Kearney, Marna, and Ayodele Odusola. "South Africa." *Financing Human Development in Africa, Asia and the Middle East*. Ed. Marco V. Sánchez and Rob Vos. London: Bloomsbury Academic, 2013. 139–164. The United Nations Series on Development. *Bloomsbury Collections*. Web. 26 Apr. 2023. <<http://dx.doi.org/10.5040/9781472544551.ch-006>>.

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Chapter 6

South Africa

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INTRODUCTION

After successful free elections in April 1994, South Africa was readmitted to the international community, following years of international isolation imposed on the country due to its racially motivated apartheid policies. Since then, trade liberalization has been accompanied by responsible monetary and fiscal management, and South Africa has continuously recorded moderate economic growth. Inflation has been within target, and the budget deficit has been falling in recent years. The government has also channelled an important amount of resources to social programs and services. Yet despite bold policy changes, the economy has failed to grow in sufficient amounts to make inroads into high unemployment and poverty (Hoogeveen and Özler, 2005).

In 2000, the South African government adopted the United Nations Millennium Declaration, pledging to meet the millennium development goals (MDGs) by 2015. The country has made some progress in achieving the MDGs since then, but some gaps remain, especially with regard to the health goals. This chapter addresses three key questions: First, what is the likelihood that South Africa will achieve the MDGs given current policies and levels of social investment? Second, if business as usual is not good enough, what changes in strategies and policies should be pursued in order to achieve the goals? Finally, what will it cost to implement the different strategies, policies and investment alternatives to ensure MDG achievement by 2015, and how should they be financed?

This chapter begins with a discussion of recent economic reforms and the macroeconomic performance achieved by South Africa as well as current

economic constraints and vulnerabilities the country faces. The next section addresses the country's social policies with specific reference to the MDGs. The third section analyses alternative scenarios created using the MAMS model and a microsimulation approach. It describes a baseline scenario that shows MDG outcomes if South Africa maintains its current growth path, then examines additional spending that may be required to ensure that South Africa meets its MDG targets by 2015, including the alternative financing options and how these may impact the economy. The concluding section provides some policy recommendations.

MACROECONOMIC PERFORMANCE

Recent reforms

In October 2010, President Zuma proposed a New Growth Path (NGP) strategy for South Africa that places employment as a priority. The strategy identifies the following key areas for job creation: infrastructure expansion in transport, energy, water, communications and housing; increased value-added generation in agriculture and mining; the greening of the economy; stimulus of selected manufacturing sectors identified in the government's industrial policy action plan; and tourism and certain high-end services. This economic policy builds on earlier initiatives such as the Accelerated and Shared Growth Initiative (AsgiSA), the Growth, Employment and Redistribution (GEAR) programme, and the Reconstruction and Development Programme (RDP).

The target is to create five million jobs by 2020, so as to reduce the rate of unemployment from 25 to 15 per cent. In order to achieve this, though, the economy at large would also need to grow faster. As part of its macroeconomic approach, the government plans to pursue more active monetary policy interventions, make the exchange rate more competitive, reduce the cost of capital, maintain a more restrained fiscal stance, and reprioritize public spending to ensure fiscal sustainability. The strategy includes other measures to support jobs and competitiveness, including education and vocational training programmes for skills development, new regulation to enhance competition in industry and promote small businesses development, labour market reforms, rural development programmes, African regional integration policies and other trade policy reforms (The Presidency of South Africa, 2010).

Economic trends

After apartheid, economic growth has been relatively robust. During 1995–2003, GDP increased by 3.3 per cent per year on average. Income per capita increased by 1.7 per cent per year. This growth performance was a notable improvement compared with the 0.8 per cent of GDP growth and -1.3 per cent GDP per capita growth per annum during 1985–1994 (Figure 6.1). Economic growth picked up further during 2004–2007, averaging over 5 per cent per year. Growth slowed somewhat thereafter as a result of the global financial crisis.

Figure 6.1
South Africa: GDP growth, 1995–2008

Source: South African Reserve Bank (SARB) database (www.reservebank.co.za).

Du Plessis and Smit (2006) attribute most of the positive economic growth to improvements in total factor productivity driven for the most part by greater openness to international markets. Fedderke and others (2007) argue that greater competition among industrial sectors also helped enhance productivity.

The slowdown in 2008 was associated with the global economic downturn, which adversely affected South African trade and inflows of foreign direct investment and portfolio capital. More recent estimates of real GDP growth suggest the economy contracted by 1.7 per cent in 2009, showing a mild

recovery thereafter with the economy growing at 2.8 per cent in 2010 and an estimated 3.3 per cent in 2011 (Statistics South Africa, 2011a).

Post-apartheid strategies oriented to promote growth and income distribution did not succeed in reducing the high levels of unemployment, particularly for less-skilled younger blacks. Neither did the policies help to significantly reduce widespread poverty and high inequality. Employment growth, although positive, has been outpaced by labour force participation growth in various periods, leading to high unemployment rates. Banerjee and others (2006) have gauged that the rate of unemployment—according to the official definition¹—increased from 15.6 to 30.3 per cent between 1995 and 2001. According to the official estimate published by Statistics South Africa, the unemployment rate has declined to 23.6 per cent in 2008, but remaining well above the level of the mid-1990s. The global financial crisis pushed unemployment further up again. From 2009 to mid-2011, the jobless rate stayed stubbornly above 25 per cent (Statistics South Africa, 2011b).

The reasons for the poor employment performance, as identified by Rodrik (2006), include insufficient growth, high real wages due to strong trade union influence in wage setting, poor performance of the tradables sector (which is considered one of the drivers of growth), the shrinkage of the manufacturing sector and the related decline in the demand for unskilled workers, and failure of the informal market to absorb the unemployed.

Public debt sustainability has been a key objective of government policies since 1994. Measures taken from 1996 have helped reduce public debt and interest costs over time and created the necessary fiscal space for the government to mitigate the impact of the global economic downturn at the end of the 2010s. External borrowing has remained relatively stable since 2003, but domestic borrowing increased sharply in 2003 and 2008 and is forecast to remain high on a slight decreasing trend over the medium term (National Treasury, Budget Reviews: 1994 to 2009). The total debt as a percentage of GDP decreased from 48 per cent in 1994 to 22.8 per cent in 2008 owing to the government's efforts to bring it down to sustainable levels. However, with the economic slowdown and countercyclical policies, government debt as a share of GDP has been on the rise again after 2008 and is expected to increase further in the near future—with the net national government debt peaking at 44 per cent of GDP in 2015/16 (National Treasury, 2011).

