Sánchez, Marco V., Rob Vos, Keiji Inoue, and Diyora Kabulova. "Financing Human Development: A Comparative Analysis." *Financing Human Development in Africa, Asia and the Middle East*. Ed. Marco V. Sánchez and Rob Vos. London: Bloomsbury Academic, 2013. 1–30. The United Nations Series on Development. *Bloomsbury Collections*. Web. 26 Apr. 2023. <<http://dx.doi.org/10.5040/9781472544551.ch-001>>.

Downloaded from Bloomsbury Collections, www.bloomsburycollections.com, 26 April 2023, 08:54 UTC.

Copyright © United Nations 2013. You may share this work for non-commercial purposes only, provided you give attribution to the copyright holder and the publisher, and provide a link to the Creative Commons licence.

Chapter 1

Financing Human Development: a comparative analysis

MARCO V. SÁNCHEZ, ROB VOS, KEIJI INOUE AND DIYORA KABULOVA

INTRODUCTION

Aware of enormous human development deficits, all member states of the United Nations resolved to pursue achievement of the millennium development goals (MDGs) in 2000. Concrete targets were set, and to be met by 2015, for a future of less poverty, hunger and disease, better education, gender equality, greater prospects of survival for infants and mothers, and a more sustainable environment. Much progress has been made since 2000, but it has been uneven across and within countries (United Nations, 2012). Sustained and robust economic growth, particularly in Asia, has been a major factor in meeting the global target of halving income poverty by the end of the 2000s. Nonetheless, the proportion of people who suffer from hunger has not declined, and still nearly one in five children under the age of five in the developing world are undernourished. Improvements in primary school enrolment have slowed during the past decade and the target of universal access to primary education is unlikely to be met in many countries without additional policy efforts. Gender gaps in access to education have narrowed, but girls remain at important disadvantage in many developing countries, especially in Oceania, Africa and West and South Asia. Significant gains in assisted child delivery and coverage of vaccination programmes and intensive control efforts for major diseases have contributed to declining child and maternal mortality worldwide, but in many countries, especially in Sub-Saharan Africa, rates are still very high and meeting the internationally agreed targets by 2015 will be most challenging.

2 • Financing Human Development in Africa, Asia and the Middle East

This volume analyses the challenges of nine countries (Egypt, Kyrgyzstan, Philippines, Senegal, South Africa, Tunisia, Uganda, Uzbekistan and Yemen) in improving human development in multiple dimensions. These countries' experiences are reflective of the varying degrees of human development progress and remaining challenges observed across the developing world. Consistent with global trends, all nine countries have made substantial progress in reducing income poverty (MDG 1) and, except for Senegal and Yemen, seem to be on track—assuming continued trends—to meet the target of having the poverty incidence by 2015 (Table 1.1). Also, progress in providing access to safe drinking water (MDG 7a) has been encouraging, although availability in rural areas still lags far behind. Seven out of the nine countries are well on track to meet the international target for increased access based on continued trends of the past two decades. Yemen, in particular, is not on track to achieve most targets owing to a lack of investment in basic infrastructure, among other constraints.

Table 1.1

Achievement of MDG targets by 2015 based on continuation of past trends¹

	<i>MDG 1²</i>	<i>MDG 2³</i>	<i>MDG 4</i>	<i>MDG 5</i>	<i>MDG 7a</i>	<i>MDG 7b</i>
Egypt	√	√	√	≈	√	
Kyrgyzstan	√	√			√	
Philippines	√		√		√	√
Senegal	≈		√		√	
South Africa	√	√			√	√
Tunisia	√	√	√		√	
Uganda	√				√	
Uzbekistan	√	√	√	√	≈	≈
Yemen						

Legend: √ = on track; ≈ = almost on track; blank = off track.

1 Past trends refers to progress measured between 1990 and 2009 (or latest available year) and are projected forward linearly to 2015. For Kyrgyzstan and Uzbekistan the base year is 2000 for some targets.

2 The poverty line used for the MDG 1 target of halving the poverty incidence is \$1.25 a day (PPP) for Egypt and Tunisia, \$1.00 a day (PPP) for South Africa, and a national poverty line in the case of the other six countries.

3 The goal of universal primary education (MDG 2) refers to (near) 100 per cent completion rates in the cases of the Philippines, Senegal, South Africa, Uganda and Uzbekistan, 100 per cent net enrolment in primary education for Egypt, Tunisia and Yemen, and 100 per cent net enrolment in basic education (grades 1-9) for Kyrgyzstan.

Source: Authors, based on country studies referred to in this chapter.

Progress towards other MDGs has been sluggish in the nine countries, making timely achievement of the corresponding targets by 2015 challenging. For example, while there have been substantial improvements in access to education in Sub-Saharan Africa as a whole, individual country experiences differ. Despite more than doubling primary school completion rates over the past two decades, Senegal remains at some distance from meeting the target of all children finishing primary education. In Uganda, the completion rate actually dropped despite increasing enrolment, because classrooms have become overcrowded and the quality of education declined. The Philippines in South-East Asia and, especially, Yemen in Western Asia have seen little improvement in primary completion rates as a result of underinvestment in education, poor child health, and the continued high prevalence of child labour, among other problems. The remaining five countries seem on track to achieving universal primary education, though some, notably Egypt and Tunisia, still face pervasive gender gaps and regional disparities. Achieving the MDG targets in child and maternal health (MDGs 4 and 5) and basic sanitation (MDG 7b) seems more challenging in most of the country cases.

Projecting past trends into the future can be haphazard, however. Economic conditions tend to be volatile, of which the global financial crisis of 2008-2009 was but one manifestation. Persistent international financial market and commodity price instability have affected the economies of the nine countries to varying degree, and differences in policy responsiveness further explain varying impacts on human development. Economic uncertainty has been compounded by political conflict and instability. Five of the nine countries have been recently immersed in conflictive situations. In the context of the Arab Awakening, the governments of Tunisia and Egypt were toppled in the beginning of 2011, but discontent and political uncertainty prolonged in the aftermath of the regime changes. Paradoxically, Tunisia and Egypt had a good track record of economic performance and MDG progress prior to the outburst of political unrest. Yemen also witnessed a political uprising in early 2011 as a result of which the then-president signed a power-transfer agreement and eventually stepped down in favour of his vice-president in February 2012. The setbacks caused by the conflict have made achieving human development goals in Yemen all the more challenging. Kyrgyzstan and Uganda have also experienced episodes of conflict, despite remarkable progress in reducing poverty and improving access to basic social services. The problems in Kyrgyzstan began in 2005 when protests led to the ousting of its then-president and of his successor in 2010. Political instability continued with a coalition government, and

in November 2011 a new president was elected. Uganda has had a long history of conflict, but the most recent bout started in 2008 between anti-government forces in the northeast and the government until the present. Most of these episodes of instability unfolded and continued to linger as this publication was being completed. Only until their effects on the economy at large and the MDGs in particular are fully understood, will we be on more solid ground in including them as part of the analysis.

There is ample evidence that countries affected by major violence have slower poverty reduction rates than countries in more peaceful situations (World Bank, 2011, p. 60). In addition, conflict countries had higher poverty rates than countries without violence. Evidence also shows that compared to non-conflict countries, countries experiencing or coming out of conflict lag behind in school enrolment, child nourishment and mortality levels, access to water and most of the other MDGs (World Bank, 2011, p. 63). Nonetheless, one of the most striking issues is that for many of the nine countries studied here, it would have been very difficult to forecast that such episodes of conflict would ever unfold considering they were witnessing robust economic growth, substantial poverty reduction, and, in some cases, falling vertical income inequality as well. Hence, at the surface, things seemed to be on the right track in these countries. Underneath, however, problems were boiling: high rates of (youth) unemployment, perceived lack of economic opportunities for educated young workers, rising food inflation, perceived corruption and lack of political freedoms.

