Public Policies for Human Development

Achieving the Millennium Development Goals in Latin America

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Contents

List of tables and figures

Tables

Figures

10

Mexico

Araceli Ortega and Miguel Székely

Introduction

The commitment to reach the Millennium Development Goals (MDGs) is one of the few issues on which a broad consensus has emerged in Mexican society in recent years. An initial report on the MDGs was presented in early 2004 as part of a joint effort on the part of the Government of Mexico and the United Nations Development Programme (UNDP). This report was discussed extensively by many stakeholders, including both chambers of Congress, the state governments, the municipal governments, and the executive branch of the federal government. This appears to have yielded three key results. For the first time in many years, a shared vision has emerged regarding the medium-term objectives the country should aim for. In addition, broad agreement was reached on the need to pursue the MDGs, independent of the political moment and the six-year electoral cycles marked by each change of government. Finally, the need to take action on several fronts was acknowledged, with the participation of all three levels of government and all three branches of government, to ensure the goals will be achieved.

This chapter seeks to contribute to the consolidation of the MDGs in Mexico as an instrument for planning and evaluating public policies, identifying some of the actions that can help ensure they are achieved by 2015. To that end, the quantitative impact of public policies aimed at achieving the MDGs is estimated using a computable general equilibrium model known as MAMS (see Chapter 3). To adequately estimate the impact on poverty, this model is supplemented with a microsimulation technique (see Chapter 2, Appendix A2.1). This methodological approach permits to evaluate the feasibility and effectiveness of alternative policy scenarios to achieve the MDGs, in order to derive recommendations for further public action.

Although Mexico has achieved some of the MDGs ahead of the 2015 deadline and has as yet to attain others, the analysis is important for two reasons.

First, the pace of progress is not yet satisfactory in some areas, specifically in reducing infant and maternal mortality. Therefore, identifying specific scenarios in which the health goals could be achieved is valuable for future planning and allocation of public budgets. Second, while Mexico has made substantial progress towards at least six of the eight MDGs, this does not guarantee that all will be achieved in a timely manner. Any drawback from the degree of economic stability and growth observed in recent years will slow progress towards the MDGs or could even roll back the gains made to date.

To be consistent with the other country studies in this publication, the effort in this chapter will be focused on the goals of poverty reduction, total coverage and completion of primary education, reductions in maternal mortality and under-five child mortality, and expanded coverage of drinking water supply and basic sanitation services. Four more sections are included for that purpose. The next section compares the macroeconomic situation and poverty and inequality in Mexico from 1990 to the most recent year for which information was available at the time of elaborating the study, and briefly describes progress made towards the MDGs. The following section describes some aspects of the application of the modelling methodology using Mexican data. Subsequently, in the fourth section, a series of scenarios are analysed that were simulated to identify the extent to which public spending needs to be scaled up to accelerate progress towards attaining the MDGs, and how the new spending could be financed and the effect that each financing strategy would likely have on the Mexican economy. Finally, the last section presents the conclusions and policy recommendations.[1]

The Mexican economy until the mid-2000s

Comparing economic and social progress between the years 1990 and 2004 provides an encouraging picture as far as progress towards the MDGs is concerned.[2] The macroeconomic context seemed favourable, a series of reforms were introduced that have not necessarily resulted in a further increase in income inequality, and notable gains were observed in the accumulation of human capital and in reducing inequality in access to social services. Nonetheless, as will be observed further on, far from being a period of continuous improvement, the Mexican economy experienced a series of abrupt fluctuations, causing the degree of poverty reduction to be much less than otherwise might have been expected.

The macroeconomic environment

As illustrated in Table 10.1, real per capita GDP grew 23.0 per cent from 1989 to 2004. Inflation fell from 19.7 per cent to 5.6 per cent, the real exchange rate appreciated by 19 per cent, the interest rate fell from 45.0 per cent to 7.1 per cent, and social spending as a share of GDP rose from 6.1 per cent to 11.0 per cent.

At first glance, this macroeconomic context appears to be favourable for reducing both income inequality and poverty. First, it is well-known that inflation tends to hurt the poor more, as they are less able to protect their monetary income and assets from the erosion entailed in a sustained increase in prices. In contrast, high-income groups have access to financial services that enable them to maintain the real value of their assets. A reduction of inflation on the scale observed would thus create a less adverse environment for the poor. Second, since low-income groups tend to depend more on wage labour than the wealthier sectors, an appreciation of the exchange rate (as observed in Table 10.1) would increase their income situation as it is associated with a higher average real wage. Third, a reduction in the interest rate generally benefits net debtors, and it is well known that the greater one's income, the less one will depend on credit, and the greater the likelihood of becoming a net creditor. Therefore, it may be expected that such a substantial decline in interest rates will benefit low-income groups relatively more. Fourth, if social spending is adequately targeted, even if partially, an increase as seen during the first half of the 2000s should be associated with lower levels of poverty.[3] One would also expect that the higher levels of economic growth observed would have allowed for reductions in poverty, even if the relationship between economic growth and inequality is not obvious.[4]

Table 10.1 includes information for 1984, since the differences with respect to this year clearly reflect that since the early 1980s, Mexico has been characterized by enormous macroeconomic volatility and instability. Indeed, as observed in Figure 10.1, the 1984-89 period presents a totally different picture. In this period there was economic contraction, a major devaluation, stagnant social spending, and a high and rising debt-to-GDP ratio. Even though there was lower inflation and, in 1989, a slight appreciation of the real exchange rate, the context was less favourable than that of most of the period from 1989 to 2004 (with the exception of the currency crisis of 1994-95, of course). Figure 10.1 also shows that the volatility and economic recession of the 1984-89 period coincided with contractions in social spending, whereas from 1989 to 2004, with the exception of the brief period of instability around 1994, economic stability predominated and there was a sustained increase in social spending.

A breakdown of public spending by sector makes it possible to verify that spending on public education, health, and poverty reduction programmes has closely followed the trend of total social spending (see Table 10.2). Taxes are a main source of government finance, though total tax revenues remained rather stable as a share of GDP. Income tax revenue, which accounts for the largest share of total taxes, has remained at levels below 5.5 per cent of GDP since 1993, while total tax revenue, not including exports, has remained below 12 per cent (see Figure 10.2).

Table 10.1 Mexico: Overview of socio-economic indicators for the 1984-2004 period

Variables	1984	1989	2004	Percentage change 1989/2004	Effect on inequality[a]
Macroeconomic indicators					
Per capita GDP (baseline 2002)	$52,730	$50,216	$61,574	23%	?
Inflation (annual change in CPI) (%)	59.2	19.7	5.6	-72%	-
Index of real exchange rate	80.2	101	82.0	-19%	-
Real interest rate (Cetes at 28 days)	61.6	45	7.1	-84%	-
Social spending / GDP (%)	6.5	6.1	11.0	80%	-
External debt / GDP (%)	37.8	35.4	12.0	-66%	?
Structural reform indicators					
Index of reforms in Latin America	0.34	0.40	0.57	43%	?
Index of reforms in Mexico	0.29	0.41	0.55	38%	?
Labour reform in Mexico	0.36	0.33	0.30	-10%	-
Financial liberalization in Mexico	0.19	0.43	0.77	78%	?
Trade liberalization in Mexico	0.62	0.87	0.84	-3%	-
Privatization in Mexico	0.00	0.40	0.27	-33%	-
Tax reform in Mexico	0.28	0.34	0.38	12%	?
Indicator of inequality: years of schooling by income deciles					
I	2.32	2.82	4.08	45%	1.26
II	3.10	3.65	4.71	29%	1.06
III	3.49	4.43	5.40	22%	0.97
IV	3.61	4.79	5.95	24%	1.16
V	4.24	5.71	6.72	18%	1.01
VI	4.94	6.18	7.06	14%	0.88
VII	5.96	6.73	7.86	17%	1.13
VIII	7.16	7.94	8.63	9%	0.69
IX	8.06	9.05	10.15	12%	1.10
X	9.52	11.19	12.78	14%	1.59

Source: Based on data from: the National Household Income and Expenditure Survey (ENIGH) of 1984, 1989, 2004; the National Institute of Statistics, Geography, and Informatics (INEGI); the Ministry of Finance and Public Credit (SHCP); Banco de México; and Lora and Barrera (1997) and Lora (2001).