The current level of social spending is already quite high in South Africa and further increases could undermine fiscal sustainability. The government is perceived to have little scope to broaden the tax base further as long as employment growth remains subpar and given the fiscal reforms that have already been undertaken. External budget support is also limited as South

Africa is not a major recipient of Official Development Assistance (ODA). It received R5 billion in ODA in 2005 which constitutes about 1.5 per cent of government expenditures, and less than 1 per cent of GDP.

Current economic constraints and vulnerabilities

Macroeconomists in South Africa generally agree that the widening current account deficit is becoming a major liability. Prior to 2003, the country had moderate current account surpluses and deficits, with no systematic tendency in one direction or another. However, since 2003 deficits have been growing steadily, reaching 7.1 per cent of GDP in 2008 (Figure 6.2). The deterioration of the trade balance, which moved from an almost balanced position in 2004 to a deficit of more than 2 per cent of GDP in less than two years, has been a large contributory factor to the current account deficit.

As indicated, the government's borrowing requirements are another source of vulnerability. Borrowing requirements are expected to rise to 7.5 per cent of GDP in 2009/10 and, as said, government debt as a share of GDP is expected to increase in the near future owing to the effects of the economic slowdown and countercyclical policies implemented to offset

Figure 6.2
South Africa: Current account of the balance of payments, 1994–2008

Source: South African Reserve Bank (SARB).

them. A large share of borrowing is to finance the investment programme of the utilities, including Eskom and Telkom, which was set at R90 billion per year over the period 2009/10.

Backlogs in logistics, energy infrastructure, and skill development, as well as the low levels of domestic savings and productive investment form additional challenges. The high degree of concentration of economic activity, practices of price collusion, and an overvalued currency are other concerns, all of which are to be addressed by the NGP (The Presidency of South Africa, 2010).

MDG ACHIEVEMENT IN SOUTH AFRICA

The latest MDGs report produced by the Republic of South Africa (2010) indicates that South Africa is likely to meet its poverty reduction targets, depending on which poverty line is used (Table 6.1). The ambitious target to reduce the Gini coefficient of income inequality from 0.65 to 0.30 is very unlikely to be met. In fact, inequality increased during the 2000s.

South Africa is also likely to achieve universal primary education (MDG 2) and is also close to achieving the targets for gender equality in education and empowerment of women (MDG 3). However, there are still important gaps to achieve the health-related MDGs (MDG 4, 5 and 6). The rise in child and maternal mortality rates is mainly attributable to the substantial increase in HIV/AIDS prevalence after 1998. Prevalence rates have stabilised in recent years with a major shift in the government's approach in combating the pandemic. Despite the upward trend in the under-five mortality rate, the infant mortality rate has remained more or less stable as there has been a marked increase in the proportion of children under 1 year of age who have received all their primary vaccines for tuberculosis, diphtheria, whooping cough, tetanus, polio, measles, hepatitis B and haemophilus influenza. Although good progress is being made in combating malaria, the country is not on track to meet its targets in combating HIV/AIDS or tuberculosis. In contrast, South Africa is more likely to meet the targets for improving access to drinking water and basic sanitation (MDG 7).

SCENARIO ANALYSIS OF MDG ACHIEVEMENT

This section analyses various scenarios using the dynamic, computable general equilibrium (CGE) model called MAMS (Maquette for MDG Simulations), as described in Chapter 1 of this volume. Those are defined

Table 6.1

South Africa: Selected MDGs and most important related indicators

	<i>Past</i>	<i>Most recent</i>	<i>Target (2015)</i>
MDG 1: Eradicate extreme poverty			
Proportion of population below \$1 per day (PPP) (per cent)	11.3 (2000)	5.0 (2006)	5.7
Proportion of population below \$1.25 per day (PPP) (per cent)	17.0 (2000)	9.7 (2006)	8.5
Proportion of population below \$2.50 per day (PPP) (per cent)	42.2 (2000)	34.8 (2006)	21.1
Gini coefficient (per capita expenditure, excluding taxes)	0.65 (2000)	0.67 (2006)	0.3
MDG 2: Achieve universal primary education			
Adjusted net enrolment ratios for primary education (per cent)	96.4 for males 97.0 for females (2002)	99.4 for males 98.8 for females (2009)	100.0
Primary completion rate for 18 year olds (per cent)	89.2 (2002)	93.8 (2009)	100.0
MDG 3: Promote gender equality and empower women			
Ratio of girls to boys in primary education	0.97 (1996)	0.96 in 2009	1:1
Ratio of girls to boys in secondary education	1.13 (1996)	1.05 in 2009	1:1
Ratio of women to men in tertiary education	0.86 (1996)	1.26 in 2009	1:1
Proportion of seats held by women in national parliament	25 (1994)	44 in 2009	50.0
MDG 4: Reduce child mortality			
Under-five mortality rate (per 1,000 live births)	59 (1998)	104 (2007)	20.0
Infant mortality rate (per 1,000 live births)	54 (2001)	53 (2007)	18.0
MDG 5: Improve maternal health			
Maternal mortality ratio (per 100,000 live births)	369 (2001)	625 (2007)	38.0
MDG 6: Combat HIV/AIDS, malaria and other diseases			
HIV prevalence among pregnant women aged 15-24 (per cent)	22.8 (2002)	29.3 (2008)	22.8
HIV prevalence in men and women aged 15-49 (per cent)	15.6 (2002)	16.9 (2008)	15.6
MDG 7: Ensure environmental sustainability			
Access to improved drinking water per cent of population)	61.1 (1996)	92.4 (2009)	81.0
Access to an improved sanitation facility (per cent of population)	58.5 (2001)	72.2 (2009)	79.2

Source: Republic of South Africa, 2010.

to shed light on the likelihood of achieving some of the MDGs under assumptions of unchanged policies and alternative growth paths, as well as on the budgetary efforts that would be required to close some of the existing gaps towards the targets. As also described in Chapter 1, the analysis with MAMS is combined with a microsimulation approach to determine the impact on poverty and inequality. Details of the implementation of these methodologies using South African data are spelled out in Appendix A6.1.

Baseline scenarios

A baseline scenario was defined replicating a trajectory of South Africa's economy under unchanged economic trends and policies for the period 2005-2015. For the calibration of this baseline the model is initially solved allowing a part of total factor productivity to adjust endogenously in order to reproduce the assumed path of GDP growth. The baseline is a plausible benchmark against which alternative policy scenarios can be assessed.

