Realizing the Millennium Development Goals through socially inclusive macroeconomic policies

Country Study

Assessing Development Strategies to Achieve the MDGs in

The Arab Republic of Egypt

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The overall objective of the project was to strengthen the capacity of policymakers to formulate and evaluate socially-inclusive macroeconomic policies aimed at facilitating the achievement of the MDGs through the adaptation of an integrated modelling framework to country-specific conditions. The methodological framework is based on the adaptation of the economy-wide model system, known as *Maquette* for **M**DGs **S**imulation (MAMS) – a dynamic computable general equilibrium (CGE) model that includes a special module for the "production" of services associated with the Millennium Development Goals (MDGs). It also compromises methodologies at the micro level to identify determinants of MDG achievement, on the one hand, and to quantify effects on poverty and inequality, on the other.

The views and opinions expressed herein are those of the authors and do not necessarily reflect those of the United Nations and the World Bank or their member states.

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ABBREVIATIONS

CBE	Central Bank of Egypt
CAPMAS	Central Agency for Public Mobilization and Statistics
CPI	Consumer Price Index
DHS	Demographic and Health Survey
ERF	Economic Research Forum
ERSAP	Economic Reform and Structural Adjustment Program
FY	Fiscal Year (Egypt's fiscal year starts July and ends June)
GoE	Government of Egypt
LE	Egyptian Pound
MDG	Millennium Development Goals
Real GDP	RGDP
WPI	Wholesale Price Index
MOED	Ministry of Economic Development
MOF	Ministry of Finance
MAMS	Maquette for MDG Simulation
CGE	Computable General Equilibrium
SAM	Social Accounting Matrix
mdg2	MDG for achieving universal primary education
mdg4	MDG for reducing child mortality
mdg5	MDG for reducing maternal mortality
mdg7a	MDG for access to safe water
mdg7b	MDG for access to improved sanitation

1.   Introduction

On September 2000, the United Nations Millennium Summit approved a wide-ranging agenda for reducing poverty and improving quality of lives. That agenda was embedded in the framework of the Millennium Development Goals (MDGs). Most of these development goals need to be achieved by 2015, using 1990 as the starting benchmark. For each of these goals more specific targets and indicators have been defined. In trying to achieve those goals, developing countries have very different starting points, both initial conditions and historical experience. Also, the advance towards these goals since the 1990 benchmark and the 2000 Summit has been very uneven

This country report aims primarily at assessing development strategies to achieve the Millennium Development Goals (MDGs) in Egypt. It represents a component of a larger regional research project directed to evaluate development strategies to achieve the MDGs in the Arab Countries, and which has been coordinated and sponsored by UNDP Regional Bureau of Arab States, the United Nations Department of Economic and Social Affairs (UN-DESA) and the World Bank. This project adopts a macro-micro analytical approach to assess the impact of alternative MDG development strategies. On the macro level, the project relies on a model for economy-wide, country-level analysis of medium and long-term development policies, including strategies for – indirectly- reducing poverty and –directly- achieving the MDGs. In the core of this macro analysis lays the Maquette for Millennium Development Goal Simulations (MAMS) which is an extended issue-oriented dynamic economy-wide model capable of analyzing strategies to achieve the MDGs (Lofgren and Diaz-Bonilla, 2009). The database of MAMS is dependent on a consistent and comprehensive economy-wide accounting framework based on the social accounting matrix principles. A social accounting matrix (or simply a SAM) is designed to identify the interactions among economic subsystems, and capture the complete cycle of income flows within the economy, at a specific point of time (generally one year). On the micro level, a micro simulation methodology is particularly designed to translate the changes at the economy-wide level to resulting impact on the distribution of income and poverty. It captures the mechanism by which economy-wide shocks and variables work their way through the economy and affect the income and spending behaviour of households. This "macro-micro" mechanism depends on tracking the functioning of factor and commodity markets, the changes in prices and wage rates and then the employment performance (UNDP-RBAS, UN-DESADPAD and WB, 2006).

After an introductory part, section II provides a brief exposition of the Egyptian economy focusing on its recent reforms, macroeconomic policies as well as its current and future challenges. It turns – in section III - to the current status of MDG goals and whether or not Egypt is on the road to achieve these goals by 2015. In section IV, a sector specific analysis focusing on the targets associated with MDG2, MDG4, MDG5 and MDG7a, b is presented. The prime objective of this sector analysis is to come out with realistic estimates of the factors affecting the above four MDGs. Such analysis should ideally take into account the results of empirical studies on education and health determinants focusing primarily on Egypt and other similar countries as well as recent and future public policy regarding education and health, especially the ones which focus on achieving those four MDGs. This section addresses also the government of Egypt efforts to achieve these development objectives up to 2005.

In sections V and VI, the MAMS model was tailored to the Egyptian case and used to test alternative development strategies to achieve the millennium development goals. In order to achieve this analytical purpose, the following tasks have been accomplished and summarized in this report; a) construct a social accounting matrix (SAM) for Egypt - based on the most recent available socioeconomic data - to form a consistent and comprehensive accounting framework for MAMS, b) collect and organize the non-SAM socioeconomic data and indicators such as labour force and population size in thousands, c) estimate the parameters and technical coefficients needed to run MAMS and calibrate its base run results, d) validate the results of MAMS based on the recent economic performance of the Egyptian Economy reflected in its national income accounting system and finally e) carryout simulation runs to generate the reference path (or the base scenario) and assess the impact of alternative strategies for achieving the MDG goals in the Egyptian context. In section VII, the outcome of the micro-simulation is presented and analyzed with the objective of assessing the impact of the adopted MDG strategies on poverty and income distribution. Finally, the last section of this report provides some concluding remarks and policy recommendations based on the obtained results and sums up the experience gained from the whole analytical exercise.

2. Macroeconomic Stance

In this section of the report, the macroeconomic stance of the Egyptian economy during the last two decades is briefly outlined. It starts with an exposition of the main indicator of macroeconomic stance that is economic growth and how its trend was shaped by reform attempts. Then the discussion turns to the conduct of fiscal and monetary policy. To complete the picture, the main foundations of the Egyptian economy such as investment and external sector together with other fundamental indicators such as inflation and unemployment are presented and discussed. Finally, recognizing the importance of the recent financial turmoil and its effect on the global economy and consequently the Egyptian economy, the last subsection briefly examine how the Egyptian economy was affected by this recent global financial crisis and the measures that were adopted to stabilize the economy.

2.1. *Economic Growth and Reform*

In 1991, after nearly a decade of unsustainable trend in the government deficit, mounting external debt, double digit inflation and stagnant economic growth, the Government of Egypt (GoE) launched the Economic Reform and Structural Adjustment Program (ERSAP). ERSAP aimed primarily at stabilizing the economy through reducing structural unemployment, external debt, inflation, and increasingly negative fiscal and external deficits (ERF, 2004). The main objectives of ERSAP were to eliminate imbalances and distortions in Egypt's economy by transforming it to a market-based economy, and to restore the country's credit worthiness. The program comprises reforms of the public sector, investment policies, external policies, pricing, monetary and fiscal reform policies, and social policies (Korayem, 1997),

ERSAP was proven to be a success especially on the stabilization front where the program succeeded in bringing inflation down from an official average of more than 20 percent during the late 1980s to a single digit level in 1994 and putting the government deficit in check to 1 percentage of GDP in FY1997/8 (ERF, 2004). As a result of these stabilization efforts and a number of reforms in the real and financial sectors, the growth rate of GDP reversed its downward trend in 1995 to reach its peak at 6.3 percent in FY 1998/9 (Ministry of Foreign Trade).

As typical of most exchange rate-based stabilization programs, the boom period which was driven by the demand side, was short-lived and was followed by a bust as a result of the prone response of the supply side. Three major external shocks: the East Asian crisis (1997-1998), the Luxor massacre (November, 1997), and the sharp decline in oil prices (January, 1998) acted as catalysts for this bust period. As a result of ill government economic policy in response to these shocks as well as the global economic recession resulting from the events of 9-11 in 2001, the slowdown in economic growth continued into the new millennium, approaching 3 percent in FY 2001/2 –the lowest growth rate in more than a decade (ERF, 2004). The slowdown continued till 2003, accompanied by rising inflation, high unemployment rate, widening fiscal deficit and growing domestic debt. Moreover, economic activity continued to be constrained by high real interest rates, poor levels of productivity and competitiveness, a shortage of foreign currencies, and a depressed regional and global environment (ERF, 2004). Real GDP (RGDP) growth rate stayed in the 2-3 percent range, which is below the Egyptian economy's potential, and almost half of what is required to provide new job opportunities for the rapidly growing labour force.

Table (2.1): Main Macroeconomic Indicators, 1990-2007

Sub-periods	RGDP (Billion LE)	Inflation (%)	Government Deficit (% of GDP)	Investment (% of GDP)	Trade Deficit (% of GDP)
1990-94	2.28	14.08	7.23	20.14	6.93
1995-99	2.87	6.90	8.18	19.73	7.19
2000-04	3.64	4.69	2.92	17.93	3.95
2005-07	4.37	7.28	2.76	19.32	2.39

Source: International Monetary Fund (IMF), International Financial Statistics (IFS), July 2008.

A new cabinet was appointed in 2004 to turn around this feeble economic performance through a series of reforms focusing on revitalizing the supply side of the Egyptian economy through improving the business climate and implementing bold trade and tax reforms. For example, September 2004 saw significant tariff reductions and in June 2005 a new tax code was passed that reduced personal and corporate taxes by 50 percent (Ministry of Finance, 2007). As a result of these reform efforts, the level of economic activity witnessed a turnaround when GDP real growth started to show a growing trend and reaching 5.1 percent in FY 2004/5 and mounting to 6.9 percent in FY 2005/6, and to 7.1 percent in FY 2006/7 (Figure (2.1)). Whereas most of the growth momentum until 2004 came from the external sector: the increased receipts from the recovery of the tourism sector and the Suez Canal; the growth after 2004 was mainly driven by an upbeat trend in investment as it is explained next.

Figure (2.1): Real GDP Growth Rate

Source: Central Bank of Egypt

Despite this upbeat trend in economic growth in the recent years, this growth did not translate into a significant improvement in the welfare of the average Egyptian citizen. Moreover, this growth did not yet make a dent in poverty. According to the latest World Bank report on poverty in Egypt, poverty affects 40 percentage of the population. Between 2000 and 2005 extreme and absolute poverty has increased from 16.7 percent to 19.6 percent but near poverty has declined from 26 percent to 21 percent (World Bank, 2007).

2.2. *Fiscal Policy*

The Ministry of Finance focuses on the budget that includes local government and public service authorities, but it excludes the social insurance funds (SIFs) that are included in general government, whose fiscal deficit was 9 percentage of GDP in 2006 (up from 8.2 percent in 2005). This deficit declined to 1 percentage of GDP in the first five months of 2007, from 1.9 percent the previous year; but while too much cannot be made of intra-year numbers (since many items only appear in the last fiscal quarter), total revenues have increased in the first five months of 2006 to 8.6 percentage of GDP from 6.5 percent. Main sources of government revenue are tax receipts, grants, and other revenue from surpluses, profits, services, and achieved proceeds. Tax receipts, just over half of total revenue, also increased. They are composed of income tax, property tax, and other taxes as shown in the table below.

Table (2.2): Structure of Tax Receipts, FY2002-FY2007

Items	FY02	FY03	FY04	FY05	FY06	FY07
	% of Total					
Income tax	23	23	24	24	26	26
Individuals	8	7	7	7	5	4
Corporates	16	16	17	17	21	22
EGPC	4	3	4	3	13	11
Suez Canal	4	5	6	6	4	4
CBE	1	1	0	0	0	0
Other	6	8	7	8	4	6
Property tax	1	1	1	1	1	1
VAT	25	26	23	24	19	18
International trade	9	9	8	6	5	5
Other	3	3	3	3	2	2
Total Tax Receipts	100	100	100	100	100	100

Source: World Bank

Government spending also increased but more slowly. So the plan to reduce the fiscal deficit by about 1 percentage of GDP in each of the next five years is attainable. Deep reforms were undertaken by the government such as the implemented income tax reform that enhanced tax collections as well as possible energy price adjustments. The Ministry of Finance had confirmed that proceeds from income and goods and services taxes have picked up for the FY 2006/2007 beyond their levels in the previous years despite the rate cuts.

Interest on government debt, the second largest item, rose significantly to LE 15.3 billion (2.3 percentage of GDP) from LE 9 billion (1.5 percentage of GDP). It may rise further since real interest rates are now negative, while custom receipts have remained constant.

Total public domestic debt including government debt, continues to increase but at a slower pace. After an increase of almost 21 percent from June 2004 to June 2005, total domestic debt accounted for 76.1 percentage of GDP in June 2006, down from 87.1 percent a year earlier. That is generally

because Total Domestic Public debt increased by 0.26 percent in June 2006 compared to the previous year.

High levels of domestic debt represents a high burden on government spending which to an extent constraint social spending. Government spending on social benefits had declined from 2.61 percent in FY 2005 to 1.99 percent in FY 2006.

Total External Public Debt accounts for around 27.5 percent in June 2006, down from 31.1 percent a year earlier, mostly because of the government resorting to bonds as a source of financing budget deficit in efforts to avoid exchange rates fluctuations and sustain a non-inflationary way to finance public debt.

Table (2.3): Domestic and External Public Debt, FY2001-FY2006

	FY01	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**
Weight of External Debt with respect to GDP (%)	29.4	34.0	41.1	39.0	31.1	27.4
Weight of Domestic Debt with respect to GDP (%)	62.9	71.3	77.4	80.0	87.1	76.1

Source: Ministry of Finance.

According to the above table, theoretically speaking Egypt is not a highly indebted country. Also, the external debt as a ratio of GDP is quite modest. This gives Egypt lots of leeway to use debt financing especially external financing to finance MGD-related investment. Nevertheless, authority in Egypt has decided to put stringent restrictions on external borrowing to limit exchange rate risk associated with external borrowing. This has led to an upward trend in the domestic borrowing which has increase in absolute as well as in relative terms. This increasing size of domestic debt caused the rise of calls to work on a plan to limit the expansion in the domestic debt.

2.3. *Monetary Policy*

Before the launching of ERSAP, monetary policy suffered from fiscal dominance where GoE depended to a large extent on seigniorage to finance budget deficit creating continuous inflationary pressure resulted in chronic inflation throughout the 1980s. To rectify this situation, ERSAP had in its core an exchange rate-based stabilization component where CBE adopted the nominal exchange rate as its nominal anchor. As a result of fiscal discipline and effective coordination between the fiscal and the monetary policy, inflation, as indicated earlier, went down from more than 20 percent in 1989 to a mere 8 percent in 1994.

Despite the positive inflation differential between Egypt and major trading partners throughout the second half of the 1990s, the nominal bilateral exchange was kept constant during this period resulting in an appreciation in the real exchange rate. This resulted in a growing exchange rate pressure which intensified with the three external shocks which hit the economy around the end of the 1990s as explained earlier. Despite this mounting pressure, GoE resisted the devaluation of the Egyptian pound by injecting sums from the international reserves into the foreign exchange market. As a result, international reserves declined from US$18 billion in 1999 to US$14 billion in the year 2000. Chronic shortages of foreign currencies forced the government to announce successive

devaluations of the pound between 2000 and 2003 until it suddenly announced in January 2003 the free float of the Egyptian currency (see below table). Also, in 2003, Law no 88 was passed, granting CBE more operational independence and establishing that maintaining price stability is the prime objective of CBE.

As a result of these series of significant devaluations in the nominal exchange rate, real exchange rate followed the same path during the 2001-2004 period. However, with the resurgence of capital flows and the across the board weakening of the dollar, nominal exchange rate started to stabilize in 2004 then appreciate in 2005. This appreciation has continued from 2005 until now at the background of rising inflation pressures culminating into a double digits figure in 2008. Hence, one can safely claim that the real exchange rate has appreciated vis-à-vis the dollar in the last two years; however, similar assertions for other currencies cannot be made.

Table (2.4): Nominal Exchange Rate, June 2000 – June 2008

	June 2000	June 2001	June 2002	June 2003	June 2004	June 2005	June 2006	June 2007	June 2008
Official Exchange Rate (LE/US$)	3.446	3.860	4.449	5.195	6.163	6.006	5.747	5.690	5.48

Source: Ministry of Finance

According to the Monetary Policy Statement, CBE "intends to put in place a formal inflation targeting framework to anchor monetary policy once the fundamental prerequisites are met" (CBE, 2005). Also, this statement has outlined a number of monetary tools such as short-term interest, money supply and banking credit to be used influence inflation rate. What is still obscure is the nominal anchor that CBE is currently using as CBE officials were clear that CBE has not yet adopted inflation targeting.

Many observers believe that currently CBE is targeting nominal or real exchange rate. While the exchange rate regime is described as a float, in reality, the rates are largely determined by CBE which acts as a residual buyer of foreign exchange. In addition, the variation of nominal exchange rate from the onset of the floatation has been quite subdued which is atypical of real floating exchange rate regime. Recently, with the influx of capital inflows, CBE allowed the pound to appreciate slightly and gradually to LE 5.5 per dollar from an average of around LE 5.78 in 2005.

Currently, the monetary authority is faced with a critical challenge. As a result of the recent surge of capital inflows, there is a mounting pressure on monetary aggregates to increase- broad money (M2) grew at 13.5 percent in 2006 and at 15 percent in the first half of 2007, up from 11.5 percent a year ago- which put upward pressure on inflation which is supposed to be contained by the monetary authority. Sterilization may not be effective as needed as most of the funds reside in the banking sector. Besides, higher interest rates would make government borrowing more costly, increase quasi-budget deficit, depress private investment and finally may attract more, or shift the composition more toward, hot capital flows which potentially could destabilize the financial sector. Nevertheless, CBE raised the overnight lending and deposit facility interest rates by 50 basis points in November 2006 and another 25 basis points in December to 10.75 percent and 8.75 percent respectively, but the Monetary Policy Committee kept them unchanged when it met on February 1 and March 22 of 2007.

2.4. *Investment*

Most of the recent swings in economic growth emanate from the variability of investment, especially from the private sector. Interestingly, starting from ERSAP, public investment has been used to reduce the variability of total investment; however, it is apparent that the rate of growth in public investment has followed mostly a downward trend (Figure 2.2) where real growth averaged a mere 2.1% during the period FY 1993/4-2006/7 compared to 18.6% in the 1970s. Investment figures reveal that where private real investment increased by almost 33% in FY 2006/7, real public investment in electricity, education and health dropped by 20%, 13% and 35% respectively. This causes for an alarm as private sector investment is either inexistent in the sector as in the case of electricity sector or it cannot be extended to cover different income groups as in case of health and education sectors. Such a trend may indeed have significant adverse effects on the trickle-down effect of growth for the most vulnerable groups of the population and it can also jeopardize the sustainability of long-term growth (Board of Trustees of the General Authority for Investment and Free Zones, 2008)[1].

Figure (2.2) Real Investment, 1991/92-2006/07
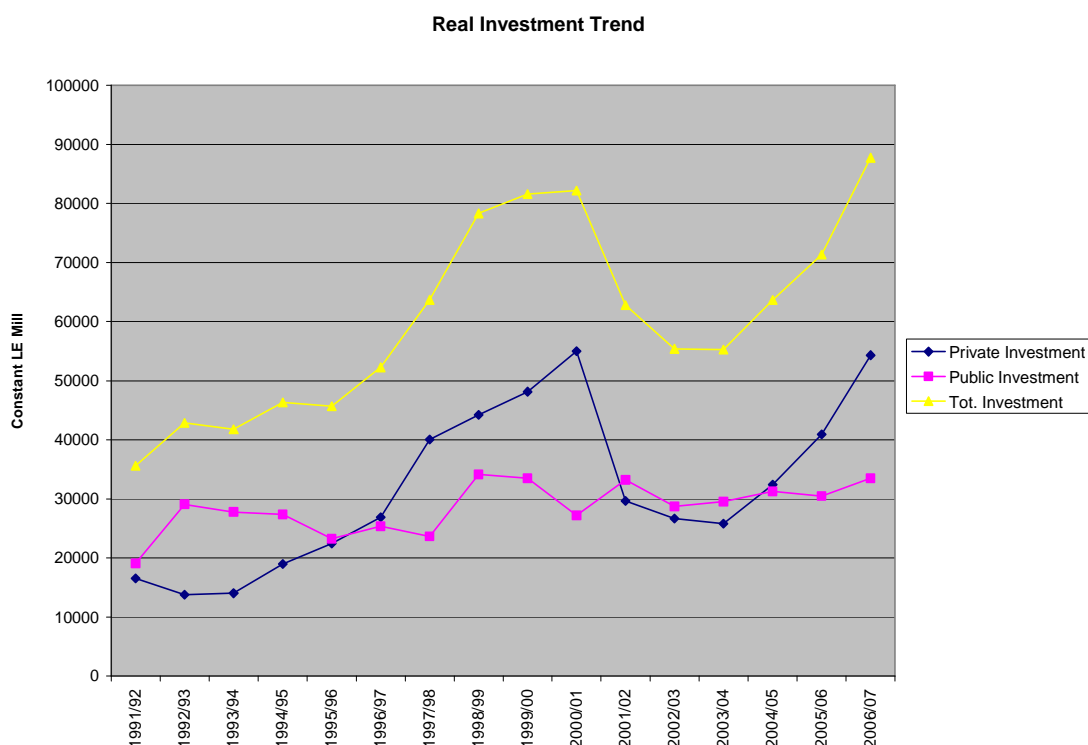
Source: Ministry of Economic Development

After the success of ERSAP to stabilize the economy, the removal of a number of market distortions and the implementation of major financial liberalization, investment picked up starting

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[1] Presumably, this relative decline in the importance of public investment especially in boom periods would negatively affect the path toward achieving MDG targets in Egypt. Indeed, as presented in MDG trends section, a number of MDG targets especially in water and sanitation witnessed a setback in the last five years..

from 1994, after reaching an abyss in 1993, driven by a noticeable escalation in private investment. This positive trend in investment continued to near the end of the 1990s, but as mentioned above, the three external shocks and ill monetary and fiscal policies put a halt on investment after reaching an apex of more than 22 percentage of GDP in FY 1996/7. Stagnation hit investment for three consecutive years from FY 1998/9 until FY 2000/1, then the situation deteriorated even further in FY 2001/2 where private investment nosedived and recorded a negative real growth of 46 percent which resulted in a massive decrease in investment by 23 percent despite government efforts to salvage investment by increasing its share by 22 percent. During the following two years (FY 2002/3 and 2003/4), real investment continued to fall driving the economy deeper into the recession.

With the appointment of a new cabinet in 2004 and the establishment of the Ministry of Investment with the prime mandate of encouraging investment and improving business climate, major efforts and a series of reforms have been conducted by GoE to revert this sliding trend in investment. Indeed, the first year of the new cabinet saw a major rebound in investment which increased by 15 percent in real terms guided by a significant increase of approximately 26 percent in private investment. This positive trend has continued during the following consecutive years (FY 2005/6 and 2006/7) again driven by a healthy 28 percent average annual real growth in private investment.

A couple of things are worth noting regarding this current boom in investment. First, this positive trend in investment was chiefly owned to buoyant private investment where recently, more than 60 percentage of total investment is owned to the private sector. Second, there has been an uneven distribution of investment across sectors. Whereas sectors like manufacturing, construction and building and internal trade experienced more than two digit average growth in real investment; sectors like mining, agriculture and health witnessed an average negative real growth during the recent period.

2.5. *Inflation*

Through using nominal exchange rate as a nominal anchor and containing the budget deficit, ERSAP succeeded in curbing in the inflation rate in Egypt. Inflation fell from 15.7 percent in 1995 to below 5 percent by the second half of the 1990s (Figure 3).

By the dawn of the second millennium with the mounting pressure on the Egyptian pound and the rising devaluation expectation as the result of the previously mentioned external shocks and the failure of GoE to deal effectively with these shocks, inflation started to pick up. Further inflationary pressure came along due to the consequent increase in prices of imports that resulted from the decision of GoE to "officially" float the Egyptian pound in January 2003[2]; where both the nominal and real effective exchange rates fell significantly (ERF, 2004).

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[2] In January 2003, GoE announced the floatation of the Egyptian pound; however, fearing an upshoting in the nominal exchange rate, the CBE put a number of controls on the exchange rate market. Consequently, a parallel exchange rate market emerged and over time it further deviated from the official. It was not until the appointment of the new CBE governor Dr. Farouk El Okda in December 2003 that the prices the official and the unofficial started to converge.

Figure (2.3) Wholesale- and consumer-price inflation rates, 1991-2007
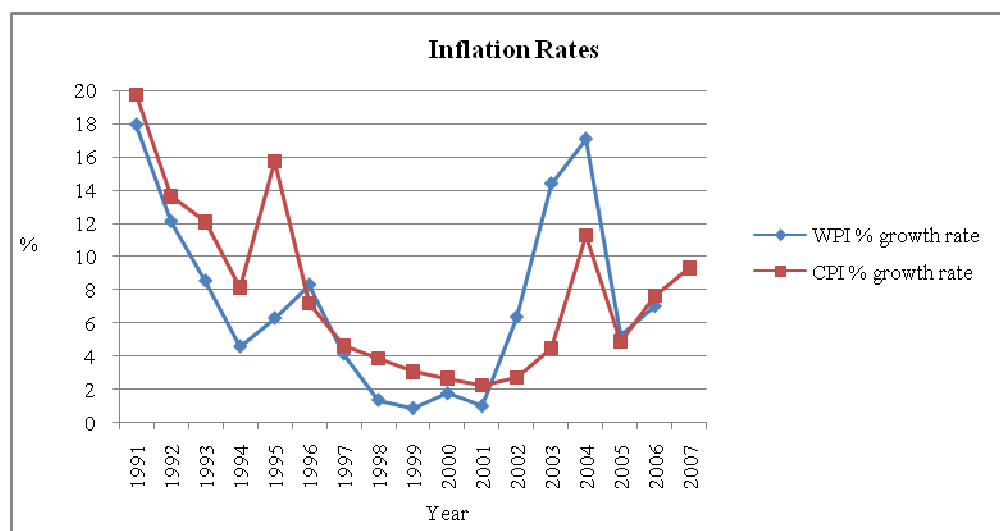
Source: International Monetary Fund (IMF), International Financial Statistics (IFS), July 2008.

Despite the establishment of a Monetary Policy Committee in 2003 which is in charge of putting in place a monetary policy with price stability as its main objective, the Wholesale Price Index (WPI) rose by 20.5 percent between January and May 2004 as compared to 14.8 percent during July-December 2003. Also, the Consumer Price Index (CPI) rose by 4.9 percent on average during the first half of FY 2004 and reached a peak of 12.7 percent in October 2004[3] (World Bank, 2005).

The CPI annual inflation rate dropped to 4.7 percent in June 2005 from a 9.5 percent in January 2005. Likewise, the WPI inflation rate declined sharply to 4.2 percent in May 2005 and further to 3.8 percent in November 2005. The sharp decrease can be attributed to a number of factors including the non-expansionary monetary policy adopted by the CBE, the stability in the foreign exchange market that reduced inflationary expectations, lower international commodity prices, and the reduction in tariff rates that was implemented in September 2004.

The economy has witnessed strong inflationary pressures since July 2006. Inflation rose to 7.6 percent for 2006 – and continued rising to 12.6 percent in February 2007 (World Bank, 2007). The rebound of inflation reflects the interaction between some external factors and other policy reforms that pushed the prices of goods and services. This surge in inflation could be attributed to first, adverse supply shock related to the avian influenza as well as the spillover effects from the 30 percent increase in the prices of petroleum products in July 2006; and second, the increase in aggregate demand fuelled by tax reforms that reduced the tax burden on incomes.

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[3] The disparity between the CPI and the WPI stems from the different weightings and types of goods included in each basket. The CPI gives more weight to subsidized goods such as bread, fuel, medicines, and electricity; while the WPI is more heavily influenced by imported raw materials such as farm products, machinery and metals. Nevertheless, the size of the discrepancy suggests that the basket for the CPI may be underestimating the full extent of consumer price increases. But the fact that the index continues to rise, although only about one-third of the CPI components being market sensitive, is an indication of strong inflation.

2.6.   *Unemployment and Real Wages*

Before ERSAP and especially before the mid 1980s, GoE had in place employment guaranteed schemes where each graduate was guaranteed a job either in the government or one of the public sector enterprises. The reforms that Egypt embarked on in the 1990s have not only changed the structure of the labour market but have also reduced the government's ability to generate jobs through limiting government current and capital expenditure. Consequently, the unemployment rate increased from 8percent in 1990 to 11 percent in 1995 (ERF, 2004).

Following the business cycle in Egypt as explained above, unemployment declined to 8.4 percent in 2001 but rising to 9.9 percent in 2003 (World Bank, 2003). Despite the introduction of a new labour law in 2003 allowing employers some flexibility in hiring and firing, this new law did not have an immediate positive impact on employment in Egypt. The latest available data by the World Bank reveal a marginal decline in the unemployment rate from 10 percent in 2004 to 9.5 percent in 2005 while CAPMAS's records point to an unemployment rate of 10.9 percent in 2006 up from 10.5 percent in 2005. The difference in data stems from different employment definitions where CAPMAS is planning to change its unemployment definition soon. Two main characteristics remain valid throughout the recent period: (i) the low participation of women in the labour force (around 24 percent), and (ii) the high female unemployment rate (26.4 percent) compared to the male unemployment rate (only 5.9 percent) (World Bank, 2006).

The challenge facing the Egyptian economy in terms of employment is twofold. On one hand, the labour market should have the capacity to absorb around 600,000 new job-seekers each year[4]. On the other hand, the labour market is facing an apparent "quality" mismatch between the supply and the demand. Most of the labour supply especially the newly entrants lack the appropriate qualifications and skills associated with quality jobs created by the private sector. Consequently, it is currently commonplace to find fresh university graduates having tremendous difficulty in entering the job market or opting for working in frustrating low quality jobs; and at the same time, it is also common to find some sectors like manufacturing, construction and building, and finance having problems finding the qualified skilled labour to the extent that a number of business enterprises are now trying to find ways to rely on foreign labour.

One important symptom of the above challenge and is that based on the most recent labour survey in 2006 more than 80 percentage of unemployed are new entrants to the labour market; moreover, unemployment seems to be subdued among all groups classified by education attainment except university graduates (Population Council, 2007).

Discrimination based on gender remains to be a major issue in the Egyptian labour market. Women suffer from higher unemployment rates than men according to official statistics. Those who work earn significantly less than men in the private sector, even after taking into consideration education and experience. These gender gaps are not only large, but they are also increasing over time (Assaad and Arntz, 2002).

Real wages declined throughout the 1980s, yet it had recovered slightly in some sectors especially from 1995 to 2001. In state-owned enterprises, wages increased at an average annual rate of 3.9 percent, returning to their 1978 level. In the formal private sector they only recovered at a rate of 0.8percent annually, barely approaching their 1976 level (ERF, 2004).

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[4] By the next decade, this number will stabilize at 750,000 new entrants each year (Population Council, 2007)

Evidence from the most recent labour force sample survey of 2006 suggests that real wages went up in 2006 compared to their 1998 values. It was argued that real wages in Egypt from 1988 till 2006 have followed a "U turn path" (Said, 2007) where in 2006 they almost return to their past values recorded twenty years ago.

2.7.   *External Sector*

Although Egypt had adhered to an open-market and export-promoting strategy, it has not succeeded in achieving high export performance and growth. Knowledge based (high technology content) exports are minimal, hardly reaching one percentage of manufactured exports (ERF, 2004). Main imports continue to be machinery, equipment, and means of transport, in addition to food products. Egypt's major trading partners are the EU and the USA; however, the share of Arab countries and of other countries of the world had increased.

The deficit in trade balance has been widening reaching US$8.4 billion in 2006 from US$7.8 billion in 2005. However, the trade deficit share of GDP has actually declined from 2.3 percent in 2005 to 1.6 percent in 2006 due to the increase in GDP relative to the increase in the trade deficit. Yet, the actual deficit has been compensated by the services balance surplus, mainly from tourism revenues, Suez Canal proceeds, and workers' remittances. During the first half of 2007, Suez Canal receipts rose by 14.4 percent to US$2 billion, tourism revenue by 9.1 percent to US$4.3 billion, and investment income rose with global interest rates; but the increase in GDP was greater. The surplus in services was US$5.6 billion in the first half of 2007 (3.8 percentage of GDP), up from US$4.2 billion a year earlier (4.2 percentage of GDP). Consequently, the current-account surplus widened.

Constraints on export's performance are mainly represented by limited export supply capacities, high production and transaction costs, institutional and bureaucratic barriers. Furthermore, domestic markets structures are characterized by being highly concentrated with high domestic profit margins.

Figure (2.4) Trade Deficit as a Percentage of GDP, 1990-2006
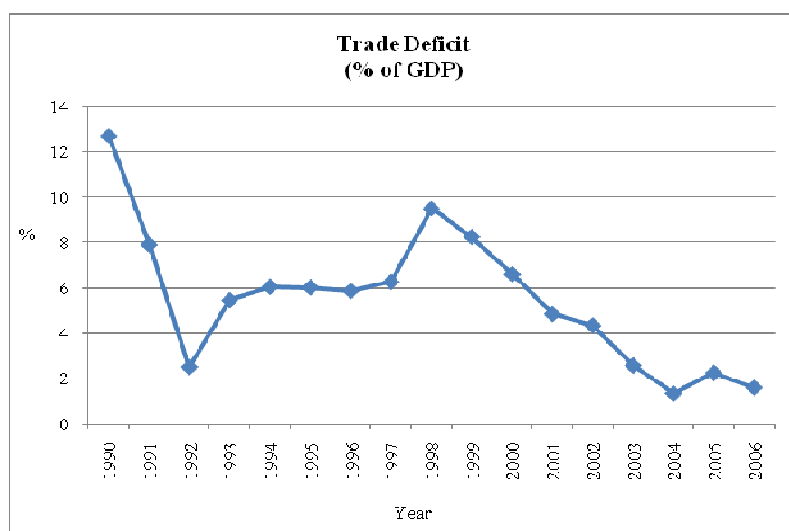
Source: International Monetary Fund (IMF), International Financial Statistics (IFS), July 2008.

