

## Growth and Poverty Reduction

This chapter reviews Armenia's growth performance and poverty indicators since the early 1990s. It seeks to respond to the following four questions: What were the sources of growth? Can the recent rapid growth be sustained? How responsive was poverty reduction to economic growth? What is the minimum annual growth needed for Armenia to reach its poverty target by 2015? The analysis is based on a growth accounting exercise and the results of recent household surveys.

Armenia's growth since the mid-1990s has been impressive. During 1995–98, Armenia's real GDP growth was 5.8 percent per year. Growth rose to an average of 11.6 percent per year during 2001–04. The contraction in output during 1990–94, however, was quite deep, and real GDP took almost 15 years to get back to its 1990 level (Figure 2.1).

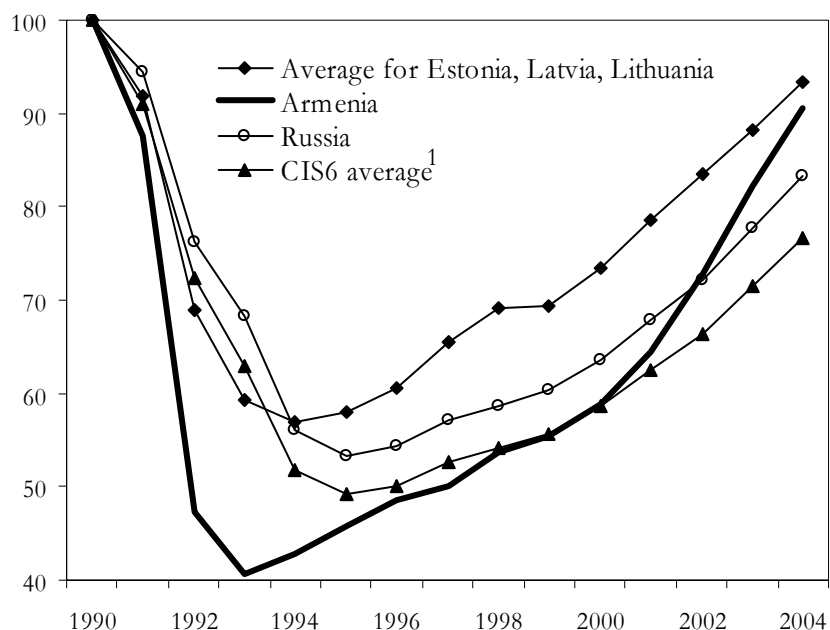
Poverty and inequality indicators have improved significantly in recent years. Extreme poverty fell faster than overall poverty. Gains have not been shared by all regions, however, and have been smaller in rural and in urban areas outside Yerevan. In August 2003, the Armenian authorities endorsed their PRSP, laying out a comprehensive program for sustaining high economic growth and directing public resources toward fighting poverty.

### A. Economic Restructuring and Growth

Sustained rapid real income growth largely reflects the effects of structural and macroeconomic reforms that increased total factor productivity (TFP). In the late 1990s, growth was mostly driven by consumption and was financed by external borrowing and income from the underground economy. Since 2001, growth resulted from a strong expansion of exports and investment. Grant-financed public and private investment in both construction and industry played a key role in a new wave of capital accumulation. At the same time,

Figure 2.1. Index of Real GDP in CIS Countries

(1990 = 100)



Sources: Author's calculations using real GDP growth rates from the WEO database.

<sup>1</sup>CIS-6: Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.

diaspora investors and entrepreneurs played an important role in channeling foreign direct investment (FDI), setting up joint ventures, and promoting exports.<sup>20</sup>

The sectoral composition of output and employment changed radically during the past decade (Table 2.1). In the 1990s, industry contracted rapidly and agriculture became more labor-intensive. By 2003, agriculture accounted for 42 percent of total employment but only 21 percent of GDP. With a large influx of workers from industry to a relatively fixed amount of land, labor productivity in agriculture declined. At the same time, a modest rate of growth in agricultural output was offset by a decline in relative prices of agricultural goods.

<sup>20</sup>The Armenian diaspora represents an extraordinary source of development resources. Private transfers from abroad were estimated at between 15 and 25 percent of GDP in 2003–04. Between 1990 and 2003, an estimated one million Armenians left the country. Almost two-thirds of the migrants are well-educated men of active working age (20–44 years).

Table 2.1. Structure of Output and Employment

	Share of Production (In percent of GDP)				Share of Employment (In percent of total)			
	1990	1994	1999	2003	1990	1994	1999	2003
Agriculture	13	43	27	21	17	34	43	42
Industry	45	29	27	20	31	24	15	15
Construction	18	7	8	16	12	7	4	4
Services	24	21	38	43	40	35	38	39
Total	100	100	100	100	100	100	100	100

Source: Armenian authorities.

Growth in the industry and construction sectors fell in the 1990s but rebounded in recent years. During the past decade, these sectors' share in total employment fell to 15 percent and 4 percent, respectively. The recent growth in industrial output was driven by food processing, jewelry making, and mineral production. The boom in construction provided significant employment opportunities as evidenced by the sharp increase in hourly rates for workers in this sector.