Various closure rules are imposed to define macroeconomic adjustment and equilibrium in all markets. Taxes, domestic borrowing, foreign borrowing and foreign aid are the sources the government can use to finance its budget deficit. For the baseline scenario, we assume that tax revenue and domestic and foreign borrowing follow exogenously set growth rates in line with the actual trends and projections as estimated by the National Treasury. Any residual budget financing requirement is assumed to be covered by official foreign transfers to the government. In the baseline, these residual financing requirements are relatively small, consistent with the actual size of disbursements of foreign aid to South Africa in recent years. Government consumption grows at predetermined rates, except for health expenditures whose level is determined as a fixed share of GDP. The real exchange rate is assumed to be flexible and clears the market for foreign exchange. Accordingly, the current account of the balance of payments is endogenous, while capital flows are assumed to increase at an exogenously given rate. Household savings rates are assumed to adjust to generate the required resources to satisfy the demand for private investment. The latter is assumed to be a fixed share of domestic absorption. In factor markets, the rate of underutilization of productive capital is assumed to be fixed and the rate of return adjusts to balance demand and supply of capital. In MAMS for South Africa, equilibrium in the labour market is assumed to be achieved as follows. Real wages clear the market in case unemployment drops to a

given minimum level. As long as the unemployment rate is higher than the minimum, the labour market clears through quantity adjustment (that is, more or fewer workers are employed at the given wage level).

The baseline scenario was calibrated to replicate the National Treasury's GDP growth forecast for 2010-2012 and a continuous trend of GDP growth for 2013-2015. An alternative, more optimistic baseline scenario was also generated according to which the GDP growth rate would average 6 per cent per year during 2010-2015. This second baseline is more akin to AsgiSA's projection of around 5 per cent growth for the period 2004-2014 (The Presidency of South Africa, 2008) and assumes the "growth initiative" would effectively induce higher levels of productivity in the economy. Observed data were used for the period 2005-2009 to generate both baseline scenarios. Government spending follows the same (exogenous) rules of the initial baseline for the more optimistic scenario. The latter was designed to assess whether the growth acceleration, as expected under the AsgiSA and NGP, would suffice to meet South Africa's MDG targets. The baseline results for key macroeconomic aggregates are presented in Table 6.2. In the first baseline scenario, household consumption expenditure remains a strong driver of GDP growth, while export growth is sluggish as a result of the strong appreciation of the real exchange rate that results from steady growth of government consumption and other non-tradables goods demand. Investment spending expands strongly. Public investment spending is by and large financed through domestic borrowing (at the exogenously set

Table 6.2

South Africa: Initial value and average annual growth rate of key macroeconomic aggregates in the baseline scenarios, 2005-2015

	<i>Average annual growth rate (per cent)</i>		
	<i>Base year value (R billion)</i>	<i>Moderate baseline scenario</i>	<i>Optimistic baseline scenario</i>
GDP	1291.9	3.39	4.50
Household consumption	942.5	4.98	6.03
Government consumption	306.6	2.83	2.84
Investment			
Private	188.3	4.92	6.02
Public	64.2	0.92	1.36
Exports of goods and services	407.8	0.39	2.73
Imports of goods and services	433.0	4.21	5.45

Source: Authors' estimates based on MAMS.

rate). GDP growth is 1.1 percentage points higher in the optimistic baseline scenario, and growth rates of aggregate demand components are also commensurately higher.

Under these baseline scenarios, South Africa would make further progress towards achieving the MDGs, but only the target for reducing extreme poverty (MDG 1) would be met by 2015. This also holds under the more optimistic growth scenario (Table 6.3).² The higher demand for unskilled workers would help reduce poverty. The unemployment rate for unskilled workers would drop from 33 per cent in 2005 to 24.1 per cent by 2015 in the first baseline and to 22.8 per cent in the more optimistic scenario. Real wages would also increase strongly contributing to poverty reduction.

Table 6.3

South Africa: MDG achievement in the baseline scenarios, 2005 and 2015

<i>MDG and associated indicator</i>	<i>Moderate baseline growth scenario</i>		<i>Optimistic baseline growth scenario</i>		<i>Target (2015)</i>
	<i>2005</i>	<i>2015</i>	<i>2005</i>	<i>2015</i>	
MDG 1: Percentage of the population living on less than \$1.25 per day (PPP)	38.4	23.1	38.4	20.2	25.4
MDG 2: Primary completion rate (per cent of cohort)	36.1	66.4	36.1	68.2	92.3
MDG 3: Child mortality rate (per 1,000 live births)	57.6	97.6	57.6	90.7	26.4
MDG 5: Maternal mortality rate (per 100,000 live births)	124.0	143.0	124.0	139.3	112.5
MDG 7a: Access to drinking water (per cent of population)	84.7	86.5	84.7	87.3	99.0
MDG 7b: Access to basic sanitation (per cent of population)	94.0	94.5	94.0	94.7	99.0

Source: Authors' estimates based on MAMS and microsimulations.

As said, both baseline scenarios assume that government consumption either grows at a given rate or follows a fixed share of GDP (as in the case of health expenditures). Government investment follows government consumption growth to increase the capital stock as much as needed to ensure social infrastructure expands commensurately with overall service delivery. Even so, substantial gaps vis-à-vis the MDG targets for primary education, child and maternal mortality, and water and sanitation remain under these scenarios.

One of the targets is to achieve a nearly 93 per cent net completion rate (on time) in primary education. Although school enrolment rates are fairly

high in South Africa, high repetition and dropout mean that a majority of children do not complete primary school in the number of years of the education cycle. The baseline simulations with MAMS suggest the primary completion rate (on time) of the relevant age cohort would increase gradually with unchanged education policies over the simulation period, reaching 66 per cent by 2015, well short of the target. Reducing child and maternal mortality rates poses an even bigger challenge for South Africa. The baseline scenarios reproduce the observed increase in both mortality rates during the 2010s. The trend is projected to reverse towards the end of the simulation period, but progress is far from sufficient to meet MDGs 4 and 5. This is an indication that health spending is highly ineffective, considering that the moderate to relatively robust GDP growth in the two baseline scenarios (see Table 6.2) and that health spending is maintained fixed as a percentage of GDP. Lastly, baseline projections show a larger share of the population would have access to drinking water and basic sanitation by 2015 mostly owing to strong spending. Yet this would be insufficient to reach the target of 99 per cent coverage for both services.

In sum, under the assumptions of the two baseline scenarios, South Africa would witness some progress in achieving the MDGs, but most targets would remain unmet by 2015. Government spending is already high to deliver existing levels of education and health services, but it would either need to be scaled up further, become much more efficient, or both, in order to meet all the MDG targets by 2015. The analysis below sheds light on the additional MDG spending that would be required to close the gaps and the mechanisms the government could resort to in order to finance it.

