ECONOMIC GROWTH AND INVESTMENT NEXUS IN ETHIOPIA

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Abstract

This paper is about growth and its relationship to investment in Ethiopia. It argues that Ethiopia does not only need to grow but it needs to do so rapidly if it hope to match the per capita income levels of middle and high income countries. From 1981 to 2000 economic growth in Ethiopia on average was 0.25 percent. The country has much unskilled labor and little capital in the economic sense. If output is to grow the country would have to import more capital.

The thrust of the paper is more growth is preferred to less growth and more rapid growth to less rapid growth. Implicitly, factors that inhibit growth (namely, political instability, corruption) should be minimized and there should be policies in place to deal with acts of nature—drought and famine, which sap energy needed for work. On the other hand, factors promote growth (namely, borrowing of technology from abroad, market competition) should be encouraged. A simple growth model was used to establish the nexus of investment and growth. It shows that if investment to output rises by ten, growth would rise at 0.30. In Ethiopia, exports will be shown to exert a strong effect on growth and capital inflows no effect. Market competition appears quite vibrant in Addis and more of it should be encouraged.

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1. INTRODUCTION

In choosing a growth strategy, the people and government of Ethiopia must bear in mind what is likely to work and what does not. This is particularly important to developing countries that are forced to contend with realities about their ability to finance investment through saving, and the role that human and physical capital accumulation play in the whole growth process.

Growth is seen as the solution to the country's poor performance among countries of the world. But growth is not enough. What is needed is sustained rapid (high rates of growth in the order of 8-10 percent) for Ethiopia to achieve income levels comparable to those in the West or the newly industrialized countries, NICs, of Asia. The notion that capital is scare relative to labor implies that Ethiopia should have a high return to capital and therefore a high rate of growth. However, for the period 1980-1990 (the Marxist government period) and 1990-1998 (transitional government period) per capita output was negative. This means the GOE must take some action to insure positive growth rates in the new millennium. These are vital questions begging for practical answers for Ethiopia as it struggles to enter into a new phase following a long period in the political and economic wilderness.

Old growth theories that stress external financing and total factor productivity should not be dismissed out of hand because they may respond better to Ethiopia's present economic condition than more sophisticated theories of growth. The role of foreign aid in growth based on the Harrod-Domar model may shed insight into the problem of the gap between saving and investment. The tendency to focus on inputs such as capital and labor must recognize their limitations—adding more inputs to the production mix will increase output at diminishing rates. Yet capital is a constraint in production.

The emphasis on industrialization and even import replacement production makes sense. Ethiopia is not immune to this logical progression and so the GOE talks about agriculture-led industrialization. The transformation of the economy—economic reform—must also recognize the role of incentives in growth. The transformation might be driven in part by the movement to free markets undertaken by the GOE—including privatization—and reflects an understanding that market players bring resources to the market in response to incentives, i.e., prices (including interests) and opportunities for profits.

Unpacking technology from developed countries has been an important way that some developed countries made the critical journey from underdeveloped to

developed. There is no need for an underdeveloped country to travel the same path and timeframe of developed countries. It is more important to legally appropriate technology and transform it to meet local needs, taking advantage of the structure of wages, employment, capital and interest rates.

Growth retardants are economic and political constraints. Taxes, tariffs, quotas, subsidies and other market barriers lead to misallocation of resources and inefficiencies and affect growth negatively. Political instability through its effects on investment tends to have a negative impact on economic growth. The protracted conflict between the revolutionary government of Ethiopia during the 1980s and the Tigrayian People's Liberation Front (TPLF) and the Eritrean People's Liberation Front (EPLF) certainly diverted resources from other uses. The conflict between Eritrea and Ethiopia over Badme, no matter how just from Ethiopia's point of view, means that resources that might be used to create more physical capital and raise long-term growth rates were being used up in fighting the war. Corruption has a deleterious effect on growth because it siphons off resources from productive use to law enforcement.

Concerning the rest of the paper, Section II gives a descriptive analysis of growth problems facing the country. Section III examines the link between investment and growth and compares the expected outcomes of the Harrod-Domar Model and the Solow-Swan Model, in terms of Ethiopian data sets. Section IV discusses the relationship between growth and investment. Section V deals with growth inhibitors such as political stability, corruption and drought and famine are examined. Section VI argues among other things that growth can be achieved from an unpacking of technology from the west. Section VII offers a summary and conclusion of the paper.

2. DESCRIPTIVE ANALYSIS

Ethiopia is among the poorest countries in the world. In terms of per capita income the country ranks 210.[2] When purchasing power parity (PPP) is used to measure per capita income, Ethiopia's ranking among countries improves marginally to 208. Ethiopia is an agrarian economy. Agrarian economies are characterized by labor intensity of production and low productivity, among other things. There are over sixty million people in Ethiopia, most of whom—about 85 percent of the population—eke out a living in the agriculture sector.[3] This sector accounts for slightly more than 50

[2]From the World Development Report 1999/2000, p. 274. Rankings are with the range of 1 to 210. Ranked 1, 2, and 3 are Liechtenstein, Luxembourg, and the US, respectively.
[3]Data obtained from Ethiopia Public Expenditure Review (two vols), vol. 1 Main Report, Report No. 16593-ET (November 26, 1997), pp. 21 and 22.