The services sector has been the fastest growing segment of the economy since the late 1990s, especially wholesale and retail trade (Table 2.2). While official employment data indicate that the sector had a limited role in absorbing labor released by industry, this is likely to be associated with deficiencies in the employment data, as many businesses opt not to report their employees to avoid taxation.<sup>21</sup>

An analysis of the expenditure components of GDP shows that, contrary to previous years, the economic boom since 2000 has been driven by net exports and investment rather than by consumption. The share of consumption in GDP fell from 114 percent during 1995–97 to 99 percent during 2001–04 (Table 2.3). The improvement in net exports in recent years reflects the sharp increase in exports of precious stones, metals, and processed food products.

<sup>21</sup>GDP data contain an estimate of the size of the informal sector, but employment data do not.

**Table 2.2. Sources of Growth**

	Average Annual Real Growth (In percent)			Contribution to Growth (Annual averages, in percent)		
	1990–93	1994–98	1999–2004	1990–93	1994–98	1999–2004
Agriculture	–6.1	3.5	6.1	–1.5	1.2	1.5
Industry	–18.3	2.5	7.7	–5.0	0.4	1.7
Construction	–29.8	7.9	23.0	–2.9	0.4	2.6
Services	–22.7	10.4	10.1	–8.6	3.7	3.6
Total	–18.4	5.6	9.3	–18.0	5.7	9.4

Sources: Armenian authorities.

**Table 2.3. Components of GDP by Expenditure  
(In percent of GDP)**

	1995–97	1998–2000	2001–04
Consumption	114.1	109.5	98.5
Private	101.4	97.5	88.5
Public	12.7	11.9	10.0
Fixed investment	16.5	18.7	22.2
Private	12.4	14.3	17.7
Public	4.1	4.4	4.6
Net exports	–33.7	–30.1	–17.8

Sources: Armenian authorities; IMF staff estimates.

## **B. Total Factor Productivity**

Economic growth in Armenia since 1994 has been driven primarily by high rates of TFP growth (i.e., by the improved allocation of resources). As in most transition economies, while capital accumulation had been the main factor behind economic growth in the Soviet era, efficiency gains became the main source of growth in recent years.

**Table 2.4. Output and Total Factor Productivity Growth**  
(Average Annual Percentage Changes)

Period	Output Growth Rate	Capital Growth Rate <sup>1</sup>	Labor Growth Rate	TFP Growth Rate	Labor Productivity Growth Rate
<b>Armenia</b>					
1990–93	-17.3	-1.0	-3.2	-15.4	-16.7
1994–97	5.4	0.9	-2.9	6.0	8.1
1998–2000	5.5	1.9	-2.3	5.3	8.0
2001–04	11.6	5.9	-0.7	8.4	12.5
<b>Albania</b>					
1990–92	-15.3	-7.9	0.6	-10.8	...
1993–96	9.3	0.2	-0.4	9.3	...
1998–2001	7.4	1.3	0.4	6.4	...
2002–03	5.4	2.7	0.8	3.4	...
<b>Azerbaijan</b>					
1990–95	-12.0	3.4	-1.2	-13.5	-3.1
1996–98	5.7	9.5	0.8	-0.3	4.9
1999–2004	9.9	10.2	0.3	3.6	9.7

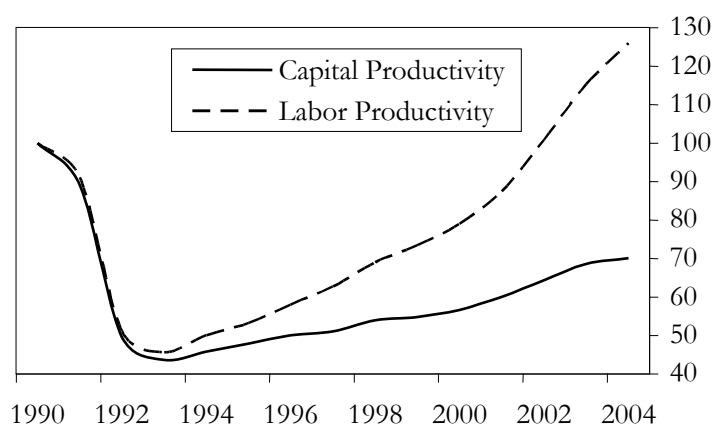
Sources: Authors' estimates for Armenia and Azerbaijan following the methodology of De Broeck and Koen (2000); for Albania, World Bank (2004).

Note: Elasticities of output with respect to capital and labor are set equal to 0.6 and 0.4, respectively, and the annual depreciation rate of the capital stock is 4 percent.

<sup>1</sup>Capital  $K$  is calculated by the conventional perpetual inventory method, as discussed in Barro and Sala-i-Martin (2000):  $K(t+1) = I(t) + (1-d)K(t)$ , where  $I$  is the level of real investment and  $d$  is the rate of depreciation of the existing capital stock.

The growth accounting framework distinguishes between growth arising from increases in inputs (capital and labor) and growth arising from higher efficiency (technological change) in the use of those inputs (TFP). Our estimates show that Armenia's TFP grew at an average rate of 5.3 percent and 8.4 percent per year during 1998–2000 and 2001–04, respectively (Table 2.4). This result—that the initial contraction and the subsequent growth in real GDP were primarily driven by large negative and subsequently large positive rates of TFP growth—is consistent with the findings of De Broeck and Koen (2000) and Campos and Coricelli (2002) for other transition economies.

