African Finance and Lack of Development

George M. von Furstenberg

Abstract

Of all major regions in the world, Sub-Saharan Africa has made the least progress over the past three decades, and — leaving out South Africa — it is now one of the world’s poorest. Even a country relatively untouched by war (though not by refugees) that had been widely hailed as “reformed” by the early 1990s, Tanzania, has turned in a disappointing growth performance since that time that is hard to explain. It is as if a quarter of its capital formation had gone missing and multifactor productivity had shrunk relentlessly from 1990 to 2003.

While Tanzania has improved the soundness of its money and financial regulations in the most recent years and its growth has improved, financial and other forms of repression have not ended, making cumulative improvement in living standards tenuous. Foreign assistance programs that try to bypass the national and local authorities in the recipient countries may bring some immediate relief but do not encourage institutional development or strengthen public-service and civil-service ethos and capabilities in the heavily-indebted countries of Sub-Saharan Africa.

Domestic private interests, though often in cahoots with local authorities, have been more successful at generating cumulative development in China where the central government, for its own survival, has been keenly interested in promoting the rise of people’s living standards. In Sub-Saharan Africa, as a rule, incentive compatibility of good governance still has to be found before cumulative progress may become possible.

Introduction

Africa as a whole has failed to move forward over recent decades. As estimated by Maddison (2001, p. 554), its real GDP per capita was 5% of the 1998 U.S. level in 1973 and it was still only 5% of that same level in 1998. For comparison, the world’s real GDP per capita had risen from 15% to 21% of the 1998 U.S. level over this period. For China the jump had been from 3% to 11%: Much poorer than Africa in 1973 and over twice as well off in 1998. Sub-Saharan Africa has done worse yet. There the number of extremely poor people, those who live on less than $1 international dollar a day, has almost doubled since 1981 to 313 million in 2001 (World Bank Group, 2005, p. 4). Correspondingly, all but three of the 36 countries ranked lowest out of a total of 177 countries by the Human Development Index and comprising the entire category of “Low Human Development” in that index for 2002, come from Sub-Saharan Africa (UNDP, 2004).

While the minstrels of hope keep trying to animate progress, the militias of death appear to be winning: Considering both the immediate and delayed effects of unequal wars and cross-border armed carnage directed mostly against civilians of another tribe, warlord, race, or religion, Africans have managed to murder between 500,000 and a million of their own on average per year for at least a dozen years and there is no end to the serial slaughter in sight. Adding those who die from indirect consequences of those atrocities, such as hunger, and disease, in the Sudan and what is cynically called the Democratic Republic of the Congo (DRC) alone, would add another half million dead in each recent year. AIDS and malaria have taken, and will continue to take for some time, a combined toll of invalidity and premature deaths that is several times larger. AIDS deaths in Sub-Saharan Africa alone were 2.3 million in 2004 (Commission for Africa, 2005, p. 194). Since Sub-Saharan Africa’s population, excluding South Africa, is well over 600 million and women bear 5 children on average, even losing 4 million, 2/3 of 1 percent, of its people annually, through the combined effect of such “extraordinary” causes will not bring population growth to a halt. Yet the destruction of organized life and its basic values and
institutions, and the waste of human and capital resources, not to mention the human suffering, are tremendous.

At the International Financial Institutions (IFIs), few have dared give an honest and comprehensive account of Sub-Saharan Africa’s severe and treatment-resistant problems without raising false hopes. Hernández-Catá (2000) is among the laudable exceptions. Statements in other IMF publications such as that “since early 2001, under the leadership of its new [hereditary] president, Joseph Kabila, the DRC has made remarkable progress in moving from conflict to reconstruction” (Clément, 2005, p. 1) are enough to make one’s blood boil.\footnote{Consider the following, “A leaked U.N. Report this month suggested that Rwanda has maintained a military structure in the DRC through proxy Congolese militias. The public threat to invade has created fears that the conflict, which has led to the deaths of 3.8 million people since 1998 and continues to kill more than 30,000 people monthly, could resume. This would have major implications for regional stability and could see a renewed proxy war between Uganda and Rwanda in the DRC [Rwanda invaded the DRC in 1996, 1998 and 2004].” Forbes.com, Global Strategic Analysis: Political and Economic Outlook for East Africa in 2005, http://www.forbes.com/2005/02/03/cz_0203fullsegments9and10africa_print.html.}

If, after decades of foundering, a key to sustained economic and human development in sub-Saharan Africa (excluding South Africa throughout as a special case) is to be found, it must be dug out in most countries from under the ruin and putrefaction created by the blight of lawlessness, corruption, and official connivance – from inside and outside the region – with brutality.

To start conveying a sense of what one may realistically expect in a comparatively peaceful Sub-Saharan country, that has gone through a process of reform, I choose a country, Tanzania, that looked ready for a growth spurt around 1990. Then I construct what I considered to be a worst-case scenario for the country for 1990-2003 only to find that, for Tanzania too, this worst-case scenario is not bad enough. Factors, including financial factors, are examined that could account for the disappointment. After this sobering object lesson, I consider what “sound money and finance” might be expected to accomplish generally and in Sub-Saharan Africa in particular.

Of course, a precondition for sound money and finance usually is a fairly advanced level of institutional development and of tax and government expenditure administration. Other prerequisites include effective protection of property rights, adequate prudential supervision, separation of powers, and appropriate fiscal balance. Hence determining the effect of any one of several correlated factors that condition and reinforce each other in complex (multiplicative) ways presents formidable challenges assuming these prerequisites could all be met. If not, it is tempting to adopt a strategy that bypasses government-imposed obstacles to economic and financial development in Sub-Saharan Africa by working directly for the “people” and with “their” NGOs. While such a strategy may help temporarily to contain some of the more malignant governments in the region, it does not help build self-confident local institutions and an essential ethos of public service on which cumulative development depends.\footnote{When rapaciousness and depravity become prevalent in public life, economics, out of desperation, really does become moral philosophy, as Adam Smith called it, because certain core values must be set and shared for economic value to flourish. The famous Scotsman went to study moral philosophy at the University of Glasgow in 1737 and later taught there.}

Dashed Model-Based Expectations: Tanzania

After a long history under colonial rule in which both the Second German Empire and then the British Empire took part, the United Republic of Tanzania was formed in 1964 attaching Zanzibar to Tanganyika. Tanganyika is a latecomer to the process of industrialization and to this day derives almost half of its GDP from agriculture. The United Republic had a good economic start from 1964 but then fell into laboring under an increasingly ruinous experiment with its version of state-misdirected management, an indigenous brew of socialism known in Swahili as ujamaa.
This aberration did not begin to be scuttled until the end of President Nyerere’s indefinite tenure in 1985 and was followed by a period of economic reforms commonly dated 1986-1992. In the meantime, labor productivity in aggregate manufacturing had fallen from a peak of 11 percent of the U.S. level in 1973 to a mere 4 percent of that level in 1990 by one careful estimate (Sirmai, Prins, and Schulte, 2002, p. 34). Having fallen so low and reformed so long, the outlook appeared good for a substantial rebound and sustained economic growth in the 1990s.

