

Social Obstacles to Technology, Technological Change, and the Economic Growth of African Countries: Some Anecdotal Evidence from Economic History

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Abstract. This paper comments on a number of social obstacles to the economic growth and technological change of African economies from the perspective of economic history. Economic history is full of evidence about what held African economies back for years. Some obstacles are of domestic origin such as excessive consumption and luxury masqueraded as public investment. Other obstacles were imposed from outside such as the destruction and weakening of traditional African religions and religious leadership as well as other wide ranging institutions. The combined effects can be summed up in one word: de-institutionalization. De-institutionalization devalued local knowledge (technology) thereby reducing performance. It is not possible to turn the clock back, but current policy is better-off bringing these obstacles into discussion as they stand a good chance of lowering the so-called “Africa dummy” variable common to growth regressions. Future research would also benefit if it sought to adjust conventional economic theory to allow space for the special features of African economies. Market theory is misleading in treating private use rights as antithetical to private ownership rights. For example, the suggestion that land tenure in Africa is anti-growth is inconsistent with the spectacular growth China has experienced even without private property rights.

Keywords. Social obstacles, Growth and change, African economies, ‘Primitive’ economies, African traditional economies.

JEL. N17, N27, N87, O33, O43, O55; P47, P52.

1. Introduction

The quote above should indicate that I am a convert to Sir W. Arthur Lewis’s maxim that “old economists never die; they [only] become economic historians” (Caincross, 1996:ix). The conversion incidentally reveals my age, but more importantly it shows that age refocuses one’s reading of history. Now I see in economic history enough evidence that early African civilizations were as advanced as other civilizations elsewhere in the world (Hull, 1976; Davidson, 1959; Rogers, 1947; Rogers, 1946; Johnson, 1974; Pakenham, 1991; Fagan, 2011). The biblical notions of Africa as a dark place, and of Africans as cursed offsprings of Ham were products of incomprehensible ignorance and prejudice, some of which knowledge has begun to conquer with the passage of time (Shinnie, 1965).² This is to be expected because ‘primitive’ people everywhere were wise, but their knowledge was spatially limited. However, even with that limitation, we now know of strong Carthage-Africa trade dating to BC years, and

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of extensive interactions between Africans on one hand, and the Romans, Phoenicians, and Vandals on the other hand (Rogers, 1946; 1947; Wells, 1961). Claims like Sigmund's (1972) that Africa's political, social thought and organization are *recent* developments are simply incorrect. They confirm that while modern people are knowledgeable, they often also tend to be unwise. For that reason I have come to think the fastest pace of human progress has happened at the intersection of wisdom and knowledge, but I have no intention to test that proposition. What I would say is that historical evidence leaves no doubt that obstacles like the Atlantic Slave Trade, colonization and colonialism, and economic and political imperialism arrested endogenous development of indigenous institutions with and without replacement (cf. Acemoglu, Johnson, & Robinson, 2001; Thornton, 1998; Rodney, 1972; Boulding & Mukerjee, 1972). The effects are huge, see, e.g., Fosu (2012), Nunn (2008; 2012).

Social obstacles to growth and change have not been peculiar to African countries. How and why their arrest have had longer-lasting effects on Africa than elsewhere is fundamental to the hypothesis one would need to construct in order to answer the question. But then again I intend to stay away from that too, reminded of the challenge that "the construction of hypotheses is a creative act of inspiration, intuition, invention; its essence is the vision of something new in familiar material, [and that] the process [of building hypotheses] must be discussed in psychological, not logical categories; studied in autobiographies and biographies, not treatises on scientific method; and promoted by maxim and example, not syllogism or theorem" (Friedman, 1953: 43). However, if I were to venture a maintained hypothesis I would say that the arrest of the development of indigenous institutions has lasted long because obstacles to fast progress of African countries first interrupted technology (knowledge), and thereby slowing down technological progress (Segal, 1987). Without technological change, organizational change is also constrained, economic growth checked and "things fell apart" (Scabrough & Corbett, 1992; Mabin, 1989).³ Without technological change, the spread within, and transfer without, of knowledge are severely constrained (Jovanovic & Nyarko, 1995, cf. Reid, 2009).

By technology I mean any knowledge that is capable of inducing socio-economic change (Sowell, 1996; Szirmai, 2005). Thus, I adopt, without providing further explanation, William F. Ogburn's (1957) list of the "different viewpoints toward technology", i.e., technology is: "gadget and push buttons; destroyer of artistic skills; creator of technological unemployment; aid to non-industrial peoples; maker of wealth; materialization versus spiritualization [of human efforts]; machine the monster; a worker of miracles; a precipitator of change; a changing environment to which we [must] adjust; and creator of cultural lags" (pp. 3-8, [] added). The preceding suggest that technology is a multidimensional agent of social change (cf. Szirmai, 2005; Allison, 2002; Brose, 1998; Cottrell, 1972; Pytlik, Lauda & Johnson, 1985; Lustig-Arecco, 1975) as evident from nearly all prior writings on the subject ranging from K. Marx & F. Engels (1848:79-94) and on down. For the inquisitive reader, social determinants of technical progress are subjects of Edwin Mansfield (1971), Nathan Rosenberg (1982), Rosenberg, Laundau, & Mowery (1992), Richard Nelson (1981; 1996), Douglas North (1990), and Dasgupta & Stoneman (1987) to mention just a few. In fact, Stewart & James (1982), Lall (1981), Fransman (1986), and others tell us that the understanding of technology as a social phenomenon has basis in Adam Smith's (1937, Book 1 Chapters 1- 4, pp. 3-29) discussion of specialization and productivity.

