we find in societies where people are not so concerned with growth (p. 420, cf. Easterlin, 1974 Layard, 2006, Helliwell, Layard and Sachs, 2012).

Thus, “we certainly cannot say that an increase in wealth makes people happier. We cannot say, either, that an increase in wealth makes people less happy .. ., [but we know that] ... economic growth gives man greater control over his environment, and thereby increases his freedom” (p. 421).

Economic growth is also beneficial for making leisure time possible; as incomes rose the work week has shortened. A work week was 72 hours long in the 1800s in the USA; it is 40 hours on average today. Technological change has raised productivity and made life more enjoyable than before, and leisure is one of those activities that enhance the quality of life. Increased leisure with increased economic growth, suggests a higher demand for goods and services that meet human’s higher-order, rather than just basic, human needs. Examples, would include the arts, music, and such.

Perhaps the most important benefit of economic growth is that women gain more than men, and not only in terms of higher labor participation rate than without economic growth. With rising wage rates, the time and effort that go into household production decrease, but without loss of productivity partly due to technology, but also because of substitution and income effects made possible by women labor.

It is hard to imagine the states of philanthropy and humanitarianism without economic growth. There is less monetary charitable giving in poor countries than in rich countries not because people in the former countries are less kind and generous; they simply have less to share. Taken a step or two further, economic growth implies that there is more to share, and the class struggles and revolutions that Marx predicted never happened, more certainly did not intensify. This, of course, does not mean conflicts disappeared; conflicts remain a human condition as long as aspirations and resources remain unequal, frictions among the earth people will continue.

The benefits of economic growth must be purchased. One of the costs of economic growth is that it creates new attitudes and institutions. Stable societies which need growth most are also likely to resist change that growth brings. Since “the will to economize” is an individual motive, economic growth is conducive to individualism which stable economies may find excessive. Because a growing economy is rational (optimizing on the basis of private self-interests), it relies upon reason than hunches, it is easy to interpret such behavior as being against long-cherished cultural traditions and spiritual beliefs

History has shown repeatedly that sustained growth requires scale made possible by machine production, impersonal organization of activity, highly disciplined and on-time demands on life, and of course urbanization. All these generate systemic and systematic internal frictions, not least of which is income and wealth inequalities

On the whole and balance, economic growth faces a number of key transitional problems according to Lewis, which policy-makers must learn to manage to ensure success. These include learning new work habits, temptation to use force to speed up economic growth as the USSR and other socialist economic systems tried and failed to do, coping with dramatic changes in social relations, and learning to live with new moral values, some of which may be completely foreign. All these make the transition painful. Moreover, concludes Lewis, “painful transitions are inherent in the transformation of a society from one way of life to another; they cannot be altogether avoided except by avoiding change itself. This no one can do. ... [However,] ... though we cannot prevent change we can accelerate it or retard it” (p. 433). But since “all the under-developed world aspirations nor greatly exceed production, and the gap is growing, ... we cannot really choose to retard” change (pp. 434-435).

4. Concluding Remarks

There is a *deliberate purpose* and a *purposeful deliberateness* in Lewis's theory of economic growth. Only a good economic historian, an excellent theorist, and an engineer-like practitioner of his caliber could combine that many specialities with such clarity and humility. The purpose is to show developing nations *what* to do to stimulate economic growth, given their unique initial conditions. The deliberateness is in *the order of importance* of *how* and *for whom* these nations can sustain economic growth. The precision and commitment with which Asian countries followed Lewis explain the difference in their performance compared to their African counterparts – claim I am making in this comment.

I have remarked elsewhere that the new growth theory, especially Paul Romer's version of it, has the same theoretical structure as Lewis's growth theory (Amavilah, 2005). Both theories stress individual choice and innovations as sources of a "perpetual motion" of growth. Faster growth requires a set of preconditions chief among institutions (economic freedom, property rights, markets), and good policy. Lewis and Romer are in agreement about the implications for long-run growth and technological change of resource inter- and intra-actions.

While Romer and Lewis are on the same page about what needs done to stimulate growth, Lewis is ahead of most about the importance of how that should be done for growth to be sustainable. For Lewis growth starts with a positive attitude. African countries appear to have suffered more than Asian countries from the psychology of negativity self-talk, giving undue rise to negative expectations to lose (economics of losing). I am not sure any one will ever know how the negativity started, but it still continues to this day.

