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Chapter 5

Senegal

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INTRODUCTION

Senegal faces daunting policy challenges if it is to meet the millennium development goals (MDGs). The country's economic and social developments to a large extent resemble those of other West African economies. In the 1970s, GDP growth closely tracked the average for all sub-Saharan African countries. Growth started to decelerate progressively in 1979 due to a sharp deterioration of the countries' terms of trade. The depreciation of the dollar against the French franc, to which the Senegalese CFA franc is pegged under a fixed exchange rate regime, significantly reduced the competitiveness of Senegal's exports. The world market prices for groundnut oil and phosphates, the two main export products, also declined steadily, widening the trade deficit and narrowing foreign reserves. High wages (in both the public and the private sector) and taxation, and other distortions in the business environment also affected the competitiveness of the private sector. The monetary situation rapidly worsened as a result of capital flight and the monetization of deficits. It was only through the relaxation of fiscal discipline that the government was able to better contain the social and political tensions. The vicious circle that stalled the Senegalese economy was halted in January 1994 with the nominal devaluation of the CFA franc. This marked the beginning of a second period in Senegal's economic and social development.

The creation of the West African Economic and Monetary Union (WAEMU) in 1994 had a major impact on the state budget through the introduction of a common external tariff, the harmonization of the value-

added tax (VAT), and the establishment of macroeconomic management standards to accelerate the economic convergence of members of the Union. The recovery of economic growth and the return of capital and foreign aid significantly improved the conditions for macroeconomic management, but had no notable impact on development. It was not until the adoption of the MDG agenda in the early 2000s that Senegal's policy shifted in favour of social sectors that had largely been neglected.

The aim was to achieve macroeconomic stability while implementing policies to eradicate extreme poverty and hunger, promote universal access to basic education and the quality of primary care to reduce child and maternal mortality, encourage gender equality and empowerment of women, and ensure access to safe drinking water and basic sanitation. The new policies were also expected to reduce the deleterious effects of internal and external shocks on the economy and vulnerable groups. All these new policies have been placed in the context of the poverty reduction strategy from the early 2000s. In spite of progress in various social areas covered by the MDGs, economic growth remains slow, irregular and not pro-poor (Cabral, 2010), and the expectation is that with unchanged trends of past achievement the country would not meet most MDG targets by 2015 (République du Senegal, 2006).

The purpose of this chapter is to assess the macroeconomic feasibility of achieving the MDGs in Senegal. Three questions will be addressed: first, what is the trajectory of the Senegalese economy under current policies and are these policies sufficient to achieve the MDGs by 2015? Second, what amount of public spending is needed to achieve the MDGs? Third, what are the best options for financing additional public spending and what are the macroeconomic trade-offs associated with these options? Rigorous answers to these questions are sought through the application of an economy-wide model framework known as MAMS (see Chapter 1), by means of which various scenarios were simulated and their results scrutinized.

The remainder of this chapter is organized as follows. The next section describes the main reforms and macroeconomic policies adopted under the poverty reduction strategy and also as part of efforts to enhance economic performance. The third section describes the main social policies implemented by the government over the past two decades, and the resulting trends in terms of poverty, inequality, and MDG achievement. A fourth section presents the scenario analysis based on MAMS and, subsequently, the final section concludes and makes some policy recommendations.

REFORMS, MACROECONOMIC POLICY, ECONOMIC PERFORMANCE AND VULNERABILITIES

Economic reforms and policies

Reforms and economic policies implemented during the period 1990-2008 represent a continuation of economic adjustment reforms initiated since 1985 and supplemented by a monetary adjustment in 1994. Policies have focused on economic growth, but also poverty reduction and the MDG agenda.

The so-called “Emergency Plan” (a reduction of public sector salaries and increases in import tariffs and the price of petroleum products) was adopted to reduce macroeconomic imbalances in 1992 and 1993. By and large, however, the plan was not enough to restore the health of public finances. At the same time, the real exchange rate appreciated substantially, hampering the competitiveness of the economy. All these factors, which seemed to be typical of most WAEMU countries, triggered the devaluation of the CFA franc by 50 per cent in 1994.

The devaluation seemed in line with the main objective of the government’s new strategy to improve the competitiveness of the economy, but it raised concerns about adverse social effects. The adjustment programmes and market reforms, supported by the International Monetary Fund (IMF), sought to create better conditions for sustained growth. The economy was liberalized, the size of the public sector was reduced, private sector development was promoted, and inflation was to be controlled. The Poverty Reduction Strategy Program (PRSP), adopted in December 2001, underpinned policy making during much of the 2000s.