For many decades countries that have managed to enter a sustained process of development have been able to count on what is known as multifactor productivity growth to contribute 1 percentage point or more to their growth rate annually on top of what is obtained from simply employing more identified factors of production such as capital and labor (and land). Progressive improvement in technology, management practices, general sophistication, and international connectedness are supposed to provide this extra output gain. Looking forward to the 1990s from the hopeful conditions that had lifted the outlook for Tanzania, the ex-ante worst-case scenario could reasonably be taken to be one in which multifactor productivity still would not grow appreciably from 1990 to 2003 but the use of ever more capital and labor would bear its proportionate fruit in raising income and output, merely assuming constant returns to scale. The technical details of this scenario are laid out in the Appendix, and the results for the projected as opposed to actual growth of real income per capita are shown in Table 1.

Column 2 of Table 1 indicates that, by 2003, even in the worst-case scenario, GDP per capita still should hence have risen by 25% (or about 1.7% a year) from 1990 to 2003. Reality, however, was much different. The first column in Table 1 shows that it took 12 years, to 2002, for per capita GDP merely to be restored to its 1990 level — that hopeful level that was widely expected to be quickly lifted on the wings of reforms. The last column in Table 1 has the shortfall of the actual from the worst-case projected level of GDP per capita peaking at 26% in 1997-98 before declining to 17% in 2003. As so often in Sub-Saharan Africa, worst-case scenarios constructed ex ante with conservative growth- accounting assumptions turn out to have been not nearly bad enough. What could be the reasons?

(a) Wasteful Government, and Corruption-Impacted Private, Investment

In Tanzania, allocation through markets rather than government directives was encouraged after 1985. As a result, the share of public investment in total investment declined from over 45% before the 1986-92 reform period to a seemingly more appropriate 25% after the reforms (Kweka and Morrissey, 1999, p. 5). Nevertheless Kweka and Morrissey (1999, p. 12) found a negative relationship between “productive” government spending – on human (health, education, information resources) and physical infrastructure capital – and economic growth for the period 1965-1999. They attributed this unexpected finding to the inefficiency associated with the use of public funds and public investment in Tanzania. Bu (2005) has shown that both inefficient selection of projects that are difficult to monitor and thus easy targets for corruption and planned undermaintenance raise depreciation rates of capital in developing countries. Private capital, both at formation and in operation, also can be bled by pilferage and by the impositions, side-payments and take-offs of corrupt outside agencies or gangs, public or private. Conversely, some private entrepreneurs who are political insiders may get favored access to rationed credit resources even though their projects are patently inferior to the projects of others who do not get funded for lack of the right connections. Considering waste of both publicly and privately invested capital, assume that the outcome is analogous to one-quarter of the capital funds invested each year simply being “lost” or diverted to unproductive activities. Then the 22% gross saving rate realistically assumed for Tanzania as explained in the Appendix, would produce an effective investment rate equal to only 16.5% of GDP. With that, per capita GDP would be expected to increase by only 13.6%, rather than 25%, from 1990 to 2003. The expected increase would be reduced further, to 8.5%, if the true depreciation rate were in fact 0.10 rather than 0.08, as assumed in generating Table 1. There the actual increase is shown to be just 3.7% over this 13-

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year period or 0.28% on average per annum. Hence even these highly adverse assumptions do not yet suffice to explain why growth was so anemic.

(b) Falling Multifactor Productivity

In developing countries, low or negative measured multifactor productivity growth may simply be a consequence of assuming an insufficiently high effective rate of depreciation. Assume, however, that the combination of deforestation, desertification, and an influx of refugees from the murder and mayhem countries in Africa’s Great Lakes region have made deployment of existing resources of capital and labor less productive. The result would be negative multifactor productivity growth (or synonymously, total factor productivity, TFP) that would not be the result of measurement elsewhere in the growth accounting framework. Long episodes of negative multifactor productivity growth have been reported occasionally even for countries not highly stressed by continuing catastrophe. For instance, the IMF (2004, p. 17) has estimated average actual (trend) TFP growth for Mexico of -0.5% (-0.4%) for the period 1980-2003. Applying this trend rate of -0.4 percent, rather than the rate of 0 assumed in the provisional worst-case scenario, would bring the growth of GDP per capita finally down from the already much reduced estimate of the previous paragraph, 8.5%, to 3% over 13 years, which was about all that was achieved. FDI as a percentage of gross fixed capital formation averaged 8.3% for 1992-1997 in Tanzania, being attracted mostly to the exploitation of natural resources, while this percentage was 14.4 for Mexico (UNCTAD, 2004, pp. 391, 393). There FDI went predominantly into manufacturing and services such as business services and retailing where beneficial spillovers to the local economy and to improved business practices are likely to be greater than in resource extraction and cultivation. The absolute average annual amounts of inward FDI involved where $90 million for Tanzania and over 100 times as much, $9,619 million, for Mexico (UNCTAD, 2004, pp. 368, 369).

To recapitulate, to account for Tanzania’s disappointing growth performance over the originally so hopeful period from 1990 on one would have to identify a combination of highly adverse factors such as the following:

- One quarter of capital invested goes to waste or a quarter of the funds ostensibly available for capital formation is not turned into productive capital at world market prices.
- Because of foreign donors and corrupt contracting practices favoring investment in new, negotiation- and approval-intensive, projects over funding of routine maintenance, the effective annual depreciation rate is 10% of the net stock of capital, about twice as high as in advanced industrial countries.
- Progressive degradation of the physical (reduced rainfall and water quality, deforestation, rural blight) and human (e.g., spread of urban slums) environment caused negative multifactor productivity growth of -0.4 percent per annum. In addition, the fact that Tanzania, unlike Mexico, had been unable to attract a substantial amount of FDI outside the natural resource sector meant that that the technology transfer and the training and best-practice benefits frequently conferred by MNEs were low.