How is knowledge created in the first place? Well, Arrow (1962a; 1962b; 1969) has argued that knowledge creation is a learning-by-doing process that is not difficult as it is what people already do for a living as well as what happens

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incidentally in the living process. Yaw Nyarko (2008) has dubbed this process experimental “problem-solving”, which every country must do for itself if it hopes to grow and change. The real problem is that knowledge creation suffers a two-part incentive problem. The first part stems from the uncertainty which drives a wedge between the market rate of return from knowledge creation and the higher expected rate of return from the same. The second part is what Fransman (1986:8) has called the “appropriability problem” arising from the fact that knowledge is, at least, a quasi-public resource. These two problems make the distribution of knowledge uneven and its pricing indeterminate, and hence complicate the transmission channels due to potential externalities and associated inefficiencies (Jovanovic & Nyarko, 1995). Such complications further affect local capabilities for creating and adjusting to local conditions knowledge created elsewhere. The debate on the appropriateness of knowledge, and subsequent social benefit/cost analyses reflect that concern (Martinussen, 1997; Sen, 1980; 1999; Schumacher, 1989[1973]; Adelman & Morris, 1971; Temple & Johnson, 1998).

To understand the social foundation of technology from the perspective of economic history we need to study how historians view economic growth (Adelman, 1988; Jerven, 2011; Temin, 2014). Doing so is important because it re-orientates analysis. Currently economists are all Marxists in a way insofar as they often place the economy and economic activities at the center of human progress. Toynbee (1946), like most historians, argues that economic growth is a function of society (the macrocosm), the individual (the microcosm), and other forces. Among the individuals that have been critical to economic growth Toynbee has listed God, Saints, religious and political leaders, and “creative minorities”. In his own words, “growth is achieved when an individual or a minority or a whole society replies to a challenge by a response which not only answers that challenge but also exposes the respondent to a fresh challenge which demands a further response on his part” (p. 241). Similarly, the decline of civilizations is also determined by Nature, loss of control on the environment, and loss of self-determination (pp. 244-359). The pace of decline (disintegration of civilization) depends on social decay, resulting from the “schisms” of the “body social,” “soul,” and the interaction between the two (pp. 360-566). Whereas God is rarely an explicit variable in present-day growth regressions, religion and religious leadership continue to hold the attention assigned to it by Max Weber’s (1998[1905]) *The Protestant Ethic and the Spirit of Capitalism*, for instance. Nowadays, God has entered growth regressions only as Nature/nature (geography, climate, ethno-linguistics, etc) and as god-given influences like cultural differences (Malinowski, 1944).⁴ For example, Robert Barro (2003), David Brat (1996), Robin Grier (1997), Young (2009) have all tested the strength of religion or religious variables in economic performance with varying results. Although Amintore Fanfani (2003) agrees with Hicks (1969) that the emergence of exchange relations and the market preceded the rise of capitalism, he is convinced of the strong, positive and negative, effects of primitive Catholic and Protestant institutions on the progress of capitalism.

In reading EAJ Johnson’s (1965) chapter, “Everyman his own economist,” it is hard not to think how much present-day development economics in general and in Africa particularly is a throwback to the pre-Smithian economic localism strangely in a world that has become global. Unlike his predecessors, says Johnson, but “like all good architects [Adam] Smith did not rely wholly on naïve design or domestic materials; he surveyed the modes of building at home and abroad, using sound methods and good materials of both foreign and domestic origin. Scholar and builder that he was, he thought it proper not only to construct an adequate system but also to show where others had erred. His bitter criticism of the Mercantile System ought not to be regarded as evidence that he repudiated the work of all his

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British predecessors. What he really censored was faulty work of the merchant-authors, the most dogmatic and voluble, but least reflective of his British predecessors” (p. 10). Stated differently, Smith understood that “doctrinal genealogies are always flimsy and fragile, [and] they attain strength only when they are incorporated into the whole fabric of which they are but major threads” (pp. 10-11). As Arthur Schopenhauer (c.1910) came to restate the same idea later, individual threads are like wax which melts away when exposed to heat leading to the whole fabric to fall apart (cf. von der Wagon Brecht, 2007). Smith’s approach is exactly the approach that has been missing in the study of knowledge (technology) and its implication for the progress of African countries.

2. Obstacles to Technology, Technological Change, and the Progress of African countries

I claim that the fastest pace of progress anywhere in the world has occurred at the intersection of wisdom and knowledge (technology). What slowed progress in African countries is the de-institutionalization of those countries. Loss and weakening of traditional (indigenously endogenous) institutions devalued and undervalued local knowledge, in some countries more than in others. Following below are examples indicative of the de-institutionalization process.

2.1. Loss of Traditional Religions and Religious Authorities

Among all regions of the world, Africa has adopted most foreign religions, and this came with a high opportunity cost – de-institutionalization.⁵ As Toynbee (1946) indicated religion played an important role in economic growth of all civilizations. Max Weber thought of protestant religions as being central to “the spirit of capitalism.” On the other hand, Weber also argued that *The Religions of the East* (in three volumes, 1951; 1952; 1958) were not conducive to the economic growth and technological progress of the region. Ming-Yih Liang, Wen-Ying Wang & Bruce Yichun Hsueh (2005), Ming-Yih Liang (2010), and Ming-Yih Liang (2012) have illustrated that East Asian growth miracles are likely due to the Confucian ethic. Karl Marx concluded that all religion is “the opium of the people” which prevents “universal human emancipation” (Bender, 1986:21-23; 45-61).⁶ However, although other religions are now common variables in growth regressions, traditional African religions have never been given their due place in such regressions, at least not that I am aware of. Many writers have suggested that African religions were banished to obscurity because they were, or were perceived to be, inconsistent with modernity (Mezzana, 2010; Gbanda, (undated), Ogunbado, 2012). This claim is incomprehensible since as defined by Awolalu (1975) most African religions have had significant overlaps with Christianity, Islam, and Judaism (cf. Ogunade, (undated)).⁷

African countries also have not escaped the effects of religion-science debates. Theoretically science is based on reason and evidence; religion on faith and sacredness. However, as John Polkinghorne (1998) discusses the two have often interacted, although not always amicably. The Catholic Church persecuted Galileo for espousing Copernicus ideas. Later the same opposition, albeit to a less severe extent, was expressed against Darwin for his theory of evolution through natural selection. In fact, the science-religion dichotomy continues to-date, even as it is abundantly clear now that both religious and nonreligious people have made important contributions to science. The U.S. National Academy of Sciences (USNAS) is on record about the compatible independence of science and religion and their respective roles in humanity.⁸ Albert Einstein (1941) also sees no contradiction between science and religion per se, but he notes that “a conflict arises when a religious community insists on the absolute truthfulness of all

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statements recorded in the Bible, [because] this means an intervention on the part of religion into the sphere of science ... [Similarly] representatives of science have often made an attempt to arrive at fundamental judgments with respect to values and ends on the basis of scientific method, and in this way have set themselves in opposition to religion” (cf. Na, undated). Moreover, it is common knowledge that many scientists, including Nobel Prize winners, are religious, with an overwhelming majority of them being Christians.⁹ By contrast, traditional African religions were persecuted first by other religions and later by science, and the effect is the de-institutionalization of African economies.