The government’s Accelerated Growth Strategy (AGS) seeks to better capitalize on growth opportunities from international trade. A complement to the PRSP framework, it was the result of a participatory approach to design and implement economic policies that emphasize competitiveness. The Millennium Challenge Account (MCA) agenda is also in line with policy objectives of the AGS and the PRSP and relies on two main strategies: creating a favourable business environment and improving infrastructures that would promote private investment.

In response to the surge in world grain prices in 2008, the Great Agricultural Offensive for Food and Abundance (GOANA) was launched to promote agricultural production and ensure coherence in agricultural policy and programmes. GOANA and the national program of food security (PNASA) were designed to complement the PRSP and the AGS.

Economic growth

Despite the structural reforms undertaken during the 1980s, GDP growth was only 2.9 per cent per year in the period between 1985 and 1991, and income growth barely outpaced population growth (2.4 per cent). The decline in grain production and economic activity in an industrial sector hit hard by tariff reductions exacerbated the budget deficit and current account imbalances during the following two years. With the currency adjustment of 1994, however, GDP started to grow incrementally, from 2.9 per cent in 1994, to 4.8 and then 5.5 per cent in 1995 and 2000, respectively.

After 2000, GDP growth was at times robust but also relatively unstable due to climate and energy shocks in 2002, 2006 and 2008 (Table 5.1). Overall, GDP growth has not kept pace with population growth, making efforts to reduce poverty less effective.

Driving factors of growth

Industry and services have been the main engines of growth (Table 5.1). On the demand side, final consumption, influenced to a large extent by relatively high wages, represented almost 93 per cent of GDP in 2008, leaving a low domestic savings rate. Investment demand has substantially contributed to GDP growth since the early 1990s, as a result of strong public investment efforts which averaged about 10 per cent of GDP during 2001-2008 (up from 5.3 per cent during 1990-2000). In view of the low domestic savings rate, investment financing has relied heavily on foreign savings. The share of exports in GDP declined during much of the 2000s, while the import share increased substantially.

Fiscal stance and debt

During the period 2000-2008, the budget deficit exceeded 3 per cent of GDP. Measures to control public spending, particularly salaries and other current expenditures, were initially an important component of enhanced fiscal discipline. Tax revenues rose sharply after 2005 following measures to broaden the tax base and modernize the tax administration. Nonetheless, the level of tax revenue has never reached 20 per cent of GDP and remains somewhat low (Table 5.1).

Helped by the improvement of Senegal's fiscal stance, public debt decreased from 78.6 per cent in 2000 to 34.8 per cent in 2010 (République

Table 5.1
Senegal: Selected macroeconomic indicators, 2001–2008

	2001	2002	2003	2004	2005	2006	2007	2008
Real GDP growth (per cent)	4.6	0.7	6.7	5.8	5.3	2.3	4.7	2.5
GDP Share (per cent)								
Primary sector	16.3	13.6	15.1	13.7	14.6	13.0	11.8	13.0
Agriculture	9.3	6.8	8.3	7.2	8.1	6.6	5.2	6.7
Secondary sector	21.7	22.3	21.4	21.7	20.5	20.1	20.3	21.1
Tertiary sector	43.8	44.9	44.7	45.8	45.4	46.6	47.4	46.3
Public administration	18.2	19.1	18.8	18.8	19.4	20.4	20.6	19.6
Investment, savings and consumption (per cent of GDP)								
Investment rate	18.4	17.2	22.3	21.6	24.5	24.8	26.4	27.6
Domestic saving rate	9.4	6.8	10.2	9.0	9.1	7.4	6.4	7.4
Public	3.1	6.0	5.8	6.4	6.4	3.7	4.9	4.0
Private	6.3	0.8	4.4	2.6	2.7	3.7	1.5	3.4
Gross national saving rate	13.4	11.2	15.9	15.2	16.7	15.6	17.2	17.6
Final consumption	90.6	93.2	89.8	91.0	90.9	92.6	93.6	92.6
Public finances (per cent of GDP)								
Tax revenue	16.1	16.9	17.1	17.4	18.5	18.8	19.3	18.3
Expenditure	20.8	20.1	21.6	23.3	24.0	27.2	26.5	26.3
Fiscal balance	-1.2	1.8	0.5	-0.2	-0.3	-4.4	-2.3	-2.2
External sector (per cent of GDP)								
Exports	28.7	28.5	26.6	27.1	27.0	25.6	23.2	28.4
Imports	37.8	39.0	38.7	39.8	42.4	43.1	43.2	48.5
Current account balance	-5.0	-6.0	-6.4	-6.4	-7.8	-9.2	-11.6	-14.2

Source: République du Sénégal (2010a).

du Sénégal, 2010c). Since 2005, external financing of budget deficits has become less important. During this period, the government implemented large-scale public investment projects utilizing domestic resource mobilization instead of donor funding. Even so, aid provided in the form of budget support increased sharply between 2006 and 2008 and averaged slightly over 4 per cent of GDP in 2009 (République du Sénégal, 2010c).