Negative multifactor productivity growth may have been counteracted to some extent because Tanzania has been able to import technologies that imply important savings in the capital and educational investment needed for more advanced development. Such technologies are embodied, for instance, in cellular phones and internet connections that allow advanced ICT services to be obtained readymade and at very low cost from abroad by both businesses and other organizations and individuals alike. According to UNDP (2004, p. 183), in 2002, Tanzania had per 1,000 people, 5 telephone mainlines, but more than 4 times as many (22) cellular subscribers, and 2.3 internet users. In a favorable economic climate, these numbers per 1,000 well could double by 2005 making continued negative multifactor productivity growth less likely.
Villains & Victims

Given the past growth disappointments, there are of course other possible negative factors that need to be considered. Some of these, such as the inexorable decline in the terms of trade of the primary commodities exported by African countries against the advanced-processed goods and services sold by industrial countries do not appear to square with the facts. IMF & IDA (2001, p. 30) project, for instance, that Tanzania’s terms of trade will improve 1.1% per year on average for 2001-2010 and 0.4% per year 2011-2020, after having risen 9.9% in 1999 and then fallen 2.5% in 2000. Commodity prices have been quite volatile around shifting trends while the relative prices of high-tech goods, very much including consumer-oriented imported ICT goods, both in acquisition and operation have been persistently declining.

Other, currently much more common and vehement assertions, clearly swear with the facts. For instance, even though creditors are known as predators in Africa, there are no indications that foreign-debt collectors ever have any luck in Tanzania or elsewhere (e.g., Argentina) in sucking up budgetary resources that “should” be spent on human and economic development. The Human Development Indicators (UNDP, 2004, p. 205) are gravely at fault for pandering to that notion by juxtaposing total foreign debt service in percent of GDP to public expenditures on health and education (and the military) while failing to explain that the heavily-indebted poor countries (HIPC) in their postcolonial history hardly ever have repaid anything except with new debts.3 These new loans not only had to be at least equal to any scheduled repayment obligation but were usually much greater: amounting to rollover plus a big plus. If this plus of net new borrowing was in danger of disappearing because foreign governments and IFIs started balking at continuing the rapid debt build-up, the country would get substantial amounts of debt forgiveness by one means or another. The HIPC initiatives of recent years are the most forthcoming in offering ever more forgiveness with the least questions asked — cancellation of up to 90% of the face value of their debt to official holders “or more if necessary” under the 1999 Cologne (summit) terms — like no-fault divorce made in heaven. Some African journalists4 also claim that to the extent their country’s debts were contracted under the last, and not the current, odious dictator, these debts qualify for unilateral repudiation under the convenient Doctrine of Odious Debts.

3 Even experienced NGOs such as Oxfam fall into this trap. Oxfam noted that in fiscal year 1998 “on a per capita basis... Tanzania has been spending nine times as much on debt servicing as on basic health and four times as much on debt as on primary education... Translated into human terms, excessive repayments to the external creditors means schools without desks, pencils and books and – in many cases – roofs; it means health centers without essential drugs; and it means women have to walk over three hours to collect water.” http://www.oxfam.org.uk/what_we_do/issues/debt_aid/debt_tanzania.htm

Although this description of dire public and private poverty is apt for Tanzania, the implied identification of the contributing cause is based on incomplete accounting in that Tanzania repays foreign creditors as a group, if at all, with their own funds. In other words, sovereign debt repayment is fully financed through rollover plus and not by reducing domestic government spending or domestic absorption.

In the end, most debts of the African HICPs are paid by taxpayers in the creditor countries who can forgive foreign debts but not avoid servicing the increased domestic debt that results from their government’s non-recourse lending or extension of credit guarantees. The benefits from the original “loans” extended to the HICPs are shared mostly between corporations and special interests in the creditor and debtor countries who lobby for such lending to finance their deals. When Perkins (2004, p. 16) writes, “The larger the loan the better. The fact that the debt burden would deprive the poorest citizens of health, education, and other social services for decades to come was not taken into consideration” he misrepresents who ultimately paid these debts, just like Oxfam, but not who shared the benefits from extending them.

4 An example from Lagos posted March 17, 2005 can be found at http://allafrica.com/stories/printable/200503170389.html.
Here are some of the basic facts: Tanzania regularly receives a quarter of its fiscal resources from grants and a nearly equal amount of “exceptional” financing or debt “forgiveness.” The latter is a polite term for interest and principal repayments in arrears on foreign debts finally being written off as a long-lost cause. The financial programming data contained in the “Completion Point Document for the Enhanced HIPC Initiative” for Tanzania provide some telling statistics. That document (IMF & IDA, 2001, p. 31) shows official current-account unilateral transfers to Tanzania in 2000, the last actual as opposed to projected year shown, of $762.7 million, arrears rising by $106.2 million, and new debt relief of $130.5 million. Foreign loan inflow was $319.3 million and amortization due was 273.0 million (including $105.8 million in below-market interest). Ignoring the debt relief as much ado about bygones, if one adds just foreign loan inflow and official current-account transfers ($1,082 million) and subtracts amortization due that was actually paid and not added to arrears ($166.8 million), one finds that Tanzania did very well for itself, attracting a combined total of $915.2 million in grants and net new lending. Since Tanzania’s 2000 GDP at the official average annual exchange rate of 800TZS/USD was worth only $9 billion, this 10 percent current resource inflow is neither small nor credibly debt creating.

HIPC countries have always welcomed any opportunity to borrow to the hilt to generate debt forgiveness: “Grants only” threatens to put them on short rations. A bit of storytelling my help to make the point: A man was asked by his fine daughter for a loan because she, quite sensibly, wanted to buy a condo or a cottage. The man offered to give her a grant equal to the down-payment required at the bank. The daughter immediately declined, protesting that she would be ashamed to take such a large gift from father dear and that she would prefer a loan for the full amount of the purchase price at the same as the bank’s interest rate from him instead. She knew that her father would not want to let it appear that he did not believe that he would ever get paid back, thereby displaying a lack of faith in his upstanding daughter. Thus instead of getting the down-payment as a voluntary gift, she ended up getting the entire condo for nothing. Her father was not really surprised and forgave her debt in the end, there being no palatable alternative. The taxpayers of developing countries appear ready to do likewise since radical debt forgiveness for the HIPC is a cause that moves many people though not so much that they would like to the foreign-aid budget being boosted directly. Debt forgiveness can be kept out of the sight of taxpayers in that it appears only as an obscure “capital transfer” or “capital grant” item in the international capital accounts years later. This political cover makes serial default (a term introduced by Reinhart and Rogoff, 2004) possible on repeated transfers of official loan resources à fonds perdue.