percent of GDP and about 90 percent of exports earnings come from coffee. More than fifty percent of the population lives below the poverty level which is a measure of the capacity of people to secure their minimum needs. The Vali Jamal estimated a minimum monthly income required to secure 2,330 calories per person per day in 1982 in a family size of 4.5 people was 78.1 birr. The poverty line in this survey was estimated at birr 133.4 per month. Ten years later, the same family (a family of five) has calorie requirements birr 244.2 or birr 209.9.[4]

What is the cause of poverty of this magnitude? Part of the answer is low productivity. Low productivity is the result of many factors in Ethiopia. It includes low real wages, poor heath, poor energy levels, scarcity of capital (such as machinery and financial capital), inadequate accessibility to education and low levels of efficiency nationwide because of management practices such as side payments by business and processing delays by public officials, and economic distortions such as taxes and regulations. The variables are interrelated. Low wages mean that people's health is more susceptible to the whims of the environment and to disease, low quality food, and poor medical care. Low wages also mean that people save little because all their income must be spent on necessities. Low saving results in low investment which then causes low productivity. Low productivity means low saving, investment, and low productivity. Investment is an increase in the nation's capital stock. With more capital, workers produce more up to a point. High levels of poverty also mean that people do not have the income with which to satisfy basic human needs. Low income indicates that low caloric intake and low energy brought to the production process. Energy comes from the food we eat and it is required for work and play. Both work and play are undermined when there is insufficient energy from food. If people are made sick by environmental conditions such as high levels of pollution and poor sanitation, their productivity will suffer.

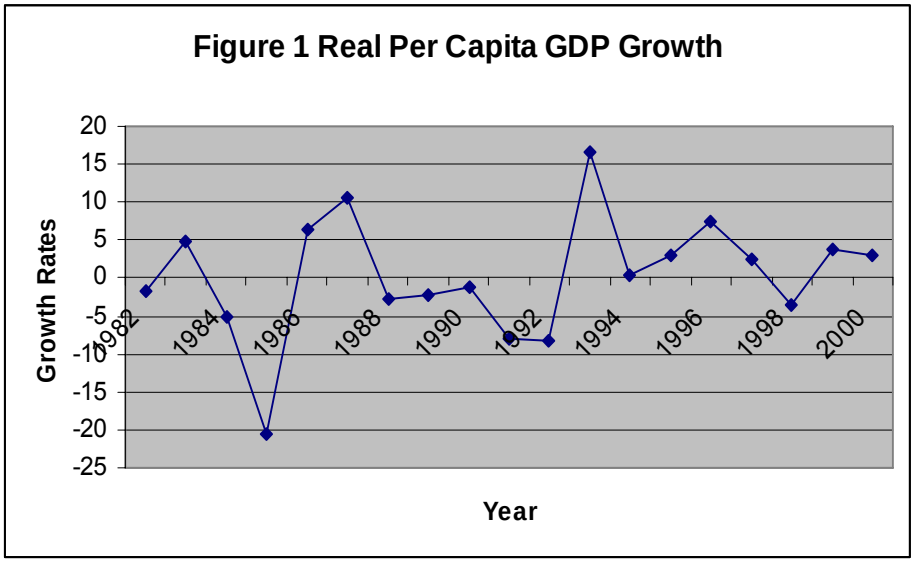
In 1991, the Transitional Government of Ethiopia inherited a rundown education infrastructure and set about to repair it. It understood that education increases the stock of human capital that is an input in the production function for the country. However, like other inputs it is subject to the law of diminishing returns. William Easterly writes that "All of Africa had very rapid accumulation of human capital because of massive expansion of primary and secondary enrollment. The absence of a growth response to this educational miracle prompted Pritchett (1996) to ask "Where has all the education gone?"[5] GOE's commitment to improving education in Ethiopia should take this into account. Education also has inherent value because it will make the people better citizens and improve their understanding of the

[4]Report # 11306-ET (June 28, 1993), p. 15
[5]This article was downloaded from the www.worldbank.org/html/pdrmg/grtweb/note1.html

importance of better sanitation, health and nutrition. One caveat, Ethiopia ought not to deposit all its hope for growth on education; it might be disappointed.

Performance of per capita GDP

Sub-Sahara African countries are poor by any objective economic measure. Per capita income in the region is approximately $480 compared with about $25,510 for rich countries, which is higher than in sub-Saharan Africa by a factor of 53, in 1998. Total world output is $28,862 billion but sub-Saharan Africa accounts for only $304.2 billion or approximately 1.1 percent of the total world output. Ethiopia's contribution to total world output if $6.1 billion and its per capita GNP is about $100. Between 1981 and 2000 real per capita GDP in Ethiopia was in steep decline. The movement of Ethiopia's real per capita GDP is illustrated in Figure 1. Starting in 1984 per capita GDP declined steeply until 1985 and subsequently recovered to about 16 percent in 1986 and 1987. It remained positive until 2000, except for negative growth of 3.6 percent in 1998. Some of this performance in real per capita GDP in Ethiopia might be explained by the intensification of the conflict between the revolutionary government and the—Derq—and Tigray People's Liberation Front (TPLF) and the Eritrea People's Liberation Front (EPLF) that culminated in their victory in 1991.