Terms of trade shocks

Internal and external shocks are typically reflected in unstable terms of trade. Agricultural output is frequently hurt by poor rainfall. The external terms of trade fluctuate with the volatile world market prices of the country's key export products (phosphate, peanut oil). Senegal's economy is

further highly vulnerable to contractions in global demand and exchange rate movements between the United States dollar and the euro. A dollar depreciation tends to result in a real exchange appreciation in Senegal (Diagne and Daffé, 2009). The global financial crisis of 2008-2009 resulted in a contraction of Senegal's economic activity that was mainly transmitted through reductions in export demand and migrant remittances.

SOCIAL POLICY, INEQUALITY, POVERTY AND MDG ACHIEVEMENT

Public spending

Total government expenditure (plus net lending) increased from 497.9 to 1,578.2 billion CFA francs between 1996 and 2007, which corresponds to an average annual growth rate of 10.3 per cent. This strong positive growth is mostly explained by increased capital expenditures. The relative share of capital expenditures in the budget has fluctuated between one third and one quarter of total spending. Current expenditures averaged nearly 60 per cent of total spending during the period 1996-2008 and were mainly composed of wage payments to public employees and, more recently, subsidies to energy producers and households to help these cope with rising prices of primary commodities.

The share of the budget allocated to education spending has fluctuated between a low of 20 per cent during the biennium 2000-2001 and a high of 29 per cent in 2004. Public health spending was increased to close to the target level of 10 per cent of total spending. The government has set this target in pursuit of achieving the health-related MDGs.

MDG progress and challenges

A number of studies have been carried out to analyze the trends of MDG indicators in Senegal and the probability of achieving each of the targets by 2015. Based on MDG reports for 2007 and 2010 (République du Sénégal, 2006, 2007, 2010b), MDG indicators for 2009 and 2010, and a linear projection of past trends, the targets for child mortality and access to drinking water of the population are likely to be achieved (Table 5.2).

The target of halving the share of the population living under the poverty line will unlikely be met. The fact that poverty incidence decreased 17 percentage points between 1994/1995 and 2005 signals important progress. However, a further reduction of similar magnitude would need to be

achieved between 2005 and 2015 in order to meet the target. This seems challenging considering the relatively slow pace of output growth and jobs creation during the 2000s.

Senegal has been implementing an ambitious educational and training program since 2000 (Plan Décennal pour l'Education et la Formation, PDEF). This has boosted fiscal resources for the educational sector. The quality of education has been enhanced, not only through the increased supply of education services but also through investments in other areas. These include the electrification of 1,233 rural schools (République du Sénégal, 2010b) and new roads that have reduced the time it takes for pupils to reach schools. As a result, the net completion rate in primary education has increased from 53.4 per cent in 2005 to 59.6 per cent in 2009. Improvements in the three five-year periods to 2005 were even more marked (Table 5.2). Without boosting the fiscal efforts, however, this progress will not be sufficient to achieve a national target of 90 per cent for MDG 2 by 2015.

Table 5.2

Senegal: Current (1990-2010) and target values (2015) of the MDGs

	1990	2005	2009 or 2010	Target	Probability of achieving target ¹
MDG 1 - Poverty headcount (per cent of population)	68.0	50.8	n.a.	34.0	Low
MDG 2 - Primary completion rate (per cent of age cohort)	24.0	53.4	59.6	90.0	Low
MDG 4 - Under-five mortality rate (per 1,000 live births)	131.4	121.0	85.0	43.8	High
MDG 5 - Maternal mortality rate (per 100,000 live births)	510.0	401.0	370.0	127.0	Low
MDG 7a - Access to drinking water (per cent of population)	56.0	76.6	84.8	90.1	High
MDG 7b - Access to sanitation (per cent of population)	25.8	41.0	43.5	70.1	Low

¹ The probability of achieving target is taken from the 2007 MDG report and it was updated using the 2010 report and an analysis of recent trends.

Source: République du Sénégal (2006, 2007 and 2010b).

Progress achieved under several public health programmes has led to significant decreases in the under-five mortality rate in Senegal. The share of children aged 11 months or less who have been vaccinated doubled to 80 per cent between 2000 and 2008. Vaccination programmes have also incrementally covered other age cohorts. The number of children covered by nutritional status surveillance has increased from 112,000 in 2005 to

418,000 in 2008. Together these efforts have led to a significant decrease in the under-five mortality rate from 131.4 per 1,000 live births in 1990 to 121.0 in 2005, according the Demographic and Health Survey (EDS-4). In recent years, progress has been faster—the under-five mortality rate was estimated at 85.0 per 1,000 live births in 2009 (République du Sénégal, 2010b, 2006). A linear continuation of this trend would mean that MDG 4 could be achieved by 2015.