[a] In the case of years of schooling by income deciles, this column shows the absolute difference between 1989 and 2004.

Structural reform policies undertaken since the early 1980s and deepened from around 1990 have transformed the Mexican economy and have had an impact on income distribution. The second panel of Table 10.1 shows the value

of a series of indices of reform developed by Lora and Barrera (1997) and Lora (2001). According to these indices, the reforms in Mexico increased 90 per cent towards greater market orientation from 1984 to 2004. Much of this shift was pushed following the intensification of the reform process from 1989. This degree of market liberalization is noteworthy if one considers that the average increase in the degree of market reforms in Latin America was 69 per cent during the same period. The repercussions for income distribution and poverty are not obvious, and, in fact, these depend on the specific type and area of reform.

The general index of reform is an average of five indices in the areas of labour, finance, commerce, privatization and taxation. The impact of the reforms in

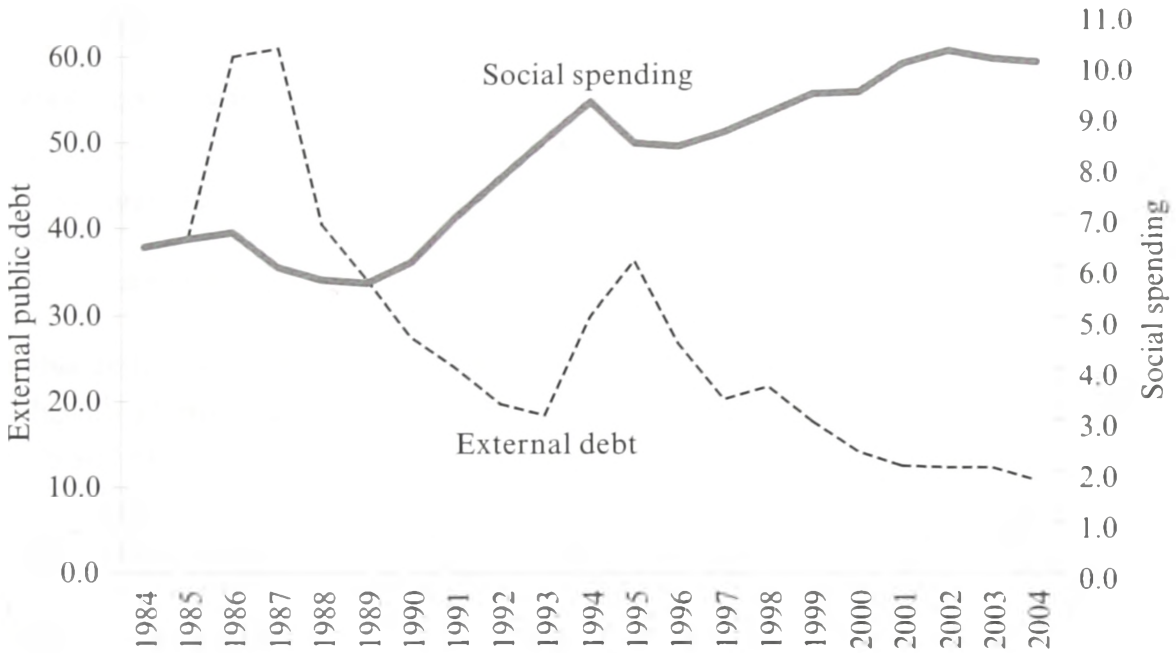

Figure 10.1 Mexico: External public debt and social spending, 1984-2004
(Percentage of GDP)
Source: SHCP, Centre for Studies of Public Finances.

Table 10.2 Mexico: Executed public sector budget by programmes, 2004-2006
(Percentage of GDP)

Item	2004	2005	2006[a]
Total	17.2	17.7	15.4
Social development	10.1	10.4	9.6
Education	3.8	3.8	3.6
Health	2.4	2.7	2.5
Social security	2.2	2.1	2.0
Urban development, housing and regional development	1.4	1.3	1.1
Drinking water and sewerage	0.1	0.1	0.1
Social assistance	0.3	0.3	0.3
Other	7.1	7.3	5.8

Source: Federal public budget for 2004 and 2005, and Budget of outlays of the Federal Government for 2006.
[a] Approved budget as authorized by Congress (Honourable House of Representatives).

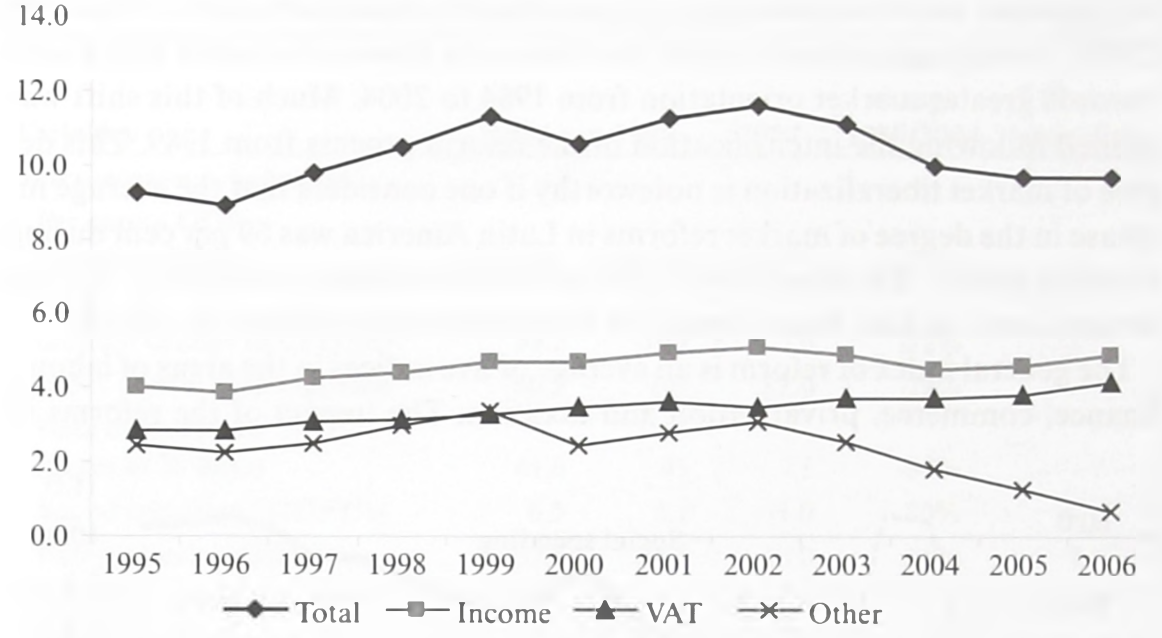

Figure 10.2 Mexico: Total tax burden and main sources of tax revenue, 1995-2006 (Percentage of GDP)

Source: Based on the data base of the SHCP, the statistical office of the Ministry of Finance.

these areas on inequality and poverty is not obvious a priori, since they set in motion a series of favourable and adverse effects, whose net impact depends on the specific conditions and the context of their implementation. In the case of Mexico, the three most important reforms in terms of intensity and repercussions for the well-being of the population are financial liberalization, trade liberalization and privatization.[5]

Given the impact of these reforms on the wage differentials between workers with different education levels, one may expect that differences in years of schooling across income strata are indicative of how the welfare effects are distributed. The third panel of Table 10.1 shows the average number of years of schooling of income earners in each decile of the income distribution. It can be seen that the absolute number of years of schooling of those in the top 10 per cent increased more than for any other decile between 1989 and 2004. The second largest increase was for those in the poorest decile. In relative terms, however, gains in schooling have been greater for the lower income deciles between 1989 and 2004. Indeed, the bottom five deciles have proportional increases greater than the rest, with a 45 per cent increase in the poorest decile. In other words, the distribution of education improved in relative terms, and this might suggest that forces were at play that tended to favour a reduction of inequality and poverty in general.

