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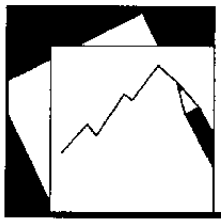

IMF Working Paper

Armenia: The Road to Sustained Rapid Growth, Cross-Country Evidence

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Armenia: The Road to Sustained Rapid Growth, Cross-Country Evidence

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Abstract

This study examines the growth determinants and the economic policy challenges that Armenia faces to sustain the rapid growth of the past two years. The paper also seeks to answer the following two questions: Why has Armenia performed relatively better than other transition economies? What are the roles of macroeconomic policies and the level of financial intermediation in explaining growth differences? The paper also draws upon past cross-country experiences by estimating panel regressions on the determinants of growth to make predictions for the Armenian economy.

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I. INTRODUCTION

Armenia has made substantial progress since 1994 on a path toward macroeconomic and structural reform. The benefits are becoming evident in a robust economic expansion, led by a recovery in investment and rapid export growth. This paper seeks to answer the following questions:

- Why has Armenia performed relatively better than other transition economies?
- What is the role of macroeconomic policies in explaining growth across countries?
- Do differing levels of financial intermediation, as measured by the shares of broad money or credit to the private sector in GDP, help explain differences in growth?
- What policy implications flow from the empirical results, as they pertain to the sustainability of the rapid growth of Armenia?

Given the short period of time that has elapsed since the start of the transition process, any meaningful estimation of long-term growth parameters for the Armenian economy is precluded. The methodology followed in this paper will therefore consist of drawing upon past cross-country experiences of the determinants of growth to make predictions for the Armenian economy. I use one of the preferred estimated equations of panel regressions on the determinants of growth in a sample of 50 countries (both developing and transition economies) to simulate Armenia's future output growth under two scenarios. The main findings are as follows:

- The catching-up process has accounted for almost one-third of the real per capita GDP growth in 1996–2001. It is expected to disappear gradually by year 2005.[2]
- The substantial and increasing private transfers from diaspora Armenians, in addition to sound macroeconomic policies, could partly explain why Armenia has performed relatively better than other transition economies.[3]
- Underlying growth in Armenia, excluding the effect of the catching-up process associated with the sharp fall in output in the early 1990s, is about 6 percent, assuming the investment ratio stays around the 2002 level (22 percent of GDP) and sound macroeconomic policies are continued.

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[2] Experience from several countries has shown that real GDP growth rates are relatively high during the initial phase of recovery following a sharp fall in output (catching-up, or starting from a low base of output). Armenia's real GDP fell by a cumulative 60 percent from 1991–93.

[3] See page 9.

- To sustain the rapid growth of the past two years over the medium-term Armenia should maintain sound macroeconomic policies and make further progress in structural reforms, improve significantly the financial intermediation level, which is a major requirement to raise investment, and raise total factor productivity growth.

II. Armenia's Growth Performance and Challenges

Armenia has made great strides since it initiated its transition to a market-based economy in the early 1990s. Starting in 1994, and supported by a succession of mostly concessional IMF and World Bank credits, the government implemented tight fiscal and monetary policies accompanied by the initiation of broad-based structural reforms. As a result, economic growth has been fairly robust, inflation was brought under control, the exchange rate is relatively stable, foreign exchange reserves are at comfortable levels, and both the external and the fiscal deficits have narrowed significantly (Figure 1).

Contraction in output during 1991–93 was so deep (about 60 percent) that in 2002 real GDP was only 77 percent of its 1989 level (Figure 2). Growth in Armenia since 1994 outperformed the growth of most other transition economies.[4]

A. Sources of Growth

The output contraction in the early 1990s was mainly as a result of the collapse of the Soviet economy, a significant deterioration in the terms of trade (as energy and raw material prices within the former Soviet Union republics were increased), and conflict in the Caucasus and especially over the Nagorno-Karabakh region which resulted in the closure of the Armenian border with Azerbaijan and Turkey. The country kept a small corridor in the south for exports to Iran and the northern border with Georgia. But Georgia has also been afflicted by civil conflict and a poor transport system. Thus, Armenia began its transition to a market economy as a virtually closed economy with high transaction and transport costs.[5]

Following the major economic reforms in the early 1990s, the composition of output changed drastically as unproductive sectors, particularly manufacturing, contracted mainly due to the collapse of regional trade and payments agreements with the Baltic countries, Russia, and other countries of the former Soviet Union. The evolution of the composition of output, employment, and growth during 1990–2002 is shown in Table 1.