Achieving the human development goals under alternative financing scenarios

A set of MDG scenarios were simulated to gauge the additional public spending that would be required to achieve the MDGs in primary education, mortality, and water and sanitation. In these scenarios, public spending is scaled up to the required level to achieve the MDG targets by 2015. The economy-wide effects and precise costs may differ depending on whether the newly required public spending is financed through increased taxation, domestic borrowing or foreign borrowing. These MDG scenarios do not specify any special measures targeted at reducing income poverty. The poverty is modelled to be endogenous to the impact of the different policy scenarios on employment and labour incomes. Hence, achieving the

targets for education, health, drinking water and basic sanitation, does not necessarily imply the target for MDG 1 will also be achieved at the same time.

Table 6.4 shows the increase in public (current and capital) spending that would be required to achieve the MDGs with respect to the first baseline scenario. The results are shown for the case in which the additional spending is financed through (direct) taxation. The domestic and foreign borrowing scenarios are not shown because in both cases public debt levels would become unsustainable, as discussed further below. The option of financing the MDG strategy with foreign grants is not considered because it is unlikely that South Africa could become a major recipient of official development assistance being a middle-income country.

Social spending would need to have increased by 9.1 per cent of GDP on average during 2005-2015—considering also what the government should have spent, but did not, in the period 2005-2009 (Table 6.4). Given the enormous deficits, the cost for the South African government to meet the targets for reducing child and maternal mortality are highest, at nearly 5 per cent of GDP per year during 2005-2015. In the scenario where all MDGs are targeted, meeting the targets for improving access to water and sanitation would cost an additional 3.5 per cent of GDP per year. Achieving the target for primary school completion would require additional spending of 0.7 per cent of GDP per year during 2005-2015.

The results presented in Table 6.4 also indicate that the spending requirements would increase when getting closer to the 2015 deadline. This is because the marginal returns of the interventions would decrease as more progress is made towards meeting the human development goals. The government would need to scale up MDG spending by at least 12.5 per cent of GDP per year, compared to the first baseline, in order to achieve the MDGs in primary education, mortality, and water and sanitation.

The estimated costs in terms of additional MDG spending decline only marginally under the more optimistic baseline scenarios (see Table 6.5). This is because even with faster GDP growth, macroeconomic costs remain substantial due to the size of the deficits in MDG achievement, especially in child and maternal health.³ Also, improvements in factor productivity from the newly added MDG service delivery are expected to kick in only over the medium run and hence do not make an impact during the simulation period.

The results for required MDG spending discussed thus far belong to the scenarios that assume additional spending is financed through increased taxation. However, the cost of achieving the MDGs is sensitive to the source of financing. Take as an example the scenarios where only achievement of MDG 2 (primary completion) is targeted and the first baseline scenario

Table 6.4

South Africa: Additional public spending required to achieve the MDGs under the MDG-achieving scenarios with tax financing, 2005-2015

Deviation from first baseline scenario, per cent of GDP				
	<i>Only MDG 2</i>	<i>Only MDGs 4 & 5</i>	<i>Only MDGs 7a & 7b</i>	<i>All MDGs</i>
<i>Annual average for the period 2005-2009</i>				
Primary education	1.0	0.0	0.0	0.7
Current spending	0.7	0.0	0.0	0.5
Investment	0.3	0.0	0.0	0.2
Health	0.0	2.9	0.0	3.0
Current spending	0.0	2.5	0.0	2.5
Investment	0.0	0.4	0.0	0.5
Water and sanitation	0.0	0.0	1.3	1.3
Current spending	0.0	0.0	0.3	0.3
Investment	0.0	0.0	0.9	0.9
Total	1.0	2.9	1.3	4.9
<i>Annual average for the period 2010-2015</i>				
Primary education	1.1	0.0	0.0	0.7
Current spending	1.2	0.0	0.0	0.8
Investment	0.1	0.0	0.0	-0.1
Health	0.0	6.4	0.0	6.4
Current spending	0.0	5.5	0.0	5.4
Investment	0.0	0.9	0.0	0.9
Water and sanitation	0.0	0.0	5.4	5.4
Current spending	0.0	0.0	2.5	2.5
Investment	0.0	0.0	3.0	2.9
Total	1.1	6.4	5.4	12.5
<i>Annual average for the period 2005-2015</i>				
Primary education	1.1	0.0	0.0	0.7
Current spending	0.9	0.0	0.0	0.6
Investment	0.1	0.0	0.0	0.1
Health	0.0	4.8	0.0	4.8
Current spending	0.0	4.1	0.0	4.1
Investment	0.0	0.7	0.0	0.7
Water and sanitation	0.0	0.0	3.5	3.5
Current spending	0.0	0.0	1.5	1.5
Investment	0.0	0.0	2.0	2.0
Total	1.1	4.8	3.5	9.1

Source: Authors' estimates based on MAMS.

Table 6.5

South Africa: Additional public spending required to achieve the MDGs under the MDG-achieving scenarios with tax financing, 2005-2015

Deviation from optimistic baseline scenario, per cent of GDP				
	<i>Only MDG 2</i>	<i>Only MDGs 4 & 5</i>	<i>Only MDGs 7a & 7b</i>	<i>All MDGs</i>
	<i>Annual average for the period 2005-2009</i>			
Primary education	1.0	0.0	0.0	0.7
Current spending	0.7	0.0	0.0	0.5
Investment	0.3	0.0	0.0	0.2
Health	0.0	2.9	0.0	3.0
Current spending	0.0	2.5	0.0	2.5
Investment	0.0	0.4	0.0	0.5
Water and sanitation	0.0	0.0	1.3	1.3
Current spending	0.0	0.0	0.3	0.3
Investment	0.0	0.0	0.9	0.9
Total	1.0	2.9	1.3	4.9
	<i>Annual average for the period 2010-2015</i>			
Primary education	1.0	0.0	0.0	0.6
Current spending	1.1	0.0	0.0	0.7
Investment	0.1	0.0	0.0	-0.1
Health	0.0	5.9	0.0	5.9
Current spending	0.0	5.1	0.0	5.1
Investment	0.0	0.8	0.0	0.8
Water and sanitation	0.0	0.0	4.9	4.9
Current spending	0.0	0.0	2.3	2.3
Investment	0.0	0.0	2.6	2.6
Total	1.0	5.9	4.9	11.4
	<i>Annual average for the period 2005-2015</i>			
Primary education	1.0	0.0	0.0	-1.2
Current spending	0.9	0.0	0.0	-1.4
Investment	0.2	0.0	0.0	0.1
Health	0.0	4.5	0.0	4.5
Current spending	0.0	3.9	0.0	3.9
Investment	0.0	0.6	0.0	0.6
Water and sanitation	0.0	0.0	3.2	3.3
Current spending	0.0	0.0	1.4	1.4
Investment	0.0	0.0	1.8	1.8
Total	1.0	4.5	3.2	6.6