Inequality and poverty

As shown in Table 10.3, between 1989 and 2004, the income share of the richest decile of the population fell, while that of the rest, but especially that of the

Table 10.3 Mexico: Inequality and poverty indicators, 1984-2004

Indicator	1984	1989	2004	Change 1989/2004[a]
Income share of the poorest 10%	1.4	1.3	1.4	7.7
Income share of deciles 2 to 5	15.7	14.7	15.6	6.1
Income share of deciles 6 to 9	43.4	40.3	42.5	5.5
Income share of the richest 10%	39.5	43.7	40.5	-7.3
Per-capita monthly income of the 10% poorest[b]	266	260	358	37.7
Per-capita monthly income of the richest 10%[b]	7,253	8,828	10,311	16.8
Proportion of per-capita income of the richest 10% with respect to the poorest 10%	27.3	34.0	28.8	-15.3
Number of years for the income of the poorest 10% to converge to the observed income level of the richest 10%[c]	68	73	70	
Gini coefficient	0.43	0.47	0.46	0.0
Percentage of persons in food poverty (extreme)	22.5	22.7	17.3	-5.4
Percentage of persons in income poverty (moderate)	53.0	53.5	47.0	-6.5
Millions of persons in food poverty	16.9	19.0	18.3	-0.7
Millions of persons in income poverty	39.8	44.7	49.6	4.9

Source: Székely (2005b).

[a] Represents the percentage change except for the last five indicators (Gini coefficient and poverty incidence) for which the absolute change is shown.

[b] Constant 2002 pesos.

[c] In a scenario in which the economy grows by 5% annually.

poorest 10 per cent, increased. This led to a 15 per cent reduction in the income gap between these two extremes. Nonetheless, the Gini coefficient remained practically constant in the same period due to shifts in other parts of the income distribution.

As for poverty, the percentage of people in extreme poverty fell by 5.4 percentage points to 17.3 per cent between 1989 and 2004 (see Table 10.3). Moderate poverty fell by 6.5 percentage points in the same period. Nonetheless, due to the population growth observed in those years, the absolute number of people in extreme poverty remained almost constant, whereas the number of those in moderate poverty rose by almost five million.

In the previous period (1984-89), inequality had increased considerably and the number of people living in poverty increased. Nonetheless, despite increasingly favourable macroeconomic conditions during 1989-2004, the degree of poverty was limited, and, indeed, deceiving. The 23 per cent increase in real GDP per-capita that was achieved during the period could not prevent an increase in the absolute number of poor.

These results can be explained by the fact that instead of experiencing sustained and stable growth, the economy remained highly volatile and, during the

downturns, this instability had a more adverse effect on the poor (Ortega and Székely, 2006). These negative effects were not fully offset during the upturns either through income growth or higher social spending.

The high economic volatility and instability that Mexico experienced during 1984-96 was detrimental for progress towards the MDGs. In contrast, the greater economic stability and growth from 1996 until 2008 has allowed for greater progress, as shown below. If these conditions can be maintained, achieving most of the MDGs by 2015 would seem feasible.

Progress towards the MDGs

Mexico has made significant progress towards the MDGs. This has been insufficient in some areas, though, in particular with respect to the targets for reducing child and maternal mortality.

According to the available information, Mexico prematurely achieved the goal of reducing extreme poverty by half (MDG 1). The percentage of the population that lives on less than one dollar a day at purchasing power parity (PPP) fell from 10.8 per cent in 1989 to 4.1 per cent in 2004. However, the international yardstick for measuring extreme poverty is of little relevance to Mexico, as the given poverty line would not be sufficient to cover even basic food needs in the country. When using the official national threshold for food poverty, the target would be to reduce extreme poverty from 22.7 per cent in 1989 to 11.4 per cent by 2015. Using a linear projection towards this target, food poverty should have been brought down to 16.3 per cent by 2004. According to the official estimates, food poverty incidence had fallen to 17.3 per cent by that point in time; one percentage point short of the target.

Poverty and economic growth are strongly correlated. Between 1982 and 1995, real GDP growth averaged only 1.3 per cent per year, implying negative growth in per capita terms. In this period, the incidence of moderate poverty increased from 59.6 per cent in 1989 to 69.6 per cent in 1995, with most of the increase attributable to the crisis of 1995. In the subsequent period from 1997 to 2004, GDP growth averaged 3.4 per cent, contributing to the reduction of the moderate poverty rate to 41.1 per cent by 2004. If the economic policies are successful in maintaining growth stable at this pace, Mexico should be able to meet the food poverty target by 2015.

In education, the biggest challenge is ensuring that all students enrolled in primary school also complete the cycle on time; in other words, to achieve a 100 per cent completion rate. The goal of universal coverage in primary education was practically attained by the end of the 2003-04 school year, when the net enrolment rate reached 99.6 per cent. By 1990, coverage was already over 95 per cent. It will be difficult to increase school enrolment further, given that the remaining 0.4 per cent of the population in primary school age is found in remote and difficult-to-reach localities.[6] The officially recorded rate of primary

school completion was close to 90 per cent in 2003-04.[7] Nonetheless, according to the projections by the Ministry of Public Education, Mexico would not reach the target of 100 per cent by 2015.

Achieving the target of bringing the child mortality rate down to 14.7 per 1,000 live births (MDG 4) and that of maternal mortality to 22 per 100,000 live births (MDG 5) by 2015 are probably the greatest challenges for Mexico's MDG agenda. In 1990, there were 44.2 deaths among children under the age of five per 1,000 live births, and though the rate had fallen to 25 in 2003, this progress is well short of the target. By 2003, the child mortality rate should have been reduced to 28 if a gradual and linearly declining trend towards the target was followed. However, the rate of reduction has slowed since 1995 and progress in the 2000-03 period was less than that of earlier trends. As Ortega and Székely (2006) show, the same applies for the pace of reduction of infant mortality (mortality of children under one year), which accounts for most of the under-five child mortality.

There are also shortfalls in the degree of reduction in the maternal mortality rate. This is largely explained by inequalities in access to health services and other unmet social needs affecting some regions of Mexico, mainly those in the south of the country. Maternal mortality fell by 26.7 per cent between 1990 and 2003, reaching 65.2 deaths per 100,000 live births. The delays observed are the result of limited progress during the 1990s. Indeed, maternal mortality fell by 1.2 deaths per year between 1990 and 1995, while it increased by 2.08 deaths per year during 1995-2000. Between 2000 and 2003, maternal mortality resumed its decline, now at a pace of 2.5 fewer deaths per 100,000 live births per year, yet short of the reduction of 2.7 per year required to meet the 2015 target.