**Figure 2.2. Capital and Labor Productivity**  
(1990 = 100)



Source: IMF staff estimates.

TFP increases accounted for more than three-fourths of GDP growth since 1998.<sup>22</sup> The analysis also shows that both capital and labor productivity, defined as real GDP to capital and real GDP to labor, bottomed out in 1993 and improved steadily thereafter (Figure 2.2). By 2004, labor productivity far exceeded its 1990 level (although capital productivity was slightly lower).

The figures show a distinct V-shaped pattern in TFP growth. TFP growth in Armenia was sharply negative in the early years of the transition (1990–93) but turned positive after the mid-1990s, indicating that part of the initial sharp productivity decline was temporary, with production factors being less than fully used. Factors such as trade disruptions and the war with Azerbaijan explain a large part of the fall in TFP in the early 1990s. TFP captures increases in productivity, but it also reflects increases in capacity utilization, changes in hidden employment, and the increase in GDP on account of estimated informal sector activity.

For comparison, Table 2.4 also shows the results of the growth accounting framework for Albania and Azerbaijan. Like Armenia, Albania's movements in real GDP growth were mainly driven by movements in TFP. During the sharp contraction of 1990–92, TFP fell dramatically. During the subsequent strong recovery, economic growth in Albania has been driven primarily by high rates of

<sup>22</sup>These results are subject to some caveats, such as data weaknesses due to difficulties in the measurement of formal sector activity, labor hoarding, capacity utilization, and the depreciation rate of capital.

TFP growth. The TFP growth, however, appears to be gradually declining in recent years in Albania as the effect of post-transition reallocation ends. In contrast to Armenia and Albania, more than one-half of the growth in Azerbaijan has been driven by accumulation of capital (mainly in the form of FDI in the oil and gas sectors).

### **Can the recent growth be sustained?**

While Armenia's performance has been impressive, there are some concerns about the sustainability of high growth in the medium to long run. Empirical evidence for several countries indicates that TFP growth is unlikely to remain high for a long time.<sup>23</sup> As post-transition reallocation gradually tapers off, the country must raise its investment further in order to sustain high rates of GDP growth.

Long-term rapid growth will be increasingly dependent on physical and human capital accumulation. Most investment will originate in the private sector but the government should also contribute with investment in the public infrastructure and the social sectors. As foreign savings are expected to decline gradually over the years, the increased investment will need to be financed with domestic savings (Box 2.1).

While higher domestic savings would strengthen the foundations for sustained economic expansion, the unfavorable demographic trends of low birth rates and recent emigration of the young will make it difficult for Armenia to attain and maintain savings rates as high as those recorded by the most rapidly growing economies. Therefore, foreign financing will remain a significant, albeit declining, source of financing in the medium term.

Continued structural reform can affect TFP through two channels. First, existing resources may be allocated to uses that are more productive. This requires policies that facilitate resource mobility, for example, greater efficiency in financial intermediation. As noted in Chapter 4, there is a need to improve confidence in banks and increase the number of financial instruments. In addition, policy actions could reduce the cost of engaging in economic activities, for example, improvements in the tax and legal systems and a reduction of corruption.<sup>24</sup>

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<sup>23</sup>See Campos and Corcelli (2002).

<sup>24</sup>Corruption has emerged as a threat to growth and equity in Armenia. Recent surveys indicate that corruption is a major constraint on the business environment and allows for the granting of economic favors or privileges to elites to the detriment of equity and efficiency. Weak governance in public services delivery also affects the poor directly. The problem is compounded by low wages in the public sector and the absence of a proper law enforcement mechanism.

**Box 2.1. Determinants of Growth: Cross-Country Evidence**

In constructing a long-term growth scenario for Armenia, it is useful to look at experiences of growth in other transition and developing economies. Some of the conditions that led to the rapid growth in certain periods in other countries also are present in Armenia, but others are not. A recent paper by Iradian (2003a) concludes that:

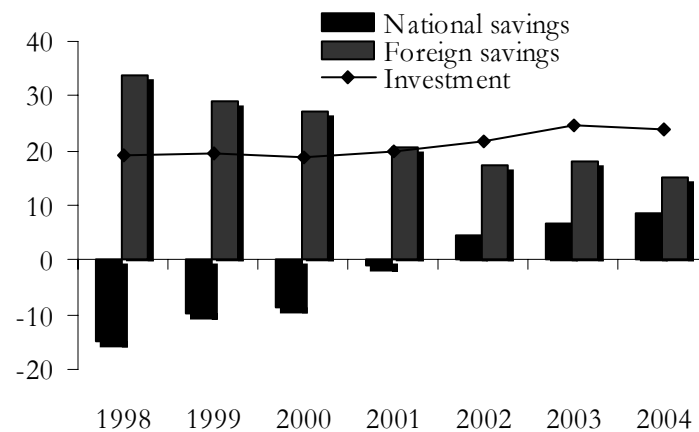
- The catching-up process explains only a small share of recent growth in Armenia. Following the sharp fall in output in the early 1990s, the catching up accounts for no more than one-third of real economic growth during the last eight years.
- As the economy moves closer to its production possibility frontier, Armenia will need to maintain macroeconomic stability and raise financial intermediation and investment rates.
- Investment (private and public) should be raised to 23 percent of GDP or more to ensure high rates of growth in coming years. During 2001–04, the average investment ratio rose from under 20 percent of GDP to 22.7 percent. These investment rates have been lower than in other countries with comparable rapid real GDP growth (China, Vietnam, and South Korea).