Macroeconomic and political uncertainties as just described make two things clear. First, that a broad, economy-wide analytical framework is needed to assess the feasibility of policies aiming to improve human development. Second, policymakers will be well served with the availability of scenario analysis that provides contingency assessments when conditions change and shows the macroeconomic feasibility and distributive consequences of alternative policy options. The studies in this volume provide such a framework and scenario analysis. This chapter provides a comparative perspective of the macroeconomic and human development challenges faced by countries like the nine studied in the rest of the volume and summarizes the analytical framework underlying the country assessments. The next section reviews some key issues in financing human development strategies. The third section outlines the contours of a rigorous integrated modelling framework designed to study the effectiveness of policy interventions and financing mechanisms aimed at enhancing human progress (as reflected in the MDGs) taking account of

the complex interactions between the macro-economy, sector trends, and household level dynamics. The fourth section highlights some key findings of the application of the framework for policy analysis as applied to the nine countries and draws some key policy conclusions.

MACROECONOMIC TRADE-OFFS WHEN FINANCING HUMAN DEVELOPMENT

Most economic studies of human development take a sector or micro approach typically using some version of the expanded human capital theory (see e.g., Glewwe, 2002). Decision making about sending children to school or access health care typically is seen to depend on a variety of factors, such as the cost, availability and quality of such social services and expected returns from the use of such services along with a range of household and individual circumstances. Investing in human capital and decisions on how to finance for the use and provisioning of education and health services are essentially seen as cost-benefit assessments in the light of the indicated, context-specific factors determining the supply of and demand for social services. Arguably, such an approach can provide useful insights about the cost-effectiveness of policy interventions trying to improve outcomes in education, health, and other dimensions of human development.

Assessing the feasibility of implementing a more ambitious strategy of reducing poverty and improving human welfare on a broad front, as entailed by the MDGs, requires a more ambitious analytical approach. It requires a framework for policy analysis that accounts for both the microeconomic determinants of needs satisfaction in education, health and drinking water and basic sanitation and macroeconomic trade-offs in the financing of public spending options directed at satisfying those needs. The pursuit of a strategy towards the achievement of the MDGs will likely have strong effects throughout the economy. It will undoubtedly affect the demand for and supply of different types of goods and services, labour and capital, and foreign exchange, and the related adjustments may imply important trade-offs. Such trade-offs may be strong, especially if the period to implement the strategy is relatively short (as is definitively the case for many countries if the goals are to be achieved by 2015). The trade-offs have intertemporal characteristics. In an economic sense, gains from investing in human development take time to materialize. For better education and health outcomes to translate into higher labour productivity and social outcomes takes time, if only because children need to go through one or

more educational cycles, and improved child and maternal health care today will pay off in terms of healthier students and workers several years from now. Given existing deficits, the cost of pursuing the MDGs in most, if not all, of the nine countries studied in this volume should be expected to be substantial in macroeconomic terms. The financing of a broad-based human development strategy thus may induce a number of short-term macroeconomic trade-offs since much of the social and economic payoffs come in the medium and long run.

Public policies are critical to human development, as markets by themselves are poor providers of social services and because of the positive externalities associated with quality education and health and less poverty and inequality (Sánchez and others, 2010). Public financing of the MDG strategy thus also will be critical. Even in most low-income countries, social service delivery and poverty reduction programmes are largely financed through domestic resource mobilization. Increasing taxes or public borrowing in domestic capital markets to finance the MDG strategy may create macroeconomic trade-offs as it may affect private consumption (by reducing disposable incomes through taxation) and investment (by crowding out private sector credit supplies in shallow domestic capital markets). A squeeze of private consumption and investment would hurt output and employment growth and may also affect private provisioning of and demand for social services. As a result, governments may need to further step up efforts to achieve human development goals as they may need to step in more in order to compensate for less private spending on social services.

Appreciation of the real exchange rate (RER) and possible erosion of export competitiveness poses another potential macroeconomic trade-off. The effect is likely to be stronger in the case of external borrowing or foreign-aid financing. One way to define the RER is as the price of “tradables” relative to “non-tradables”. Government services, including education, health, and infrastructure are typically seen as “non-tradable commodities”. Consequently, a large shift in domestic spending towards social services will push up demand for non-tradables. As a result, the price and cost of such services is likely to increase, since the government will, among other things, try to hire more teachers and medical personnel, and may have to increase their wages if such workers are in short supply. Rising costs of non-tradable services will, in principle, shift the relative price against tradables, thus inducing an appreciation of the RER as defined above. Financing human development through aid flows or foreign borrowing will likely

exacerbate the real appreciation of the exchange rate, as it will increase the supply of foreign exchange in the economy. In any case, the decrease of the RER results in a loss of competitiveness of exports and import-competing firms. This may have important implications for long-term growth, as the export sector in many developing countries is an important contributor to aggregate growth and has potential dynamic spillover effects for the economy at large. Real appreciation of the exchange rate may result in the so-called “Dutch disease”, when it leads to a resource allocation away from export industries, resulting in an undesirable structural change away from dynamic production activities—a shift that is typically difficult and time-consuming to reverse.¹ However, the impact on competitiveness will depend on, among other factors, how greater achievement of human development goals will affect the economy over time. Better infrastructure and a better-educated and healthier labour force may have important externalities in the form of productivity growth, attract foreign investors and thereby have a dynamic impact on economic growth. This presents an inter-temporal trade-off, as the real appreciation of the exchange rate would erode export competitiveness in the short run, while productivity gains and faster economic growth from increased human development levels would pay off only in the medium to long run. The question then is whether the negative short-run effects can be contained so as not to limit the resources available for long-term investments in human capital.

Emerging labour market constraints may pose another macroeconomic trade-off. For many of the countries under study, especially those with lower levels of income per capita, large-scale investments in pursuance of human development goals could overstretch the availability of skilled labour, as expanding health, education and other social services would increase the demand for teachers, nurses, doctors and other trained workers. This could lead to upward pressures on real wages of skilled workers, which in turn would increase the overall labour costs for the public sector and the cost of achieving the development goals. Bourguignon and Sundberg (2006) suggest that, for reasons such as these, a sequenced approach to expanding MDG-related social services may be needed in order to avoid disruptive pressures on labour costs owing to skill bottlenecks. Investing in specialized education and training for teachers and medical personnel should then precede or move in parallel with the expansion of the services themselves. Over time, other labour market constraints may be induced by the human development strategy. As more educated workers enter the labour market, the economy will also need to adjust to provide them with adequate job

opportunities. Insufficient creation of skilled jobs in the economy could jeopardize the achievement of the education MDG and could further result in high rates of (youth) unemployment and skill mismatches in the labour market that can be catalysts of conflict.

Such labour-market concerns and their implications for inequality and poverty are particularly pressing against the backdrop of recent conflict episodes in some of the countries under study. In all countries studied in this book, employment creation did not keep pace with GDP growth in the period from 1991 to 2009, indicating productivity growth has implied insufficient employment generation for these countries’ growing labour forces. Interestingly, for most countries, employment growth has been less than labour force growth, as reflected in the negative “net” employment growth rates in Figure 1.1. Uzbekistan witnessed the strongest net job loss at a rate of about 1.2 per cent per year, even as their per capita GDP growth remained relatively modest. Among the faster-growing economies of the group since 1991, Tunisia and Egypt did not manage to sustain a relatively labour-intensive growth pattern.