Figure (2.5) Composition of the current account, FY2003-FY2007
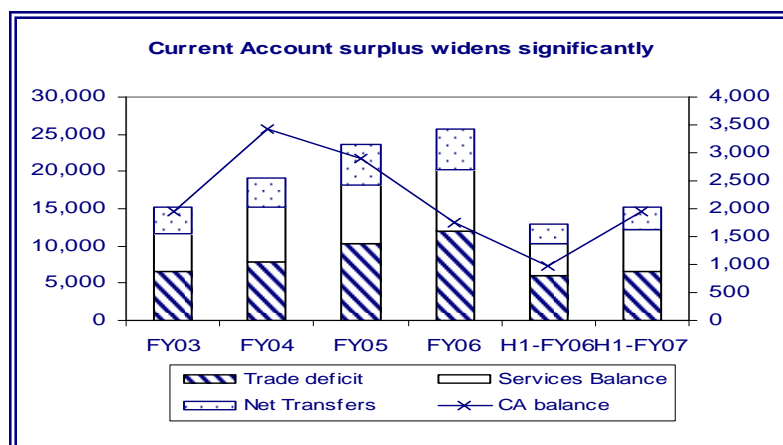
Source: World Bank

In the past three years, Egypt has witnessed an influx of capital inflows mainly taking the form of Foreign Direct Investment (FDI). FDI has increased from less than US$0.5 (less than 1 percentage of GDP) in FY 2001/2 to more than US$11 billion (approximately 9 percentage of GDP) in FY 2006/7 (Ministry of Finance, 2007). Such surge in FDI flows has been attributed to the recent policy initiatives in the areas of trade reform, taxation, doing business[5], and "revived privatization" as well as positive outlook of major macroeconomic indicators such as economic growth and investment.

2.8. *Recent Economic Changes*

The period of analysis for this document ends at 2007; nevertheless, one should outline the recent changes that took place after the onset of the recent global financial crisis. This crisis has changed the economic stance in all countries, and Egypt was no exception. In addition, there have been a number of stabilization policies that were adopted to ease the effect of the crisis. Evidently, a full account and analysis of these policies is beyond the scope of this report; however, it is imperative to shed some light of the current economic stance based on the above categories.

First, economic growth has slowed down significantly starting from 2009 to an estimated less than 4 percent and it is expected that be also below potential in 2010 (IMF, 2009). The deceleration is mainly due to the slowdown in investment, exports and to a less degree private consumption. This decrease in aggregate expenditure coupled with the drop in food prices have eased to a large extent inflationary pressure but still inflation is expected to remain a double digits figure in the near future.

Second, since that the crisis is more pronounced abroad especially in advanced economies, the effect of the crisis was more evident on the external sector. In the real sector, commodity exports slowed down as well as services with the significant drop in tourism and Suez Canal

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[5] Based on the series of reforms touching various aspects of doing business, Egypt was ranked the "Top Reformer" in the world based on the World Bank's annual report "Doing Business" (World Bank, 2007).

receipts. These coupled with the drop in workers' remittances have worsened current account which is expected to be on the negative side in 2009 for the first time in six years[6]. FDI trend depicts a similar trend. After its celebrated surge during the last two years, FDI flows have subsided to reach US$ 9.5 billion down from US$ 11 billion in 2007[7].

Faced with the possible woes of the financial turmoil, Egypt has adopted a set of policies to stabilize the economy and render it more resilient to these external shocks. On the fiscal side, it adopted a stimulus package to spur domestic demand by increasing government expenditure by LE 15.5 billion (1.5 percentage of GDP) mainly directed to infrastructure projects such as water, sewage, roads and transportation. In addition, the 2009/2010 budget includes provision for a "second stimulus package" amounting to LE 5.5-6 billion (Ministry of Finance 2009). This fiscal stimulus is compatible with the expected negative yet moderate effect of the financial crisis on the Egyptian economy. Nevertheless, such expansionary fiscal policy is expected to widen the government deficit which is already one of the main concerns associated with the Egyptian economy.

On the monetary policy side, there has been a widespread call among the business community especially after the outbreak of the financial turmoil to adopt an easy monetary policy. The CBE did not first succumb to these calls arguing that its first objective is price stability and reducing interest rate may spur inflation which was already high. But recently, in September 2009, CBE decided to reduce the overnight lending and deposit facility interest rates by 25 basis points to 8.25 and 9.75 percent respectively. The justification advanced by CBE for this move has focused on the "…the evident change in the inflation dynamics" which showed a decline in the "headline CPI inflation". Interestingly, the press release has pointed that adopted monetary together with fiscal measures "..will help provide a conducive environment for the domestic economy" (Central Bank, 2009).

This move by CBE left the two opposite camps unsatisfied with the outcome. The business community has argued that this cut is too small to have a significant effect on the macroeconomy in the light of the major interest rate cuts worldwide. Consequently, this conservative monetary policy is not conducive for investment and growth. Whereas, the opposite camp has argued that CBE is reinforcing the status of quasi financial repression where real interest real interest rates are kept negative[8]; hence rewarding borrowers at the expense of savers. In addition, it is argued that promoting growth and stabilizing price level are- in most cases- contradictory objectives especially that the latter is not achieved with inflation rate is still a double digits figure.

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[6] According to official figures, the balance of payment turned red in second quarter of FY 2008/09 (Ministry of Finance, 2009).

[7] Given its inherit stability, FDI did not retreat as in the case of portfolio investment which fled the country in massive amounts during the dawn of the crisis.

[8] Real interest rate is negative when nominal interest rate is below inflation rate.

3.   MDG Trends

Egypt was one of 188 countries which embraced the MDGs and agreed to strive to meet these goals by 2015. In June 2002 the United Nations unveiled the first report on Egypt's progress towards meeting the MDGs, which was followed by the second and third reports in 2004 and 2005 respectively. Because of the relatively advanced stance of Egypt in most of the MDGs, Egypt is unlikely to face major problems toward the achievement of its MDGs targets. Nevertheless, reports exposed the emergence of worrying gaps in income levels and living standards between Lower and Upper Egypt.

These reports also show that the Egyptian government continued to give attention to critical areas of development, such as health, education, access to water and sanitation as well as improving the livelihoods of the most deprived segments of the population. However, the pace of progress varies among the goals: fast and sustained in some areas (child and maternal mortality, water and sanitation), at acceptable levels for others (education and poverty reduction), while somewhat slowly in others (women empowerment and the environment). In addition, Egypt will have to increase its efforts and investments in order to keep the current rate of progress with respect to some specific indicators (in the area of poverty, mortality rates, and combating major diseases).

These reports identify Egypt's population growth as one of the main challenges to achieve the MDGs. Egypt ranks as the 16th most populous country in the world and the annual population growth rate is around 2 percent. If this growth rate persists, Egypt's population is expected to reach 83 million by 2015, thus putting a considerable strain on the country's ability to sustain progress towards achieving the MDGs.

The following subsections give an account of the trend in MDG targets divided into the following categories: poverty, education, gender, heath and environmental stability. In each subsection, the trends of the related MDGs are presented together with the obstacles to achieve MDG targets, governmental efforts and future perspective for each group.

3.1.   *Poverty*

Poverty reduction was declared as one of the main objectives of the long-term development vision in Egypt, aiming at reducing poverty to 6 percent by year 2022. The basic indicators of poverty in Egypt are summarized in tables (3.1) and (3.2). These two tables summarize the development of aggregate poverty measures according to different poverty lines over time as well as the Gini coefficient for Egypt. All MDGs focus on poverty in all its aspects; namely, income scarcity or illiteracy, gender equality or reproductive and children health. Also, the other issues or objectives deal indirectly with poverty. For instance, the increase in school enrolment, especially that of girls, can alleviate poverty and hence mortality. Moreover, the enhancement in primary health care can have an indirect positive effect on neediness.

In Egypt, recent data indicate that the downward trend in malnutrition has reversed in recent years. Malnutrition in fact is one of the few childhood indicators that have shown deterioration (Zanaty and Way, 2009). Six percent of Egyptian children are underweight in 2008, compared with 5 percent in 2005. Stunting rates reached 29 percent in 2008. A comparison of the results with the 2005 EDHS indicates that the stunting level increased by 26 percent between the two surveys (was 23 percent in 2005) and wasting rates reached almost 7 percent (was 5 percent in 2005).

Poverty measurement during 1995- 2008[9]

Based on international standards, Egypt has already halved the proportion of the population living in extreme poverty since 2005. According to the Household Income, Expenditure and Consumption Survey 2008-09 (HIECS) as many as 3.5 percentage of Egyptians are living on less than $1.25 per day, (evaluated at purchasing power parity), compared to 7 percent in 1995. However, trends on poverty rates using the $2.5 per day or the national poverty lines show a somewhat different picture where poverty rates fluctuating during the period 1990-2008. For example, 44.1 percentage of Egyptians lived on $2.5 or less a day in 2009 compared to 43.7 percent in 2000.

Moreover, the number of persons living below the Egyptian poverty line in 2008-09 was 16.3 million persons, representing 21.6 percent. A larger number, mainly located in rural areas, has expenditure levels just above the poverty line.[10] Poverty declined from 19.24 in 1995 to 16.7% in 2000, it was back to its 1995 level in 2005 (19.6 %) then increased again to reach 21.56 percent in 2008-09. Considering the total period of 1990-2009, poverty has shown a significant decline by all poverty measures and regardless of the poverty line chosen, compared to the initial year 1990/91.

The poverty reduction would in part be explained by the trend of income distribution as defined by the Gini coefficient, as indicated further below. Income distribution has generally improved from 1990/91 to 2008/09 as the Gini coefficient declined from 0.45 to 0.32. However, the improvement was not uniform between successive household surveys.

Poverty trends are best explained by tracking two factors; growth and distribution. First there is the effect of a proportional change in all incomes that leaves the distribution of relative incomes unchanged, i.e. a growth effect. Second, there is the effect of a change in the distribution of relative incomes, which, by definition, is independent of the mean, i.e. a distribution effect. A change in poverty can then be shown to be a function of growth, distribution and the change in distribution (Datt and Ravallion, 1992).

There were various distinctly different patterns overtime in terms of distribution and growth effects on changes in expenditures that drove the differences in poverty outcomes over the whole period as well as over successive sub-periods (table 3.3). At the national level and over the whole period covered, the improved distribution effect led to a reduction in poverty incidence by -10.5 percent while the growth effect was associated with an increase in poverty incidence (P0), by 5.9 percent, leading to an overall decline in poverty incidence by -4.6 percent. A similar pattern was observed during the first sub-period. However, during the second sub-period, the deterioration in income distribution dampened the favourable growth effect on reducing the poverty incidence, and poverty decreased by -2.7percent. Relatively improved growth rates of GDP and slight deterioration in

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[9] The analysis of poverty in Egypt is based on household consumption. The estimated poverty lines ensure that regional differences in factors such as relative prices, activity levels, as well as size and age composition of poor households are taken into consideration. This results in a rank distribution that is consistent with the chosen indicator of household welfare. This approach follows the cost of basic needs methodology to construct household region-specific poverty lines.

[10] Egyptians who spent less than LE 995 per year in 2005 are considered 'extreme poor' and those who spent less than LE 1,423 are classified as 'poor'. Those with spending on average between LE 1,424 and LE 1,854 per year are considered 'near poor'.

distribution, particularly against Upper Egypt (World Bank 2002) explain these developments between 1995/96 and 1999/00. Finally, over the last sub-period, 1999/00 – 2004/05, the improved distribution effect led to a reduction in poverty incidence (Po) by -1.8 percent. However, the adverse impact of the slowdown in growth on increasing poverty incidence (4.6 percent.) was larger than the effect of improved expenditure distribution (-1.8 percent.), leading to an overall increase in poverty incidence by 2.8 percent.

Kheir El-Din and El-Laithy (2007) showed that the reduction in poverty observed in the 1990-2000 period was associated with the rebound of GDP growth in 1994/95 which was sustained till the end of the decade. Starting in 2001/02, Egypt's economic performance slumped, in response to the September 11 attack and the resulting instability in the region. The slowdown in domestic credit reinforced these recessionary pressures.

Given that poverty in Egypt is fairly shallow, many of those who escaped poverty during the 1990/91 – 1994/95 sub-period and further during the 1995/96 – 1999/00 sub-period may have slipped back into it during the five following years (table 3.3). The structural reforms implemented over the last year considered 2004/05, and the resulting improvement in growth performance did not yet translate into significant decline in poverty incidence.

The sectoral pattern of growth over the period considered has remained remarkably stable, with marginal shifts in employment from low output per worker sectors (agriculture and social services) to relatively higher output per worker sectors (industry and production services). Furthermore, sectoral output per worker increases remained modest in all sectors, and the gap between relatively high output per worker sectors and low output per worker sectors remained high, although this did shrink.

The devaluation following the pound flotation in January 2003 raised the rate of domestic average inflation from 2.4% in 2001/02 to 3.2% in 2002/03 and further to 8.1% in 2003/04[11], as a result of the pass-through effect of devaluation.

The 2008-09 income poverty data already seem to indicate that the global economic crisis is having a negative impact on poverty in Egypt. With work being the most important source of income, the rise in unemployment has resulted in an increase in income poverty. Inflationary pressures remain at a higher level than before the crisis and domestic food prices remain higher, despite the decline in international food prices.

Table (3.1): Aggregate poverty measures, 1990/91 – 2008/09 (Percent)

	1990/91[1]	1995/96[1]	1999/00[1]	2004/05[1]	2008/09[2]
P_0	24.18	19.41	16.74	19.56	21.6
P_1	6.54	3.39	2.97	3.90	4.1
P_2[*]	2.77	0.91	0.80	1.09	1.2

Source: [1]Kheir El-Din and El-Laithy (2007); [2]Author's calculations using HIECS 2008/09.

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[11] The domestic average inflation rate is measured here on the basis of the consumers' price index (CPI) changes. If measured by the wholesale price index (WPI) it rises from 2.1% in 2001/02, to 11.6% in 2002/03 and further to 17.8% in 2003/04 (Central Bank of Egypt).

Table (3.2): Incidence of Poverty Using Different Poverty Lines and the Gini coefficient (in percentage points), 1990-2009

	1990/91[1]	1999/00[1]	2004/05[1]	2008/09[2]	2015
National lower poverty[12] line	24.18	16.74	19.56	21.56	12.09
National upper(moderate) poverty line	51.4	42.6	40.5	41.69	25.7
International poverty line ($1.25 per day, PPP)	7.04	3.35	3.44	3.499	3.5
International poverty line ($2.5 per day, PPP)	56.99	43.67	42.76	44.099	28.5
Gini Coefficient	0.446	0.362	0.320	0.301	

 Source: [1]Kheir El-Din and El-Laithy (2007); [2]Author's calculations using HIECS 2008/09.

Table (3.3): Growth and redistribution effects on changes in poverty incidence P_0, 1990/91 - 2008/09

	Change (%) in incidence of poverty due to		
	Growth[13]	Redistribution	Actual Change
1990/91 – 2004/05	5.866	-10.486	-4.620
1990/91 – 1995/96	4.890	-9.660	-4.770
1995/96 – 1999/00	-3.631	0.954	-2.677
1999/00 – 2004/05	4.607	-1.780	2.827
2004/05– 2008/09	4.40	-2.44	2.00

Source: Authors' calculations

Future perspective: Egypt **can** attain the MDG on poverty reduction-regardless of the chosen poverty line- if the prevailed trends on economic performance will continue provided fast recovery from the global crisis. However, many challenges face Egypt's medium and long term development goals, among them:

- To enhance and sustain economic growth.

- The outlook for job creation is unclear in the medium term as traditional sectors like agriculture as well as the informal sector which are absorbing most of the new entrants to the labour market.

- The high fertility rate and high dependency ratio are affected by and affect poverty rates. The association between fertility and poverty is more prevalent among female headed households.

- Illiteracy, low school enrolment rate, and child labour are especially high among the

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[12]Food component, in both lower and upper poverty lines is similar, while non food component for lower poverty line is estimated using the share of non-food expenditure for households in which total expenditure is equivalent to the food poverty line. For Upper poverty line, non food component is estimated using the non-food share of households whose expenditure on food is equivalent to the food poverty line.

[13] Growth and distribution effects are explained in the text and in (Datt and Ravallion, 1992).

poor which reflects how poverty is perpetuated from one generation to another.

- Decentralization, better coordination, and increased institutional capacity of both governmental and non-governmental organizations will be critica1 to keep up to the challenge of poverty reduction.

3.2. ***Education***

Since the early 1990s, Egypt has embarked on an ambitious and comprehensive educational reform program. The Egyptian government has demonstrated a strong commitment to prioritizing education as a key tool for development and has defined "Education" as the "National Project of the Nineties". Increasing amounts of resources have been allocated to education in both nominal and real terms. The number of basic education schools increased up to nearly 11,000 and the total number of students enrolled in pre-university education increased from 12.08 million in 1990/91 to 15.5 million in 2003/4. Net enrollment rates in primary education went up by 8 percent between 1995 and 2005.

Education indicators presented in Table 3.4 reveal that Egypt is in its course to achieve MDG2 without major difficulty. For example, in 2006, primary school enrolment reached 96 which is very close to the universal enrolment that is expected by 2015. Nevertheless, it is worth noting that there are wide discrepancies between regions, income groups and by gender that are not shown by the national figures.

Two more things to note regarding MDG2: Firstly, official sources recognize regional and gender discrepancies in achieving MDG2; however, they have not identified the reasons behind these discrepancies. Even the announced public policies regarding this matter, they are more in the form of goals than policies. Nationwide policies are bound to have limited success tweaking these discrepancies since their causes are region-specific which are yet to be fully identified. Secondly, MDG2 is not concerned with the quality of education; however, casual observer of the status of education in Egypt will have no trouble noticing the deterioration in the quality of education which has adverse effect on the achievement of MDG2 as mentioned above[14].

Future perspective: If this trend continues, Egypt will achieve primary education by 2015 at the national level. However, there would be differences at the governorate level. Lower Egypt frontiers governorates will not be able to achieve that for girls and Upper Egypt will not be able to achieve universal coverage neither for boys nor girls at the current rate of progress (more of these points is presented in the next section of this report). Challenges facing education and the attainment of education related targets are:

- Attaining high quality education

- Increasing the accessibility of the poor

- Revisiting illiteracy eradication efforts.

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[14] It should be noted that the concept of quality in this context is different from MAMS model. In Egypt, passing a grade and moving from one cycle of education to another is not a good indication of quality since students are allowed to pass in order to free spaces for new students from previous grades.

3.3. *Gender*

The ratio of females to males in primary education increased from 81.3 percent in 1990/91 to 90 percent in 2002/2003. In secondary education, this ratio increased faster moving from 77 percent to 104 percent during the period. This ratio improved also for technical education, from 74.1 percent in 1990/1991 to 85.7 percent in 2002/2003. These improvements are connected to the growing access of girls to education. Significant progress has been achieved in school enrolment over the past few decades. The net enrolment rate in primary education witnessed an observed improvement. However, there are still more girls than boys out of school. The net enrolment rate in primary education for girls (93 percent) was still three percentage points less than that for boys (95 percent) in 2004/2005.

As for the gender inequality in employment, between 1976 and 1996, the female share in Egyptian labour force increased from 7.3 percent to 15.3 percent. This was mainly due to the increase in the number of educated females. Gender composition of the labour force in 2001 was more balanced in urban than rural areas. Despite the improving figures, the female participation rate in the Egyptian economy still lags behind that of males: it was 18 percent in 2001 compared to 65.7 percent for males in the same year. Unemployment is also higher for women than for men as this reached 22.6 percent in 2001 compared to 5.6 percent for men.

Future perspective: Poverty is the major challenge that faces the Egyptian government in closing the gender gap in primary and secondary education, and in reducing the gender gap in literacy among 15–24 year olds. Gender inequality, while low among the rich, is quite large among the poor, and poverty exacerbates gender disparities in education. Poverty has also been among the main reasons for girls to drop out of school while traditions and cultural factors constitute an additional constraint to girls' education in Egypt. Regarding women employment, the major challenge is constituted by the economic conditions and the expected rate of growth in the near future. It is therefore uncertain whether there will be new job opportunities created for women.

In regard to women's greater political participation, this will still be challenged by the notion that women's traditional role is in the private domain (as wives and mothers).

3.4. *Health*

Similarly to MDG2, according to the observed trend in under-five child mortality presented in Table 3.4, Egypt on the national level is expected to achieve MDG4 of cutting the 1990 under five child mortality rate by two-thirds by 2015. Egypt is among some few countries which enjoy low child mortality compare to its level of development and income (Boone and Zhan, 2006). Egypt has succeeded in reducing under five child mortality from 91 in 1990 to a mere 35 per one thousands in 2006. If this trend continues Egypt stands a very good chance of achieving MDG4 target of 12.2 by 2015.

Despite the fact that there data for child mortality is not available on the governorate level, there is evidence that there are large discrepancies among governorates. Areas in rural Upper Egypt that are

lagging behind compared to national averages. In addition, the quality of data is mediocre and figures from different sources are not consistent[15].

Turning the discussion to MDG5 which is associated with the maternal mortality rate (MMR), one first has to point out the universal problem associated with MMR. That is MMR is usually estimates as it is extremely difficult to record precisely the incidence of maternal mortality within a country. There have been only two surveys in the past that have measured MMR in Egypt. The first one was conducted in 1992 ad the second was conducted in 2000. According to these surveys, Egypt made major strides to achieve the MDG target of reducing MMR by three-quarters between 1990 and 2015. In fact, according to the figures of MMR depicted in Table 3.4, Egypt succeeded in reducing MMR by almost 52 percent over the period 1990-2000[16]. According to this reduction rate in MMR and the more recent National Maternal Mortality Surveillance System (NMMSS), Egypt will be successful in reaching the MDG5 target (Ministry of Economic Development, 2008).

Besides the imprecision in the data on the national level, data from surveys cannot be used to compare between regions and governorates in terms of the MMR; however, one can safely assume that there are major differences across regions. One can deduce this by looking at possible factors affecting the MMR such as the availability of health personnel (Anand and Bärnighausen, 2004) and adolescence marriage and pregnancy.

There has been a steadily increase in the percentage of deliveries attended by health personnel as this went up from 40.7 percent in 1992 to 74.2 percent in 2005 (See Table 3.4). Also the percentage of girls who gave birth at 18 or less has dropped from 23.7 percent in 1992 to 15.8 percent in 2005. This noticeable improvement in terms of the above figures masks large discrepancies between regions with rural Upper Egypt again lagging far behind. In fact, only 54.8 percentage of deliveries in rural Upper Egypt are attended by health personnel. In addition, as high as 26.8 percentage of women obtained their first child before reaching 18 in rural Upper Egypt compared to the national average of 12.3 percent.

Efforts towards the eradication of Malaria and Tuberculosis, two of the major health challenges for the new millennium, have resulted in good progress in Egypt. Malaria has been well controlled over the past ten years. The incidence declined from four cases to almost zero per one thousand between 1990 and 2000. WHO reported that there has been 87 percent Directly Observed Treatment Short Course (DOTS) treatment success in Egypt for 1999 and 2000, which is a higher rate than the target of 85 percent. Egypt has also achieved 63 percent case detection of the sputum positive cases and has a strategy to reach 70 percent. Prevalence of TB in the population is currently at around 32 cases per 100,000 inhabitants and Egypt's goal is to reach 22 cases per 100,000 inhabitants.

Egypt, on the other hand, is facing an epidemic of Hepatitis C. Seven to nine percentage of the population is a carrier of this disease. It shares with HIV/AIDS many of the modes of transmission. Like HIV/AIDS, it does not have an effective treatment and causes death due to liver failure or hepatic cancer. Achieving the goal of reducing the prevalence of Hepatitis C and reversing its

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[15] There are two sources for under five mortality data, the fertility surveys and the vital statistics (birth and death statistics). There are significant discrepancies between child mortality figures from these two sources (Ministry of Economic Development, 2008).

[16] Interestingly, another study conducted by WHO, UNICEF, UNFPA and the World Bank (World Bank, 2005) also in 2000 indicated that the rate of decrease in MMR in Egypt is much more modest where only MMR was reduced by 25 percent during the same period.

spread requires several coordinated efforts including raising public awareness and a strong infection control program at the national level.

Future perspective: Egypt can achieve MDG4 and MDG5 on the national level but there are wide discrepancies across regions with rural Upper Egypt being the most vulnerable.

Although Egypt managed to eliminate malaria, it is geographically closed to countries where this disease is still endemic and must therefore remain alert to prevent the entrance of infected individuals. Efforts are required to continuously control the mosquito breeding areas and to cover all areas of the country with a good sewage system.

The goals for Tuberculosis can be achieved but challenges related to individual behavior such as smoking and sharing *shisha* (traditional water pipe) need to be changed. Over-crowding, poor ventilation in houses, and poor nutrition also increase the chances of infection.

An assessment of the situation and the current response, conducted by the UN Expanded Theme Group on HIV/AIDS and the NAP during 2003, confirmed that regardless of the current low prevalence, Egypt presents risk factors that must be adequately addressed in order to prevent any possible outburst in the future.

3.5.   Environmental Stability

There have been major strides by GoE to extend safe water coverage to all regions in Egypt. National data as depicted in Table 3.4 reveals that access to safe water went up from 94 percent in 1990 to 98 percent in 2006, hitting already the 2015 target for MDG7a of 97 percent. Nevertheless, the most recent data from the 2006 census has revealed unexpected reversal in this trend whereas between 2004 and 2006 access to safe water has actually dropped to 98.8 and 92.9 percent in urban and rural areas respectively (Ministry of Economic Development, 2008). According to government sources, the reason behind this setback is population growth. Nevertheless, population growth has been following a declining trend during the last decades. Hence, this recent deterioration in clean water coverage must definitely have been the result of other factors other than population growth such as the stagnation in real public investment in the recent years (Board of Trustees of the General Authority for Investment and Free Zones, 2008). Following this logic, we postulate that if GoE is keen to maintain in progress to achieve MDG7a in all its **regions and governorates**, it has to put more real resources into this important sector.

The trend of the access to improved sanitation (MDG7b) depicts a similar story to the trend of the access to safe water but the 2015 target has not yet been achieved. The most recent figure for the percentage of the population with access to improved sanitation is 66 percent in 2006 - up from 50 percent in 1990, and the target is set at 75 percent. These figures reveal that MDG7b could still be within reach if the GoE allocates more resources.

Unfortunately, as it happens with most other MDGs, disparities across urban and rural areas and across governorates add another layer of challenge. Given the current percentage of buildings in urban areas with improved sanitation (62.6 percent) and the target set for 2015 (76.89 percent), MDG7b will likely be achieved for the urban areas. Meanwhile, coverage in the rural areas is only 13.7 percent and the target here is 54.58 percent, making unrealistic to expect achievement of the goal in the rural areas.

Similar disparities are found among governorates where a number of governorates have experienced improvement in the access to sanitation. Examples of these governorates are Cairo, Damietta, Menoufia, Behera, Giza, Aswan, and South Sinai. Other governorates have witnessed a decline in access to improved sanitation, going back to the 1996 level. Examples of these governorates are Alexandria, Assiut, and New Valley. Definitely, without major efforts to completely reversing this trend, these governorates will stand very little chance to achieve MGD7b.

Future perspective: Egypt has already achieved MDG7a on the national level. As for MDG7b, Egypt has to make more effort to achieve this goal.

For both targets, wide discrepancies are present between regions and governorates with the most unfortunate being rural Upper Egypt region and some frontier governorates. If conditions remain the same, Egypt will continue to suffer from significant discrepancies between regions and governorates in terms of the wide spread of safe drinking water and the coverage of proper sanitation.

Table (3.4): Indicators of the Millennium Development Goals

Goals	1990	1995	2000	2005	2006	2015[10]
Goal 1: Eradicate Extreme Poverty and Hunger						
Population below national poverty line	24.32[1]	22.9[2]	16.47[3]	20.16[4]	n/a	10.8
Poverty Line at $1/day (PPP) Headcount (% below)	8.241[1]	2.497[2]	0.682[3]	0.94[4]	n/a	0.88
Poverty Line at US2$/day PPP Headcount (% below)	39.45[1]	41.52[2]	24.84[3]	14.4[4]	n/a	16.49
Food Poverty line Head count (% below)	8.93[1]	3.05[2]	2.87[3]	4.64[4]	n/a	1.94
Goal 2: Achieve Universal Primary Education						
Total net enrolment ratio in primary education, both sexes	90.6[5]		96.8	97.2	96	100
Literacy rates of 15-24 years old, both sexes, percentage	n/a	73.2[6]	n/a	84.9	n/a	100
Goal 3: Promote Gender Equality and Empower Women						
Gender Parity Index in primary level enrolment	0.83	n/a	0.92	0.94	0.94	1
Gender Parity Index in secondary level enrolment	0.79	n/a	0.93	0.94	n/a	1
Goal 4: Reduce Under 5 Mortality rate						
Children under five mortality rate per 1,000 live births	91	68	51	37	35	12.2
Infant mortality rate (0-1 year) per 1,000 live births	67	52	40	31	29	13.4
Goal 5: Improve Maternal Health						
Maternal Mortality Ratio	174[7]	96[9]	84	n/a	n/a	40
Proportion of Birth attended by Skilled personnel	40.7[8]	46.3	60.9	74.2	n/a	84
Goal 6: Combat HIV/AIDS, Malaria, and Other Diseases						
Condom use to overall contraceptive use among currently married women 15-49 years old, percentage	4.4[5]	2.9	1.8	1.7	n/a	
Tuberculosis incidence rate / year / 100,000 population	36.8	36.7	31	25	24	
Goal 7: Ensure Environmental Stability						
Carbon dioxide emissions (CO_2), thousand metric tons of CO_2 (CDIAC)	75481.37	95084.97	138724.7	1582374	n/a	
Proportion of the population using improved drinking water sources, total	94	96	97		98	97
Proportion of the population using improved sanitation facilities, total	50	55	61		66	75
Goal 8: Develop a goal partnership for development						
Debt service as percentage of exports of goods and services and net income	23.7	14.6	8.5	6.4	5.3	
Telephone lines per 100 population	3.01	4.67	8.64	14.57	14.33	
Telephone lines	1602067	2716213	5483601	10396148	10807678	
Cellular subscribers per 100 population		0.01	2.14	19.1	23.86	
Cellular subscribers	4000	7368	1359900	13629602	18001106	
Internet users per 100 population	0	0.03	0.71	7.15	7.95	
Internet users	0	20000	450000	5100000	6000000	
Personal computers per 100 population	n/a	0.43	1.26	3.78	4.19	
Personal computers	n/a	250000	800000	2700000	3160000	

Source: Millennium Development Goals Indicators, [10] Source: Ministry of Planning (2005)

4.   Determinants of the MDGs: a literature review

In this part of the report, we will present the sectoral analysis focusing the targets associated with MDG2, MDG4 and MDG5. MDG2 is concerned with achieving universal primary education. The target associated with MDG4 is to reduce by two thirds under five children mortality. The target associated with MDG5 is to three quarters the maternal mortality. This prime objective of this sector analysis is to come out with realistic estimates of the factors affecting the above three MDGs. Such analysis should ideally take into account the results of empirical studies on education and health determinants focusing primarily on Egypt and other similar countries as well as recent and future public policy regarding education and health, especially the ones which focus on achieving those three MDGs. This last factor is important since hysteresis effects are definitely present during the period of analysis. Hence, one should not focus solely on point estimates but should be open on how these point estimates may change in the course of pubic policy implementation and overall system changes.

MDG2: Achieving Universal Primary Education

As outlined in the previous section, according to the trend in the education data, on the national level, Egypt is on course to achieve the target of universal completion of primary education. The challenge however, is to achieve this target on a regional level and within vulnerable groups in Egypt. Unfortunately, MAMS model is not disaggregated enough to zoom on certain regions and groups which are likely need policy interventions to reach 100 percent completion rate of primary education[17]. Another limitation of the MAMS model is that it does not differentiate between male and female.   However, studies on Egypt as well as data confirm the presence of behavioral differences in terms of the factors affecting primary school completion. Studies such as Roushdy and Namora (2007) Rammohan and Dancer (2008) have demonstrated that boys are more likely to get more education than girls. In addition, Hanushek el al. (2008) has found evidence that gender affects drop out rate where girls drop out rate is 0.06 higher than boys in elementary schools.

Similar to other countries, the most important determinant of education attainment in Egypt is family wealth and income. Income and more generally wealth affect completion rate in two ways. First, ceteris paribus, the higher is the family wealth the higher is the probability that the child is enrolled at school. Second, drop out rate decreases with family wealth. Consequently, completion rate is positively associated with per capita income which is a proxy for wealth. A few studies have found evidence to support this hypothesis in Egypt. Roushdy and Namora (2007) document that family wealth has a strong positive effect on education attainment. Dancer and Rammohan (2007) also provide evidence that per capital expenditure which a proxy for income has a positive and significant effect on child enrolment. Data from demographic and health survey of 2003 (DHS 2003) in Egypt confirms the relation on a macro level. School participation among primary cohort is an increasing function of income groups. High income quintiles are associated with higher school participation. School participation is as high as 94.5 percent in the richest quintile but it

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[17] There is a striking difference in terms of school enrolment and drop out rate among different governorates in Egypt. For example, Giza, South Sinai and Mattrouh are among the governorates which are unlikely to achieve MDG2 with almost 14 percent of their population between 6 and 17 years have never attended school and in excess of 6 percent have dropped out of primary school (Ministry of Economic Development, 2008).

drops to 75.9 percent in the poorest quintile. Data for primary drop rate follows the same trend. The drop rate among the richest quintile is as low as 0.2 percent; however, for the poorest it goes up by ten fold to reach 2.2 percent.

There are other important factors identified by the literature that affect education indicators such as parents' level of education, health indicators for children, infrastructure especially the availability of paved roads and quality of education. Empirical studies on Egypt did not consider all of these factors; however, few studies have found evidence for the importance of fathers' educational level (Roushdy and Namora, 2007) and the quality of schools (Hanushek el al., 2008) on enrollment and drop out in primary education.

To map the above discussion into the education elasticities in the model, first for the g1entry, in Egypt all children are expected to enrol in primary education. According to the data, GoE has made significant stride in this direction. One cannot identify major impediments hindering children from entering school for the first time. The only possible factor, according to the empirical studies on Egypt as well as DHS 2003 as indicated above that may have a somehow significant effect on this step is family's wealth and income. Other possible factors including MDG4, other health factors and the quality of education may have some limited effects on entering the primary cycle.