Source: Authors' estimates based on MAMS.

is used for comparison. As can be seen from Table 6.6, GDP growth is lower when domestic financing is mobilized as compared to accessing foreign borrowing. In 2015, GDP growth would be, respectively, 0.03 or 2.0 percentage points lower when the strategy is financed by taxation or domestic borrowing as compared with the foreign borrowing scenario. Here, domestic resource mobilization by the government crowds out private spending; private investment, in particular, declines by 18.6 per cent in the domestic borrowing scenario. Lower private investment also affects social service delivery and, consequently, the government is required to further scale up public spending to compensate for lesser private spending in order to achieve the desired outcomes in education, health, and water and sanitation.

The feasibility of the alternative financing options should not only be evaluated against the additional public spending requirements for achieving the development goals. One should also consider by how much the tax burden should increase and whether public indebtedness would not rise to unsustainable levels. Looking again at the results of the scenarios in which only the achievement of MDG 2 is targeted, for instance, income taxes as a percentage of GDP would need to increase to 15.8 per cent of GDP by 2015, up by 1.2 percentage points from 2005 (see Table 6.6). Under the other financing scenarios, total government debt would increase notably from around 37 per cent of GDP in the base year to between 50 and 82 per cent of GDP by 2015, depending on whether the government resorts to, respectively, foreign or domestic borrowing. These results are for the scenarios where only MDG 2 is being targeted. When all MDGs are targeted simultaneously, income taxes would have to be raised by 15 points of GDP between 2005 and 2015—taking the first baseline scenario as the benchmark. The results under the optimistic baseline scenarios—not presented here—only show small deviations from those that are being analysed here, for the same reason indicated earlier; that is, the additional MDG spending requirements are also high in the optimistic growth scenario given the large deficits in MDG achievement, especially in health.

Such a considerable increase in tax revenues is not likely to be feasible for South Africa, considering that the tax burden was already more than 27 per cent of GDP in the base year (2005). Rather than increasing taxes, policies to broaden the tax base should be put in place. Current policies that focus on promoting economic growth and increasing employment could also be expected to broaden the tax base. South Africa should avoid a high public debt burden as, by increasing the risk profile of the country, borrowing

Table 6.6

South Africa: Selected macroeconomic results for the first baseline and associated scenarios where MDG 2 is achieved under alternative financing options, 2005-2015

<i>Variable and scenario</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>
GDP (annual growth rate)			
First baseline scenario		2.3	4.0
MDG 2 achievement with direct-tax revenue		2.2	3.9
MDG 2 achievement with external borrowing		2.3	3.9
MDG 2 achievement with domestic borrowing		1.5	1.9
Private consumption (annual growth rate)			
First baseline scenario		3.1	4.2
MDG 2 achievement with direct-tax revenue		3.7	4.2
MDG 2 achievement with external borrowing		3.0	4.1
MDG 2 achievement with domestic borrowing		2.8	3.6
Private investment (annual growth rate)			
First baseline scenario		3.8	5.0
MDG 2 achievement with direct-tax revenue		4.5	5.0
MDG 2 achievement with external borrowing		3.8	4.9
MDG 2 achievement with domestic borrowing		2.6	-18.6
Exports (annual growth rate)			
First baseline scenario		-2.3	3.2
MDG 2 achievement with direct-tax revenue		-2.3	3.2
MDG 2 achievement with external borrowing		0.0	3.6
MDG 2 achievement with domestic borrowing		-3.1	0.1
Domestic public debt (per cent of GDP)			
First baseline scenario	8.1	7.8	7.7
MDG 2 achievement with direct-tax revenue	8.1	7.8	7.7
MDG 2 achievement with external borrowing	8.1	7.8	7.7
MDG 2 achievement with domestic borrowing	8.1	17.6	44.9
External public debt (per cent of GDP)			
First baseline scenario	29.1	30.8	34.4
MDG 2 achievement with direct-tax revenue	29.1	30.8	34.6
MDG 2 achievement with external borrowing	29.1	35.6	42.2
MDG 2 achievement with domestic borrowing	29.1	31.3	37.4
Income taxes (per cent of GDP)			
First baseline scenario	14.6	14.2	14.9
MDG 2 achievement with direct-tax revenue	14.6	15.6	15.8
MDG 2 achievement with external borrowing	14.6	14.2	14.9
MDG 2 achievement with domestic borrowing	14.6	14.2	14.9

Source: Authors' estimates based on MAMS.

costs would rise and further reduce fiscal space and increase borrowing requirements. According to the simulation results, the substantial financing requirements would quickly push public debt to likely unsustainable levels when recurring to borrowing, especially in the case of domestic borrowing.⁴ Again, the challenge for South Africa to broaden the space for domestic resource mobilization will be to achieve higher and sustained growth and reduce unemployment.

Poverty reduction under simulated scenarios

The application of the microsimulation approach enabled the computation of poverty and inequality indicators for baseline and MDG-achievement scenarios. Under the assumptions of the first baseline scenario, extreme poverty incidence, as measured by the percentage of the population earning less than \$1.25 a day, would fall to around 23.1 per cent in 2015, from 38.4 per cent in 2005 (Table 6.7), thus meeting the target of 25.4 per cent (Table 6.3). The reduction of poverty is accompanied by a reduction in

Table 6.7

South Africa: Poverty and inequality indicators in the base year and 2015 for the baseline and tax-financing MDG scenarios

	Base year (2005)	End of simulation period (2015)				
		Baseline	Achieving MDG 2 only	Achieving MDGs 4 & 5 only	Achieving MDGs 7a & 7b only	Achieving all MDGs
First baseline growth assumption						
Incidence of poverty (per cent of the population)						
\$1.25 per day poverty line at PPP	38.4	23.1	22.8	22.3	23.6	21.9
\$2 per day poverty line at PPP	43.2	28.1	27.4	26.2	28.6	26.2
Gini coefficient for labour income	0.633	0.621	0.620	0.618	0.626	0.619
Optimistic baseline growth assumption						
Incidence of poverty (per cent of the population)						
\$1.25 per day poverty line at PPP	38.4	20.2	20.0	19.3	20.7	19.3
\$2 per day poverty line at PPP	43.2	23.9	23.4	22.8	24.5	22.8
Gini coefficient for labour income	0.633	0.610	0.606	0.605	0.614	0.608

Source: Authors' estimates based on MAMS.

income inequality as the Gini coefficient for labour income declines slightly (Table 6.7).