Figure 1.1:
Net employment and GDP per capita growth,¹ 1991-2009

¹ Senegal and Uganda are not included as data on employment growth net of labour force growth were not available for these countries.

Sources: ILO, Key Indicators of the Labour Market (KILM); World Bank, World Development Indicators database; IMF, World Economic Outlook data.

Against this backdrop, it is then unsurprising that for Tunisia and Egypt, and perhaps also Yemen,² palpable economic growth and MDG progress (in Egypt and Tunisia at least), and even the ability of governments to shield social developments against the effects of the global financial crisis (in Tunisia and Egypt), a large part of the population has expressed discontent over high rates of (youth) unemployment and skill mismatches in the labour market—reflecting inequality of opportunities, among other factors mentioned in the introduction. This expressed discontent has ignited political conflict that will likely have unfavourable repercussions for future human development.

ASSESSING HUMAN DEVELOPMENT STRATEGIES

An integrated macro-micro modelling framework

Since such economy-wide interaction effects are likely to be pervasive, an integrated macro-micro modelling framework has been applied to understand these interactions in the specific context of each of the nine countries under study. The policy modelling framework integrates three analytical components.

First, a dynamic computable general equilibrium (CGE) model is at the core of the framework. The CGE framework applied for this purpose is called *Maquette* for MDG Simulations (MAMS), developed originally at the World Bank (Lofgren and Díaz-Bonilla, 2010ab) and subsequently improved in numerous country-specific applications in collaboration with the United Nations and national experts (see, e.g., Sánchez and others, 2010, for applications to a large number of Latin American and Caribbean countries). MAMS has been built from a fairly standard CGE framework with dynamic-recursive features,³ but incorporates a special module which specifies the main determinants of MDG achievement and the direct impact of enhanced public expenditures on MDG-related infrastructure and services. MAMS considers specific targets for achieving universal primary education (MDG 2), reducing under-five and maternal mortality (MDGs 4 and 5) and increasing access to safe water and basic sanitation (MDGs 7a and 7b). In the case of MDG 2, the demand for primary and other levels of schooling is a function of student behaviour (enrolment, repetition, graduation). Student behaviour, in turn, depends on the quality of education (identified by a variable such as service delivery per student), income incentives (the expected wage premium from education), the under-five mortality rate (a proxy for the health status of the potential student population), household consumption per capita (a

proxy for the capacity to pay for education and for opportunity costs) and the level of public infrastructure (a proxy for the effective distance to school). Under-five and maternal mortality are considered to be determined by the availability of public and private health services, household consumption per capita, the level of public infrastructure (a proxy for the effective distance to health centres and hospitals), and the coverage of water and sanitation services. Access to water and sanitation, on the other hand, is modelled as a function of household consumption per capita, the provision of such services by public or private providers and the level of public infrastructure. Achievements in the reduction of income poverty are measured as the outcome of the overall general equilibrium effects from dynamic adjustments in production, employment, wages and other relative prices, as well as changes in the quality of human capital through MDG-related expenditures.

Second, microeconomic and sector analyses of determinants of outcomes for MDGs 2, 4, 5 and 7 were undertaken for each of the nine countries. Human capital models, along the lines referred to in the previous section, were estimated to identify the influence of both supply and demand factors on outcomes in, respectively, education, health and drinking water and sanitation. The findings of this analysis were used to calibrate the MDG module of MAMS for each country case.

Third, poverty and inequality indicators are estimated—for various MAMS scenarios—through a non-parametric microsimulation approach which, in turn, allows for the assessment of the extent to which the target for poverty reduction (MDG 1) is being met. This is done by taking the labour market outcomes (i.e., unemployment, employment structure, relative remunerations, and skill composition) of MAMS scenarios and imposing these on household survey data providing the full distribution of income. This procedure is followed because CGE models like MAMS typically only specify a limited number of representative households, providing insufficient detail regarding changes in the income distribution in order to be able to make robust statements regarding the poverty outcomes. The microsimulation approach applied to the country studies in this volume is that proposed by Vos and Sánchez (2010), which fits a recent tradition of combining economy-wide modelling instruments and micro-level data of the full income distribution.⁴

Policy scenarios

As said, MAMS considers specific targets for key MDGs (2, 4-5, 7a and 7b). The related social services may be provided publicly or privately.

However, in the policy scenarios undertaken in the country studies it is assumed that governments will attempt to scale up interventions (reflected in higher current and capital spending on social services) in order to meet the targets for primary education, child and maternal health and drinking water and basic sanitation. Based on country-specific assessments, it is further assumed that the effectiveness of those interventions is subject to diminishing returns. That is to say, the closer one gets to the target, interventions tend to become more costly. This is realistic in the sense that one typically finds that, for instance, when child mortality rates have already come down to low levels, reducing them further typically requires more costly interventions as remaining cases of early child death tend to be caused by more complex health factors.

A business-as-usual (BAU) or baseline scenario is generated first to establish a benchmark for each country. Starting from a base year, around 2005, this reference scenario replicates actual economic performance under existing policies implemented in recent years (2005-2010) and then projects the observed trends to 2015. The BAU assumptions may vary depending on the country case, but the deceleration in GDP growth caused by the global financial crisis of 2008-2009 has been accounted for in most country cases. Government consumption and other components of recurrent spending evolve following certain rules (for example, that they grow at a given rate per annum or represent certain share of GDP), which is part of the model's closure rules. The spending rules were set to mimic unchanged expenditure policies of the recent past. Government investment spending depends on the demand for capital in the public services sector and this, in turn, varies as the government consumes to deliver services. Government spending can be financed from various sources: direct and indirect taxes, domestic and foreign borrowing, and foreign transfers from abroad (foreign aid). Alternatively, fiscal space can be created for social spending through reallocation of existing public expenditures. In the baseline for most countries, private investment is assumed to remain fixed as a share of GDP, while savings rates of private agents adjust endogenously to ensure the model consistency requirement that total savings equal total investment is met.

The baseline scenario also helps to identify whether the MDG targets would be met by 2015 under business-as-usual conditions and policies. Some of the country assessments presented in this volume consider various baseline scenarios; for instance, with more and less optimistic GDP growth assumptions (Egypt, South Africa) or assuming that public spending responds pro-cyclically or countercyclically to GDP growth (Tunisia).

In the MDG-financing scenarios, public expenditures are scaled up in order to meet defined targets for primary education, mortality rates, and water and sanitation, unless they were already met under the baseline scenario. These scenarios thus enable us to gauge how much it would cost the government to ensure that unmet goals under the baseline are effectively met by 2015. To achieve this, government spending by MDG sector becomes endogenous (or no longer evolves following certain rules as in the baseline scenario) and emerging fiscal deficits can be financed through increased taxation, domestic or foreign public borrowing and/or seeking more foreign aid. Another closure-rule change compared with the baseline is that overall investment is assumed to be savings driven. That is to say, the amount of private investment that can be realized at the end of the day depends on the total availability of savings. Generally speaking, it can be argued that the nine countries tend to face overall financing constraints, especially given their generally low initial levels of domestic savings and limited access to international capital markets.

In one case, Uganda, the alternative MDG-financing scenarios have also been assessed in combination with assumptions about possible improvements in the efficiency in the delivery of social services. In the case of Yemen, the scenario analysis also includes an assessment of the scope for reallocation of existing expenditures in favour of more spending for infrastructure and MDG-related social services.