For the elasticity of pass variable with respect to other variables, according to DHS 2003, again the most important variable is family's income especially for primary education. There are other variables identified by the literature such the quality of education, availability of paved roads and father's education which can be proxied by family's income. It is important to note that the elasticity of the quality of education is not high due to the fact that in Egypt the emphasis is more on transferring the children from one grade to another without paying much attention to the quality of education which, even according to officials, is deteriorating overtime.

Regarding the factors affecting the share of graduates from one cycle who continue to the next, there is no single study that tried to identify these factors in Egypt. Also, it is not totally accurate to rely completely on elasticities from different countries since there are many dynamic factors that influence these elasticities. Moreover, policy variables associated with educational policies as well as other socioeconomic factors are key in shaping these elasticities. Having said that the choice of continuing to the secondary cycle after finishing the primary one depends, to a large extent, in Egypt on the socioeconomic background of the parents. The higher is the socioeconomic level of the parents, the more likely those students continue their education into the secondary cycle. This is by far the most important factor; nevertheless, on the margin the effect is not high as even poor and less educated parents strive to provide for their children better chances in life.

Other relatively important factors are quality of education and the existence of supporting infrastructure such as paved roads. However, this last factor is not important as before given GoE efforts to increase the number of schools and the relative independence of student which enables them commute and live by themselves.

As for the choice of continuing to the tertiary cycle after finishing the secondary one, the effects of income as well as the educational quality are stronger. For the former, the opportunity cost of continuing into the tertiary phase is relatively high given the forgone income and the cost related to

higher educational[18]. For the latter, the quality of education is the one that determines whether tertiary education is successful and effective or not.

MDG4: Reduce Child Mortality

There are ample empirical studies that determine the factors affecting child mortality. The literature has identified a host of potential variables that could affect child mortality such as income level, education levels for parents, access to clean water, access to sanitation, availability of hospitals and medical staff and different household characteristics. Results in terms of significance of the estimated parameters or elasticities as well as their magnitude are varied from one study to another depending on the sample, the type of estimation and the quality of data.

There are not many empirical studies on the determinants of child mortality in Egypt. In addition, most of them have quite different results regarding the importance of the various factors. This could be attributed as mentioned above to the poor quality of data and the inconsistency between different sources of data. Regarding the synergy between education and child mortality, using Egyptian Fertility Survey, conducted in 1980, Marcotte and Casterline (1990) and Hassan and Grabowski (1990) have reported that education attainment of parents has no significant effect on child mortality. Whereas Boone and Zhan (2006) have found that one standard deviation rise in mother's and father's education predicts 14 percent and 11 percent decline in the probability of child mortality respectively[19].

The effect of access to clean water on child mortality is yet another example of conflicting results between studies. The results of Hassan and Grabowski (1990) indicate that access to clean water has a significant effect on reducing child mortality contradicting with the results reported by Boone and Zhan (2006) which have found positive but insignificant effect of access to clean water on child mortality. Interestingly, both studies concur that appropriate sanitation is an important factor in reducing child mortality. Given these empirical evidence, access to sanitation represented by MDG7b is given higher weight than access to clean water in terms of elasticities.

As for the effect of income on child mortality, studies seem to be less varied. Casterline el al. (1989) and more recently Boone and Zhan (2006) attest for the supremacy of income in reducing child mortality. In fact for the former study, the significant negative effect of household income of child mortality is present even after controlling for a host of other variables. As for the later study, it was calculated that one standard deviation rise in wealth is responsible for a 30 percent[20] decline in the probability of child mortality. This figure is taken as the elasticity of MDG4 with respect to per capita income.

Government policies to achieve MDG4 work through different levels. GoE has been successful in implementing a nationwide program of vaccination against vaccine-preventable diseases such as Measles, Polio and neonatal tetanus. In fact, according to the Ministry of Health data, immunization coverage exceeds 97 percent against vaccine-preventable diseases with little

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[18] The significance of the opportunity cost of continuing into tertiary education varies greatly with income groups. For example, wealthy families do not consider the opportunity cost of forgone income as a result of social norms in Egypt which put tremendous emphasis on university education.

[19] These percentages are even higher than the sample averages.

[20] Egypt has the second highest effect of wealth on child mortality (average 12.6 percent).

discrepancies across regions (Ministry of Economic Development, 2008). In addition, the Ministry of Health is coordinating the efforts of the different programs such as National Diarrhoeal Control Program, the Child Survival Program, the Expanded Program of Immunization, and Healthy Mother – Healthy Child aiming at reducing infant and child mortality to increase the effectiveness of these programs and reduce the duplication of efforts. All of these health related efforts to reduce child mortality can be represented in the model by per capita use of aggregate health commodity. This is why its related elasticity is given this relatively high value of -0.5.

Lastly, another initiative which will increase the synergy between MDG2 and MDG4 is that recently the Ministry of Health with the cooperation of the Health Insurance Organization has expanded the coverage to all primary and pro-school children.

MDG5: Reduce Maternal Mortality

There has been no serious empirical study to gauge the determinants of maternal mortality in Egypt. However, the literature has identified a number of important factors that influence maternal mortality such the availability of medical personnel especially physicians, female education (Anand and Bärnighausen, 2004), and infrastructure (Fay and al., 2005). Based on these empirical findings and the socioeconomic factors in Egypt, the factor with biggest impact on maternal mortality in Egypt is set to be per capita use of health commodity followed by infrastructure related factors and per capita income. One important factor that is left out due to the absence of a link in the model is the effect of education on maternal mortality; however, including per capita income can be regarded as a proxy for the level of education.

Government policies recognize the fact that vulnerable socioeconomic groups especially in some regions like Upper Egypt suffer from high levels of MMR. Efforts have been underway to ameliorate the scope and quality of health services pertained to reproductive health especially among these groups. In addition, these governmental efforts realize the important nexus between education and health. Hence, GoE has been designing programs to internalize these synergies and incorporating cultural and religious dimensions.

MDG7a: Access to Safe Water and MDG7b: Access to Improved Sanitation

The determinants of infrastructure such as access to safe water and access to improved sanitation depend primarily on how much the government spend on infrastructure as well as the level of income of household. The difference between MDG7a and MDG7b is that the elasticity with respect to expenditure on infrastructure is higher in the case of access to sanitation than access to safe water. However, in terms of the per capita income elasticity, the situation is reversed where it is higher for access to safe water than access to sanitation.

Lastly, as mentioned in the beginning, the main challenge to achieve a number of MDGs in Egypt is finding ways to bridge these disparities between urban and rural areas as well as between different governorates. However, MAMS model does not support this disaggregation between rural and urban nor between governorates.

5. Estimation of the SAM and calibration of MAMS for Egypt

5.1. Introduction

In order to construct a calibrated and validated version of MAMS for Egypt and be able to assess the impact of different policy measures and strategies for achieving MDG goals in 2015, the following tasks were required:

1) Construct and balance a specific social accounting matrix (SAM) for Egypt which is particularly designed to form a consistent and comprehensive accounting framework for addressing alternative strategies for achieving MDG goals. The SAM is based on the most recent available socioeconomic data for Egypt and it represents the main database of MAMS.

2) Collect and organize the non-SAM socioeconomic data including labour force and population.

3) Estimate the parameters and technical coefficients needed to run MAMS and calibrate its output results.

4) Validate the results of the MAMS model based on the recent economic performance of the Egyptian Economy.

5) Carry out simulation runs to generate the reference path (or baseline scenario) and assess the impact of alternative strategies to achieve the MDGs taking the baseline scenario as a benchmark.

A SAM is a consistent and comprehensive accounting framework that captures the interactions among economic subsystems, and estimates the complete cycle of income flows within the economy, at a specific point of time (generally one year). The basic accounts of any SAM are factors of production, current accounts of domestic institutions, a consolidated capital account, activities, commodities and the outside world. In a SAM, the income (expenditure) of an economic agent can be traced via the figures appearing in the cells of its row (column). For consistency purposes, total spending of an economic actor should equal to its total collected revenues. Most economy-wide models- and particularly CGE models- rely explicitly (or implicitly) on a consistent accounting structure dependent on the SAM principles and the selected economic rationale.

The SAM might be developed to properly analyze a specific area of interested or study a particular development goal. The SAM documented in this report can be viewed as an analytical tool (or an accounting structure) which is mainly developed to calibrate a model that can be efficiently used to assess the impact of MDG-related strategies and policies.

Beside its important role as a consistent database for economy-wide modelling, the SAM provides substantial support to the model building process. First, a SAM is generally constructed to achieve a specific analytical objective. Since the SAM structure and level of disaggregation is highly dependent on this analytical purpose, the constructed SAM can be viewed then as a consistent base that helps the modeller in understanding the structural features and behavioural relations governing

the functioning of the economic system as well as the interactions among its sectors. Second, the construction process of a SAM is characterized by the confrontation of data collected from different sources, or estimated via alternative statistical estimation methods, and faces conditions of data shortage and fragmentation. This provides the model builder with invaluable practical information that supports the model building process. Third, the SAM is generally used to estimate the structural parameters of the economy-wide model and this estimation process can be automated as part of the model MAMS used in this study. Fourth, because the non-empty cells of a SAM can be viewed as payment from one economic actor (a column) to another (a row), the specification of this payment relation (or value of transaction) for all cells of a SAM provides a consistent approach for economy-wide modelling.

MAMS can be viewed as an issue-oriented CGE model which is particularly extended   to enable the analysis of the development strategies for achieving the MDG at the country level. It has its routes in the standard CGE model developed at the International Food Policy Research Institute (IFPRI) by H. Lofgren, R. Harris and S. Robinson in 2002. MAMS is significantly extended to consider explicitly a time dimension by including recursive inter-period dynamic relations and the addition of an MDG module that treats MDG and education outcomes as endogenous variables. For more information about MAMS and its implementation, see Lofgren and Diaz-Bonilla (forthcoming in 2010).

The particular structural features of the SAM and how this relates to MAMS are summarized in what follows. This is followed by a brief description of the SAM estimation and balancing process. The calibration of MAMS for Egypt is then introduced and commented, and the structure of the Egyptian economy based on the SAM data is also summarized. The SAM for Egypt, its data sources and other relevant indicators and parameters used to calibrate MAMS are presented in the appendix.

5.2.   *Specific Structural Features of the SAM and MAMS*

Two considerations have significantly affected the process of constructing the SAM and implementing the Egyptian version of MAMS:

- The main technical features needed to make the SAM and MAMS an appropriate analytical tool for handling the interaction among the economy-wide performance and the achievement of the MDG in Egypt.

- The particular behavioural features and the specific structural characteristics of the Egyptian economy needed to be explicitly embodied in the model structure and economic rationale.

The Egyptian SAM for MAMS is constructed to identify and explain various socioeconomic features related to the strategies for achieving the MDGs. The newly constructed SAM for Egypt included the following structural characteristics:

First, the educational goals of the MDG are captured using the following mechanisms:

Labour – as a factor of production - is broken down into three types with the following educational achievements; (i) completed tertiary, (ii) completed secondary but not completed

tertiary, and (iii) less than completed secondary. This disaggregation level can be used to analyze the demand for labour services and the prevailing wage rate structure by education status. It further permits to assess the impact of alternative MDG strategies on the structure of the labour market. It finally allows us to perform a one-to-one mapping between educational sectors and labour categories.

1) The education activities (and commodities) in the SAM include both government services and private activities with each of them broken down by the three basic educational cycles: primary, secondary and tertiary. This level of detail permits MAMS to trace the demand for educational services broken down by learning status and the level of the adopted MDG-related measures, in addition to estimate the enrolment and completion rates for primary education (that is, the indicator for MDG2).

2) The interaction between public and private education activities and the three labour categories in the factors of production provides very useful means to analyze the human resource development policies and in particular those related to the educational MDG indicators.

3) Labour intensive activities are identified and isolated from other production sectors to allow for assessing the impact of MDG-related policies on the demand for factors of production in both labour intensive and capital intensive activities. Labour intensive activities in the Egyptian SAM include; spinning and waving, cloth, non metallic industries, engineering and machinery and other manufacturing sectors.

Second, the interests on domestic and foreign loans and other sort of borrowing instruments have separate accounts in the SAM. The accumulation of the stock of government domestic loans, foreign borrowing and grants can be properly adjusted through time using these interest accounts coupled with the inter-period dynamic module of MAMS.

Third, the saving-investment balance -within the SAM- is ensured via a capital account which is broken down by type of domestic and foreign institution as well as a disaggregated investment accounts. The institutional capital accounts are broken down into households, general government and the outside world. Note here that the households account groups three economic actors; household sector, private companies and public enterprises that are in principle not directly associated with the MDGs. The institutional capital accounts isolate investment spending (or the gross capital formation) from other inter-institutional capital transfers (sales/purchases of physical and financial assets/liabilities). This breakdown of the institutional capital account is required by MAMS to enable a more realistic inter-period adjustment mechanism within the model.

Fourth, the Egyptian SAM for MAMS includes investment accounts by both sectors of origin (the usual treatment) and destination (the unusual one). Investments by destination are detailed only with respect to general government activities, whereas other non-government sectors have an aggregate account. The breakdown of government investments is made mainly for the MDG-related services (public education, health services, water and sanitation services and government infrastructure). As usual, the investment by sectors of origin are concentrated in

construction, machinery and equipments and some productive services sectors such as transportation and storage.

Fifth, to satisfy the requirements of the MDG modelling exercise, the treatment of government final consumption spending is somewhat unique in the analytical SAM for MAMS. The column of government institution includes only consumption of the services produced by the general government. Purchases by the general government of non-government commodities appear in the intermediate-consumption sub-matrix of the SAM, that is, in the intersection between governmental services (column-wise) and non-government commodities (row-wise). As a result, government final consumption expenditure would amount to only 2.7 percentage of GDP at market prices. In the principal aggregates of the national accounts – produced by the Ministry of Economic Development –, government final consumption in 2006/07 represented 11.5 percentage of GDP at market prices.

Sixth, since increased tax income can represent one of the options for financing the MDG achieving strategies, the SAM sets detailed accounts for taxes, including direct and personal taxes, import duties and other indirect taxes. Direct taxes are broken down by type of domestic institution, and indirect and import taxes are divided by type of domestic and foreign commodities.

Seventh, non-government services in the SAM are broken down into sectors serving the production process within the economy and other social services. To satisfy the analytical purposes of this study, social services are broken down into three education categories (primary, secondary and tertiary), health services and other social services.

Eight, the SAM for Egypt has been built for the fiscal year 2006/07. This year provides the most recent and complete information on disaggregated national income accounting data and other socioeconomic indicators. Furthermore, the recording of socioeconomic data in Egypt adopts the fiscal year convention. Given that MAMS is adopting the calendar year convention, it is assume that the fiscal year 2006/2007 is represented by the 2007 as the base year of the modelling exercise in MAMS. The projection period of MAMS includes the period from 2007 to 2015, the target year of achieving the MDGs.

Ninth, as customary in CGE modelling, most of the structural parameters of MAMS – such as the input output coefficients and base year tax rates - are estimated from the SAM data. In fact, this process is automated through GAMS/Excel version of MAMS used in the project. Other behaviour parameters of the MAMS version for Egypt are based on; i) similar economic studies for Egypt or estimates available for similar developing economies, ii) guesstimates supported by economic rationale and some econometric evidences, and iii) assessments of the parameters used for other models for Egypt (such as the Energy Economy Interaction Model for Egypt developed by Motaz Khorshid in 2008 and the Food Subsidy Economy-wide Model developed by Hans Lofgren in 2004). It is worthwhile noting, however, that a considerable part of these parameters is adjusted and fine-tuned during the validation of the MAMS version for Egypt. During the validation experiments, the output results of the model is compared with the published socioeconomic aggregates up to 2009 and results obtained for other economy-wide models for Egypt from 2009 to 2015.

5.3. *Estimation of the SAM*

The SAM estimation process is based on multiple sources (see Appendix I-C) and different computational methods. As such, a detailed description of these methods would be an extremely complex process that goes beyond the purpose of this final report. In this section we provide only the main approaches used for estimating the SAM as well as the specific features of its cells with special reference to the requirements for MAMS. A detailed description of the SAM construction and assembly processes can be found in Soheir Aboul-Einein and Motaz Khorshid (2009).

- Officially published macroeconomic indicators of sources and applications of GDP, the balance of payments and government income and spending accounts are used as control variables to guide the development of the SAM and the balance of its accounts. The values of the disaggregated cells in the SAM - which are computed using indirect estimation methods – should generally converge to these aggregate control figures. The SAM for MAMS relied however on several other sources of data such as recent input output tables, population census, labour market surveys, various annual establishment surveys of agriculture, industry and services as well as previously constructed SAMs for Egypt.

- The disaggregation of activities and commodities focuses on government and non-government services that would enable us to analyze MDG-related issues for Egypt. Education services and labour factor are both disaggregated into 3 educational levels, water and sanitation is presented as a separate sector, and "other public infrastructure" is identified as another separate sector that accounts for government shares in electricity, transport and communications. In the annual follow-up report of the five-year socioeconomic development plan for 2006/2007, published by the Ministry of Economic Development (MOED), investments in different activities are broken down into private, public and general government. This disaggregated data is not available however for GDP at factor cost, which is only divided into private and public sectors. In the constructed SAM for MAMS, the public sector is however combined with private enterprises and households to form a "non-government" sector, whereas general government is treated as a separate institution. Figures of investment and GDP were therefore adjusted to meet these analytical needs of MAMS.

- GDP at factor cost in different sectors is calculated from the data provided by the Ministry of Economic Development. Since GDP for manufacturing industries is not disaggregated in the national accounting indicators of the MOED, it was necessary to breakdown its value into labour-intensive and capital-intensive industries using the structure of the most recent (2005) detailed data of the industrial census published by CAPMAS, in order to cope with the disaggregation scheme of SAM for MAMS. Moreover, government and non-government education services were disaggregated by educational level using data on the number of students in each of these levels and the

corresponding costs. The whole structure of education by level in private and government sectors was then adjusted or fine tuned to be consistent with other accounts of the SAM.

- Household consumption was calculated on the basis of the recent household survey for 2004/2005. The structure of final consumption spending of the household survey was used to derive detailed consumption patterns in the SAM.

- Exports and imports by sector were estimated using the structure of a previously constructed SAM for 2004/2005 and were further adjusted according to more detailed export and import data by commodity and type of use, published by the central bank of Egypt (CBE) for 2006/2007. The 2004/2005 data was used because the actual data published by CBE does not cover all services, required by the SAM for MAMS. The SAM of 2004/2005 was assembled for a project carried out by the Information and Decision Support Center (IDSC) which is affiliated to the Egyptian Cabinet of Ministers. The Input-Output table of 2002/2003 – developed by the Ministry of Economic Development - was used as a starting point to reflect the structure of production sectors of the Egyptian economy. Both the input output table of 2002/2003 and the accounting structure of the SAM 2004/2005 were used in the process of assembling the SAM for the base year 2006/2007 as a first step before applying the updating and balancing processes and techniques.

- To cope with the analytical purposes of MAMS, labour compensation by education level and production activity was estimated in two steps; first, total labour income per economic activity was estimated using data from the Ministry of Economic Development on compensation of employees (or wages). The disaggregation of labour compensation by activity and education status was estimated using the structure of labour compensations data produced by the central agency for public mobilization and statistics (CAPMAS).

- Gross operating surplus of different activities was calculated as the difference between the value added at factor cost and labour compensation by economic activity. It is then considered as a residual estimate.

- Domestic and national savings figures represent an important economic variable for the SAM and the calibration of MAMS. Their estimated values are based on the national accounting data produced by MOED. Savings of Government and the rest of the world were respectively computed from the deficits of the government and the current account of the balance of payments. Private savings (households and companies), on the other hand, were calculated as a residual value based on the investment-saving balance at the macroeconomic level. Capital transfers between institutions were estimated using the following: (i) a matrix of savings and lending available in the follow-up report of MOED and (ii) institutional accounts form the 2005-2006 bulletins

of national accounts. Using data for different years other than 2006/2007 for which a SAM for Egypt was built, was considered necessary only in cases where the required 2006/2007data for compiling the SAM were not available. The SAM building has however by and large relied on the most recent data reflecting the current structure of Egypt's economy.

- Aggregate investment spending figures are available from the published reports of national accounting produced by MOED. Its breakdown into government and non-government investments was meanwhile carried out using the yearly follow-up reports of the five year socioeconomic development plan for 2006/2007. Investments by sector origin are generally based on the input-output tables for 2002/2003 after adjusting its structure according to the activity and commodity breakdown of the SAM for MAMS. A capital coefficient matrix of investment by origin and destination - based on the 2004/2005 SAM of the IDSC - was also estimated to derive the mapping between investments by sectors of origin and destination. This matrix was furthermore used to estimate a capital matrix for both the government and non-government investments.

- A matrix of intermediate consumption was estimated on the basis of the I-O matrix of 2002/2003. Some guesstimates were used for disaggregated activities of education. In this respect, we have relied on ratios of expenditure on different level of education in government budget as well as ratios of the numbers of students in each education level.

- The breakdown of indirect taxes by activity type was based on the Input Output table of 2002/2003 in addition to some details statistics collected from the government budget. Total subsidies along with their allocation patterns are computed directly from the government budget. Total import taxes are also taken from government final accounts. Tax and subsidy rates derived from the SAM are used in MAMS as part of its structural parameters.

- Total income of households was initially adjusted by making use of the estimated savings, trying to maintain the ratio of household gross savings to total income at around 14%, which is an indicator mentioned in the follow-up report of the five-year development plan. In the SAM for MAMS, however, households are combined with companies. In order to have more accurate estimates, the economic aggregates of the two types of institutions were estimated separately. In the final version of the SAM for MAMS, households and companies are grouped in one account such that savings are for both institutions. Based on the above aggregation scheme, the ratio of households (or more precisely non-government domestic institutions) savings increased to 22 percentage of total income.

- Current transfers between government and other institutions are estimated according to some partial data found in the government budget - related to pensions' instalments and payments of social insurance and social aid – and the documents of national accounting

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produced by MOED. Current transfers with the rest of the world (including worker's remittances) are estimated using the data of the private and public transfers from the balance of payments tables produced by CBE. The base year income distribution shares used in calibrating MAMS are based on the SAM data. Interests paid on borrowings from domestic and foreign institutions are directly computed from the indicators of the government budget. These data represent a direct input to compute some parameters used in MAMS.

- An important point – concerning particularly the SAM for MAMS - needs to be explained here. Government final consumption expenditure, appearing in the column of government spending in the SAM, includes only purchases of services produced by the general government. The remaining part of government consumption of commodities is recorded under the intermediate consumption column of the producer of government services. This treatment of government final consumption spending is specific to the SAM for MAMS.

5.4. Structural Features of the Egyptian Economy

The SAM for Egypt was particularly designed to calibrate MAMS to be able to analyze alternative MDG-related strategies. The constructed SAM can serve however to identify the major macro-features of the economy based on a set of national accounting indicators derived from its structure and data framework. These indicators include macroeconomic aggregates as well as sector specific measures such as household consumption patterns, government income and spending accounts and the external transactions of Egypt. A set of tables computed directly from the SAM are shown in this section in order to explain some structural features of Egypt's economic system and the prevailing interactions among its components in 2006-2007.

5.5. Structure of GDP

Sources and uses of GDP (in LE million) permit to determine the relative weight of each economic aggregate in the formation of gross domestic product. In Egypt, final consumption spending exceeds 80 percentage of the value of GDP, with private consumption reaching 79 percentage of GDP. Given the particular treatment of government final consumption in the SAM for MAMS, its share in GDP is only 2.7 percent. In general, government consumption spending in Egypt ranges from 10 to 12 percentage of GDP on average (see section C for more detailed analyses of this point). Investment spending (or gross capital formation) in 2006/2007 mounts to 21 percentage of GDP. Imports and exports of goods and services account for 34 and 31 percent, respectively. This result explains the negative value of the commodity trade balance of the balance of payment accounts. Finally, net indirect taxes (indirect taxes minus commodity subsidies) account for 2 percentage of GDP. Detailed information about taxes and subsidies are shown in the government final accounts shown below.

Table (5.1): Sources and Applications of GDP in LE Million, 2006/2007

SOURCES of GDP	Indicator	USES of GDP	Indicator
GDP at factor cost	715530	Household consumption	580153
Net indirect taxes	15700	Government consumption	19777
GDP at market price	731230	Total final consumption	**599930**
Imports	254600	Investment	155300
		Exports	230600

Source: SAM for 2006/2007 constructed by authors

5.6. *Value added matrix*

The generation of factor income in the Egyptian economy is shown in Table (5.2). The share of labour compensation in GDP is estimated by the SAM as 26 percentage of GDP at factor cost. The breakdown of this 26.4% into different education levels is in favour of the before university level (around 9.3% for primary and 9.8% for secondary education respectively). Compensation of employees of the tertiary education is around 7% only of the aggregate GDP. Most of the gross operating surplus is generated in the non-government activities. This is expected for at least two reasons; i) the gross operating surplus of the general government is – according to the national income accounting convention – composed only of the consumption of fixed capital (or the depreciation), the net operating surplus of government is generally recorded as zero in the national accounting system, and ii) In the SAM for MAMS, the non-government activities group the organized private companies, the public enterprises and household activities. Finally, given that the capital income – in table (5.2) - represents more than 70% of the value added generated in the production activities, we can assume that the Egyptian economy is a capital intensive one. This point needs however further investigation with more disaggregated data and advanced analytical tools.

Table (5.2): Structure of the Value Added in LE million, 2006/2007.

Value added	Values	Percentage Structure
Labour income	189000	**26.4**
Labour at primary level of education	66557	9.3
Labour at secondary level of education	70218	9.8
Labour at tertiary level of education	52226	7.3
Capital income	526530	**73.6**
Operating surplus in non-government activities	522034	73.0
Operating surplus in government activities	4496	0.6
Value added at factor cost	715530	100

Source: SAM for 2006/2007 constructed by authors.

5.7. *Government account*

General government revenues and spending are recorded in Table (5.3). The main characteristics and structural features of this table are: a) tax revenues collected by government

account for 58 percentage of its total income. This figure is however reduced by the subsidy payments that amount to 21 percentage of income. The net tax income represents then no more than 38 percentage of government income. b) Direct taxes composed of personal, income, corporate and wage taxes account for 50% of the total tax income. c) Indirect tax income covers the remaining 50% of the tax revenues due to the increased share of sales taxes in the structure of indirect taxes in Egypt. Note that the sales taxes are applied on both domestic and foreign commodities. d) Due to engagement of Egypt in the general agreement for trade (GATT) beginning from 2005, the percentage share of import taxes does not exceed five percent in 2006-2007. e) Current transfers to government represent 52 percentage of total income and they are dominated by domestic transfers which amount to 81 percentage of total current transfers. This later category includes profit transfers from public enterprises – mainly from the petroleum and transport sectors – interest on government deposits in domestic banks as well as all other private sector current transfers. f) Capital income of government – composed of foreign and domestic investments in the public sector and government borrowing - does not exceed 10% of total government income. This reflects the fact that most direct domestic and foreign investments are mainly allocated to the private sector or public enterprises. g) On the expenditure side, government transfers to domestic institutions represent the highest spending component of the budget (82 percentage of total government expenses). In addition, the level of interest paid to domestic institutions represents the main component of the cost of government debt service (with a ratio of 23 percentage of total spending and around 94 percentage of total cost of debt service). This is explained by the adopted government policy of Egypt to rely exclusively on domestic borrowing as the main source for financing government deficit. The resort to foreign borrowing is considerably restrained since the 1990 decade. h) Finally, government savings were negative in 2006/2007(-41,830 LE million) with a relative share that exceeds 20 % of total expenses (or revenues).

Table (5.3) Structure of government revenues and spending, 2006/2007, (LE million and %)

Revenues	Values	%	Expenditures	Values	%
Total	**196517**	100.0	**Total**	**196517**	100.0
taxes:	114326	58.2	**consumption**	19777	10.1
direct taxes	57708	29.4	**Transfers**	170870	86.9
indirect taxes	56618	28.8	To rest of the world	9315	4.7
in which: import taxes	10370	5.3	To domestic institutions*	161555	82.2
export taxes	1	0.0	**interest paid**	47700	24.3
Subsidies	-40918	-20.8	To rest of the world	3000	1.5
transfers:	102296	52.1	To domestic institutions	44700	22.7
from rest of the world	19810	10.1	**Savings**	-41830	-21.3
from domestic institutions	82487	42.0			
capital income in government activities	20813	10.6			

Source: SAM for 2006/2007 constructed by authors

5.8. Balance of Payments

The rest of the world column (revenues collected by the Egyptian economy) and row (Egypt's payments to the outside world) reflect the balance of payment account as shown in the SAM and in table (5.4). The main result obtained from this figure is that although the trade balance of goods and services was negative (reaching -24,000 LE million in 2006/2007), the current account balance was positive (or foreign savings was negative). This outcome has resulted from the excess of transfers from abroad (worker's remittances and return on Egypt's foreign investments) over transfers to the outside world. Again here, more than 75% of the transfer income from the outside world is channelled to the non-government sector. Finally, the interest on government loans from the rest of the world has reached 3 LE billion in 2006-2007.

Table (5.4): Structure of the Balance of Payments, 2006/2007 (LE million and %)

Revenues	Values	%	Payments	Values	%
Total	**297669**	100.0	**Total**	**297669**	100.0
Exports of goods & services	230600	77.5	**Imports of goods & services**	254600	85.5
Transfers	81069	27.2	**Transfers**	40069	13.5
for non-government	61259	20.6	from non-government	30753	10.3
for government	19810	6.7	from government	9315	3.1
foreign savings	-14000		**interests from government**	3000	1.0

Source: SAM for 2006/2007 constructed by authors

5.9. Savings – Investments Balance

The savings and investment accounts of the SAM represent an important balance on the macroeconomic level. It reflects the capacity of the economy to invest and then the need for foreign borrowing to finance these domestic investments. Figure E.5 reveals the fact that the financing of domestic investments is strongly dependent on non-government savings. Accordingly, the non-government sector represents the main driving force for the accumulation of fixed capital accumulation and economic growth in Egypt based on the data of 2006/2007. This result is reflected on the allocation of investment between private and government sector in table (5.5). Because the SAM for MAMS merges public enterprises with the private sector, non-government investments have exceeded 80% of total domestic investments in 2006-2007.

Table (5.5): Structure of savings and investment, 2006/2007 (LE million and %)

Savings	Values	%	Investments	Values	%
Total	**155300**	**100.0**	**Total**	**155300**	**100.0**
Non-government savings	211130	135.9	Non-government investments	130133	83.8
Government savings	-41830	-26.9	Government investments	25167	16.2
foreign savings	-14000	-9.0			

Source: SAM for 2006/2007 constructed by authors

5.10. Pattern of household consumption

The pattern of household final consumption shown in table (5.6) demonstrates that the expenditure on public education is generally much higher than the spending on private (or non-government) education services. This might be explained by the dominating role of public education system in Egypt. For instance, about 80% of the secondary school graduates - enrolled in the higher education system – are studying in state universities. The remaining share is distributed between higher education institutes and private universities. It shows also that the spending on private education services is mainly concentrated in the primary education level. This result has however changed later on due to the considerable increase in the number of private universities and higher education institutes in the period from 2005 to 2009. The SAM shows also that the expenditure of households on public health services is fairly similar to that on private health services. Households spending on capital intensive industries account for the largest part of private consumption (about 35% of household expenditures). Finally, about 15% of household current spending is allocated to government services other than education, health, sanitation and infrastructure.

Table (5.6): Structure of household consumption spending, 2006/2007, (LE million and %)

Commodities	Household consumption	%
Agriculture & Fishing	47297	8.2
Crude Oil & Natural Gas	1051	0.2
Labour Intensive Industries	78232	13.5
Capital Intensive Industries	203495	35.1
Construction		0.0
Electricity & Water	7859	1.4
Transport & Communication	29736	5.1
Other Productive Services	64468	11.1
Private Education - Primary	1065	0.2
Private Education - Secondary	217	0.0
Private Education – tertiary	127	0.0
Private Health Services	6686	1.2
Other Private Services	22435	3.9
Public Education - Primary	6066	1.0
Public Education - Secondary	1508	0.3
Public Education – tertiary	2835	0.5
Public Health Services	5198	0.9
Water & Sanitation Services	3017	0.5
Other Infrastructure	12866	2.2
Other Government Services	85995	14.8
Total	580153	100

Source: SAM for 2006/2007 constructed by authors

6.   Assessing Strategies for achieving MDG for Egypt

6.1.   *Introduction*

Alternative strategies for achieving the MDGs in Egypt are formulated and assessed in this section, using the MAMS framework.

The model is first used to generate a reference path for 2007-2015, which is also indifferently regarded as a base run or a business-as-usual (BAU) scenario. This BAU run is mainly directed to project the medium-term economy-wide indicators up to 2015, assuming that the government continues to rely on various policy measures and strategic trends applied in the 1990 decade and the beginning of the twenty one century. Based on the results of this BAU scenario - with respect to the achievement of the MDG - alternative policy measures can be formulated and tested. The selected strategies will depend then on the results of the BAU reference path and the selected government policy measures to achieve the MDG.

In light of the current performance and structural features of the Egyptian Economy as well as the adopted development policies and directions, three financing options for the MDG strategy are considered here: (i) domestic borrowing, (ii) foreign current transfers (or aid transfers) and (iii) domestic tax revenue. The first option assumes that the Egyptian government would further rely on domestic borrowing – in the form of treasury bills and other government domestic financial instruments – to ensure the financing of the cost related to the MDG strategy. The second option assumes that the Egyptian government will succeed to acquire foreign grants (or transfers) directed to reach the aspired MDG indicators. Finally, the third option adjusts the direct tax rate so as to generate enough revenue to finance the required MDG spending. The above financing options are compatible with the decision of the Egyptian government and the central bank (CBE) to minimize the reliance on foreign borrowings and, instead, mobilize domestic resource to finance the government budget.

Three additional experiments were also perform to enrich the analysis: (i) MDG financing via external debt, (ii) specific policies to achieve universal primary education (MDG2) and (iii) specific policies to achieve appropriate access to improved sanitation (MDG7b). The selection of the last two scenarios stemmed from the fact that most of the MDG indicators – except MDG2 and MDG7b – are achieved in the reference path scenario (see section B3). It would be useful then to apply appropriate policy measures that concentrate specifically on these two indicators.