<b>Factors Affecting Growth: Armenia in Global Perspective</b>							
<i>(Rounded Annual Averages in Percent)</i>							
	Armenia 1996–2003	Baltics <sup>1</sup> 1996–2003	CIS6 <sup>2</sup> 1996–2003	Vietnam 1996–2003	China 1990–2000	South Korea 1970–85    1986–95	
GNP per capita (in US\$) <sup>3</sup>	2,265	7,243	1,962	2,122	3,164	2,299	7,866
Real per capita GDP growth	7.7	5.4	5.1	5.9	8.7	8.5	6.1
<i>Of which: Catching up</i> <sup>4</sup>	2.7	1.1	1.9	...	...	...	...
Investment/GDP	20.0	24.0	19.0	28.0	34.0	30.0	34.0
Inflation	4.0	4.0	15.0	7.0	6.0	12.0	5.0
Government consumption/GDP	12.0	21.0	16.0	13.0	13.0	11.0	12.0
Broad money/GDP	14.0	32.0	14.0	21.0	104.0	24.0	45.0
Secondary school enrollment	86.0	88.0	80.0	55.0	64.0	75.0	90.0
Source: Iradian (2003b).							
<sup>1</sup> Simple average for Estonia, Latvia, and Lithuania.							
<sup>2</sup> Simple average for Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.							
<sup>3</sup> In U.S. dollars at 1993 prices, adjusted for purchasing power parity (PPP).							
<sup>4</sup> Impact of the catching-up process after the sharp fall in output in the early 1990s. Empirical evidence shows that countries would tend to grow faster following a sharp fall in output because of starting from a lower base of GDP.							

The authorities' medium-term economic framework projects an investment-to-GDP ratio of 23–25 percent based on the gradual implementation of economic reforms during the next three years (baseline scenario). Still, immediate and



**Figure 2.3 Investment and Savings**  
(In percent of GDP)



Sources: Armenian authorities; and IMF staff estimates.

deeper structural reforms could generate even faster growth.<sup>25</sup> Based on the growth accounting framework, we calculate GDP growth rates under two scenarios (baseline and accelerated) under differing assumptions about TFP growth and investment rates (Table 2.5). The baseline and the accelerated scenarios assume that TFP growth is 3 percent and 4 percent, respectively. These rates are lower than the average growth experienced during 2001–04 because the impact of structural reforms on factor productivity growth is likely to be smaller given that the most significant reforms have already been implemented. Under the accelerated scenario, the investment rate goes up to 27 percent by 2010 and generates an additional 2 percent in annual growth as compared with the base case.

Assuming Armenia's border with Turkey remains closed, the structure of the economy is unlikely to undergo drastic changes in the next few years. In the medium term, income growth is expected to be driven by increased activity in the agro-business industry, exports of light manufacturing, and, to a lesser extent, tourism.

<sup>25</sup>Sound policies will not only increase the level of investment, but also improve its efficiency (as reflected in higher TFP). Other important factors influencing the business environment and the growth process are regional relations and the functioning of the legal system.

Table 2.5. Illustrative Scenarios for Per Capita Real GDP Growth<sup>1</sup>

	2001–04	2005	2006	2007	2008	2009	2010
	Actual	Projection					
<b>Base growth scenario</b>	TFP = 8.4	TFP = 3.0					
Real GDP growth	11.6	6.4	6.1	5.8	5.9	6.0	6.1
<i>Of which: Catching-up effect</i> <sup>2</sup>	2.0	1.0	0.5	0.0	0.0	0.0	0.0
Investment as percent of GDP	22.7	23.5	23.7	23.9	24.1	24.3	24.5
<b>Accelerated growth scenario</b>	TFP = 8.4	TFP = 4.0					
Real GDP growth	11.6	8.2	7.9	7.8	8.0	8.2	8.3
<i>Of which: Catching-up effect</i> <sup>2</sup>	2.0	1.0	0.5	0.0	0.0	0.0	0.0
Investment as percent of GDP	22.7	24.0	24.6	25.2	25.8	26.4	27.0

Source: IMF staff estimates.

<sup>1</sup>GDP growth is based on a growth-accounting framework assuming annual labor growth of 0.6 percent in the base scenario and 1.3 percent in the high scenario, and a capital depreciation rate of 4 percent.

<sup>2</sup>The catching-up effect for 1999–2006 is based on Iradian (2003a) and is assumed to be worn off gradually by 2007, when Armenia reaches its real GDP of 1990.