MDG-FINANCING STRATEGIES: A COMPARATIVE COUNTRY ANALYSIS

This section provides a comparative analysis of the nine country studies of this volume which all applied the modelling framework described above as adapted to each specific context. The studies tried to answer the following key policy questions:

- How much progress would the countries make towards internationally and nationally set MDG targets under essentially unchanged public spending and financing policies?
- What, if any, would be the cost of additional efforts in order to meet the targets by 2015?⁵
- What would be feasible financing options to cover the cost of additional policy efforts to be made, considering potential macroeconomic trade-offs and fiscal and debt sustainability considerations?
- To what extent is progress towards the achievement of the MDGs for education, health and sanitation also helping meet the target for poverty reduction?

Human development in the “business as usual” scenario

Table 1.2 gives an overview of the expected degree of progress the countries would make towards the key MDG targets by 2015 under the assumptions of the BAU scenario. This scenario presents more realistic benchmarks for assessing whether countries would be “on track” or “off track” towards the targets compared to those presented in the introduction (see Table 1.1), because they are no simple linear projection of past trends. Instead, this scenario provides a counterfactual projection of what the progress could be under an expected path of economic growth and existing public spending priorities and budget financing policies. In addition, non-linearities in the effectiveness of social spending in achieving the targets are taken into account as explained above.

Table 1.2 measures the degree of progress towards the MDGs under the BAU scenario as the percentage of the target value to be met by each country by 2015. None of the nine countries would meet all targets under the baseline assumptions, although some would show remarkable progress. Egypt would show most progress and even would overachieve the targets for MDGs 4, 5 and 7a and the country would meet more than 90 per cent of the targets for MDGs 2 and 7b. It would only fall significantly short of meeting the poverty reduction target. Egypt’s BAU scenario is rather optimistic, however, as it was conceived prior to the eruption of the revolution in early 2011 and, at the time of writing, the economic and social costs of the difficult political transition were unknown. Egypt’s revolution likely has caused important setbacks in the progress towards the MDGs. Four other countries, Tunisia, Uzbekistan, Kyrgyzstan and the Philippines, also show remarkable progress, though would not meet several of the targets under the BAU scenario. Yemen and Uganda would show least progress under their respective baseline assumptions. Both Tunisia and Yemen were also affected by political conflict and change as part of the Arab Awakening. While not captured in the BAU scenario, these events likely have slowed MDG achievement.

The effects of the global financial crisis of 2008-2009, in contrast, are considered in the BAU scenario which in most cases also assumes that an economic recovery begins in 2010. Employment and income per capita gradually recover during 2010-2015, enabling poverty to fall in most countries, except in the Philippines where the path to recovery has been projected to evolve much more slowly under the baseline assumptions. Four countries over-achieve the poverty goal (Kyrgyzstan, South Africa, Tunisia and Uganda) and one meets almost 94 per cent of the target (Uzbekistan). In contrast, two countries (Egypt and Yemen) manage to

achieve only around 60 per cent of the required reduction in the poverty rate when measured on the basis of national poverty lines. When measured against the international thresholds of \$1.25 or \$2.00 per day, Egypt would meet the target of halving the poverty incidence (not shown in Table 1.2). In some countries, Egypt and Uganda in particular, poverty reduction would fall short of the target not only because of low economic growth in the BAU scenario, but also because of rising income inequality. As discussed further below, inequality rises in these cases mainly because of widening wage gaps between skilled and unskilled workers.

Table 1.2
Achievement of MDG targets by 2015 under the BAU scenario (per cent)¹

Per cent						
	MDG 1 ²	MDG 2 ³	MDG 4 ⁴	MDG 5 ⁵	MDG 7a ⁶	MDG 7b ⁷
Egypt	60.4	91.8	100.9	153.9	101.1	95.7
Kyrgyzstan	181.7	93.8	45.9	46.6	99.9	70.0
Philippines	82.7	61.1	98.2	82.6	105.0	107.0
Senegal	69.7	80.9	99.8	40.0	102.6	67.6
South Africa	110.2	72.0	27.0	78.7	87.4	95.4
Tunisia	117.0	98.1	94.8	56.8	99.7	95.2
Uganda	114.8	51.7	52.0	39.1	86.4	74.8
Uzbekistan	93.6	98.7	84.9	81.9	97.7	92.6
Yemen	59.3	55.8	59.5	n.a.	71.2	43.0

1 Achievement refers to the percentage of the MDG target that the country would achieve by 2015 under the BAU scenario. The most moderate scenario in terms of GDP growth is considered for countries for which more than one BAU scenario was generated. The “pro-cyclical scenario” as labelled in the country study is used for Tunisia.

2 The target for MDG 1 is to halve the percentage of the population living on less than a \$1.25 a day (Tunisia and South Africa) or an income/consumption per capita level below a national poverty line (all other seven countries). Achievement by 2015 under the BAU scenario is not available for Tunisia. However, 117 per cent of the MDG-1 target had been achieved in this country by 2005, which is the percentage achievement used in the table.

3 The target for most countries is to reach, by 2015, on-time primary school completion rates between 95 and 100 per cent. The least ambitious targets are set for South Africa (92 per cent), Senegal (90 per cent) and the Philippines (81 per cent). For Kyrgyzstan, the school completion rate is for basic education (grades 1-9).

4 Reduce by two thirds the under-five mortality rate.

5 Reduce by three quarters the maternal mortality ratio. Data are not available (n.a.) for Yemen as targets for the maternal mortality ratio are not considered as part of the country study.

6 Reduce the proportion of people without sustainable access to safe drinking water according to a national target.

7 Reduce by half the proportion of people without sustainable access to basic sanitation according to a national target.

Source: Country studies of this volume.

How much would it cost to achieve the MDGs?

The MDG-financing scenarios delineate a path towards the full achievement of the targets for MDGs 2, 4, 5 and 7a and 7b, as defined in Table 1.2. Through these scenarios MAMS allows to obtain an estimate of the required additional public spending based on a scaling up of interventions which were found to be effective in increasing primary school completion rates, reducing child and maternal mortality and improving access to drinking water supply and basic sanitation. In addition to the direct costs of the interventions and the macroeconomic trade-offs, the model considers three important factors which may influence these cost estimates: the complementarities or synergies in achieving the various development goals (e.g. improved health may accelerate progress towards the education goal); the source of financing for the additional public spending which, as already indicated, influences the required cost of achieving the MDGs; and decreasing marginal returns to additional public spending (which would over time increase the marginal costs to achieve each of the development goals).

To determine how much it will cost to achieve the MDGs, we analyse the required “additional MDG-related public spending” defined as the difference between the estimate for total spending on MDG-related public services under each of the MDG-financing scenarios and the estimate for total spending on MDG-related public services under the BAU scenario.⁶ As shown in Table 1.3 (see last four columns), Egypt would have to spend less than 0.3 per cent of GDP per year to ensure that MDGs 2 and 7b are achieved by 2015—though this estimate may be much larger if the effects of Egypt’s revolution were taken fully into account. The other MDGs are achieved under the BAU scenario. For most other countries, additional MDG-related public spending would be between 5 to 10 per cent of GDP per year—or even more, as in Yemen under the domestic resource mobilization scenarios. Interestingly, countries that would make good progress towards the MDGs under the BAU scenario (Kyrgyzstan, the Philippines, Tunisia and Uzbekistan), owing in part to relatively high base-year cost of education, health and basic sanitation services, would also need to significantly step up public spending in order to achieve the targets. These countries may need to find ways to enhance the efficiency of service delivery in order to contain costs.