All the above experiments were also analyzed in the context of alternative economic growth scenarios and their impact on the MDG indicators taking alternative reference path scenarios as the benchmark. Specifically, two economic growth, reference path scenarios were tested. Firstly, an optimistic scenario based on the government indicators reflected in the follow-up reports of the five year plan produced by the Ministry of Economic Development (MOED) as well as other official government documents. This scenario assumes that Egypt will gradually overcome the effects of the recent world-wide financial crises and will achieve real GDP growth rates of 4% in 2010, 5% in 2011 and 6.5% per annum thereafter until 2015. The average growth rate of real GDP at factor cost in this scenario will be 5.7% during 2008-2015. Secondly, a moderate growth scenario which assumes that the Egyptian economy will take more time to overcome the effects of the financial crises with real GDP at factor cost growing annually by 4.9% in 2008-2015.

The results of the two reference paths are discussed in what follows. Alternative financing options to achieve the MDGs are then assessed taking into consideration the performance of the Egyptian economy and the resulting MDG indicators. The main findings of the MDG modelling exercise are summarized in the concluding part of the report (section VIII) in order to provide appropriate policy advice that may be useful to the government of Egypt.

6.2. *Assumptions and medium term projections of the reference path*

The main trend or development path of the economy of Egypt – under the reference path or BAU assumptions - has been generated based on: (i) the assumptions of the development scenario of the current medium term socioeconomic development plan (2007-2012), (ii) World Bank development indicators and development reports, the IMF economic outlook and results from existing studies for Egypt (such as Khorshid, 2003 and 2008), (iii) the structural parameters of the Egyptian economy based on the constructed SAM for MAMS, (iv) the follow-up reports of MOED on the impact of the recent worldwide financial crisis on Egypt's main socioeconomic indicators and finally (v) the specific estimates of the behavioural parameters and technical coefficients of the model based on worldwide indicators, similar country's indicators and other economic studies for Egypt.

6.3. *Assumptions of the Reference Path*

The assumptions of the BAU scenario can be delineated in the following points:

1) In light of the documents of the current five year plan (2007-2012) and the analytical reports published by the government of Egypt after the world financial crisis as well as other economic studies, two GDP growth scenarios were formulated (see the introductory part of this section). In this respect, we assumed that the government of Egypt will either succeed to achieve the pre-crises GDP performance before 2015 or it will continue to be hit by the impact of the crisis up to 2015. The average annual growth of real GDP in the two scenarios during 2008- 2015 was, respectively, 5.7 and 4.9 percent.

2) Real government consumption spending follows an exogenous growth rate. The choice of this closure rule is explained by the fact that government final consumption is considered as part of the demand management policies directed to enhance the growth prospects of the economy. According to the optimistic growth scenario and based on the most recent data trends of the development plan follow-up reports, real government consumption expenditures are assumed to grow on average by 4.5 percent per annum during the projection period up to 2015. For the fiscal year 2009/10, however, real government current spending is expected to grow by 5.6 percent. This higher growth rate reflects the government policy to increase both current and developmental expenditures in order to overshadow the negative impact of the current international financial crises resulting in a decline of private investment spending and an observed decrease in the GDP growth rates. With respect to the moderate growth scenario, on the other hand, the same government expenditure trend is adopted but with slightly less

growth to reflect the difficulty to finance government spending policy under the conditions of moderate GDP growth rates. According to this moderate scenario, public final consumption will grow at only 4 percent a year during the planning period.

3) Based on the above, MAMS was then used to generate two reference paths for the Egyptian economy, an optimistic and a moderate one. These two paths are really benchmarks for comparing alternative strategies to achieve the MDG.

4) According to the Central Bank database, government domestic borrowing – including treasury bills and loans from the monetary system – are expected to grow by 2 percent a year up to 2015. Current transfers between domestic institutions will increase annually by 4 to 5 percent in nominal terms. This assumption is based on data collected from the published social accounting matrices during the last 1990 decade and the beginning of the twenty first century. The estimated growth rates are however adjusted to reflect current government policies with respect to social aid, social security funds and other government welfare transfer measures. Government and households transfers to the outside world are assumed to grow annually by 4 and 2 percent respectively. These rates are consistent with the Ministry of Finance (MOF) data and the results of household income and expenditure surveys.

5) Annual growth rates of imports and exports price indices relied mainly on the future scenarios of world price categories produced as part of the global economic prospects of the IMF and the WB. These general trends are adjusted by additional information from the CBE and the Ministry of Commerce and Industry.

6) The Armington elasticity of substitution between domestic and imported, and elasticity of transformation between domestic sales and exports per commodity group are based the international data provided by H. Lofgren (2008a), similar general equilibrium modeling exercises for Egypt (Khorshid 2003 and 2008) and the judgment and expertise of the Egyptian team.

7) In addition to the socioeconomic behavior parameters, which are many in MAMS, the model includes elasticies that measures by how much the different MDG indicators would change in response to their determinants (see Appendix III). These elasticities are based on other countries comparative measures provided by Hans Lofgren and background studies of the MDG indicators recorded in section IV of this study. It is clear from the data of appendix III that reducing child and maternal mortality rates (MDGs 4 and 5) are affected by spending on health services, government accumulated stock of other infrastructure and per capital household final spending. Furthermore, it is expected that the improvements in the provision of clean water and sanitation services to the Egyptian population (MDG7a and b) would also affect the performance of MDGs 4 and 5. In light of the elasticities of Egypt used with MAMS, the government spending on health commodity represents the main determinant of the indicators of MDG 4 and5. With respect to improving the provision of clean water and appropriate sanitation

infrastructure (MDG7a and MDG7a), government spending on water and sanitation services is the main determinant for achieving the desired development goals (it has the largest elasticity level). Other government infrastructure and per capita private spending has however a smaller impact in particular with respect to improving sanitation infrastructure (MDG7b). Determinants of achieving universal primary education (MDG2) and its associated elasticities are computed in MAMS as a function of several educational parameters as well as some other socioeconomic factors. On the educational side, the students' behavioural characteristics include; a) shares of enrolled students that pass their current grade (pass), b) shares among cycle graduates who continue to next cycle (grdcont) and c) share of cohort of the first year in primary school that enters school. In this respect, the education elasticities are linked accordingly to these students behaviour characteristics and the corresponding socioeconomic indicators which are; a) education quality parameter, b) under five child mortality rate, c) government other infrastructure, d) per-capita household consumption spending and finally e) wage premium. The education quality – measured by government spending on education in MAMS – represents an important factor in achieving MDG2 and improving the educational process in all cycles. The impact of the education quality becomes more apparent with education cycles after the primary education (see appendix III). The same logic applies also to the per-capita household consumption spending with respect to its impact on student educational characteristics. It should be noted finally that both the improved child mortality rate (MDG4) and the other government capital infrastructure have a sensible impact on the students educational characteristics and then on MDG2.

8) Estimated base-year share of domestic government borrowing that generates interest-bearing debt and the prevailing discount rate were obtained from CBE database. Net profit rate for private capital was defined based on world wide cross-country analysis adjusted by the specific studies for estimating return on capital in the Egyptian economy. Depreciation rate of capital has relied mainly on international experience and the applied CGE models for Egypt (Lofgren 2008a and Khorshid 2003 and 2008). Depreciation rate for most government services – such as education, health, water and sanitation and other public services – is 2 percent per year whereas that for other private capital was set as 7 percent per year.

9) The base-year level of employment by factor and activity (mainly applied to the three labour categories in thousand of persons) is based on adjusted data from the population census and the labour survey of CAPMAS as well as the published information by the MOED as part of the plan documents. During the period 2008-2015, since it was difficult to collect these data by economic activity, the number of workers by education status was recorded only on the aggregate level. Similarly, the labour participation rate out of population at labour force age per year was computed from the population data produced by CAPMAS. The increase in the labour participation rate changes from 4.96

percent in 2007 to 5.06 percent in 2015 and then to 5.15 percent in 2020. This gradual increase in the labour participation rate reflects government policy in this respect.

10) The unemployment rate by labour category reflects to a great extend the specific structure of the labour market in Egypt. The largest unemployment rate is for labour that has completed tertiary education (12 percent). The lowest rate reflects the situation of those who have completed only primary education (8 percent). This base year parameter is computed from the 2006 labour survey conducted by the population council in Egypt.

11) Estimates of total population data in thousands are from the population census and reports of the MOED. The population size is expected to reach 92.6 million in 2015. The model also needs information of a particular population groups such as; i) population in the age cohort that enters grade 1, ii) population in the age cohort that enters the labour force (often 15 years) and iii) population at labour force age (often 15-64). These estimates are again based on the population census produced by CAMPAS and other surveys carried out by the population council.

12) In order to adjust domestic and foreign government borrowing over time, initial government debts account for 637,200 and 170,430 LE million from domestic and foreign markets ,respectively. Accordingly, the domestic government debt represented 95.4 percentage of GDP in the base year.

6.4. *Market Closure Rules for Egypt*

The assessment of the economic performance of a country – via a CGE model – depends to a great extend on the selected closure rules. These rules explain the clearing mechanisms for factor and commodities markets as well as key macroeconomic balances including the balance of payments, government income and expenditure balance and investment-saving equilibrium. The Closure rules can then reflect various demand management and supply oriented decisions as well as the macroeconomic adjustment programs. In this vein, they can be viewed as part of the set of instruments used by economic decision maker to achieve the planned development objectives of a country.

One of the principal closure rules included in an economy-wide model is the government clearing mechanism. In MAMS, three categories of closure rules are embedded in its structure. The first one is used to close the gap between income and spending accounts of the government budget. The second closure is related to the allocation of government final consumption spending. The third closure addresses alternative means used to determine the income of government institution.

In light of the options included in the structure of MAMS system, the level of domestic borrowing is selected as the initial clearing variable. This choice is based on Egypt's current government policy to rely mainly on domestic government borrowing in financing the government budget deficit. The reliance on foreign borrowings or tax rates is not currently part of Egypt's policy measures. Based on the recent economic and financial indicators, foreign loans have been reduced

to a minimum level and the government of Egypt has adopted - since 2005 – a tax reduction policy directed to revitalize the domestic markets and enhance the growth prospects of the economy. Although the Egyptian economy has witnessed a considerable increase in the flow of direct foreign investments, their largest part are used in financing the private and joint sectors.

Government final consumption is assumed to be fixed in real terms and follows an exogenous growth rate. In the Egyptian context, government spending is not pro-cyclical and it does not generally dependent on the economic growth. It is used in principle to affect the quantity and pattern of demand for commodities and then the level of output. With respect to alternative rules for government receipts, income from direct and indirect taxes are generated using fixed tax rates. Government borrowings of domestic bonds and foreign debt are computed using fixed value shares of GDP. Finally, the transfers from the rest of the world and borrowing from the monetary system are determined as a fixed share of GDP. It worth noting, however, that both current transfers and borrowing from the rest of the world are assumed to be fixed in foreign currency.

A flexible real exchange rate clears the foreign exchange market. Based on the document "MAMS – A Guide for Users" developed by Hans Lofgren in 2008, this choice is justified by the fact that " Experience from MAMS simulations in different countries and contexts indicates that other rules are not useful, especially in medium – to long run setting". On the other hand, MAMS can use two factor-market closure rules; i) exogenous unemployment rate (greater than or equal to zero) and ii) endogenous unemployment rate (Greater than or equal to a minimum rate). In the case of Egypt and consistent with most previous MAMS simulations, the first rule is applied to non labour factors whereas the second rule is typically used for labour factors. This means that the unemployment rate is a function of the policies affecting the demand for (and the supply of) labour. This rule is consistent with the labour market functioning in the Egyptian context.

The investment and saving accounts are computed for households, government and the rest of the world. Given that the saving and investment accounts for both the government and the outside world are determined by other rules within MAMS, the investment-saving balance on the macroeconomic level is cleared by either household savings or household investment. In the application of MAMS for Egypt, household investment spending is determined as an exogenous share of GDP and saving clears the market. This closure assumes that the government of Egypt will adopt a policy directed to accumulate national savings with the objective of ensuring a level of investment consistent with a selected share of GDP.

6.5.   *Results of the reference Path*

The performance of the reference path scenario during the period 2007-2015 is assessed using four economic development objectives; namely, economic growth, structure of the economy, government income and spending and the external balance. The performance indicators are recorded in the tables from (6.1) to (6.8).

GDP and Aggregate demand

Tables (6.1) and (6.2) summarize the macro indicators of the Egyptian economy under the optimistic and moderate growth assumptions of the reference path scenario. They measure also the impact of the adopted MDG strategies on the macroeconomic performance. In the moderate

scenario, GDP in real terms at market price is expected to grow on average by 4.7% per annum during the projection period. This GDP growth has contributed to a similar increase in private investment spending accounted for 5.7% per year (see column 2 of table (6.1)). It should be noted here that the investment-saving closure rule of the model assumes that private investment is a fixed share of GDP. On the other hand, government investment is expected to grow annually by 3.2 percent from 2007 up to 2015. In the optimistic scenario (table (6.2)), real GDP at market prices is expected to increase on average by 5.5 percent per year up to 2015. This higher growth is also reflected on private investment spending which is expected to grow on average by 6.1 percent up to 2015.

In the moderate scenario, GDP growth coupled with the increase in investment spending positively contributes to raising household disposable income and, as a consequence, household final consumption expenditures increase by 6.5 percent per annum. The considerable growth of private investments - which account for more than 60 percentage of aggregate gross fixed capital formation in 2007 - and the increase in private final spending generate higher levels of demand for both intermediate and final goods and services. Given the considerable share of imports in aggregate demand for goods and services and real GDP (the share of imports in real GDP accounted for 32 percent in the base year), the volume of imports increased annually by 7.9 percent on average during the projection period (2007-2015). In fact, the volume of imports does not depend only on its initial share in GDP but also on the degree of substitution of domestic goods by imports (which is treated in MAMS as a function of the value assigned to the Armington elasticity of substitution between domestic and imported goods and the magnitude of the difference between domestic and world prices). In the optimistic growth scenario, real private investment and household final consumption spending increased annually by 6.1 and 7.4 percent, respectively. This performance has contributed to augmenting the annual growth rate of imports – during 2007-2015 – to 8.4 percent on the average.

The tables (6.1) and (6.2) indicate also that exports in real terms increase on average by only 3.5 and 3.9 percent per annum in the moderate and the optimistic scenarios, respectively. This represents generally half the growth rate of imports. This might be the outcome of several factors such as the magnitude of export subsidies, the elasticity of transformation between domestic production and exports as well as the relation between the domestic supply price of commodity and the corresponding world price. It is worth noting however that government spending on export subsidies is – according to public finance indicators - at its minimum level (see table (5.3)). This result stresses the need to strengthen the efforts of Egypt's government to promote exports in order to reduce the growing deficit observed in the accounts of the trade balance of goods and services During 2007-2015. As a percent of GDP, the trade deficit - measured as the difference between imports and exports of commodities – has increased from 3.1 in the base year to around 3.9 percent in 2015 (see table (6.7) below) .

Macroeconomic structure and public debt

As a percentage of GDP, the structural features of the economy are not considerably affected by the assumptions of the reference path (see tables (6.3) and (6.4)). In the moderate growth scenario, the major change compared to the base year (2007) is the share of exports in GDP. This indicator declines from 31.5 percent in the base year to around 26 percent on average during the projection period of the reference path. Because domestic savings are computed as the difference between

GDP – or more accurately the gross income – and final expenditure spending, the drop in the share of exports contributes to reducing the percentage of gross domestic savings in GDP from 18 percent in the base year to a yearly average of 16.7 percent for the whole projection period. Given the assumed continuing reliance of the government of Egypt on domestic debt to finance its public deficit, the share of domestic debt to GDP increases

From 95.4 percent in the base year to about 106 and 100 percent in the moderate and optimistic scenarios, respectively. In consistency with this trend, the percentage of foreign debt in GDP in the moderate scenario shows a decline from 23 percent in the base year to 15 percent in 2015. Similar structural features appeared in the results of the optimistic growth scenario.

Government Income and Spending

Tables (6.5) and (6.6) show the component of government receipts and spending as a percentage of GDP for both the optimistic and moderate growth scenarios. These tables reveal the following results:

- Direct tax income as a percentage of GDP does not change - during the projection period and compared to the indicators of the base year. The average GDP share of direct tax income is 7.9% in both 2007 and 2015.

- With respect to the indirect tax income as a percentage of GDP, the results show a drop in the revenues from import taxes from 1.4% in the base year to 1.2% in 2015. This can be justified by the drop in the share of imports in GDP from 34 percent in the reference path to around 30 percent in the terminal year 2015 of the reference path scenario (see Table (6.7)). The share in GDP of other indirect taxes – composed mainly of sales tax revenues – does nevertheless increase from 0.7% in the base year to around 1.6% in 2015. This is a direct impact of the favourable growth prospects in the real GDP and the demand for goods and service during 2007-2015.

- Private transfers to government represent the highest share in GDP (that is 11.4 percent) compared with other income sources for the government. This high ratio is generated from a consolidated institutional account that groups the household sector, private companies and public enterprises.

- Consistent with the financing policy of the budget deficit, domestic borrowing as a percentage of GDP is classified as the second most important income source for the government, being 8.7% in the base year and 7% in 2015 under the moderate growth scenario. The decline from 2007 to 2015 can be attributed to the improved performance of government revenues due to an increase in the share of factor income in GDP from 2.8 percent in the base year to around 3.7 percent in 2015, as well as the reduction of the percent share of fixed government investment spending from 3.4 in the base year to 2.8 percent in 2015.

- As a percentage of GDP, government transfers to the private sector represent 22% of total public spending. This highest spending item is composed of welfare transfers and pension payments to the household sector, subsidies to public enterprises and other transfers to private companies. Given that government transfers to the private sector are fixed in nominal terms, their share of GDP is the same in both the base year and the reference path scenario. Furthermore, given the increase in domestic government debt over time, and assuming fixed interest rates on treasury bills and other domestic loans, the domestic interest payments increase in the reference path relative to the base year.

- Real government final consumption spending is assumed to grow at a fixed rate, and even though this is lower than the real GDP growth rate, the share of real government final consumption of GDP is higher than in the base year basically due to price changes.

The external balance

The balance of payment indicators as a percentage of GDP - in the base year and the reference paths – are shown in tables (6.7) and (6.8). Imports represent the highest percentage of all income to the rest of the world. This indicator represents 35 and 30 percentage of GDP in the base year and 2015, respectively. The smaller percentage in the reference path may be attributed to the changes in the exchange rate as a clearing variable of the foreign exchange market. Similarly, on the inflows front, exports of goods and services occupy the highest share in GDP. The percentage of exports in GDP declines over the years relative to the base year by about 5%. Other government transfers to the domestic market, and to the rest of the world, represent a relatively smaller share of GDP ranging from 0.5% to 6%.

6.6. *Assessment of the MDG Indicators*

Most of the MDG indicators are generally achieved – or even over-achieved – in both the optimistic and moderate growth scenarios. This is excluding the poverty goal (MDG1) which is analyzed in the subsequent section and, to some extend, the goals of access to improved sanitation (MDG7b) and universal primary education (MDG2).

This outcome is primarily attributed to the continuous efforts of the successive Egyptian governments to adopt appropriate policies for achieving these goals. It can be argued also that the improved growth performance of the Egyptian economy during the first decade of the twenty first century has positively contributed to this situation. And, and indicated earlier, all these policies and performance are somewhat captured and continued through the reference path scenarios.

Tables (6.9a) and (6.9b) provide a summary of the MDG indicators in the years 1990, 2007 and the target year 2015 for the reference path respectively under alternative economic growth scenarios - as well as for the MDG scenarios that will be introduced below. The performance of all the MDG indicators is quite satisfactory. With respect to the child and maternal mortality rates (mdg4 and mdg5, respectively) the aspired targets are achieved. Improved health care services, extended health insurance coverage and building more physical infrastructures – particularly in the rural

areas - are the main determinants of this positive performance of the mdg4 and mdg5 indicators. The goal of improving access to safe water (MDG7a) has been achieved before 2007. According to the MAMS results, 99% of the population would have access in 2015 under business-as-usual policies. As for access to improved sanitation (MDG7b), coverage goes up to 80% by 2015, which is a satisfactory result, but the target set for 2015 is not fully reached. The primary completion rate (mdg2) goes up to 92% against the goal of nearly 100%. It should be noted however that the full primary completion rate (MDG2) is targeted indirectly in MAMS. This means that the completion rate of the students in the primary education cycle – which consists of 6 academic years – relies on the entering and passing behaviour of these students. The computed target of MDG2 depends then on the passing and entry targets which – if selected as 99% - would lead to goal of 93.2 percent. Given this computational rationale, the performance of the reference path scenario, with respect to MDG2 can be considered a satisfactory result in spite of not fully reaching the target.

It should nevertheless be noted that, according to the description shown in part IV, the same indicators reflect a clear duality between urban and rural areas with respect to the achievement of the MDGs. This disaggregated level of analysis cannot however be handled by MAMS but based on the modelling results one could conclude that achievement under business-as-usual policies would be more likely to happen for the urban areas and less likely for the rural areas.

6.7. *Evaluating alternative strategies to achieve the MDGs*

Based on the outcomes of the reference path – or baseline – scenarios, MDGs 4, 5 and 7a would be within reach under business-as-usual policies whereas MDGs 2 and 7b would not, though the latter would not be far from being achieved by 2015. From a policy point of view, then, Egypt would have to target those MDGs that cannot be achieved under the reference path. Accordingly, financing strategies to scale up public spending aiming at achieving MDG2 and MDG7b are analyzed in what follows.

Six alternative policy scenarios – that take both the moderate and optimistic growth reference paths as the benchmark - have been formulated to evaluate what would be the most convenient strategy for Egypt's government to achieve MDGs 2 and 7b when adding up public spending efforts to the business-as-usual policies. The set of policy measures or strategies vary depending on two determinants: a) the financing mechanism of public spending and b) the selected development goal or combination of goals to be attained. Specifically, the following six policy measures or scenarios have been generated:

a) **mdg-db**: domestic borrowing is used to target both MDG2 and MDG7b.

b) **mdg-ft:** foreign transfers and grants to the government sector are increased to finance the achievement of MDG2 and MDG7b.

c) **mdg-tax:** income taxes are raised as a policy to finance the achievement of MDG2 and MDG7b**.**

d) **mdg-fb:** the government relies on foreign borrowing to achieve MDG2 and MDG7a**.**

e) **mdg2-db:** domestic borrowing is used to achieve MDG2**.**

f) **mdg7b-db:** domestic borrowing is used to achieve MDG7b**.**

In light of the currently adopted public finance policy in Egypt, domestic borrowing represents the major source of financing the government resorts to. After the Gulf War of the 1990s, the reliance on foreign debt has been reduced to its minimum level. Based on the base year SAM of 2006/07, for example, foreign borrowing represented around 0.5% of GDP whereas the share of domestic borrowing was 8.7% of GDP. Reliance on income-tax revenue is not high either. The government of Egypt has actually recently issued a new tax law including a reduction in both personal and import taxes in order to revitalize the economy and enhance its future growth prospects. Using current transfers from the rest of the world in the form of grants or other current payments to the government may however be considered as a second valid choice to finance MDG-related spending, pending on the success of the Egyptian government to attract these foreign inflows. Based on the above rationale, it can be concluded that domestic borrowing and foreign transfers represent policy options which the government can think of in consistency with the current economic trends in Egypt. Scenarios that consider the other two financing options are discussed here for analytical purposes only. The last two scenarios listed above target the achievement of MDG2 or MDG7b separately using domestic borrowing in order to determine how much it would cost to achieve each of them. The six MDG financing scenarios and their main economy-wide repercussions, including the effects for the MDGs are addressed in what follows.

6.8. *Economy-wide Impact*

The economy-wide impact of the strategies simulated to add efforts to the business-as-usual policies in order to achieve MDG2 and MDG7b is generally limited. This is expected considering that most of the MDGs are achieved with a continuation of policies. The macroeconomic level, the specific polices directed to improve access to sanitation services represent a unique case with respect to government consumption expenditures. Compared with other policy measures addressing all the MDG indicators, the mdg7b-db concentrates only on the improved access to sanitation services (mdg7b). Because the gap to achieving MDG7b is the widest under the reference path scenarios, real government final consumption spending is expected to witness an average annual increase of 4.9 percent in this specific scenario (mdg7b-db) compared to a drop in the annual growth rate of 0.6 percent in the case of the scenarios in which the two unrealized MDGs are targeted (see table (6.10)). All other economic indicators are less sensitive to the strategies of achieving the MDGs. The structure of government income and spending as a percentage of nominal GDP is not affected by the adopted MDG policies either. The strategy of relying on foreign debt to achieve MDG2 and MDG7b does contribute to reducing government domestic borrowing, though, by an annual average of 1% during the period 2008-2015. Excluding these two results, the economy-wide impact in the simulated MDG-related scenarios - relative to the reference path - is negligible.

Under both moderate and optimum growth scenarios, the government income and spending accounts as a percent of GDP reflect the following behavioural features with respect to alternative MDG strategies (tables 6.5 and 6.6). First, the MDG policies concentrating only on the universal primary education goal (MDG2) is less expensive to achieve than other strategies targeting MDG7b or both MDG 2 and 7b for at least two reasons; a) the development strategies directed only to achieve MDG2 are expected to avoid the current and capital spending associated with (or needed for) improved sanitation facilities (MDG7b) and b) the improved net completion rate of

primary education (MDG2) is expected to reduce the illiterate rate, improve the performance of the education system and enhance the quality of labour force. The expected favourable labour market environment and the improved quality of education coupled with the saving in cost required to finance MDG7b, would contribute to reducing the need for government current and capital spending. Based on table (6.5), government current spending as a percent of GDP decreased from 3 percent in the moderate reference path scenario to no more than 2.6 percent under the mdg2-db strategy. Second, the development strategy that is directed to target MDG7b and neglect MDG2 as well as other goals – or not targeting them – is expected to increase the MDG financing burden on the Egyptian government by augmenting the current expenditures as a percent of GDP from 3 percent in the moderate growth reference path scenario to 3.2 percent when adopting the mdg7b-db strategy. Given that the MDG indicator for access to improved sanitation facilities (MDG7b) has increased in 2015 from 79.8 percent under the reference path to reach the goal of 83.3 percent, this improved performance required more government expenditure on sanitation services during 2008-2015.

The growth rates of real government consumption spending under alternative policy measures are summarized in tables (6.10). As explained previously, these measures concentrate mainly on achieving MDG2 and MDG7b; other MDGs are already achieved under the reference path and they are not then part of the goal seeking process. Because the goal of improved access to sanitation (MDG7b) is the least achieved one in 2007 (around 66 percent) and the target in 2015 is 83.3 percent, the average annual growth rate of government consumption spending on water and sanitation services needs to go up under the selected development strategies for achieving the MDGs. A reverse direction is witnessed with respect to government spending on the primary education services. This result may be explained by the small difference between the achieved MDG indicator (MDG2) in 2015 in the reference path scenario and the adopted strategies or policy measures. Since the goal is nearly achieved in the reference path, any additional financing to achieve the MDGs should be directed to the other one (say MDG7b). If we add to the above rationale to the synergies between alternative MDGs – and in particular the impact of MDG7a and b on MDG2 - the observed decline in the annual growth rate of government expenditure on the primary education in the case of all selected policy measures can be explained.

Tables (6.11) and (6.12) show the impact of the selected development strategies on real GDP by productive activity. In table (6.11), real GDP in the water and sanitation sector accounts for the highest average annual growth under the selected scenarios during 2008-2015. The annual growth rate of this sector increases from an average of 5.1% in the base run to around 6.9% under alternative development strategies. The annual growth rate of the primary education sector declines however from 4.3% in the reference path to 3% only under the selected alternative strategies. This result is compatible with the performance of government final spending with respect to the on-time primary completion rate (MDG2). The results also show a slight improvement in the growth rate of government health sector and other government services under the selected policy measures compared to the base run. This outcome reflects the interdependence between government spending on health and other government services and to achieve both MDG2 and MDG7b. Real GDP performance of other sectors is not affected by the tested MDG policy measures. The structure of GDP by sector and type of MDG strategy is shown in table (6.12). Again here, the GDP share of the government's water and sanitation sector increases slightly from 0.7 percent in the reference path to 0.8 percent under the policy measures. On the other hand, the percentage of government real GDP of primary

education sector declines however from 3.1% in the base run to around 2.8% under all the selected policy measures due to the decline in its growth rates.

Since the achievement of the MDGs in Egypt is relying mainly on the domestic borrowing financing strategy, it would be useful, as well as important, to estimate the additional borrowing needs to be acquired. Although the domestic borrowing as a percent of GDP has reached 8.7 percent in 2007, this indicator decreased under the business-as-usual scenario and other MDG strategies during 2008-2015 to around 7 percent of GDP. The change in the domestic borrowing requirements as a percent of GDP between different scenarios is ranging from 0.1 to 0.4 percent which is considered a limited one. Furthermore, the impact on government domestic debt as a percent of GDP in 2015 has increased from 106.2 percent in the moderate growth reference path to 108.8 percent in the specific strategy of achieving universal primary education (mdg2-db), to 107.9 percent in the strategy of improving access to sanitation services (mdg7b-db) and to 110.2 percent in the strategy targeting both MDG2 and MDG7b. This average of two percent change in domestic debt is considered a reasonable additional cost to achieve the MDGs in the Egyptian context.

The general conclusion in this respect is that the policy maker in Egypt is advised to target all the unrealized MDGs (which are MDG2 and MDG7b in the Egyptian case) and avoid concentrating on achieving one of them or delaying the targeting of one of them with the objective of reducing their financing cost. This finding is justified by two arguments; a) the success to achieve all the targeted MDGs as a group with the positive impact of this achievement on the socioeconomic performance and the satisfaction of the Egyptian citizens and b) the moderate – or even the low impact- of the general MDG strategy on government consumption and investment spending as well as the incremental increase in foreign borrowing needs.

6.9.   *Performance of MDG Indicators*

At the aggregate level, all the simulated alternative strategies contribute to speeding up the targeting of MDG2 and MDG7b during 2008-2015, in addition to those who were already achieved under the reference path scenario, with some specific differences between these strategies to be delineated as follows (tables 6.9 to 6.15):

1) The performance of the MDG indicators during the projection period (2008-2015) is generally better in case of the optimistic growth reference path scenario. This is particularly apparent for MDG1, MDG4 and MDG5. The results of MDG strategies for Egypt based on MAMS (tables 6.1 and

2) 6.2) show that the real annual growth rate of private final consumption spending, private investments and exports have increased during 2008-2015 from 6.5, 5.7 and 3.5 percent in the moderate growth to 7.5, 6.1 and 4 percent in the optimum growth scenario. Furthermore, government needs for government domestic borrowing decreased in case of the optimum growth scenario. Given this improved growth prospects of the Egyptian economy, it is expected that the per-capita household consumption spending and the per-capita expenditure on health services would witness similar growth. Because these two economic indicators are part of the determinants of MDG 1, 4 and 5 (see the appendix III), these MDGs are more affected by the growth of

the economy than other development goals. It can generally be concluded then that a more favourable growth prospects for the economy would result in more progress towards the achievement of the MDGs.

3) Some development goals are overachieved when the MDG strategies are adopted. This is particularly true with respect to the child and maternal mortality goals (MDG4 and 5) and the access to safe water (MDG7a), as shown in tables 6.9a and b. This finding is the outcome of several factors; a) the Egyptian development indicators confirm that the goal of access to clean water (MDG7a) has been achieved in 2007 (with around 98 percent of population benefiting from access to clean water), b) similarly, the indicator of reducing child mortality rate (MDG4) was 33 percent in 2007 against the specified goal in 2015 which is 30.3 percent. Given that this goal is not targeted by alternative MDG strategies, the optimum growth reference path scenario has overachieved the selected goal with an indicator of 29.1 percent, c) although the goal of the maternal mortality rate (MDG5) is 4.4 percent, the business-as-usual indicators in 2015 reached 2.1 percent under the moderate growth scenario and 1.9 percent under the optimum growth scenario, and d) based on the analysis of the MDG determinants in section IV and appendix III of the report, both MDG4 and 5 are affected by the improvement in MDG7a and b. The observed overachievement in MDG4 and 5 is then partially explained by synergies as reaching MDG7a and b has a positive effect on their performance.

4) The primary completion rate (MDG2) improves compared with the reference path results. Tables 6.9a and b show that this indicator increases on average from 91.8% in the reference path to 93.6% under the selected development strategy. The primary completion rate (MDG2) goes up to 92% and the results of applying alternative MDG strategies have shown an additional increase to 93.6% against the ultimate goal of nearly 100%. It should be noted however that the full primary completion rate (MDG2) is targeted indirectly in MAMS. This means that the completion rate of the students in the primary education cycle – which consists of 6 academic years – relies on the entering and passing behaviour of these students. The computed target of MDG2 depends then on the passing and entry targets which – if selected as 99% - would lead to a goal of 93.3 percent. Given this computational rationale, the performance of the MDG strategies with respect to MDG2 – using MAMS – is satisfying the computed goal in spite of not fully reaching the ultimate target of 100%. The only exception to this outcome is the strategy targeting only – or concentrating only on - the MDG7b and not MDG2. The average performance of MDG2 indicator under this scenario is similar to the reference path projected indicator in 2015.

5) The yearly progress of the MDG indicators in response to alternative MDG strategies - within the goal seeking process implemented in MAMS – is shown in figures 6.1-6.5

and table 6.15. In spite of the existence of several goal seeking routines that determine the progression of the generated indicator towards the desired target, most of these MDG indicators in MAMS record a gradual progression between years from 2007 to 2015. For example, the on-time completion rate of universal primary education (MDG2) – in case of the domestic borrowing financing scenario – increases from 75.1 percent in 2007 to 82.4 percent in 2010 and then to 93.6 percent in 2015. Similarly, the improved access to sanitation (MDG7b) – under the same MDG financing policy – gradually rises from 66 percent in 2007 to 73.8 percent in 2010 and then to 83.3 percent in 2015. The goal of access to safe water (MDG7a) where the goal is achieved in 2009 and shows no further improvement thereafter. Furthermore, the goal of reducing maternal mortality rate (MDG5) is over achieved in the reference path scenario. The maternal mortality rate in the reference path is 2.8 per 100,000 live births in 2015 which is less than the targeted value of 4.4 percent. When the domestic borrowing strategy is adopted, MDG5 reaches 2.6 in 2015.