Lower unemployment is a main factor determining the reduction in poverty and inequality in the MDG scenarios.⁵ The unemployment rate of unskilled labour (workers who have not completed secondary education) declines from 33 to 24.1 per cent between 2005 and 2015, resulting in a decline in extreme poverty incidence to 24.5 per cent in 2015. The increase in real wages that most workers experience explains the remaining reduction in poverty and inequality.

In the MDG-achievement scenarios with tax financing, extreme poverty falls the most when all the MDGs are targeted simultaneously because, as explained earlier, the additional MDG spending that the government mobilizes would be relatively less owing to MDG synergies, as a result of which the macroeconomic trade-offs and the GDP growth effects in particular, would also be relatively less important. Extreme poverty in 2015 falls from 23.1 per cent in the first baseline scenario to 21.9 per cent in the scenario where all MDGs are achieved using tax financing. Extreme poverty in 2015 is slightly higher when only one or two goals are targeted (Table 6.7). The distribution of income, which is mostly driven by a reduction of the unemployment rate, and changes in the structure of remuneration to a lesser extent, does also improve in the MDG-achieving scenarios. Poverty and inequality are less when the MDGs are achieved under the higher GDP growth assumption of the second baseline scenario. The poverty incidence, as measured by the \$1.25 per day poverty line, would be between 2.6 and 3.0 percentage points lower under the assumptions of the optimistic growth baseline scenario as compared with the moderate growth baseline. Poverty would be significantly lower when measured by the \$2 per day poverty line. This suggests that there is a high concentration of people with incomes around the moderate poverty line in South Africa and that even a modest acceleration of economic growth could help achieve significant poverty reduction. This underscores the importance of current government plans to lift constraints to growth and job creation.

CONCLUSIONS AND POLICY IMPLICATIONS

South Africa's economic growth performance has been fairly satisfactory over the last decade and more. However, economic growth has not been accompanied by much needed reductions in unemployment, which continues to be high due to a growing labour force, high real wages, and

a decline in the demand for unskilled workers. Still widespread poverty also remains an issue and inequality has actually worsened further recently. Current policies that can create job opportunities include measures to reduce backlogs in infrastructure, most notably harbour backlogs, and to enhance competition and reduce the degree of concentration of economic activity. Macroeconomic policies should also aim to reduce the trade deficit, increase domestic savings and ensure a competitive exchange rate. However, borrowing requirements for the government to finance large infrastructure spending projects and increased spending on social welfare programmes present challenges for economic growth in the short run.

Given the relatively favourable economic situation, South Africa has made some progress in terms of achieving the MDGs. There are, however, important gaps that need to be paid particular attention since under current policies and expected growth only the extreme poverty goal (MDG 1) would be achieved by 2015. The scenario analysis of this chapter helped to determine that spending on education, health, and water and sanitation would have to increase by nearly 9 per cent of GDP compared to a baseline where GDP grows as forecast by the National Treasury for 2010-2012. Reducing mortality rates would be most costly, with additional public health spending requirements amounting to little less than 5 per cent of GDP. These cost estimates would be slightly less under more optimistic growth assumptions and would be somewhat higher if the strategy would be to achieve one or two goals at a time, instead of all goals simultaneously, given the synergies among some MDGs.

The government will have to create substantive additional fiscal space. The simulation results suggest this will be an enormous challenge. Using income tax revenue this would need to be about 15 percentage points of GDP higher by 2015 compared to 2005 (for both the trend GDP and optimistic GDP baselines), but the total tax burden is already considered relatively high. In 2008, the IMF estimated total government debt at a conservative 26.7 per cent of GDP. The debt burden would increase rapidly to likely unsustainable levels when financing the MDG strategy through foreign or domestic borrowing, and more steeply in the case of the latter.

Thus, the government will have to rely heavily on increased tax revenue to finance the MDG strategy. It will have to make sure that the policies related to the New Growth Path, which aims to promote economic growth and employment opportunities, also comprise measures to broaden the tax base. Areas where more jobs can be created include infrastructural works, agro-industries, processing of mining products, investment in green energy

and climate change adaptation, tourism, and some high-end services. If the economy grows and unemployment among unskilled workers falls systematically, South Africa would also ensure the achievement of the extreme poverty goal and likely a reduction in inequality.

In spite of the new spending requirements that have been gauged through the scenario analysis, one should take into consideration that government spending on education and health is already high and has not been seen to accelerate MDG achievement in any efficient way. Therefore, it is of paramount importance that South Africa addresses the quality of service delivery and improves its MDG monitoring to ensure that it remains on the right track.

Importantly, the success of any MDG-related strategy will depend on combining these measures with the aforementioned policies to pursue economic growth and job creation, thereby giving the government the opportunity to broaden the tax base.

NOTES

- 1 In the official definition, the unemployed are those individuals within the economically active population who: did not work during the seven days prior to the interview; want to work and are available to start working within two weeks of the interview; or are actively looking for work or some form of self-employment in the four weeks prior to the interview. In the expanded definition of unemployment, the third criterion (some sort of work-seeking activity) is dropped such that unemployment also includes so-called “discouraged job seekers”.
- 2 Some MDG indicators generated by MAMS and the microsimulation approach may differ from MDG indicators as published in United Nations (UN) reports and those in Table 6.1. For example, the UN reports extreme poverty to be 9.7 percent in 2006, much less than 38.4 percent as generated by the integration of MAMS results and the microsimulation approach. The main difference lays in the use of different sources of information for the estimation of extreme poverty: the UN report uses the Income and Expenditure Survey for 2005 and 2006, while the microsimulation approach was applied here with data from the 2008 GHS. The construction of the income variable that was used to compute extreme poverty is also different. In any case, the UN report also indicates that South Africa is likely to reach the target for extreme poverty. Another difference is that MAMS uses the net on-time primary completion rate (that is, the product of the entry rate and the promotion rates for the relevant series of years in the primary cycle) for the relevant age cohort as the indicator for MDG 2. UNDP in 2010 reported the primary completion rate for 18 year olds only, and not on time.
- 3 This result is also partly model-driven, as the elasticity of the different MDG indicators with respect to household consumption per capita, one of the MDG determinants the value of which increases when GDP growth is higher at given population growth rates, has been assumed to be very low for the calibration of