The year after the Derg was removed from office real per capita GDP in Ethiopia made an about turn and started to rise again. Figure 1 demonstrates that apart from

a 20.6 percent drop in growth in 1985 the trend in the performance of per capita GDP has been up, i.e., the average rate of growth was 0.25. In fact, there were 10 years of positive growth and 9 years of negative growth from 1991 to 2000. The GOE seems committed to putting in place policies intended to stimulate economic growth: more spending on education, agriculture-led industrialization, maintenance and expansion of the transport infrastructure, and promotion of better health and sanitation. The problem for the GOE is that it starts from a very low base of literacy, income, physical capital, health and sanitation, and worker skill. However, the incentive provided by the GOE for increasing real per capita GDP so quickly after it came into power cannot be overlooked. The long term potential for both human and physical capital accumulation will be greatly enhanced.

3. INVESTMENT LINK TO GROWTH

There is some controversy over the relationship between investment and growth. Even in Ethiopia the relationship seems weak. The relationship between investment and real output can be thought of in different ways. For example, De Long and Summers (1991, 1992), Collier and Gunning (1997), and Barro and Lee (1994) find that the investment/GDP ratio exerts a strong influence on income growth.[6] On the other hand, some economists argue that massive investments in infrastructure and human capital have not produced faster growth in SSA [see Easterly (1998) and Prichett (1996)]. There is also the question of causality between investment and growth rates or growth rates and investment. Lipsey and Kravis (1987) and Blomstrom (1996) show that growth induces subsequent capital formation more than capital formation inducing subsequent growth.

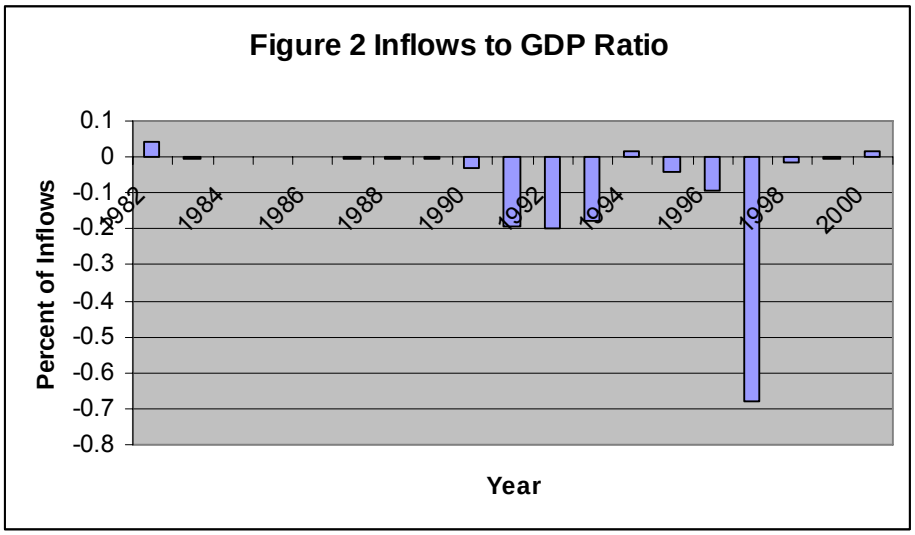
The Harrod-Domar growth model can be used to predict the role of foreign inflows on growth. The model assumes that saving depends on income via the marginal (average) propensity to save and that investment is a constant ratio of capital to income—i.e., the incremental-capital-output-ratio (ICOR). Since ex-post investment equals saving, growth can be expressed as the ratio of the saving rate divided by the ICOR, φ. That is, saving $S=sY$ and $K=\varphi Y$, where K is capital and Y is output (income). The investment I (dK) must equal φdY, so it follows that $sY=\varphi dY$ and growth $g_Y=s/\varphi$, or growth is equal to the rate of investment. Ethiopia does not have a shortage of unskilled labor. The positive difference between saving and investment (saving gap) equals the current account deficit. Foreign aid in this amount would close the saving gap. To determine the gap between saving and investment in Ethiopia assume $\varphi=3.5$. If Ethiopia desires an ambitious growth rate of 10 percent (about equal to past growth

[6]Blomstrom et. al. (1996) finds no strong relationship between fixed investment and growth.

rates for Asian MICs), then the required level of investment is 35 percent of output. So foreign credit or aid of 35 percent allocated to investment would cause output to grow at 10 percent. Harrod-Domar model predicts a positive relationship between inflows (and foreign aid) and investment. However, a close look at the model reveals inherent inconsistencies with respect to foreign credit or aid. First, if aid is available on a permanent basis, the country might increase it by reducing its own saving rate. That is, the country would get more foreign aid by saving less. Second, if aid is guaranteed it will be used to smooth out consumption rather than for investment in accordance with the permanent income hypothesis.

World Bank data on Ethiopia for real GDP growth rate and the ratio of investment to read GDP from 1981 to 2000 was used to determine if there was any relationship between the two variables. The analysis suggests a positive relationship between growth in GDP and investment in Ethiopia. Investment generally also means investment in quality of life issues—i.e., education and health. Education will provide the skill needed for production and health programs, and the energy needed for play and work. This paper does not consider the effects of education and health on economic growth in Ethiopia. It is about physical capital growth and its financing on economic growth.