The Commission for Africa (2005, p. 319) has proposed to formalize this loans-to-grants program (historically anticipated not by the Marshall Plan but by the Lend-Lease military-aid program of World War II) by proposing “a transparent debt compact to include all Sub-Saharan African low-income countries, including those excluded from the current schemes. It should cancel debt stock and debt service by up to 100 percent, and cover multilateral and bilateral debt. As an urgent measure, financing should immediately be put in place to provide 100 per cent multilateral debt service cancellation, where this is necessary to reach to achieve the MDGs [Millenium Development Goals].” Since these goals are overly ambitious for all of Sub-Saharan

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5 In May 1940 Churchill wrote to Roosevelt that he would “like to feel reasonably sure that when we can pay no more you will give us the stuff all the same” (quoted by Erlandson, 1997, p. 270). In the end the Lend-Lease program neither lent nor leased, never counting on getting back anything, but fully achieved its purpose all the same. One might think that 100% debt relief for Sub-Saharan countries could provide a somewhat analogously inspired way and political subterfuge for advanced industrial countries to join the fight of Sub-Saharan countries to meet their MDGs and poverty-reduction targets. In fact, however, such debt relief by itself provides no new resources, since debts to Sub-Saharan countries, just like Lend-Lease loans, were dead upon disbursement (under LL to U.S. arms manufacturers) and only the modalities of their formal burial with the necessary G8 fanfares are once again still to be decided.
Africa (still excluding South Africa), 100 percent debt forgiveness appears to be proposed for the entire region, with the hits to the capital base of international financial institutions (IFIs) and affiliates resulting from their own debt write-offs presumably to be made up through additional capital (or “quota”) subscriptions by the advanced industrial countries and their taxpayers. These taxpayers may be at least dimly aware that government or government-guaranteed lending to Sub-Saharan Africa has long been a means to provide foreign aid — of course not just for the benefit of its designated recipients or for the announced purposes — by other means. Nevertheless, disguising such aid as loans has been useful in providing more resources to those countries and assorted leeches for their own use, one of which may, of course, be capital flight linked to corruption (Nyoni, 2000).

What Reform of Sub-Saharan Africa’s Own Money and Finance Systems May (Not) Achieve

In the quasi-documentary film, Hotel Rwanda, a five-star Hutu general who was later convicted of war crimes throws down a pile of Rwandan francs as worthless trash. It had been offered to him in desperation by the hotel manager, whose supply of U.S. dollars had run out, to continue buying protection from being massacred for the mostly Tutsi refugees whom the hotel had harbored. In actuality, Rwandan francs, lost only a little over half their “official” dollar value by yearends 1994 to 1995 and are still in use. So they were trashed by the commanding general presumably because they were not readily convertible and did not travel nearly as well as U.S. dollars to foreign hiding places to and from money laundries. Hence I have my doubts whether having free access to foreign currency accounts inside the country (score 5 out of 10) or inside and outside the country (a perfect score of 10) would really be such an unmixed blessing in Sub-Saharan Africa as the Fraser Institute’s “Economic Freedom Index of the World” (EFW) assumes with its innocent rationale. That rationale is that currency competition keeps a national money healthy and strong, or, if not, limits the harm it can do by marginalizing it in daily use and outsourcing most of the functions of sound money and finance to foreign carriers and suppliers.

Yet the EFW, that goes back to 1970, appears more discerning than its far less transparent competitor, the Index of Economic Freedom (IEF), put out since 1995 by the Heritage Foundation in Washington, D.C. The IEF, for instance, awards equal scores of 2.0 in the categories of both “Monetary Policy” and “Banking & Finance” to Tanzania and to the EMU member and financial services exporter, Spain, in 2005. Hence it is best to ascertain what can be learned about monetary stability and financial development of Tanzania since 1990 or 1992, when a more complete set of data became available, by use of the EFW alone. What is it about “sound money” (category 3 of 5) and appropriate “credit market regulations” (subcategory 5A) that the EFW finds supportive of economic growth on its own and because it corroborates other productive elements of economic freedom? Here are excerpts from Gwartney and Lawson’s (2003, pp. 7, 10) explanation:

High rates of monetary growth invariably lead to inflation. Similarly, when the rate of inflation increases, it also tends to become more volatile. High and volatile rates of inflation distort relative prices, alter the fundamental terms of long-term contracts, and make it virtually impossible for individuals and businesses to plan sensibly for the future. Sound money is essential to protect property rights and, thus, economic freedom. Inflation erodes the value of property held in monetary instruments. Governments have used inflation and printing presses in effect to expropriate citizens’ property by devaluing it while using newly printed currency for government expenditures... It makes little difference who provides the sound money. The important thing is that individuals have access to it... [Thus,] in order to earn a high rating in this area [of access to sound money], a country must follow policies

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and adopt institutions that lead to low (and stable) rates of inflation and avoid regulations that limit the use of alternative currencies should citizens want to use them...

Regulatory restraints that limit the freedom of exchange in credit, labor, and product markets are included in the index. The first component (5A) reflects conditions in the domestic credit market... Countries that used a private banking system to allocate credit to private parties and refrained from controlling interest rates received higher ratings for this component of the regulatory area.

Part A of Table 2 shows that in the “access to sound money” category, Tanzania had an average score of 5 or less in the 0-10 range, ordered from the lowest, from 1975 to 1995, but that the rating then shot up to about 9 by 2000, with lower money growth, inflation, inflation variability, and the granting of full freedom to own foreign currency deposits anywhere all contributing to the massive improvement. Progress in the other category of “sound financial regulation” came later and more slowly. Here the average score rose solidly above 3 only after 2000, with “avoidance of interest rate controls and negative real interest rates” contributing most to the eventual improvement. There is some doubt that the improvement has lasted. World Economic Forum’s Global Competitiveness Index (GCI) (see Schwab, 2005), for instance, shows Tanzania’s ranking slipping markedly from 69 out of 101 countries in 2003 to 82 out of 104 countries in 2004. Since all three components of the GCI, the “technology index,” the “public institutions index,” and the “macroeconomic environment” including the “macroeconomic stability” index, all rate factors complementary to financial development and efficiency in risk analysis, risk pricing, and project selection, some backsliding may be under way. Hence further analysis of this mixed picture of high monetary and mediocre and uncertain financial development appears worthwhile.