Again, while all these religion-science issues are nearly universal, African religions are among the few that have been forced out of existence or their growth and diffusion stunted. With such a decline ceremonies, deities, practices and rituals, and virtues and vices alike have weakened or disappeared. The weakening and disappearance of African religions undermined social norms and values upon which economic behavior, organization, and control depend (cf. Kornai, 1983; Amavilah, 2010). Moreover, the persecution did not just eliminate African religions; in many cases it replaced them with seemingly unscientific beliefs, practices, and rituals. For example, the idea of Santa Claus has no scientific basis. Catholics have been opposed to Halloween for years, but society is least bothered by the opposition. As with magic acts, while unscientific, Santa Claus and Halloween generate beneficial economic activities and technological changes, and are respected by many people.¹⁰ In many places even traditional African weddings disappeared and there is no reason to doubt that such festivities would have had important economic impact as well.

2.2. Loss of Traditional Economic Institutions

Sir W. Arthur Lewis (1965) lists economic institutions second among the proximate causes of economic growth (cf. Amavilah, 2014a).¹¹ In the chapter on “archaic economic institutions” of his book *Dahomey and the Slave Trade: An Analysis of an Archaic Economy*, Karl Polanyi (1966, cf. 1957[1944]) describes a highly sophisticated cowrie-based monetary system (cf. Dalton, 1965). The invention made a huge, but unreconized, contribution to financial and banking technology. It was a harbinger of fiat money at the time when Europe and China focused on conventional commodity money. Archaic economies demonstrated beyond any reasonable doubt that an economy could run efficiently with money that did not have universal intrinsic face value. As money cowrie was the equivalent of paper money. However, cowrie money was ahead of paper money because it did not require government law to make it a legal tender. How it became that way, we’ll most likely not understand given that the knowledge has long disappeared. What one gathers from Polanyi is that fiat money is really a technological invention by ‘primitive’ economies (cf. Herskovits, 1952; Malinowski, 1921; 1961).

In an informal conversation, a colleague has argued, and I paraphrase, that cowrie money can never be any improvement on paper money in any society or country. He insisted that cowrie money has intrinsic value just as gold and silver or copper which replaced it, but it has never been fiat money. Many ‘primitive’ societies still use cowrie as decorative ornaments. Thus, while one can say cowrie money was not full-bodied commodity money, one cannot say it does not have any intrinsic value, because its value derives from its demand just like the value of gold, silver, and so on derives from demand. He concluded that cowrie money failed for the same reasons other commodity money failed; it did not have enduring basic characteristics and properties of money, and it could not improve accounting or promote efficiency of business transactions. Hence, he does not see the devastating consequences African countries incurred as a result of the destruction

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of the cowrie-based monetary system as there is no evidence of bankruptcies resulting from loss of massive storage of cowries leading to cowrie bank panic and cowrie money market crashes.

My friend's argument is incisive. However, I would say that cowrie money preceded, and coexisted in some places, with paper money, illustrating that sophisticated economic institutions and networks existed in African economies, and the cowrie-based monetary system in 'primitive' West Africa is an excellent example. The example is not groundless; evidence clearly now shows that dysfunctional institutions, including financial institutions, are a part of the deep causes of the economic problems African countries have faced (Fosu, 2012; Bhattacharyya, 2009; Humphries & Bates, 2005; Goldsmith, 1998; Easterly & Levine, 1997; Stein, 1994; Andres, Asongu, & Amavilah, 2013). Just as clearly research continues to suggest that African economies that retained and were able to improve at least some of their traditional institutions, have done well relative to their counterparts who lost all or most of their traditional institutions and had to start from scratch. In Africa, Botswana and Mauritius are often singled out for the honor (Acemoglu, Johnson, & Robinson, 2001; 2002; cf. Amavilah, 2006). Regarding bankruptcies, things were actually worse than they appear; there was indeed a cowrie inflation. As the demand for gold/silver increased, the quantity "demanded" of cowrie fell to zero, and there was too much cowrie and nothing to spend it on – the cost of such inflation are now self-explanatory – de-institutionalization.

There is a growing line of research that documents the negative long-term effects of the de-institutionalization of African economies (Nunn, 2008; 2009; 2012). The destruction of the cowrie-based monetary system offers a good example, not inasmuch as it was superior over the alternatives, but as in terms of what was lost. To appreciate my interpretation of Polanyi's *Dahomey*, one has to buy into my characterization of a monetary system. To me, a monetary system (MS) consists of (a) money (M) as its foundation, and (b) financial institutions (FI). Some financial institutions are private (FIP), and others are public (FIG), i.e.,

$$MS = M + FI = M + (FIP + FIG) \quad (1)$$

Now, let's designate the 'primitive' economies by the number 1, such that for M = Cowrie

$$MS1 = Cowrie + FI1 = Cowrie + (FIP1 + FIG1) \quad (2)$$

The introduction of gold/silver as a replacement for cowrie destroyed (2) to

$$MS2 = Gold\ or\ Silver + (FIP2 + FIG2), Cowrie = 0 \quad (3)$$

The trouble started there – with (3).¹² How? – note that while cowrie was a commodity, it was not commodity money in the economist's full definition of commodity money. For example, Samuelson & Nordhaus (1995) describe two sets of commodity money. The first set would include commodities like tally sticks, paper, beaver pelts, tobacco, cowrie, salt, Rai stones, alcohol (wine, beer, etc.), cigarettes, cannabis, candy, maize, barley, wampum, rice (koku), cattle, arrowheads, olive oil, and so on, depending on time and place. These "items have served as money at one time or another" (p. 480), but their universal "moneyness" was constrained by the fact that they had *little or no universal intrinsic value*. The second set of commodity money "had [high] intrinsic value, meaning that they had use value in themselves, [and] because [such] money had intrinsic value, there was