The relationship between investment and growth suggests the GOE should promote policies that foster the benefits of this connection. The GOE's options are forced saving through taxation and inflation, or the inflow of foreign capital by running deficits in the current account. Analysis from World Bank data does not show a strong connection between inflows and investment or inflows can growth. It appears from the data that Ethiopia financed investment and growth primarily from exports and to a modest extent from capital inflows. The pattern of inflows in Ethiopia is shown in Figure 2.



In Figure 2, the data denote inflows to GDP in current US dollars. Negative values are inflows or trade deficits and positive values are outflows or trade surpluses. The highest inflows occurred in 1997. These deficits meant that the rest of the world was extending credit to Ethiopia. If these inflows were used to import capital goods, growth was likely to occur. Ethiopia's imported capital, i.e., investment, will cause capital per unit of labor (or population) to rise as well, and productivity to increase.

In a country starved for physical capital addition to the stock of capital comes from imported capital. The World Bank data base on Africa for 2000 does not contain data on capital imports. This does not mean there are no capital imports. It could mean that capital imports are a negligible part of total imports. This is not a good trend because Ethiopia has not yet attained a level of development that would justify allocating resources to R&D. In fact, it does not make any sense for the country to attempt to reinvent the wheel. GOE would be wiser to continue to encourage capital importation through various schemes.

A Simple Model

I modeled the ideas described above in a simple mathematical representation. To proceed assume the incremental-capital output ratio is constant and local saving rates are low, this implies that the change in output can be expressed as

$$\Delta Q=(1/\theta)I \qquad (1)$$

where ΔQ denotes the change in real output, θ is the incremental capital-output ratio, and I is investment. Equation (1) states that the change in output is proportional to changes in capital (i.e. investment). Easterly (1998) argues that Equation (1) tends to overstate the effects of investment on real GDP. Nevertheless, real output and investment appear to be positively correlated. Since saving is assumed to be too low to support local investment requirements, capital will need to be imported. Imported capital can be financed through exports (Ethiopian coffee, leather, etc.) and capital inflows (borrowing from the rest of the world). Thus, investment is related to imports in the following way

$$I = bM^K \qquad (2)$$

If coefficient b is positive but less than one, then changes in imports will lead to changes in investment by the b. M^K is imports of capital. Thus, from the balance of payment imports can be financed from exports and capital flows

$$M^k = cX + dF \qquad (3)$$

where X is exports and F denotes capital inflows.
Substituting, rearranging and dividing through by Q, the growth rate of output becomes

$$g_Q = (bc/\theta)(X/Q) + (bd/\theta)(F/Q) \qquad (4)$$

The form of this equation which can be estimated by OLS is

$$g_Q = \alpha + f(X/Q) + h(F/Q) + u \qquad (5)$$

where α is a constant, f=(bc/θ), h= (bd/θ) and u a stochastic error term. Equation (5) suggests that increases in exports (X) and/or inflows (F) relative to output (Q) would increase the growth rate (g_Q).

4. GROWTH TO INVESTMENT

Growth models, Harrod-Domar and Solow-Swan (1956) presume that investment causes growth. However, it is possible that growth causes investment. M. Blomstrom, Richard E. Lipsey, and M. Zejan (1996) found that growth causes investment rather than the other way around. The source of increase in output can be technology. The level of technology or R&D in Ethiopia is small but this is not insurmountable over time. Growth can be impacted negatively by growth inhibitor—

political instability, corruption, drought and famine; and positively by growth promoters such as the borrowing of technology from abroad and promotion of a climate of competition domestically.

Growth Inhibitors

Political instability

It can be argued that the absence of political stability reduces economic growth because of its negative effect on investment (see for example Barro, 1991; Barro and Lee, 1994). Barro, and Barro and Lee provide empirical support for this argument, which has intuitive appeal and is part of the conventional wisdom in economics. The disincentive effect of the absence of political stability might be inefficient allocation of resources from civilian use. Or political instability might be the catalyst for capital flight in the face of adverse economic conditions that undermine the profitability of investment.

Political instability can also lead to speculative behavior that can discourage investment: speculation about the exchange rate, safety of foreign direct investment or hoarding in anticipation of price inflation. In the main, the relationship between investment and economic growth is positive. There are some who argue that this relationship is not quite as robust as might be predicted using a Harrod-Domar type analysis. For example, Angola's average annual percent growth was 3.7 for 1980-1990, while for all of sub-Saharan Africa growth was 1.8 percent. The recent Ethiopia-Eritrea conflict does not appear to have had any noticeable effect on growth rates of real output in Ethiopia. Ethiopia's real output growth rate was 4.9 percent for the period 1990-1998, greater than the 1.1 percent growth the country registered for the period 1980-1990, during the Mengistu regime. Easterly (1998) demonstrates that growth performance predicated by the Harrod-Domar growth model severely understates GDP growth in Zambia.