Coming behind a positive attitude is full acknowledgment of scarcity, and that coping with scarcity requires "the will to economize." It seems to me that most countries that have performed well over long periods of time are not resource-rich countries; they are countries with a positive attitude towards growth and a strong "will to economize." Examples: Japan, Finland, and so on. By contrast many African countries are resource-rich, but they do not acknowledge scarcity and did not therefore build economic institutions to deal with scarcity.

Economic institutions are critical to economic growth. All economies, irrespective of their level of technological advancement, have local institutions, but the strengths and appropriateness are a function of acceptance of scarcity, the responsiveness to scarcity of both institutions and individuals. Compared to Asian countries, African countries started with an institutional disadvantage partly because they refused to take scarcity seriously, but mainly because external forces (slavery, colonialism, religions, and so on) destroyed traditional institutions without appropriate replacement.

We know the importance of institutions to growth because in a few instances like Botswana in which traditional institutions survived and complemented each other with modern institutions, growth has been remarkable (Acemoglu, Johnson and Robinson, 2001a, Acemoglu and Robinson, 2012). Many Asian countries never lost the foundations of their traditional institutions. We now know that Max Weber (1960) was mistaken in supposing that Eastern religions would be anti-growth. Liang (2010) has shown clearly enough that Confucianism is consistent with the miraculous growth of East Asian countries, in some instances it led such growth. African nations need institutions before they can hope for the other causes of growth to take deeper roots.

Making growth happen is like cooking (production); I think I got that from Paul Romer (1993, 1994). You take the pan (pot) you have – people have no choice of the countries they were born in. For ingredients you have a positive attitude, economizing behavior (Herskovits, 1952[1940]), and economic organization (Knight, 1951[1933]). African countries started their growth with the level of knowledge handicapped. Colonial institutions, including religion and governance, stunted African traditional institutions and with them corresponding “social knowledge”, leaving only inadequate technological knowledge as the only source of the growth of knowledge. This shortcoming is ongoing today; it might have contributed the “lonely African” mentality (Turnbull, 1971)), and African countries better deal with that situation. In the absence of institutions, or presence of weak or dysfunctional institutions, the importation and transfer of knowledge would remain nearly impossible.

Lewis lists physical capital as the fifth of the most important determinants of economic growth. Asian countries, including China, understand Lewis’s emphasis and built their early growth on labor-intensive production for export – consider “Made in Hong Kong” wooden toys not too long ago. African countries on the other hand over-stressed the importance of physical capital; in many cases they built huge, but unproductive structures for which local knowledge, technology, market, and so on were either absent or weak. The outcome is too obvious to describe.

Even more than physical capital, African countries overstated the value of their natural resources, but understated the value of their human resources. The former gave unreasonable credence to the negligence of scarcity; the latter weakened dynamic interactions among factors usually occurring through investment in the quality of the population – human capital formation (Schultz, 1981). Nearly all successful countries have limited land, but they determinedly train their populations to deal with scarcity and its consequences.

Whereas Lewis places the role of government last on the list of factors determining growth, both colonial and post-colonial governments in African countries were deemed crucial to growth. As Acemoglu, Johnson, and Robinson (2001b, Amavilah, 2006) show, colonial governments were designed to provide support for extractive industries and to prevent the evolution of institutions and

knowledge. Post-colonial governments were suspicious of the colonial institutions they found, and tentatively, often unsuccessfully, tried to build new institutions from scratch. Such an emphasis of government is misplaced because research has shown over and over again that the public sector tends to affect growth negatively (Choi, 1983, Lee, 1996) for a variety of reasons. For African countries the reasons may include aid dependency as budget support, the tax systems which damage production structures, the so-called Baumol disease, crowding-out of private investment, and Olsen's "institutional arthritis or sclerosis." Asian countries could have fallen victim(s)? To the same problems, but they used government to create distortions, mainly in the foreign sector, that favors their growth. South Korea grew fastest when its trade regime was not free and its political regime dictatorial.

African countries lagged behind until recently they lacked a positive and must-do attitude and economy (Moss, 2007). They understated the need for institutions, knowledge growth, and the quality of their population. They over-estimated the value to growth of government, physical capital, and natural resources. It is not that these countries did not read Lewis; it appears though that they did not fully appreciate that the order of doing these things matters, and that explains the difference in performance between them and the Asian countries.

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