Regarding maternal mortality, the government has increasingly sought to reinforce the supply and the quality of maternal and reproductive health services. The proportion of deliveries attended by skilled health personnel rose from 49 per cent in 1999 to 66.9 per cent in 2009. The ratio of neonatal consultations has also increased significantly, reaching 94.7 per cent in 2009, up from 88 per cent in 2008 (République du Sénégal, 2010b). The quality of child delivery services has improved and a larger number of women are having access to C sections free of charge. As a result, the maternal mortality rate decreased from 510 deaths per 100,000 live births in 1992 to 370 deaths in 2010 (Table 5.2). However, reaching the target of 127 deaths in 2015 seems unlikely with the current level of policy efforts.

As a result of implementing the “Drinking Water and Sanitation Program Goals” programme (PEPAM), access to drinking water has climbed to 85 per cent of the population, nearly 29 percentage points since 1990 (Table 5.2). The goals may have already been achieved in the urban areas, but the rate of access to drinking water still lags in rural areas (République du Sénégal, 2010b). The government is now targeting rural areas through PEPAM, making it likely that the water access target is achievable by 2015. Regarding access to basic sanitation, however, it will be difficult to reach the target of 70.1 per cent without additional efforts, given that present coverage is at 43.5 per cent. Accelerated progress would require additional fundraising to enable PEPAM to step up implementation.

Achieving all MDGs will entail significant additional spending for improving access and the quality of services in education and health, as discussed above. Investing in agricultural development would seem to have the greatest potential for accelerated poverty reduction in the Senegalese context. Furthermore, specific policies should be put in place to remove or limit the impact of a variety of risks which could hamper MDG achievement. In particular, these policies should try to mitigate: (i) risks related to exogenous shocks that may affect the macroeconomic targets and the absorptive capacity of aid provided in the form of budget support, (ii) natural hazards, such as droughts and heavy rainfalls affecting agricultural production, (iii) the risks of locust aggression, (iv) risks related

to international price volatility, including that of oil prices, (vi) political and institutional risks, which can directly hamper the execution of capital expenditure plans.

ACHIEVING THE MDGs UNDER VARIOUS SCENARIOS

Calibration of MAMS with Senegalese data

In order to determine additional public spending required to close the MDG gaps in primary education, mortality, and water and sanitation, a scenario analysis was performed using MAMS. A Social Accounting Matrix (SAM) for 2005 was built and adapted as part of the assembling of the Senegalese dataset for MAMS using various sources of information: the input-output table and the supply-demand balance for 2005 from the National Statistical and Demographic Agency (ANSD, in French); 2005 public financial transactions from the Department of Economic Surveys and Forecasting (DPEE); 2005 balance of payments data from the West African Central Bank (BCEAO); detailed education data from the Direction of General Administration of Equipment of the Ministry of Education, the education and training decade program (PDEF) and UNESCO; the 2005 Senegalese Households Survey (ESPS); the Demographic and Health Survey (EDS-4) for 2005; drinking water and sanitation program goals (PEPAM) for water and sanitation sector, which provided important information on cost; and, data on domestic and foreign public debt for 2005 from the Central Bank of Senegal.

Most policy papers that analyze and evaluate MDG progress in Senegal make reference to a number of determinants that are likely to affect MDGs, for example, public delivery of corresponding services on the supply side and income per capita on the demand side (République du Sénégal, 2007, 2010b). It is important to note other determining factors, however, such as available infrastructure, as well as synergies between different MDGs. The health status of children is likely to affect educational outcomes too, while mothers' education and access to safe water and sanitation affect under-five mortality (MDG 4) and maternal mortality (MDG 5).

In the case of Senegal, the more important supply-side determinant appears to be service delivery. On the demand side, household economic well-being is expected to play a role, although it is rarely mentioned explicitly in existing literature. In the case of under-five mortality, the Demographic and Health Surveys conducted in Senegal provide statistics

by socio-demographic characteristics that suggest that demand factors such as economic well-being and mothers' education are likely determinants of child mortality. For instance, according to the last DHS survey (EDS-4, Senegal 2005), the probability of dying before the age of 5 is three times higher for children born in households belonging to the poorest quintile of the population as compared with those of the richest quintile.

