

Growth Strategies to Reach the Millennium Development Goals (MDGs) in Ethiopia

Abstract

Since the Gleneagles promises, least developed countries have been encouraged to plan growth strategies to reach the Millennium Development Goals (MDGs) with the expectation that per capita Overseas Development Assistance (ODA) will grow dramatically above current levels. Such growth strategies pose grave dangers for those countries that follow them. First, although many poor countries may receive higher per capita ODA, it is highly unlikely that they will increase by multiples of current levels. Second, there are several inter-related issues including absorptive capacity and Dutch Disease effect that can undermine the intended gains for recipient countries, even if major increases in ODA are realized. Given these realities, most poor countries need to plan their growth strategies to take into account a resource-constrained environment in which there will be tradeoffs, as well as to manage absorptive capacity and Dutch Disease effects. Using a dynamic Computable General Equilibrium (CGE) Model, this paper analyzes quantitatively the tradeoffs involved for Ethiopia. The dynamic CGE model, the MAMS model, has been developed at the World Bank by Hans Lofgren and is closely related to the standard, static, single-country CGE model developed earlier by Hans Lofgren, Sherman Robinson, and Rebecca Harris.

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Introduction:

Attention to scaling up development assistance to least developed countries, particularly to Sub Saharan African countries, have gained momentum in recent years as efforts have grown to have these countries if not achieve, then make substantial progress, towards meeting the UN Millennium Development Goals (MDGs) by 2015. At the International Conference on Financing for Development in Monterrey in March 2002 (the “Monterrey Consensus”) countries belonging to the Development Assistance Committee (DAC) reaffirmed their commitment to making progress towards helping poor countries achieve the MDGs primarily by increasing Official Development Assistance (ODA). For instance, the European Union announced plans that it would increase its assistance to an average of 0.39 percent of national income by 2006, and some EU members envisioned further increases in aid. The United States announced that it would propose increases in its annual contribution by \$5 billion for the Millennium Challenge Account and just below \$2 billion for an AIDS initiative by 2006. And other DAC members announced plans to raise aid levels.

The Monterrey commitments were further renewed and even unprecedented commitments were made at the 2005 G-8 summit held at Gleneagles. The summit made Africa a priority where a comprehensive assistance package was agreed to accelerate progress by Africa towards meeting the Millennium Development Goals. Some of the commitments include a doubling of aid by 2010, which means an extra USD \$50 billion worldwide and USD \$25 billion for Africa; Writing-off immediately the debts of 18 of the world's poorest countries, most of which are in Africa. This is worth \$40 billion now, and as much as \$55 billion as more countries qualify; Writing off \$17 billion of Nigeria's debt, in the biggest single debt deal ever; A commitment to end all export subsidies by wealthy countries where a date was to be set at the World Trade Organization's Ministerial meeting in Hong Kong later that year. The G8 have also committed to reducing domestic subsidies, which distort trade; to make possible universal access to HIV/AIDS treatments by 2010; and to provide funding for treatment and bed nets to fight malaria.

This represents a major increase in official development assistance flows as a share of the Gross Domestic Product (GDP) of the individual Sub Saharan countries while in absolute terms it represents a tripling and even in some cases quadrupling of aid money than current levels of assistance. It also means for the donor countries a sizable increase as a share of their national income (GNI). For instance, although well below the peak of 0.34 percent of GNI in ODA achieved in the 1990s, if realized, the Monterrey commitments alone would have pushed ODA to 0.26 percent of industrial countries' GNI¹ and the Gleneagles commitments to above 0.5 percent of GNI.

Can a scaling up of development assistance help African countries reach the MDGs? Indeed, some have argued that the MDGs are unnecessarily ambitious with no historical precedence of achieving such a mammoth task.² Others argue that given a conducive

¹ Shaw and Eung Ju Kim. 2003

² Clemens et al. 2004

environment and sufficient level of external support, African countries can actually make substantial progress to reaching the MDGs. For instance, the UN Millennium Project Report outlines the factors that enable a conducive environment like good governance and empowering civil societies and the private sector. It also articulates the level and type of external support deemed sufficient. It includes expanding the financial envelop; making aid processes MDG-based; adequately differentiating support strategies by country; making development a long term process, such as development partners supporting countries to put forward 3- to 5-year MDG-based poverty reduction strategies that are anchored in a 10-year needs based framework through 2015; adequately coordinating the efforts of multilateral agencies to MDG-based poverty reduction strategies; structuring development finance to be needs-based or set to meet the MDGs which means ODA should be set by the MDG financing gaps outlined in the MDG-based poverty reduction strategies; aligning debt relief with the MDGs; improving the quality of development finance such as for well governed countries a much larger share of ODA should take the form of budget support and for all developing countries, donor agencies honor the commitments outlined in the Rome harmonization agenda; improving systemic issues such as overlooking major MDG priorities like environmental conservation, regional integration, sexual and reproductive health, and cross-border infrastructure; and developing by donor countries a coherent development, finance, foreign, and trade policies with respect to supporting the MDGs.³

Towards these goals, MDG needs assessment studies have been conducted in many African countries with estimated annual costs ranging from USD \$50 to \$66 billion initially and rising to \$126 billion by 2015 in incremental MDG spending requirements in addition to current aid flows to reach them.⁴ For instance the MDG Needs Assessment Synthesis for Ethiopia initially estimated the cost between USD \$300-\$500 per capita in overseas assistance annually for Ethiopia to achieve the MDGs in 2015.⁵ Although lower estimates were also offered especially by the World Bank⁶, by and large much of the research and government strategies tended, at least implicitly, to assume that such increases in overseas assistance are actually feasible and forthcoming.

Two basic questions therefore are whether these commitments will be honored and if so can low income countries effectively absorb such increases in aid at a relatively short period of time to efficiently use it for the purpose of making progress towards meeting the MDGs? And in the likely event that these commitments will not be fully honored, how should African countries strategize their growth policies to achieving the MDGs?

This paper examines these questions and argues that although many poor countries may receive higher per capita ODA, it is highly unlikely that they will increase by multiples of current levels. Second, there are several inter-related issues including absorptive capacity and Dutch Disease effect that can undermine the intended gains for recipient countries,

³ UN Millennium Project. 2005

⁴ Sundberg and Lofgren. 2006

⁵ MDG Needs Assessment Synthesis. 2005

⁶ Global Monitoring Report. 2004

even if major increases in ODA are realized. Given these realities, most poor countries need to plan their growth strategies taking into account a resource constrained environment in which there will be tradeoffs, as well as to manage absorptive capacity and Dutch Disease effects.⁷ Using a dynamic Computable General Equilibrium (CGE) Model, the paper analyzes quantitatively the tradeoffs involved for Ethiopia distinguishing between the implications of directing aid at investments of basic infrastructure with the aim of generating rapid growth and directing aid towards the social sectors with the aim of maximizing human development. Although the model simulation results and the case study are for Ethiopia, the conclusions equally apply to most least developed countries.

The structure of the paper is as follows. The first section provides some relevant background information on the Ethiopian economy, including a discussion of its structure which is characterized by low and poor public asset accumulation. The second section discusses the implications of poor and inadequate public asset accumulation on growth. The third section explores the problems of resource constraints and absorptive capacity including Dutch disease effects. The fourth section presents an overview of the MAMS model including a discussion of its main MDG simulation results. Finally, based on the simulation results, section five outlines a growth strategy for Ethiopia to substantially progress towards the MDGs given the problems of resource constraints and absorptive capacity.