Corruption

The word corruption is emotive implying something negative and destructive of an economy's well being.[7] Its presence in the economy tends to elicit demands for legal

[7]The meaning of corruption here is bribery and delays are just a means of extracting more bribes. It is however, a catchall word for various kinds of illegal activities such as smuggling, and failure of public employees to perform the service for which they are paid. However, corruption might be in the eye of the beholder. In less developed countries in which an individual obtains resources for survival from a dyadic relationship with immediate family

action to eradicate it or at the very least to discourage its growth. Paradoxically, corruption depends on the existence of the very legal institution that makes corruption possible. Tanzi (1998) says that corruption is "the abuse of public power for private benefit." It is also defined "as misappropriation of government property or revenues made possible through government regulation" (Braguinsky, 1996). It can only exist if there are intramarginal returns or rents that acts of corruption attempt to extract, which would not be present in the economy without the monopoly or discretionary power of the government. It is sometimes maintained that corruption is inefficient because it increases the waiting time for the consumers of public goods in order to create more corruption. Corruption also deters investment and thereby lower economic growth (Mauro, 1995). Countries with active industrial policies may both promote corruption and investment. The cause of corruption can be traced to ethnic diversity. Ethnic diversity influences economic performance through its effects on, ceteris paribus, corruption. However, the effect of corruption on economic growth is difficult to ascertain. Some have argued that the effect is negative (Ades et al., 1997, Tulluck 1996). It has become the conventional wisdom that corruption undermines growth. The role of government in making corrupt practices possible cannot be overstated. The opportunity for corruption occurs when public officials are the gatekeepers of public goods and services. If you have to see a public official to obtain a passport, a driver's license, government housing, farmland, etc., the potential for illegal payments presents itself at that intersection. Government policies that create market distortions are the immediate cause of corruption, but government action to detect and punish corrupt practices can raise their costs and lower their occurrence. Before engaging in corrupt practices people will consider the benefit and the cost of their action, taking into account the probability of detection and punishment. Moreover, corruption may be thought of as occurring when someone through illegal payments obtains a scarce resource or avoids a cost, when illegal payments determine the allocation of a good or service that is left to the discretion of the public official, when the corrupt practice (such as bribes) provides fast service or inside information, and when the corrupt practice confers monopoly power on someone by preventing others to share in a benefit or imposes a cost on third parties.

In the case of scarce resources, there is an implicit zero-sum game. That is, the person who makes the illegal payment obtains benefits at the expense of someone else. Good examples are payments for import or export license, foreign exchange, mineral rights, and access to newly privatized firms. Getting ahead in a queue is

members, wider kin and community. Calling on this network of people for resources is perceived as necessary if not good practices of corruption in less developed countries. The end of corruption for less developed countries is expected to come from the rational-legal model of clean public administration that prevails in developed countries (see Theobald 1990, ch. 2).

another example. Bumping someone off a government-run airline flight by paying a bribe is yet another. Or the requirement to pay an airport fee for departing passengers be paid in hard currencies can result in a flustered passenger paying a bribe.

Corruption is a specific measure of illegal activities within the political system. The effect of corruption on investment is through its distortion of economic and financial policies, reduction in efficiency by promoting patronage instead of ability. It has the potential of creating political instability. Finally, corruption introduces efficiency into the economy.

Corruption free countries should performance better (have faster growth rates) than corruption rife countries at the extremes. The greater the incidence of corruption the lower the growth rate of real output is expected to be.

Drought and famine

Droughts are a recurring SSA feature, particularly in the Sahel region. Alone droughts need not be totally crippling and when good drought programs are in place, the potential effects of drought can be minimized. Not only nature but humans' actions have also contributed to and compounded the problems of droughts. In recent years and because of past and present practices on the environment, droughts have been extremely severe and have affected many nations. In fact, in 1968-74, 16 nations were hit by drought; 26 nations were affected in 1982-1984.[8] For the decade of the 80s, 30 countries were victims of drought. Botswana was hit by drought for six consecutive years, while Ethiopia had the same number of drought events; they came in 1980 and 1981, 1984 and 1985, and 1987 and 1988.[9] Yet, the effects of the droughts on Ethiopia far exceeded the effects on Botswana. Not to trivialize differences in income between the two countries and huge Botswana's foreign reserves in the Bank of Botswana, yet better administration in Botswana, more than higher income, explains the degree of severity of the drought in the two countries.

This brings us to the important point that drought need not turn into a famine. And famine areas need not become venues for hunger and malnutrition, and death. The prolonged absence of rain brings deprivation or famine. But focusing only on the availability of food fails to explain the presence of famine when food is abundant. Malnutrition can be chronic even when food is available. When food it absent, deprivation leads to starvation and death. Sometimes when food is absent, famine

[8]See Somerville, p. 17.
[9] African Development Report 1992, p. 242.

might not result in death because of what Dreze and Sen call entitlement, which means the right of ownership or command over a bundle of goods, including food.[10] The entitlement, however, depends in part on one's initial endowment of resources that can be converted into goods directly through production or indirectly in exchange for goods. For most people, their only resource is their labor that earns wages to buy goods and services. Or one might own a farm on which she transforms her labor into agricultural products, part of which she consumes and part of which she exchanges for other goods. The quality of this endowment will determine, among other things, her level of command of goods and services.

Drought reveals the degree to which rural people are poor because it exposes their entitlement over resources. In the rural economy, the drought signifies production losses, increased cattle mortality, and higher unemployment.[11] The non-rural community would feel the effects of these losses particularly if they are ignored and allowed to spill over into the rest of the economy.