In spite of the empirical evidence, elasticity values are not available for Senegal as needed for the MAMS MDG module. In view of this limitation, their values have been borrowed from a systematic review of relevant studies collected by Lofgren (2010ab). As with other studies using a similar methodology, the main purpose here is to highlight the relative importance of various determinants of MDG outcomes and, within a consistent economy-wide framework, discuss the relative merits of various sources of financing and the implications of a targeted pursuit of MDGs on the rest of the economy. Thus, while the exact quantitative findings of this study may be subject to revision if better elasticity estimates become available, the qualitative conclusions should remain applicable.

The different elements reviewed above, the available literature and MDG data, and the functioning of the model in terms of generating plausible trends for the MDG indicators (as further shown below), led us to define the elasticity values as reported in Table 5.3 along with all other information needed for the MDG module. The main determinant is assumed to be service delivery per capita (or per student for education) except in the case of under-five mortality that is mostly affected by household consumption per capita. Improvements in public infrastructure that are not directly associated with the MDGs are assumed to affect progress towards meeting the water and sanitation goals.

Baseline scenario

Once calibrated, MAMS was used to generate a baseline scenario for Senegal. Under this scenario, GDP grows at the observed average annual rate for the period 2005-2010 (3.1 per cent) and at the rate suggested by both official and IMF predictions for the period 2011-2015 (4.0 per cent).¹

The baseline closure rule for the external sector assumes that the real exchange rate clears the market for foreign exchange, whereas budget financing requirements are assumed to be ultimately covered through adjustments in direct taxes. Other budgetary financing sources, such as domestic and foreign borrowing and foreign aid, are assumed to adjust

Table 5.3

Senegal: Elasticity of MDG indicators with respect to determinants in MAMS

	<i>Service delivery¹</i>	<i>Household consumption per capita</i>	<i>Public infrastructure</i>	<i>Other MDGs</i>	<i>Wage incentives</i>
MDG 2 Primary completion rate					
Entry rates	0.900	0.400	0.200	-0.100	0.005
Promotion rates	0.900	0.200	0.100	-0.100	0.005
MDG 4 Under-five mortality	-0.300	-0.600	-0.100	-0.300	
MDG 5 Maternal mortality	-0.900	-0.600	-0.100	-0.600	
MDG 7a Access to water	0.900	0.100	0.500		
MDG 7b Access to sanitation	0.665	0.100	0.500		

¹ Per student in the case of MDG 2 and in per capita terms for all other MDGs.**Source:** Authors' assumptions based on Lofgren (2010ab).

according to exogenously set rules in the baseline. The provision of government services is assumed to increase by 5 per cent over the simulation period. Private investment is assumed to be a fixed share of domestic absorption and, accordingly, household savings rates adjust endogenously. The unemployment rate is set at 20 per cent for semi- and highly-skilled labour and 5 per cent for unskilled labour. When this unemployment rate is above a pre-set minimum (0.4 per cent for unskilled labour and 2.5 per cent for all other labour categories), the labour market clears through changes in the level of unemployment. Otherwise, when it is equal that minimum, the labour market clears through changes in the real wage level.

In the baseline, the average annual allocation of MDG-related public expenditures as percentage of GDP during 2005-2015 is as follows: 3.7 per cent for primary education (compared with 2.8 per cent in 2005), 1.5 per cent for the health sector (compared with 1.7 per cent in 2005), and 1.9 per cent of GDP for water and sanitation (compared with 2.1 per cent in 2005) (see Table 5.4). Total MDG-related public expenditures would represent 7.2 per cent of GDP in 2005-2015 (compared with 6.7 per cent in 2005). Real spending per student in primary education would increase on average by 9.2 per cent, while, in contrast, per capita spending on health and on water and sanitation services would decrease by 16.1 and 14.5 per cent, respectively.

Furthermore, an elasticity for the poverty reduction (headcount ratio) with respect to growth of GDP per capita of nearly -1 was estimated using the last Senegalese household survey. This estimate was used to compute poverty effects for the baseline—and subsequent scenarios. Poverty changes are exclusively due to growth of mean income since no distribution effects are being taken into consideration.²

Under these baseline assumptions, only the targets for under-five mortality (MDG 4) and access to drinking water (MDG 7a) would be met by 2015, while, in spite of notable progress, the country would fall short of achieving the other goals (Figure 5.1). In 2005, the base year for MAMS, the country was already relatively close to meeting only MDG 7a. In order to meet all the targets by 2015 in an economic setting such as that underlying the baseline, the government would have to boldly expand the provision of MDG-related services.