MDG 7, which reflects the aspiration of ensuring environmental sustainability, includes a large number of targets. For this study, however, we restrict ourselves to assessing the progress made towards the targets to half both the percentage of the population without access to drinking water (7a) and that without access to basic sanitation (7b) between 1990 and 2015. Coverage of the population with access to drinking water increased from 75.4 per cent in 1990 to 89.4 per cent in 2003, thus reducing the proportion of the population without this service to 10.6 per cent.[8] The coverage of the population with access to basic sanitation also increased in recent years, although it continues to be substantially less than that of drinking water. Total sanitation coverage was 77.3 per cent in 2003, which is 15.8 percentage points more than in 1990 and benefitting 31 million more people who gained access to the service. These gains show that achieving both targets by 2015 is within reach. Nonetheless, this progress does not mean that sustainable management of water resources is guaranteed. It is endangered by the overexploitation of aquifers and the pollution of rivers and lakes caused by the discharge of urban and industrial waste. Therefore, the most important challenge is to attain those goals without degrading the aquatic ecosystems and their environmental services.[9]

Scenario simulation methodology

A few important conclusions can be drawn from the two preceding sections. While there has been satisfactory progress towards some of the MDGs, more recent trends suggest that there is no guarantee that all of them can be attained by 2015. Any deviation from the relatively stable macroeconomic context of the late 1990s and early 2000s would mean not only a slowdown, but could even imply a backtracking on earlier progress. Attaining the targets for reducing child and maternal mortality, however, will be a challenge even if stable economic growth can be sustained.

In order to identify the conditions under which the goals considered above could be achieved, various policy scenarios were simulated using the computable general equilibrium model known as MAMS. The methodological aspects of this model are discussed at length in Chapter 3. The model-based analysis should facilitate an improved public debate in Mexico as to the trajectory the country could follow in the future and how this would translate into progress towards the MDGs, going beyond assessments based on mere linear projections from past trends.

The empirical estimation of MAMS for Mexico draws mainly on information organized in a Social Accounting Matrix (SAM), though in addition to this values for a range of other key parameters and elasticities need to be obtained. The SAM was constructed using 2003 as the base year, based on information from the System of National Accounts and economic censuses provided by the national statistical office, INEGI, as well as data from the Ministry of Education, the Ministry of Public Health, Banco de México, the Ministry of Finance (SHCP), and estimates from Székely (2005a), among others. The information was systematized to construct the SAM in accordance with the accounting structure of MAMS, and also drawing on the methodology described in Lee-Harris (2002) to reconcile data sources and achieve accounting balances.[10] As required by MAMS, those sectors directly related to the MDGs were identified based on their service provider (public and private).[11]

The macroeconomic aggregates used in the model are obtained from the System of National Accounts of Mexico for the 1990-2003 period and from a series of other sources identified in Ortega and Székely (2006). These authors also report on the procedures they followed to compile and estimate the key elasticities of the model. Ortega and Székely estimated income elasticities of consumption demand using the theoretical specification of the linear expenditure system (LES) proposed by Stone (1954). A SURE model specification was used to calculate the elasticities empirically. Elasticities for the substitution in the demand for domestically-produced goods and imports in response to changes in relative prices were obtained econometrically following specifications as in Kapuscinski and Warr (1996) and using the ordinary least squares estimation procedure.

Constant elasticities of transformation determining shifts in the shares of production destined to exports and the domestic market in response to changes in relative prices were estimated using an error correction model, which provided the better fit. Most of the elasticities associated with the determinants of the MDGs were estimated using information from INEGI and the ministries of health and education. The values for some elasticities were defined on the basis of ad-hoc assumptions, because of data constraints, but with the magnitudes all within the range consistent with a feasible model solution that enabled the generation of plausible trends for the MDG indicators.[12] Finally, the elasticity of private savings with respect to per-capita household income was taken from Attanasio and Székely (2001).

Policy scenarios for attaining the MDGs

For the baseline scenario, key exogenous variables are set in line with recent observed trends. Subsequently, 12 policy scenarios were run to assess the requirements of public spending for attaining the MDGs. These scenarios were simulated for achieving either one or two MDG targets at a time and for all of the targets to be achieved simultaneously, all under alternative financing options. In the baseline scenario, the default macroeconomic closure rules set for MAMS were used (see Chapter 3). Accordingly, any government financing gap is assumed to be covered by raising direct-tax rates. This closure rule is changed under the alternative financing scenarios whereby increased public spending is financed through either domestic or external public borrowing. In these scenarios, the direct-tax rate is kept fixed.

Prospects for increasing completion rates in primary education

Substantial progress has been made in improving access to primary schooling, with enrolment rates reaching near 100 per cent in 2003-04. Considerable room exists, however, for improving completion rates in primary education, which averaged 90 per cent in 2003-04. In the scenarios simulated with MAMS, the target for primary education is to reach a completion rate of 100 per cent by 2015.

As shown in Figure 10.3, this target is not quite met under the baseline scenario assumptions. These results are consistent with 'business-as-usual' projections of the *Secretaría de Educación Pública* (SEP), though the results generated in the MAMS baseline scenario are somewhat better after 2010.[13]

Policy options for reducing child and maternal mortality

To reduce under-five child mortality by two-thirds, the target for MDG 4, an additional effort is needed as the target would not be met at the rate of reduction of the observed trend and that of the baseline scenario (Figure 10.4). According to the scenario in which only MDG 4 is targeted, public spending on

health services would need to increase by 61 per cent from 2003 to 2015 (or by 5.1 per cent per year). The additional spending would also contribute towards meeting the target set for reducing maternal mortality (Figure 10.5). The maternal mortality target would be reached ahead of the child mortality, as improved health services have a greater impact on reducing the risk of maternal mortality relative to that on child mortality (see Ortega and Székely, 2006).

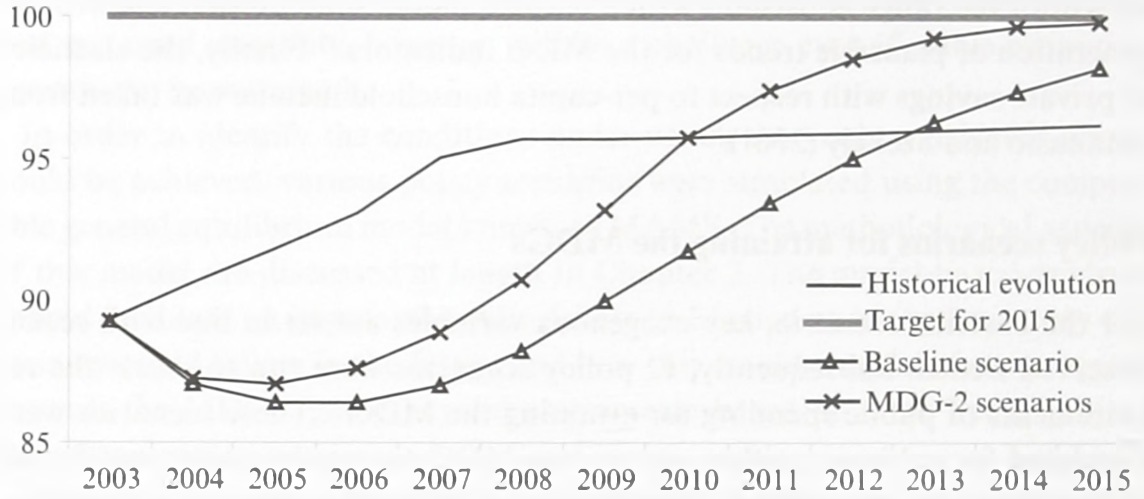

Figure 10.3 Mexico: Historical and simulated evolution of completion rates in primary education, 2003-20151[a]

Source: MAMS for Mexico and SEP.

[a] From 2004 the official trend represents a projection made by the SEP. The MAMS-based trends are the results for the baseline scenario and the MDG scenarios that target only the attainment of MDG 2. The trend of the primary completion rate in primary education is the same in the MDG-2 scenarios, independent of the financing strategy.