Such an analysis is provided in Table 3. Its first column shows that while the Tanzanian shilling (TZS) has lost two-thirds of its dollar value from 1992 to 2004, there was an up-tick in that value in the end. That small appreciation was short-lived, however, as TZS stood at 1113.5 to the USD when last checking on May 5, 2005, thereby continuing its trend depreciation against USD. The decline in nominal interest rates from 24% in 1993 to 2.4% in 2004 in column 2 mirrors an almost equally impressive decline in Tanzania’s inflation rate to the lower single digits. Nevertheless taking an amount in TZS worth USD100 at the end of 1992 and investing it at Tanzanian savers’ interest in TZS and then converting into USD at successive yearends shows the unsteadiness of international currency returns in column 3. The dollar value of principal and interest first drops by over 13% from yearends 1992 to 1993, then rises 45% from $86.6 to $125.8 at the end of 1997. It then wobbles around, earning no net dollar return, until 2000, before falling to 101.9 in 2003 and then recovering to 106.43 in 2004. Of course a 6 percentage point rise in the USD value of principal and interest over 12 years is far below the gross return of $156.37 that a rollover investment of initially $100 in U.S. Treasury bills would have yielded by the end of 2004.

On an average annual basis, the mean rate of return on Tanzanian savings, after converting from TZS to USD thus was over 3 percentage points lower than the 3.80% average annual rate earned on U.S. Treasury bills. At the same time, the difference in dollar rates of returns was extremely variable from year-to-year, with a range from

-16.6% to +11.2% to and a standard deviation of 8.46%. Not only was the “excess dollar-equivalent return” on TZS over 3 percent negative, but it was extremely variable from year-to-year and hence exceptionally risky. In other words, country, currency, and market risk all failed to be compensated and worse. When earning much less, not just in a few isolated years but on average over 12 years, on a vastly riskier investment in a minor currency than on the international USD benchmark investment, financial repression and capital controls must be at work. Hence if there was greatly increased financial development since 2000, as the EFW index suggests, corroborative evidence of greater financial openness is hard to find. Question marks over whether Tanzania is headed from sound money to financial development and financial openness just will not go away.
Bypassing Disappointment?

During recent decades, Sub-Saharan Africa has regularly turned “worst-case” scenarios developed ex ante into “best-case” scenarios after the fact as worst-case scenarios rarely have turned out to have been bad enough. Not only aid and loan funds, but also the fruits of capital formation, frequently go missing. Marauding militias in the land and the utter contempt with which most of those in power treat their common people remind me of old history lessons about how things were in much of continental Europe in the twelfth to fourteenth century, and not much better in England. At the time, the rural population in many parts was neither safe nor free from oppression and most villages and towns were not either, even when there was a lull in the sieges, raids and tumult of local skirmishes. Epidemics and pestilence were common. People rarely found occasion to offer the bitter and anguished prayer, “Thank you God for giving us a kind lord,” a condition so unusual as to deserve special gratitude to make it last.

The many disappointments in postcolonial Africa have tempted donor countries and development agencies to try to bypass those governments, license boards, institutions, and control mechanisms which they hold most responsible for blocking progress. Waiting for reform in Sub-Saharan Africa and for the emergence of public spiritedness, with its firm embrace of social and professional ethics, has been frustrating since that embrace will not come. Those from outside this extremely poor region who care for its welfare are tempted to stop waiting and to start acting on their own by pitching their political-economy sanitation programs and getting them put in place.

This intemperance has led to a number of policy recommendations. For instance, if you can not do your own sound money nor keep your money sound, the advice is, just use someone else’s, preferably USD or euro, and dare not restrict that. As the EFW rationale proclaimed and as I do not quite agree, “It makes little difference who provides the sound money. The important thing is that individuals have access to it.” If your own financial system keeps being stunted and periodically wrecked by insider deals and directed lending, the advice continues, just give up having your own system and invite the top foreign banks and investment houses to take over and straighten things out. If you do not have a comparative advantage in developing reliable business ethics or the rule of law, just let MNEs show you the proper practices and let them sue you, if necessary, in their home court or bring you before an international tribunal or dispute-settlement panel. If your government is corrupt and/or incapable, the foreign saviors will just have to keep it from meddling in the country’s externally-devised poverty-reduction and development strategy. To keep up appearances, that strategy is supposedly “owned” by the locals and by “their” civil society usually represented by foreign-inspired NGOs. But not to worry too much: If you can not afford to hold free and fair elections and are busy paining some of your own people or their neighbors, just pretend that you love the United States, France, Great Britain, or whoever profits you most, more than all others and that you have some resources that beckon, and they will send you arms, investments, and tokens of official respect anyway. The IFIs, as for Laurent and Joseph, can be counted on to offer a fitting accompaniment of loans and praise.

There are no good options. Rapid aid actions may bring immediate, but largely transitory, benefits. For instance, an unexpected major increase in official transfers from abroad, a budgetary windfall, will bring an end to budget deficits and inflationary finance in the near term. Credit will be redirected toward the private sector and it may grow faster than GDP, much as the data in columns 4-6 of Table 3 suggest from 1996 on, even while the ratio of total domestic credit to GDP, a commonly used indicator of financial development, keeps falling. An aid windfall also will preclude balance-of-payments crises, and it may well inaugurate an episode of macroeconomic stability and higher economic growth. Yet it will not improve either budgetary expenditure planning and control or the tax-administration system. This raises the issue of sustainability once aid dependence has grown because the budget has come to be based on the expectation that the higher flow of official foreign transfers to the country will be maintained indefinitely.