Alternative financing scenarios for achieving the MDGs

The baseline scenario was used as the benchmark to assess the impact and spending requirements of MDG achievement under alternative financing scenarios. In order to simulate these alternate scenarios, the closure rule for the government budget was changed. Under these MDG scenarios, public spending is—endogenously—scaled up to the level needed to meet the education, health, water and sanitation targets. The spending needs are then allowed to be financed, alternatively through additional foreign aid, foreign borrowing, or tax increases.³

Depending on the financing mechanism (Table 5.4), the government would have to allocate an additional 8.0 to 8.9 per cent of GDP—compared with the business-as-usual scenario reflected in the baseline—to ensure that all non-income poverty MDG targets are achieved by 2015. Achieving the MDG for primary education would be most costly in budgetary terms. Most additional spending would be on public sector wages and other current expenditures, except in the case of sanitation where capital expenditures weigh more. When the additional costs are fully covered through foreign financing, the additional public spending required to meet the targets is relatively less. Under a mixed financing strategy which combines an increase in direct taxes with additional foreign transfers, public spending requirements are higher. Increasing domestic tax collection, perhaps desirable from a foreign policy perspective because it would signal Senegal's strong commitment to the MDGs, would have an adverse effect on disposable

Figure 5.1

Senegal: Evolution of MDG indicators in the baseline scenario, 2005-2015

MDG 1 - Poverty headcount

MDG 2 - Primary completion rate

MDG 4 - Under-five mortality rate

MDG 5 - Maternal mortality rate

MDG 7a - Access to drinking water

MDG 7b - Access to Sanitation

Source: République du Sénégal (2010b) and authors' estimates based on the application of MAMS for Senegal.

household incomes. Since household income is an important demand-side determinant of all non-income poverty MDGs, the reduction of private incomes would have to be compensated by enhanced policy efforts by the government, thus increasing the additional total cost. Resorting to foreign borrowing, on the other hand, would carry the costs of an increasing public debt burden. As is also the case in mobilizing more foreign aid, it would penalize export growth owing to real exchange rate appreciation.

Table 5.4

Senegal: MDG-related public spending, base year and period annual average in 2005–2015 for simulated scenarios

Per cent of GDP					
	<i>Base year (2005)</i>	<i>Baseline scenario</i>	<i>MDG-achieving scenarios</i>		
			<i>foreign transfers</i>	<i>foreign borrowing</i>	<i>foreign transfers & direct taxes</i>
Primary education	2.82	3.71	8.17	8.17	8.65
Current	1.56	2.04	4.60	4.60	4.86
Investment	1.26	1.67	3.56	3.56	3.79
Health services	1.72	1.54	2.92	2.92	3.15
Current	1.04	1.01	1.67	1.67	1.78
Investment	0.68	0.52	1.25	1.25	1.37
Water and sanitation	2.12	1.94	4.14	4.14	4.25
Current	1.06	1.03	1.97	1.97	2.03
Investment	1.06	0.91	2.16	2.16	2.23
Total	6.66	7.18	15.22	15.22	16.06

Source: Authors' estimates based on the application of MAMS for Senegal.

The additional annual spending required to meet the non-income poverty MDGs as a percentage of GDP corresponds to annual flows of 459.7 to 498.8 billion of CFA francs for foreign financing or foreign transfers combined with increased direct-tax revenue, respectively (Table 5.5). These numbers have to be contrasted with the base-year global budget of MDG-related sectors that amounts to 298.2 billion of CFA francs in 2005. This means for instance that the primary education sector would have to absorb twice the value of its 2005 budget per annum, on average, over the period 2005–2015. While sharp increases in the education budget have been registered since 2000, this could still be a challenge and it raises a crucial question with respect to the absorptive capacity of the social sectors in Senegal.

The average annual additional public expenditures required to meet the MDGs—with respect to the baseline, as estimated by MAMS, are also 10 to

15 times larger than cost estimates by sector presented in the 2007 MDG report (see Table 5.5)⁴. In the case of education, other methodologies have been used to assess the cost of achieving the universal primary education goal. Mingat and others (2003), for example, estimate that it will cost from 20 to 40 billion CFA francs per year depending on the scenario. Although higher than the UNDP estimate for MDG 2 (16.3 billion CFA francs per year), their estimate is 10 times lower than our MAMS estimates and should be subjected to further scrutiny.⁵ Unlike a merely sectoral study, MAMS calculations capture the macroeconomic repercussions of MDG financing which may increase or even decrease the additional MDG spending. Importantly, MAMS does not rely on forward projections of linear trends, but considers a more plausible non-linearity in the form of decreasing marginal returns to public interventions. The closer the country is to meeting the 2015 target, the more difficult and costly it becomes to make further progress.