1. Overview of the Ethiopian Economy:

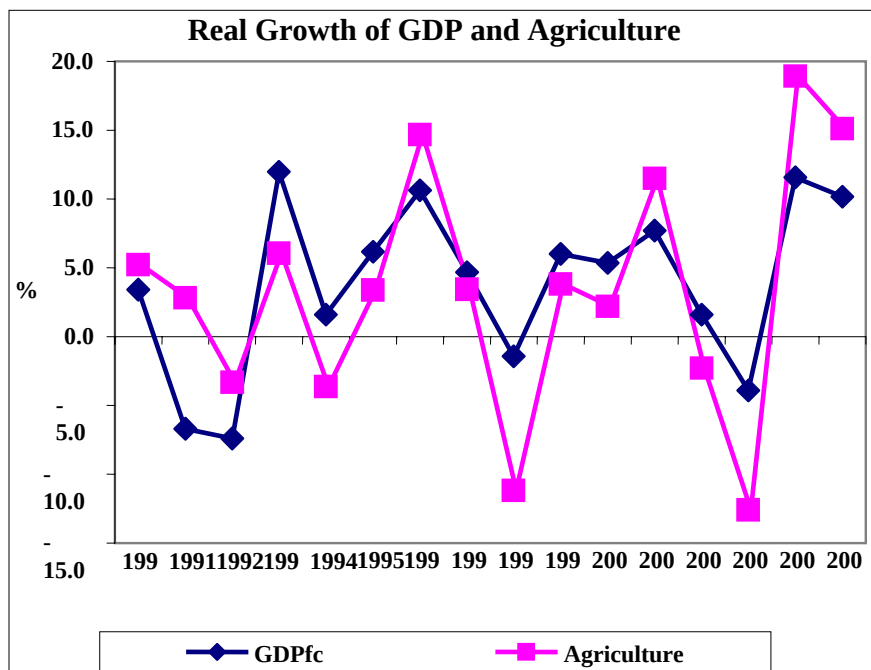
The challenges facing Ethiopia are daunting and are characteristic of several Sub Saharan African economies. Accelerated population growth (about 3 percent p.a.), very low productivity, structural bottlenecks, and dependence on unreliable rainfall pose challenges that continue to undermine rapid and sustainable growth. The different mechanisms hindering Ethiopia's progress are intimately intertwined and self enforcing that lock the country in perpetual poverty traps that prevent it from breaking out of the combinations of low income levels and low productivity growth.

Like most Sub Saharan countries, GDP growth in the 1980s was very low and at times in the negatives leading to the present widespread and deep income poverty and low human development indicators. There is also extreme vulnerability, with consumption rising and falling dramatically from year to year as a result of drought, ill health, or terms of trade shocks. During the 1990s, growth accelerated averaging 4.7 percent annually. Despite such growth rates in the past few years, however, sustaining long-term growth remains a challenge. Adjusting for population growth, average per capita incomes rose only by about 2.1 % per annum.

⁷ Recent studies have focused attention on the implications of Absorptive capacity and Dutch disease effects on achieving the MDGs. See Bourguignon et al 2004-2006. Sundberg and Lofgren. 2006

There has been, however, encouraging progress in recent years in improving some basic aspects of life in Ethiopia. Since 1996 the literacy rate has increased by 50%, the rate of malnutrition has fallen by 20%, the share of the population with access to clean water has risen to 38% and according to the Welfare Monitoring Survey (WMS) of the Central Statistical Agency (CSA), there has been a steady decline in the reported incidence of illness.⁸

The economy also continues to register double-digit growth for the second year since the 2003 drought. Growth was also broad-based, agriculture-led and driven by private consumption. Increased investment and an unprecedented rise in the price of strategic import products resulted in wider external resource gaps, while aggregate fiscal discipline resulted in an improved public resource balance.



Source: The World Bank. Ethiopia: Economic Update. May 2005

After two consecutive years of negative real growth, GDP increased by 11.5 and 10.2 percent in FY 2003/04 and 2004/05, respectively and is expected to grow by about 8 percent in 2005/06. The major source of growth was the rural sector. During the first and second year under review, agricultural value added increased by 18.9 and 15.1 percent, respectively. Performance in the non-agricultural sectors was also strong compared to trends. Value added in the industry and distributive sectors grew by about 7 percent in 2003/04 and 2004/05, against the 3 percent average during 2001/02 and 2002/03. Public sector value added, particularly in the education and health sectors, continued to grow at an average of 12 and 8 percent, respectively.⁹

⁸ MOFED. 2005

⁹ Ethiopia: Economic Update. World Bank. 2005.

Gross Domestic Product At 1992 Constant Prices Growth Rate(%)										
Industry/Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
A. Agriculture,Hunting and Forestry	17.2	2.4	-10.5	4.6	3.2	10.6	-2.7	-11.4	17.5	12.3
B. Fishing	29.2	35.7	10.7	-4.4	1.1	-1.9	18.8	3.9	5	5
C. Mining and Quaring	8.3	3.4	2.7	-8.4	11.1	0.8	13.3	7.2	8	8
D. Manufacturing	1.8	4.8	-1.6	12.8	3.6	5	-1.8	0.7	5.4	5
E.Electricity,Gas and Water	2.1	4.9	3.6	1.6	4	3.3	9.7	4.3	7	6
F.Construction	6.9	7.3	13.4	4.5	2.6	5.9	11.3	11.9	8.2	8.5
G.Tradeand Related Services	10.5	4.3	-1.6	11.8	3.6	3.5	0.8	1.1	6.5	6
H.Hotels and Restorants	10.5	4.3	-1.6	11.8	3.6	3.5	0.8	1.1	6.5	6
I.Transport and Comunications	13	2.6	4.6	-0.5	8.1	14.4	3.5	8.1	7	7
J.Financial Intermediation	55	1.5	1.7	15.5	10.8	5.9	-0.4	4.8	6	6.5
K. Real Estate,Renting and Business Activities	4	4	3.9	4	3.9	4	3.9	3.9	4.1	4
L.Public Administration and Defence	8.9	-4.1	4.2	43.7	33.1	-7	-13.4	-1	2	3
M.Education	3.3	4.3	5.6	5.7	6.7	11.2	7.6	11.3	11	11
N.Health and Social Work	5.2	5.9	8.5	17.2	6.1	11.7	14	0.8	8	8
O.Other community,Social and Personal Services	8	6.8	3.1	2.4	3.9	3.9	5.1	5	5	5
P.Private Householdes with Employed Persons	4.7	4.4	4.3	4.2	4.1	4.1	4	4	4	4
Q.Extra-Territorial Organizations and Bodies	2	2	2	2	2	2	2	2	2	2
Total	13	3	-4.6	7.4	5.4	7.2	-0.5	-3.6	11.2	9
Less: FISIM	60.5	4.1	-7.2	27.1	19.7	-2.5	-6.1	4.8	8.4	8.6
Value Added at Current Basic Prices	12.8	3	-4.5	7.2	5.3	7.3	-0.5	-3.7	11.2	9
Taxes on Products	7.7	14.3	-2.1	2.7	6.7	15.3	3.9	7.8	12.8	8
GDP at Current Market Prices	12.4	3.7	-4.4	6.9	5.4	7.9	-0.2	-2.9	11.4	8.9