As mentioned, the financing strategy matters for the estimates of additional MDG-related public spending. Six country analyses considered domestic resource mobilization scenarios through taxation or borrowing. Financing the additional public expenditures through domestic resources (borrowing or taxation) tends to increase the total costs of the strategy in

all but one case (Uzbekistan) as compared with financing through external resources (foreign borrowing or grant aid). Crowding out of private spending makes domestic borrowing the more costly scenario in macroeconomic terms in most cases, while external financing tends to be least costly in all nine country cases. Tax-financing would be less costly as compared with the domestic borrowing scenario in most cases, including Tunisia, Uganda, Uzbekistan and Yemen. This is not the case in the Philippines and Egypt where the “consumption-compression” effect of higher taxation appears to be rather strong. As discussed further below, these macroeconomic cost implications of alternative financing options are not the sole criterion for deciding which might be the more viable option. Other aspects, like debt sustainability and the feasibility of raising tax burdens need to be taken into consideration as well.

Table 1.3
MDG-related public spending in the base year and simulated scenarios¹

Per cent of GDP per year						
	<i>Base year</i> ²	<i>BAU scenario</i> ³	<i>Additional spending under different financing scenarios</i> ^{3/4}			
			<i>Foreign aid</i>	<i>Foreign borrowing</i>	<i>Domestic borrowing</i>	<i>Taxation</i>
Egypt	1.48	1.50	0.26	0.26	0.27	0.28
Kyrgyzstan	5.58	4.88	7.83	7.83	n.a.	8.21
Philippines	2.21	2.00	6.30	6.30	7.17	7.41
Senegal	6.66	7.18	8.04	8.04	n.a.	n.a.
South Africa	5.91	3.07	n.a.	n.a.	n.a.	9.08
Tunisia	5.28	5.09	5.56	5.56	6.10	6.09
Uganda	3.89	4.24	6.73	6.73	9.47	9.21
Uzbekistan	5.94	6.28	n.a.	4.76	4.81	4.62
Yemen	5.37	16.04	10.39	10.39	18.76	17.39

¹ MDG-related public spending is defined in the text. For most countries, the base year of the simulation period is on or around 2005 (2004 for Yemen, 2006 for Kyrgyzstan and the Philippines, and 2007 for Egypt and Uganda).

² Lack of detailed information on all MDG-related public spending in the corresponding MDG sectors which was required for the construction of the Social Accounting Matrix (SAM) to which MAMS has been calibrated may have caused the base-year MDG-related public spending appear low in some countries (notably Egypt and the Philippines).

³ Annual average of the period from the base year to 2015, unless otherwise indicated.

⁴ Results are not available (n.a.) for financing scenarios considered infeasible in the country studies.

Source: Country studies of this volume.

Before getting to those issues, it is important to note that the simulation results reflect the impact of the global financial crisis on the nine countries studied. The crisis caused a slowdown in the growth of GDP, employment, household consumption, tax revenue and government spending, which, taken together, triggered setbacks in MDG progress in the BAU scenario. Consequently, the additional public spending requirements to achieve the MDGs tend to be significantly higher than would have been the case had the crisis not taken place. A related study for six countries (United Nations, 2011, Box I.3) estimates that public spending would need to be scaled up by an additional 0.2-1.5 per cent of GDP per year between 2010 and 2015—over and above additional efforts in a scenario of continued pre-crisis economic trends. The six countries of the referred study included Kyrgyzstan, Uzbekistan and Philippines, for which the additional efforts were estimated at, respectively, 0.5 per cent, 0.2 per cent and 1.0 per cent of GDP per year during 2010-2015.

What are feasible financing scenarios?

Except in Egypt (when not considering the impact of the revolution), achieving the MDGs clearly poses a major macroeconomic challenge. For the countries that went through periods of political turmoil and conflict, like Egypt, Tunisia and Yemen, the costs estimates presented in Table 1.3 may in fact underestimate the actual challenge by a significant margin. It was further shown that the source of financing matters to the cost estimates, with external financing typically appearing least expensive in the short to medium run. Yet, this does not necessarily mean external borrowing or accessing more foreign aid would be the better options to finance additional MDG spending requirements. In fact, most country studies (Kyrgyzstan, Philippines, Senegal, South Africa and Uzbekistan) recommend increasing tax revenues to finance the MDG strategy. In two studies, Kyrgyzstan and Senegal, the recommendation is to combine greater tax collection with additional foreign aid. A key argument is that in most countries present tax burdens are low, so tax reform would be preferred to increasing the public debt burden, either because debt sustainability would come into question or because of concerns of crowding out of private investment (with increased domestic borrowing) or loss of export competitiveness induced by a real exchange rate appreciation (with a larger influx of foreign loans).

Three country studies (Tunisia, Uganda and Yemen) conclude that tax financing is not a feasible option as there would be little space to further

broaden the tax base (including because of a large informal economy), because existing tax burdens on taxable parts of the economy are already considered very high, and/or because the tax burden would need to be drastically increased by unrealistic margins (as in the cases of Yemen and South Africa; see Figure 1.2).

Figure 1.2:
Required tax revenue for financing MDG-related public spending by 2015¹

¹ Base year is defined in the first note to Table 1.3. Results are not provided for countries for which tax financing was not considered to be a feasible option in the country study. For Kyrgyzstan and Senegal, the mixed financing scenario combines tax financing and foreign-aid financing. An asterisk (*) indicates that the study of the corresponding country recommends the tax financing option (alone or combined with foreign aid).

Sources: Country studies of this volume.

Four country studies recommend financing exclusively through foreign aid (Tunisia and Uganda) or in combination with increased taxation (Kyrgyzstan and Senegal). However, in such case, these countries would need to mobilize substantial amounts of additional foreign aid in the order of between 6 and 14 per cent of GDP (Figure 1.3), which will be extremely challenging in a global context in which donor countries are limiting their aid budgets.

Figure 1.3:
Foreign aid required for financing MDG-related public spending by 2015¹

¹ Base year is defined in the first note to Table 1.3. Results are not provided for countries for which the authors consider foreign-aid financing as an unfeasible option in the country study. For Kyrgyzstan and Senegal the mixed financing scenario combines foreign-aid and tax financing. An asterisk (*) indicates that the corresponding country study recommends the aid financing option (alone or combined with increased tax revenues).

Source: Country studies of this volume.

Only one country study (Egypt) recommends a strategy exclusively based on additional government borrowing. The authors of Egypt's study recommend domestic borrowing in the first place because the government relied mainly on this source of financing during the late 2000s in order to avoid exchange rate risks seen to be associated with external borrowing, but also because additional borrowing requirements to finance the additional MDG-related public spending would be negligible. However, the feasibility of this policy will likely be put into question by the dire economic and fiscal situation of Egypt during its post-revolution reconstruction, which—at the time of writing—had led the interim military government to seek external funding rather than tapping the domestic capital market. The more so, because Egypt's public debt burden already well exceeded 100 per cent of GDP before the revolution. In all cases, possibly with the exception of Uzbekistan, public borrowing to finance the MDG strategy would likely lift debt burdens to unsustainable levels (Table 1.4).

Table 1.4
Total public debt in the base year and 2015 in the baseline and borrowing scenarios¹

Per cent of GDP				
	<i>Base year</i>	<i>BAU scenario</i>	<i>Foreign borrowing</i>	<i>Domestic borrowing</i>
Egypt²	118.7	121.1	123.0	125.0
Kyrgyzstan	77.1	26.0	71.8	n.a.
Philippines	61.8	56.6	85.6	135.0
Senegal	48.9	84.9	148.7	n.a.
Tunisia	56.6	33.2	73.8	n.a.
Uganda	19.5	22.9	67.5	188.2
Uzbekistan	27.5	6.8	34.1	49.0
Yemen	39.8	53.6	140.2	82.6

¹ Base year is defined in the first note to Table 1.3. Results are not available (n.a.) for borrowing scenarios that were not analysed in the country studies as they were considered unfeasible options. The authors of South Africa's study do not report results for the borrowing scenarios which they consider infeasible in the context of the country.