Table 5.5

Senegal: Base-year and average annual additional public spending required to meet the MDGs—with respect to the baseline—and UNDP cost estimations, 2005–2015

Billions of CFA francs					
	<i>Base year (2005)</i>	<i>MDG-achieving scenarios (2005-2015)</i>			<i>UNDP estimates (2005-2015)</i>
		<i>foreign transfers</i>	<i>foreign borrowing</i>	<i>foreign transfers & direct taxes</i>	
Primary education	126.2	255.0	255.0	277.7	16.3
Health Services	77.0	79.0	79.0	90.8	21.4
Water and sanitation	95.0	125.7	125.7	130.3	23.4
Total	298.2	459.7	459.7	498.8	61.1

Source: Authors' estimates based on the application of MAMS for Senegal and République du Sénégal (2006).

Turning to the key macroeconomic issues, GDP growth is slightly higher than it is in the baseline under the MDG-achieving scenarios (Table 5.6). Public spending on MDG-related services increases the domestic components of demand, but financing this through inflows of foreign exchange penalizes exports through real exchange rate appreciation. This, in turn, encourages imports with respect to the baseline. The negative impact on exports is relatively less when foreign transfers are combined with increased direct taxation, but GDP growth is still relatively lower than

in the other two financing scenarios due to the crowding-out effect of direct taxation on private spending.

The choice of direct-tax financing combined with foreign aid appears to have an explicit cost: fewer gains in terms of growth (and poverty, as further indicated below). When the choice is made for financing through foreign borrowing, however, the country is shown to experience a high debt burden (Table 5.6). Raising the stock of external debt would not seem to be a good strategy for a country that takes part in the Heavily Indebted Poor Countries (HIPC) Initiative. Furthermore, foreign indebtedness can have adverse effects on growth in the long term. Financing the extra MDG spending through foreign aid would produce the same effects on the economy as foreign borrowing, but without accumulating debt. The question is whether Senegal is able to mobilize the amount of foreign aid required—on average 5 to 6 times more than in the base year (Table 5.6). Still, in view of the criteria combining WAEMU convergence ratios and highest growth rates, foreign transfers seem to be the more suitable financing mechanism for MDG achievement in Senegal.

The labour market shows modest improvements under the MDG-achieving scenarios, perhaps as a result of MDG 2 being achieved and perhaps because GDP growth is only slightly higher than in the baseline. This illustrates the links between the dynamics of the labour market and MDG-achieving strategies: efforts to increase the net completion rate in education and keep students at school would shrink the relative supply of unqualified workers—thus raising these workers' wages relative to the baseline. Also, as the government scales up health and education service delivery, the demand for skilled workers may rise. In the short term, higher labour costs may have an adverse impact on the private sector's production, but in the longer term, a more educated labour force will likely boost growth. Within the bounds of the simulation period, however, the growth effects of the MDG-achieving strategies are very modest. Also, wages for the more skilled workers decrease less than they do in the baseline scenario because high unemployment in the Senegalese context leaves little room for wages adjustments (Table 5.6).

GDP growth per capita in the baseline allows the poverty incidence to fall from 50.8 to 48.8 per cent between 2005 and 2015 (Table 5.6). Under the MDG-achieving scenarios, poverty reduction is 7.5 percentage points higher than in the baseline by 2015—or 4.4 percentage points higher if increased taxation is used. These results are likely overestimated as the distributional effects of the MDG strategy are not being taken fully into

Table 5.6

Senegal: Selected results for macroeconomic variables, wages and poverty in the base year and simulated scenarios, 2005–2015

			<i>MDG-achieving scenarios</i>		
	<i>Base year (2005)</i>	<i>Baseline scenario</i>	<i>foreign transfers</i>	<i>foreign borrowing</i>	<i>foreign transfers & direct taxes</i>
	<i>bIn CFA francs</i>	<i>Average annual growth rate, 2005-2015 (per cent)</i>			
Real GDP at market prices	4,478	3.4	3.9	3.9	3.7
Private consumption	3,242	2.8	4.4	4.4	3.7
Government consumption	817	3.1	6.0	6.0	6.1
Private investment	676	3.0	5.6	5.6	4.8
Public investment	483	2.8	7.5	7.5	7.7
Exports	849	5.0	-1.2	-1.2	-0.7
Imports	1,590	2.5	5.9	5.9	5.2
Real GDP per capita (thousand CFA francs)	397	1.0	1.4	1.4	1.2
Real Exchange Rate	1.00	0.7	-2.5	-2.5	-2.1
	<i>Per cent</i>	<i>2015 level</i>			
External debt-to-GDP	46.9	83.0	65.4	146.8	68.0
External debt service-to-exports (per cent)	5.3	7.2	15.6	33.5	14.4
	<i>USD per capita</i>	<i>Average annual level, 2005-2015</i>			
Foreign resources	59.2	59.1	159.5	166.7	142.5
Grants	17.5	17.5	105.8	17.5	91.0
Loans	41.7	41.7	53.8	149.2	51.5
	<i>Thousands of CFA francs</i>	<i>Average annual growth rate, 2005-2015 (per cent)</i>			
Unskilled-labour wage	360	2.8	2.9	2.9	2.9
Semi-skilled labour wage	1,063	-0.8	-0.7	-0.7	-0.7
Highly-skilled labour wage	2,207	-1.1	-1.0	-1.0	-1.0
	<i>Per cent of population</i>	<i>2015</i>			
Poverty headcount	50.8	48.8	41.3	41.3	44.4

Source: Authors' estimates based on the application of MAMS for Senegal.

account, as explained earlier. Since wage changes essentially affect the three types of workers in the same direction and by similar magnitude, most distributional effects would likely be driven by changes in employment.