6) Table (6.13) shows the impact of the moderate growth reference path scenario as well as alternative MDG achievement strategies on the educational composition of the labour force in Egypt. The results of the reference path scenario – which have shown an improvement in MDG2 and MDG7b - reflect a change in the educational structure in favour of labour that has not completed their secondary education during 2008-2015. This trend continued with the application of alternative MDG strategies. For all the scenarios, the share of these "unskilled labour" in the total labour force increases from 34.5 percent in the base year (2007) to around 41.5 percent in 2015. This result may be attributed on the one hand, to the young structure of the Egyptian population and on the other hand, to the MDG policies supporting the achievement of universal primary education.

Table (6.1): Real macro indicators by simulation (% annual growth from year in column 2 to final year), Moderate Growth scenario

	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Absorption	6.2	6.2	6.2	6.2	6.2	6.2	6.2
Consumption - private	6.5	6.5	6.5	6.5	6.5	6.6	6.4
Consumption - government	3.9	3.3	3.3	3.3	3.3	2.3	4.9
Fixed investment - private	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Fixed investment - government	3.2	2.9	2.9	2.9	2.9	2.8	3.4
Stock change							
Exports	3.5	3.6	3.5	3.6	3.5	3.5	3.5
Imports	7.9	7.9	7.9	7.9	7.9	7.9	7.9
GDP at market prices	4.7	4.7	4.7	4.7	4.7	4.7	4.7
GDP at factor cost	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Total factor employment (index)	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Total factor productivity (index)	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Real exchange rate (index)	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7

Table (6.2): Real macro indicators by simulation (% annual growth from year in column 2 to final year), Optimistic Growth scenario

	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Absorption	7.0	6.9	7.0	6.9	7.0	7.0	7.0
Consumption – private	7.4	7.4	7.5	7.4	7.5	7.5	7.4
Consumption – government	3.9	2.3	2.2	2.3	2.2	1.5	4.6
Fixed investment – private	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Fixed investment – government	3.9	3.4	3.5	3.4	3.4	3.4	4.0
Stock change							
Exports	3.9	4.1	3.9	4.1	3.9	4.0	3.9
Imports	8.4	8.3	8.5	8.3	8.5	8.5	8.4
GDP at market prices	5.5	5.5	5.5	5.5	5.5	5.5	5.5
GDP at factor cost	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Total factor employment (index)	3.2	3.3	3.3	3.3	3.3	3.3	3.2
Total factor productivity (index)	2.5	2.4	2.4	2.4	2.4	2.4	2.5
Real exchange rate (index)	-3.5	-3.4	-3.5	-3.4	-3.5	-3.5	-3.5

Table (6.3): Macro indicators in year in column 2 and by simulation in final year (% of nominal GDP), Moderate Growth Scenario

Indicator	2007	Final year						
		base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Absorption	103.3	103.9	103.6	103.9	103.6	103.9	103.9	103.9
Consumption - private	79.3	80.2	80.2	80.5	80.2	80.5	80.7	80.0
Consumption - government	2.7	3.0	2.8	2.8	2.8	2.8	2.6	3.2
Investment - private	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
Investment - government	3.4	2.8	2.8	2.8	2.8	2.8	2.7	2.9
Stock change								
Exports	31.5	26.4	26.8	26.5	26.8	26.6	26.6	26.4
Imports	-34.8	-30.3	-30.4	-30.4	-30.4	-30.4	-30.5	-30.3
GDP at market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Net indirect taxes	2.1	2.8	2.8	2.7	2.8	2.8	2.8	2.8
GDP at factor cost	97.9	97.2	97.2	97.3	97.2	97.2	97.2	97.2
Foreign savings	0.5	0.6	0.6	0.6	0.3	0.6	0.6	0.6
Gross national savings	20.7	20.0	20.0	20.0	20.2	20.0	20.0	20.1
Gross domestic savings	18.0	16.7	17.0	16.7	17.0	16.7	16.7	16.8
Foreign government debt	23.3	14.9	14.9	14.8	16.9	14.9	14.9	14.8
Foreign private debt								
Domestic government debt	95.4	106.2	106.1	106.2	106.1	110.2	108.8	107.9

Table (6.4): Macro indicators in year in column 2 and by simulation in final year (% of nominal GDP), Optimistic Growth scenario

Indicator	2007	Final year						
		base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Absorption	103.3	103.8	103.3	103.8	103.3	103.8	103.8	103.9
Consumption – private	79.3	80.1	80.1	80.7	80.1	80.7	80.8	80.0
Consumption – government	2.7	3.0	2.6	2.6	2.6	2.6	2.4	3.2
Investment – private	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
Investment – government	3.4	2.9	2.8	2.8	2.8	2.8	2.8	2.9
Stock change								
Exports	31.5	26.4	27.1	26.6	27.1	26.7	26.7	26.4
Imports	-34.8	-30.3	-30.4	-30.4	-30.4	-30.5	-30.5	-30.3
GDP at market prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Net indirect taxes	2.1	2.9	2.9	2.7	2.9	2.9	2.9	2.9
GDP at factor cost	97.9	97.1	97.1	97.3	97.1	97.1	97.1	97.1
Foreign savings	0.5	0.5	0.6	0.5	0.0	0.6	0.6	0.5
Gross national savings	20.7	20.1	20.0	20.0	20.6	20.0	20.0	20.1
Gross domestic savings	18.0	16.8	17.3	16.7	17.3	16.7	16.7	16.8
Foreign government debt	23.3	14.3	14.4	14.3	15.6	14.3	14.3	14.2
Foreign private debt								
Domestic government debt	95.4	100.0	99.9	100.0	99.9	102.4	101.4	101.3

Table (6.5): Government receipts and spending in base year and by simulation in final year (% of nominal GDP), Moderate Growth Scenario

Indicator		2007	Final year						
			base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Receipts	Direct taxes	7.9	7.9	7.9	7.6	7.9	7.9	7.9	7.9
	Import tariffs	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Export taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other indirect taxes	0.7	1.6	1.6	1.5	1.6	1.5	1.5	1.6
	Private transfers	11.3	11.4	11.4	11.4	11.4	11.4	11.5	11.4
	Foreign transfers	2.7	2.7	2.4	2.7	2.7	2.7	2.7	2.7
	Factor income	2.8	3.7	3.7	3.8	3.7	3.8	3.7	3.8
	Domestic borrowing	8.7	7.0	7.0	7.0	7.0	6.9	6.6	7.3
	Foreign borrowing	0.5	0.6	0.6	0.6	0.3	0.6	0.6	0.6
	Total	36.0	36.0	35.8	35.8	35.8	36.1	35.7	36.4
Spending	Consumption	2.7	3.0	2.8	2.8	2.8	2.8	2.6	3.2
	Fixed investment	3.4	2.8	2.8	2.8	2.8	2.8	2.7	2.9
	Stock change								
	Private transfers	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1
	Foreign transfers	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Domestic interest payments	6.1	7.0	7.0	7.0	7.0	7.3	7.2	7.1
	Foreign interest payments	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total	36.0	36.0	35.8	35.8	35.8	36.1	35.7	36.4

Table (6.6): Government receipts and spending in base year and by simulation in final year (% of nominal GDP), Optimistic Growth scenario

Indicator		2007	Final year						
			base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Receipts	Direct taxes	7.9	7.8	7.8	7.3	7.8	7.8	7.8	7.8
	Import tariffs	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	Export taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other indirect taxes	0.7	1.7	1.7	1.5	1.7	1.6	1.6	1.7
	Private transfers	11.3	11.4	11.4	11.5	11.4	11.5	11.5	11.4
	Foreign transfers	2.7	2.7	2.2	2.7	2.7	2.7	2.7	2.7
	Factor income	2.8	4.0	3.9	4.0	3.9	4.0	3.9	4.0
	Domestic borrowing	8.7	6.4	6.4	6.4	6.4	6.0	5.8	6.6
	Foreign borrowing	0.5	0.5	0.6	0.5	0.0	0.6	0.6	0.5
	Total	36.0	35.7	35.2	35.2	35.2	35.4	35.2	36.0
Spending	Consumption	2.7	3.0	2.6	2.6	2.6	2.6	2.4	3.2
	Fixed investment	3.4	2.9	2.8	2.8	2.8	2.8	2.8	2.9
	Stock change								
	Private transfers	22.1	22.1	22.1	22.1	22.1	22.1	22.1	22.1
	Foreign transfers	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Domestic interest payments	6.1	6.6	6.6	6.6	6.6	6.8	6.7	6.7
	Foreign interest payments	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total	36.0	35.7	35.2	35.2	35.2	35.4	35.2	36.0

Table (6.7): Balance of payment in base year and by simulation in final year (% of nominal GDP), Moderate Growth Scenario

Indicator		2007	Final year						
			base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Outflows	Imports	34.8	30.3	30.4	30.4	30.4	30.4	30.5	30.3
	Private transfers to RoW	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.2
	Official transfers to RoW	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Factor income to RoW								
	Net interest income of RoW	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total	40.7	35.7	35.8	35.8	35.8	35.8	35.9	35.6
Inflows	Exports	31.5	26.4	26.8	26.5	26.8	26.6	26.6	26.4
	Private transfers from RoW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	Official transfers from RoW	2.7	2.7	2.4	2.7	2.7	2.7	2.7	2.7
	Factor income from RoW								
	Government borrowing	0.5	0.6	0.6	0.6	0.3	0.6	0.6	0.6
	Private borrowing								
	FDI								
	Total	40.7	35.7	35.8	35.8	35.8	35.8	35.9	35.6

Table (6.8): Balance of payment in base year and by simulation in final year (% of nominal GDP), Optimistic Growth scenario

Indicator		2007	Final year						
			base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
Outflows	Imports	34.8	30.3	30.4	30.4	30.4	30.5	30.5	30.3
	Private transfers to RoW	4.2	4.2	4.2	4.3	4.2	4.3	4.3	4.2
	Official transfers to RoW	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	Factor income to RoW								
	Net interest income of RoW	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Total	40.7	35.7	35.8	35.8	35.8	35.9	35.9	35.6
Inflows	Exports	31.5	26.4	27.1	26.6	27.1	26.7	26.7	26.4
	Private transfers from RoW	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	Official transfers from RoW	2.7	2.7	2.2	2.7	2.7	2.7	2.7	2.7
	Factor income from RoW								
	Government borrowing	0.5	0.5	0.6	0.5	0.0	0.6	0.6	0.5
	Private borrowing								
	FDI								
	Total	40.7	35.7	35.8	35.8	35.8	35.9	35.9	35.6

Table (6.9-a): MDG indicators -- summary - Moderate Growth Scenario

	1990	goal2015	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
mdg1	24.3	10.8	19.6	10.5	10.5	10.4	10.5	10.4	10.3	10.5
mdg2	90.6	100.0	75.1	91.8	93.6	93.6	93.6	93.6	93.6	91.8
mdg4	91.0	30.3	33.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
mdg5	17.4	4.4	8.4	2.8	2.6	2.6	2.6	2.6	2.6	2.7
mdg7a	94.0	98.0	98.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg7b	50.0	83.3	66.0	79.8	83.3	83.3	83.3	83.3	80.0	83.3

Table (6.9-b): MDG indicators -- summary - Optimistic Growth scenario

	1990	goal2015	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
mdg1	24.3	10.8	19.6	8.5	8.5	8.3	8.5	8.2	8.2	8.5
mdg2	90.6	100.0	75.1	91.9	93.6	93.6	93.6	93.6	93.6	91.9
mdg4	91.0	30.3	33.0	29.9	29.9	29.9	29.9	29.9	29.9	29.9
mdg5	17.4	4.4	8.4	2.1	1.9	1.9	1.9	1.9	1.9	2.0
mdg7a	94.0	98.0	98.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg7b	50.0	83.3	66.0	80.9	83.3	83.3	83.3	83.3	81.1	83.3

Table (6.10): Real government consumption – annual growth from base year to final year (%)

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
c-edup	64.2	3.9	-1.7	-1.8	-1.7	-1.8	-1.9	3.9
c-edus	16.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9
c-edut	30.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9
c-hlt	11.7	3.9	3.9	3.9	3.9	3.9	3.9	3.9
c-wtsn	3.0	3.9	29.4	29.3	29.4	29.3	3.9	29.7
c-oinf	0.4	4.5	4.7	4.7	4.7	4.7	4.7	4.7
c-ogov	73.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9
total	198.2	3.9	3.3	3.3	3.3	3.3	2.3	4.9

Table (6.11): Real GDP at factor cost – annual growth from base year to final year (%),
Moderate Growth Scenario

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
a-agr	896.8	6.3	6.3	6.3	6.3	6.3	6.3	6.3
a-oilext	1037.7	3.2	3.2	3.2	3.2	3.2	3.2	3.2
a-labint	360.0	4.8	4.9	4.9	4.9	4.9	4.9	4.8
a-capint	1285.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4
a-const	301.0	5.2	5.2	5.2	5.2	5.2	5.2	5.3
a-elect	65.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
a-transpcom	511.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
a-othprdsvc	1432.4	4.8	4.9	4.9	4.9	4.9	4.9	4.8
a-edupng	29.4	4.8	4.8	4.8	4.8	4.8	4.8	4.8
a-edusng	6.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8
a-edutng	3.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
a-hltng	61.7	4.7	4.7	4.7	4.7	4.7	4.7	4.6
a-othsvcng	268.3	4.9	4.9	4.9	4.9	4.9	4.9	4.9
a-edup	160.8	4.3	3.0	3.0	3.0	3.0	3.0	4.3
a-edus	40.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3
a-edut	75.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3
a-hlt	61.8	4.3	4.4	4.4	4.4	4.4	4.4	4.3
a-wtsn	33.5	5.1	6.9	6.9	6.9	6.9	5.1	6.9
a-oinf	205.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7
a-ogov	320.3	5.2	5.3	5.3	5.3	5.3	5.3	5.2
total	7155.3	4.9	4.9	4.9	4.9	4.9	4.9	4.9

Table(6.12): GDP at factor cost by activity – shares in base year and final year (%), Moderate Growth Scenario

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
a-agr	12.5	10.5	10.5	10.5	10.5	10.5	10.6	10.4
a-oilext	14.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4
a-labint	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9
a-capint	18.0	20.0	20.0	20.0	20.0	20.1	20.1	19.9
a-const	4.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
a-elect	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2
a-transpcom	7.1	7.5	7.5	7.5	7.5	7.5	7.5	7.5
a-othprdsvc	20.0	22.6	22.7	22.7	22.7	22.7	22.7	22.5
a-edupng	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
a-edusng	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
a-edutng	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
a-hltng	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1
a-othsvcng	3.8	4.2	4.2	4.2	4.2	4.2	4.2	4.2
a-edup	2.2	3.1	2.8	2.8	2.8	2.8	2.8	3.1
a-edus	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
a-edut	1.1	1.5	1.4	1.4	1.4	1.4	1.4	1.5
a-hlt	0.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2
a-wtsn	0.5	0.7	0.8	0.8	0.8	0.8	0.7	0.8
a-oinf	2.9	3.7	3.7	3.7	3.7	3.7	3.7	3.7
a-ogov	4.5	6.0	5.9	6.0	5.9	6.0	5.9	6.0
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table (6.13): Educational composition of the labor force – shares in base year and final year (%), Moderate Growth Scenario

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
f-labn	34.5	41.5	41.4	41.4	41.4	41.4	41.4	41.5
f-labs	37.2	32.6	32.7	32.7	32.7	32.7	32.7	32.6
f-labt	28.3	25.9	25.9	25.9	25.9	25.9	25.9	25.9
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table (6.14): Employment by factor – annual growth from base year to final year (%), Moderate Growth Scenario

	2007	base	mdg-ftr	mdg-tax	mdg-fb	mdg-db	mdg2-db	mdg7b-db
tot-lab	215.7	3.4	3.3	3.3	3.3	3.3	3.3	3.4
f-labn	76.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5
f-labs	80.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7
f-labt	59.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5
f-cap	14266.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2
f-capedup	382.9	10.4	8.8	8.8	8.8	8.8	8.8	10.5
f-capedus	95.2	10.4	10.2	10.3	10.2	10.3	10.2	10.5
f-capedut	178.9	10.4	10.2	10.3	10.2	10.3	10.2	10.5
f-caphlt	358.8	10.3	10.2	10.2	10.2	10.2	10.2	10.3
f-capwtsn	1051.9	10.7	12.5	12.5	12.5	12.5	10.6	12.7
f-capoinf	8158.7	9.6	9.5	9.5	9.5	9.5	9.5	9.6
f-capgov	180.1	9.9	9.9	9.9	9.9	9.9	9.8	10.0
f-oil	492.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1

Table (6.15): MDG indicators – year-by-year - Moderate Growth Scenario

		2007	2008	2009	2010	2011	2012	2013	2014	2015
base	mdg1	19.6	18.0	17.4	16.7	16.0	15.1	13.8	12.2	10.5
base	mdg2	75.1	76.5	78.4	80.6	83.1	85.8	89.0	90.8	91.8
base	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
base	mdg5	8.4	7.8	7.3	6.8	6.3	5.6	4.7	3.7	2.8
base	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
base	mdg7b	66.0	69.1	70.8	72.2	73.6	75.1	76.7	78.3	79.8
mdg-ftr	mdg1	19.6	18.0	17.3	16.6	16.0	15.1	13.7	12.2	10.5
mdg-ftr	mdg2	75.1	77.4	79.9	82.5	85.1	87.8	92.1	93.2	93.6
mdg-ftr	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg-ftr	mdg5	8.4	7.8	7.3	6.9	6.2	5.5	4.6	3.5	2.6
mdg-ftr	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg-ftr	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3
mdg-tax	mdg1	19.6	18.1	17.6	17.1	16.1	15.2	13.8	12.2	10.4
mdg-tax	mdg2	75.1	77.4	79.9	82.5	85.1	87.8	92.1	93.2	93.6
mdg-tax	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg-tax	mdg5	8.4	7.8	7.4	7.1	6.3	5.6	4.6	3.5	2.6
mdg-tax	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg-tax	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3
mdg-fb	mdg1	19.6	18.0	17.3	16.6	16.0	15.1	13.7	12.2	10.5
mdg-fb	mdg2	75.1	77.4	79.9	82.5	85.1	87.8	92.1	93.2	93.6
mdg-fb	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg-fb	mdg5	8.4	7.8	7.3	6.9	6.2	5.5	4.6	3.5	2.6
mdg-fb	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg-fb	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3
mdg-db	mdg1	19.6	18.1	17.6	17.1	16.1	15.1	13.8	12.1	10.4
mdg-db	mdg2	75.1	77.4	79.9	82.5	85.1	87.8	92.1	93.2	93.6
mdg-db	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0

		2007	2008	2009	2010	2011	2012	2013	2014	2015
mdg-db	mdg5	8.4	7.8	7.4	7.1	6.3	5.5	4.6	3.5	2.6
mdg-db	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg-db	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3
mdg2-db	mdg1	19.6	18.1	17.5	17.0	16.1	15.1	13.7	12.1	10.3
mdg2-db	mdg2	75.1	77.4	79.9	82.5	85.1	87.8	92.1	93.2	93.6
mdg2-db	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg2-db	mdg5	8.4	7.8	7.4	7.1	6.3	5.6	4.6	3.6	2.6
mdg2-db	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg2-db	mdg7b	66.0	69.0	70.6	71.9	73.6	75.2	76.9	78.5	80.0
mdg7b-ftr	mdg1	19.6	18.0	17.3	16.7	16.0	15.1	13.7	12.2	10.5
mdg7b-ftr	mdg2	75.1	76.5	78.4	80.6	83.1	85.8	89.0	90.8	91.9
mdg7b-ftr	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg7b-ftr	mdg5	8.4	7.8	7.3	6.8	6.2	5.5	4.6	3.6	2.7
mdg7b-ftr	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg7b-ftr	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3
mdg7-db	mdg1	19.6	18.0	17.4	16.8	16.1	15.1	13.8	12.2	10.5
mdg7-db	mdg2	75.1	76.5	78.4	80.6	83.1	85.8	89.0	90.8	91.8
mdg7-db	mdg4	3.3	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
mdg7-db	mdg5	8.4	7.8	7.3	6.8	6.2	5.5	4.6	3.6	2.7
mdg7-db	mdg7a	98.0	98.9	99.0	99.0	99.0	99.0	99.0	99.0	99.0
mdg7-db	mdg7b	66.0	68.7	71.4	73.8	76.1	78.2	80.1	81.8	83.3

Figure (6.1) Achieving Universal Primary Education (mdg2) – Moderate Growth Scenario
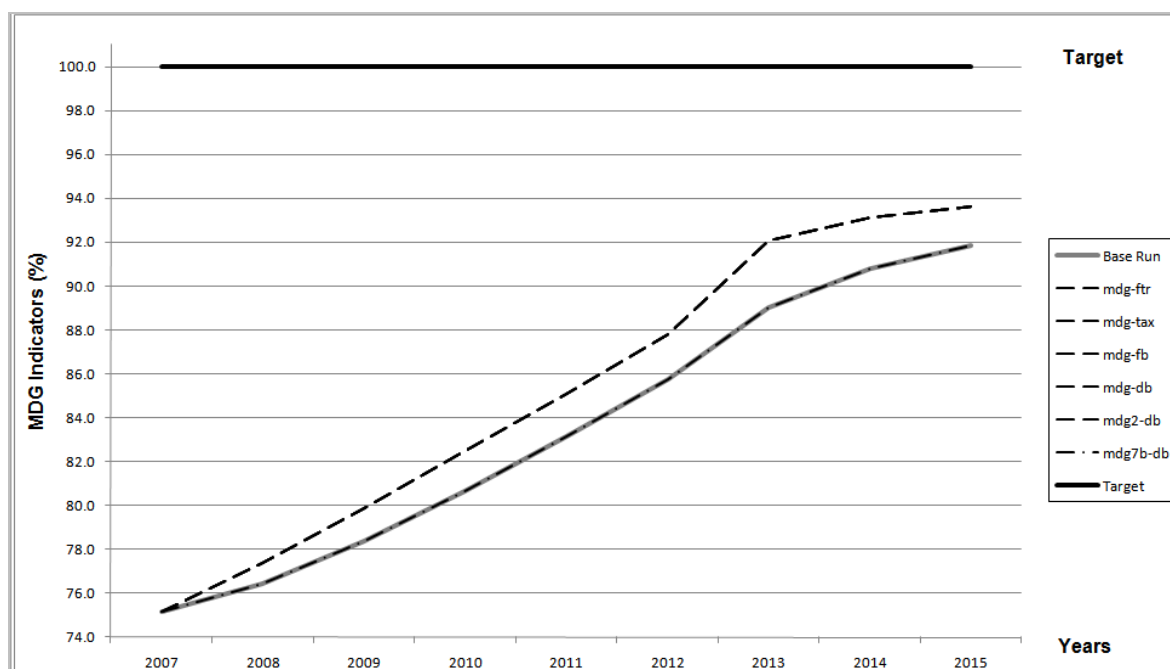
Figure (6.2) Reducing Child Mortality (mdg4) – Moderate Growth Scenario
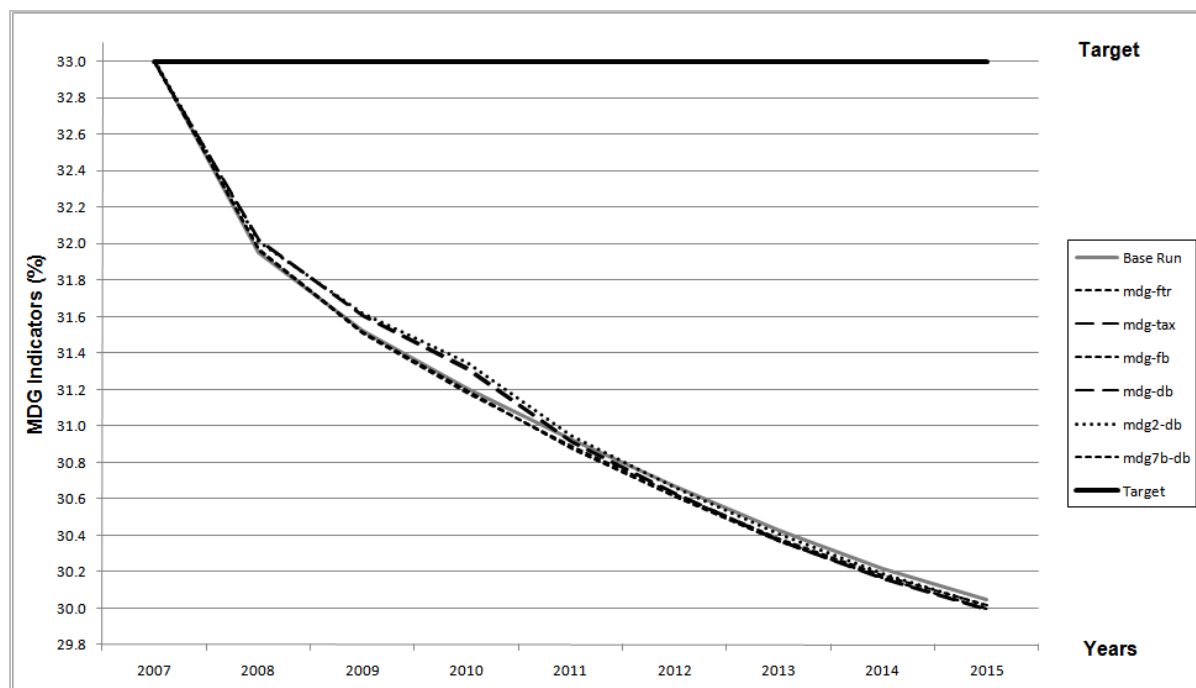
Figure (6.3) Reducing Maternal Mortality (mdg5) – Moderate Growth Scenario
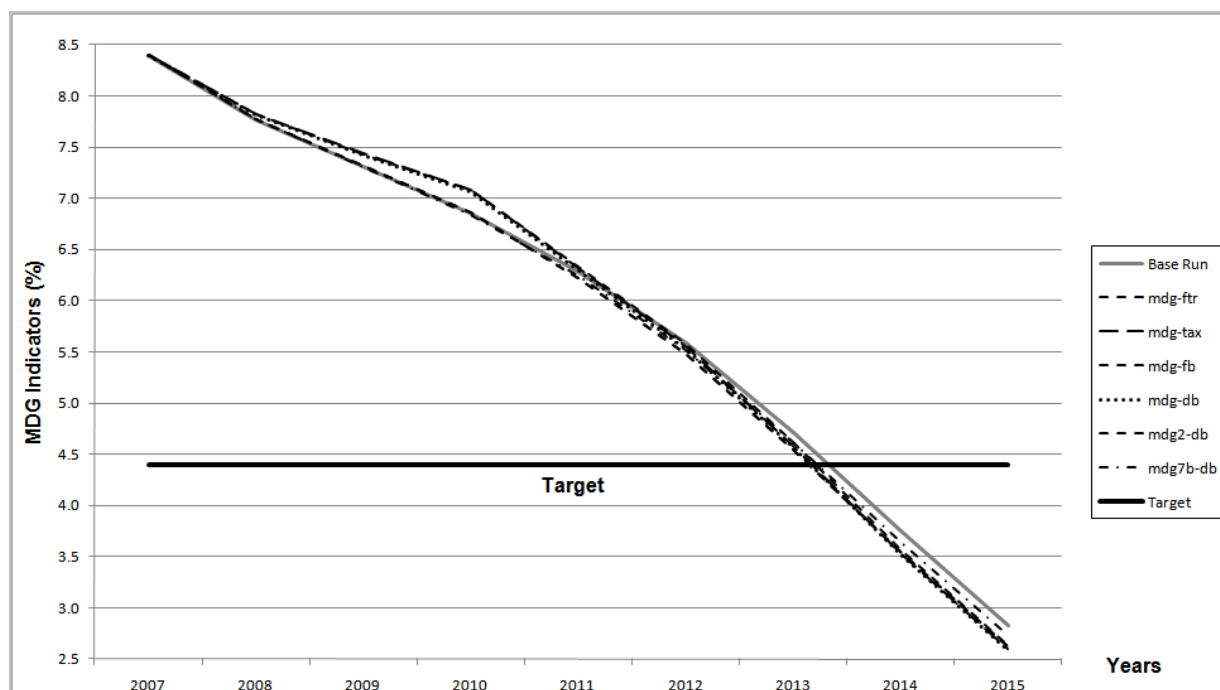
Figure (6.4) Access to Safe Water (mdg7a) – Moderate Growth Scenario
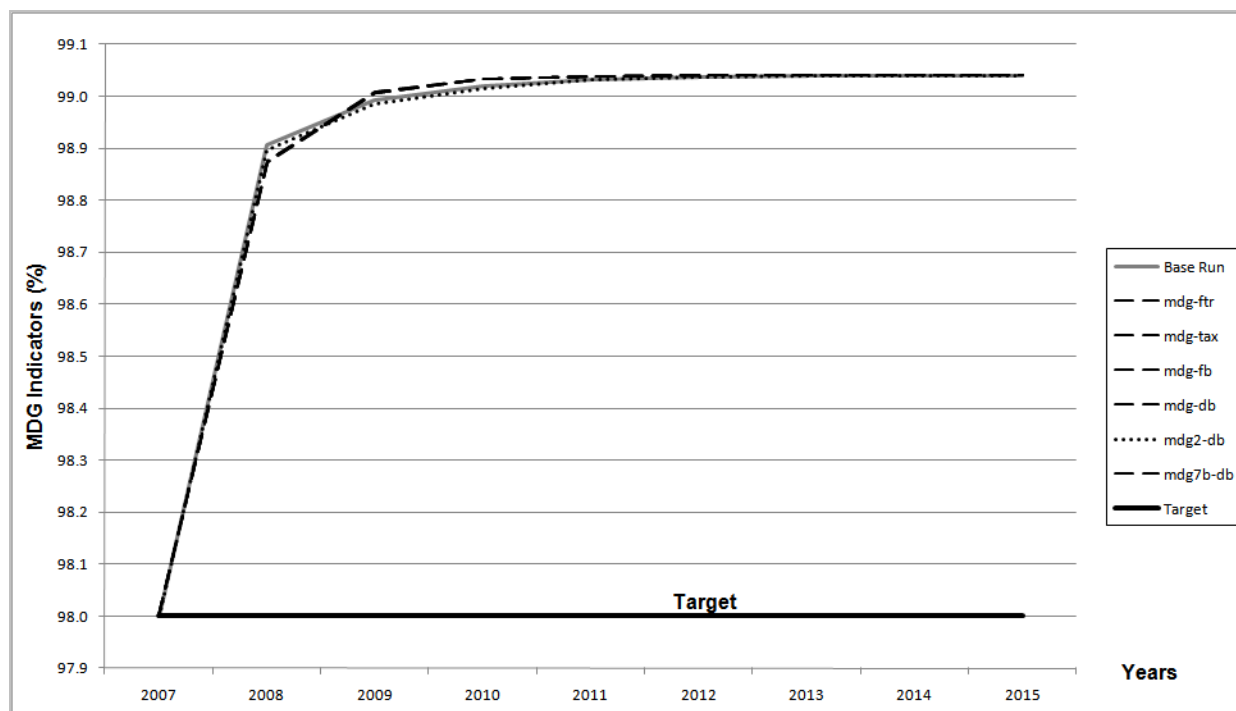
Figure (6.5) Access to Improved Sanitation (mdg7b) – Moderate Growth Scenario
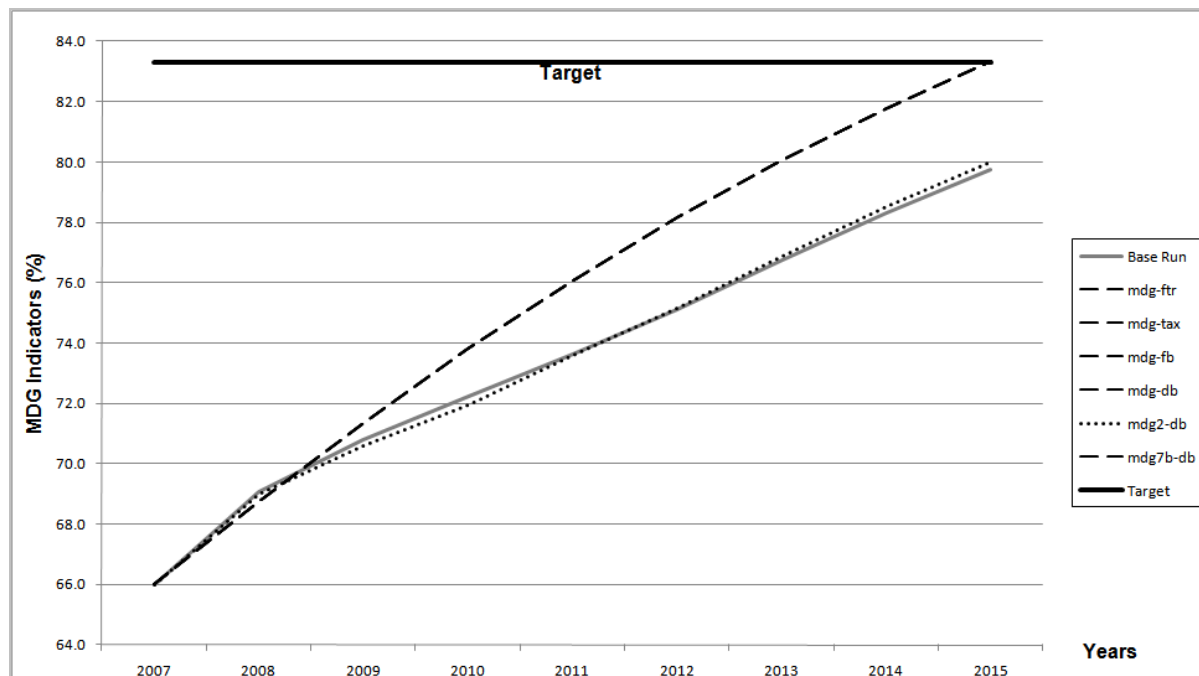
7.   Analysis of Micro-simulation Results

After identifying the macro effects of the reference path and MDG scenarios, this section addresses how poverty and income distribution evolve in those scenarios. We measure poverty with members of the Foster, Greer and Thorbecke (1984) family of decomposable indices. Our analysis of inequality is based on the Gini coefficient. We discuss respectively the baseline distribution of income and the distributional implications of the different MDG scenarios.