² The BAU scenario for Egypt does not consider the reduction in the public debt to GDP ratio observed from 2007 to 2009 because MAMS for this country had been estimated and calibrated before this reduction was reflected in the official data.

Source: Country studies of this volume.

The trade-off between foreign financing and loss of export competitiveness varies in degree across countries (Figure 1.4). Where “Dutch disease” effects are strong, as in the cases of Senegal and Uganda, this may have important implications for long-term growth, especially if the export sector is an important contributor to aggregate growth. The trade-off shown in Figure 1.4 refers to the short-to-medium term impact. Greater investment in human capital, complemented by other conditioning factors, may create additional productivity gains over time, however. The challenge to policymakers thus would be to avoid that, in case of opting for foreign financing, the negative short-run effects can be contained so as not to limit the resources available for long-term investments in human capital.

Yemen's country study concludes that, considering the magnitude of the MDG challenge, full, on-time MDG achievement by 2015 does not appear a realistic objective. The required financing is unlikely to be available and, if it were, it would be extremely challenging for the government to bring about the required increases in real service delivery without strong sacrifices in efficiency.

Considering the macroeconomic trade-offs, probably all countries should consider a mixed financing strategy. In most cases, the balance in this mix

Figure 1.4:
Simulated change in RER and export-to-GDP ratio under the recommended MDG-financing scenario compared with the BAU scenario, 2010-2015¹

¹ An asterisk (*) indicates that the country study recommends foreign-aid financing (alone or combined with increased tax revenues). Yemen is excluded for the reasons explained in the text.
Source: Country studies of this volume.

should be tilted towards broadening the tax base, in particular given already high public debt burdens. A further option, explored in the case of Yemen only, would be to seek gains in the reallocation of government spending. In Yemen, where the required MDG financing would unlikely be available, there would notably be more MDG progress than under business-as-usual conditions, if the government reduces spending that is presumably wasteful or covers overlapping functions in order to commensurately expand human development-related spending.

Poverty reduction, inequality and growth

Substantial poverty reduction is achieved under business-as-usual conditions in most countries. This holds in particular for Uganda where

poverty reduction appears rather responsive to employment growth. Baseline trends in South Africa suggest a significant shift in the skill composition of labour in favour of less educated workers while the average real wage level increases at a robust pace. As a result, there would be notable declines in both income inequality and poverty (Table 1.5).⁷ In the other country cases, however, inequality increases slightly in the baseline, mitigating the degree of poverty reduction. In the Philippines, poverty is projected to increase under the baseline assumptions, as a consequence of a sharp rise in unemployment during global crisis of 2008-2010. Unskilled workers are affected in particular.⁸

Would scaling up public spending to meet the targets for improving primary education, child and maternal health, and water and sanitation help accelerate poverty reduction? This is indeed found to be the case in all country studies for which the poverty impact could be calculated (see final two columns of Table 1.5), except for Uzbekistan. Senegal might see the fastest acceleration in poverty reduction as a result of an expected strong increase in real wages induced by the MDG strategy.⁹ Nonetheless, the acceleration would not be enough for Senegal to reach the target for poverty reduction by 2015. Also in the Philippines the acceleration in poverty reduction would be insufficient for meeting the target. Unlike in all other cases, the MDG scenario for Yemen presented in Table 1.5 does not fully scale up MDG-related spending to ensure meeting the targets for education, health, and drinking water and sanitation. Rather, it assumes a budget reallocation in favour of MDG-related spending, as explained in the note to the table. The demand for skilled and semi-skilled workers increases with the expansion of education and health services, thereby helping contain the fall in real wages projected in the baseline scenario. This, in turn, induces greater poverty reduction, enough to meet the target for MDG 1. Uzbekistan is the only case where scaling up MDG-related spending would slow poverty reduction (by almost 2 percentage points). The scenario presented assumes the additional public spending is financed by increasing direct taxes, which reduces disposable income growth and hence poverty reduction.

The results of the microsimulations suggest that progress towards MDG 1 is mostly explained by average income and employment growth and less by changes in the distribution of income/consumption under both the BAU and MDG scenarios (Table 1.5). However, higher growth—or a lower negative growth rate—of both employment and real wages relative to the baseline, explain the reduction in the poverty rate in the MDG scenarios

Table 1.5

Labour market, inequality and poverty indicators in the simulation period under alternative scenarios¹

Per cent of GDP												
	<i>Employment (annual average growth rate)</i>		<i>Unskilled/ skilled employment ratio (annual average growth rate)²</i>		<i>Real wage per worker (annual average growth rate)</i>		<i>Unskilled/ skilled wage ratio (annual average growth rate)²</i>		<i>Gini coefficient (absolute change from the base year)^{3,4}</i>		<i>Poverty rate (absolute change from the base year)^{3,5}</i>	
	BAU scenario	MDG scenario ⁶	BAU scenario	MDG scenario ⁶	BAU scenario	MDG scenario ⁶	BAU scenario	MDG scenario ⁶	BAU scenario	MDG scenario ⁶	BAU scenario	MDG scenario ⁶
Egypt	3.4	3.4	3.4	3.3	5.0	4.9	-3.2	-3.0	0.049	0.047	-0.2	-3.1
Kyrgyzstan	2.7	2.6	6.0	5.7	3.0	2.9	-7.2	-7.8	0.007	0.002	-2.0	-2.5
Philippines	2.4	2.0	-1.9	-3.3	0.7	1.4	1.7	1.5	0.004	0.008	0.3	-0.9
Senegal	2.3	2.4	1.3	1.1	1.5	4.9	-4.1	-6.8	n.a.	n.a.	-1.1	-5.2
South Africa	1.0	0.8	-4.3	-5.1	3.2	3.8	3.7	4.0	-0.023	-0.025	-15.4	-16.5
Tunisia	-0.4	-0.3	-6.2	-6.0	4.6	5.1	4.7	3.9	n.a.	n.a.	n.a.	n.a.
Uganda	5.8	5.9	1.6	1.5	0.3	2.6	-0.3	-3.1	0.040	0.070	-6.4	-6.6
Uzbekistan	2.9	2.9	-6.4	-6.8	6.4	6.3	7.8	7.1	n.a.	n.a.	-10.9	-9.2
Yemen	3.4	3.4	-3.6	-3.6	-0.3	-0.1	0.9	0.6	-0.004	-0.004	-0.9	-1.2

1 Some entries are missing (n.a.) for countries whose corresponding study did not estimate results for poverty and inequality (Gini) due to lack of data.

2 Unskilled labour includes workers who have less than a complete secondary education, whereas skilled labour includes workers who have completed secondary education or above.

3 For most countries for which microsimulations were conducted, excluding Uganda and Yemen, the base year of the MAMS simulation period matches exactly the base year of the microsimulations (i.e., the year for which the household survey dataset used to conduct the microsimulations was compiled).

4 Gini coefficient calculated for per capita household consumption for Kyrgyzstan and per capita household income for all other countries.

5 Refers to the percentage of the population living on less than a \$1.25 a day (South Africa) or an income/consumption per capita level below a national poverty line (all other countries except Tunisia). In general, most countries find it more challenging to meet a poverty target when the poverty rate is calculated using national poverty lines.