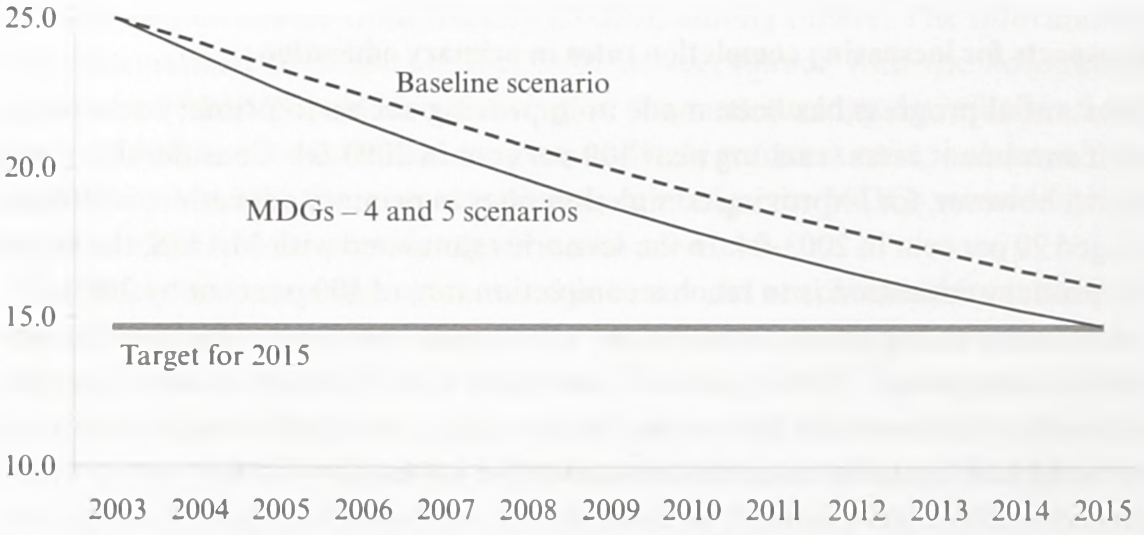

Figure 10.4 Mexico: Simulated evolution of child mortality per 1,000 live births, 2003-2015[a]

Source: MAMS for Mexico.

[a] The simulated trends refer to the baseline scenario and the MDG scenarios in which only the targets for child and maternal mortality are achieved. In these latter cases, the trend of the indicator is the same, independent of the financing strategy.

Policy options to increase access to drinking water and sanitation

The official target for the MDG for improving access to drinking water was reached by Mexico in 2003. A more ambitious and relevant goal would be to extend this service to 95 per cent of the population by 2015. Figure 10.6 shows that sustaining existing growth of public spending on water and sanitation would suffice to meet this more ambitious target for drinking water supply coverage.

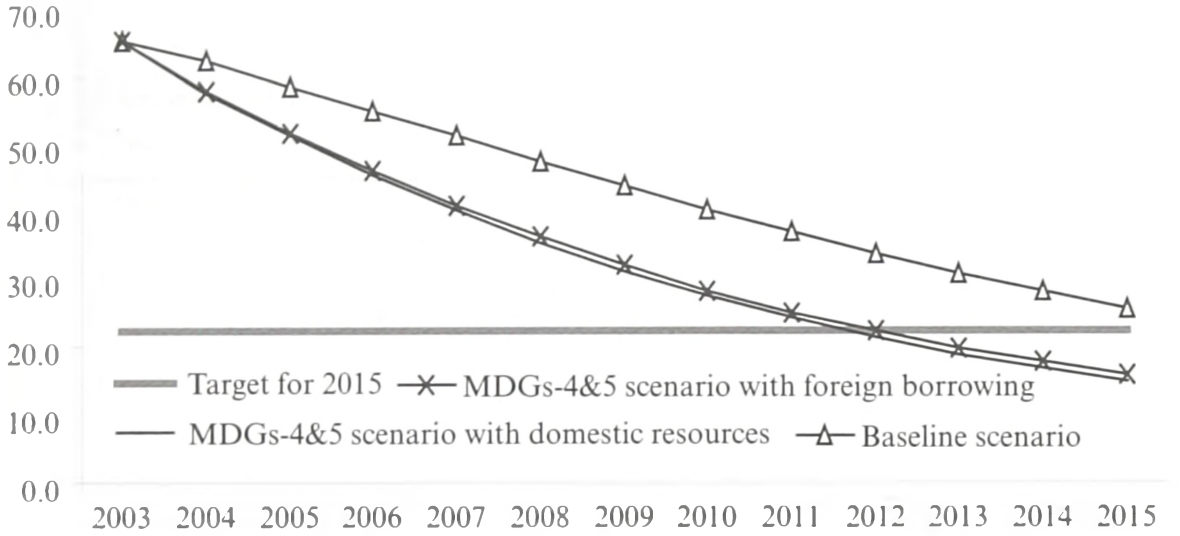

Figure 10.5 Mexico: Simulated evolution of maternal mortality per 100,000 live births, 2003-2015[a]

Source: MAMS for Mexico.

[a] The simulated trends refer to the baseline scenario and the MDG scenarios in which only the targets for child and maternal mortality are achieved. In these latter cases, the trend of the indicator is the same, independent of the financing strategy.

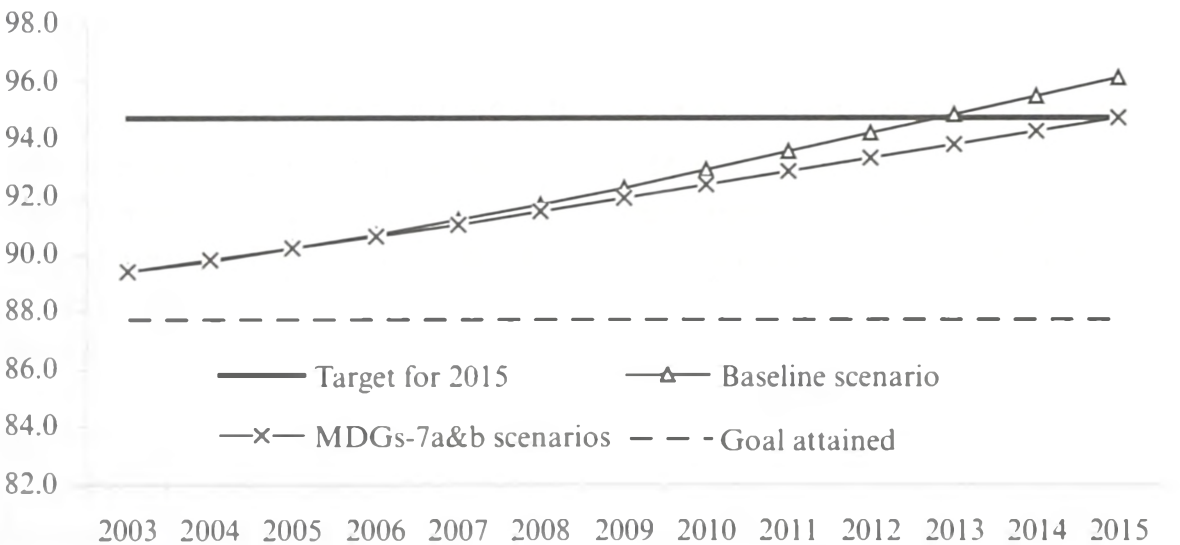

Figure 10.6 Mexico: Simulated evolution of the percentage of the population with access to drinking water, 2003-2015[a]

Source: MAMS for Mexico.

[a] The simulated trends refer to the baseline scenario and the MDG scenarios in which only the targets for drinking water and sanitation are achieved. In these latter cases, the trend of the indicator is the same, independent of the financing strategy.

Such a scenario would involve a 30 per cent increase in spending on drinking water and sewerage services between 2003 and 2015. With somewhat less spending on drinking water supply, the target would also be met, but not until 2015.