Experience for other countries indicates that meeting other MDGs is not translated automatically into achieving MDG1. This is exactly the case of Egypt. Although all the MDGs scenarios presented in this report result in less poverty, the goal of halving the poverty rate is not achieved by 2015 when the other MDGs are achieved.

The MAMS scenario analysis does not target to meet MDG 1: rather, it treats poverty as an outcome of all general equilibrium effects that lead to changes in the labour market and, as a result, household income. Achieving MDG2 and MDG7 can reduce poverty through enhanced skills and labor-market shifts. It is expected to raise both the demand for and supply of skilled workers through improving access to education, through shifts in the skilled-unskilled composition of labour demand and hence reduce income poverty. All these changes, though, may only take place beyond the time scope of the present analysis.

7.1.   *Micro Simulation Methodology[21]*

MAMS, typically only distinguishes between a few groups of households for assessing the impact of alternative policy scenarios on per capita household consumption and income. The policy scenarios, therefore, only allow us to draw conclusions about the differences in impact for these aggregate household groups—thus ignoring income distribution changes within those groups. The use of a micro simulation methodology has been suggested to take account of the full income distribution and hence estimate poverty and inequality measures for the baseline and resulted from different scenarios.

Several methodological issues and assumptions have to be considered when mapping results of MAMS scenarios (that is, the base line and MDG scenarios) into the full distribution of income as given by a micro dataset (e.g., a survey at the household and/or individual level)

1) No further feedback effects would affect MAMS. The top-down causal chain works from policy changes or exogenous shocks through aggregate variables that are affected by the operation of factor and product markets yielding prices, wages and employment,

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[21] This part is completely extracted from :Vos, Rob, Marco V. Sánchez and Cornelia Kaldewei (2010), "Latin America and the Caribbean's challenge to reach the MDGs: financing options and trade-offs", forthcoming in Marco V. Sánchez, Rob Vos, Enrique Ganuza, Hans Lofgren, and Carolina Díaz-Bonilla (eds), Public Policies for Human Development. Feasible Financing Strategies for Achieving the MDGs in Latin America and the Caribbean, London: Palgrave/Macmillan.

and finally to household income and expenditure, the outcome on households are not retuned back into MAMS.

2) Micro simulation focuses on the labour market as the main transmission channel of the modelled impact of the simulated scenarios on poverty and income distribution.

3) Workers are allowed to shift from one sector to another, change occupation or lose their jobs (and hence also affect household income) due to external shocks, trade reforms, or other policy changes such as the MDG strategies examined in this study.

4) A randomized process is applied to simulate the effects of changes in the labour-market structure. That is to say, random numbers are used to determine which persons at working age change their labour force status; who will change occupational category; which employed persons obtain a different level of education; and how new mean labour incomes are assigned to individuals in the sample. On average, the effect of the random changes should correctly reflect the impact of the actual changes in the labour market. The micro simulations are repeated a large number of times in Monte Carlo fashion.

5) It assumed that an individual will first make a decision regarding her/his participation in the labour force. Then the probability of finding employment will follow from labour demand and supply. Subsequently, given the sectoral labour demand, an individual will make the choice of the sector he/she desires to work in, which will also be followed by the decision to work as an employee or be self-employed. Changes in the remuneration structure will possibly take place given the shifts in labour supply and demand in the labour market, while the average level of remuneration will reflect the overall economic performance.

7.2. *Employment and Poverty Links*

Evidence from Egyptian HIECS supports the above assumptions on links between labour market and poverty. Employment characteristics of the poor point to strong relation between poverty and sector and type of employment. HIECS data show that: a) the poor are mostly found in the unskilled labour category and the number of poor is lower among wage workers, specially with qualifications; b) unemployed rates are higher among the poor; c) the "outside establishment(workers with no specific work place)" sector seems to be the only sector of employment for the poor; and d) the poorest segments of rural population are depending the most on agriculture with about two-thirds (63 percent) of the poor employed in agriculture which provides 52 percent their income. The poor are the most employed as agricultural wage workers.

Egyptian data shows that changes in the employment structure and labour productivity can influence the determinants of changes in poverty of which mention was made above (that is, growth and distribution). Growth in employment and its productivity can improve the growth rate of the economy. Moreover, changes in employment structure and its productivity can improve

income distribution by pushing up the relevant segment of the Lorenz distribution, see discussion of MDG1 in section III.

7.3. *Micro Simulation Results*

Poverty and distributional implications of the different MDG scenarios are assessed against the poverty and income distribution situation of the reference path. The micro-simulation model has nine economic sectors and three skill types for workers and 3 employment choices (employed, unemployed and inactive). Mapping between sectors of the CGE model and the nine sectors used in Micro simulation is presented in table (7.1) below. The microsimulation takes into account the effects on earnings of people having more education to trade in the labour market, under different sets of assumptions about the evolution of returns, as well as labour force participation and occupational choice. Thus, using the complete sample Household Income, Expenditure and Consumption Survey, 2008 (HIECS), the micro-simulations help to calculate the structure of wages and total income for different occupational choices at the micro level – i.e., for each individual - that are consistent with wages and employment levels by broad categories that are generated from the CGE model.

The main simulation results are presented in Tables 7.3 to Table 7.16 of appendix. Table 7.3 reports poverty rates and the Gini coefficient for per capita income for each of the eight scenarios. The poverty rates are calculated for different poverty lines; namely, US$1.25 and US$2.5 per person per day evaluated at PPP and official extreme and moderate poverty lines. National poverty lines in Egypt are generally more in the order of two dollars a day, and thus define a poverty challenge of much larger magnitude.

The present analysis uses both the international poverty measures for comparability, and moderate and extreme poverty indicators measured with national poverty lines to assess the challenges Egypt has to face. Since the micro simulation methodology derives poverty rates by comparing household income with an income poverty line, and the Egyptian official national poverty lines are estimated based on the consumption level that satisfies household basic needs, consumption-based poverty lines were adjusted in order to use them as income-based poverty lines. This was done by scaling up the consumption-based poverty lines using a factor, making sure that comparing these lines to household incomes would enable the computation of poverty rates that would exactly match rates computed using household consumption and the official poverty lines.

Poverty changes outlined below result from the response of the poverty rates to growth and distribution of income changes. All simulated scenarios exhibit positive income growth and some scenarios show improvements in income distribution, see table 7.2.c. The growth elasticity of poverty reduction in Egypt as a whole is -3.05. This means that 10 percent growth in real per capita consumption for everyone will reduce poverty by 30 percent, or expressing it in percentages of population, will move poverty from 20 percent to 14 percent, while distribution elasticity is 2.83. The overall change in poverty; for each scenario, depends on the relative change of poverty due to growth compared to changes of poverty due to change in income distribution.

Table (7.1): Mapping sectors used in MAMS scenarios and micro simulation sectors.

	a-agr	a-nrexp	a-ind	a-ser	a-hlth	a-edu	a-wtsn	a-oinf	a-ogov
a-agr	YES								
a-oilext		YES							
a-labint			YES						
a-capint			YES						
a-const			YES						
a-elect			YES						
a-transpcom				YES					
a-othprdsvc				YES					
a-edupng						YES			
a-edusng						YES			
a-edutng						YES			
a-hltng					YES				
a-othsvcng				YES					
a-edup						YES			
a-edus						YES			
a-edut						YES			
a-hlt					YES				
a-wtsn							YES		
a-oinf								YES	
a-ogov									YES

7.4. *Reference Path scenario*

Initial poverty levels and income distribution patterns seem relevant in explaining why Egypt show relatively little absolute poverty reduction when US$1 per person per day poverty line is used, while sustaining relatively high growth rates under both the reference path and MDG scenarios. More visible absolute poverty reduction is observed for higher poverty lines. In those cases, too, the MDG scenarios yield greater poverty reduction than the BAU scenario.

The simulation results of the two reference path scenarios show that there is a positive evolution of poverty, though income inequality deteriorates. Based on the reference path assumptions, the proportion of individuals living below different poverty lines (except when using US$1.25 per day poverty line) decreases significantly. The income poverty reduction target would be expected to be met under the assumptions of the reference path scenario, if the US$1.25 or US$2.5 per day poverty lines were used. In fact, when US$1 per day poverty line is used, this goal is already achieved in 2005.

Under the optimistic BAU scenario, poverty rates in 2015 range from 68 to 80 percent lower than the rates of 2007. Changes in poverty rates are more pronounced for the higher poverty lines (US$2 or moderate national poverty lines). The reference path scenario exhibits higher employment participation changes for unskilled labour (2.8 percent for unskilled labour compared to only 1.8 percent for all labour), and higher growth of agricultural output (12.9 percent, compared to 6.5 percent for all sectors). Therefore, as the poor are more likely to be unskilled labour and/or working in the agricultural sector, it is not surprising that the poor benefit more from these changes and witnesses a decline in the poverty rates, especially the poorer. However, according to the Gini

coefficient, inequality goes up from 0.33 to 0.39 and from 0.42 to 0.48 for, respectively, family and labour incomes, basically for two reasons. First, wage income growths by 9 percent per annum for unskilled workers and this is below the growth shown by the wage income of other workers (that is, 11.5 percent for semi-skilled and 11.7 percent for highly skilled workers, respectively). Second, agriculture's share in GDP declines and whereas the GDP share of capital and production services goes up, all of which works relatively better for the non-poor. In all, economic growth does reduce poverty at the expense of making income distribution less equal in the optimistic reference path scenario.

Similar results are found for the moderate reference path scenario, though poverty rates attain lower levels for the optimistic scenario compared to the moderate scenario, which resembles the impact of growth in poverty reduction.

Figure (7.1): Poverty Incidence indicators in the BAU scenario, optimistic scenario
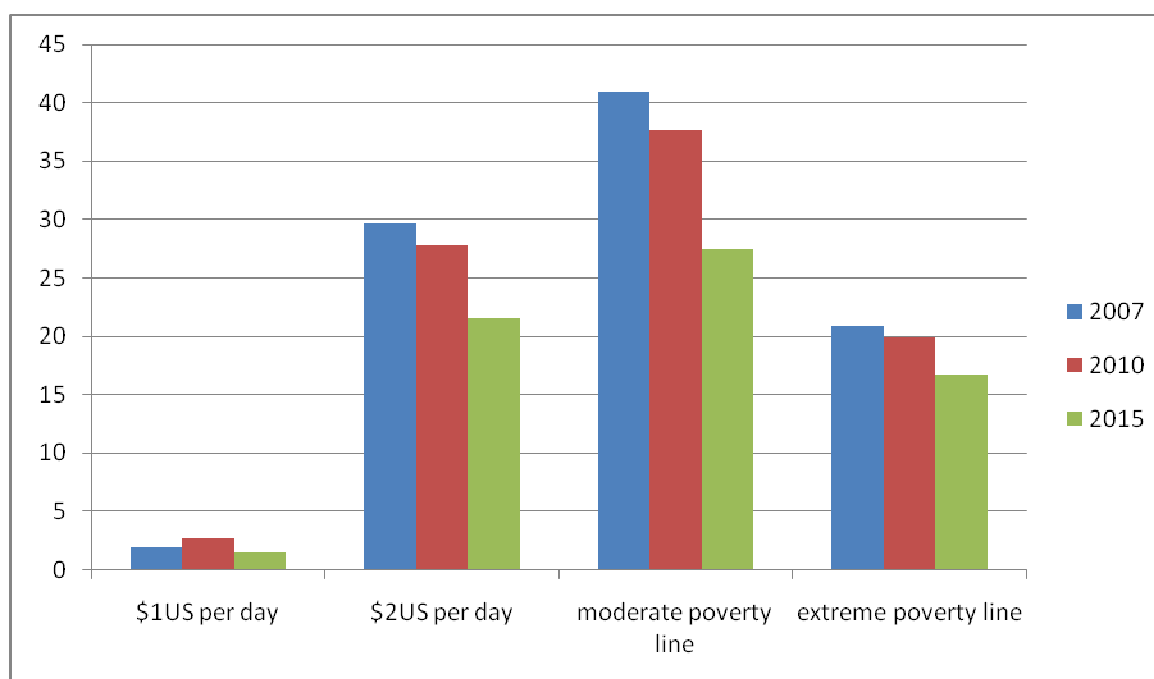
Source table (7.4)

The question is, then, whether a strategy of increased public spending for the achievement of the MDGs in education, child and maternal health, and water and sanitation would also help reduce income poverty beyond what is achieved under the BAU scenario.

7.5.   *MDG scenarios*

Moderate linkages of employment, education (reflected in labour skills) and income levels can explain changes in poverty. Poverty rates and income redistribution show moderate changes under all MDG scenarios. However, under all these scenarios, the reduction in poverty continues to be large enough to halve the poverty rates of 1990 by 2015 when the international poverty lines are used. However, the goal of halving the poverty rate is no longer met when the national poverty lines are used; though poverty rates based on the moderate poverty lines represent 53 percentage of the corresponding poverty rate in 1990, indicating that the goal may be within reach by this

measure.   On the other hand, changes in the Gini coefficient of per capita household income (see tables 7.3 and 7.4), are negligible during the 2007-2010 period, but there is a significant rise in income distribution during the subsequent 2010-2015 period. The results differ very little between the MDG scenarios were only MDG2 is targeted and the MDG scenarios where all goals were simultaneously targeted using different financial mechanisms. These scenarios have better poverty and inequality results compared to the scenarios where MDG7 is targeted (mdg7bftr and mdg7db) and the reference path scenario. The scenario in which all MDGs are simultaneously achieved using foreign borrowing (mdgfb) records the largest reduction in poverty regardless of the chosen poverty line. Targeting MDG2 or all MDGs takes poverty to fall by 30 percent when the international poverty lines are used or by 33 percent when the moderate national poverty line is used, during the period 2007-2015. In addition to the poverty reduction, these scenarios also exhibit the smallest increase in income inequality (by 16 percent) for the following reasons. First, they help raise education levels as reflected by labour skills and labour-market opportunities for all, with most of the gains benefiting the poor who currently tend to have a lower skill level (see table 7.2.a). Second, they also exhibit a larger increase in agricultural GDP and employment, which also benefits the poor, as GDP growth rate in general and in agriculture and construction in particular show higher rates (see table 7.2.c). Third, although real wages increased for skilled and unskilled labour, the pace of change in wages for unskilled is slower compared to skilled workers, which would likely push up income inequality for all scenarios; Fourth, the gap between remuneration rates of skilled and unskilled workers is relatively wider in the reference path and MDG7 scenarios, and hence higher inequality is observed, compared to other scenarios.

As in the reference path scenarios, in the MDG scenarios changes in real wages and agriculture output seem to benefit the poor but at the same time the non-poor benefits relatively more. As a consequence, growth contributes to reducing poverty even though income inequality partly offsets such reduction. Thus, growth and inequality changes work in opposite direction.

In all, MDG 1 would be achieve under reference path policies using the international poverty lines, and targeting mdgs, 2 and 7b would further contribute to reduce poverty by around 0.1 and 0. Percentage points per annum, for US$1 and US$2 per person poverty lines, respectively. Halving poverty would not be achieved by 2015 if poverty is instead defined through the national poverty lines under any of the simulated scenarios. Moreover, all scenarios exhibit large increases in income inequality.

If Egypt is committed to halving poverty incidence by 2015, as measured by the national poverty lines, it should address a multidimensional process to reduce poverty consisting of: (i) providing the necessary services to improve the levels of health and education, as well as skills (human capital dimension); (ii) providing employment and income-generating activities that ensure the participation of the poor in the labour market, through enhancing their skills, enabling the allocation of soft loans to small-scale enterprises, and increasing their access to the markets (the economic dimension); and, (iii) providing financial and in-kind subsidies to the poor, through cash transfers and subsidized goods and services and social and health insurance (social security dimension).

Table (7.2.a): Percentage change in Real wages, 2015

	Base	Mdg_ftr	Mdg_tax	Mdg_fb	Mdg_db	Mdg2_db	Mdg7_ftr	Mdg7_db
Unskilled	9.0	8.8	8.9	8.8	8.8	8.8	9.0	9.0
Semi-	11.5	11.1	11.3	11.1	11.1	11.1	11.5	11.5
Skilled	11.7	10.9	11.1	10.9	10.9	10.9	11.7	11.7

Table (7.2.b): Structure of employment by skill type, 2015

	Base	Mdg_ftr	Mdg_tax	Mdg_fb	Mdg_db	Mdg2_db	Mdg7_ftr	Mdg7_db
Unskilled	41.43687	41.3706	41.3862	41.3706	41.3816	41.3807	41.4329	41.4358
Semi-	32.58601	32.6329	32.6294	32.6329	32.6298	32.6293	32.5849	32.5849
Skilled	25.97712	25.9965	25.9843	25.9965	25.9886	25.9899	25.9823	25.9793

Table (7.2.c): Percentage change in GDP by sector in 2015

	Base	Mdg_ftr	Mdg_tax	Mdg_fb	Mdg_db	Mdg2_db	Mdg7_ftr	Mdg7_db
a-agr	12.904	12.949	13.021	12.949	13.073	13.080	12.914	12.914
a-oilext	1.123	1.134	1.146	1.134	1.142	1.142	1.127	1.127
a-labint	6.379	6.695	6.791	6.695	6.665	6.681	6.365	6.374
a-capint	8.844	8.916	8.892	8.916	8.981	8.982	8.848	8.849
a-const	6.631	6.526	6.441	6.526	6.375	6.378	6.604	6.582
a-elect	8.499	8.493	8.601	8.493	8.572	8.579	8.502	8.489
a-transpcom	3.732	3.862	3.872	3.862	3.868	3.872	3.748	3.745
a-othprdsvc	4.767	5.030	5.004	5.030	4.890	4.896	4.765	4.769
a-edupng	5.848	6.008	6.090	6.008	6.059	6.064	5.854	5.856
a-edusng	5.848	6.008	6.090	6.008	6.059	6.064	5.854	5.856
a-edutng	5.848	6.008	6.090	6.008	6.059	6.064	5.854	5.856
a-hltng	5.211	5.361	5.502	5.361	5.476	5.487	5.213	5.215
a-othsvcng	5.592	5.683	5.854	5.683	5.827	5.828	5.612	5.611
a-edup	4.758	2.029	2.006	2.029	2.015	2.016	4.759	4.761
a-edus	4.758	4.907	4.954	4.907	4.938	4.943	4.759	4.761
a-edut	4.758	4.907	4.954	4.907	4.938	4.943	4.759	4.761
a-hlt	4.386	4.570	4.659	4.570	4.645	4.655	4.382	4.386
a-wtsn	5.876	6.710	6.686	6.710	6.687	6.045	6.708	6.709
a-oinf	4.748	4.891	4.944	4.891	4.925	4.932	4.747	4.746
a-ogov	6.009	6.151	6.317	6.151	6.288	6.280	6.038	6.039
total	6.506	6.573	6.597	6.573	6.590	6.591	6.515	6.513

Figure (7.2): Poverty incidence using the US$1 per person per day poverty line (%)
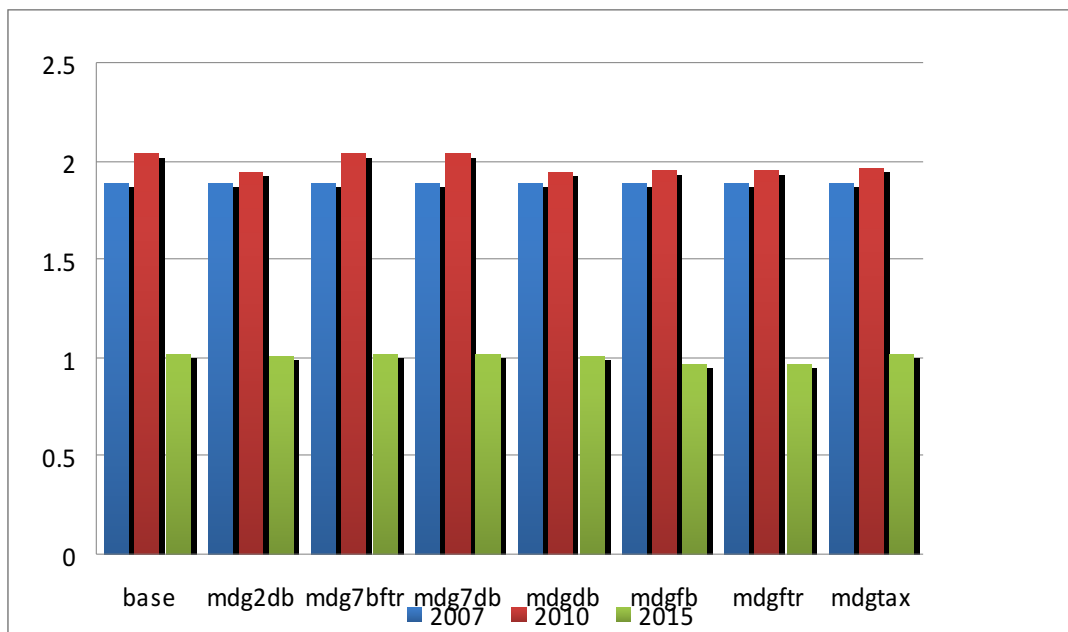
Source table (7.4)

Figure (7.3): Poverty Incidence using the US$2 per person per day poverty line (%)
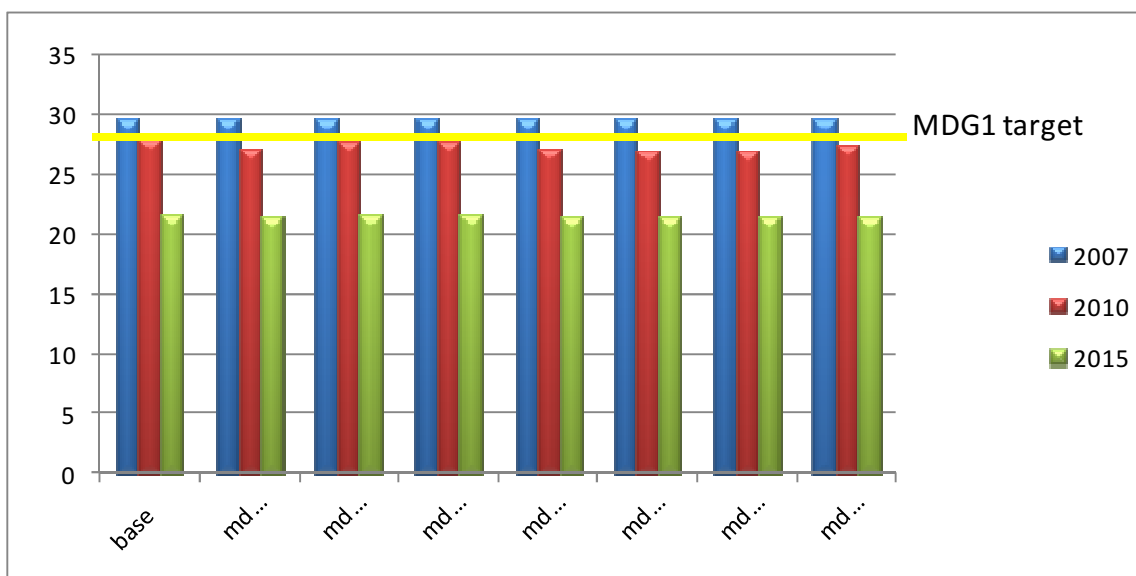
Source table (7.4)

Figure (7.4): Poverty incidence, using the moderate poverty line (%)
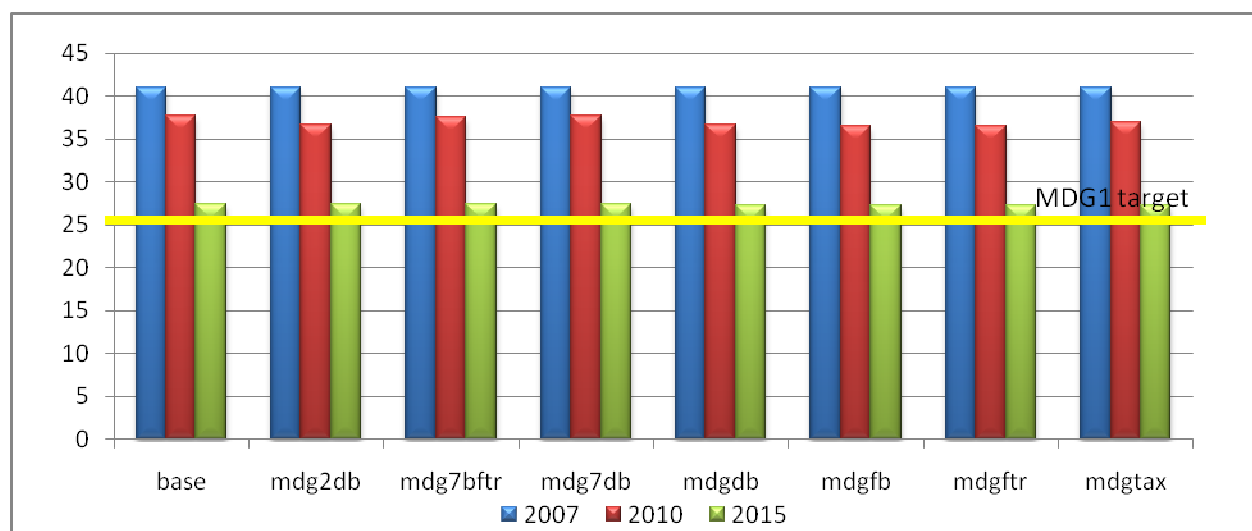
Figure (7.5): Poverty incidence, using extreme poverty line (%)
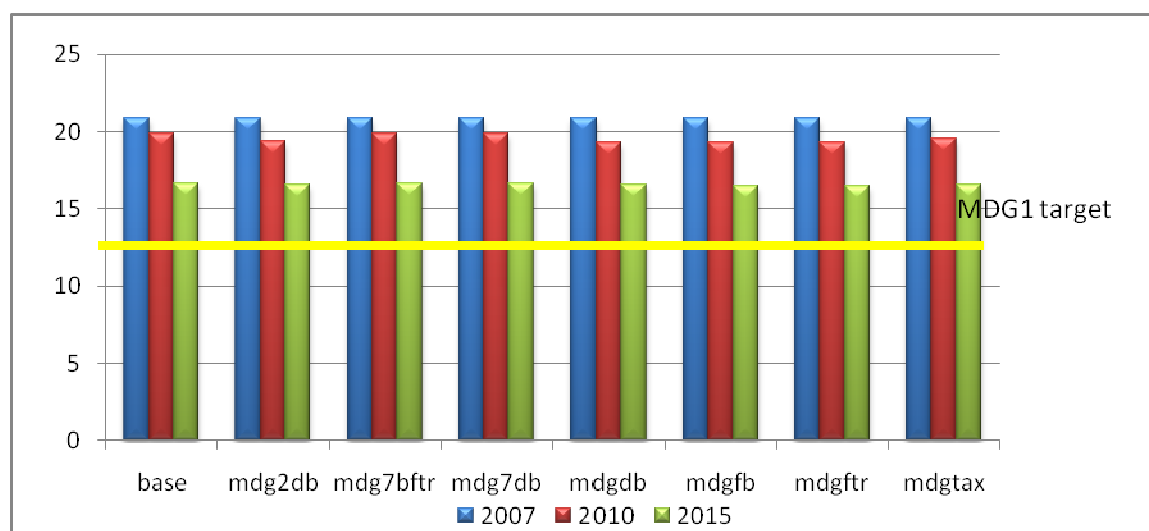
8.   Main Findings and policy recommendations

This country report has aimed primarily at assessing development strategies to achieve the Millennium Development Goals (MDGs) in Egypt. It represents a component of a regional research project directed to evaluate development strategies to achieve the MDGs in the Arab Countries.

Macroeconomic Stance

Egypt's macroeconomic stance in 2007 looked very promising with the exception of inflation. It seemed that the set of reforms introduced by the new cabinet at the end of 2004 had paved the way for a major transformation and structural adjustment in the Egyptian economy, driven by upbeat investment and a surplus generated by the external sector (in form of current and capital account surplus), all of which has pushed economic growth to record high levels. Nevertheless, this buoyant stride was halted with the onset of the recent global financial crisis by the end of 2008. This crisis has changed the economic stance in all countries, and Egypt has not been an exception. Egypt was not directly affected by the subprime crisis, though, but increasing uncertainty and negative expectations of consumers and producers as well as the adverse shock in Egypt's external sector has forced the government of Egypt (GoE) to adopt a number of stabilization policies aiming at easing the effect of the crisis on the Egyptian economy.

Egypt was one of the 188 countries which embraced the MDGs and agreed to strive to meet these goals by 2015. In June 2002, the United Nations unveiled the first report on Egypt's progress towards meeting the MDGs, which was followed by the second and third reports in 2004 and 2005, respectively. Because of the relatively advanced stance of Egypt in most of the MDGs, Egypt is unlikely to face major problems toward the achievement of its MDG targets. Nevertheless, different reports have exposed the emergence of worrying gaps in income levels and living standards between Lower and Upper Egypt.

MDG Trends

In terms of GoE efforts in the area of MDGs, reports on the progress of Egypt toward the achievement of MDGs show that the GoE continued to give attention to critical areas of development, such as health, education, access to water and sanitation as well as improving the livelihoods of the most deprived segments of the population. However, the pace of progress varies among the goals: it is fast and sustained in some areas (child and maternal mortality and water), acceptable in others (sanitation, education and poverty reduction), and somewhat slow in some others (women empowerment and environmental protection). In addition, Egypt will have to increase its efforts and investments in order to keep the current rate of progress with respect to some specific indicators (in the area of poverty, mortality rates, and combating major diseases).

Egypt's population growth is one of the main challenges to achieve the MDGs. Egypt ranks as the 16th most populous country in the world and the annual population growth rate is around 2 percent. If this population growth rate persists, Egypt's population is expected to reach 83 million by 2015, thus putting a considerable strain on the country's ability to sustain progress towards achieving the MDGs.

Because of the relatively advanced stance of Egypt in most of the MDGs, Egypt is unlikely to face major problems toward the achievement of its MDGs targets nationally. However, on a

regional level and across genders given the stark disparities between different governorates and gender, a number of MDGs are very difficult to achieve on a regional level and across gender. For example, by 2015 poverty is expected to disappear from the rural governorates of Lower Egypt (Northern part of Egypt) but increasing to 38 percent in Upper Egypt (Southern part of Egypt). Also, poverty is concentrated among female-headed households which count for 20 percent of total households. **Lower Egypt frontiers governorates** will not be able to achieve MDG 2 for girls and Upper Egypt will not be able to achieve it neither for boys nor for girls at the current rate of progress. In terms of sanitation, the governorates of Alexandria, Assiut, and New Valley experienced a setback that would make it impossible for these governorates to achieve the MDG target for sanitation in this trend continues.

Methodology and Policy Formulation

In order to evaluate alternative policy measures and strategies for achieving the MDGs in 2015, several tasks have been accomplished. **First**, an issue-specific social accounting matrix (SAM) - based on the most recent available socioeconomic data – was constructed to form a consistent and comprehensive analytical framework for policy analysis via an extended economy-wide model. The SAM was designed to capture the particular structural features and interactions within the Egyptian economy with special reference to the socioeconomic data relevant to the millennium development goals. **Second**, a comprehensive set of non-SAM socioeconomic indicators such as labour force and population size in thousands were collected and organized, among others. **Third**, the constructed accounting framework, collected information and similar studies on Egypt were used to determine the structural parameters and technical coefficients needed to calibrate and run the MAMS model and generate output results. **Fourth**, recent economic performance of the Egyptian economy was used to validate the results of the MAMS model. Finally, a number of scenarios were simulated to generate a reference path (or baseline) for the Egyptian economy and, based upon changes on this, assess the impact of alternative strategies for achieving the MDGs.

The reference path run is mainly directed to project the medium-term economy-wide indicators of Egypt up to 2015, assuming that the government is continuing to rely on the policy measures and strategic trends applied in the 1990s and the beginning of the twenty one century. Based on the results of this reference path scenario with respect to the achievement of the MDGs, alternative policy measures were formulated and tested.

In light of the current performance and structural features of the Egyptian economy as well as the adopted development policies and directions, three policy measures to finance the MDG objectives were experimented. The first policy assumes that the Egyptian government would further rely on domestic borrowing – in the form of treasury bills and other government domestic financial instruments –to ensure the financing of the cost related to the achievement of MDGs 2 (universal primary education) and 7b (basic sanitation coverage) as these two goals would not be achieved under business-as-usual assumptions of the reference path run. The second policy assumes that the Egyptian government would have access to foreign grants (or transfers) directed to reach the aspired MDG indicators. Finally, the third policy measure adjusts the direct tax rate so as to achieve the required MDGs. Of these three selected policy measures only the first one would be compatible with the decision of the Egyptian government and the central bank (CBE) to minimize the reliance on foreign borrowings and to finance government deficit mainly by domestic borrowing means. Furthermore, two specific MDG strategies have been added to separately target

the universal primary education (MDG2) and the improved access to sanitation facilities (MDG7b). The Different combinations of these financing options with achieving MDGs 2 or MDG 7b separately, or in tandem with all other MDGs (but MDG 1) were generated.

In addition to the specific MDG achieving policy, MAMS was used to test alternative economic growth scenarios and their impact on MDG indicators. In this respect, two economic growth scenarios were tested, for which all the aforementioned policy scenarios were generated. Firstly, an optimistic scenario based on the government indicators reflected in the follow-up reports of the five year plan produced by the Ministry of Economic Development (MOED) as well as other official government documents. This scenario assumes that Egypt will gradually overcome the effects of the recent global financial crises and achieve real GDP growth of 4% in 2010, 5% in 2011 and 6.5% annual growth rate in 2015. The average growth rate of real GDP at factor cost in this scenario would then be 5.7% during 2008-2015. Secondly, a moderate economic growth scenario which assumes that the Egyptian economy will take more time to overcome the effects of the financial crises with a 4.9% average annual growth rate of real GDP during 2008-2015.