- Agriculture is the largest employer in the country and accounts for one-fifth of GDP. The country produces a wide variety of high-quality fruits and vegetables. Moreover, many of the more promising industrial activities, such as production of wine, brandy, beer, and mineral water, are in food processing.
- A second promising sector is information technology (IT), which seems well placed to take advantage of the country's specialization in electronics from Soviet times and the involvement of the Armenian diaspora in IT in such places as California's Silicon Valley.
- Third, the tourism sector is also seen as a potential source of growth in Armenia. Income from tourism has grown from under 2 percent of GDP prior to 2000 to an average of 2.7 percent of GDP during 2001–04.

### C. Poverty, Inequality, and Employment

Like most former Soviet Republics, Armenia experienced a dramatic rise in both poverty and inequality in the early 1990s. Although economic growth resumed in the mid-1990s, poverty did not begin to fall until the end of the decade. Between 1999 and 2003, all measures of poverty, especially extreme poverty, declined significantly.

## Causes of poverty in Armenia

The causes of poverty and the increase in income inequality in the early 1990s are attributed to the sharp decline in output, the displacement of workers to the countryside (into subsistence-type agriculture), and the collapse of the system of social benefits.

A decline in the real value of pension benefits contributed to higher poverty during the early years of transition. The number of pensioners is relatively large, about 15 percent of the population. The ratio of the value of pensions to average wages fell from 33 percent in 1996 to 19 percent in 2001, and rose slightly to 21 percent in 2003. For pensioners with no other source of income, current pension levels are below the extreme poverty line.

## Results of recent household surveys

Poverty in Armenia has declined strongly since 1998, with a particularly notable fall in extreme poverty (Table 2.6).<sup>26</sup> Estimates for 2003 show that overall poverty has declined from 56 percent in 1998 to 32 percent in 2003. These positive developments are mainly due to the strong economic growth registered since 2001 and the improvements in targeted social policies in recent years. The broadening of the growth pattern in 2002–03 to embrace construction, industry, and services also helped to spread the benefits of rising economic activity in and around Yerevan. Remittances, particularly from Armenian workers in Russia, have been an important factor as well.

The reduction in poverty in recent years was larger in Yerevan than in other urban or rural areas. In 2003, poverty in Yerevan was only 22 percent compared with 38 percent in other urban areas and 33 percent in rural areas.<sup>27</sup> Poor urban households outside Yerevan enjoyed few economic opportunities. Less than one-half of their income came from wages, self-employment, and farming. Almost half of their income is derived from remittances, transfers, and selling household assets.

Extreme poverty also fell markedly in recent years from 27.7 percent in 1996 to 5.5 percent in 2003. This performance is due to rising incomes and better access to the minimum food basket, especially in rural communities. There have also

<sup>26</sup>The incidence of poverty is the share of poor people in the population; the poverty gap indicates how far below the poverty line poor households are; and the severity of poverty captures inequality among the poor.

<sup>27</sup>In terms of a regional breakdown of poverty, the provinces of Shirak and Aragatsotn recorded the highest poverty rates. Both provinces are located in the earthquake zone.

**Table 2.6. Poverty, Inequality, and Unemployment**

	1996	1998–99	2003
Poverty as percent of population <sup>1</sup>			
National average	56.7	56.3	32.0
Urban	58.8	62.7	30.7
Yerevan	58.2	58.7	22.0
Rural	49.0	47.7	33.9
Poverty gap <sup>3</sup>	21.5	17.1	5.8
Severity of poverty <sup>4</sup>	11.1	7.0	1.6
Extreme poverty as percent of population <sup>4</sup>			
National average	27.7	26.1	5.5
Urban	29.6	32.1	6.2
Rural	24.4	34.5	4.5
Poverty gap <sup>2</sup>	...	5.8	0.2
Severity of poverty <sup>3</sup>	...	1.9	0.0
Inequality measure <sup>5</sup>			
Gini coefficient (income based)	0.60	0.59	0.44
Gini coefficient (expenditure based)	0.44	0.37	0.33
Unemployment rate (in percent)	9.3	11.2	10.1

Sources: National Statistical Service of Armenia based on World Bank's methodology.

<sup>1</sup>Defined as household expenditures of less than US\$24 per month.

<sup>2</sup>Defined as the aggregate income shortfall of the poor as percentage of consumption, that is, the amount of money needed to bring all the poor up to the poverty line as a share of income. A poverty gap of 6 percent means that average poor person's expenditure is 94 percent of the poverty line.

<sup>3</sup>This index gives greater weight to those furthest below the poverty line (this accounts for the inequality among the poor by giving more weight to those that are far below the poverty line).

<sup>4</sup>Household expenditures of less than \$16 per month.

<sup>5</sup>0 implies perfect inequality and 1 perfect inequality.

been improvements in the depth and severity of poverty. The increasingly important role played by the family poverty benefit, with real increases in the benefit and improved targeting in recent years, facilitated the efficient transfer of resources to those living under extreme poverty.

The relatively small decline in poverty in rural areas reflects the slow increase in agricultural output during 1999–2004 and raises the question of how to deal with rural poverty in coming years. For the poor and nonpoor alike, farm income is the dominant, but declining, source of income, and nearly 40 percent of Armenia's working population is employed in agriculture.