As in the case of drinking water services, the pace of expansion of sewerage services has been greater than what would be needed to achieve the international target for 2015. Even though the target of 79.1 per cent was not yet met by 2008, the target could be reached ahead of time by 2013 at the baseline rate of improvement (Figure 10.7).

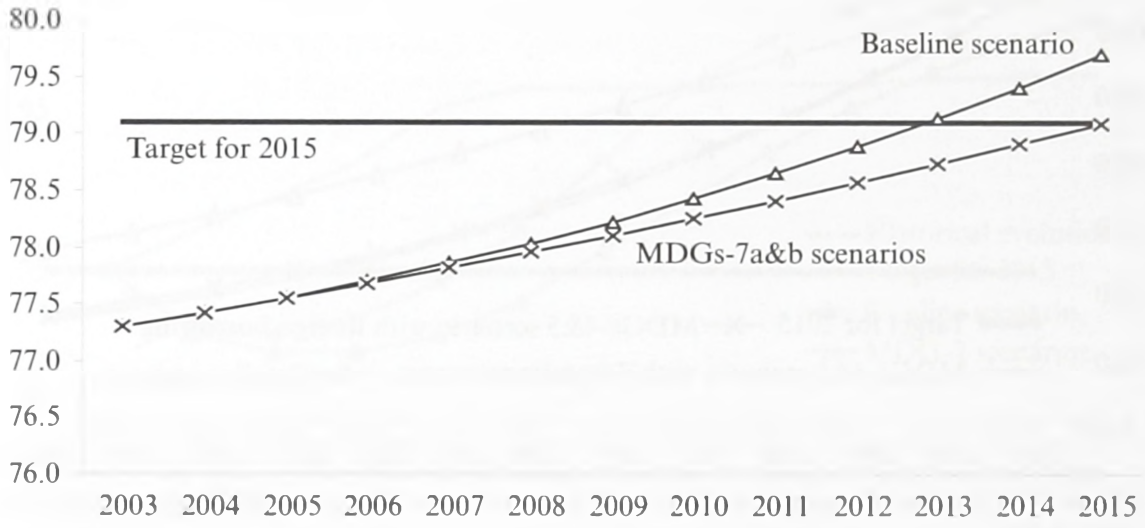

Figure 10.7 Mexico: Simulated evolution of the percentage of the population with access to basic sanitation, 2003-2015[a]

Source: MAMS for Mexico.

[a] The simulated trends refer to the baseline scenario and the MDG scenarios in which only the targets for drinking water and sanitation are achieved. In these latter cases, the trend of the indicator is the same, independent of the financing strategy.

Public spending and economic feasibility of achieving the MDGs

The feasibility of achieving the MDGs will depend on the rate of economic growth and adequacy of government revenues. According to the simulations with MAMS for Mexico, an annual rate of GDP growth of 3.5 per cent on average between 2003 and 2015 would not be sufficient to reach all MDGs, while increased government revenues would be needed in order to finance the additional public spending required to meet the MDGs.

Table 10.4 shows the public spending requirements as a percentage of GDP. Only the results of the baseline scenario and of the scenario in which the MDGs of reducing under-five child mortality and maternal mortality—which are those most in need of resources—are presented. One can deduce that, on average, public spending would have to increase approximately 5 per cent of GDP per year with respect to the baseline scenario in order to achieve MDGs 4 and 5. This holds in the cases when the additional spending is financed through direct taxes or domestic borrowing.[14] As can be observed, it is secondary care

Table 10.4 Mexico: Required government spending in the baseline scenario and the MDGs 4&5 scenarios with domestic resource mobilization, 2003-2015 (percentage of GDP)

	2003	2003-2005	2005-2010	2010-2015	2003-2015	2015
Baseline scenario						
Current spending on education	3.52	3.51	3.52	3.47	3.50	3.40
Current spending on health	2.23	2.22	2.23	2.20	2.21	2.20
- Type 1 health service[a]	0.20	0.20	0.20	0.19	0.20	0.19
- Type 2 health service[b]	0.72	0.71	0.72	0.71	0.71	0.69
- Type 3 health service[c]	1.32	1.31	1.32	1.30	1.31	1.28
Current spending on water and sanitation	0.03	0.03	0.03	0.03	0.03	0.0
Current spending on other public infrastructure	0.38	0.38	0.38	0.37	0.38	0.40
Current spending on other government services	5.41	5.40	5.41	5.33	5.37	5.30
Investment in education	0.01	0.01	0.01	0.01	0.01	0.00
Investment in health	0.00	0.00	0.00	0.00	0.00	0.00
Investment in water and sanitation	0.23	0.24	0.27	0.32	0.29	0.30
Investment in other public infrastructure	9.92	9.26	7.93	4.10	6.49	0.60
Investment in other government services	0.01	0.01	0.01	0.01	0.01	0.00
MDGs-4&5 scenarios with domestic resource mobilization[d]						
Current spending on education	3.52	3.50	3.47	3.34	3.42	3.30
Current spending on health	2.23	3.11	5.98	10.61	7.45	13.40
- Type 1 health service[a]	0.20	0.30	0.53	0.94	0.66	1.18
- Type 2 health service[b]	0.72	1.00	1.92	3.41	2.39	4.31
- Type 3 health service[c]	1.32	1.80	3.53	6.26	4.40	7.91
Current spending on water and sanitation	0.03	0.03	0.03	0.03	0.03	0.0
Current spending on other public infrastructure	0.38	0.38	0.37	0.36	0.37	0.40
Current spending on other government services	5.41	5.38	5.32	5.13	5.25	5.00
Investment in education	0.01	0.01	0.01	0.01	0.01	0.00
Investment in health	0.00	0.00	0.01	0.00	0.00	0.00
Investment in water and sanitation	0.23	0.23	0.27	0.31	0.28	0.30
Investment in other public infrastructure	9.92	9.22	7.81	3.99	6.39	0.60
Investment in other government services	0.01	0.01	0.01	0.01	0.01	0.00

Source: MAMS for Mexico.

[a] Primary health services, including those provided through social welfare programmes.

[b] Intermediate health services, including medical and dental clinics, as well as nursing and obstetric services.

[c] Specialized health services, including hospitals, sanatoria, clinics, maternity clinics, and blood banks.

[d] Domestic resource mobilization refers to raising direct taxes or borrowing domestically.

(hospitalization) and tertiary care (specialty care) that put the most pressure on public spending.

To increase the likelihood of attaining the mortality targets it will be necessary to implement a fiscal reform that increases government revenues such that the capacity for investment in public health services goes up by 60 per cent over the next 12 years. Figure 10.8 shows that in the scenarios in which the mortality targets are attained, in isolation or accompanied by increased public spending towards the attainment of the goals for primary education and water and sanitation, the income tax burden would need to climb from 5.5 per cent to just over 22 per cent of GDP. This is a rather tall order and alternatives to the raising income taxes must be considered.