- MAMS for South Africa (that is, 0.1 for education behaviour parameters or even lower for the other MDG-related indicators).
- 4 In fact, public debt levels turned out to be so high in scenarios where all non-poverty MDGs were targeted using either foreign borrowing or domestic borrowing to finance the newly required public spending, that MAMS could not reach a feasible macroeconomic solution at the end of the simulation period.
 - 5 See Kearney and Odusola (2010) for a decomposition of the microsimulation results presented here.
 - 6 Quantec (Pty) Ltd is a privately owned company in South Africa selling data, software and consultancy services to various agents and institutions in South Africa, including the government and academia.
 - 7 This choice of the base year of the SAM (and the model) is important particularly in the case of primary education as, in order to achieve the related target (MDG 2), the model follows the age cohort that should enter into the education system and pass all grades without repeating one in order to graduate in 2015. A simulation period of 10 years also permits to perform a good calibration and likely all efforts need not be made exclusively at the end of the period.

REFERENCES

- Banerjee, Abhijit, Sebastian Galiani, Jim Levinsohn, and Ingrid Woolard (2006). Why Has Unemployment Risen in the New South Africa? CID Working Paper No 134. Available from <http://www.cid.harvard.edu/cidwp/pdf/134.pdf>.
- Conninghart Economists. (2001). Social Accounting Matrix (SAM). Compiled for Ntsika Enterprise Development Agency, Department of Trade and Industry of the Republic of South Africa. Unpublished.
- Du Plessis, Stan, and Ben Smit (2006). South Africa's Growth Revival After 1994. Stellenbosch Economic Papers 01/06. Matieland: University of Stellenbosch.
- Fedderke, Johannes W., Chandana Kularatne, and Martine Mariotti (2007). Mark-up Pricing in South African Industry. *Journal of African Economies*, Vol. 16, No. 1, pp. 28-69.
- Hoogeveen Johannes G., and Berk Özler (2005). Not Separate, Not Equal: Poverty and Inequality in Post-Apartheid South Africa. William Davidson Institute Working Paper No. 739. Washington, D.C.: World Bank. Available from <http://deepblue.lib.umich.edu/bitstream/2027.42/40125/3/wp739.pdf>.
- Kearney, Marna, and Ayodele Odusola (2010). Assessing development strategies to achieve the MDGs in The Republic of South Africa. Project Final Report, UNDP, UN Department of Economic and Social Affairs (UN-DESA) and World Bank, March. Available from http://www.un.org/en/development/desa/policy/capacity/output_studies.shtml.
- National Treasury (1994). Budget Review. Pretoria: Government Printers.
- National Treasury (1995). Budget Review. Pretoria: Government Printers.
- National Treasury (1996). Budget Review. Pretoria: Government Printers.
- National Treasury (1997). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (1998). Budget Review. Available from <http://www.treasury.gov.za>.

- National Treasury (1999). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2000). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2001). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2002). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2003). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2004). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2005). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2006). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2007). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2008). Budget Review. Available from <http://www.treasury.gov.za>.
- National Treasury (2009). *Medium Term Budget Policy Statement*. Chapter 2 (October). Available from <http://www.treasury.gov.za>.
- National Treasury (2011). Budget Review. Available at <http://www.treasury.gov.za>.
- Quantec (2003). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2004). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2005). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2007). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2008). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2009). A Social Accounting Matrix for South Africa. Unpublished.
- Quantec (2010). A Social Accounting Matrix for South Africa. Unpublished.
- Republic of South Africa (2010). Millennium Development Goals: Country Report. Available from http://www.undp.org/africa/documents/mdg/southafrica_2010.pdf.
- Rodrik, Dani (2006). Understanding South Africa's Economic Puzzles. CID Working Paper No. 130. August 2006.
- Statistics South Africa (2002). *Final Social Accounting Matrix*, 1998. Report No. 04-03-02 (2 December 2002). Pretoria.
- Statistics South Africa (2008). Linking the Social Accounting Matrix to Existing Strategies for Government. Discussion document D0403-1 (January 2008). Pretoria. Available from <http://www.stassa.gov.za>.
- Statistics South Africa (2011a). Gross domestic product. Second quarter 2011. Statistical release P0441. Pretoria. Available from <http://www.statssa.gov.za/publications/P0441/P04412ndQuarter2011.pdf>.
- Statistics South Africa (2011b). Quarterly Labour Force Survey. Quarter 2, 2011, Statistical release P0211. Pretoria. Available from <http://www.statssa.gov.za/publications/P0211/P02112ndQuarter2011.pdf>.
- The Presidency of South Africa (2008). Development Indicators: Mid-term Review. Pretoria.
- The Presidency of South Africa (2010). Cabinet statement on the new growth path. Available from <http://www.thepresidency.gov.za>.
- United Nations Development Programme (2007). Millennium Development Goals; Mid-term Country Report.

APPENDIX A6.1

CALIBRATION AND DATA ISSUES

MAMS requires two data sets in order to be fully calibrated: a “general dataset” that permits to solve a reduced, core version of the model, and a “MDG dataset” by means of which the MDG module of the model becomes operational. Here we described very briefly the main pieces of information that were used to complete both datasets.

The most important data are comprised in a Social Accounting Matrix (SAM) in the general dataset. This is a consistent accounting framework that links supply and use tables and institutional sector accounts. To calibrate MAMS, however, the SAM must be extended to make proper account of activities and commodities that would be directly or indirectly associated with the MDGs (such as education, health, sanitation, and infrastructure). It further requires distinction between government and private provision of the services; labour groups by education level; capital accounts of the institutions represented in the model (households, government and rest of the world; institutions’ borrowing and associated interest payments); and investment by sector of destination associated with each capital stock.

Various SAMs have been constructed to represent the South African economy, as reported in Conninghart Economists (2001), Statistics South Africa (2002) and Quantec (2003 to 2010). The latest SAM released by Quantec⁶ is based on 2008 national accounts figures. However, for the purposes of the present analysis we decided to use the Quantec 2005 SAM to allow a sufficient number of years before the MDGs are supposed to be met.⁷ The 2005 Quantec SAM was also chosen as a basis for developing the SAM for MAMS as it already contained a well-disaggregated government sector. It was also chosen because the other SAMs do not disaggregate the sources of income of the represented households, and knowing, for example, whether households get the majority of their income from labour or capital is essential for policy analysis. The various adjustments and extensions performed to get the 2005 Quantec SAM in the required format for MAMS, and the data sources used, are described in Kearney and Odusola (2010).