Source: National Accounts Department. MOFED. 2005

Aggregate Output, Consumption and Savings At Current Prices ('000 Birr)								
Items/Year	1990 1997/98	1991 1998/99	1992 1999/00	1993 2000/01	1994 2001/02	1995 2002/03	1996 2003/04	1997 2004/05
					Pre.Actual	P.Estimate	P.Estimate	Forecast
GDP at Current basic Prices	51256763	55292367	61488648	62629650	58780076	63748865	77677912	89111060
Taxes on Products,net	3512089	3737172	4348950	4957600	5094835	6011374	6780830	7682681
GDP at Current Market Prices	54768852	59029539	65837598	67587250	63874911	69760239	84458742	96793741
Incomes from ROW,net	-239449	-392105	-488880	-426388	-457878	-567204	-690000	-778816
Gross National Income at Current Basic Price	51017314	54900262	60999768	62203262	58322198	63181661	76987912	88332244
Gross National Income at Current Market Price	54529403	58637435	65348718	67160862	63417033	69193035	83768742	96014925
Current Transfers from ROW,net	3657599	3695266	5652268	6434136	6635814	9387614	9435750	8782509
Gross National Disposable Income	58187002	62332701	71000986	73594998	70052847	78580649	93204492	104797434
Government Financial Consumption Expenditure	5432134	9160836	11921904	9963846	8986752	10505513	11661120	12943842
Private Financial Consumption Expenditure*	42365601	45092568	48771037	52049346	49308573	52825888	63995855	73030940
Gross Capital Formation	11195435	11999590	13096291	13786201	15261655	16787820	22495679	25870031
Exports of Goods and Services	7116915	6878011	8017632	8017632	8027387	9778050	11611838	13176480
Imports of Goods and services	11341233	14101466	15969265	15969265	17709457	20137033	25305750	28227552
Resourse Balance	-4224318	-7223455	-7951633	-7951633	-9682070	-10358983	-13693912	-15051072
Gross Savings	10389267	8079297	10308046	10308046	11757521	15249247	17547517	18822652
Ret of Gross Savings(%)	18.97	13.69	15.66	15.66	18.41	21.86	20.78	19.45
Rate of Investment(%)	20.44	20.33	19.89	19.89	23.89	24.07	26.64	26.73
Mid-Year Population ('000)	59000	60777	62584	62584	66282	68174	70097	72055
Per Capita GDP at Current Market Price (Birr)	928	971	1052	1052	964	1023	1205	1343
Average Exchange Rate (Birr/USD)	6.86	7.53	8.15	8.15	8.54	8.58	8.63	8.89
Per Capita GDP (USD)	135	129	129	129	113	119	140	151
Per Capita GDP(USD) 3 year Moving Average	147	138	131	131	123	119	124	137
*Includes Statistical discrepancy								

Source: National Accounts Department. MOFED. 2005

One of the major factors that characterize the Sub Sahara African economies is the extremely low level of physical capital stocks. The low level of public asset accumulation has been a major growth-detering feature of these economies. Low public asset accumulation particularly infrastructure translates into underdeveloped markets, high transport and trade margins, coordination failures, and costly and weak diffusion of innovation, science, and technology.

Public Asset Accumulation (infrastructure Indicators)					
Regions	Access to improved water source (% of population) 2000	Road density (km/sq. km of land) 1999	Installed capacity per 1000 persons (kW) 2001	Electricity consumption per capita (kWh) 2001	Average telephone mainlines per 1,000 persons
Ethiopia	24	0.03	8	22	5
Sub-Saharan Africa	58	0.07	105	456	15
Developed countries	99	0.43	2044	8421	585
Developing countries	79	0.14	272	938	100
East Asia & Pacific	76	0.14	223	816	131
Europe & Central Asia	91	0.12	992	2774	228
Latin America & Caribbean	86	0.15	431	1493	168
Middle East & North Africa	88	0.06	338	1409	107
South Asia	84	0.82	99	331	34
Low income	76	0.18		317	28
Least developed countries: UN classification	62	0.06		89	7

Source: Ethiopia: Fiscal Space and Infrastructure Investment Pilot Study. Unpublished draft. IMF and the World Bank. September 2004.

2. The Implications of Low Public Asset Accumulation on Growth:

Growing evidence shows a link between the level and composition of public investment to private capital formation, factor productivity, and growth. There is growing evidence that public asset accumulation, particularly in roads, electricity, and telecommunications, does stimulate private investment.¹⁰ The relationship between public asset accumulation and private investment, however, is subject to a threshold. There is a general consensus

¹⁰ Country Economic Memorandum (CEM). 2005

among development economist's that a gestation lag of about five years is necessary for the investment in infrastructure to raise private investors' rate of return sufficiently to stimulate private capital formation.¹¹ If this complementary effect of public on private investment is constrained mainly because of neglect or lack of sufficient funds being appropriated towards infrastructure, the economy may be stuck in a low-growth, high poverty trap, in which small increases in public investment in infrastructure yield few benefits.¹²

Sufficient accumulation of public asset, particularly in infrastructure, affects growth through several channels. The major effect is in stimulating private physical capital formation, and thus the overall rate of accumulation of physical capital, which has a direct impact in generating an increase in the productivity of the production sectors thereby affecting growth. Although it is not the only factor, this complementary effect between public capital and private capital accumulation certainly has a causal impact on productivity. Public investment in infrastructure may therefore affect the rate of total factor productivity growth, independently of its effect on factor accumulation.¹³

There is growing evidence linking the level and composition of public investment to private capital formation and growth in several developing countries. For instance, Aschauer and Lachler¹⁴ (1998), using both a time-series and cross-country approaches for Mexico found that public capital contributes significantly to factor productivity growth in circumstances where the public investment is financed by lower current government spending, as opposed to a higher level of public debt and when public investment does not substitute for private investment. In fact, if it does, it will even reduce overall productivity if public expenditures are made with less regard for appropriate procurement procedures than private investment.

In a study of nine major Latin American nations over the 1983- 1993 period, Ramirez and Nazmi¹⁵ found that public investment expenditure has a positive, albeit lagged, effect on private capital formation. The authors also found that government consumption expenditure has a negative effect on both private capital formation and growth and that overall public investment exerts a crowding-out effect on private capital formation if financed through domestic borrowing.

Although they are very few, there are studies that have attempted to quantify the effects of various components of public investment in infrastructure on growth and private capital formation in developing countries. In one of the few studies available, Naqvi¹⁶ found that public capital has large positive externalities in Pakistan and is significantly

¹¹ Bourguignon, Francois and Sundberg, Mark. 2006

¹² Country Economic Memorandum (CEM). 2005

¹³ Agénor, Pierre-Richard. 2004

¹⁴ Aschauer, David Alan and Lachler, Ulrich. 1998

¹⁵ Ramirez, Miguel D. and Nazmi, Nader. 2003

¹⁶ Naqvi , Naveed. 2003

more productive than private capital, with an output elasticity close to 0.5 as opposed to 0.3 for private capital. The Naqvi research finds evidence of large externalities to public capital accumulation. When these externalities are fully taken into consideration, public capital is shown to be more productive than private capital in the macro economy. Furthermore, impulse response analysis shows that an exogenous shock to private capital takes almost twice as long to disappear from the system as an equivalent shock to public capital.

The evidence of the relationships between public asset accumulation (infrastructure investment) and private investment is not necessarily limited to macro analysis. There is also growing microeconomic evidence that the lack of public investment in infrastructure, or poor quality in the provision of public services, can have detrimental impact on private capital formation. In a 1999 study of how inadequate provision of public infrastructure and services affects private investment, using firm-level surveys of Uganda, Reinikka and Svensson¹⁷ have found that poor public infrastructure (unreliable and inadequate public power supply used as a proxy for poor infrastructure) significantly reduced investment by private firms.

However, the impact of public investment on growth depends to a large measure on how it is financed. If the financing of public investment displaces or “crowds-out” private investment, its impact on factor productivity and hence growth is minimal if not negative. The crowding out effect occurs if the incremental public investment is financed by either higher taxes or increased domestic borrowing. Such financing mechanism spreads out the tax burden over time. Thus, the net return of that investment is reduced by the impact of the distortion the taxes may have on the economy.¹⁸ Its impact on growth will also be distorted through reduced factor accumulation, which occurs when higher taxes lead to a net reduction in total investment, and on lower productivity, which occurs when investors reduce investment to as a result of higher taxes or “shift to less socially profitable economic activities in order to evade government taxes”.¹⁹ Moreover, if a rise in domestic public debt occurs as a result of public investment, it may raise concerns about its sustainability over time, and strengthens expectations of a future increase in taxation thereby increasing risk premia and affecting negatively expected after-tax rates of return on private capital.²⁰ When this happens, the negative impact on total factor productivity and hence growth will be great.