Despite the declining trend in poverty, unemployment remains high. New job creation has not yet fully compensated for the earlier labor shedding arising from the shocks in the early 1990s.<sup>28</sup> According to a nonofficial survey, overall unemployment was about 30 percent in 2003. According to the official data, unemployment fell from 11.2 percent in 1999 to 10 percent in 2004. Weaknesses have been detected in both surveys, and experts estimate that the true figure lies between 15 and 25 percent.

Emigration and remittances have played an important role as a safety net for many households with unemployed workers. The 2003 household survey revealed that transfers, mainly assistance from relatives abroad, accounted for 16.1 percent of household income, compared to earnings from employment of 26.1 percent of income. Official benefits and state pensions accounted for 9.9 percent of household income. The role of transfers underlines the importance of economic conditions in other countries, especially in the Russian Federation.

Notwithstanding the relevance of private and public transfers as a source of income for poor households, a more sustainable mechanism for poverty alleviation is warranted. Along these lines, microcredits, which provide poor households and small entrepreneurs with small loans, can help generate employment for those excluded from the formal banking sector in rural and urban areas outside Yerevan.

An improvement in income distribution has accompanied the decline in poverty in recent years. The Gini coefficient of income inequality rose from 0.27 in 1989, to about 0.59 in 1999, and then fell to 0.44 in 2003. The expenditure-based Gini coefficient also fell from 0.37 in 1999 to 0.33 in 2003. The expenditure-based measure of income inequality is lower than the income-based inequality because of higher savings rates of upper-income classes, the large size of the shadow economy, and large private transfers (particularly from the diaspora).<sup>29</sup>

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<sup>28</sup>After the collapse of the Soviet Union, unemployment increased sharply. In the 1990s, industry and services combined lost about 650,000 workers (more than one-third of the labor force) whereas agriculture absorbed about 250,000 workers. The remaining 400,000 left the country or joined the informal sector.

<sup>29</sup>Weaknesses in the data and sampling differences across services call for some caution in interpreting these results. For instance, the reported improvement in income distribution in 2002 is due to a 22 percent decline in income in the richest decile. However, wealthier households often refuse to participate in surveys or tend to answer questionnaires dishonestly, partly out of fear that their answers can provide grounds for the tax authorities to uncover tax evasion.

### **Policies going forward**

Despite the positive trends described above, there are segments of the Armenian population that have not yet benefited from the recent growth. This is a common problem in developing countries that has led many governments to emphasize policies and programs targeting the poor. In this regard, further attention is warranted on certain activities identified in the PRSP, namely public infrastructure in agriculture, water resources, education, and housing. In addition, pro-poor policies could be designed to protect the most disadvantaged regions of the country (e.g., Aragatsotn, Gegharkunik, Kotayk, and Shirak).

### **International comparison**

The incidence of poverty in Armenia can be compared with other countries using a poverty line of US\$1 per day per person converted to “purchasing power parity.” This measure shows that the incidence of poverty in Armenia is lower than in Azerbaijan and Georgia, but somewhat higher than in Albania and Vietnam (Table 2.7).

The speed and extent of poverty reduction depends on the quality of growth, the initial level of income inequality, and changes in income distribution. For a given growth rate, poverty should fall faster in countries where the distribution of income becomes more equal than in countries where it becomes less equal.<sup>30</sup> Armenia’s estimated elasticity of poverty with respect to growth is  $-0.82$ . That is, a 1 percent increase in real per capita income has led to a 0.82 decline in the incidence of poverty. An econometric analysis of a panel data for 70 developing and transition countries estimates the average growth elasticity of poverty at  $-1.08$ .<sup>31</sup>

Armenia’s poverty is induced primarily by an inadequacy of income rather than of human development (a broader socioeconomic measure). The 2002 United Nations’ Human Development Index ranked Armenia 82nd out of 177 countries, placing it in the “medium” human development category.<sup>32</sup> In fact,

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<sup>30</sup>As a guide, the impressive record of poverty reduction in China, India, Malaysia, and Vietnam has been attributed to two factors: (1) rapid growth of labor-absorbing industries coupled with macroeconomic stability; and (2) poverty reduction programs targeted at specific groups in rural as well as in urban areas, including facilitating access to credit, subsidies for health and education, safety nets for the very poor, and, in some cases, redistribution of assets.

<sup>31</sup>Iradian (2005, p. 21).

<sup>32</sup>The Human Development Index (HDI) for Armenia was 0.754. The index, measured on a scale of 0 to 1, is a composite of three measures: health, as proxied by life expectancy; knowledge, as proxied by literacy rate; and standard of living, as proxied by real per capita income.