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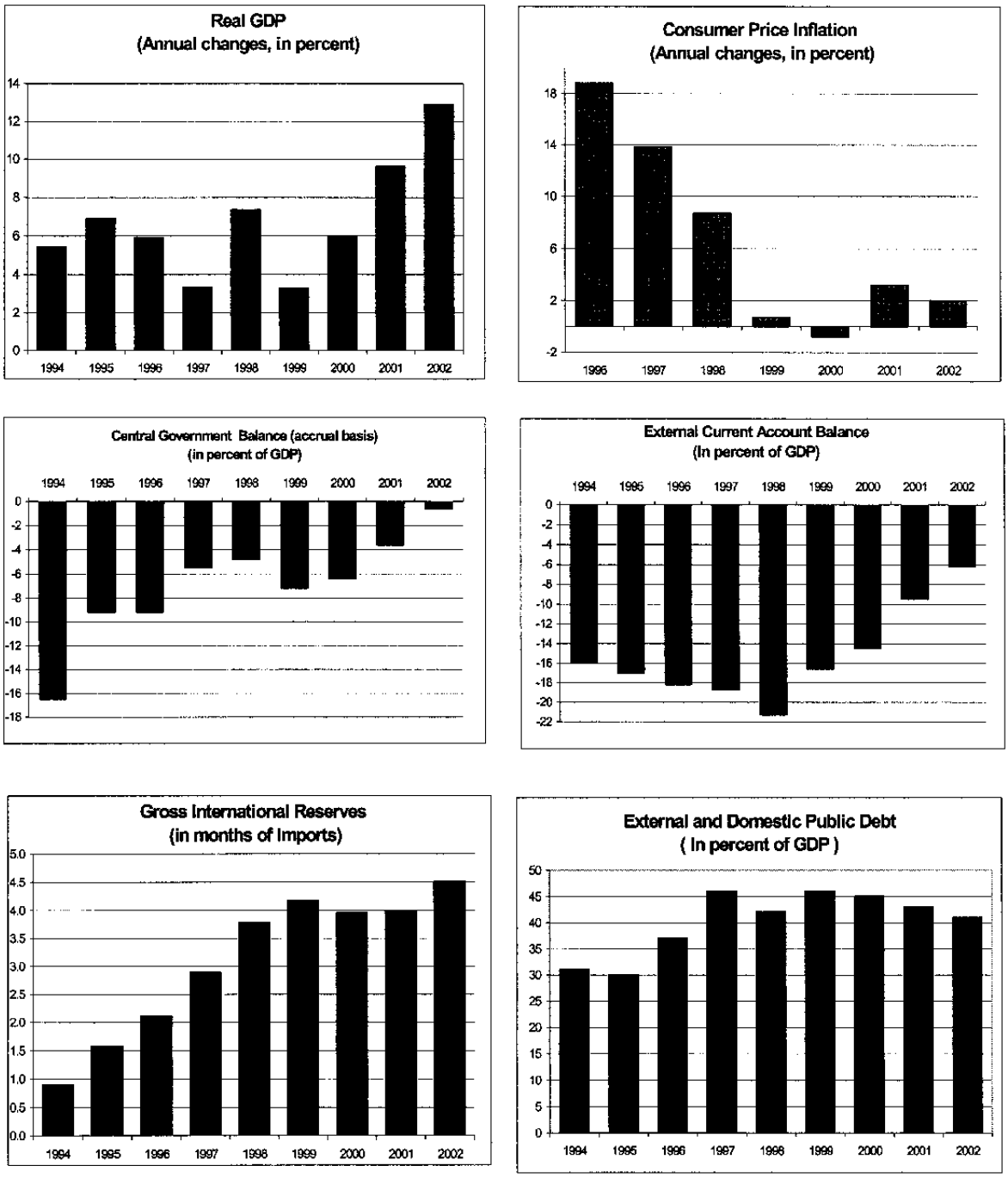
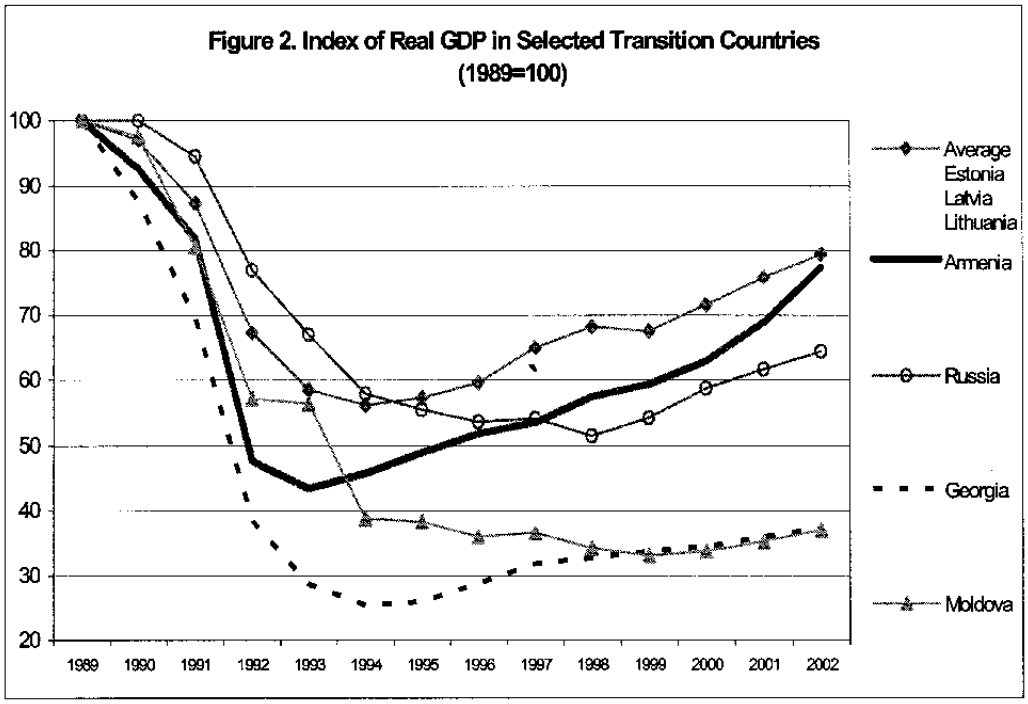
[4] The year 1989 was the year in which officially measured output peaked in the former Soviet Union, as well as in most other countries in the region.

[5] Economic recovery could have started sooner—and proceeded more rapidly—had Armenia settled the Karabagh problem with Azerbaijan and had Turkey opened its border with Armenia.