Growth Promotion

Paul Krugman argues rather forcefully that the Soviet Union was less efficient than the U.S. in 1960 despite immense mobilization of millions of workers from farms to cities, forced addition in the millions of women into the labor force and millions of men into longer hours, massive programs of education, and above all plowing ever-growing proportion of the country's industrial output back into the construction of new factories.[12] This means it is not so much investment but technical progress that may in the end raise long term per capita output in Ethiopia. Investment accounts for about 20 percent of long-term growth in per capita income in the U.S. However, Robert Solow found that technological progress accounted for 80 percent of this growth.

The most serious problem facing Ethiopia is what to do to grow fast enough to improve living standards that can be approximated broadly real per capita GDP. Per capita income of $100 indicates a living standard that must be raised. Higher income per capita might lead to improvements in other areas: the environment, education, investment, sanitation, and health. Since the new GOE came to power in 1991, the change in per capita GDP since that year might be used to grade the performance of the government's effort to increase growth. The comparisons between real per capita GDP in Ethiopia and sub-Saharan Africa are shown in Table 1.

[10] See Dreze and Sen (1989), p. 9.
[11] See Dreze and Sen (1989), p. 152.
[12] Krugman, Paul. Pop Internationalism, pp. 172-174.

Table 1 Real per capita GDP in Ethiopia and SSA from 1984 to 1995

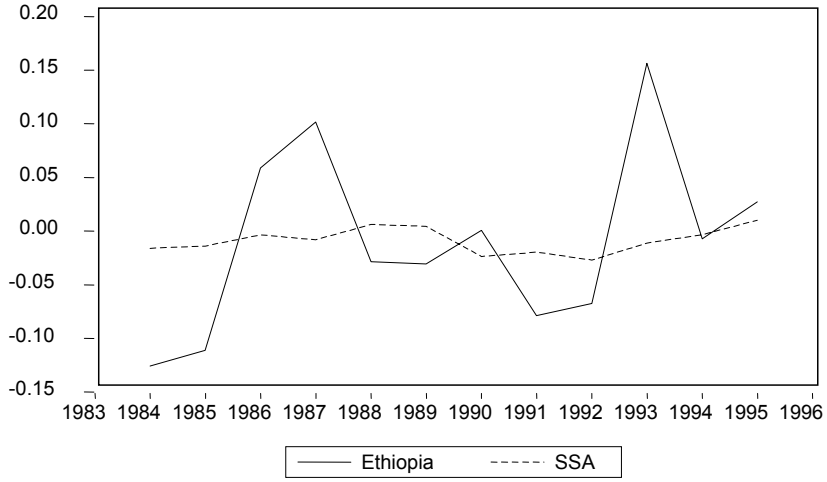
Year	Ethiopia	SSA
1984	-0.125754	-0.016293
1985	-0.111130	-0.014134
1986	0.058747	-0.003734
1987	0.101685	-0.008093
1988	-0.028587	0.006060
1989	-0.030765	0.004409
1990	0.000603	-0.023826
1991	-0.078890	-0.019725
1992	-0.067430	-0.027180
1993	0.156372	-0.011341
1994	-0.007105	-0.003384
1995	0.027293	0.010001
Average	-0.008747	-0.008937

Source: World Bank, African Development Indicator 1997.

Table 1 reveals that the averages for real per capita GDP of Ethiopia and SSA are almost identical at minus 0.8 percent. But Ethiopia performance spans the Marxist regime as well as the current GOE. The performance of growth in Ethiopia was very erratic for the period. The range of growth for Ethiopia is minus 29 percent (i.e. between -.13 and .16). In contrast, SSA had a low of -0.027 and a high of 0.01 or a range of growth for the period of 0.037. The differences in the growth performance for Ethiopia and SSA are depicted in Figure 3. The solid line represented the behavior of growth in Ethiopia and the broken line is SSA's. The SSA line is essentially flat for the period but Ethiopia's line shows large spikes in 1987 of 10 percent growth and in 1993 denoting about 16 percent growth.[13]

[13]This is computed from data in Table VI.1, using program C in appendix.

Figure 3: Growth performance of Ethiopia and SSA



Secondly, the government must decide upon a realistically attainable target rate of growth based on the Ethiopian historical growth experience. A rate of growth of twelve percent (as was registered in China during the 1980s) would be incompatible with the recent experience of the Ethiopia's nominal growth rate of about 4.9 percent from 1990-1998. However, the problem is more daunting for the country because real growth was actually negative. Since prices rose 7.9 percent for the period the real increase in gross domestic product was negative, -3.0 percent. The population growth rate is 2.6 and real output growth rate is -3.0 percent, so the change in per capita GDP for the period was -5.6 percent.

Thirdly, Ethiopia must have a target level of per capita income it wishes to attain at a time certain. Attempts to achieve US living standards will fail at currently differentials in per capita income between the two countries. If the US economy has a secular growth rate of approximately three percent (and per capita income $30,000) and Ethiopia about four percent (and per capita income $100), then assuming ceteris paribus Ethiopia would require about 570 years for their incomes to converge. That is, more than half a millennium and 28 generations of Ethiopians. No country can be expected to wait that long. But the problem does suggest the need for Ethiopia to grow (growth cannot be -3.0 percent long term) and much faster than the 5.6 percent it registered during the 1998-99 fiscal year. The problem for the country after it has determined where it wants to be is finding the best strategy to get there. It must

acknowledge the success of market economies in the West and the importance of incentives in the private and public sectors.
Ethiopia has the option of choosing to finance investment through foreign assistance, hoping that such investment will not be diverted to consumption. Or the government of Ethiopia may wish to use inputs better or more inputs to increase output. The government may also endeavor to enlist the private sector in the enterprise of growth recognizing that people respond to returns to capital and labor in allocating their resources among various alternatives. The continuation of an elected government in office depends on that government supplying public goods and services that the people want.