Table 2.7. Progress in Poverty and Inequality in Selected Countries

Country (period)	Poverty <sup>1</sup>		Inequality <sup>2</sup>		Annual Per Capita Growth	Cumul. Per Capita Growth	Growth Elasticity of Poverty
	(Percent of population)		(Gini index)				
	First Year	Second Year	First Year	Second Year			
Albania (2002)	...	25.4	...	28.0	...	...	...
Armenia (1996, 2003)	56.7	32.0	44.0	33.0	7.4	51.8	-0.82
Azerbaijan (1995, 2002)	61.6	49.0	45.0	36.5	5.1	35.7	-0.62
Georgia (1995, 2002)	60.0	50.0	41.6	38.9	5.1	35.7	-0.56
Kyrgyz Republic (1996, 2003)	68.1	41.0	40.5	31.0	4.8	26.6	-1.53
Tajikistan (1999, 2003)	65.4	57.0	34.7	36.0	6.0	24.0	-0.68
China (1981, 1990)	63.8	33.0	32.0	31.4	8.8	79.2	-0.65
China (1990, 2001)	33.0	16.6	34.6	44.7	8.3	91.3	-0.68
India (1978, 1988)	55.8	46.3	33.1	31.2	2.3	23.0	-0.87
India (1988, 2000)	46.3	34.7	31.2	32.5	3.8	45.6	-0.68
Indonesia (1970, 1980)	58.0	29.0	30.7	35.6	5.6	56.0	-0.98
Indonesia (1980, 1993)	29.9	14.8	35.6	31.7	4.5	58.5	-0.92
Malaysia (1970, 1980)	49.3	32.5	51.3	49.1	4.6	46.0	-0.86
Malaysia (1980, 1995)	32.5	9.3	49.1	45.6	4.5	67.5	-1.16
South Korea (1965, 1975)	41.4	20.0	34.3	38.0	8.1	81.0	-0.72
South Korea (1975, 1990)	20.0	7.4	38.0	33.6	6.4	96.0	-0.73
Thailand (1985, 1996)	27.0	3.0	47.4	43.4	7.2	79.2	-1.22
Vietnam (1993, 2002)	50.9	28.9	35.7	36.4	4.4	39.6	-1.20
Egypt (1990, 2000)	25.0	16.7	34.0	34.4	2.5	24.5	-1.70
Ghana (1992, 1999)	50.8	42.6	38.9	36.0	2.4	16.8	-1.17
Madagascar (1979, 2001)	49.3	69.5	46.9	47.5	-4.1	-4.1	-0.88
Uganda (1992, 2000)	56.0	35.0	39.2	40.5	4.5	36.0	-1.17
Zambia (1990, 1998)	58.6	72.9	48.3	52.6	-4.1	-4.1	-0.98
Average	50.3	36.5	41.2	41.3	5.1	48.3	-0.99

Sources: Armenian authorities, World Bank database, and IMF PRSP and staff reports.

<sup>1</sup>Difference across countries should be interpreted with caution because national poverty lines may vary considerably.

<sup>2</sup>Inequality figures are based on expenditure Gini-coefficient, except for Malaysia and South Korea.

some important human development indicators in Armenia are now high by international standards: there is universal literacy, infant mortality is low (30 per 1,000 live births in 2003 as compared with 42 in 1999), and life expectancy is similar to that in industrialized countries (Table 2.8).

**Table 2.8. Human Development Indicators**

	Human Development		HDI
	Index (HDI) <sup>1</sup>		Rank <sup>2</sup>
	1990	2002	2002
Estonia	0.82	0.85	36
Latvia	0.81	0.82	50
Bulgaria	0.80	0.80	56
Russia	0.82	0.80	57
Albania	0.73	0.78	65
Romania	0.80	0.78	69
Ukraine	0.80	0.78	70
<b>Armenia</b>	<b>0.75</b>	<b>0.75</b>	<b>82</b>
Turkey	0.68	0.75	88
Azerbaijan	0.74	0.75	91
Georgia	...	0.74	97
Kyrgyz Republic	0.72	0.70	110
Vietnam	0.61	0.69	112
Moldova	0.76	0.68	113
Uganda	0.45	0.49	146

Source: United Nations Development Program (2004).

<sup>1</sup>A higher index indicates improved human development indicators.

<sup>2</sup>Out of 177 countries.

## Achieving the Millenium Development Goals

Armenia is well positioned to achieve most of the MDGs by 2015 (Table 2.9). The MDGs provide a framework in which low-income countries attempt to reduce poverty, provide adequate education for all, improve health indicators, and preserve the environment. The MDGs center on poverty reduction and human development as the main preconditions for sustained social progress.

The target of reducing overall poverty to 20 percent by 2015 is well within reach. Table 2.10 contains two scenarios. The first scenario assumes a growth elasticity of poverty of  $-0.82$  (same as the historical elasticity) and unchanged income distribution. In the second scenario, income distribution is assumed to improve modestly, declining from 0.44 in 2003 to 0.39 by 2015. In the first scenario, Armenia will achieve its poverty reduction goal by 2012 with per capita real GDP growth of 5 percent. The second scenario shows that the poverty goal will be achieved even earlier (by 2010) for the same per capita growth due to the combined effect of growth and improvement in income distribution. Table 2.10 also shows that a minimum per capita growth rate of 3 percent to 4 percent a