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no need for government to guarantee its value, and the quantity of money was regulated by the market through the supply and demand for gold or silver” (p. 480, stress added) – resulting in a rather volatile and unpredictable value of money as it depended on market and technical conditions affecting the availability of the metals involved. *In Africa’s case the switch from the first set of commodity money to the second was in fact a step backward as it later turned out.* First, the cowrie-to-gold/silver rate of exchange was either nonexistent, undefined, or outright indeterminate. Hence, full replacement of (2) by (3) just meant people *needed* gold/silver.¹³ In other words, the value of cowrie in circulation and whatever storage facilities (vaults) they had then suddenly became zero. This was a *massive crash*.¹⁴ Consequently where there were no gold/silver mines, or other cheap sources of gold/silver, the need for gold/silver fed directly into the slave trade. Polanyi (1966) has a schedule of the price of a woman slave on Page 152 of his book in terms of the exchange rates between a gold bar and a number of items (excluding cowrie). The schedule shows clearly that 50 gold bars were the price of a *perfect* woman slave, which was then adjusted if the slave was missing a tooth or limb, or whether she was old or young, plus profit margin. In monetary terms it appears an ounce of gold was valued at four British pounds, and 1000 cowrie was an equivalent of 2s.6d. So, a woman slave cost anywhere between 16,000 and 32,000 cowrie. Of course, this is all speculative now; but just imagine what happened when all that cowrie money becomes worthless instantly. In fact, things cannot be any more devastating than that, because if you enslaved women, you destroy the family; destroying the family is destroying agriculture, and without agriculture the entire society suffers (Bell & Vogel, 1968; Gilman, 1966). Thus, the devastating effects were the loss of institutions, knowledge and confidence, all essential to innovations and other sources of knowledge growth (Amavilah, 2009).

The devastation was wide because cowrie money was not fiat money in the simple economist’s sense. Again economists define fiat money as “money because the government decrees it is money, and because we all accept it” (Samuelson, 1970:259). N. Gregory Mankiw (2014) defines fiat money as “money *without intrinsic value* that is used as money because of government decree” (p. 220). Although later the monarch in Dahomey issued “separate currencies [that] operated in each of the neighboring countries of Dahomey, Ashanti, and Whydah” (Polanyi, 1966:30), there were no political state units that made cowrie a generally accepted means of exchange. Modern fiat money is a legal tender in the jurisdiction that made it so. The use of cowrie was transboundary and trans-tribal, in fact transnational long before there were nations; no-one made it money by law – proving Samuelson (1997[1948]) correct that “money, as money rather than a commodity, is wanted not for its own sake but for things it will buy!”(p. 55).¹⁵ Think of it: To-date the U.S. dollar is generally an accepted international currency, but other countries still are not obliged to accept it as a means of payment. From such angle the cowrie system was comparable only to the Euro, but without any political sanction behind it – it was far ahead of its times.

While it is a reasonable argument that cowrie was replaced by gold/silver as better commodity money because the latter had a higher face value than the former, that argument was valid only as long as economies ran on valuable commodity money. *The introduction of paper money by fiat was conceptually the re-introduction of cowrie money. Thus, “archaic economies” recognized that economies could be run on the basis of money with far less intrinsic value than gold/silver, and without decree. The failure to credit primitive economies for this technological invention is a form of de-institutionalization* (cf. Malinowski, 1944; 1945).

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I would also claim that the concept of a bank as a financial intermediary is not really modern. While cowrie was an accepted medium of exchange (it had value in exchange), value in use was in other things. George Dalton (1965) has written more authoritatively on primitive money than anyone else, but even Herskovits (1952) tells us that in some traditional African economies cattle, for example, played a role similar to that of a modern bank (cf. Herskovits & Harwitz, 1964). Essentially, cattle were a mobile house of value – mobile bank. Again, primitive people recognized that although it stored value well, cattle was not a good medium of exchange because it was indivisible, not easily portable, and hence a poor unit of account, a role cowrie filled well. The failure to acknowledge this sophisticated theory of value, explains why some economists still today do not understand while electronic mobile banking is spreading fastest in the traditionally cattle raising regions of Africa like Kenya. The missing part, to quote JJ Spengler's (1960) understanding of JS Mill, is that “noneconomic factors played an important role in human affairs, which involved economic progress. Among these factors he included beliefs, habits of thought, customs, and institutions” (p. 119). Today these same factors are all largely ignored in African economies, explaining the extant wedge between economic theory and practice.