Getting actively involved in Sub-Saharan Africa with a bypass strategy that minimizes reliance on a country’s own political, administrative, and institutional capabilities is also quite possibly a blessing only in the short to medium run. Giving up on your own money and financial system
may be a beneficial stabilization shock for inflation-prone governments that are no longer able to generate seignorage from inflationary finance of fiscal deficits. But (as I must have read somewhere) the straightjacket that you may need for remaining under control on land will not help you survive if you fall into the water. Thus this policy does not explain how, when unable to balance the budget, the government can be kept from issuing quasi-moneys and IOUs or simply failing to pay some of its workers and captive suppliers, including schools and hospitals. Not all government payments in arrears are owed to foreigners and most expropriations do not concern them. Argentina writhing through the crisis of 2001-2002, and Ecuador as lawless as ever after its formal dollarization in 2000 hold some interesting object lessons in that regard. Hanke (2003, p. 131) has written that “when national monetary arrangements fail to comply with the rule of law, ‘dollarization’ is desirable.” However it is hard to argue the converse, that formal dollarization has reliably advanced the rule of law, either in Ecuador to date or, say, in Liberia during the four decades before it de-dollarized by introducing its own currency in 1986. Of course one can always argue that things could have been even more broadly lawless in the absence of dollarization to keep the faith.

Foreign provision of the entire financial system means that you will have little incentive to invest in the type of expertise and risk analysis needed for effective banking supervision and regulation. You end up relying on consolidated home-country supervision and on distant prudential standards and anti-money laundering directives, however implemented, instead. Local investments in financial-product development and design are likely to be negligible under these conditions. Modern financial systems are among the most important aggregators of business and personal information as they develop highly detailed, and increasingly mandatory, information about their customers and their activities. It is unlikely that this information can be kept from the information-sharing and monitoring requirements imposed by the external currency hegemon. Here too conditions for developing countervailing local expertise are adversely affected by outsourcing one’s financial system to the international banks and those who oversee them.

Minimalist Recommendations

At the 2005 G8 summit, the hyperactive mega-recommendation cocktails that are being mixed for Sub-Saharan Africa to make it meet its MDGs have taken not only center stage but proscenium and backstage as well. Still, after the play has closed, the following four points may merit consideration:

- Limit the application of bypass strategies, whose logical endpoint is regime change, to cases where there is no conscionable alternative, such as when governments produce or promote genocide.
- Reward good governance, not good rulers, in Sub-Saharan Africa to help nurture beneficial and lasting system change and institutional development. Do not try to bypass just plain bad governments, rather do not feed them or their country so as not to extend their lease on bringing misery.
- If bypass, outsourcing, or foreign-delegation strategies are adopted in matters relating to the national conduct of monetary, financial-sector, information-access and education policies and to exemption from local laws and regulations, any unilateral dependence on foreign management and expertise so created should be scheduled for build-down once certain performance standards have been met. Otherwise a country would be permanently denied the learning and discovery benefits of self-reliance, ownership of reforms, co-management of institutions that vitally affect it, and effective self-determination or public choice.
- Sustained economic development is predicated on the credible adoption of an intentionally beneficent public-service ethos and of a political and economic incentive

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7 De la Torre, Yeyati, and Schmukler (2004, pp. 208-212) have written insightfully about the limitations of hard pegs as commitment mechanisms.
and selection structure and a business culture that sustain this ethos. Its discovery and institutional anchoring and subsequent support must come from within the region and can not be forced or “required” from the outside although technical assistance and both moral and financial support may be offered if officially welcomed. Anti-corruption codes and transparency pledges with regard to business and financial dealings between government and business, in particular multinational enterprises (MNEs), can help.

Compared with the mountains of bold-faced, finely detailed, and commanding recommendations in the hundreds of pages of the (Report of the) Commission for Africa (2005), the short list of basic principles above is like twopence to a bank. Yet where recommendations are as rarely taken as in Africa, very few should be made to minimize the mutual embarrassment, if there still is a capacity for shame, later on.

It is puzzling that domestic private interests, though often in cahoots with local authorities, have been highly successful at generating cumulative development quite without any foreign encouragement or advice in the People’s Republic of China. There the central government, for its own survival, has been keenly interested in promoting the rise of people’s living standards even while official corruption and one-party rule remained ingrained. In most parts of Sub-Saharan Africa, incentive compatibility of good governance with remaining in office still has to be established before cumulative progress may begin. Such a transformation of systems and hence objectives can be encouraged and supported from outside but, to be credible and sustainable, if must be achieved from within. Unless we wait as long as it takes for that to happen, even the worst-case scenarios we construct for Sub-Saharan Africa will again turn out to have been not nearly bad enough.

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8 Easily half of its current rulers have demonstrated and may still be demonstrating that they are quite prepared, indeed eager, to sacrifice the common people’s welfare for their own power and enrichment.
Table I. The Projected and Actual Growth Records of Tanzania

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP per Capita: Actual</th>
<th>GDP per Capita: Projected</th>
<th>GDP/Capital: Projected</th>
<th>GDP per Capita: Actual over projected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[1]</td>
<td>[2]</td>
<td>[3]</td>
<td>[4]=[1]/[2]</td>
</tr>
<tr>
<td>1990</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1991</td>
<td>0.986</td>
<td>1.034</td>
<td>0.924</td>
<td>0.953</td>
</tr>
<tr>
<td>1992</td>
<td>0.892</td>
<td>1.065</td>
<td>0.864</td>
<td>0.837</td>
</tr>
<tr>
<td>1993</td>
<td>0.865</td>
<td>1.092</td>
<td>0.815</td>
<td>0.792</td>
</tr>
<tr>
<td>1994</td>
<td>0.848</td>
<td>1.116</td>
<td>0.775</td>
<td>0.760</td>
</tr>
<tr>
<td>1995</td>
<td>0.852</td>
<td>1.137</td>
<td>0.741</td>
<td>0.749</td>
</tr>
<tr>
<td>1996</td>
<td>0.863</td>
<td>1.156</td>
<td>0.713</td>
<td>0.747</td>
</tr>
<tr>
<td>1997</td>
<td>0.869</td>
<td>1.174</td>
<td>0.688</td>
<td>0.741</td>
</tr>
<tr>
<td>1998</td>
<td>0.882</td>
<td>1.189</td>
<td>0.667</td>
<td>0.742</td>
</tr>
<tr>
<td>1999</td>
<td>0.904</td>
<td>1.204</td>
<td>0.649</td>
<td>0.751</td>
</tr>
<tr>
<td>2000</td>
<td>0.928</td>
<td>1.217</td>
<td>0.633</td>
<td>0.763</td>
</tr>
<tr>
<td>2001</td>
<td>0.961</td>
<td>1.228</td>
<td>0.619</td>
<td>0.782</td>
</tr>
<tr>
<td>2002</td>
<td>1.000</td>
<td>1.239</td>
<td>0.606</td>
<td>0.807</td>
</tr>
<tr>
<td>2003</td>
<td>1.037</td>
<td>1.249</td>
<td>0.595</td>
<td>0.830</td>
</tr>
</tbody>
</table>