¹⁷ Reinikka, Ritva and Svensson, Jakob. 1999

¹⁸ Aschauer, David Alan and Lachler, Ulrich. 1998

¹⁹ Aschauer, David Alan and Lachler, Ulrich. 1998

²⁰ Agénor, Pierre-Richard. 2004

3. Resource Constraints, Absorptive Capacity and Dutch Disease Effects:

Two interrelated issues occupy this section. Resource constraints on one hand and absorptive capacity and Dutch disease effects on the other in the event that the development assistance commitments materialize as promised. There has been of late extensive research on the implications of absorptive capacity and Dutch disease effects on progress towards achieving the MDGs.²¹ Insufficient structural and institutional capacity often preclude poor countries to absorb large amounts of aid and put it to productive use. Absorptive capacity therefore refers to the marginal rate of return to aid.²² And a country will have reached its absorptive capacity for foreign aid when the rate of return on additional aid fails to achieve its productive potential or fails to achieve a minimum acceptable level of result that the aid was intended for in the first place.

One of the adverse implications of large aid flows is on the macro economy, particularly on domestic demand, relative prices, and the real exchange rate. Substantial aid flows often permit recipient countries to a much larger trade deficit, and draws resources to non-traded sectors, and places upward pressure on the real exchange rate, reducing competitiveness and resources flowing to traded goods and services. These effects are long recognized as the Dutch disease effects.²³ The extent to which aid flows are associated with the problem of real exchange rate appreciation depends largely on the relative impact on demand and supply. The supply response, depending on the effects of aid on productivity across sectors, largely determines the depth and duration of adverse effects following the surge in aid.²⁴

While the implications of absorptive capacity and the Dutch disease effects and the challenges they pose to achieving the MDGs in the event that commitments materialize from donor countries are clear, they are based on the assumption that donors have adequate knowledge of the growth strategies of recipient countries to reach the MDGs and recipient countries reveal their true strategy based on the anticipation of fully certain aid flows according to the commitments of donors.²⁵ But the prevailing precedence thus far is that aid flows from donors are far more unpredictable and are often characterized by big swings. Although the reasons for delayed and unpredictable timing of disbursement of aid are, to some extent, traceable to the recipient governments themselves mainly due to their inability to meet aid conditions, very often, however, aid is tied to political agendas and delays can be traced to reasons other than non-fulfillment of conditionality on the part of recipient countries.

²¹ See Bourguignon et al 2004-2006. Sundberg and Lofgren. 2006

²² Bourguignon and Sundberg. 2006

²³ Sundberg and Lofgren. 2006. Also Heller and Gupta (2004) provide a clear overview of the issues and cite several country studies.