Assessing Strategies to Achieve MDGs

The main finding of the reference path scenario with respect to the MDG indicators is that in both the optimistic and moderate economic growth scenarios most MDGs would be achieved on the macro level, or even overachieved in some instances. This is excluding the poverty goal (MDG1) which is analyzed though results of micro-simulations and, to some extend the goals of access to improved sanitation (MDG7b) and the attainment of universal primary education (MDG2) as defined by the on-time primary completion rate.

This outcome is primarily attributed to the continuous efforts of the successive Egyptian governments to adopt appropriate policies for achieving these goals. It can be argued also that the improved growth performance of the Egyptian economy during the first decade of the twenty first century has positively contributed to achieving this positive performance.

The primary completion rate (MDG2) under the reference path leveled at 92%. With respect to the child and maternal mortality rates (MDGs 4 and 5) the aspired targets are achieved. Improved health care services, extended health insurance coverage and building more physical infrastructures – particularly in the rural areas - are the main determinants of this positive performance in terms of child and maternal mortality rates. The objective of improving access to safe water (MDG7a) has been achieved way in advance of 2007. According to MAMS results, 99% of the population would have access in 2015. As for access to improved sanitation (MDG7b), coverage goes up to 80% by 2015 under a continuation of current policies, which is a satisfactory result.

At the aggregate level, all the adopted alternative strategies that were simulated do contributed to speeding up the achievement of the MDGs by 2015, with some specific differences between policies attributed to the sensitivity of the MDGs and the Egyptian economy to these policy measures. These differences can be delineated as follows:

First, the performance of the MDG indicators during the projection period (2008-2015) was generally better under the optimistic economic growth scenario. This is particularly apparent for MDG1, MDG4 and MDG5. The results of MDG strategies for Egypt based on MAMS show that the real annual growth rate of private final consumption spending, private investments and exports have increased during 2008-2015 from 6.5, 5.7 and 3.5 percent in the moderate growth scenario to 7.5, 6.1 and 4 percent in the optimistic growth scenario.

Furthermore, government needs for domestic borrowing decreased in case of the optimum growth scenario. Given this improved growth prospects of the Egyptian economy, it is expected that the per-capita household consumption spending and the per-capita expenditure on health services would witness similar growth. Because these two economic indicators are part of the determinants of MDG 1,4 and 5 (see the appendix III), these MDGs are more affected by the growth of the economy than other development goals. It can generally be concluded then that a more favourable growth prospects for the economy would result in more progress towards the achievement of the MDGs.

Second, some development goals would be overachieved as a result of adopting the selected MDG strategies. This was particularly true with respect to the child and maternal mortality goal (MDG4 and MDG5) and the access to safe water (MDG7a). This finding is the outcome of several factors; a) the Egyptian development indicators confirm that the goal of access to clean water (MDG7a) has been achieved in 2007 (with around 98 percent of population benefiting from access to clean water), b) similarly, the indicator of reducing child mortality rate (MDG4) was 33 percent in 2007 against the specified goal in 2015 which is 30.3 percent. Given that this goal is not targeted by alternative MDG strategies, the optimum growth reference path scenario has overachieved the selected goal with an indicator of 29.1 percent, c) although the goal of the maternal mortality rate (MDG5) is 4.4 percent, the business-as-usual indicators in 2015 reached 2.1 percent under the moderate growth scenario and 1.9 percent under the optimum growth scenario, and d) based on the analysis of the MDG determinants in section IV and appendix III of the report, both MDG4 and 5 are affected by the improvement in MDG7a and b. The observed overachievement in MDG4 and 5 is then partially explained by synergies as reaching MDG7a and b has a positive effect on their performance.

Third, the indicator of the on-time completion rate of primary education (MDG2) improved compared with the reference path results. It increased on average from 91.8% in the reference path to 93.6% under the selected development policy measures. The only exception to this outcome is the strategy targeting only – or concentrating only on - MDG7b. The average performance of MDG2 indicator under this scenario does not exceed 92%.

Fourth, because MDGs 4, 5 and 7a were already achieved under the reference path scenario, alternative development strategies or policy measures concentrated mainly on achieving MDG2 and MDG7b. Given that the goal of improved access to sanitation (MDG7b) is the least achieved one in 2007 (around 66 percent) and the desired target in 2015 is 83.3 percent, the average annual growth rate of government consumption spending on water and sanitation services went up under the selected development strategies for achieving the MDGs.

Fifth, real GDP in the water and sanitation sector accounted for the highest average annual growth rate under the selected development scenarios during 2008-2015. Its annual growth rate increased from an average of 5.1% in the base run scenario to around 6.9% under the adopted policy measures. Slight improvements in the growth rate of government health sector and other government services were also observed under the selected policy measures. This outcome reflects the interdependence between government spending on health and other government services and both MDG2 and MDG7b. Real GDP performance of other sectors is not affected by the tested MDG policy measures. Finally, the structural changes in the economy during 2008-2015 – measured by the percentage distribution of GDP by sector – were very limited.

Sixth, the results of applying the selected policy measures to achieve MDG2 and MDG7b, reflected a change in the educational structure in favour of labour that have not completed their secondary education. This result may be attributed on the one hand to the young structure of the Egyptian population and explained on the other hand by the MDG policies supporting the achievement of universal primary education. Furthermore, to achieve the on-time primary education goal (MDG2), the number of students enrolled in primary education needed to grow annually by 2.2 percent on average during the period 2008-1015.

Micro-Simulation Analysis

Although all the MDGs scenarios simulated in this study resulted in a reduction of poverty, halving poverty would not be achieved by 2015 when the national poverty lines are adopted and if the government only pursues achieving the other MDGs. Moreover, all scenarios exhibit large inequality increases. Changes in real wages and agriculture output seem to benefit the poor but at the same time the non-poor benefits relatively more. As a consequence, growth contributes to reducing poverty even though income inequality partly offsets such reduction. Thus, growth and inequality changes work in opposite directions.

If Egypt is committed to halving poverty incidence by 2015, it should address a multidimensional process to reduce poverty that consists of: a) Developing employment and income-generating activities that ensure the participation of the poor in the labour market through enhancing their skills, b) Allocating soft loans to small-scale enterprises, as well as increasing their access to the markets (the economic dimension); and c) Providing financial and in kind subsidies to the poor through cash transfers and subsidized goods and services and social and health insurance, (social security dimension).

This report does not address alternative measures of poverty; namely poverty gap and severity of poverty measures. These measures are very important in the Egyptian context as poverty is shallow and so the percentage of the poor may not be changed or slightly reduced but the welfare of the poorest of the poor has improved and hence the poverty gap measure decreased. This issue can be addressed in other analytical reports.

Moreover, micro-simulation methodology can be improved by addressing not only income poverty but also the multidimensional poverty. The Multi-dimensional Poverty Index (MPI) complements money-based measures by considering multiple deprivations and their overlap. The index identifies three deprivations dimensions; Education, health and living standards, and it shows also the number of people who are poor. Ten indicators are concerned; five of them (including enrolment rate, water and sanitation) are addressed as MDG,s and are dealt with in the report, and hence achieving any Millennium goal means eradicate deprivation in the corresponding dimension.

Conclusion and Macro Policy Recommendations

It can be concluded that the analysis of the Millennium Development Goals (MDG) in Egypt based on MAMS has generally confirmed that it is possible to achieve most of the MDGs on the aggregate socioeconomic level in 2015. The business as usual (BAU) or the reference path scenario has succeeded to generate satisfactory results on the macro-level via achieving the MDGs 4, 5 and 7a. It is recommended then – as a first policy recommendation - to direct any additional MDG financing policies to achieve MDG2 and MDG7b. This represented our experimental choice when applying MAMS. The economy-wide analysis using MAMS suggested also that the MDG

indicators are not too sensitive to changes in alternative strategies to finance the achievement of the MDGs.

The general conclusion in this respect is that the policy maker in Egypt is advised to target all the unrealized MDGs (which are MDG2 and MDG7b in the Egyptian case) and avoid concentrating on achieving - or delaying the targeting of one of them - with the objective of reducing the associated financing cost. This finding is justified by two arguments; a) the success to achieve all the targeted MDGs as a group with the positive impact of this achievement on the socioeconomic performance and the satisfaction of the Egyptian citizens and b) the moderate – or even the low – additional financing cost needed to achieve the MDG as measured by government consumption and investment spending as well as the incremental increase in foreign borrowing.

The micro simulation analysis has confirmed that halving poverty would not be achieved by 2015 when the national poverty lines are adopted irrespective of the tested financing policy measures. Moreover, all policy scenarios exhibit large inequality increases. If the government of Egypt is committed to halving poverty incidence by 2015, it should address a multidimensional process to reduce poverty that includes developing more employment and income-generating activities, allocates soft loans to small-scale enterprises, provides financial and in kind subsidies to the poor and adopts further social security measures.

Based on the results of MAMS, a considerable increase in government expenditure on water and sanitation sector is required - in most of the adopted strategies to achieve both MDG 2 and 7b – in order to reach a yearly increase in the real GDP of this sector from 5.1 percent in the base run (BAU) to 6.9 percent annually during the period 2008-2015. Real GDP of health and other government services need to witness also a slight increase in order to cope with the MDG achievement process. Finally, the government of Egypt should direct additional investments to the labour intensive industries to timely achieve MDG2 and MDG7b objectives in 2015. The analytical results stress also the need to augment real government spending on infrastructure from 4.5 percent per year in the base run to around 4.7 percent in the MDG policy scenarios. When measured by the additional government borrowings, the amount of domestic interest payment to the private institutions has to increase – as a percent of GDP – from 6.1 percent in the base run to about 6.6 percent in case of the optimistic growth scenario and to nearly 7 percent in case of the moderate growth scenario. The above changes in the expenditure items and economic aggregates can be easily converted into a set of current and capital government spending measures.

It should be noted nevertheless that the same indicators on the regional or governorate level reflected a clear duality between urban and rural areas with respect to the achievement of the MDGs. This concluding remark represented the main outcome of the section on sector analysis and the MDG determinants. Unfortunately, MAMS is not disaggregated enough to zoom on certain regions and groups which are likely need policy interventions. In this respect, MAMS does not support any disaggregation between rural and urban, male and female nor between governorates. This limitation makes the model misses an important dimension in the MDG analysis for the Egyptian case. Furthermore, MAMS does not represent an appropriate analytical tool for addressing the poverty issues. These issues are handled more conveniently in the micro-analysis part of the study.

Project Follow up Process

The final workshop of the project was hosted by the Institute of National Planning (INP) and the Ministry of Economic Development (MOED) the morning of December 5, 2010. It was

attended by the Egyptian team, Dr. Rob Vos from UNDESA, representatives from the ministry of economic development (MOED), Experts from the INP, UNDP staff as well other participants from the UN agencies in Egypt. After a brief welcome speech from the director of the INP, the director of the UNDP office in Egypt and Dr. Rob Vos, Professor Motaz Khorshid presented in detail the methodology and findings of the project with special reference to MAMS and its tailoring to the Egyptian case to test alternative MDG strategies. He explained also the structure, contents and conclusions of Egypt's report. This was followed by professor Heba's presentation on the micro simulation part of the study. The participants of the workshop discussed all aspects of the report for more than two hours. The workshop participants also discussed steps to be taken for adequate follow-up and transfer of the tools for strengthening analytical capacity and policy dialogue. The comments and recommendation for the follow up process can be summarized as follows:

1. The institutionalization and capacity development phase will be mainly managed by the MOED within the policy advising unit of the ministry. The MOED and the Egyptian team have to clearly define and specify the requirements of this phase so that the regional experts of the project can contribute to achieving its planned goals. This phase needs to include; i) training and building Egypt's national capacity using the current status of MAMS, micro methodology and policy experiments, ii) updating and adjusting the socioeconomic data and accounting structures of MAMS, iii) including additional policy measures to be tested by MAMS and iv) fine adjusting and modifying the model structure with the support of the regional team.

2. It was agreed that a visit of the regional experts to the MOED can be arranged in coordination with the Egyptian team based on the definition of the training and policy analysis requirements as well as a request from the Egyptian government.

3. Other government agencies and ministries need to participate in the capacity development phase such as the ministry of finance, the ministry of social security and if possible the ministries of education and health. Furthermore, the national team - that elaborated the country study - was asked to make further presentations to a broader group of expert staff of government institutions. The main purpose would be to further discuss the findings of the study and show the relevance of the analytical framework to help close the gap between the budgeting process and the goals and targets laid out by ministerial action plans.

Additional Comments from the Terminal Workshop

A number of points have been raised by participants in the terminal workshop of the project in order to enhance the capacity building exercise and support the decision maker in evaluating various MDG strategies. These points are related to the need to adjust and expand the analytical tools as well as to carry out further policy assessment:

1. The general framework, scenario development, level of disaggregation and policy analysis are consistent and suitable for the MDG analysis and reflect – to great extend – the specific features and structure of Egypt.

2. More analysis is needed to assess the impact of the global financial crises on the performance of the economy and the MDGs. This can nevertheless be the object of a second phase of the project.
3. The socioeconomic accounting framework and particularly the SAM need to be updated to a more recent year. Experts of MOED have confirmed the availability of national accounting information for this purpose. Given the time span of the project, this request has to be satisfied in a second phase or during the institutionalization phase of the project.
4. Given the weak linkages between the education status and labor market in the Egyptian economy, further disaggregation mechanisms may be needed to capture the impact of realizing MDG2 on the structure of the labor market and job creation process.
5. The participants have confirmed their satisfaction that the results of MAMS are consistent with the findings of the 2010 MOED/UNDP report on the MDG follow up for Egypt. They requested however further policy recommendations and suggestions in the concluding part of Egypt's report based on medium term projections.
6. Given the importance of the gender issue - as reflected in MDG3 - particularly in the Egyptian rural areas, it needs to be included in the institutionalization and capacity development phase.
7. MAMS need to be subject to further disaggregation to include regions and gender classifications as well as more MDGs. Professor Khorshid explained however that it might be difficult to carry out more disaggregation within the current mathematical structure of MAMS based on the CGE methodology. He suggested adding a sub-model for analyzing these additional issues. It is preferred then to deal with the disaggregated issues in a similar way to the poverty micro-simulation analysis. We can have then a core extended CGE model (including the MDG inter-period sub-model) and a number of satellite models to deal with any further human development issues.
8. The micro part of the report needs to include a discussion or analysis of the multidimensional poverty approach in contrast to income poverty.
9. Given the new trend towards partners for development, the contribution of the private sector to human development and achieving the MDGs may be considered jointly with government policies within the modeling framework.
10. MOED experts confirmed the data availability for 2008/2009 for the updating of the accounting framework of the model during the project's second phase .
11. To enhance the capacity building exercise, the Egyptian team and the MOED representatives requested to have the new version of MAMS which has a more friendly and transparent interface system. Professor Rob Vos promised to discuss this issue with the regional team.

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10. Appendices

I. Documentation of the SAM 2006/2007 for Egypt

A. Definitions of the SAM Accounts:

Account	Definition
LABOR:	
f-labn	Labor less than completed secondary
f-labs	Labor completed secondary level of education
f-labt	Labor completed tertiary level of education
CAPITAL:	
f-cap	Operating surplus for non-government activities
f-capedup	Operating surplus for government education at primary level
f-capedus	Operating surplus for government education at secondary level
f-capedut	Operating surplus for government education at tertiary level
f-caphlt	Operating surplus for government health activity
f-capwtsn	Operating surplus for water and sanitation activity
f-capoinfr	Operating surplus for other infrastructure activity
f-capogov	Operating surplus for other government services
Institutions:	
hhd	Current account of households[22]
gov	Current account of general government
row	Current account of the rest of the world
Int-dom	Interest paid from government to domestic institutions
Int-row	Interest paid from government to the rest of the world
sav - hhd	Savings of household
sav - gov	Savings of government
sav - row	Foreign Savings
cap - hld	Capital account of household

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[22] This account includes –in addition to households- private and public enterprises.

cap - row	Capital account of the rest of the world
inv-edup	Investment realized by government in primary education
inv-edus	Investment realized by government in secondary education
inv-edut	Investment realized by government in tertiary education
inv-hlt	Investment realized by government in health
inv-wtsn	Investment realized by government in water and sanitation
inv-oinfr	Investment realized by government in other infrastructure
inv-ogov	Investment realized by government in other services
inv-prv	Investment realized by non-government
ACTIVITIES	
a-agric	Agriculture
a-oilext	Crude Oil and natural gas and other Extractive industries
a-labint	Labor Intensive industries
a-capint	Capital Intensive industries
a-const	CONSTRUCTION
a-elect	ELECTRICITY
a-transpcom	Transport and communication
a-othprdsvc	Other productive services (hotels and restaurants, trade and insurance)
a-edupng	Education in non-government primary schools
a- edusng	Education in non-government secondary schools
a- edutng	Education in non-government universities
a-hltng	HEALTH activity in private sector
a- othsvcng	Other non-government services
a-edup	Education in government primary schools
a-edus	Education in government secondary schools
a-edut	Education in government universities
a-hlt	HEALTH activity in government
a-wtsn	Water and Sanitation
a-oinfr	Other infrastrucure
a-ogov	Other government services
c-agric	Agriculture
c-oilext	Crude Oil and natural gas and other Extractive industries
c-labint	Labor Intensive industries
c-capint	Capital Intensive industries
c-const	CONSTRUCTION
c-elect	ELECTRICITY
c-transpcom	Transport and communication
c-othprdsvc	Other productive services (hotels and restaurants, trade and insurance)

c-edupng	Education in non-government primary schools
c- edusng	Education in non-government secondary schools
c- edutng	Education in non-government universities
c-hltng	HEALTH activity in private sector
c- othsvcng	Other non-government services
c-edup	Education in government primary schools
c-edus	Education in government secondary schools
c-edut	Education in government universities
c-hlt	HEALTH activity in government
c-wtsn	Water and Sanitation
c-oinfr	Other infrastructure
c-ogov	Other government services
t-dir	Direct taxes
t-exp	Exports taxes
t-imp	Import taxes
t-oind	Other indirect taxes
t-sub	Subsidies

B. Description of the cells of the SAM for Egypt (by blocks):

ROW	COLUMN	CONTENT
1-3	31-50	Wages and salaries paid by activities to labour of each of the 3 education levels
4	31-43	Gross Operating surplus of non-government activities
5-11	44-50	Gross Operating surplus of government activities
12	1-4	Earnings of households from factors of production
12	13-14	Earnings of households from transfers from government and the rest of the world
12	15	Interests received by households from government
13	5-11	Government revenue from gross operating surplus in government activities
13	12-14	Revenues of government from current transfers from households and from the rest of the world
13	71-75	Revenues of government from taxes and subsidies
14	12-13	Current transfers to the rest of the world from household and government
14	16	Interests paid from government to the rest of the world
14	51-63	Imports from different commodities
15	13	Interests paid from government to domestic institutions
16	13	Interests paid from government to the rest of the world
17-19	12-14	Savings accounts of institutions
20-22	17-19	Capital accounts of institutions
20	22	Lending from non- government institutions to the rest of the world
21	20	Lending from non- government institutions to government
21	22	Lending from rest of the world to government
22	19	Foreign savings (Current account balance with the rest of the world)
23	29	government investment in government activities
30	20-21	Non-government investment financed by savings of non-government institutions and by government
31-50	51-70	Total domestic output of each activity
51-70	12	Household consumption
51-70	14	Exports of different commodities
64-70	13	Government final consumption from government services
51-70	23-29	Composition of investment in government activities
51-70	30	Composition of total investment in non-government activities
51-70	31-50	Matrix of intermediate consumption
71	12	Direct taxes (on personal income and profits)
72	54	Export taxes on some capital intensive commodities (iron and steel)
73	51-54	Import duties on different commodities
74	31-50	Indirect taxes on production of different activities
75	31-34	Subsidies paid by government to some activities

C. Sources of data for SAM

To cope with multiplicity of data sources, differences of estimation methods and inconsistency of some fragmented economy-wide statistics, the construction of the SAM for Egypt and then the structural parameters of MAMS relied on economic data and statistics produced by the following sources:

1) **Ministry of Economic Development:**

   a. Yearly reports on the five year socio economic development plan 2006/2007.
   b. Estimated Input-Output table for 2002/2003
   c. National Accounts 2005/2006
   d. Updated data on sources and Uses of GDP, and GDP by the economic sectors, published in the website of the ministry: www.MOP.gov.eg

2) **Central Agency for Public Mobilization and Statistics (CAPMAS):**

   e. Statistics Yearbook 2007.
   a. Statistics of yearly industrial production
   b. Household income and expenditure survey 2004/2005.
   c. Primary results of the population census 2006.
   d. Statistics of employment, wages and working hours 2006.

3) **Ministry of finance. The Final accounts of Government budget 2006/2007.**

4) **Central Bank of Egypt (CBE). The current and capital accounts of the Balance of Payments for the year 2006/2007.**

5) **Information and Decision Support Centre (IDSC). SAM for 2004/2005. Unpublished Document and the monthly economic bulletin.**

D. The Social Accounting Matrix for Egypt, In LE Million (2006-2007)

Figure (2) Current and Capital Accounts of Institutions

		Institutions Accounts										
		13	14	15	16	17	18	19	20	21	22	23
		hhd	gov	row	int-dom	int-row	sav-hhd	sav-gov	sav-row	cap-hhd	cap-gov	cap-row
Factors of Production	1 f-labn											
	2 f-labs											
	3 f-labt											
	4 f-cap											
	5 f-capedup											
	6 f-capedus											
	7 f-capedut											
	8 f-caphlt											
	9 f-capwtsn											
	10 f-capoinf											
	11 f-capgov											
	12 f-oil											
Institutions Accounts	13 hhd		161,555	43,688	44,700							
	14 gov	82,487		19,810								
	15 row	30,753	9,315			3,000						
	16 int-dom		44,700									
	17 int-row		3,000									
	18 sav-hhd	193,560										
	19 sav-gov		-41,870									
	20 sav-row			3,570								
	21 cap-hhd						193,560					0
	22 cap-gov							-41,870		63,426		3,570
	23 cap-row								3,570			
Investment Acc.	24 inv-edup										1,437	
	25 inv-edus										357	
	26 inv-edut										238	
	27 inv-hlt										726	
	28 inv-wtsn										772	
	29 inv-oinf										9,025	
	30 inv-ogov										5,037	
	31 inv-prv									130,133	7,534	

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Figure (2) Current and Capital Accounts of Institutions (Continued)

			Institutions Accounts										
			13	14	15	16	17	18	19	20	21	22	23
			hhd	gov	row	int-dom	int-row	sav-hhd	sav-gov	sav-row	cap-hhd	cap-gov	cap-row
Production Activities (Non-Gov.)	32	a-agr											
	33	a-oilext											
	34	a-labint											
	35	a-capint											
	36	a-const											
	37	a-elect											
	38	a-transpcom											
	39	a-othprdsvc											
	40	a-edupng											
	41	a-edusng											
	42	a-edutng											
	43	a-hltng											
	44	a-othsvcng											
Prod. Act. (Gov.)	45	a-edup											
	46	a-edus											
	47	a-edut											
	48	a-hlt											
	49	a-wtsn											
	50	a-oinf											
	51	a-ogov											
Commodities Acc. (Non-Gov.)	52	c-agr	47,297		4,224								
	53	c-oilext	1,051		30,977								
	54	c-labint	78,232		19,911								
	55	c-capint	203,495		53,256								
	56	c-const											
	57	c-elect	7,859		39								
	58	c-transpcom	29,736		24,622								
	59	c-othprdsvc	64,468		79,198								
	60	c-edupng	1,065		397								
	61	c-edusng	217		81								
	62	c-edutng	127		47								
	63	c-hltng	6,686		528								
	64	c-othsvc	22,435		2,697								
Com Acc(Gov)	65	c-edup	6,066	6,418	2,259								
	66	c-edus	1,508	1,596	562								
	67	c-edut	2,835	3,000	1,056								
	68	c-hlt	5,198	1,165	410								
	69	c-wtsn	3,017	299									
	70	c-oinf	12,866	40	7,768								
Taxes Acc.	71	c-ogov	85,995	7,299	2,569								
	72	t-dir	57,708										
	73	t-exp											
	74	t-imp											
	75	t-oind											
	76	t-sub											
		total	944,660	196,517	297,669	44,700	3,000	193,560	-41,870	3,570	193,560	25,126	3,570

Figure (3) Investment Matrix by Sectors of Origin and Destination

			Investment Accounts							
			24	25	26	27	28	29	30	31
			inv-edup	inv-edus	inv-edut	inv-hlt	inv-wtsn	inv-oinf	inv-ogov	inv-prv
Production Activities (Non-Gov.)	32	a-agr								
	33	a-oilext								
	34	a-labint								
	35	a-capint								
	36	a-const								
	37	a-elect								
	38	a-transpcom								
	39	a-othprdsvc								
	40	a-edupng								
	41	a-edusng								
	42	a-edutng								
	43	a-hltng								
	44	a-othsvcng								
Prod. Act. (Gov.)	45	a-edup								
	46	a-edus								
	47	a-edut								
	48	a-hlt								
	49	a-wtsn								
	50	a-oinf								
	51	a-ogov								
Commodities Acc. (Non-Gov.)	52	c-agr	0	0	0	0		0		415
	53	c-oilext		1	0	1		21		105
	54	c-labint	40	10	7	20		34	139	7,296
	55	c-capint	426	106	71	215	743	2,913	1,494	37,674
	56	c-const	922	164	110	334	29	4,875	2,366	63,530
	57	c-elect	27	7	4	14	0	82	64	1,065
	58	c-transpcom	0	0	0	0	0	11	0	1,412
	59	c-othprdsvc	11	67	45	136		1,088	946	22,157
	60	c-edupng								
	61	c-edusng								
	62	c-edutng								
	63	c-hltng								
	64	c-othsvc								
Com Acc (Gov)	65	c-edup								
	66	c-edus								
	67	c-edut								
	68	c-hlt								
	69	c-wtsn						0		3,093
	70	c-oinf	12	3	2	6	0	0	28	920
Taxes Acc.	71	c-ogov						0		0
	72	t-dir								
	73	t-exp								
	74	t-imp								
	75	t-oind								
	76	t-sub								
		total	1,437	357	238	726	772	9,025	5,037	137,667

Figure (4) Production Activites (Non-Government)

			Production Activities (Non-Government)												
			32	33	34	35	36	37	38	39	40	41	42	43	44
			a-agr	a-oilext	a-labint	a-capint	a-const	a-elect	a-transpcom	a-othprdsvc	a-edupng	a-edusng	a-edutng	a-hltng	a-othsvcng
Factors of Production	1	f-labn	6,559	820	7,173	6,808	8,674	365	4,363	10,451	91	19	11	344	2,487
	2	f-labs	2,720	2,199	7,776	7,380	7,433	941	3,977	11,668	558	114	66	1,813	1,498
	3	f-labt	363	2,345	2,895	2,747	2,124	536	1,440	6,892	1,140	232	136	1,599	1,394
	4	f-cap	80,040	49,202	18,158	111,592	11,870	4,693	41,346	114,228	1,148	234	137	2,410	21,455
	5	f-capedup													
	6	f-capedus													
	7	f-capedut													
	8	f-caphlt													
	9	f-capwtsn													
	10	f-capoinf													
	11	f-capgov													
	12	f-oil		49,202											
Institutions Accounts	13	hhd													
	14	gov													
	15	row													
	16	int-dom													
	17	int-row													
	18	sav-hhd													
	19	sav-gov													
	20	sav-row													
	21	cap-hhd													
	22	cap-gov													
	23	cap-row													
Investment Acc.	24	inv-edup													
	25	inv-edus													
	26	inv-edut													
	27	inv-hlt													
	28	inv-wtsn													
	29	inv-oinf													
	30	inv-ogov													
	31	inv-prv													

Figure (4) Production Activites (Non-Government) (Continued)

			32	33	34	35	36	37	38	39	40	41	42	43	44
			a-agr	a-oilext	a-labint	a-capint	a-const	a-elect	a-transpcom	a-othprdsvc	a-edupng	a-edusng	a-edutng	a-hltng	a-othsvcng
Production Activities (Non-Gov.)	32	a-agr													
	33	a-oilext													
	34	a-labint													
	35	a-capint													
	36	a-const													
	37	a-elect													
	38	a-transpcom													
	39	a-othprdsvc													
	40	a-edupng													
	41	a-edusng													
	42	a-edutng													
	43	a-hltng													
	44	a-othsvcng													
Prod. Act. (Gov.)	45	a-edup													
	46	a-edus													
	47	a-edut													
	48	a-hlt													
	49	a-wtsn													
	50	a-oinf													
	51	a-ogov													
Commodities Acc. (Non-Gov.)	52	c-agr	7,245		267	61,204		0	90	1,091	44	9	5	92	412
	53	c-oilext		2,049	2,527	50,170		19,570	396	1,373	1	0	0	2	7
	54	c-labint	4,287	481	39,681	27,385	13,378	1,357	6,107	5,234	681	139	81	1,429	6,375
	55	c-capint	4,851	269	16,631	54,862	9,779	277	15,969	3,705	237	48	28	498	2,220
	56	c-const	2	0	6	17	0	2	43	7	2	0	0	5	23
	57	c-elect	86	2	581	4,329	7,682	0	38	2,668	8	2	1	18	79
	58	c-transpcom	738	31	3,525	3,439	32	14	1,087	13,474	120	24	14	252	1,123
	59	c-othprdsvc	5,586	273	11,711	22,788	3,800	234	963	42,323	187	38	22	392	1,751
	60	c-edupng	114	9	767	576	71	6	37	514	11	2	1	23	101
	61	c-edusng	23	2	156	117	15	1	8	105	2	0	0	5	21
	62	c-edutng	14	1	91	69	8	1	4	61	1	0	0	3	12
	63	c-hltng	103	8	691	519	64	6	33	463	10	2	1	20	91
	64	c-othsvc	36	3	244	183	23	2	12	164	3	1	0	7	32
Com Acc(Gov)	65	c-edup	430	34	2,880	2,164	267	23	138	1,930	41	8	5	85	379
	66	c-edus	107	8	716	538	66	6	34	480	10	2	1	21	94
	67	c-edut	201	16	1,346	1,011	125	11	65	902	19	4	2	40	177
	68	c-hlt	116	9	778	585	72	6	37	522	11	2	1	23	103
	69	c-wtsn	78	6	520	391	48	4	25	349	7	1	1	15	69
	70	c-oinf	271	11	1,369	3,013	3,436	4	359	5,431	42	8	5	87	389
Taxes Acc.	71	c-ogov	767	61	5,141	3,863	477	42	247	3,445	72	15	9	152	677
	72	t-dir													
	73	t-exp													
	74	t-imp													
	75	t-oind	441	1,684	9,458	5,118	4,942	316	1,990	18,239	90	18	11	190	847
	76	t-sub	0	0		0									
		total	115,178	108,726	135,088	370,868	74,386	28,416	78,811	245,719	4,537	925	540	9,524	41,817

Figure (5) Production Acitivites (Government)

		Production Activities (Government)						
		45	46	47	48	49	50	51
		a-edup	a-edus	a-edut	a-hlt	a-wtsn	a-oinf	a-ogov
Factors of Production	1 f-labn	778	194	364	501	248	1,664	14,642
	2 f-labs	4,775	1,187	2,232	2,637	638	1,788	8,816
	3 f-labt	9,761	2,427	4,562	2,326	364	735	8,208
	4 f-cap							
	5 f-capedup	766						
	6 f-capedus		190					
	7 f-capedut			358				
	8 f-caphlt				718			
	9 f-capwtsn					2,104		
	10 f-capoinf						16,317	
	11 f-capgov							360
	12 f-oil							
Institutions Accounts	13 hhd							
	14 gov							
	15 row							
	16 int-dom							
	17 int-row							
	18 sav-hhd							
	19 sav-gov							
	20 sav-row							
	21 cap-hhd							
	22 cap-gov							
	23 cap-row							
Investment Acc.	24 inv-edup							
	25 inv-edus							
	26 inv-edut							
	27 inv-hlt							
	28 inv-wtsn							
	29 inv-oinf							
	30 inv-ogov							
	31 inv-prv							

Figure (5) Production Acitivites (Government) (Continued)

			Production Activities (Government)						
			45	46	47	48	49	50	51
			a-edup	a-edus	a-edut	a-hlt	a-wtsn	a-oinf	a-ogov
Production Activities (Non-Gov.)	32	a-agr							
	33	a-oilext							
	34	a-labint							
	35	a-capint							
	36	a-const							
	37	a-elect							
	38	a-transpcom							
	39	a-othprdsvc							
	40	a-edupng							
	41	a-edusng							
	42	a-edutng							
	43	a-hltng							
	44	a-othsvcng							
Prod. Act. (Gov.)	45	a-edup							
	46	a-edus							
	47	a-edut							
	48	a-hlt							
	49	a-wtsn							
	50	a-oinf							
	51	a-ogov							
Commodities Acc. (Non-Gov.)	52	c-agr	235	58	110	90	49	31	1,573
	53	c-oilext	4	1	2	2	1	8,864	38
	54	c-labint	3,636	904	1,699	1,398	758	2,706	21,491
	55	c-capint	1,266	315	592	487	264	4,875	8,453
	56	c-const	13	3	6	5	3	16	1,904
	57	c-elect	45	11	21	17	9	13	3,644
	58	c-transpcom	641	159	299	246	134	380	4,620
	59	c-othprdsvc	999	248	467	384	208	436	6,567
	60	c-edupng	58	14	27	22	12	15	786
	61	c-edusng	12	3	5	5	2	3	160
	62	c-edutng	7	2	3	3	1	2	93
	63	c-hltng	52	13	24	20	11	14	532
	64	c-othsvc	18	5	9	7	4	5	27,639
Com Acc (Gov)	65	c-edup	216	54	101	83	45	58	940
	66	c-edus	54	13	25	21	11	14	234
	67	c-edut	101	25	47	39	21	27	439
	68	c-hlt	58	15	27	22	12	16	277
	69	c-wtsn	39	10	18	15	8	753	152
	70	c-oinf	222	55	104	85	46	126	3,079
	71	c-ogov	386	96	181	148	3,864	104	1,844
Taxes Acc.	72	t-dir							
	73	t-exp							
	74	t-imp							
	75	t-oind	483	120	226	186	101	825	963
	76	t-sub							
		total	24,626	6,123	11,509	9,466	8,919	39,786	117,453

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Figure (6) Commodities Accounts - Goods and Servicies (Non-Government)

			Commodities Accounts (Non-Government)												
			52	53	54	55	56	57	58	59	60	61	62	63	64
			c-agr	c-oilext	c-labint	c-capint	c-const	c-elect	c-transpcom	c-othprdsvc	c-edupng	c-edusng	c-edutng	c-hltng	c-othsvc
Factors of Production	1	f-labn													
	2	f-labs													
	3	f-labt													
	4	f-cap													
	5	f-capedup													
	6	f-capedus													
	7	f-capedut													
	8	f-caphlt													
	9	f-capwtsn													
	10	f-capoinf													
	11	f-capgov													
	12	f-oil													
Institutions Accounts	13	hhd													
	14	gov													
	15	row	9,687	14,698	103,344	85,576			7,322	21,774	92	19	11	366	11,711
	16	int-dom													
	17	int-row													
	18	sav-hhd													
	19	sav-gov													
	20	sav-row													
	21	cap-hhd													
	22	cap-gov													
	23	cap-row													
Investment Acc.	24	inv-edup													
	25	inv-edus													
	26	inv-edut													
	27	inv-hlt													
	28	inv-wtsn													
	29	inv-oinf													
	30	inv-ogov													
	31	inv-prv													

Figure (6) Commodities Accounts - Goods and Servicies (Non-Government) (Continued)

		Commodities Accounts (Non-Government)												
		52	53	54	55	56	57	58	59	60	61	62	63	64
		c-agr	c-oilext	c-labint	c-capint	c-const	c-elect	c-transpcom	c-othprdsvc	c-edupng	c-edusng	c-edutng	c-hltng	c-othsvc
Production Activities (Non-Gov.)	32 a-agr	115,178												
	33 a-oilext		108,726											
	34 a-labint			135,088										
	35 a-capint				370,868									
	36 a-const					74,386								
	37 a-elect						28,416							
	38 a-transpcom							78,811						
	39 a-othprdsvc								245,719					
	40 a-edupng									4,537				
	41 a-edusng										925			
	42 a-edutng											540		
	43 a-hltng												9,524	
	44 a-othsvcng													41,817
Prod. Act. (Gov.)	45 a-edup													
	46 a-edus													
	47 a-edut													
	48 a-hlt													
	49 a-wtsn													
	50 a-oinf													
	51 a-ogov													
Commodities Acc. (Non-Gov.)	52 c-agr													
	53 c-oilext													
	54 c-labint													
	55 c-capint													
	56 c-const													
	57 c-elect													
	58 c-transpcom													
	59 c-othprdsvc													
	60 c-edupng													
	61 c-edusng													
	62 c-edutng													
	63 c-hltng													
	64 c-othsvc													
Com Acc(Gov)	65 c-edup													
	66 c-edus													
	67 c-edut													
	68 c-hlt													
	69 c-wtsn													
	70 c-oinf													
Taxes Acc.	71 c-ogov													
	72 t-dir													
	73 t-exp				1									
	74 t-imp	21	20	6,460	3,868									
	75 t-oind	-342	-6,282		-34,294									
	76 t-sub													
	total	124,543	117,162	244,893	426,019	74,386	28,416	86,133	267,493	4,630	944	551	9,890	53,529

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Figure (7) Commodities Accounts - Goods and Servicies (Gov.)