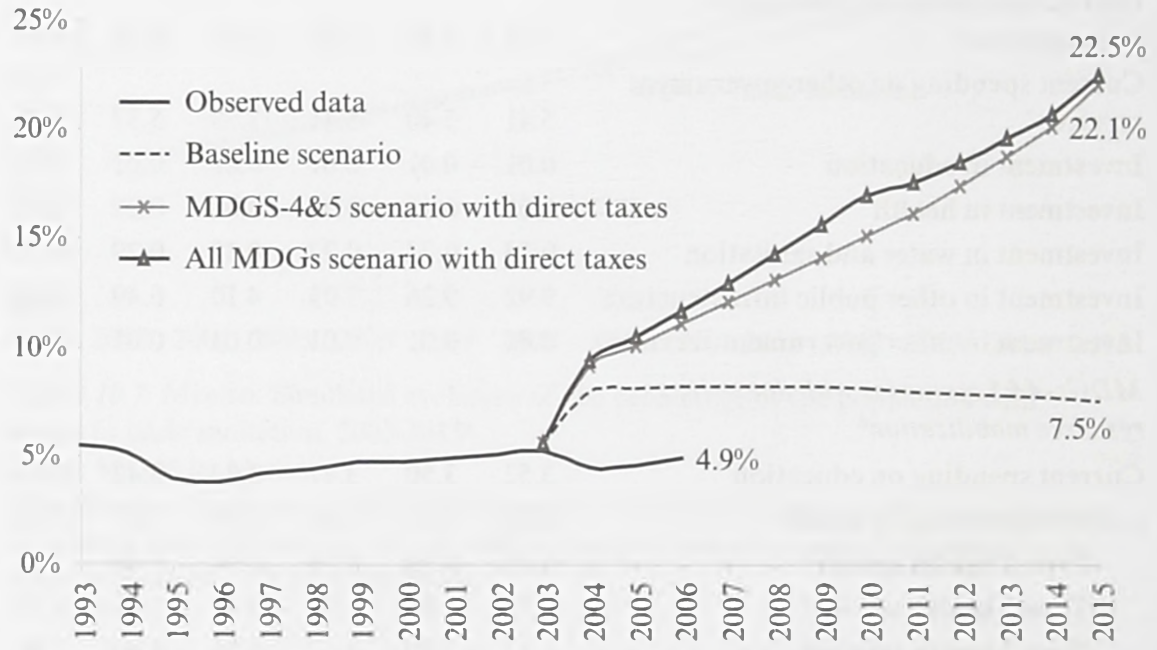

Figure 10.8 Mexico: Observed and simulated income-tax rate, 1993-2015 (percentage of GDP)

Source: Based on observed data of the SHCP and simulations results of MAMS for Mexico.

Prospects for reducing poverty

As explained in the second section of this chapter, Mexico is a country that has achieved the goal of reducing extreme poverty early, if one takes the international definition of a poverty line of one dollar a day at purchasing power parity (PPP). It is therefore more relevant for Mexico to analyse progress towards poverty reduction according to national definitions. By construction, MAMS does not specify any particular policy instrument for income poverty reduction, as was done for all the other goals being examined. In addition, while MAMS does provide results for macroeconomic conditions that influence poverty outcomes, it lacks sufficient detail about the household income distribution to reliably measure the evolution of poverty and inequality in all simulated scenarios.

Therefore, the microsimulations methodology described in Appendix A2.1 of Chapter 2 is used to make up for this methodological limitation. The methodology links the changes in the labour market simulated with MAMS to microeconomic household income distribution data and makes it possible to estimate the sequential and cumulative effects of shifts in employment and labour incomes on poverty and inequality.

Information on the economically active population as recorded by the 2002 household income and expenditure survey (ENIGH) was used to apply the microsimulation exercise. Monetary incomes were adjusted in order to link these to the CGE model results and official poverty lines were used to calculate poverty indicators according to the national definitions, differentiating between urban and rural areas.[15]

Figure 10.9 presents the results of the cumulative effects of the labour market changes of the baseline scenario of MAMS on international extreme poverty, measured by the line of one dollar a day PPP, as well as on food poverty as defined by the national food-sufficiency threshold. In the case of international extreme poverty, results indicate that increases in the average real wage (W2 effect), stemming mainly from maintaining the current economic context, would not only ensure staying on target for meeting the MDG for poverty reduction

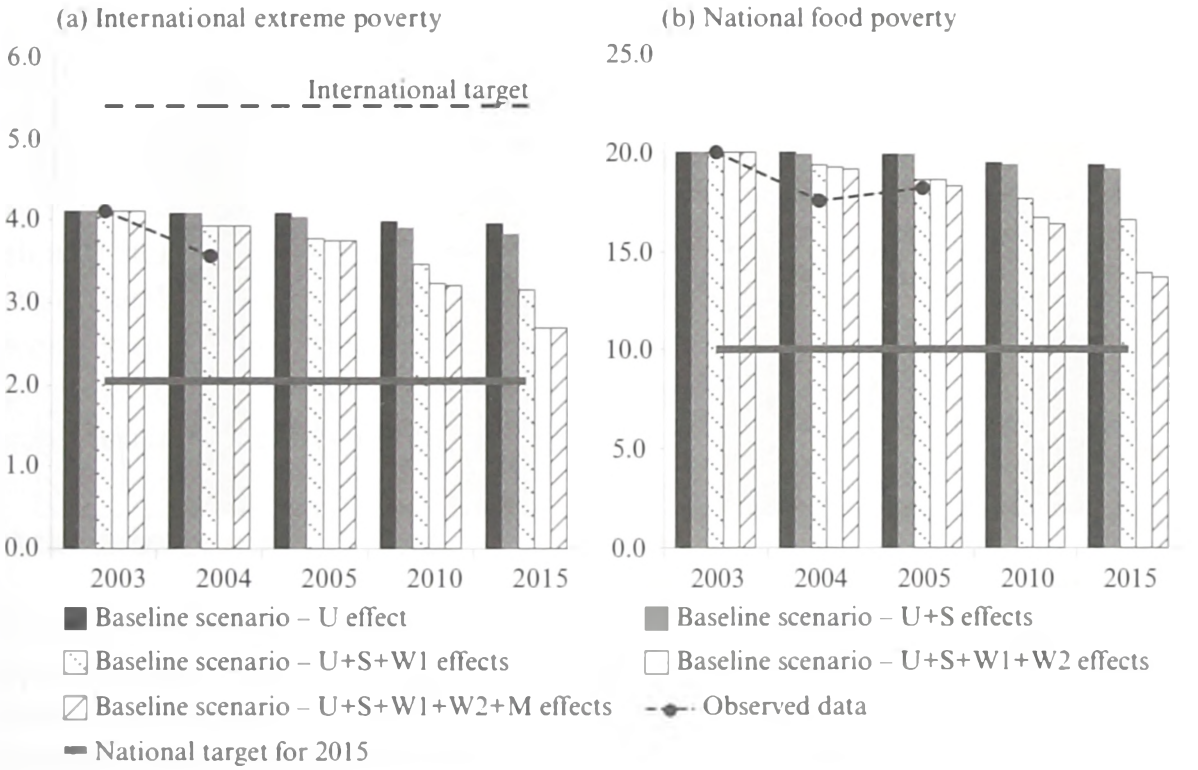

Figure 10.9 Mexico: Evolution of international extreme poverty and national food poverty, 2003-2015[a]

Source: MAMS for Mexico and microsimulations based on the 2002 ENIGH.

[a] The cumulative effects of the labour market in the baseline scenario are due to the sequential changes in the unemployment rate (U), the structure of employment and remuneration by sector (S and W1, respectively), average labour income (W2), and the structure of employment by skill level (M).

between 1990 and 2015, but would also achieve a 50 per cent reduction between 2002 and 2015. This would almost make it possible to achieve a more ambitious target of reducing extreme poverty, according to which less than 2.1 per cent of the population would have incomes of less than one dollar a day at PPP by 2015. Changes in the sector structure of employment (S effect) and remuneration structure across labour categories and sectors (W1 effect) also have a favourable impact in terms of reducing extreme poverty. These occur to the extent that the workers in the agricultural sector move towards the services sector; that is, the labour factor is reallocated, moving from lower-wage to higher-wage sectors.

The level of poverty does not change substantially with the simulated changes in the structure of employment, but its reduction is closely tied to the increases in the average level of real wages, which in turn depends on maintaining a sufficient rate of labour productivity growth.[16] These baseline results do not change much under the MDG scenarios. This is mainly due to the fact that Mexico is already close to meeting the education target. As a consequence, the MDG scenarios produce only minor few additional impacts on the labour market.