6 The reported results are for the recommended MDG-financing scenario as identified in the text. In the case of Yemen, no MDG-financing scenario is recommended by the authors of the country study as explained in the text. In this table, however, results for Yemen have been included for a scenario consisting of a 50 per cent cut in the growth rate for government expenditures that are not related to MDG sectors or infrastructure, during 2011-2015, with expansion in MDG-related spending sufficient to make use of the resulting fiscal space. The scenario is similar to the MDG-financing scenarios in that there is an increase in MDG-related spending, though financing is not really being affected, and there is no deliberate targeting of any MDG.

Sources: MAMS country model simulation and microsimulation results and analysis from country studies of this volume.

only in three countries (Senegal, Uganda and Yemen). Interestingly, employment stays the same or grows by less than in the baseline in the cases of Egypt, Philippines, South Africa and Kyrgyzstan. This result is apparently associated with the lower labour intensity of MDG-related services sectors compared to the average for tradable sectors in these countries. Also, as said, higher spending to expand government services in education, health, and infrastructure triggers an appreciation of the real exchange rate eroding export competitiveness, that would result in job losses in some export sectors, particularly in Kyrgyzstan, the Philippines and South Africa (see Figure 1.4). Thus, progress towards MDG 1 when MDG-related spending efforts are stepped up in these four countries is mostly explained by an increase in real wages. Unskilled workers benefit relatively more from this increase in real wages in Egypt and South Africa, as making progress towards MDG 2 implies that these workers become relatively scarcer. The impact on overall income inequality (as measured by the Gini coefficient) is rather small, however. In the other two countries, the Philippines and Kyrgyzstan, real wages for unskilled workers also increase in the MDG strategy. In the case of Kyrgyzstan, skilled workers gain more, including because of greater demand for teachers and medical personnel, thereby pushing up the skill premium by more than in the BAU scenario. Rising real wages also help further poverty reduction in the MDG scenario. Similarly, in the Philippines, the real wage growth supports poverty reduction, despite the slight increase in inequality induced by the stronger increase in demand for skilled workers than for unskilled workers.

GDP growth is somewhat stimulated by MDG spending—compared to the BAU scenario—in all but the two Central Asian countries, but this does not tend to move together with employment growth in a number of countries (Figure 1.5). As said, employment decreases under the MDG scenario in various countries, especially because of job losses in labour-intensive export sectors owing to the real exchange rate appreciation. Less ambiguously, in all countries where GDP growth is stimulated by the increase in MDG-related spending, the implied employment-output elasticity decreases significantly under the MDG scenario (by more than 14 per cent in the Philippines, Senegal, South Africa and Uganda) as explained above.

The predominance of employment and average income effects in explaining changes in poverty suggests that income redistribution effects under both the BAU and the MDG scenarios tend to be weak. This is confirmed by the results for the changes in the Gini coefficient of per capita household income/consumption (see Table 1.5). During the simulation

Figure 1.5:
Employment-output nexus under the BAU scenario and the recommended MDG-financing scenario¹

¹ The reported results are for the recommended MDG-financing scenario as identified in the text, and an asterisk (*) indicates that the country study recommends foreign-aid financing (alone or combined with increased tax revenues). Results for Yemen correspond to the "MDG scenario" defined earlier in the text (see also note 6 to Table 1.5).

Source: MAMS country model simulation results and analysis as reported in the country studies.

period to 2015, little income/consumption redistribution is generally achieved under any scenario. This appears to be a surprising general finding, as the MDG-financing scenarios, in particular, would be expected to help raise education levels and labour-market opportunities for all, with most of the gains benefiting the poor who often tend to have a lower education level. The MDG-financing strategy should be expected to raise both the demand for and supply of skilled workers. However, a fundamental timing disparity needs to be taken into account: the demand for skilled workers in MDG-related services will go up first, whereas the increase in the supply of skilled workers would materialize with a lag, given the time it will take before the better-educated school graduates enter the labour market—most likely beyond the time horizon of the present analysis. However, in the case of the countries under study, some progress was already made in improving access to education during the 2000s, and hence skilled labour-supply growth may already be apparent without the MDG-financing

strategy. Shifts in the skilled-unskilled composition of labour demand will depend further on changes in sectoral labour demand induced by general equilibrium effects of the MDG-financing strategy triggered by both higher government spending and real exchange rate appreciation.

Figure 1.6:
Change in income poverty and GDP per capita growth under the BAU scenario
and the recommended MDG-financing scenario¹

¹ For details on the MDG-financing scenarios see note to Figure 1.5. Poverty has been calculated using the \$1.25 a day poverty line (South Africa) or a national poverty line calculated on the basis of income or consumption per capita, depending on the country (all other countries).

Source: MAMS country model simulation results and analysis as reported in the country studies.

In sum, the employment and real wage effects of an MDG strategy tend to offset each other in terms of their impact on overall income inequality. As a result, the impact on poverty reduction is mainly determined by overall employment and real wage growth. Another important finding is that most countries seem to encounter difficulties in absorbing the growth supply of skilled workers resulting from a successful MDG strategy. Existing economic growth patterns do not appear sufficiently skill-intensive and would suggest countries need to think beyond the MDG strategy and find ways to induce necessary structural change to level up skill demand.

Against this backdrop, in many of these countries, especially those that have recently experienced political conflict (notably, Egypt, Tunisia and Yemen), the MDG-financing strategy will need to be implemented in tandem with production sector and labour market policies that enable raising productivity growth, improving production capacity, and resolving labour market frictions and creating more jobs, especially for skilled labour and groups that, in the case of conflict countries, have felt excluded from their country's economic model. Only in this way, will the MDG-financing strategy achieve its objectives without increasing inequality.

Such policy coherence should be central to inclusive economic and social development strategies aiming to achieve human development goals. Much strengthened policy coherence will also be urgently needed for development strategies beyond 2015, which most likely will be even more ambitious, particularly considering the challenges posed by environmental threats requiring that achievement of human development goals will need to be done in ways that are also environmentally sustainable. This likely will require even larger upfront investments—for instance, in environmental protection, sustainable food agriculture, and cleaner energy supply and use—thus complicating the possible short-term macroeconomic trade-offs to be dealt with for long-term developmental gains. Consideration of such challenges is beyond the scope of this volume and is left for future research.

Other intertemporal trade-offs have clearly come to the fore in the present country studies. The high cost in terms of additional public spending requirements to achieve the MDGs stem in part because the potential economic gains from better education and health outcomes can only be reaped over the medium- to longer-run, since it takes time before better educated workers come out of the schooling system and improved child health translates into higher labour productivity. As economic growth accelerates, the cost (expressed as a percentage of GDP) would thus be expected to decline over time. However, there is no certainty that the economic gains from higher levels of human development will materialize in full. If the economic structure and labour market dynamics are such that better educated workers cannot find employment, this may give rise to new inequalities and a sense of lack of opportunities among important segments of society. As several of the countries studied have witnessed, such conditions may ignite social unrest and conflict. The more general lesson is that human development strategies should be embedded in a broader strategy of inclusive economic growth, ensuring that economic and social development move hand in hand.