			Commodities Accounts (Government)						
			65	66	67	68	69	70	71	
			c-edup	c-edus	c-edut	c-hlt	c-wtsn	c-oinf	c-ogov	total
Production Activities (Non-Gov.)	32	a-agr								115,178
	33	a-oilext								108,726
	34	a-labint								135,088
	35	a-capint								370,868
	36	a-const								74,386
	37	a-elect								28,416
	38	a-transpcom								78,811
	39	a-othprdsvc								245,719
	40	a-edupng								4,537
	41	a-edusng								925
	42	a-edutng								540
	43	a-hltng								9,524
	44	a-othsvcng								41,817
Prod. Act. (Gov.)	45	a-edup	24,626							24,626
	46	a-edus		6,123						6,123
	47	a-edut			11,509					11,509
	48	a-hlt				9,466				9,466
	49	a-wtsn					8,919			8,919
	50	a-oinf						39,786		39,786
	51	a-ogov							117,453	117,453
Commodities Acc. (Non-Gov.)	52	c-agr								124,543
	53	c-oilext								117,162
	54	c-labint								244,893
	55	c-capint								426,019
	56	c-const								74,386
	57	c-elect								28,416
	58	c-transpcom								86,133
	59	c-othprdsvc								267,493
	60	c-edupng								4,630
	61	c-edusng								944
	62	c-edutng								551
	63	c-hltng								9,890
	64	c-othsvc								53,529
Com Acc(Gov)	65	c-edup								24,626
	66	c-edus								6,123
	67	c-edut								11,509
	68	c-hlt								9,466
	69	c-wtsn								8,919
	70	c-oinf								39,786
Taxes Acc.	71	c-ogov								117,453
	72	t-dir								57,708
	73	t-exp								1
	74	t-imp								10,369
	75	t-oind								5,330
	76	t-sub								0
		total	24,626	6,123	11,509	9,466	8,919	39,786	117,453	5,897,151

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Figure (8) Direct and Indirect Taxes

			Taxes Accounts					
			72	73	74	75	76	
			t-dir	t-exp	t-imp	t-oind	t-sub	total
Factors of Production	1	f-labn						66,557
	2	f-labs						70,218
	3	f-labt						52,226
	4	f-cap						456,515
	5	f-capedup						766
	6	f-capedus						190
	7	f-capedut						358
	8	f-caphlt						718
	9	f-capwtsn						2,104
	10	f-capoinf						16,317
	11	f-capgov						360
	12	f-oil						49,202
Institutions Accounts	13	hhd						944,660
	14	gov	57,708	1	10,369	5,330		196,517
	15	row						297,669
	16	int-dom						44,700
	17	int-row						3,000
	18	sav-hhd						193,560
	19	sav-gov						-41,870
	20	sav-row						3,570
	21	cap-hhd						193,560
	22	cap-gov						25,126
	23	cap-row						3,570
Investment Acc.	24	inv-edup						1,437
	25	inv-edus						357
	26	inv-edut						238
	27	inv-hlt						726
	28	inv-wtsn						772
	29	inv-oinf						9,025
	30	inv-ogov						5,037
	31	inv-prv						137,667
		total	57,708	1	10,369	5,330	0	5,897,151

II. Analytical Results of The Micro-Simulation

Table (7.3): Poverty rates and Gini Under different - Moderate Scenarios

	FGT US$1 per day			FGT US$2 per day			FGT _moderate poverty line		
	2007	**2010**	**2015**	**2007**	**2010**	**2015**	**2007**	**2010**	**2015**
base	1.893	2.654	1.683	29.654	27.827	23.116	40.925	37.689	29.682
mdg2db	1.893	2.684	1.611	29.654	27.138	23.007	40.925	36.678	29.618
mdg7bftr	1.893	2.649	1.685	29.654	27.808	23.022	40.925	37.629	29.580
mdg7db	1.893	2.652	1.679	29.654	27.813	23.027	40.925	37.661	29.585
mdg-db	1.893	2.685	1.607	29.654	27.118	22.966	40.925	36.670	29.554
mdgfb	1.893	2.684	1.599	29.654	26.976	22.964	40.925	36.465	29.522
mdgftr	1.893	2.684	1.599	29.654	26.976	22.964	40.925	36.465	29.522
mdgtax	1.893	2.701	1.634	29.654	27.329	22.993	40.925	36.984	29.570
	FGT _extreme poverty line			Gini_per capita income					
	2007	**2010**	**2015**	**2007**	**2010**	**2015**			
base	20.872	19.871	17.888	0.331	0.341	0.380			
mdg2db	20.872	19.339	17.811	0.331	0.344	0.378			
mdg7bftr	20.872	19.846	17.842	0.331	0.341	0.381			
mdg7db	20.872	19.848	17.827	0.331	0.341	0.380			
mdgdb	20.872	19.330	17.762	0.331	0.344	0.378			
mdgfb	20.872	19.276	17.741	0.331	0.345	0.378			
mdgftr	20.872	19.276	17.741	0.331	0.345	0.378			
mdgtax	20.872	19.510	17.774	0.331	0.344	0.378			

Table (7.4): Poverty rates and Gini Under different - Optimistic Scenarios

	FGT US$1per day			FGT US$2 per day			FGT _moderate poverty		
	2007	**2010**	**2015**	**2007**	**2010**	**2015**	**2007**	**2010**	**2015**
base	1.893	2.654	1.429	29.654	27.827	21.531	40.925	37.689	27.489
mdg2db	1.893	2.684	1.366	29.654	27.138	21.394	40.925	36.678	27.377
mdg7bftr	1.893	2.649	1.430	29.654	27.808	21.511	40.925	37.629	27.408
mdg7db	1.893	2.652	1.429	29.654	27.813	21.500	40.925	37.661	27.399
mdgdb	1.893	2.685	1.368	29.654	27.118	21.379	40.925	36.670	27.342
mdgfb	1.893	2.684	1.329	29.654	26.976	21.332	40.925	36.465	27.320
mdgftr	1.893	2.684	1.329	29.654	26.976	21.332	40.925	36.465	27.320
mdgtax	1.893	2.701	1.380	29.654	27.329	21.397	40.925	36.984	27.335
	FGT _extreme poverty line			Gini_per capita income					
	2007	**2010**	**2015**	**2007**	**2010**	**2015**			
base	20.753	20.022	16.334	0.331	0.340	0.384			
mdg2db	20.753	19.772	16.197	0.331	0.340	0.378			
mdg7bftr	20.753	19.975	16.307	0.331	0.340	0.384			
mdg7db	20.753	20.000	16.297	0.331	0.340	0.384			
mdgdb	20.753	19.792	16.199	0.331	0.340	0.377			
mdgfb	20.753	19.773	16.063	0.331	0.340	0.376			
mdgftr	20.753	19.773	16.063	0.331	0.340	0.376			
mdgtax	20.753	19.824	16.138	0.331	0.340	0.378			

Table (7.5): Poverty rate using US$1 per person day poverty line – Moderate Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.804	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.805	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.805	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.496	2.033	**fgt_1usd_w1**	1.893	2.631	1.919
fgt_1usd_w2	1.893	2.043	1.271	**fgt_1usd_w2**	1.893	1.946	1.241
fgt_1usd_m	1.893	2.654	1.683	**fgt_1usd_m**	1.893	2.685	1.607
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.778	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.779	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.779	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.631	1.888	**fgt_1usd_w1**	1.893	2.767	1.852
fgt_1usd_w2	1.893	1.946	1.246	**fgt_1usd_w2**	1.893	1.954	1.233
fgt_1usd_m	1.893	2.684	1.611	**fgt_1usd_m**	1.893	2.684	1.599
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.801	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.802	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.802	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.501	2.067	**fgt_1usd_w1**	1.893	2.767	1.852
fgt_1usd_w2	1.893	2.038	1.277	**fgt_1usd_w2**	1.893	1.954	1.233
fgt_1usd_m	1.893	2.649	1.685	**fgt_1usd_m**	1.893	2.684	1.599
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.803	1.782	**fgt_1usd_u**	1.893	1.785	1.782
fgt_1usd_s	1.893	1.804	1.783	**fgt_1usd_s**	1.893	1.786	1.783
fgt_1usd_o	1.893	1.804	1.783	**fgt_1usd_o**	1.893	1.786	1.783
fgt_1usd_w1	1.893	2.495	2.050	**fgt_1usd_w1**	1.893	2.570	1.938
fgt_1usd_w2	1.893	2.042	1.269	**fgt_1usd_w2**	1.893	1.965	1.269
fgt_1usd_m	1.893	2.652	1.679	**fgt_1usd_m**	1.893	2.701	1.634

Table (7.6): Poverty rate using US$2 per person per day poverty line – Moderate Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.207	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.208	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.208	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	30.823	34.869	**fgt_2usd_w1**	29.654	31.193	34.616
fgt_2usd_w2	29.654	27.360	21.354	**fgt_2usd_w2**	29.654	26.357	21.348
fgt_2usd_m	29.654	27.827	23.116	**fgt_2usd_m**	29.654	27.118	22.966
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.082	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.083	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.083	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	31.188	34.578	**fgt_2usd_w1**	29.654	31.241	34.562
fgt_2usd_w2	29.654	26.381	21.395	**fgt_2usd_w2**	29.654	26.214	21.353
fgt_2usd_m	29.654	27.138	23.007	**fgt_2usd_m**	29.654	26.976	22.964
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.200	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.201	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.201	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	30.829	34.888	**fgt_2usd_w1**	29.654	31.241	34.562
fgt_2usd_w2	29.654	27.341	21.253	**fgt_2usd_w2**	29.654	26.214	21.353
fgt_2usd_m	29.654	27.808	23.022	**fgt_2usd_m**	29.654	26.976	22.964
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.202	29.087	**fgt_2usd_u**	29.654	29.089	29.087
fgt_2usd_s	29.654	29.203	29.089	**fgt_2usd_s**	29.654	29.090	29.089
fgt_2usd_o	29.654	29.203	29.089	**fgt_2usd_o**	29.654	29.090	29.089
fgt_2usd_w1	29.654	30.821	34.890	**fgt_2usd_w1**	29.654	31.140	34.628
fgt_2usd_w2	29.654	27.346	21.265	**fgt_2usd_w2**	29.654	26.585	21.375
fgt_2usd_m	29.654	27.813	23.027	**fgt_2usd_m**	29.654	27.329	22.993

Table (7.7): Poverty rate using Moderate poverty line – Moderate Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.262	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.263	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.263	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.450	44.005	**fgt_moderate_w**	40.927	41.670	43.735
fgt_moderate_w	40.927	37.323	27.601	**fgt_moderate_w**	40.927	35.977	27.642
fgt_moderate_m	40.925	37.689	29.682	**fgt_moderate_m**	40.925	36.670	29.554
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.046	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.047	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.047	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.665	43.712	**fgt_moderate_w**	40.927	41.712	43.710
fgt_moderate_w	40.927	35.990	27.714	**fgt_moderate_w**	40.927	35.771	27.616
fgt_moderate_m	40.925	36.678	29.618	**fgt_moderate_m**	40.925	36.465	29.522
	mdg7bft	mdg7bft	mdg7bft		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.249	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.250	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.250	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.446	44.020	**fgt_moderate_w**	40.927	41.712	43.710
fgt_moderate_w	40.927	37.263	27.492	**fgt_moderate_w**	40.927	35.771	27.616
fgt_moderate_m	40.925	37.629	29.580	**fgt_moderate_m**	40.925	36.465	29.522
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.254	40.051	**fgt_moderate_u**	40.927	40.051	40.051
fgt_moderate_s	40.927	40.255	40.052	**fgt_moderate_s**	40.927	40.052	40.052
fgt_moderate_o	40.927	40.255	40.052	**fgt_moderate_o**	40.927	40.052	40.052
fgt_moderate_w	40.927	41.445	44.014	**fgt_moderate_w**	40.927	41.647	43.738
fgt_moderate_w	40.927	37.294	27.496	**fgt_moderate_w**	40.927	36.313	27.655
fgt_moderate_m	40.925	37.661	29.585	**fgt_moderate_m**	40.925	36.984	29.570

Table (7.8): Poverty rate using Extreme poverty line – Moderate Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.394	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.394	20.263	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.394	20.263	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.476	28.606	**fgt_extreme_w1**	20.873	22.914	28.360
fgt_extreme_w2	20.873	19.287	16.308	**fgt_extreme_w2**	20.873	18.464	16.302
fgt_extreme_m	20.872	19.871	17.888	**fgt_extreme_m**	20.872	19.330	17.762
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.256	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.257	20.262	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.257	20.262	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.907	28.336	**fgt_extreme_w1**	20.873	23.056	28.321
fgt_extreme_w2	20.873	18.476	16.353	**fgt_extreme_w2**	20.873	18.423	16.281
fgt_extreme_m	20.872	19.339	17.811	**fgt_extreme_m**	20.872	19.276	17.741
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.387	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.388	20.263	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.388	20.263	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.478	28.659	**fgt_extreme_w1**	20.873	23.056	28.321
fgt_extreme_w2	20.873	19.264	16.273	**fgt_extreme_w2**	20.873	18.423	16.281
fgt_extreme_m	20.872	19.846	17.842	**fgt_extreme_m**	20.872	19.276	17.741
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.389	20.261	**fgt_extreme_u**	20.873	20.265	20.261
fgt_extreme_s	20.873	20.390	20.263	**fgt_extreme_s**	20.873	20.266	20.263
fgt_extreme_o	20.873	20.390	20.263	**fgt_extreme_o**	20.873	20.266	20.263
fgt_extreme_w1	20.873	22.472	28.641	**fgt_extreme_w1**	20.873	22.773	28.372
fgt_extreme_w2	20.873	19.263	16.252	**fgt_extreme_w2**	20.873	18.658	16.312
fgt_extreme_m	20.872	19.848	17.827	**fgt_extreme_m**	20.872	19.510	17.774

Table (7.9): Gini Index of income - Moderate Scenario

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.340	0.377	**gini_ypc_w1**	0.331	0.344	0.375
gini_ypc_w2	0.331	0.339	0.378	**gini_ypc_w2**	0.331	0.343	0.376
gini_ypc_m	0.331	0.341	0.380	**gini_ypc_m**	0.331	0.344	0.378
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.344	0.375	**gini_ypc_w1**	0.331	0.345	0.374
gini_ypc_w2	0.331	0.342	0.376	**gini_ypc_w2**	0.331	0.343	0.376
gini_ypc_m	0.331	0.344	0.378	**gini_ypc_m**	0.331	0.345	0.378
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.341	0.377	**gini_ypc_w1**	0.331	0.345	0.374
gini_ypc_w2	0.331	0.339	0.379	**gini_ypc_w2**	0.331	0.343	0.376
gini_ypc_m	0.331	0.341	0.381	**gini_ypc_m**	0.331	0.345	0.378
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.340	0.377	**gini_ypc_w1**	0.331	0.344	0.375
gini_ypc_w2	0.331	0.339	0.379	**gini_ypc_w2**	0.331	0.342	0.376
gini_ypc_m	0.331	0.341	0.380	**gini_ypc_m**	0.331	0.344	0.378

Table (7.10): Gini Index of Labor Income - Moderate Scenario

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.419	0.417	**Gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.419	0.417	**Gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.419	0.417	**Gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.487	**gini_ylab_w1**	0.417	0.432	0.480
gini_ylab_w2	0.417	0.432	0.489	**gini_ylab_w2**	0.417	0.432	0.482
gini_ylab_m	0.417	0.435	0.488	**Gini_ylab_m**	0.417	0.435	0.482
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.418	0.417	**Gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.418	0.417	**Gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.418	0.417	**Gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.482	**gini_ylab_w1**	0.417	0.432	0.479
gini_ylab_w2	0.417	0.432	0.483	**gini_ylab_w2**	0.417	0.432	0.480
gini_ylab_m	0.417	0.435	0.483	**Gini_ylab_m**	0.417	0.435	0.480
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.419	0.417	**Gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.419	0.418	**Gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.419	0.417	**Gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.487	**gini_ylab_w1**	0.417	0.432	0.479
gini_ylab_w2	0.417	0.432	0.489	**gini_ylab_w2**	0.417	0.432	0.480
gini_ylab_m	0.417	0.435	0.489	**Gini_ylab_m**	0.417	0.435	0.480
	mdg7db		mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
gini_ylab	0.417		0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417		0.417	**Gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417		0.417	**Gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417		0.417	**Gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417		0.485	**gini_ylab_w1**	0.417	0.432	0.481
gini_ylab_w2	0.417		0.487	**gini_ylab_w2**	0.417	0.432	0.483
gini_ylab_m	0.417		0.486	**Gini_ylab_m**	0.417	0.435	0.483

Table (7.11): Poverty rate using US$1 per person per day poverty line – Optimistic Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.804	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.805	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.805	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.496	2.693	**fgt_1usd_w1**	1.893	2.631	2.464
fgt_1usd_w2	1.893	2.043	1.019	**fgt_1usd_w2**	1.893	1.946	1.007
fgt_1usd_m	1.893	2.654	1.429	**fgt_1usd_m**	1.893	2.685	1.368
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.778	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.779	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.779	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.631	2.436	**fgt_1usd_w1**	1.893	2.767	2.378
fgt_1usd_w2	1.893	1.946	1.007	**fgt_1usd_w2**	1.893	1.954	0.967
fgt_1usd_m	1.893	2.684	1.366	**fgt_1usd_m**	1.893	2.684	1.329
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.801	1.782	**fgt_1usd_u**	1.893	1.778	1.782
fgt_1usd_s	1.893	1.802	1.783	**fgt_1usd_s**	1.893	1.779	1.783
fgt_1usd_o	1.893	1.802	1.783	**fgt_1usd_o**	1.893	1.779	1.783
fgt_1usd_w1	1.893	2.501	2.725	**fgt_1usd_w1**	1.893	2.767	2.378
fgt_1usd_w2	1.893	2.038	1.024	**fgt_1usd_w2**	1.893	1.954	0.967
fgt_1usd_m	1.893	2.649	1.430	**fgt_1usd_m**	1.893	2.684	1.329
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_1usd	1.820	1.820	1.820	**fgt_1usd**	1.820	1.820	1.820
fgt_1usd_u	1.893	1.803	1.782	**fgt_1usd_u**	1.893	1.785	1.782
fgt_1usd_s	1.893	1.804	1.783	**fgt_1usd_s**	1.893	1.786	1.783
fgt_1usd_o	1.893	1.804	1.783	**fgt_1usd_o**	1.893	1.786	1.783
fgt_1usd_w1	1.893	2.495	2.712	**fgt_1usd_w1**	1.893	2.570	2.510
fgt_1usd_w2	1.893	2.042	1.020	**fgt_1usd_w2**	1.893	1.965	1.023
fgt_1usd_m	1.893	2.652	1.429	**fgt_1usd_m**	1.893	2.701	1.380

Table (7.12): Poverty rate using US$2 per person per day poverty line – Optimistic Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.207	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.208	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.208	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	30.823	35.372	**fgt_2usd_w1**	29.654	31.193	34.968
fgt_2usd_w2	29.654	27.360	19.697	**fgt_2usd_w2**	29.654	26.357	19.735
fgt_2usd_m	29.654	27.827	21.531	**fgt_2usd_m**	29.654	27.118	21.379
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.082	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.083	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.083	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	31.188	34.949	**fgt_2usd_w1**	29.654	31.241	34.940
fgt_2usd_w2	29.654	26.381	19.751	**fgt_2usd_w2**	29.654	26.214	19.684
fgt_2usd_m	29.654	27.138	21.394	**fgt_2usd_m**	29.654	26.976	21.332
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.200	29.087	**fgt_2usd_u**	29.654	29.082	29.087
fgt_2usd_s	29.654	29.201	29.089	**fgt_2usd_s**	29.654	29.083	29.089
fgt_2usd_o	29.654	29.201	29.089	**fgt_2usd_o**	29.654	29.083	29.089
fgt_2usd_w1	29.654	30.829	35.366	**fgt_2usd_w1**	29.654	31.241	34.940
fgt_2usd_w2	29.654	27.341	19.681	**fgt_2usd_w2**	29.654	26.214	19.684
fgt_2usd_m	29.654	27.808	21.511	**fgt_2usd_m**	29.654	26.976	21.332
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_2usd	29.543	29.543	29.543	**fgt_2usd**	29.543	29.543	29.543
fgt_2usd_u	29.654	29.202	29.087	**fgt_2usd_u**	29.654	29.089	29.087
fgt_2usd_s	29.654	29.203	29.089	**fgt_2usd_s**	29.654	29.090	29.089
fgt_2usd_o	29.654	29.203	29.089	**fgt_2usd_o**	29.654	29.090	29.089
fgt_2usd_w1	29.654	30.821	35.366	**fgt_2usd_w1**	29.654	31.140	34.990
fgt_2usd_w2	29.654	27.346	19.669	**fgt_2usd_w2**	29.654	26.585	19.746
fgt_2usd_m	29.654	27.813	21.500	**fgt_2usd_m**	29.654	27.329	21.397

Table (7.13): Poverty rate using Moderate poverty line – Optimistic Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.262	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.263	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.263	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.450	44.257	**fgt_moderate_w**	40.927	41.670	43.903
fgt_moderate_w	40.927	37.323	25.345	**fgt_moderate_w**	40.927	35.977	25.417
fgt_moderate_m	40.925	37.689	27.489	**fgt_moderate_m**	40.925	36.670	27.342
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.046	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.047	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.047	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.665	43.896	**fgt_moderate_w**	40.927	41.712	43.888
fgt_moderate_w	40.927	35.990	25.454	**fgt_moderate_w**	40.927	35.771	25.400
fgt_moderate_m	40.925	36.678	27.377	**fgt_moderate_m**	40.925	36.465	27.320
	mdg7bft	mdg7bft	mdg7bft		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.249	40.051	**fgt_moderate_u**	40.927	40.046	40.051
fgt_moderate_s	40.927	40.250	40.052	**fgt_moderate_s**	40.927	40.047	40.052
fgt_moderate_o	40.927	40.250	40.052	**fgt_moderate_o**	40.927	40.047	40.052
fgt_moderate_w	40.927	41.446	44.256	**fgt_moderate_w**	40.927	41.712	43.888
fgt_moderate_w	40.927	37.263	25.270	**fgt_moderate_w**	40.927	35.771	25.400
fgt_moderate_m	40.925	37.629	27.408	**fgt_moderate_m**	40.925	36.465	27.320
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_moderate	40.818	40.818	40.818	**fgt_moderate**	40.818	40.818	40.818
fgt_moderate_u	40.927	40.254	40.051	**fgt_moderate_u**	40.927	40.051	40.051
fgt_moderate_s	40.927	40.255	40.052	**fgt_moderate_s**	40.927	40.052	40.052
fgt_moderate_o	40.927	40.255	40.052	**fgt_moderate_o**	40.927	40.052	40.052
fgt_moderate_w	40.927	41.445	44.260	**fgt_moderate_w**	40.927	41.647	43.906
fgt_moderate_w	40.927	37.294	25.261	**fgt_moderate_w**	40.927	36.313	25.406
fgt_moderate_m	40.925	37.661	27.399	**fgt_moderate_m**	40.925	36.984	27.335

Table (7.14): Poverty rate using Extreme poverty line – Optimistic Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.394	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.394	20.263	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.394	20.263	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.476	29.207	**fgt_extreme_w1**	20.873	22.914	28.868
fgt_extreme_w2	20.873	19.287	15.097	**fgt_extreme_w2**	20.873	18.464	15.107
fgt_extreme_m	20.872	19.871	16.682	**fgt_extreme_m**	20.872	19.330	16.549
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.256	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.257	20.263	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.257	20.263	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.907	28.858	**fgt_extreme_w1**	20.873	23.056	28.815
fgt_extreme_w2	20.873	18.476	15.117	**fgt_extreme_w2**	20.873	18.423	15.046
fgt_extreme_m	20.872	19.339	16.560	**fgt_extreme_m**	20.872	19.276	16.495
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.387	20.261	**fgt_extreme_u**	20.873	20.256	20.261
fgt_extreme_s	20.873	20.388	20.263	**fgt_extreme_s**	20.873	20.257	20.263
fgt_extreme_o	20.873	20.388	20.263	**fgt_extreme_o**	20.873	20.257	20.263
fgt_extreme_w1	20.873	22.478	29.231	**fgt_extreme_w1**	20.873	23.056	28.815
fgt_extreme_w2	20.873	19.264	15.067	**fgt_extreme_w2**	20.873	18.423	15.046
fgt_extreme_m	20.872	19.846	16.643	**fgt_extreme_m**	20.872	19.276	16.495
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
fgt_extreme	20.754	20.754	20.754	**fgt_extreme**	20.754	20.754	20.754
fgt_extreme_u	20.873	20.389	20.261	**fgt_extreme_u**	20.873	20.265	20.261
fgt_extreme_s	20.873	20.390	20.263	**fgt_extreme_s**	20.873	20.266	20.263
fgt_extreme_o	20.873	20.390	20.263	**fgt_extreme_o**	20.873	20.266	20.263
fgt_extreme_w1	20.873	22.472	29.224	**fgt_extreme_w1**	20.873	22.773	28.882
fgt_extreme_w2	20.873	19.263	15.065	**fgt_extreme_w2**	20.873	18.658	15.117
fgt_extreme_m	20.872	19.848	16.643	**fgt_extreme_m**	20.872	19.510	16.557

Table (7.15): Gini Index of Income – Optimistic Scenarios

simcur	base	base	base		mdgdb	mdgdb	mdgdb
tt	**2007**	**2010**	**2015**		**2007**	**2010**	**2015**
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.340	0.381	**gini_ypc_w1**	0.331	0.344	0.378
gini_ypc_w2	0.331	0.339	0.385	**gini_ypc_w2**	0.331	0.343	0.382
gini_ypc_m	0.331	0.341	0.387	**gini_ypc_m**	0.331	0.344	0.384
	mdg2db	mdg2db	mdg2db		mdgfb	mdgfb	mdgfb
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.344	0.378	**gini_ypc_w1**	0.331	0.345	0.378
gini_ypc_w2	0.331	0.342	0.382	**gini_ypc_w2**	0.331	0.343	0.381
gini_ypc_m	0.331	0.344	0.383	**gini_ypc_m**	0.331	0.345	0.383
	mdg7bftr	mdg7bftr	mdg7bftr		mdgftr	mdgftr	mdgftr
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.341	0.382	**gini_ypc_w1**	0.331	0.345	0.378
gini_ypc_w2	0.331	0.339	0.386	**gini_ypc_w2**	0.331	0.343	0.381
gini_ypc_m	0.331	0.341	0.387	**gini_ypc_m**	0.331	0.345	0.383
	mdg7db	mdg7db	mdg7db		mdgtax	mdgtax	mdgtax
	2007	2010	2015		2007	2010	2015
gini_ypc	0.331	0.331	0.331	**gini_ypc**	0.331	0.331	0.331
gini_ypc_u	0.331	0.331	0.331	**gini_ypc_u**	0.331	0.331	0.331
gini_ypc_s	0.331	0.331	0.331	**gini_ypc_s**	0.331	0.331	0.331
gini_ypc_o	0.331	0.331	0.331	**gini_ypc_o**	0.331	0.331	0.331
gini_ypc_w1	0.331	0.340	0.381	**gini_ypc_w1**	0.331	0.344	0.379
gini_ypc_w2	0.331	0.339	0.385	**gini_ypc_w2**	0.331	0.342	0.382
gini_ypc_m	0.331	0.341	0.387	**gini_ypc_m**	0.331	0.344	0.384

Table (7.16): Gini Index of Labor Income – Optimistic Scenarios

Simcur	base	base	base	simcur	mdgdb	mdgdb	mdgdb
Tt	**2007**	**2010**	**2015**	**tt**	**2007**	**2010**	**2015**
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.419	0.417	**gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.419	0.417	**gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.419	0.417	**gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.487	**gini_ylab_w1**	0.417	0.432	0.480
gini_ylab_w2	0.417	0.432	0.489	**gini_ylab_w2**	0.417	0.432	0.482
gini_ylab_m	0.417	0.435	0.488	**gini_ylab_m**	0.417	0.435	0.482
Simcur	mdg2db	mdg2db	mdg2db	**simcur**	mdgfb	mdgfb	mdgftr
Tt	2007	2010	2015	**tt**	2007	2010	2015
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.418	0.417	**gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.418	0.417	**gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.418	0.417	**gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.482	**gini_ylab_w1**	0.417	0.432	0.479
gini_ylab_w2	0.417	0.432	0.483	**gini_ylab_w2**	0.417	0.432	0.480
gini_ylab_m	0.417	0.435	0.483	**gini_ylab_m**	0.417	0.435	0.480
Simcur	mdg7bftr	mdg7bftr	mdg7bftr	**simcur**	mdgtax	mdgtax	base
Tt	2007	2010	2015	**tt**	2007	2010	2015
gini_ylab	0.417	0.417	0.417	**gini_ylab**	0.417	0.417	0.417
gini_ylab_u	0.417	0.419	0.417	**gini_ylab_u**	0.417	0.418	0.417
gini_ylab_s	0.417	0.419	0.418	**gini_ylab_s**	0.417	0.418	0.417
gini_ylab_o	0.417	0.419	0.417	**gini_ylab_o**	0.417	0.418	0.417
gini_ylab_w1	0.417	0.432	0.487	**gini_ylab_w1**	0.417	0.432	0.487
gini_ylab_w2	0.417	0.432	0.489	**gini_ylab_w2**	0.417	0.432	0.489
gini_ylab_m	0.417	0.435	0.489	**gini_ylab_m**	0.417	0.435	0.488
Simcur	mdg7db		mdg7db				
Tt	2007		2015				
gini_ylab	0.417		0.417				
gini_ylab_u	0.417		0.417				
gini_ylab_s	0.417		0.417				
gini_ylab_o	0.417		0.417				
gini_ylab_w1	0.417		0.485				
gini_ylab_w2	0.417		0.487				
gini_ylab_m	0.417		0.486				

III. Elasticities of MDG indicators to Socioeconomic Factors

	Gov. Spending on Health Services	Gov. Spending on water and Sanitation Services	Education Quality	Capital Factor of Other Infra-Structure	Per-Capita Household Consumption	Primary Completion Rate	Access to Clean Water	Access to Sanitation Services	Wage Premium
Poverty Rate (mdg1)					-1.000				
Child Mortality Rate (mdg4)	-0.485			-0.048	-0.048		-0.097	-0.097	
Maternity Mortality Rate (mdg5)	-0.864			-0.086	-0.086		-0.086	-0.086	
Access to Clean Water (mdg7a)		0.287		0.029	0.057				
Access to Sanitation Service (mdg7b)		0.644		0.129	0.064				
Entry Rate to Primary Education			0.200	0.022	0.022	-0.022			0.022
Average Pass Rate of Primary Education			0.867	0.087	0.087	-0.087			0.087
Average Pass Rate of Secondary Education			0.171	0.017	0.017	-0.017			0.017
Average Pass Rate of Tertiary Education			0.137	0.014	0.014	-0.014			0.014
Rate of Continuing Graduate - Secondary Education			0.203	0.020	0.020	-0.020			0.020
Rate of Continuing Graduate - Tertiary Education			1.231	0.123	0.123	-0.123			0.123