Labour income inequality (as measured by the Gini coefficient) falls in the baseline scenario and is part of the explanation of falling poverty (see Figure 10.10). Increases in the relative supply of skilled labour (M effect) partially roll

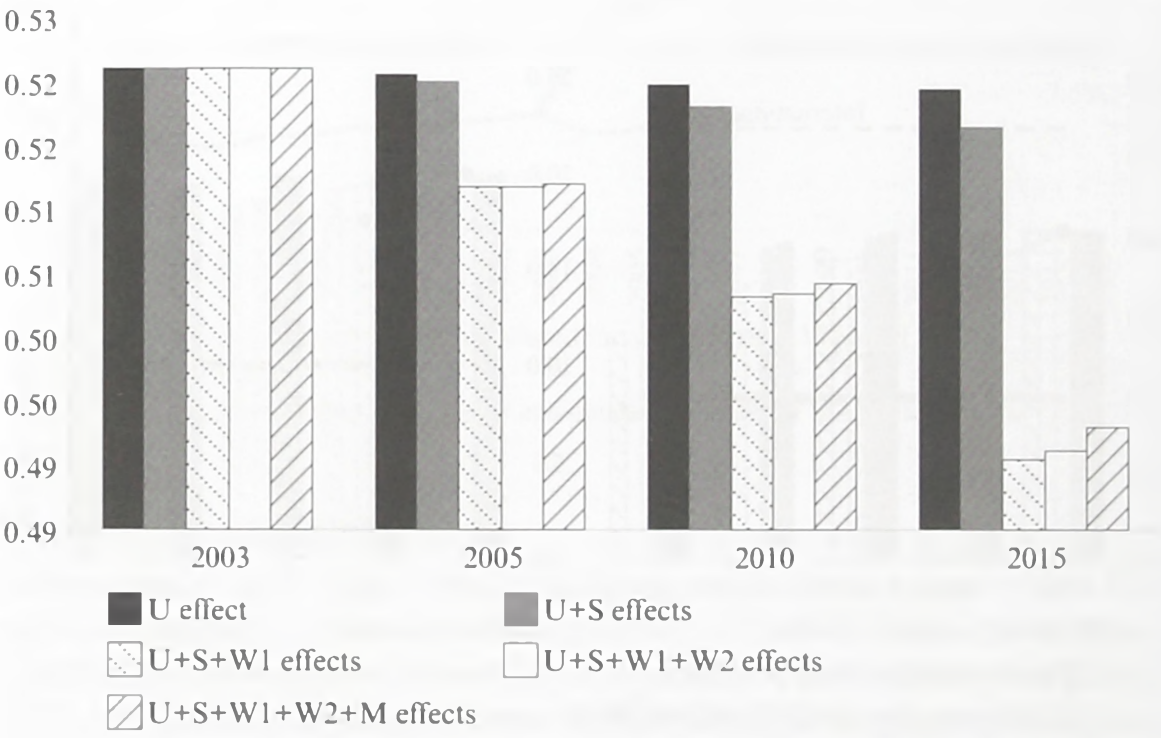

Figure 10.10 Mexico: Evolution of the Gini coefficient for labour income in the baseline scenario, 2003-2015[a]

Source: MAMS for Mexico and microsimulations applied to 2002 ENIGH (income and expenditure household survey).

[a] The cumulative effects of the labor market on the baseline scenario are due to the sequential changes in the unemployment rate (U), the structure of employment, and remuneration by sector (S and W1, respectively), average labor income (W2), and the structure of employment by skill level (M).

back the positive effect of the higher average real wage (W2) on poverty reduction. Based on these results, one can infer that in order to maintain a constant degree of inequality until 2015 or to decrease inequality to achieve additional poverty reduction, it is necessary to change the sectoral structure of employment. This is so for two reasons. First, the baseline and MDG scenarios only have a very small effect on the Gini coefficient. Second, as could be foreseen, improved educational performance enhances the skill-intensity of overall employment (M effect) causing a rise in inequality.

Conclusions and policy recommendations

Prior to the 2008-09 global economic crisis, Mexico's prospects of achieving the MDGs were good. According to the various scenarios simulated by applying MAMS for Mexico, and supplementing this model with a series of microsimulations, two key requirements for the favourable prospects to materialize were identified. The first would be to ensure a continuation of the macroeconomic climate of economic stability, growth, and expansion of social spending observed between 1998 and 2006 in Mexico. The economic crises of the 1980s and 1990s have made it clear that progress in education, health, and poverty reduction can easily be halted or reversed in a context of macroeconomic volatility, recession, and contraction of social spending. Specifically, a stable and favourable macroeconomic environment will allow for real wage growth which, as shown through simulated scenarios, is central for poverty reduction.

The second requirement is to step up efforts towards meeting the targets for reducing maternal and child mortality. The results suggest that fiscal revenues should increase substantially in order to finance the required increase in spending on health services of over 5 per cent of GDP per year up to 2015. This in turn would require a drastic fiscal reform. Whether it is possible to obtain sufficient political support for such a reform will depend on a variety of factors whose consideration goes beyond this analysis.

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Notes

1 Some aspects developed in the research have been omitted due to space considerations. These may be found in Ortega and Székely (2006), which is a lengthier version of this study.

2 The initial reference year of the MDGs is 1990, but due to lack of information for that year, 1989 is taken as the baseline year for evaluating progress in the goal of reducing extreme poverty by half by 2015.

3 According to the Presidencia de la República Mexicana (2006), federal public spending for reducing poverty increased by 5 per cent of GDP from 1995 to 2006, to the point of accounting for 16 per cent of GDP in 2006.

4 For more detail, see Ortega (2006).

5 For a detailed discussion of these reforms for the Mexican case, see Clavijo and Valdivieso (2000).

6 In addition, there are remaining gender gaps. The ratio of girls to boys enrolled in primary education was 95.4 per cent in 2003. The gap is smaller in lower-secondary and tertiary education, while at the level of higher-secondary education more girls than boys are enrolled.

7 The primary school completion rate is also targeted in the general equilibrium analysis presented below.

8 Drinking water coverage refers to the proportion of persons living in private housing with piped water reaching the property or the home.

9 For more detail on this, see UNDP and Secretaría de Desarrollo (2004).

10 An exhaustive description of the construction of the SAM and the structure of its accounts can be found in Ortega and Székely (2006).

11 The education and health sectors are subdivided by levels of specialization. Infrastructure is divided into activities that provide services for capture, treatment and supply of water by the public sector, and of construction and infrastructure services such as gas, electricity, communication and transportation.

12 These are the elasticities of the determinants of education outcomes and those related to the production functions of the model.

13 The SEP defines the completion rate as the percentage of students that complete primary school, whether they have repeated a grade or not. The MAMS model, on the other hand, defines it as the percentage of students in the cohort who begin primary and complete it on time, that is, without repeating any grade. To correct for this definitional difference, an adjustment was made by rescaling the simulated results, such that these are compatible with the observed trends. This adjustment explains the slight reduction in the completion rate in the model-based outcomes for 2003 to 2006, as shown in Figure 10.3.

14 In the foreign borrowing scenario, the required additional spending would be just under 3 per cent of annual GDP.

15 Monetary incomes were expressed in constant pesos of August 2002. Differences in the timing of data collection from households for different types of income were taken into account, ensuring all income data effectively reflect constant pesos for August 2002. The FIX exchange rate of August 2002 of 9.9109 pesos, published by the Banco de México, was used to estimate incomes in US dollars and calculate poverty indicators according to the international definitions of one and two dollars a day at PPP.

16 This conclusion coincides with that of Hernández Licona and Székely (2005), who show that the historical evolution of poverty in Mexico has been closely linked to the evolution of labour productivity.

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