Figure 1. Armenia: Macroeconomic Performance



Sources: Armenian authorities, National Statistical Service.



Source: EBRD Transition Report, 2002; and WEO estimates of real GDP growth in 2002.

Table 1. Structure of Output, Employment, and Growth

	Share of Production (In Percent of GDP)			Share of Employment (In Percent of Total)			Annual Growth Rates (In Percent)	
	1990	1994	2002	1990	1994	2000	1990–93	1994–2002
Agriculture	13	43	24	17	34	44	-6	3
Industry	45	29	22	31	24	14	-18	4
Construction	18	7	13	12	7	4	-30	12
Services	24	21	41	40	35	38	-23	9
Total	100	100	100	100	100	100	-18	7

Sources: Armenian authorities; National Statistical Service.

While several transition countries have benefited from continuing shifts in the output and employment structure away from agriculture, Armenia has lagged behind. As agriculture gained workers released by industry, the average level of labor productivity in the economy declined after the mid-1990s, since more workers were concentrated in lower value-added activities. Land reform was initiated in 1991, and by mid-1994, most of the agricultural land had been privatized. As workers took advantage of access to newly privatized agricultural land, the sector's share of employment surged. With a large influx of workers to a relatively fixed amount of land, productivity in agriculture—and therefore the returns to agriculture—declined. The modest real growth in agricultural output was offset by unfavorable price dynamics (prices for agricultural products lagged behind the CPI inflation) and by an increase in labor share in agricultural output.

The industrial sector suffered the most following the disintegration of the Soviet Union due to unfavorable movements in relative prices and the collapse of traditional markets. Before the breakdown of the Soviet Union, Armenia was a heavily industrialized country. Output consisted of capital and intermediate goods (machinery, rubber, chemicals, and electronics); the raw materials were imported and the mostly semi-finished products were exported to other parts of the USSR. As many subsectors became noncompetitive under the new price structure, employment fell and productivity—and therefore wages—plunged. Excluding energy, the industrial sector grew by more than 11 percent a year from 1999–2002 driven mainly by food processing, jewelry, and mineral production. The strong expansion of information technology represents one of the brightest spots in the recent development of Armenia. Food processing is also a sector in which productivity is relatively high. Further growth in the food processing sector, would generate considerable employment because it is relatively more labor intensive than other sectors.

Construction output declined sharply in the early 1990s as a result of the collapse in investment. Unlike many developing and transition economies, the service sector did not absorb most of the industrial workers who lost their jobs during the 1990s. Migration to other countries has played a very important role as a safety net for many households with unemployed workers.

Armenia has made substantial progress toward creating a viable private sector. By 2002, some 75 percent of GDP was produced by the private sector, a high figure as compared with other transition economies. Private sector development still faces major impediments:

- The private sector has limited access to bank credit due to the high real lending rates, reflecting credit default risk in the face of uncompleted banking reform agenda and weak corporate balance sheet and accounting. For small and medium-sized enterprises (SMEs), access to bank credit will also require that many of them strengthen corporate governance by clarifying their ownership, adopting internationally recognized accounting methods and auditing, and disclosing, more fully and accurately, business practices.

- The blockade by neighboring countries (Turkey and Azerbaijan) has raised transportation costs, limited the scope to promote exports, and raised the risks of investment in Armenia.

- Armenia lags behind its neighboring countries in providing adequate and competitive telecommunication and Internet services. A well-developed telecommunications network is one of the basic requirements for foreign direct investment. In the absence of competition, the Armenian telecommunications market remains under the absolute control of an inefficient foreign company that enjoys undisputed monopoly power.

A number of sectors are of particular interest for the to development of SMEs. Agriculture is the largest employer in the country, and accounts for about one-fourth of GDP. The country produces a wide variety of high quality fruits and vegetables. Moreover, many of the more promising industrial activities, such as wine and brandy, beer, and mineral water, are in food processing.

A second promising sector for SME activity 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 enterprises in such places as California's Silicon Valley. Moreover, IT exports are among the few which are hurt relatively little by Armenia's transport bottlenecks, given the possibility of exporting software products electronically.[6]

Third, jewelry and diamond exports almost doubled in 2002 to about $200 million. Foreign investments have largely contributed to this development. Armenia could become a new center for diamond processing due to its competitiveness in terms of skilled labor and low wages. Transfer of activity from other countries such as Israel is already observed. Finally, the preservation and promotion of Armenia's cultural heritage and tourism could have a direct impact on economic development, especially that of SMEs.

The tourism sector is widely seen as a potential source of growth in the Armenian economy. Armenia's long history, reflected in its rich and unique culture, has left a wealth of significant archaeological sites and unique local architecture. Income from tourism has been growing steadily to an estimate of about 3 percent of GDP in 2002, compared with less than 1 percent prior to 1996. The continued investment in infrastructure is expected to create the necessary conditions to attract tourists. These include: (1) modernization of the Dzvarnots Airport; (2) repair and construction of roads; and (3) the building of new hotels, and (4) preservation of cultural sites.

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[6] World Bank (2001).

For a small country like Armenia (about 3 million inhabitants in 2001) the diaspora presents an extraordinary source of development resources. According to various estimates there are about 4 million Armenians outside Armenia, compared with just 3 million in Armenia. Between 1990 and 2001 it is estimated that about 900,000 Armenians (equal to one-fourth of the population) left the country. The largest flow of migration from Armenia was triggered by harsh living conditions during 1991–94, when the country experienced severe energy outages due to a general economic crisis and territorial blockade. Emigration continued after 1994, albeit at a lower pace. Almost two-thirds of the emigrants are well-educated men of active working and reproductive age (20–44 years).