The critical reader might have objected all along to my discussion, because I superimposed modern exchange economies over traditional economies – I agree. As George Dalton (1965) tells us, economists are wrong in this superimposition. Here is one stinger Dalton threw at economists: “Economics textbooks (e.g., Samuelson 1961:54; Reynolds 1963:475) err in citing primitive monies *indiscriminately* as equivalents of Western media of (commercial) exchange By giving the impression that *all* primitive monies perform the same primary function as dollars, they quite wrongly imply that all primitive economies may be regarded as crude market economies” (p. 60, original italics). I know from their published works that both Samuelson and Reynolds were not dogmatists, but I did not examine recent editions of their textbooks to ascertain whether either or both have responded to Dalton's charge. However, we all know that there is a tendency to think that money is money, primitive or modern. While the commercial functions of money are the same across different economies, “where economies are organized differently, non-commercial uses of monetary objects become important, and “money” takes on different characteristics” (p. 45). In market economies “all the commercial uses of money are consequences of market integration, simply reflecting the highly organized credit and accounting arrangements that facilitate market purchase, [and non-commercial purchases can easily be monetized], but for primitive communities where market transactions are absent or infrequent, it would be distorting to identify money with medium of [commercial) exchange” alone (p. 47). Clearly “*primitive money-stuff [money used in non-commercial transactions] does not have that bundle of related uses which our economy is conferred on dollars by market integration and by the use of dollars in both commercial and non-commercial transactions*” (p. 50, original emphasis, [...] added). For example, while acceptable to use cowrie to buy a fish, a cow would be a more appropriate reciprocal gift for a bride. To convert the value of a cow into cowrie equivalent is inconsistent with the structure and function of the economy (Ashraf, Bau, Nunn, & Voena, 2014).¹⁶ Dalton's four types of economies (marketless economy, peripheral market economy, market-dominated (peasant) economy, and “large-scale, developed, internally integrated economy”) are illustrative here. If these features were a part of modern economic theory, economics would have been richer and more equipped to deal effectively with a host of problems facing developing countries than it is now.¹⁷

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2.3. *Confusing Private Use Rights and Private Property Rights*

Economic history also points to the confusion between *private use rights and private property (ownership) rights* as a form of the de-institutionalization that has blocked knowledge progress in African countries. In traditional African economies individuals can have private use rights to natural resources like land (classically defined); they cannot claim private ownership rights to nature's gifts to all people. A corn farmer and his/her descendants have only private use rights to the land they farm, but they have both private use rights and private ownership rights to the corn they grow on that land. Both use and ownership rights can be inherited privately, however only ownership rights can be exchanged privately. Private property rights are rights over resources that are the fruits of men's labor. Private ownership rights may or may not confer private use rights as in the case of the owner of an apartment complex who rents it. While renting it the renter cannot simultaneously use that same complex for his own private use. Conventional market theory lacks accommodation for these features of primitive economies. Instead, it assumes that either private use rights equal private ownership rights, or that the former is an element of the latter. Such a convention puts African countries at a disadvantage, resulting in a phenomenon Turnbull (1962) has named "the lonely African."¹⁸

Dalton (1962) shows that the failure of conventional economic theory to allow analytical space for Polanyi's "archaic institutions" to play their legitimate roles has had unfavorable implications for "traditional production in primitive African economies." It is simply incorrect to allege that markets did not exist in traditional Africa, or that they were inefficient because of private use rights vis-a-vis private property rights.¹⁹ What is correct is that markets that existed were neither competitive nor dominant social organizations or sources of livelihoods. By extension, while the Solow-Swan-type aggregate production functions would describe the economic activity in any modern economy, they would not suffice for traditional economies which are characterized by multi-goals. In those economies, "neighboring societies sharing the same physical environment often produce markedly different ranges of output, with different technologies used within differently organized production groups" (Dalton, 1962, 364). Moreover, the production of goods and services is *simultaneously the production of community*, suggesting that the economic system is "embedded" in the social system and "functions as a by-product of noneconomic institutions" (p. 365, cf. Smelser, 1965).

Again, the aggregate production function itself is a universal rule. However, the allocation of resources it describes is economy-specific and influenced by economic behavior, organization, and control of that economy (cf. Amavilah, 2010). Since "factor movements and appropriations are expressions of social obligations, social affiliation, and social rights, ... [and] land utilization is organized differently from labor utilization" (p. 365), the principle of equi-marginal products may not obtain and hold, in which case the primitive production function would be mis-specified. This interpretation ties in well with the distinction between private use rights and private ownership rights (cf. Dalton, 1962, pp. 365-366). Consequently, the production process, to the extent that modern economic theory does not accommodate these special features, disadvantages analysis of African economies. In fact, the switch from the real (traditional), to the imitation (modern) economy cannot be explained in terms of the conventional production possibilities frontier (PPF) model. Switching from traditional to modern production just means the PPF of non-traditional goods shifts rightward, and that of traditional goods shifts leftward, but there is no way of assessing inter-economy efficiency and the net welfare gains could actually have declined. Thus, the production of goods and services is really the production of community relationships, so that one

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cannot dispose of such goods and services even if they have use rights to them without affecting reciprocity, redistribution, and all that. Moreover, calculating and comparing policy compensating and equivalent variations, and ascertaining the net gains across the two economies would be too complicated, if not impossible, to do. Conceptually, one can say that if the gains of new production possibilities are greater than the losses of old production possibilities, society has benefited. However, that is not all, because “*colonialism did not make Africans worse off materially; it destroyed culture and society of which the indigenous economy was and inextricable part. It destroyed materially poor but unusually integrated ways of life, wherein economic and social processes were mutually dependent and reinforcing.* This is something on a different plane from simple material betterment or worsening. *The destructive colonial impact consisted in forcing socio-economic change which was not meaningful to Africans in terms of their traditional societies*” (p. 374ff, emphasis added). In concluding this subsection, cannot help drawing attention to the following Dalton’s rendition:

We should not be overly eager to create in Africa an uncontrolled market idyll the blessing of which we so insistently deny ourselves. To Africans, the welfare state and policies of strong central control mean techniques for rapid economic development and political unification, which, at the same time, express social responsibility in accord with traditional usages (p. 378).

Hoselitz (1960) has attributed to Frederick List a similar perspective that “growth can occur only in societies in which there is internal freedom, i.e., freedom of political organization and freedom of the individual [since] ‘it is vain that individuals are industrious, saving, intelligent, and inventive; free institutions are still needful for the proper application of the qualities, [as] history teaches, in fact, that individuals draw the greatest part of their productive power from social conditions and the institutions of society’” (pp. 193-238).