Table 2. Monetary and Financial Components of the Fraser Institute's Economic Freedom of the World Index

A. Sound Money Components (weight in EFW Index: 1/5)

<table>
<thead>
<tr>
<th></th>
<th>Growth of Money Supply</th>
<th>Inflation Variability</th>
<th>Recent Annual Inflation</th>
<th>Freedom to Own FOREX</th>
<th>Access to Sound Money</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>[1]</td>
<td>[2]</td>
<td>[3]</td>
<td>[4]</td>
<td>Average*</td>
</tr>
<tr>
<td>1970</td>
<td></td>
<td></td>
<td>9.4</td>
<td>9.3</td>
<td>0</td>
</tr>
<tr>
<td>1975</td>
<td>7</td>
<td>7.8</td>
<td>4.8</td>
<td>0</td>
<td>4.9</td>
</tr>
<tr>
<td>1980</td>
<td>5.9</td>
<td>6.5</td>
<td>4</td>
<td>0</td>
<td>4.1</td>
</tr>
<tr>
<td>1985</td>
<td>7.9</td>
<td>8.4</td>
<td>3.3</td>
<td>0</td>
<td>4.9</td>
</tr>
<tr>
<td>1990</td>
<td>4</td>
<td>8.7</td>
<td>5.6</td>
<td>0</td>
<td>4.6</td>
</tr>
<tr>
<td>1995</td>
<td>4.5</td>
<td>6.4</td>
<td>4.2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2000</td>
<td>8.7</td>
<td>7.8</td>
<td>8.8</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td>2002</td>
<td>8.8</td>
<td>8.7</td>
<td>9.1</td>
<td>10</td>
<td>9.1</td>
</tr>
</tbody>
</table>

Notes on scoring scheme used in each category (by column):
[1] Money growth equal to the long term growth of real output scores 10, if 50 (or more) percentage points greater, score is 0.
[2] A perfect 10 would result if the standard deviation of inflation were zero over the preceding 5-year period, zero if 25% or more.
[3] Perfect price-level stability scores 10, inflation 50% scores 0.
[4] Score is 10 if foreign currency deposits allowed at home and abroad, 5 if at home only, 0 if disallowed entirely.

B. Sound Financial Regulation (weight 1/15)

<table>
<thead>
<tr>
<th></th>
<th>Private Ownership of Banks</th>
<th>Credit to Private Sector</th>
<th>Avoid. Negotiation. Real Interest Rates</th>
<th>Credit Market Regulation</th>
<th>Real GDP Growth Rate Annual Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>0</td>
<td>4.2</td>
<td></td>
<td>2.1</td>
<td>NA</td>
</tr>
<tr>
<td>1975</td>
<td>0</td>
<td>1.3</td>
<td></td>
<td>0.7</td>
<td>NA</td>
</tr>
<tr>
<td>1980</td>
<td>0</td>
<td>0.9</td>
<td>4</td>
<td>1.6</td>
<td>NA</td>
</tr>
<tr>
<td>1985</td>
<td>0</td>
<td>0.9</td>
<td>0</td>
<td>0.3</td>
<td>NA</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
<td>7.2</td>
<td>4</td>
<td>3.7</td>
<td>NA</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>4.7</td>
<td>4</td>
<td>2.9</td>
<td>0.16%</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
<td>4.5</td>
<td>4</td>
<td>2.8</td>
<td>4.22%</td>
</tr>
<tr>
<td>2002</td>
<td>2</td>
<td>6.1</td>
<td>9</td>
<td>5.7</td>
<td>5.95%</td>
</tr>
</tbody>
</table>

[5] Score is 10 if percentage of deposits held in privately-owned banks is between 95% and 100%, 0 if 10% or less.
[6] Score is 10 if percentage of total domestic credit extended to the private sector is close to 100%, 0 if close to 0%.
[7] When interest rates are determined primarily by market forces and real interest rates are positive, score is 10. Score is zero if interest rates are fixed by government and real interest rates < 0.

* Average of items shown in previous columns, excluding blanks.
The index is available at 5-year intervals, 1970-2000, since annually.
Table 3. Twelve Years of Uneven Financial Development
Tanzania 1992-2004

<table>
<thead>
<tr>
<th>Units:</th>
<th>Exchange Rate with U.S. Dollar Yearend</th>
<th>Interest Rate on TZS Savings</th>
<th>Principal w. Interest from TZS to USD</th>
<th>Claims on Private Sector/DC PDC/DC</th>
<th>Domestic Credit (DC) in % GDP</th>
<th>Claims on Private Sector/GDP PDC/GDP</th>
<th>USD Return fr. [3] less US T-Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column:</td>
<td>TZS/USD</td>
<td>%</td>
<td>USD</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>1992</td>
<td>335</td>
<td>NA</td>
<td>100</td>
<td>33.24</td>
<td>29.31665</td>
<td>9.7447203</td>
<td>NA</td>
</tr>
<tr>
<td>1993</td>
<td>479.87</td>
<td>24</td>
<td>86.565111</td>
<td>33.22</td>
<td>32.505375</td>
<td>10.797262</td>
<td>-16.4549</td>
</tr>
<tr>
<td>1994</td>
<td>523.45</td>
<td>23.98</td>
<td>98.388178</td>
<td>35.79</td>
<td>27.104621</td>
<td>9.699548</td>
<td>9.368</td>
</tr>
<tr>
<td>1996</td>
<td>595.64</td>
<td>14.25</td>
<td>121.20905</td>
<td>19.70</td>
<td>15.702137</td>
<td>3.0937138</td>
<td>0.54482</td>
</tr>
<tr>
<td>1997</td>
<td>624.57</td>
<td>8.79</td>
<td>125.75543</td>
<td>28.54</td>
<td>12.422982</td>
<td>3.5452624</td>
<td>-1.31914</td>
</tr>
<tr>
<td>1998</td>
<td>681</td>
<td>8.29</td>
<td>124.89617</td>
<td>35.20</td>
<td>12.230469</td>
<td>4.3053175</td>
<td>-5.49328</td>
</tr>
<tr>
<td>1999</td>
<td>797.33</td>
<td>8.27</td>
<td>115.49582</td>
<td>36.17</td>
<td>12.985725</td>
<td>4.6972521</td>
<td>-12.1865</td>
</tr>
<tr>
<td>2000</td>
<td>803.26</td>
<td>6.55</td>
<td>122.15231</td>
<td>38.16</td>
<td>12.014644</td>
<td>4.5850657</td>
<td>-0.0866</td>
</tr>
<tr>
<td>2001</td>
<td>916.3</td>
<td>4.15</td>
<td>111.52684</td>
<td>50.09</td>
<td>9.735685</td>
<td>4.8762419</td>
<td>-12.1485</td>
</tr>
<tr>
<td>2003</td>
<td>1063.62</td>
<td>2.58</td>
<td>101.86988</td>
<td>90.58</td>
<td>8.4366466</td>
<td>7.642157</td>
<td>-6.86151</td>
</tr>
<tr>
<td>2004</td>
<td>1042.96</td>
<td>2.45</td>
<td>106.43307</td>
<td>97.76</td>
<td>NA</td>
<td>NA</td>
<td>3.09943</td>
</tr>
</tbody>
</table>