B. Analysis of Growth Determinants: Cross-Country Comparison

In constructing a long-term growth scenario for Armenia it is useful to look at experiences of growth of other transition and developing economies. The remarkable growth experience of the most successful emerging market countries (Korea, Malaysia, Chile, Thailand) during the past decade, when their average per capita output expanded at an average annual rate of about 7 percent, is obviously of particular interest for Armenia.

One question therefore is whether some of the conditions that led to the rapid growth in certain periods in other countries are also present in Armenia. The answer ultimately depends on the elements that determine economic growth – the growth of the labor force, the accumulation of capital, and productivity growth, or improvements in the way in which labor and capital are employed to produce goods and services.

Differences in per capita GDP growth rates between Armenia and other selected economies could be reflected in the behavior of the possible determinants of growth, including economic policy variables which affect the productivity of capital accumulation (investment) and its efficiency. An analysis of Table 2 leads to the following observations:

- The relatively higher average real GDP per capita growth in Armenia is explained partly by the catching-up process after the sharp fall in output in the early 1990s. Empirical evidence shows, including in section III of this paper, that countries would tend to grow faster following a sharp fall in outputs because of starting from a lower base of GDP.

- Armenia's average investment ratio during 1994–2001 was close to the CIS-7 group but much lower than the average for Estonia, Latvia and Lithuania (the Baltics) and selected rapidly growing economies. However, the average share of net foreign direct investment (FDI) was 5 percent of GDP in Armenia as compared with 6 percent of GDP in the Baltics.

- Inflation has been lower in Armenia than in the CIS-7 countries, but close to that in the rapidly growing economies.

- While the size of the government in Armenia, as measured by the ratio of government consumption to GDP, has been close to that of the rapidly growing economies, Armenia's fiscal deficit has been higher (in the most recent two years this deficit has declined significantly to about 2.5 percent of GDP in 2002).

- Armenia's financial intermediation as measured by the shares in GDP of broad money and credit to the private sector are substantially lower than the Baltics and the rapidly growing economies but close to the arithmetic average for the CIS-7 group.

- Human capital in Armenia, as measured by the secondary school enrollment ratio, is as high as the average for the Baltics. It remains uncertain whether the quality of human capital in Armenia can compensate for the relatively unfavorable demographic characteristics.

Table 2. Comparison of the Determinants of Growth: Armenia in a Global Perspective
(Reported figures are annual averages in percent)

	Armenia 1996–2001	Baltics 1/ 1996–2001	China 1991–2000	Malaysia 1991–2000	Korea 1991–2000	CIS-7 2/ 1996–2001
GDP per capita US$	545	2433	665	3720	8810	462
Real GDP per capita growth	7.0	4.9	8.8	6.0	5.4	4.3
Of which: Catching up 3/	2.0	1.0	---	---	---	1.5
Gross fixed investment/GDP	20	23	34	35	34	19
Domestic Investment	15	17	30	29	33	15
Net FDI/GDP	5	6	4	6	1	4
Inflation	5	6	7	4	5	24
Government consumption/GDP	11	21	13	12	10	16
Fiscal balance/GDP	-5	-2	-1	-1	-1	-4
Broad money/GDP	12	29	122	88	49	13
Private credit/GDP	8	18	95	90	66	8
Secondary school enrollment rate	86	86	62	67	90	77

Sources: Data are derived from *International Financial Statistics* and the IMF Country Staff Reports.
1/ Simple average of Estonia, Latvia, Lithuania.
2/ Simple average of Armenia, Azerbaijan, Georgia, Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.
3/ See part III section C of this paper for estimating the impact of the catching-up.

One of the factors that explain the relatively strong growth in Armenia in 1994–2002, in addition to the sound macroeconomic policies and low starting base of output, is the large and continued increase in private transfers (about 9 percent of GDP in 2001, including unrecorded transfers) by diaspora Armenians. At the same time, diaspora investors and entrepreneurs are beginning to play an important critical role in attracting foreign direct investment, setting up joint ventures, and promoting exports.

III. Empirical Model and Results

At the heart of most theories of economic growth is a production function that relates output to various factor inputs and to a variable commonly referred to as total factor productivity (TFP). While the neoclassical theory implies that long-term (steady-state) growth is driven by exogenously determined technical change, the new growth theory can explain growth as an endogenous outcome of economic conditions and policies that influence growth both through the accumulation of factors and their productivity.

The relatively short period that has elapsed since the beginning of the transition to a market economy and the initial sharp decline in output, imply that the available data for Armenia are unlikely to provide a useful guide to future trends. It is possible, however, to draw on empirical analysis of the relationship between economic growth and key determining variables for other countries in different stages of economic development. While such an approach may overlook some aspects that are unique to the Armenian economy, evidence from other developing and transition economies is probably the best way to assess Armenia's long-term growth potential.

A. Empirical Evidence

Empirical studies of the implications of endogenous growth models have used cross-country regressions to explain the links between long-run growth and national policies. Most of these studies use one observation per country (using data averaged over two or three decades) and are confined to developing and industrial countries (transition economies being excluded). Levine and Renelt (1992) estimated a basic regression equation in which per capita real income growth is dependent on initial real per capita income expressed in U.S. dollars, population growth, the share of investment in GDP, and the secondary school enrollment rate. The regression was estimated on a sample of 101 countries; each country was represented with one observation, the average for 1960–89.