2.4. Overvaluing Foreign Knowledge and Undervaluing and Devaluing Local Knowledge

Another social obstacle to technological progress of African countries is the undervaluing and devaluing of local knowledge and overvaluing of foreign knowledge. In the information and communication technology field, local area networks are essential, respected, and even revered. It does not make sense why human local networks about the same things in traditional societies are not valued the same way, in fact they are undervalued and devalued. Brush & Stabinsky (1996) make a convincing argument for the role of intellectual property rights in determining the value of local knowledge – a role that does not separate use rights from ownership rights. Using a sociological lens, Daniel Lee Kleinman (2005) may be correct is asserting that “science is political” while “technology is social” not only in the sense that the former mobilizes knowledge and the latter applies knowledge, but also that “technoscience” has facilitated colonialism and unequal resource distribution in developing countries as well as gender-biased stratification and meritocracy in science and engineering. But “development is freedom” (Sen, 1999), not bondage.

As mentioned above, when private property rights override private use rights, it is easy to see how traditional economies are understood as not having valuable local knowledge. The problem is that social values drive knowledge, and knowledge is fundamental to technological progress. Das & Kolack (2008) illustrate how values lead and sustain technological progress with study cases of pygmy, Eskimo, African, Indian, US, and Israeli economies. In all six cases the social origins and “cultural ramifications” of technological change are obvious. Moreover, such results are not really new since both in E.F. Schumacher’s *Small is Beautiful* (1989[1973]) and Wilhelm Ropke’s *A Humane Economy* (1960) society

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is the canvas on which the economy is painted (cf. Amavilah, 2009b). This perspective is consistent with Richard S. Westfall's (1977) description of the mechanisms and mechanics leading to the "organization of the scientific enterprise" (Chapter 5). The latter has historical and sociological implications for "the construction of modern science" – the title of the book.

2.5. Ignoring Art as an Expression of Technological Knowledge

Art is the skill resulting from formal knowledge, practice, or both. There is no art without skill, meaning there is no art without science, technology, and engineering behind it. Art is applied science [and engineering]; it illustrates scientific principles.²⁰ The denial of the scientific basis of art has disadvantaged African countries. To consume art, one has to produce art. To produce art one has to have the knowledge to do so.²¹ Also since knowledge is wealth, creating wealth is art, an idea common to Petty and others, according to Johnson (1965). From it, it is clear that the "Commonwealth" of a nation (W) is the sum of natural wealth (W_n) and artificial wealth (W_a), i.e.,

$$W = W_n + W_a, \quad (4)$$

where W_n is nature-given wealth such as natural resources and W_a is human-made wealth (cf. Amavilah, 2005). So, if we assume that W_a is built by adding value to W_n , then over time W becomes

$$W(t) = W_n(t)e^{-rt} + W_a(t)e^{at}. \quad (5)$$

Eq. (5) suggests that W_n follows a logistic function while W_a is exponential (potentially does not have a limit). Now, if we let $W_a(t) = \beta W_n(t)$, $0 < \beta < 1$, then

$$W(t) = W_n(t)e^{-rt} + \beta W_n(t)e^{at} = [(1 + \beta)W_n(t)]e^{(a-r)t}. \quad (6)$$

(1)

For $r > a$, W can only grow slowly as it depends largely on W_n . If $r < a$, W_a is growing faster than W_n , and both W_n and W_a are declining if $r = a$. Essentially, creating wealth is an art based on knowledge, and the net rate of wealth creation is $r - a$ (cf. Amavilah, 2005).

2.6. Too Much Natural Resource Idleness

Resource idleness is also the social obstacle which has plagued many African countries for many years. Re-interpreting Lewis (1965), Amavilah (2014a) points out that African leaders frequently overstress their countries' natural wealth. However, historically natural resource-poor economies have done better than natural resource-rich economies, suggesting clearly that resources *in-situ* are essentially not resources. Hence, Fahm (1964) is not off the mark in his contention that "despite the fervent political nationalism found in many of the African states, Africa has not found a means to achieve economic nationalism" (p. 369). Indeed, as Johnson (1965) illustrates with examples of Britain during the pre-Smith era, idle resources do not lead to wealth unless put to productivity use. Idle resources are "a sign of indolence and lassitude [for] 'it is not the vastness of territory, nor the multitude of men, but their address and industry which improve a nation'" (p. 282).²² The cost of resource idleness is the income loss of unemployment and the loss of wealth. *Resources are necessary for Africa to rise; resource are not sufficient for Africa to rise as well as run.*

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2.7. Too Little Acknowledgment of Scarcity

The obstacle of resource idleness is a failure, neglect, or refusal to acknowledge scarcity as a constraint and opportunity. Both Lewis (1965) and Johnson (1965) reveal that the gifts of nature (or is it Nature?), while certainly many, are still finite. National greatness comes from such gifts in combination with industry; it is industrious factors of production which create wealth, not money and the existence of natural resources. In other words, where factors of production are plentiful, as land is in most African countries, rent should be low, but if land is combined with industry, great things can happen, and great things did happen in other parts of the world. Thus, in justifying “The Will to Economize,” Lewis argues that

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.* [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, emphasis and [...] added).

Here, too, Amavilah (2014a) has interpreted Lewis as meaning that scarcity is good for economic efforts. Hence, “... *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*” (Lewis, 1965:28, italics added). Lewis is well aware that scarcity is not (should not be) a permanent curse, because “... 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). Thus, 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 make more effort than some with inferior resources; while some other people (countries) with inferior resources make more effort than some others with superior resources” (ib.) In the end 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). The neglect is an obstacle because we now know from Robert Lucas (1993) that the Asian miracle, for example, was in reality a man-made miracle (cf. Amavilah, 2014a; 2014b).

2.8. Overstressing the Benefit of Luxury and Excessive Consumption

Under conditions of poverty and inequality, luxury, or the unproductive time and effort expended to acquire it, is one of the obstacles to greater production, and probably one of the reasons Alfred Marshall “had propounded the view that the

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very rich and the very poor were the ignoble elements of society – and both should be eliminated through the redistribution of wealth” (Pugh & Garrett, 2000:18). Luxury and extravaganza are “cancerous social diseases” (Johnson, 1965:290), and “excessive consumption was considered as the symptom of economic decay, [it is] an insatiable demand for exotic goods: luxury bred vanity, and vanity required foreign goods” (Johnson, 1965:291). Veblen’s (1899) conspicuous consumption theory reflects that belief (cf. Bagwell & Bernheim, 1996; James, 1987; Page, 1992). African governments, especially during the so-called lost decades (1970s-1980s), have indulged in outlandish consumption, masqueraded as public investment (cf. Amavilah, 2014a; Lewis, 1965). Poverty and inequality of income and wealth magnify the negative effects of luxury and excessive consumption on knowledge and knowledge growth of African countries.