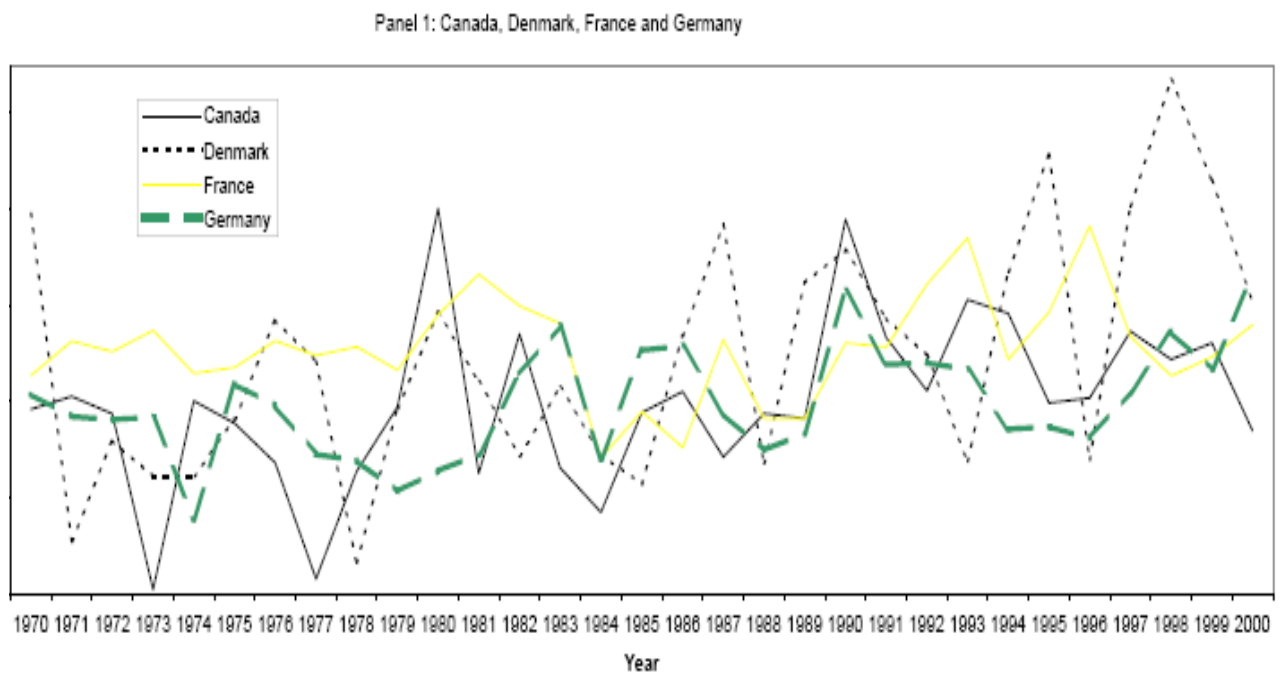
²⁴ Bevan, David. 2005

²⁵ Bourguignon and Sundberg. 2006

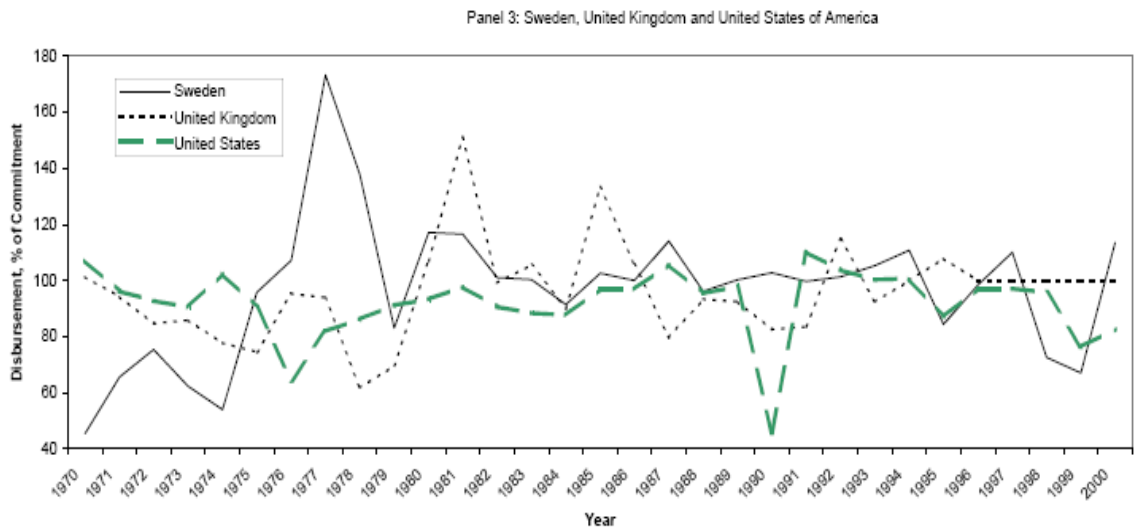
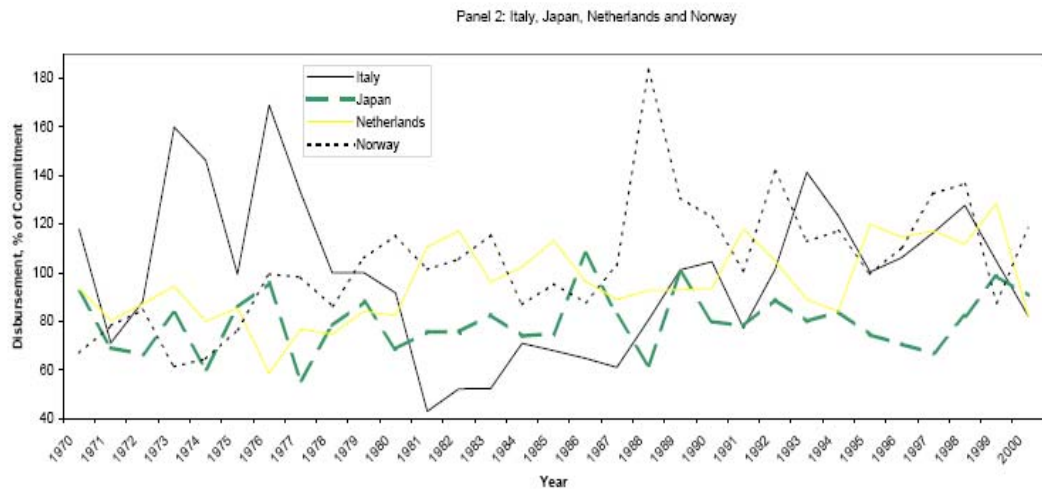
A study conducted based on panel data derived by pooling 1970-2000 annual data over the 22 donors of OECD's Development Assistance Committee (DAC) shows that aid disbursement in relation to commitments are characterized by both unpredictability and large swings.²⁶

In the figure below, annual disbursements in relation to commitments over the 1970-2000 period are shown for selected donor countries. The selection is not random, but criteria-based. The eleven countries include the G7 members plus Denmark, Norway, Netherlands and Sweden; the four donors that currently are achieving the UN-prescribed aid-giving target of 0.7 per cent of GNP. These eleven countries account for over 80 per cent of the total aid volume of all 22 DAC members.

Disbursement as Percentage of Commitment for G-7 Members and UN Target-Compliant Donors, 1970-2000



²⁶ Odedokun, Matthew. 2003



Source: Matthew Odedokun: Analysis of Deviations and Delays in Aid Disbursements. 2003.

In an ideal situation where commitments are disbursed within the agreed timeframe, in this case annually in fairly constant proportions, the pattern would have indicated almost a straight line, enabling the recipient to anticipate the expected volume of aid better. But annual aid disbursements by bilateral donors compared to commitments are characterized

by very wide swings as the panels of the above figure indicate. Temporal fluctuations measured by the coefficient of variation (standard deviation divided by mean) of the disbursement-to-commitment ratio - are particularly high for France, Germany, USA and Japan. On the whole, the underlying data show that annual disbursements fell short of commitments in about 57 per cent of the data points for all the donors.²⁷

If the swings were motivated by common external factors such as disbursement interrupted as a result of non-fulfillment of assistance conditions on the part of the recipient country, and thus collectively provoked an almost simultaneous delay in the release of overdue commitments, the fluctuation pattern in the above panels should be similar for many of the donors. But the contrary is true. Virtually no donor has a similar pattern.²⁸ This indicates that in most of the cases the fluctuation in disbursement is more donor specific than non-compliance of conditions on the part of recipient countries.

The above illustration is intended to support the argument that the historical precedence thus far is much less comforting. Aid disbursement in relation to commitments made are characterized by both unpredictability and large swings, which will make it difficult if not impossible to plan growth strategies based on the anticipation that aid flows will be as high as the pledges made by donors. In short, although most Sub Saharan countries, including Ethiopia will, most likely, see significant increases in current levels of aid, it is highly unlikely that aid flows will increase by multiples of current levels to the levels envisioned and articulated in the various needs assessment synthesis and donor commitment communiqués. Thus, Sub Saharan countries will face a serious resource constrained environment in their pursuit to achieve the MDGs. Any MDG based growth strategy therefore should account such a reality and devise an optimal path that will achieve the greatest progress towards achieving the MDGs.

4. Overview of the MAMS Model:

The MAMS (Maquette for MDG Simulation) is a dynamic computable general equilibrium (CGE) model which has been extended to include a module that covers MDGs related to poverty, health, education, and water-sanitation. The rationale for the use of a model of this type is that the pursuit of MDG strategies has strong effects throughout the economy via markets for foreign exchange, factors (esp. labor), goods and services, with feedback effects that may significantly alter the findings of more narrow sectoral analysis. For example, the amount of real health or education services that a dollar in aid can purchase may change significantly in light of changes in exchange rates, prices and wages. In addition, existing relationships between different MDGs such as health and education may influence the expansion in real services that is required – improvements in water and sanitation may reduce the expansion in health services that is required to reach health MDGs.

²⁷ Odedokun, Matthew. 2003

²⁸ Odedokun, Matthew. 2003

In the application described here, the model is applied to an Ethiopian database and solved for the period 2002-2015.²⁹ More specifically, building on the recent literature and sector studies on health and education outcomes, MAMS considers the following MDGs:

- MDG1: halving, between 1990 and 2015, the headcount poverty rate;
- MDG2: Achieve universal primary education (100% completion rate by 2015);
- MDG4: reducing by two-thirds the under-5 child mortality rate by 2015;
- MDG5: reducing by three-fourths the maternal mortality rate, and
- MDG7: reduce by half the number of people without access to safe water and basic sanitation.

The model has relatively detailed treatment of government activities related to the MDGs. Government consumption, investment and capital stocks are disaggregated by function into four education sectors, three health sectors, sectors for water and sanitation, public infrastructure, and other government activities. The major government revenue sources are taxes (direct and indirect), foreign borrowing, and foreign grants. The non-government economy is represented by a single activity. The primary factors of production are divided into public capital, private capital, and three types of labor; unskilled, skilled, and highly-skilled. GDP growth is a function of growth in the stocks of labor and capital and productivity growth. The composition and overall growth of the labor force depends on the evolution of the education sector whereas capital stock growth depends on investments. Productivity growth is also endogenous, depending on growth of the stock of public capital in infrastructure.

The core MDG module specifies how changes in the different MDG indicators are determined. To the extent possible, it is parameterized on the basis of detailed sector studies on Ethiopia. In the module, the government has an annual primary education budget covering teacher salaries, recurrent operations and maintenance costs, and capital investment for example, in new classrooms. Recurrent expenditures and the capital stock in primary education together determine the supply side.³⁰ Demand for primary schooling and student behavior – the population share that enrolls in the first grade, graduation shares among the enrolled, and the shares of the graduates that choose to continue to next grade – depend on the quality of education (student-teacher and student-capital ratios), income incentives (using current wages as a proxy, the expected relative income gain from climbing one step on the salary ladder), the under-five mortality rate (a proxy for the health status of the school population), household consumption per capita, and the level of public infrastructure services.

This specification of sector demand and supply captures lags between investment and outcomes, which is one of strength of the approach. Based on sector studies, the lags

²⁹ The model is presented in detail in Bourguignon et al (2004), and Lofgren (2004). Preliminary applications to Ethiopia are discussed in (Lofgren and Diaz-Bonilla 2005, Bourguignon et al 2005). This remains work in progress.