When Levine and Renelt extended the analysis to include a variety of other variables, they found that the relationship between growth and almost every economic policy variable other than the investment ratio was fragile. The strongest results are that investment in physical capital and the level of human capital increase the rate of growth.

In the study by Levine (2000), based on regression analysis for cross-section of countries (transition countries being excluded), it was found that the exogenous components of financial intermediation developments are positively associated with economic growth. Also,

that study showed that cross-country differences in legal and accounting systems help account for differences in economic development.

B. Model and Data

This paper extends Levine's growth equations to include both macroeconomic and financial intermediation indicators. Also the sample includes most transition economies (24 countries) in addition to 22 developing, and 4 advanced countries.[7] The data on developing and advanced economies covering the period 1975–2001 are averaged for non-overlapping, five-year periods, so that (data permitting) there are five observations per country. For transition countries the period covered is 1994–2001 (with the exception of Hungary and Poland, which cover the period 1985–2001), averaged over three years, so that each transition country is represented by 2–3 observations. The data are derived from the IMF *International Financial Statistics* publications, IMF country staff reports, and the EBRD reports. The general form of the panel regression equations estimated is the following:

$$G_{it} = \alpha_{It} + \beta X_{it} + \mu M_{it} + \partial F_{it} + u_{it}$$

where G_{it} is the dependent variable (annual per capita GDP growth rate for country *i* in year *t*, or investment share in GDP), α_{It} is the country-specific term; X_{it} is the set of standard neoclassical growth factors (per capita GDP, investment ratio in case the dependent variable is real per capita GDP growth), human capital as measured by the secondary school enrollment rate); M is a set of macroeconomic policy variables (government consumption as a share of GDP, the overall fiscal balance as share of GDP, consumer price inflation); F is the financial intermediation variable of interest (credit to the private sector as a ratio to GDP, or broad money as a ratio to GDP), i indicates country, while t refers to the time period; and u_{it} is the stochastic term, assumed to have mean zero $E(u_{it})=0$ and constant variance $E(u_{it})= \sigma^2_u$ a mean-zero disturbance term possibly with a time- and/or group-dependent variance.

Financial intermediation helps growth in two ways—first, by facilitating resource mobilization and, second, by helping to improve resource allocation, thereby enhancing total factor productivity (mostly of capital). In the panel regressions that follow, the impact of financial intermediation is measured separately on growth and investment.

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[7] The full sample includes the following 50 countries: 24 transition economies: Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, China, Croatia, Georgia, Estonia, Hungary, Kazakhstan, the Kyrgyz Republic, Moldova, Latvia, Lithuania, Poland, Romania, Russia, Slovak Republic, Slovenia, Tajikistan, Ukraine, Vietnam, and Uzbekistan; 22 developing economies: Bolivia, Chile, Colombia, Costa Rica, Cyprus, Dominican Republic, Egypt, Ghana, Honduras, India, Indonesia, Kenya, Malaysia, Mauritius, Mexico, Morocco, Pakistan, Peru, Thailand, Tunisia, Turkey, and South Africa; and 4 advanced economies: Ireland, Portugal, Spain, and Korea.

C. Main Results

The regressions are estimated by a two-step generalized least-squares (GLS). The results of the preferred specification are given in the equation below, where t-statistics (in parentheses) are based on (White) heteroskedastic-consistent standard errors:

Equation A

$$G_{it} = .73 - .49\,LogY - .04\,INF - .13\,DEF - .04\,GOV + .25FDI + .21\,DINV + .04\,SEC + 1.95DUM$$
$$(-4.1)\quad (-13.5)\quad (-3.9)\quad (-1.8)\quad (7.9)\quad (11.1)\quad (6.1)\quad (3.6)$$

unweighted R-squared = 0.50

Equation B

$$INV_{it} = 19.7 - 0.03INF - 0.22\,DEF + 0.17Finance$$
$$(-3.8)\quad (-3.0)\quad (7.5)$$

unweighted R-squared = 0.59

where: G_{it}, the dependent variable, is the annual growth rate of the real per capita gross domestic product (GDP); INV is the share of gross capital formation in GDP; $\alpha_{(i)}$ is the country-specific term; Log Y is the natural logarithm of per capita GDP in U.S. dollars; INF is the CPI inflation rate; GOV is the share of government consumption in GDP; DEF is fiscal deficit as share of GDP; FDI is the share of net foreign direct investment in GDP; DINV is the share of domestic investment (total investment – FDI) in GDP; F (finance) is either the share of private sector credit in GDP or broad money in GDP; SEC is the secondary school enrollment rate (in percent of the total secondary school-age population).

All estimated coefficients in the equations that include the full sample (see Table 3) are statistically significant at the 0.01 level, except the coefficients of government consumption in GDP in equations (1) and (2), which ware significant at the 0.05 level. When the investment and finance variables were included in the same equation, the coefficient for finance (ratios of broad money or private sector credit to GDP) was found to be insignificant. This is due to the multicollinearity problem caused by the high correlation between the investment ratio and the level of financial intermediation (equation 2). This is why investment is estimated separately in equation (B) above and in Table 3 (equations 6 and 7).