2.9 Factor Overcompensation?

With all the poverty and income and wealth inequality in African countries, the idea that factors of production are overcompensated is probably one of the hardest for many in those countries to entertain. However, as Peter T. Bauer (2013) has argued factor overpayment in West Africa has been due to imperfect competition, especially monopoly and oligopoly. Chen (2010) offers alternative evidence with the study case of teachers in developing countries, which finds teachers’ characteristics (age, education, experience, gender, etc.) and school levels (primary, secondary, and so on) to contribute significantly to teacher overpayment. The results are reasonable, because in most African countries teachers belong to unions and those unions are affiliated with dominant, often ruling, political parties. Hence, teachers’ actual wage (salary) rates are higher than the equilibrium wage rate because they include a union membership premium. This perspective agrees with the classic study of *Labor in Developing Economies* in which Walter Galenson (1963) associates wage differentials with trade union power, market structure, and the conventional forces of demand and supply. Political power enhances union collective bargaining power. This is the classic case of the so-called “bilateral monopoly” in that unionized workers act as a labor monopoly while the tertiary sector acts like a labor monopsony.

Cavalcanti, and dos Santos (undated), and Mengistae (1998) examine the tertiary sector and reveal that government employees are paid a lot more than the opportunity cost of the skills they have – they collect huge economic rents. For example, in real terms, including benefits, a Permanent Secretary (a non-cabinet position) with only a bachelor’s degree earns more than a medical doctor working for a government-owned hospital in the same country. In real purchasing power terms, senior ministers in some developing countries earn more than their counterparts in developed countries – several times more than the average value of the marginal product of labor in those countries. The ‘demonstration effect’ through consumption goods, puts upward pressure on the prices of other goods and services. As wage rates increase, the quantity demanded of labor decreases, and in terms of performance, the difference is not made up by productivity improvement, which is constrained by capital and technology imports. Unemployment increases motivate idle slum dwelling, emigration of unskilled and semi-skilled workers to other countries, or both. Stated in the demand-supply framework, the demonstration effect tends to increase wages and to reduce employment (a movement leftward along the demand curve). With high unemployment some workers quit the domestic labor market, and the labor supply curve shifts leftward. Both the movement along the demand curve and the shift of the supply curve put upward pressure on wages.²³

In developing countries overcompensating public sector workers is a learned (inherited) aftereffect of colonialism and before. David R. Roediger (1991) has

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explained the effect of race on wages in the U.S. South, and his study is relevant to other places that experience all kinds of wage discrimination on the basis of race. Abott Emerson Smith (1965) wrote eloquently about the difference between black slave and white servitude and convict labor in America. In both cases colonial officers were overpaid, and it is not surprising that those who came to replace them have done the same. However, research elsewhere shows public sector workers being overpaid in industrialized countries as well. For the USA, Allegretto & Keefe (2010) indicate that, including benefits, the private sector pays more than public sector workers with high school and some college education. Government tends to pay higher workers with associate and advanced degrees more than private firms do. Does this mean government values education more than the private sector? Are the less educated truly more productivity in the private sector than in the public sector? These matters are important for future investigations. What is clear from them all now is that African countries appear to have inherited these same contradictions, but for poor countries the cost of wrong policy are greater than they are for rich countries.

3. Concluding Remarks

Research on the economic growth and technological change of African countries has advance greatly from the problem descriptions of the 1930-1950s, and the political arguments of the 1960-1980s.²⁴ Although there have been significant variations across countries, in recent years Africa in general has risen at a faster pace than it has run forward, such that poverty and inequality of both income and wealth are still widespread. In their search to understand the deep causes of slow growth and change in African countries, economists have tended to overstress the importance of quantifiable economic factors. Even more troubling is that the quantification has neglected the economic history of Africa so much that when historical events like the Atlantic Slave Trade, colonialism, or both are accounted for, the overall performance picture itself remains not quite complete as the descriptions are essentially pseudo-dynamic.

This comment looks away from the conventional economic literature to claim that the deep causes of troubles can all be summarized as the de-institutionalization of traditional economies, making them adopt new institutions which put them at a huge disadvantage. Some of the elements of the de-institutionalization process are not easily quantifiable either because they are not directly observable, or simply because no data exists. The loss of traditional religions and religious leadership, for example, became a huge obstacle to growth and change. Religion is critical to social morality and to the understanding of the governance of economic problems like poverty and inequality. To understand the social foundation of technology from the perspective of economic history we need to study how historians view economic growth. History reveals that the weakening and disappearance of religion undermined social norms and values upon which economic behavior, organization, and control depend. We know that because economies that retained and were able to improve their traditional institutions have done well relative to their counterparts who lost all or most of their traditional institutions and had to start from scratch.

It is easy to fall victim of the belief that traditional economies were unsophisticated and dull. History says otherwise; for example, “archaic economies” were clearly innovative in recognizing very early on that economies could be run on the basis of money with far less intrinsic value than gold/silver, and without decree. The failure to credit primitive economies for this technological invention is a form of the de-institutionalization which interrupted the growth and change of traditional economies. Moreover, modern economic theory is not better-off either,

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because the failure to acknowledge this sophisticated theory of value, explains why some still today do not understand while electronic mobile banking is spreading fastest in the traditionally cattle raising regions of Africa like Kenya. If it built into its fabric the special features of traditional economies, modern economic theory would have been richer and better equipped than it is now to deal with a host of problems facing developing countries. This is important because social values drive knowledge, and knowledge is fundamental to technological progress.