³⁰ Private supply of education services has not been separately included since this is relatively small in Ethiopia, but this could be elaborated for countries where it is important.

between increased enrollments and outcomes at different education levels are related to the number of years required for completion, and actual completion rates.

The specification of health services draws on a World Bank health sector strategy report for Ethiopia. Improvement in under-five and maternal mortality rates (MDGs 4 and 5) are determined by the level of health services per capita (public and private services), per-capita consumption, and the population shares with access to improved water and sanitation services (MDG 7). The package of health services that achieves MDGs 4 and 5 also includes HIV/AIDS prevention services sufficient to halt its spread (part of MDG 6). For water and sanitation, the population share with access to improved services, are modeled as functions of per capita household consumption and provision of government water and sanitation services.

The provision of the additional government services needed to reach the MDGs clearly requires additional resources – capital, labor, and intermediate inputs – that become unavailable to the rest of the economy. The effects of a program depend on how it is financed—from foreign sources, domestic taxes (which reduce consumption), or domestic borrowing (which crowds out private investment). Even with 100 percent foreign grant financing for additional services, which minimizes domestic resource costs, the rest of the economy is affected through two main channels—labor markets and relative prices. Expanding provision of health or education services increases demand for teachers and doctors, reducing the number of skilled workers available in other sectors. Increased school enrollment also reduces the size of the over-all labor force (since it removes a larger part of the school-age population from the labor force), though in the medium run it adds to the share of skilled labor in the labor force.

Two forces drive changes in relative commodity prices. First, domestic demands switch toward MDG related government services with impacts on production costs and prices throughout the economy. Secondly, increased aid flows lead to an appreciation of the real exchange rate, manifested in increased prices of non-traded relative to traded outputs. These manifestations of the Dutch disease can bring about long-lasting changes in the structure of production, which is diverted from exports and competition with imports.

The limitations on absorptive capacity are captured through three main channels—the two channels just mentioned, through labor market and through changes in the real exchange rate (relative price of the domestic good and international prices). The third channel is represented by potential infrastructure bottlenecks, particularly in transport and energy infrastructure. Large investments in education services, for example, will tend to reduce absorptive capacity further as skilled labor is diverted to education, as the relative price of non-tradables rises (for instance real wages are bid up reflecting the Dutch disease effect), and if infrastructure bottlenecks reduce the efficiency of public service delivery. Moreover, the impact will not be limited to the education sector but affects costs throughout the economy, including other public services and the private sector.

Policy makers thus face important trade-offs: increased investment in public service delivery is essential for improved MDG outcomes, but beyond some point the unit costs

begin rising, along with indirect costs to other sectors. The challenge is to keep costs down while also targeting social outcomes over time. Building absorptive capacity is clearly a central element to this process.

There are also important complementarities across spending on different MDGs, in the modeling framework represented by cross-elasticities, where progress for one MDG may contribute to progress for other MDGs. For example, progress in the provision of improved water and sanitation services has a positive impact on health outcomes. Another example is education: provision of primary and secondary education helps to expand the skilled workforce needed to both increase productivity of the private sector, and work in publicly funded schools and clinics.

4.1. Simulation Results:

The Base Simulation and General Model Assumptions

The BASE simulation is a business-as-usual scenario. Specific MDG targets are not pursued. In terms of domestic policy, the different components of government consumption all grow at an exogenous rate of 5.5 percent per year, roughly the same rate as real GDP, and similar or slightly above the over-all growth trend of the economy in recent years.

For the other scenarios, growth rates for selected government services are endogenous, driven by the objective of achieving specified MDGs, while some of the exogenous growth rates are more rapid. Apart from the treatment of government consumption, most features of the BASE simulation are identical to those of the other three simulations. Starting from 2006, the (effective) direct and domestic indirect tax rates increase exogenously over time while foreign borrowing is assumed to stay constant at the 2005 level. Government investment is determined by the need to expand the government capital stock in proportion to the expansion in government service provision. Domestic borrowing from the Central Bank and others is exogenous. For the government account, foreign grants are flexible, over time increasing sufficiently to assure full coverage of the government financing gap. A flexible real exchange rate assures equality between inflows and outflows of foreign exchange. In the savings-investment balance, private investment is determined residually. All other savings and investment components are either exogenous (as is the case for foreign direct investment) or determined endogenously by various other rules.³¹ In the factor markets, supplies are driven by investment (for private capital) or a combination of demographic factors and the functioning of the educational system (for the different labor types). Flexible wages or rents clear the market for each factor. The CPI is the model numéraire – nominal income and price changes should be interpreted in the context of a fixed CPI.

³¹ For example, the private savings rate (out of post-tax private income) depends on per-capita income in a constant-elasticity formulation; the product of this rate and total private income defines private savings.

The results of the different simulations are summarized in the Tables below. The results all pertain to the period 2005-2015. For the BASE scenario, annual real growth is roughly 5-6 percent for GDP and most other macro aggregates, i.e. a continuation of or a slight improvement on current trends (see Table below). The growth rate for government investment is 2 percentage points higher. Private investment grows at the same rate as the rest of the economy. Wage growth is inversely related to factor supply growth, relatively low for private capital and labor with secondary education (as the supplies of these factors grow relatively rapidly). Foreign aid per capita reaches close to \$26, more than a 50 percent increase compared to 2005. Aid channeled through the government budget increases from around 10.5 to 13 percent of GDP.³² The endogenous annual rate of growth in total factor productivity (TFP) is around 2 percent for the private sector and 0.5 percent for the different government sectors. This scenario registers significant improvements relative to the situation in 2005 for all MDG targets; however, it falls short of achieving any one of them. The incremental capital-output ratio (ICOR) for this scenario is relatively low, at 2.9, reflecting that, for this scenario, growth in the two parts of capital that contribute most directly to GDP growth (private capital and public infrastructure capital) is high relative to other (government) capital.³³

Core MDG scenario

The simulation MDG-BASE targets the full achievement of MDGs 2, 4, 5, 7a, and 7b through an expansion of 1st cycle primary education, the different health services, and water and sanitation services. The provision of health services is also sufficient to reach the MDG target of halting the increase in HIV/AIDS via preventive services.³⁴ Spending on higher educational cycles and public infrastructure expands rapidly to generate balanced growth in the educational system as a whole and to provide the infrastructure services (roads, energy, and irrigation) that are needed to support more rapid growth. MDG 1 is not targeted but monitored (assuming an elasticity of minus one for the headcount poverty rate with respect to real per-capita consumption). In the areas of health and water-sanitation, the service growth rate from 2005-2015 is constant, at a level that is sufficient to meet the MDG targets. Apart from the 1st cycle of primary schooling, educational expansion also takes place at a constant rate. For public infrastructure, expansion is front loaded with growth being twice as rapid in the years 2005-2009 as during the remaining years. The rationale for this scenario is the need to build up the critical minimum in infrastructure that is needed for productivity-raising network effects. For 1st cycle primary education, frontloading is needed to make sure that, by 2012, (close to) every child in the proper cohort enters school and that (close to) every one in this group is able to graduate from the 1st grade in 2012 and successfully complete the

³² In the different simulations, per-capita non-government aid increases from around US\$5 in 2005 to US\$7 in 2015, i.e. the share of aid that passes through the government budget increases from around 70 to 90 percent.

³³ The ICOR is defined as the ratio between the change (from 2005 to 2015) in the total physical capital stock (both private and government; value at the base-year prices of new capital stock) and the change in real GDP at factor cost.