CONCLUSIONS AND POLICY LESSONS

The scenario analysis carried out in this chapter for Senegal shows that a continuation of current policies and programs would enable the country to meet the millennium development goal for access to drinking water by 2015, and perhaps also the under-five mortality goal. In order to meet the goals for primary education, maternal mortality, and access to basic sanitation, additional fiscal efforts are needed.

What's more, MDG services would have to be extended to parts of a growing population that have not yet been covered by social services. To achieve this, the government would have to mobilize up to an additional 8 per cent of GDP per year—under the assumption that economic growth remains strong at around 7 per cent per year—to be spent on primary education, health and basic sanitation. The challenge for Senegal would not stop here. Given its limited space to mobilize domestic resources, the government would have to rely on international aid to finance this extra MDG spending. Foreign borrowing is not a feasible option as it would lead to a high debt burden. Should the government be left with no other option than raising taxes, the least regressive tax rates in the Senegalese institutional context would need to be targeted to minimize any negative impact on economic growth.

Each option for financing additional MDG spending has a macroeconomic trade-off. For example, inflows of foreign resources would penalize the Senegalese export sectors through real exchange rate appreciation. However, the effect on GDP growth would be less adverse than if the government resorted to domestic-resource mobilization (for example, direct taxes) as this would crowd out private spending with more marked effects on production. In spite of these trade-offs, achieving the MDGs in Senegal by scaling up public spending would have a modest, positive impact on GDP growth in the short term. Benefits from educating the labour force, and through this, improving labour productivity, will likely be reaped in the longer term.

The amount of additional public spending required to achieve the MDGs could be less if the quality of education and the efficiency of service delivery in general is improved. Some resources could also be spent on infrastructure that facilitates the delivery of MDG-related services and has a positive

impact on growth. Similar benefits would be seen if resources were directed to key sectors like agriculture (particularly cereals and vegetables) that could have a positive impact on exports and production, as well as the well-being of many Senegalese families.

The projections and simulations results presented in this chapter indicate that significant additional spending and policy efforts are needed in order to achieve all the MDGs under study by 2015 in Senegal. This raises two important challenges—how best to finance the additional spending and the capacity of the social sectors to absorb additional budget. The analysis of the latter should be subject to further research. Furthermore, a number of contingencies need to be addressed by putting in place policies to remove or limit the impact of a variety of risks that could hamper MDG achievement. In particular, these policies should try to mitigate: (i) risks related to exogenous shocks that may affect the macroeconomic targets and the absorptive capacity of aid provided in the form of budget support, (ii) natural hazards, such as droughts and heavy rainfalls affecting agricultural production, (iii) the risks of locust aggression, (iv) risks related to international price volatility, including that of oil prices, (v) political and institutional risks, which can directly hamper the execution of capital expenditure plans. Dealing with these issues may have additional costs, but at the same time would also likely induce additional growth gains as the economy would be less volatile and actors would face less uncertainty. Assessing such policies, however, should be subject to further study.

NOTES

- 1 IMF predicts average annual growth of 4.5 per cent for the next years but the baseline scenario assumes a rate of 4 per cent considering that energy shortfalls will likely affect the economy adversely.
- 2 Most country chapters in this volume use a microsimulation approach to estimate poverty and inequality results while accounting for full income distribution effects (see Chapter 1). This approach could not be implemented for Senegal since existing household surveys do not provide the labour market detail that is needed to apply it.
- 3 Due to the small size of domestic borrowing which was close to 3 per cent of GDP in 2005, meaning that the domestic bond market is underdeveloped in Senegal, modelling the pursuit of MDGs strategies through that financing mechanism was considered unrealistic and this is the reason why it was not simulated as permitted by the MAMS framework.
- 4 The 2007 MDG report reports cumulative costs over the period 2005-2015. These costs were divided by 11 (years) in order to translate them into annual efforts and include them in Table 5.5 for comparison purposes.
- 5 Detailed cost calculations are not presented in the MDG reports and background sectoral studies on which these were based were not available for consultation.

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