Another obstacles has been the resource idleness which has plagued many African countries for many years. The cost of resource idleness is the loss of income and wealth, which implies that *resources are necessary for Africa to rise; resource are not sufficient for Africa to rise and run*. Moreover, closely allied with resource idleness is the neglect and/or refusal to acknowledge and confront scarcity. A successful response to scarcity depends neither on resources nor on innate intelligence. It depends on leadership, and relative to Asian countries, African countries have neglected investing in essential leadership. This is an obstacle because we now know that there are no such things as growth miracles – growth miracles observed in East Asian countries are all man-made miracles.

Other obstacles we outline in this comment include that African governments, especially during the so-called lost decades (1970s-1980s), have indulged in outlandish consumption masqueraded as domestic public investment, while “begging” for foreign aid at the same time. The demonstration effect of excessive consumption was inflated factor prices. But as consumption increased, given rising factor prices, investment fell. Hence, economies came to rely on the public sector. In developing countries overcompensation of public sector workers is a learned (inherited) aftereffect of colonialism and before.

How does one demonstrate that the de-institutionalization evidenced by the few obstacles outlined here did actually disrupt the progress of African countries? One can use a metaphor from foundation engineering. An economy is structure. As a structure it consists of the the substructure and superstructure. The two are held together by some kind of infrastructure. A foundation connects the economic structure to society. The social obstacles outlined here destroyed (weakened) the foundation and the economic structure collapsed (wobbled), leaving society the sufferer from the heavy load. Consequently, attempts to rebuild the economic structure either without a foundation, or with a new foundation foreign to society have had understandably limited success.

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Notes

- ²Here is an admirable blurb on the back cover of Shinnie about “the savage myth” that reads like this: “During the period of rampant European colonialism that began in the 16th century, the commonly held and self-justifying Western view of Africa was that it was a barbaric land, devoid of culture and civilization. Gradually, however, in the light of increasing historical knowledge, this myth is being dispelled.”
- ³A take from Chinua Achebe’s hugely successful novel *Things Fall Apart* (1958).
- ⁴Even though it is common practice, personally I think that since God (Nature) is a constant, it is analytically futile to explain a variable (growth) with a constant.
- ⁵I mean that Africa is the most Christianized and Islamized region in the world.
- ⁶It is interesting to note that socialism and communism grew out of the German utopian New Christianity as was espoused by Wilhelm Weitling in his book (*Real Man and Ideal Man*), written for the League of the Just. The book outlined “the guiding principles of a ‘property coownership system’” (Ching-yao Ying, 1991, p. 1). Although *The Communist Manifesto* called for the “workers of the world to unite,” according to Marx and Engels’s historical materialism, non-violent class struggles guaranteed automatic evolution towards socialism and Communism. Weitling was among the first to call for the violent overthrow of capitalism and for “denying food to the idle” (Ying, 1991, p. 2).
- ⁷W.A. Lewis’s Bibliographical Note (1965, pp. 55-56) is illuminating.
- ⁸See [Retrieved from].
- ⁹See [Retrieved from]. and [Retrieved from].
- ¹⁰In the USA the economies of, say, Disneyland/Disney Sea World and the City of Las Vegas (NV) are based on the production and distribution of “magic” which clearly satisfies consumer demand irrespective of religious underpinnings.
- ¹¹I strongly recommended Lewis’s (1965) Bibliographical Note (pp. 162-163).
- ¹²Note that (1)-(3) are not math relations; instead, they represent the hierarchical structure of a monetary system. In the USA, for example, the foundation is money (M), officially measured as M1, M2, and so on. The middle are banks, thrift institutions, and money mutual funds(FIP). The top is the Federal Reserve System (FIG). Our definition of FIG is loose here; we know that even though the Fed is governmental in its functions, its regional member banks are private. So, the Fed is really quasi-public or quasi-private depending on one’s preference.
- ¹³I am using the word “need” purposely in contrast to either “demand” or “quantity demanded”.
- ¹⁴Surely the Eurozone would not have survived a sudden introduction of the Euro currency that would have devalued to zero national currencies, and this is why national-to-Euro currency exchange rates were worked out first, sufficient time allowed for adjustment, and even permitted the right of refusal to join the Eurozone, and the UK and Norway are still exercising their right to their national currencies.
- ¹⁵There are very good references to Alfred Marshal on money in this edition, but I did not pursue them.
- ¹⁶From outside the primitive economy a bride is bought; from inside the bride price is reciprocity, defined by Polanyi and Harskovits as “mutual assistance and cooperation”. Foreign aid from the industrialized countries to developing countries would remain partially effective for overlooking reciprocity among equals. Ashraf, Bau, Nunn, & Voena’s, et al. (2014) study is very strong in its mathematical and econometric emphasis, but it does not seem to be aware of the work by economic anthropologists on this subject.
- ¹⁷It is indeed a normative stance to tell people who they should be rather than ask and accept who they say they are.
- ¹⁸This duality between modernity and tradition Hoselitz (1952) argued is one of the noneconomic obstacles to economic development of traditional economies.
- ¹⁹Unlike in Karl Marx’s historical materialism where capitalism grows out of feudalism, JR Hicks insists that exchange and markets rose long before capitalism.
- ²⁰It is good that many universities still consider mathematics, as opposed to mathematical sciences, an art.
- ²¹Hence, T. Haavelmo (1960) is correct in stressing that producing knowledge is simultaneously consuming knowledge (cf. Amavilah, 2014c).
- ²²The single quotation marks refer to Johnson citing John Evelyn; I have not read Evelyn.
- ²³William Easterly & Yaw Nyarko (2008) are correct that the growth dampening effect (cost) of emigration on the home country is potentially higher for unskilled and semi-skilled workers than it is for high skilled (human capitalized) workers. In this sense the brain drain argument is a farce.
- ²⁴I have in mind, generally speaking, the independence politics of the late 1950s-1960s; neo-colonial and post-colonial politics of 1960s-1970s; and the World Bank/IMF politics of structural reforms in late 1980s-mid-1990s.

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