³⁴ If donor support is available, these services could be supplemented by HIV/AIDS treatment programs. Given that such programs would be relatively import-intensive, their presence would not substantially alter the current analysis.

remaining three grades in 2013-2015. Foreign grants grow in pace with government financing needs, while domestic financing is the same as under the BASE scenario.

The results for MDG-BASE indicate that a rapid expansion of government services is needed to achieve the MDG targets. The different government services related to the MDGs all grow at very high rates, ranging between 10 and 20 percent per year. Government MDG investment expands even more rapidly, by 18 to 36 percent, in response to the need to expand the government capital stock in proportion to service expansion. Growth in total government consumption and investment is kept in check due to the fact that “other government” (which is not directly related to MDG services) continues to grow at annual rates of 5.5 and 7.7 percent, respectively. Expressed as shares of GDP, the sum of government consumption and investment increases from 30 percent in 2005 to 50 percent in 2015.

This government expansion gives rise a similarly drastic increase in foreign aid requirements, as foreign aid in the government budget increases from 11 percent of GDP in 2005 to 28 percent in 2015. In per-capita terms, total foreign aid reaches \$70 on 2015, more than a quadrupling relative to the 2005 level. Compared to the BASE scenario, the present value (PV) of foreign aid is almost tripled, reaching US\$ 32 billion (on the basis of a discount rate of 5 percent). Higher incomes and more rapid productivity growth (at 3.3 percent, attributable to the increase in public infrastructure) permit real GDP growth to accelerate by close to 2 percent, reaching above 7 percent. The increase in aid inflows imposes a strong increase in the trade deficit, with a drastic appreciation of the real exchange rate (by 2.7 percent per year) providing the incentives for import and export growth to accelerate and decelerate, respectively. The combination of an increase in the trade deficit and more rapid GDP growth permits total absorption (the sum of private and government consumption and investment demand) to expand at close to 9 percent per year, including private consumption and investment growth at annual rates of 7-8 percent. Growth in private consumption leads to a fall in the headcount poverty rate from 35 percent in 2005 to less than 14 percent in 2015. Across the different scenarios, the private sector grows at rates that are respectable, although clearly slower than MDG-related government services. This result reflects that the availability of foreign aid permits government expansion to take place without any significant crowding out of private investment. For this and the following scenarios, the ICOR is considerably higher than for BASE, between 4 and 5, given the allocation of a large share of investment to human development with a relatively low payoff in growth during the simulation period.

Although several scenarios are simulated using the MAMS model, Lofgren and Diaz-Bonilla³⁵, we consider a scenario here where consistent with the argument above that Ethiopia and most Sub Saharan countries will face resource constrained environment in their attempt to achieve the MDGs. As argued earlier, although aid flows will increase above current levels, it is highly unlikely that they will increase to the levels anticipated in most MDG needs assessment synthesis and donor commitment communiqués. Therefore, if one considers resource constraints, then inevitably, one has to consider tradeoffs: there is a need to identify them and their implications on the economy on the

³⁵ Lofgren and Diaz-Bonilla. 2005

one hand, and on the other, to design a development strategy that will make the best possible use of available resources, allow the economy to grow at a robust rate and, at the same time, attempt to meet the MDGs. We simulate a scenario where total ODA reaches \$UD 50 in per capita terms by 2015. Such resource constraints results in tradeoffs. The model looks at the implications of each tradeoff and its ability to reach the MDGs. In both versions, the cut in government spending is such that foreign aid needs are lower than most estimates, reaching \$50 in per capita terms by 2015. The tradeoffs are:

- Focusing on human development and
- Focusing on growth and infrastructure

Focusing on human development:

Given that the amount of foreign financing required for MDG-BASE may not be available and/or that such a rapid expansion in government services may not be considered feasible, our analysis explores two alternative scenarios that attempt to address the relative merits of a focus on public infrastructure versus a focus on human development in a resource-constrained setting.

The simulation MDG-INFCUT introduces a cut in public infrastructure spending that, in the context of an increase in effective domestic tax rates, is sufficient to limit foreign aid per capita in 2015 to \$50, roughly a tripling of the 2005 level. The achievement of the targeted (non-poverty) MDGs is not compromised. However, preliminary simulations indicated that reduced growth in infrastructure services alone is not sufficient to limit final-year per-capita aid to \$50 in the context of full achievement of the targeted non-poverty MDGs. This is due to the negative impact of less infrastructure on growth in incomes and government tax revenues; beyond a certain point, less spending on infrastructure increases the need for foreign aid. Given this result, this scenario combines a cut in infrastructure spending with an increase in direct tax rates.

The over-all result is a decline in growth rates to close to BASE levels for all macro aggregates except government consumption, as a marginal increase is needed in the different government service sectors to achieve the MDGs. This increase is due to declining growth of household consumption and a lower level of infrastructure compared to the scenario MDG-BASE (both are factors that, along with government services, contribute positively to MDG achievements). The fact that the economy fails to achieve the poverty target points to the presence of a short- and medium-run trade-off between expanded human development and poverty reduction. The PV of foreign aid 2006-2015 falls by one third, to close to US\$ 22 billion. The GDP share for government demand reaches 51 percent, a slight increase compared to MDG-BASE that is due to lower GDP growth and stronger real service expansion. Relative to GDP, tax revenue in 2015 reaches 26 percent of GDP, compared to around 20 percent for the other scenarios.³⁶

³⁶ In 2002, among the 75 countries for which the World Bank Development Data Platform includes information on total tax revenues, 10 had a tax share exceeding 26 percent. The unweighted average for the 75 countries was 17 percent..

Focusing on growth and infrastructure:

The simulation MDG-HDCUT stays within the same foreign aid constraint as MDG-INFCUT by reducing the targets that are imposed for the MDGs (other than MDG 1) to a uniform share of the improvement needed to fully achieve these MDGs (relative to the 1990 rate). This scenario generates a reduction in the expansion of the different government services that are directly related to the different MDGs (1st cycle primary education services, the different health services, and water-sanitation services), with an ensuing reduction in government spending and foreign aid requirements. In order to avoid reaching aid levels in excess of \$50 per capita during periods before the terminal year, accelerated growth in infrastructure ends one year earlier than under MDG-BASE.

The results for this simulation further demonstrates a trade-off between human development versus growth and poverty reduction in a setting where foreign aid is constrained or country absorptive capacity is limited. Compared to MDG-BASE, growth in government consumption and investment shifts down by 1-3 percentage points whereas growth in private consumption and investment declines by slightly less than 1 percentage point.

The GDP growth rate declines by 0.5 percentage points, partly due to slightly lower growth both for the private and infrastructure capital stocks. Thus, the decline in domestic real demand (absorption) is due to the combined impact of lower GDP growth and a lower inflow of foreign grants. Still, the decline is quite limited. The fact that, compared to MDG-INFCUT, export (and import) growth increases noticeably is due to more rapid GDP growth and productivity increases resulting from successful infrastructure investments.

In terms of the MDGs, the poverty target is achieved, although by a smaller margin. For the non-poverty MDGs, this simulation achieves 91 percent or more of the gain required relative to the situation in 1990. During the simulation period, it reaches the levels of MDG-BASE and MDG-INFCUT with a lag of only a few years.

The two last scenarios are comparable also in terms of the PV of foreign aid for 2006-2015, which reaches US\$ 22.9 billion for MDG-INFCUT and US\$21.7 billion for MDG-HDCUT, compared to US\$ 32.3 billion for MDG-BASE. The fact that MDG-HDCUT is less costly than MDG-BASE is primarily due to two factors: lower wages of workers with secondary education and more (slower expansion in human development leads to less pressure on this segment of labor market); and considerable real resource savings from falling slightly short of achieving the non-poverty MDG targets by the 2015 deadline.