NOTES

- 1 The empirical literature on Dutch disease shows a wide range of RER adjustments in response to strong increases in aid flows or private capital inflows, with the extent of the effects depending largely on the relative demand and supply effects across sectors, and thus on country-specific circumstances (Bevan, 2005; Heller, 2005; Bourguignon and Sundberg, 2006; Gupta and others, 2006).
- 2 Yemen's GDP per capita growth rate was more than three times the rate of net employment growth.
- 3 The model is dynamic-recursive basically because it establishes links between period solutions using past and current information only, and updating some variables and parameters. Agents are not forward-looking such that no system of inter-temporal optimization equations is solved.
- 4 Following the non-parametric approach spelled out in Vos and Sánchez (2010), occupational shifts—recorded in MAMS scenarios—have been proxied by a random selection procedure within a segmented labour market structure. In other words, random numbers have been used to determine—in consistency with the results of the different MAMS scenarios—which persons at working age change their labour force status (employment versus unemployment); those who change sector of employment; which employed persons obtain a different level of education; and how new labour incomes are assigned to individuals in the sample. The key assumption is that, on average, the effect of the random changes in such occupational shifts correctly reflects the impact of the actual changes in the labour market. Because of the introduction of a process of random assignation, the microsimulations are repeated a large number of times—in Monte Carlo fashion, and each time the changes in the labour market are imposed on a given distribution derived from household survey data, in order to produce a new income distribution. This allows constructing 95 per cent confidence intervals for indices of poverty and inequality estimated from the newly generated income distribution.

Vos and Sánchez (2010) also suggest how this approach can be generalized to capture the effects of changes in non-labour incomes, such as government transfers, on poverty and inequality. The authors of the Yemen case study have computed individual labour incomes for each MAMS scenario using the said non-parametric approach, but following a slightly different procedure. They adjusted (per capita) non-labour incomes and added them to labour incomes in order to match the change in per capita household income as recorded by MAMS. This enabled them to generate a new individual income distribution that they used to compute a counterfactual household income distribution and estimate the inequality and poverty indicators. For the Kyrgyz scenario analysis, poverty and inequality indicators have been computed using data on consumption per capita rather than income per capita. However, the authors of the chapter on Kyrgyzstan computed consumption per capita for each MAMS scenario based on income per capita results generated through the non-parametric approach, which they combined with a (fixed) marginal propensity to consume for each household.

The microsimulation approach could not be applied for three countries owing to data limitations (Senegal and Uzbekistan) or lack of access to existing survey data (Tunisia). The authors of the Senegal and Uzbekistan chapters have made inferences about how income poverty would evolve under the MAMS scenarios, using a simple constant-elasticity relationship between the headcount poverty rate and real

household consumption per capita—thus essentially ignoring income distribution effects that would likely affect the final estimates on poverty. In the case of Tunisia, no estimations have been carried out to determine changes in poverty under the MAMS scenarios, although the country had met the MDG target for extreme poverty before its recent revolution.

- 5 Some of the country studies also answer two related questions: What social sectors would require the most additional spending? Are there important cost-saving effects from the synergies among the various MDGs?
- 6 In seven countries, the additional MDG-related public spending is calculated as an annual average for the whole simulation period, from the base year (around 2005) to 2015. For the Philippines and Tunisia, however, the authors of the country studies calculated annual averages separately for the “past” (from the base year to around 2010) and the “future” (from around 2011 to 2015) and added them subsequently. The total obtained provides a more accurate estimate that reflects the additional public spending requirements that the governments should have incurred but did not incur before 2010, in order to be fully on track in meeting the MDG targets, and the additional public spending requirements that the government would have to incur after 2010 to fully meet the targets by 2015.
- 7 In the base year of South Africa’s model, the labour market records relatively higher unemployment for unskilled workers. As a consequence, employment changes clear the market for these workers in the BAU scenario—whereas the labour market adjusts more through wages for the most skilled ones. The assumed growth path of the BAU scenario results in a stronger increase in the demand for unskilled workers than for skilled workers. Since the supply of unskilled workers also slows over time (because of improved access to education), real wages for unskilled workers increase faster than those for skilled workers.
- 8 As a result of the increase in the unemployment rate in the Philippines, the country’s poverty incidence was up by 1 percentage point in 2010 compared with 2006. In the BAU scenario, the poverty rate would fall again with the projected economic recovery during 2010–2015. As indicated earlier, the Philippines would achieve about 83 per cent of the poverty target by 2015 under the BAU assumptions (Table 1.2).
- 9 The magnitude by which the poverty incidence decreases in Senegal (and increases in Uzbekistan) may have been magnified by the method of estimation. As explained earlier, a simple constant-elasticity relationship between the headcount poverty rate and real household consumption per capita was used in the studies of Senegal and Uzbekistan due to data limitations that kept the authors of these studies from applying the microsimulation approach. As a consequence, how precise the reduction (increase) in poverty is in Senegal (Uzbekistan) remains unknown as the distributional effects of the MDG strategy are not being taken into consideration.

REFERENCES

- Bevan, David (2005). An analytical overview of aid absorption: Recognizing and avoiding macroeconomic hazards. Paper for the Seminar on Foreign Aid and Macroeconomic Management, March 14-15, Maputo, Mozambique. In *Macroeconomic Management of Foreign Aid: Opportunities and Pitfalls*, Peter Isard, Leslie Lipschitz, Alexandros Mourmouras, and Peter Heller, eds. Forthcoming, International Monetary Fund: Washington, D.C.
- Bourguignon, François and Mark Sundberg (2006). Constraints to achieving the MDGs with scaled-up aid, DESA Working Paper No. 15, New York: United Nations Department of Economic and Social Affairs (ST/ESA/DWP/15). Available from http://www.un.org/esa/desa/papers/2006/wp15_2006.pdf.
- Glewwe, Paul (2002). Schools and skills in developing countries: education policies and socioeconomic outcomes. *Journal of Economic Literature*, Vol. XL (June), pp. 436-482.
- Gupta, Sanjeev, Robert Powell and Yongzheng Yang (2006). *Macroeconomic challenges of scaling up aid to Africa. A checklist for practitioners*. Washington, D.C.: International Monetary Fund.
- Heller, Peter S. (2005). Pity the finance minister: Managing a substantial scaling-up of aid flows, Fiscal Affairs Department, Washington, D.C.: International Monetary Fund.
- Lofgren, Hans and Carolina Díaz-Bonilla (2010a). MAMS: An Economy-wide Model for Analysis of MDG Country Strategies – an Application to Latin America and the Caribbean. In *Public Policies for Human Development: Achieving the Millennium Development Goals in Latin America and the Caribbean*, Marco V. Sánchez, Rob Vos, Enrique Ganuza, Hans Lofgren, and Carolina Díaz-Bonilla (eds.). Basingstoke, U.K.: Palgrave Macmillan.
- Lofgren, Hans and Carolina Díaz-Bonilla (2010b). MAMS: An Economy-wide Model for Development Strategy Analysis. The World Bank: Washington, D.C.
- Sánchez, Marco V., Rob Vos, Enrique Ganuza, Hans Lofgren, and Carolina Díaz-Bonilla, eds. (2010). *Public Policies for Human Development: Achieving the Millennium Development Goals in Latin America and the Caribbean*. Basingstoke, U.K.: Palgrave Macmillan.
- United Nations (2012). *The Millennium Development Goals Report 2012*, United Nations, New York. Available from <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2012/English2012.pdf>.
- United Nations (2011). *World Economic Situation and Prospects 2011*. New York. Available from http://www.un.org/en/development/desa/policy/wesp/wesp_current/2011wesp.pdf.
- Vos, Rob and Marco V. Sánchez (2010). A Non-Parametric Microsimulation Approach to Assess Changes in Inequality and Poverty. *International Journal of Microsimulation*, Vol. 3, No. 1, pp. 8-23. Available from: http://www.microsimulation.org/IJM/V3_1/IJM_25.pdf.
- World Bank (2011). *World Development Report 2011: Conflict, Security and Development*. Available from http://wdr2011.worldbank.org/sites/default/files/pdfs/WDR2011_Full_Text.pdf.