Finally, a persuasive case can be made for an active industrial policy that promotes economic growth because of externalities and learning by doing, and because of the higher returns to investment in high-value added sectors of the economy (Ades and Di Tella, 1997).

Japanese example

A country with scarce physical capital has to import it, and can use export earnings and capital inflow to pay for it. But the wisdom of producing goods already produced in the developed world seems a misuse of limited resources. The clever thing to do is to import them since they will be cheaper to buy than to make. Developing products that were already widely available in the developed countries have many drawbacks, not the least of which is the hit-and-run nature of R&D, the uncertain payoff, and the sheer cost. Ethiopia should consider borrowing a page from the Japanese. The Japanese dealt with their capital shortage problem by import know-how from the West and unpacking it. They studied and learned the technology then in time produced the products on which it was based. Krugman (1996) that Russian and Singapore were able to increase output by increasing inputs. But the only way to achieve sustained economic growth is by increasing productivity. And technology is the vehicle through which gains in productivity can be achieved.

Relevance to Ethiopia

How does the country increase output? An increase in output can be achieved either by means of more inputs or by using existing inputs more efficiently. One logical answer is for the country to promote factors that contribute to growth such capital (investment) and labor and minimize and the ones that inhibit growth such as corruption, political instability, lack of financial development, and drought and famine.

In terms of capital, unpacking foreign capital (no need to rediscover the wheel), raise per capita GDP (mainly via productivity increases), and follow the Japanese example.

Mathematically, Equation (5) can be estimated per capita growth in Ethiopia $g_Q=\alpha+ f(X/Q)+h(F/Q)+u$; if the ratio of exports to real output rises per capita real output will increase by f. Similarly, if capital inflow to real output increases real per capita output would rise by h. However, the transmission process is through investment and if investment is stymied by political instability, corruption, lack of financial development, droughts and famine the effect exports and capital inflows on growth would be muted. That is, in an adverse political climate, the Derg, war with Eritrea, investment would shy away from Ethiopia even when exports and capital inflows provide resources for investment.

The source of the data which covers the period 1982-2000 is The World Bank Africa Database 2002. The relationship between investment and GDP in Ethiopia is implied by Equation (1) is given by

$$g_Q = 21.9 + 0.03IQ \qquad (1a)$$
$$R^2 = 0.23$$

where g_Q denotes growth in real GDP(1995), IQ is the investment to GDP ratio in Equation (1a) and the change in GDP divided by GDP, i.e., growth.

The coefficient of the gross domestic investment to gross domestic product ratio is positive and significant of the two percent level of significance—the t-statistic is 2.29. The equation explains 23 percent of the variation in the growth variable. The data for Ethiopia shows a positive connection between investment and economic growth. It implies that an increase of ten in the investment/GDP ratio would increase growth in Ethiopia by 0.3.
But if domestic resources are scarce, then increasing export or capital inflow (i.e., buying on credit) will also increase growth. The desired relationship is shown by Equation (5). The result of the estimation of Equation (5) is

$$g_Q = 21.9 + 0.042XQ – 0.13INF \qquad (5a)$$
$$R^2 = 0.69$$

where XQ is the ratio of export to GDP and INF is the ratio of capital inflows to GDP. The two coefficients have the expected sign. The Export/GDP coefficient is significant at the one percent level of significance—the t-statistic is 5.79. The

equation explains approximately 69 percent of the variable in the growth variable in Equation (5a). However, the capital-inflow to GDP coefficient is not statistically significant. Thus, Ethiopia might wish to explore more avenues for increasing exports as this variable has the greatest impact on economic growth.

The results of the analysis demonstrate a positive connection between investment and GDP growth rates in Ethiopia. The results also suggest that financing investment from exports and capital inflow is a viable way to promote growth. That is, exports influences economic growth through their effects on investment.

Private sector activities and growth—competition in Addis[14]

The best example of private market activities is the private transportation service in Ethiopia. The most amazing observable phenomenon in Addis Ababa economy is the energy and competitive spirit of taxi and minibus operators and street vendors of all sorts. Their knack for inventiveness and entrepreneurship can be an example for the rest of the country. They are examples of free-market capitalism at work. Free-market capitalism is all about taking risks even when the returns are uncertain or low or nonexistent in the short term. It is about unfettered competition. It is about knowing the market environment you serve. It is about creating new markets and opportunities for profit. Free-market capitalism flourishes within the boundaries of the legal system that clearly defines and enforces the terms and obligations of contracts that protects property rights. In such a system the role of the government is one of facilitator. In this environment resources and goods are allocated to those who value them the most based on purchasing power. Risks are not far away in this system.