Given more rapid growth than for MDG-INFCUT and a slightly less ambitious agenda than for MDG-BASE, the 2015 GDP share for government demand, at around 44 percent, is slightly lower for this simulation than for the other two, which both landed at close to 50 percent of GDP. This observation leads to the related observation that the simulated

scenarios involve an expansion in government demand relative to GDP that is extreme by international standards (in spite of relatively optimistic scenarios for GDP growth).

One common feature of the different scenarios presented in this note is that the GDP shares for total government consumption and total tax revenues are very close to each other, at around 26 percent for MDG-INFCUT and at around 20 percent for the other simulations. This outcome suggests that, in spite of rapid government expansion, the Ethiopian government need not rely on foreign aid to cover the costs of its recurrent activities.

Balance of payments in 2005 and final year by simulation
(% of GDP)

	2005	Base	mdg-base	Mdg-infcut	mdg-hdcut
Payments					
Imports	34.1	32.6	38.1	36.3	36.0
Factor payments	0.2	2.1	1.5	1.7	1.7
Interest payments	0.8	0.9	0.6	0.7	0.7
Total	35.2	35.6	40.2	38.8	38.4
Receipts					
Exports	14.3	15.6	7.5	8.7	10.2
Private Transfers	5.3	5.6	3.6	4.6	4.3
FDI	0.7	1.3	0.8	1.0	1.0
Foreign borrowing	5.7	3.4	2.2	2.8	2.6
Foreign grants	4.9	9.7	26.1	21.8	20.3
Net other*	4.3	0.0	0.0	0.0	0.0
Total	35.2	35.6	40.2	38.8	38.4

*Net other includes changes in Central Bank reserves and exceptional financing.

Aggregate savings-investment balance in 2005 and final year
by simulation (% of GDP)

	2005	Base	mdg-base	Mdg-infcut	mdg-hdcut
Savings					
Private	10.7	11.1	11.0	10.0	11.0
Government	1.6	6.6	3.2	4.0	4.9
Rest of world*	10.6	8.0	25.0	20.3	19.0
Total	22.9	25.7	39.2	34.4	35.0
Investment					
Public	12.0	14.6	28.6	24.8	24.3
Private	11.0	11.0	10.6	9.6	10.7
Total	22.9	25.7	39.2	34.4	35.0

The table shows the simulation results for the balance of payments. However, the results for the macro-and government data in table 4 of the simulation results may be more informative on some of the issues related to BOP.

Macro and government data in 2005 and by simulation in 2015 (% of GDP)					
	2005	2015			
		base	mdg-base	Mdg-infcut	Mdg-hdcut
<u>Macro totals (% of GDP)</u>					
Absorption*	119.8	117.0	130.6	127.7	125.8
Private consumption	78.9	72.5	70.4	66.9	71.1
Government consumption	18.0	18.9	21.0	26.4	19.7
Private investment	11.0	11.0	10.6	9.6	10.7
Government investment	12.0	14.6	28.6	24.8	24.3
Exports	14.3	15.6	7.5	8.7	10.2
Imports	-34.1	-32.6	-38.1	-36.3	-36.0
<u>Government incomes (% of GDP)</u>					
Direct taxes	6.1	8.1	7.9	13.6	8.0
Import taxes	6.4	6.1	7.1	6.8	6.7
Other indirect taxes	3.3	6.1	5.9	5.8	6.0
Central bank borrowing	1.2	1.1	0.9	1.1	1.0
Other domestic borrowing	-0.7	0.2	0.3	0.4	0.3
Foreign borrowing	5.7	3.4	2.2	2.8	2.6
Foreign grants	4.9	9.7	26.1	21.8	20.3
Net other capital inflows and errors	4.3	0.0	0.0	0.0	0.0
Total	31.0	34.7	50.4	52.2	44.9
Foreign aid per capita (US\$) (2)	16.1	25.8	69.8	50.0	50.0

* Absorption: Start from the standard GDP identity:

$$\text{GDP} = C + I + G + (E-M)$$

GDP = aggregate domestic production

(M-E) = trade balance, and $C + I + G = \text{Absorption}$

Rearranging the equation;

$$\text{GDP} + (M-E) = C + I + G$$

$$\text{Supply} = \text{Demand}$$

Here, absorption as a share of GDP in the MDG-base scenario runs as high as 130.6%. Reciprocally, imports jump as well. Much of these imports are financed by foreign aid. This result does not necessarily mean that the Dutch disease effect will be serious. However, if most of this foreign aid is spent on domestic non-traded goods, then the Dutch disease effect will be serious. On the other hand, if all aid is used to finance additional imports, then there will be little or no Dutch disease effect. In the Ethiopian case, the model suggests that there will be a Dutch disease effect, which can be seen from the table where the birr appreciates.

The tradeoffs are evident in these results. First, one has to consider whether Ethiopia can achieve a \$70 per capita in foreign aid by 2015. Also the absorptive capacity has to be considered. From table that shows balance of payments conditions, the MDG-base scenario, exports are the lowest at 7.5% of GDP, while in the tradeoffs case, where foreign aid is held at \$50 per capita and human development expenditure is cut in favor of infrastructure, exports rise to 10.2% of GDP. If the focus is human development, exports decline to 8.7% of GDP.

If the government focuses on infrastructure, then imports will largely concentrate on capital goods needed as inputs for the major infrastructure investments that will take place. This increase in imports will dampen on the one hand the effect of the Dutch disease, while on the other hand, there will be more labor employed in construction to undertake the infrastructure projects, which increases demand for non-traded goods. On the other hand, if the government focuses on human development, government spending is less import intensive with a strong Dutch disease effect as the result.

5. Growth Strategy for Ethiopia:

There are important policy issues implicit in these tradeoffs. A careful study of the simulation results show that to focus on economic infrastructure (it inevitably means a cut in human development investment) will delay the achievement of the MDG's with the exception of the poverty MDG (1st MDG), by only a few years (maybe three to five at most). The 1st MDG will be reached within the target year. This result is, however, contingent upon an accelerated economic growth of 6.8 percent, which implies a focus on economic infrastructure investment along with further reform measures and a cut in human development investment. The other scenario, where the government focuses on human development in terms of investment allocations, achieves the non-poverty MDGs, but falls short of the poverty (1st MDG) target (with a rate of 27 percent as against the target of 19 percent in 2015) and also requires supplementary domestic taxation, raising the tax share in GDP from 20 to 26 percent. The scenario focused on infrastructure produces more rapid GDP growth, reaches the poverty target with a rate of 18 percent in 2015, and realizes more than 90 percent of the gain required for the other MDGs relative to the situation in 1990 (according to international targets).

If the government is to pursue a strategy that will focus on human development, as explained above, it will achieve the MDGs except the 1st MDG, but the sustainability of the growth path under the human development focus will be jeopardized given the sluggish growth rate of the economy. And the failure to achieve growth may endanger achievements of continued progress for human development indicators after 2015.

In conclusion, Ethiopia may realistically triple per capita ODA from the current level of \$16³⁷ to \$50 in 2015. This will mean a resource constrained environment that will necessitates allowing for tradeoffs in order to design an optimal growth strategy. These

³⁷ There is no censuses on the current level of per capita ODA flow for Ethiopia. Most estimates, however, put it at \$16 including food aid and emergency grants.

tradeoffs are different impacts on the future of the economy and whether Ethiopia not only can achieve any one of the MDGs, but also if it can sustain it. From this analysis, one could conclude that the government should focus on economic infrastructure investments, although the social sectors will not be abandoned. In fact, about 90% of the non-poverty MDGs will be met under this scenario. A rapid growth rate which is possible under the infrastructure focused scenario will allow reaching the social MDGs, albeit a few years after the 2015 target, but it will also make it possible to sustain them.

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