Table 2.9. Poverty Indicators and Millennium Development Goals, 1990–2015

	1998–99	2001	2003	2015 Target
1. Eradicate extreme poverty and hunger				
Population below US\$2 (PPP) a day	32.3	24.3	9.9	6.8
Overall poverty rate	56.3	47.0	32.0	19.7
Extreme poverty	26.1	16.2	5.5	4.1
2. Achieve universal primary education				
Net primary enrollment ratio (in percent of relevant age group)	...	97	...	100
Percentage of cohort reaching grade 5 (in percent)	...	100	...	100
Youth literacy rate (in percent of group ages 15–24)	...	100	...	100
3. Promote gender equality				
Ratio of girls to boys in primary and secondary education (in percent)	...	102	...	100
Ratio of young literate females to males (in percent of group ages 15–24)	99.8	100	...	100
4. Reduce child mortality				
Under 5 mortality rate (per 1,000)	47.0	37.0	35.0	19.3
Infant mortality rate (per 1,000 live births)	42.0	32.0	30.0	16.7
5. Improve maternal health				
Maternal mortality ratio (modeled estimate, per 100,000 live births)	29.0	...	...	13.2
Births attended by skilled health staff (in percent of total)	97.4	96.8	...	...
6. Combat HIV/AIDS, malaria, and other diseases				
Incidence of tuberculosis (per 100,000 people)	...	77.0	...	Reduce
Tuberculosis cases detected under DOTS (in percent)	8.0	...	...	Reduce
7. Ensure environmental sustainability				
Nationally protected areas (in percent of total land area)	7.4	7.6	...	...
CO <sub>2</sub> emissions (metric tons per capita)	1.0	...	...	...
8. Develop a global partnership for development				
Fixed line and mobile telephones (per 1,000 people)	153.3	...	...	...
General indicators				
Life expectancy at birth (years)	73.0	73.6	...	...

Sources: World Development Indicators database, April 2002; Armenia household surveys.

**Table 2.10. Projection of Poverty Under Different Per Capita Growth Rates**  
(Assuming growth elasticity of poverty of  $-0.82$  and income elasticity of  $1.3$ )

	Scenario I					Scenario II						Income Gini Coeff.
	Inequality remains constant at 0.44					Inequality declines to 0.39 by 2015						
	3%	4%	5%	6%	7%	2%	3%	4%	5%	6%	7%	
2005	30	30	29	28	28	30	29	29	28	28	27.0	0.43
2009	27	25	23	21	19	26	24	22	21	19	16.9	0.42
2010	26	24	22	19	17	25	23	21	19	16	14.4	0.41
2011	25	22	20	18	15	24	21	19	17	14	11.9	0.41
2012	24	21	19	16	13	23	20	17	15	12	9.4	0.40
2013	23	20	17	14	11	22	19	16	13	10	6.9	0.40
2014	22	19	16	12	9	21	18	14	11	8	4.3	0.40
2015	21	18	14	10	7	20	16	13	9	5	1.8	0.39

Source: Authors' calculations.

year is needed to achieve the poverty reduction goal by 2015 under the assumption of unchanged income distribution. If income distribution deteriorates, then a higher growth rate will be needed to achieve the poverty goal.

Other MDG indicators can also be achieved. This is largely because the expected higher level of income will be associated with better social services, but also because the different dimensions of poverty are interrelated. For example, the mortality rate of children under five years old is largely associated with maternal and child malnutrition, lack of access to safe water, low immunization, and a generally low level of education among mothers, all of which are MDG indicators in their own right. Thus, efforts and associated spending aimed at improving health delivery, raising educational attainment, and empowering women will allow for mutually reinforcing positive effects on the different facets of human development.

## D. Concluding Comments

Armenia's growth is likely to continue in coming years, albeit at a slightly slower pace than in the past. This outlook assumes no policy reversals and the appropriate implementation of recent and pending reforms. Growth will depend more on physical and human capital accumulation than on improved resource allocation. Both domestic and foreign investment (with embodied technical change) will be essential to sustain high growth. This, in turn, will require continued sound macroeconomic policies and actions focused on improving financial intermediation, reducing discretion in tax and customs administration, and ensuring the effectiveness of the judicial system.

The evidence from the growth accounting exercise for several other transition economies indicates that TFP growth from post-transition reallocation could gradually decline in the coming years. The contribution of capital accumulation in Armenia has picked up only recently and modestly. This suggests that in order to sustain high growth, Armenia must seek to further raise its investment rate and improve the business climate.

Based on current trends and assuming a continued reform effort, Armenia is well positioned to achieve the MDGs by 2015 or much earlier. The extent of further poverty reduction, in addition to sustained rapid economic growth, will also depend on the policies envisaged in the PRSP, especially those aimed at rebuilding the transport and water infrastructure, improving health and education outcomes, and developing the agricultural sector. A simple analysis suggests that a per capita real GDP growth of at least 3 to 4 percent is needed for Armenia to achieve its target of reducing overall poverty to 20 percent by 2015 (assuming unchanged income distribution). Improved governance and reduced corruption are not only critical to foster productive investment, they are also important to induce a more equitable distribution of income. Poverty reduction could remain on a fast track if—

- Growth is broad-based and pro-poor policies are implemented. The latter should include measures that promote social inclusion, human resource development, and social protection. In addition, steps are needed to improve governance, reduce corruption, and support the formation of small and medium enterprises and rural development.
- Social and infrastructure expenditures are given priority. Roads, sanitation, education, water, and health facilities should be upgraded, especially in underdeveloped regions and in rural areas. Average pensions should also be increased as envisaged in the PRSP.

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