I also used index numbers or a dummy variable (DUM) to capture the impact on growth following the sharp fall in output in the early 1990s of several transition countries. The estimated coefficients of the dummy variable in the first three equations reported in Table are highly significant at the 0.01 level. Experience has shown that countries usually tend to grow faster following a sharp fall in output (starting from a lower GDP base). The DUM in equation A has the following values:

- Index value of 1: for transition countries whose real GDP represented less than 50 in 1994 with 1989=100, i.e. transition countries that have lost a cumulative of more than 50 percent in their real output by 1994, following the sharp fall in output due to the transition process or due to other special factors such as wars and conflicts. These include Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, the Kyrgyz Republic, and Moldova.

- Index value of 0.5: for transition countries with real GDP between 51 and 65 in 1994 (1989=100). These include Estonia, Latvia, Lithuania, Bulgaria, Russia, Tajikistan, and Ukraine.

- Index value of zero: for all other countries in the full sample.

The main findings of the panel regressions using the full sample (168 observations) are as follows:

- There is a strong association between investment shares and GDP growth (Table 3). The coefficient for FDI is higher than the coefficient for domestic investment, suggesting that in some countries foreign direct investment was more efficient than domestic investment (this is particularly true in transition economies). The estimates suggest that an increase of Armenia's investment share from 22 to 30 percent would contribute 2.0 percentage points in additional growth. The key to rapid growth is thus investment and the policies and reforms that promote it. Those policies are well known and are reflected in the variables included in equation (B).

- Higher levels of financial intermediation are associated with higher growth prospects. The coefficients for broad money and private credit to GDP are highly significant when investment is excluded from the regression. An adequate level of financial intermediation stimulates growth by facilitating and improving resource mobilization that leads to better total factor productivity. Deepening of financial development generally raises the rate of investment by lowering the cost of matching savings of households with the investment needs of the private sector.

- Macroeconomic instability (as measured by inflation and fiscal deficits) is negatively correlated with growth. The links appear to operate through a dampening of both investment and productivity. Of course, causality is not unidirectional. The estimated coefficient for inflation is always negative and statistically significant.[8]

[8] The adverse effect of inflation on growth can be attributed in part to the way rapid inflation, and the uncertainty associated with it, induces consumers and enterprises to resort to barter and hoarding of goods, and financial investors to seek refuge in foreign currency holdings, both in cash and through capital flight. Moreover, high inflation reduces the return from productive activity relative to the return from activities to avoid inflation-induced losses. Under these conditions, the incentive to hold domestic financial assets and to provide financing for private investment is seriously eroded.

- Both higher government fiscal deficits and higher government consumption were found to reduce growth prospects. This effect is normally associated with crowding out of private sector investment, higher rent-seeking behavior, and distorted market incentives. In contrast, government investment can promote economic growth if it improves infrastructure.

- There is a negative correlation between real per capita growth and the income per capita level expressed in U.S. dollars (a poor country, all other things being equal, tends to grow faster than a rich country).

- The coefficient for secondary school enrollment ratio is always statistically significant. The secondary school enrollment ratio represents investment in human capital.

- The catching-up process (as indicated by the DUM coefficient) has accounted for almost one-third of the average annual growth during 1994–2001 in CIS countries that had experienced a sharp fall in output during 1990–94.

When separate equations are estimated for the sample that includes only transition economies (equation 4 in Table 3) the coefficient of investment is much smaller and not as highly significant as the coefficient in the full sample, particularly in the initial phase of economic recovery (1994–98). While there is evidence that economic recovery in most transition countries was accompanied by an upturn in investment, movements in labor productivity were a better predictor of the onset of recovery or output reversals. For over-industrialized, distorted, and inefficient transition economies, recovery only comes after some elimination of the wasteful old production. And recovery usually cannot be based on a large investment effort to build the new before proper incentives for efficient resource use are in place.[9]

In contrast, macroeconomic stabilization, as measured by low inflation and small fiscal deficits, are dominant determinants of recovery in the transition period. However, as the transformation process continues, the forces highlighted in Table 3 (for the sample including only transition economies) are likely to become less important, and will be taken over by neoclassical determinants of growth (that is, investment shares) as highlighted in the regression equation of the full sample. These results, therefore, shed some light on (1) why Armenia has done somewhat better than other transition economies; (2) which elements account for the good performance; and (3) what could be done to sustain rapid growth over the long term when the effect of the catching-up process on output will gradually disappear.

[9] Hernandez-Cata (1997).

Table 3. Results of Panel Growth Regressions
(T-Statistics in parenthesis) 1/

Sample	Full Sample			Transition Countries			
Dependent Variable	Per capita GDP growth			Per capita GDP Growth		Investment	
Equation	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.73	1.22	4.01		8.28	19.7	19.7
	(0.94)	(1.5)	(4.0)		(11.5)	(24.4)	(19.9)
Natural Log of income per capita	-0.49**	-0.57**	-0.48**	-0.21	-0.52**		
	(-4.1)	(-4.4)	(-2.9)	(-1.5)	(-3.2)		
Net FDI/GDP	0.25**	0.23**		0.26**	0.11 *		
	(7.9)	(6.2)		(5.4)	(1.9)		
Domestc Investment/GDP	0.21**	0.20**		0.10 *			
	(11.1)	(9.8)		(2.4)			
Private credit/GDP					0.04*	0.17**	
					(2.8)	(7.4)	
Broad money/GDP		0.01	0.03**				0.14**
		(1.0)	(4.1)				(9.6)
Government consumption/GDP	-0.04*	-0.04*	-0.09**	0.01			
	(-1.8)	(-1.9)	(-3.5)	(0.5)			
Fiscal deficit/GDP	-0.13**	-0.14**	-0.14**	-0.22*	-0.43**	-0.24**	-0.53**
	(-3.9)	(-3.8)	(-3.4)	(-2.6)	(-4.6)	(-3.3)	(-3.9)
CPI inflation rate	-0.04**	-0.04**	-0.04**	-0.03**	-0.03**	-0.03**	-0.03*
	(-13.5)	(-13.7)	(-11.3)	(-4.9)	(-16.6)	(-3.5)	(-2.0)
Secondary school enrollment ratio	0.04**	0.04**	0.06**				
	(6.1)	(6.4)	(8.0)				
Catching-up (index number)	1.95**	2.1**	2.1**				
	(3.6)	(3.7)	(3.7)				
Unweighted R-squared	0.50	0.51	0.41	0.32	0.38	0.55	0.49
Probability value	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of countries	50	50	50	26	26	26	26
Number of observations	168	168	168	66	66	66	66