Source by column (all IFS, April 2005):
[1] Shillings per US Dollar, End of Year, Line 738AE.
[2] Savings Rate (Interest Rate on TZS Deposits), Line 73860K.
[3] Growth of TZS 33,500 (= USD 100) with TZS Interest on Savings, from Yearend 1992 to Yearend 1993, converted to USD.
[7] USD-Equivalent Rate of Return on TZS Savings minus Average Annual US T-Bill Rate.
Appendix: Technical Derivation of the Missing Capital

In the open economy, the macroeconomic saving = investment identity implies that gross-of-depreciation saving from (a) domestic and (b) foreign sources must equal (c) gross domestic investment, where:

(a) gross domestic saving is sY, where s is the gross-of-depreciation saving rate and Y is gross output or, equivalently, gross income,
(b) saving from foreign sources is equal to the current-account deficit, CAD=cadY, and
(c) gross domestic investment, I, is the sum of net investment, gK, and depreciation (capital consumption allowances) δK, where K is the net-of-depreciation stock of capital, gK is its annual growth rate, and δ its annual depreciation rate.

Solving this identity, (s+cad)Y = (gK + δ) K, for gK yields:

\[ g_K = (s+cad)(Y/K) - \delta. \]  

(1)

With the net stock of capital, K, and labor input, L, preceded by the multifactor productivity scalar, A, \( Y = AK^\alpha L^{1-\alpha} \) is the aggregate (Cobb-Douglas) production function. Now assume that, at worst, multifactor productivity has not grown at all for some time in some of the world’s poorest and stagnant countries, so that \( g_A = 0 \). Then:

\[ g_Y = g_K + (1-\alpha)g_L. \]  

(2)

Assuming that the rate of growth of labor and of the population as a whole are the same, the growth rates of per capita output and of the capital-to-output ratio are, after substituting on the RHS of the equations below for gK (from equation (1)):

\[ g_Y - g_L = \alpha[(s+cad)(Y/K) - \delta - g_L], \]  

(3)

\[ g_K - g_Y = (1-\alpha)[(s+cad)(Y/K) - \delta - g_L]. \]  

(4)

Hence, the growth trajectory of a country’s per capita income and capital-output ratio can be obtained for what might tentatively be called a worst-case scenario characterized by \( g_A = 0 \) using long-term averages of the average domestic and foreign-source saving rates in relation to GDP, s and cad, an initial output-capital ratio, \( (Y/K)_0 \), and the annual rate of population growth \( g_L \). Addition of equations (3) and (4) implies, of course, further that the growth in the capital-output ratio, \( g_K - g_L = (s+cad)(Y/K) - \delta - g_L \).

Considering eleven years of data, 1991-2001, from the country pages for Tanzania from the IMF’s International Financial Statistics Yearbook 2003 suggests that the following values may have been representative for that country in recent years:

\[ s = 0.16 \]

\[ cad = 0.06 \]

\( (27\% \text{ of total gross saving and investment equal to } 22\% \text{ of GDP is obtained from abroad}) \]

\[ g_L = 0.027. \]

The value of other parameters and the initial condition are guesstimates, with the depreciation rate of 8% of the net stock of capital assumed to be considerably higher than the 4% to 6% usually encountered in advanced industrial countries. The capital share, \( \alpha \), on the other hand is lower than estimated for many developing countries thus further assuring that the contribution of capital to output is, if anything, understated in the conjectures that follow. Finally, because Tanzania only began industrializing in the 1950s and then took a long and eventually ruinous
detour through state-“guided” socialism, the capital intensity of production, K/Y, by 1990 is assumed to have been less than half of the levels of 2 to 3 commonly found for advanced industrial countries.

\[ \delta = 0.08 \]
\[ \alpha = 0.30 \]
\[ (K/Y)_{0} = 1. \]

With these (starting) values, the exponential growth rate of per capita output and income from 1990 to 1991, \( g_{Y} \) – \( g_{L} \), is found to be 0.034 while the capital-output ratio grows, and hence the output-capital ratio declines, by 0.079 from equations (3) and (4). As a result, \( (Y/K)_{1} = e^{0.079(1.034)} \) is the output-capital ratio at the beginning of year 1992 that is used to derive the next solution for the rates of growth of per capita income and the output-capital ratio from 1991 to 1992.

Starting with an index value of 100 for Y/N and an assumed starting value of Y/K = 1, as explained, the projected (superscript P) “worst-case” trajectory is laid out for Y/N and Y/K in columns 2 and 3 of Table 1. That trajectory is estimated on the assumption that growth is due entirely to physical inputs and not also to technological progress or other advances that make given inputs more efficient in the production of output over time.

If left undisturbed, this dynamic growth process would lead to a steady state where all physical inputs, and hence output, grow at the same rate, so that both \( (g_{Y} - g_{L}) \) and \( (g_{K} - g_{Y}) \) eventually fall to 0. Hence, at that endpoint, \( (Y/K)_{steady} = (\delta + g_{L})/(s+c+\delta) = 0.107/0.22 = 0.486. \) In other words, the capital-output ratio would rise from 1 at the beginning of 1991 toward 2.06 in the steady state.

Table 1 indicates that, by 2003, the output-capital ratio would have fallen from 1 to 0.595 along this path and hence the capital-output ratio would have risen to 1.68, indicating that almost two-thirds of the adjustment to the steady state should have been completed by 2003 and that GDP per head should hence have risen by 25% from 1990 to 2003.

References


World Bank Group, World Development Indicators 2005.