Other data used to complete the general dataset include a GDP growth forecast, growth in government consumption, receipts, and debt, a population growth forecast, a labour force growth forecast, factor quantities, as well as trade, production and consumption elasticities. Sources used to compile these data include budget projections from the National Treasury, data from the South African Reserve Bank (SARB), Statistics South Africa, and UNESCO. Some elasticity values were estimated; however, guesstimates defined on the basis of international empirical evidence and sensitivity

analysis had to be used where lack of data prohibited estimations. The data used to calibrate MAMS and how these were obtained are described in Kearney and Odusola (2010).

MAMS includes an MDG module, which, through government production functions, generates MDG indicators that are a function of a series of socio-economic determinants. These include government spending, the MDG policy variable in the MAMS framework, and also some MDG indicators themselves: for example, reductions in child mortality (MDG 4) have a positive impact on education attainment (MDG 2), as explained in Chapter 1 of this volume.

A complete MDG dataset should contain estimations of these elasticities. The 2008 General Household Survey (GHS) was used to carry out estimations for determinants of education attainment and the determinants of water and sanitation, the results of which are summarized in Table A6.1 panel (a), just as they are set out in the MDG dataset of MAMS. This table shows the extent to which different MDG indicators or education behaviours that MAMS uses to compute the primary completion rate or MDG 2 indicator (as set out row-wise) would change as a result of different socio-economic determinants (as set out column-wise) including the delivery of public services per capita or student and also synergies between pairs of MDG indicators. A negative elasticity indicates that determinant and indicator move in opposite directions: for example, if child mortality (MDG 4) increases, primary completion rates (MDG 2) would decline as a result. Details on how the authors arrive at these elasticity values are provided in Kearney and Odusola (2010).

The elasticities for child and maternal mortality could not be estimated empirically as the authors did not have access to a survey with relevant information. The 2008 GHS did not cover any form of mortality whether for children or mothers. The Department of Health Survey for 2003 does cover these aspects but it is not available for public use. In these cases, guesstimates were used as starting points, the selection of which was based on values from models applied to other developing countries. These guesstimates were subsequently fine-tuned to calibrate the logistic functions of MAMS in a way that they would generate values for MDGs 4 and 5 that turned out to be consistent with past trends. Accordingly, the determinants tend to affect maternal mortality more than child mortality and this reflects that interventions would be relatively less effective in reducing child mortality in South Africa (see Table A6.1).

The MDG dataset also includes information on a hypothetical scenario under which it is thought the target would be met in 2015 for each indicator

separately—or in 2010 for primary completion, year as of which the age cohort that enrolls for the first time in first grade of primary would pass until graduating in 2015 without repeating, for a cycle of six grades. This hypothetical scenario is imputed through ratios for the value of each determinant in the target year (2015 for all MDGs except education for which the target year is 2010 as explained earlier, and poverty as further explained below) and in the base year of the model (2005). These ratios are estimated from observed data and provide MAMS with a starting point to calibrate its logistic functions for the corresponding MDG (see Table A6.1, panel (b)). For example, the table shows that health spending per capita would need to be 1.26 times higher in 2015 compared to 2005 for MDGs 4 and 5 to be achieved. Household per capita consumption would by and large have to double to achieve most MDGs. The main gaps would be thought to be for MDGs 7a (drinking water) and 7b (sanitation), which would presumably be achieved only if spending in water and sanitation per capital quintuplicate. As said, these are all isolated scenarios. MAMS would likely provide different ratios for MDG achievement once all general equilibrium effects have been taken into consideration.

Microsimulation approach

For the purposes of this study, results of the labour market generated in all MAMS scenarios were imposed on a micro dataset in top-down fashion, in order to, through microsimulations, estimate income distribution and poverty indicators without having to make any assumptions on the form of the distribution. The approach is explained in more detail in Chapter 1 and its use is justified to the extent that the distributional detail one would have in any typical CGE model is fairly limited.

The GHS for 2008 was used to generate the microsimulations for South Africa. The variables used from the GHS include age, gender, level of skill according to the level of education, employment status, labour income, and sector of employment. There are 24,293 respondents to the survey. For the base year, in particular, the application of the microsimulation approach yielded a percentage of the population that lives below the 1.25-dollar-a-day poverty line to be in the region of 38.4 per cent compared to other estimates of 44.5 per cent. The Gini coefficient for labour income was estimated to be around 0.63, which is also somewhat lower than other estimates (United Nations, 2007). The differences may be attributed to the use of different data sources and methodologies employed to estimate labour income and per capita household income.

Table A6.1
South Africa: Elasticities and parameters used to calibrate the MDG module in MAMS

MDG indicator or education behaviour	Health spending per capita	Water & sanitation spending per capita	Education spending per student (education quality)	Stock of public infrastructure	Household consumption per capita	MDG 4	MDG 7a	MDG 7b	Wage premium
(a) Elasticities of MDG indicators with									
MDG 4: child mortality	-0.49			-0.05	-0.05		-0.10	-0.10	
MDG 5: maternal mortality	-0.86			-0.09	-0.09		-0.09	-0.09	
MDG 7a: drinking water		1.00		0.06	0.01				
MDG 7b: basic sanitation		1.00		0.06	0.00				
Entry rate - primary education			1.00	0.10	0.10	-0.10			0.10
Pass rate - primary education			1.00	0.10	0.10	-0.10			0.10
Pass rate - secondary education			1.00	0.10	0.10	-0.10			0.10
Pass rate - tertiary education			1.00	0.10	0.10	-0.10			0.10
Continuation to secondary education			1.00	0.10	0.10	-0.10			0.10
Continuation to tertiary education			1.00	0.10	0.10	-0.10			0.10
(b) MDG achievement scenario (2015/2005 ratios)									
MDG 4: child mortality	1.26			1.89	2.13		2.56	4.50	
MDG 5: maternal mortality	1.26			1.89	2.13		2.56	4.50	
MDG 7a: drinking water		5.65		1.89	2.13				
MDG 7b: basic sanitation		5.65		1.89	2.13				
Entry rate - primary education			1.52	1.63	1.79	0.55			1.00
Pass rate - primary education			1.52	1.63	1.79	0.55			1.00
Pass rate - secondary education			1.04	1.89	2.13	0.60			1.00
Pass rate - tertiary education			1.10	1.89	2.13	0.60			1.00
Continuation to secondary education			1.04	1.89	2.13	0.60			1.00
Continuation to tertiary education			1.10	1.89	2.13	0.60			1.00

Source: Authors' estimates.