Sources: Authors' calculations.
1/ The symbols ** and * beside the estimated coefficients denote statistical significance at the 0.01 and 0.05 levels, respectively.

IV. Will the Recent Rapid Growth be Sustained?

The major challenge that Armenia faces is to sustain fast, broad-based, economic growth that creates employment opportunities and ensures a continued reduction in poverty. This will require continued sound macroeconomic policies, pressing ahead with further improvement in the business and investment climate, and strengthening the role of the financial sector in the economy. While significant progress was made toward macro-economic stability, and many important institutional and structural reforms were accomplished, a number of fundamental reforms necessary to make the institutions of a market economy function efficiently have been lagging. Corporate governance and investor protection are wanting. More important, the banking sector has not yet been able to intermediate adequately between savers and investors.

A. Investment and Savings

The regression results reported in this paper have shown that, over the medium to long term growth will be determined by physical- and human-capital accumulation. Domestic investment rates and the ability of Armenia to attract foreign direct investment (with embodied technical change) will become the main source of growth. Investment should primarily originate from the private sector, with the public sector focusing on infrastructure and social investment. But investment must be financed from current production (i.e., savings). A major issue therefore is the capacity of Armenia to raise national saving rates further, which at present is still low despite the significant improvement in recent years (Table 4), especially when compared with the fast-growing economies.

Table 4. Investment and Savings
(In Percent of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002
Gross domestic investment	18.4	20.0	19.1	19.9	17.9	19.7	19.2	21.0
Public 1/	6.8	4.1	3.5	4.9	4.6	3.8	3.9	5.0
Private	11.8	15.9	15.6	15.0	13.3	15.9	15.3	16.0
Gross national saving	2.7	6.2	1.5	-1.3	1.3	5.1	9.8	14.8
Public	-1.6	-2.0	-1.4	0.8	0.1	-1.0	1.3	3.8
Private	4.3	8.2	2.9	-2.1	1.2	6.1	8.5	11.0
Foreign saving 2/	15.7	13.8	17.6	21.2	16.6	14.6	9.4	6.2
Public (saving-investment)	-8.4	-6.1	-4.9	-4.1	-4.5	-4.8	-2.6	-1.2
Private (saving-investment)	-7.3	-7.7	-12.7	-17.1	-14.5	-9.8	-6.8	-5.0

Source: Data provided by the Armenian authorities, National Statistical Service.
1/ Includes grants earmarked for capital expenditure in 2992 from an American-based foundation owned and funded by the Armenian Diaspora (Lincy Foundation).
2/ The external current account including transfers.

A major issue that Armenia faces, therefore, is its capacity to raise the national saving rate. An increase in the saving rate would strengthen the foundations for sustained economic expansion. But the unfavorable demographic trends in Armenia, given the low birth rates and emigration, would make it difficult for Armenian to attain and maintain saving rates as high as those recorded by the most successful market economies.

Given this uncertainty about Armenia's saving performance and the declining or at least stagnant population, productivity increases should play a crucial role in its long-run growth performance. Structural reform can affect total factor productivity (TFP) through two channels. First, existing resources may be allocated to more productive uses. Policies that further this objective in Armenia are those that facilitate resource mobility (e.g., greater efficiency in financial intermediation); and enhance competition in the domestic economy (e.g., establishment of the commercial and legal institutions of a market economy). Second, total factor productivity can be boosted by the upgrading of technologies.

B. Role of the Financial System

A crucial condition for sustained rapid growth is the effective mobilization of financial resources to finance investment. The financial system and especially banks should perform a key role in screening investment projects and enforcing hard budget constraints on enterprises and other borrowers, which helps to ensure that funds are allocated to profitable projects with high returns. Rapidly growing countries included in the panel regression (such as Korea, Malaysia, China) all have a greater proportion of credits intermediated by commercial banks. In Armenia, as well as in several other transition economies, the financial intermediation role of the banking sector is still quite limited (Box 1).

C. Could the Recent Rapid Growth Be Sustained?

The underlying real per capita growth rate in Armenia, excluding the effect of the catching-up process, is about 6 percent, assuming the investment ratio stays around 22 percent of GDP and sound macroeconomic policies are maintained. To project Armenia's long-term per capita growth under two alternative reform scenarios, I used the estimated equation in Table 3 (equations 1 and 7). The accelerated-growth scenario assumes a major improvement in the financial intermediation level, as measured by the share of broad money in GDP, improvement in business environment, and further narrowing of the fiscal deficit to a balanced budget by 2006 (Table 5). These could lead to a significant increase in the investment shares, which are highly associated with improvement in financial intermediation. Raising investment rates from 22 percent to 27 percent of GDP by year 2007 would generate an additional 1.5 percent points of growth in real per capita GDP. Table 5 also shows that the impact of the catching-up process on growth is expected to decline gradually and disappear by year 2005.