Taxi drivers and minibus operators exhibit the essence of free-market capitalism and the GOE seems increasingly willing to stay out of the way. To operate a minibus service, the would-be entrepreneur may import a minibus, pay a duty of about 20 percent, and paint its top half while and its bottom half blue. He is ready for business. He can hire a driver with a 3r grade driver's license and theoretically cover any route he chooses. Some routes are controlled by associations. You can solve that restriction by joining the associations. To provide the transport service, the driver needs a kid to ride shotgun and hawk for passengers by destination in lively competition with other minibuses. The kids yell for passengers for Kazanches, Mercato, Piaza, Bole, and Arat Kilo. There is something enervating about all this. This kind of competition is fierce but not always successful because vehicles breakdown and accidents can put them out of business.

[14]A version of this discussion under the title "Competition in Addis" appeared in The Monitor (January 2-3, 1999), pp. 3 and IV.

The hallmark of Ethiopian private transport service competition is the many minibuses, taxies, and modified pickups covering the same routes and offering the same service. Entry in the market is not restricted by law but by the entrepreneur's resourcefulness in securing funds to finance the enterprise. The price of the ride is set by market forces of demand and supply. For example, a ride from Kazanches to Mexico Square was birr 0.75. From Kazanches to Addis Ababa Commercial College the fare was about birr 0.45. These fares were determined by the market and the newcomer to the business had no need to charge more or less for the ride. If he charged more he insured his own failure because passengers would simply take the minibus parked just ahead or behind him. Ethiopians know the fare, too. The advantage of this was that people paid the lowest possible fare for transportation. Public transport was cheaper but in many ways it was not a good substitute.

But there is a dark side to this market. Price discrimination exists in the economy. It is about charging different prices to different people for the same good or service. It works if there is no place else for the consumer to obtain the service or good. In Ethiopia victims of price discrimination have a foreign face. In January 1999 the author tried to get a haircut. First price had to be negotiated because it was not posted. Friends said the price was birr 6. "How much?" I asked the barber. The reply was "twenty birr." This was more than three times the going price for Ethiopians. This was astonishing and puzzling because there were no other customers in the barbershop. This was the ferenje (foreigner's) price. And the barber would prefer to lose the business than charge a foreigner the market price. By contrast the taxi driver is not above physically pulling customers into the vehicle. The barber's behavior may be rational as it is based on the assumption that ferenjes have the means to pay more—about three times more than Ethiopians. But his behavior is anti-business. Price discrimination is difficult to justify in the presence of so many taxies, minibuses, barbershops and street hawkers. But it is insidious. Perhaps Ethiopians get their cue from the government. There is an airport exit fee of $20 for foreigners that must be paid in dollars. As a volunteer who receives birr for living expenses, imagine the author's surprise at the airport on a trip to Cairo in March 1999 when his birr was rejected. Solution: go back down town to a bank, get dollars, and return to airport with $20 for the exit fee. Reform of such practices could lead to more efficiency and productivity. Structured and bureaucratic institutions are more risk averse. In some institutions—customs for example—service comes after a long series of delays for signatures and stamps. If the cost of time is high, it is not cost effective to stand in a line for a long time for service. In contrast to the free wheeling behavior of the taxi and minibus market, structured markets such as banks, customs, Ethiopian Airlines tend to be stodgy. Reform of the system must mean service not

the nationality of the recipient determines price and long term profits depend more on increases in productivity than on price discrimination against foreigners.

5. CONCLUSION

For Ethiopia to raise per capita GDP economic growth is imperative. But it is not enough to growth. Rapid growth is necessary if the country hopes to catch up with middle-income and or preferably high-income economies. Growth can be accomplished through a growth in Ethiopian capital and/or labor, albeit with diminishing returns unless a way can be found to increase capital. The problem for Ethiopia is that it has an abundance of unskilled labor and a shortage of capital. Growth in the country would necessitate more capital per unit of labor. We have shown that investment a growth rates are positively correlated. For the country to grow it has to import capital financed by exports.

There are other considerations for growth. The growth inhibitors should not be ignored. Political instability creates a climate of uncertain and thereby discourages investment and economic growth. Corruption also can be shown to exert a negative influence on investment particularly by causing resources that might be used for production to use to combat illegal activities. Droughts and famine can reduce output, perhaps, less so if there is a plan to deal effectively with them as Botswana has done.

It is not necessary to pursue inventions for products that already exist. This is not a waste of time and other valuable resources; it is a formula for permanently lagging behind. It also means that while a country is reinventing the wheel other countries, which are potential economic and political rivals for forging ahead. The notion of unpacking technology is not novel. They Japanese did it. The idea is to import the know-how and technology to help Ethiopian workers move along the learning curve. The country might adapt technology developed in the developed countries to local needs. There is not need to do this illegally. The technology and know-how be negotiated as part of making the Ethiopian market available to foreign business—the construction of a software company, automobile assembly plant, automobile making plant, computer assembly company, and so forth. This kind of policy will increase the skill base of Ethiopian workers and take advantage of low cost labor. Like in India, the government would have to take the lead in creating the environment (at the university or technical institutes) to produce the kind of workers that would make direct investment in Ethiopia viable. Finally, without need for elaboration, it is remarkable to observe the activities described in Section VI of the paper under “Private sector activities and growth—Competition in Addis.”

Parts of analysis in this paper was used data from the 1990s. More data are available and some of the evidence of economic performance can easily be updated. However, I am not sure that the ideas illuminated by the present discussion would be negated by new data.

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