This simple exercise suggests that the key to rapid growth in Armenia is the maintenance of sound macroeconomic policies and addressing the problems in the banking system to improve the level of financial intermediation, which, in turn, will promote investment. Sound

policies not only increase the level of investment, but also improve its efficiency. Of course, there are other factors that are also likely to have an important influence on the growth process. These include political factors, such as peace in the region, the legal framework, especially the protection of property rights, the enforcement of contracts, and avoidance of corrupt practices, which are essential for the efficient allocation of resources.

Box 1. Depth of the Financial System in Armenia

The depth of the financial system and the degree of financial intermediation to the private sector in Armenia are still more limited than in other transition and developing economies (table below). Economic studies have shown that countries with "developed" financial systems tend to show stronger economic growth. A growing private sector requires a healthy financial sector. On this basis, it would appear that the distortions of Armenia's banking system probably acted as a drag on economic growth through 2001. Although it is difficult to measure the depth and efficiency of financial markets from aggregate financial data, research has commonly shown that stronger growth is linked to high ratios of broad money to GDP and high shares of bank credit channeled to the private sector.

Armenia: Comparative Improvements in Banking Sector Performance

	Financial Intermediations				Confidence		Efficiency		GDP per capita in US $
	Broad Money (in % of GDP)		Credit to private sector (in % of GDP)		Cash in % of deposits		Interest rate spreads 1/ in %		
	1995	2001	1995	2001	1995	2001	1995	2001	2001
Armenia	8	13	4	9	163	70	49	12	700
Russia	17	23	8	15	42	39	218	13	2,146
Estonia	25	43	15	28	54	21	10	4	3,932
Poland	34	47	12	25	23	13	7	6	4,571
Chile	39	46	52	65	9	7	5	6	4,315
Malaysia	85	107	83	109	11	7	2	3	3,891

Source: Derived from International Financial Statistics, IMF, January 2003.
1/ Lending minus deposit rates (percent per annum).

The level of Armenia's banking system's financial intermediation remains low due to a number of factors: (1) lack of confidence in banks (hyperinflation in the early 1990s eroded the stock of savings and there is a general distrust of banks as savings mechanisms); (2) a large informal sector; (3) high real lending rates reflecting mainly risk premium; and (4) a narrow range of saving instruments provided by banks and the absence of attractive savings instruments provided by nonbank financial institutions. The spread between the lending and deposits rates (one measure of efficiency of the banking system), while narrowing in recent years, still remains very high as compared with several transition and developing economies. Most firms rely heavily on their own financing (family and friends). The high interest rate spreads reflect difficulties in liquidating collateral (reflecting insufficient progress in enterprise and legal reforms) and high overhead costs in the banking system (reflecting the small scale of their operations).

Table 5. Armenia. Illustrative Scenarios for Per Capita Real GDP Growth

	1996-2001	2002	2003	2004	2005	2006	2007
Baseline scenario 1/							
Per capita real GDP growth	7.3	8.0	7.1	6.5	6.5	6.3	6.1
of which: catching-up process 2/	2.0	1.6	1.2	0.8	0.4	0.0	0.0
Investment/GDP 3/	20.0	22.0	22.0	22.0	22.0	22.0	22.0
Broad money/GDP	12.0	16.0	17.0	17.0	17.0	17.0	17.0
Fiscal balance/GDP (accrual)	-5.5	-0.6	-2.5	-2.5	-2.5	-2.5	-2.5
Accelerated growth scenario 1/							
Per capital real GDP growth	7.3	8.0	7.4	7.1	7.4	7.5	7.6
of which: catching-up process 2/	2.0	1.6	1.2	0.8	0.4	0.0	0.0
Investment/GDP 2/	20.0	22.0	23.0	24.0	25.0	26.0	27.0
Broad money/GDP	12.0	16.0	21.0	27.0	32.0	37.0	42.0
Fiscal balance/GDP	-5.5	-0.6	-2.0	-1.5	-0.5	0.0	1.0

1/ Both scenarios assume the 2002 consumer price inflation, government size, and human capital.
2/ The impact of the natural catching up process on growth after the sharp fall in output in the early 1990s.
3/ Investments in 2002 and 2003 are higher because they include the Lincy grant for capital spending, equivalent to about 2.5 percent of GDP in each of those years.

V. Concluding Remarks

Armenia's strong per capita growth in 1994–2002 was higher than in other transition economies. This is explained by three main factors: the catching-up process following the sharp decline in output in the early 1990s; sound macroeconomic policies; and the large private transfers in recent years.

The results of this paper's analysis of the growth performance of the Armenian economy and of its long-term growth potential show that progress in structural reforms and economic policies provides better indicators of growth than investment levels during the early phase of transition. Growth was based as much on efficiency improvement as on new investment. But the share of growth derived from improved resource allocation has gradually diminished. And in the coming years it is expected that growth will be determined more by physical- and human capital accumulation. Domestic and foreign investment rates (with embodied technical change) will be the dominant factors in explaining growth performance.

A continuation of sound macroeconomic policies and a revitalized structural reform agenda, focused on improving financial intermediation and reducing corruption—improving the effectiveness of the judicial system—should provide a favourable environment for private investment and factor productivity growth over the medium term. On this basis, and given the continuation of the catching-up process and the currently high rates of open or hidden unemployment, growth in Armenia is likely, over the next few years, to exceed the underlying long-term growth rate of 6 percent.

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