ECONOMIC DEVELOPMENT AND RESEARCH CENTER (EDRC)

Growth with Equity

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About PCPR Project

Economic Development Research Center, in cooperation with Oxfam GB, implemented "Policy Choice for Poverty Reduction" project. The Project is directed towards studying the economic causes of poverty in Armenia and construction of efficient economic policy aimed at poverty reduction. The project provides Armenian authorities and the public, particularly PRSP working groups with useful analyses, models and policy recommendations.

As outcomes of the implemented Project, Research Paper "Growth with Equity" is released, as well as economic policy development and decision making models and forecasting models are built. These outcomes are offered to the RA Government and the expert group engaged in development of the "Poverty Reduction Strategy Paper" and to non-governmental organizations. The website of EDRC provides detailed information about the Project.

About EDRC

The Economic Development and Research Center, a non-profit and politically unaffiliated organization, is established in Yerevan in 2001. The mission of the EDRC is to promote economic and social development, to influence policymaking and to raise public awareness of economic, social and demographic issues. EDRC focuses on supporting freedom in business and democracy as decisive conditions for the successful development of the Armenian economy.

Believing that the future growth of Armenia requires transparent processes in business, government and society, EDRC promotes these ideas as well as fosters mutual understanding between Armenia and other countries.

Authorship Group

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Statement by EDRC

"Economic Development and Research Center" NGO intends to overcome current social and economic problems in Armenia. Implementing the project of "Policy Choice for Poverty Reduction" EDRC pursues the goal to assist the Government of Armenia and the expert groups working on the PRSP through proposing alternatives for policy targeting and development. The proposals are based on broad macro and micro-economic analyses and researches performed in this area by economists-experts who have working experience in the Government, the Central Bank and international organizations.

Based on the results of the researches, EDRC proposes to review the economic policy targeting in Armenia and the priorities of public expenditures programs, as well as to implement active policy directed at overcoming structural obstacles in the economy (issues of economic freedom and competition, corruption, institutional and infrastructural imperfection). Development of human capital, efficient labor market regulation, proportional regional development and efficient management of price variables should become the main directions of the poverty reduction policy.

Furthermore, the EDRC proposes three economic models serving as tools for policy development:

- "Growth and Distribution Model" is used to estimate the poverty incidence under certain levels of income and distribution;
- "Macroeconomic Adjustment and Growth Model for Armenia" is used to forecast macroeconomic developments and to design alternative public expenditure programs and policies;
- "Income Distribution Matrix Model" is used for monitoring and analyzing income distribution in the economy, particularly, for assessing the impact of policies on the process of income distribution and deriving of the Gini index.

This project is an attempt to ensure participation and involvement of the society in the process of public policy making. We are sure that this research may be useful to the process of developing a policy of fight against poverty.

The EDRC is open for collaboration. Feel free to make your comments on the Paper.

Oxfam Preface

Oxfam is a British, non-government, charitable organization founded in 1942 in Oxford. The mission of the organization is to work with others to overcome poverty and suffering. Oxfam GB is a member of Oxfam International, which is a confederation of twelve agencies that work in 120 countries throughout the world.

Oxfam GB is a development, relief, and campaigning organization dedicated to finding lasting solutions to poverty and suffering around the world. We believe that every human being is entitled to a life of dignity and opportunity; and we work with poor communities, local partners, volunteers, and supporters to help this become a reality.

Oxfam (GB) Armenia office is operating in Armenia since 1994. Since 2000 Oxfam (GB) in Armenia has committed itself to supporting the civil society and the government of Armenia to develop the Poverty Reduction Strategy document based on WB/IMF conditionality, through its contribution both in terms of lessons learnt from experience from evidence-based program work and clear advocacy messages derived from it as well as through facilitating the civil society participation and engagement at a wider level.

The PRSP process presents a unique opportunity for the civil society organizations in the country to influence pro-poor national policy development agenda.

Oxfam (GB) initiated and sustained civil society participatory process through supporting meetings, seminars, workshops, publications, public hearings, drew on Oxfam program and policy experience at grassroots level to feed policy recommendations into PRSP (Micro-finance and health policy papers).

These initiatives widened space for NGO participation in developing government policies, ensured civic mobilization and engagement and initiated modeling new types of alliances between the civil society and the government, between grassroots organizations and think tanks, etc. The program focused on making the participatory process meaningful and constructive through promoting dialogue and positive co-operation between the various components of the civil society as well as between civil society and authorities.

This macroeconomic policy research supported by Oxfam and worked out by local NGO Economic Development and Research Center aims at poverty reduction in Armenia through assisting the processes directed to the exploration of the socio-economic causes of poverty and economic policy developments for poverty reduction with the main focus on Growth with Equity. The research is precedence for assessing the economic growth and other indicators in co-relation with the poverty level.

We hope that the realistic scenarios of economic indicators and the macroeconomic development model could be a basis for more effective identification of priority actions for poverty reduction in Armenia.

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Executive Summary

In the last decade of transition Armenia faced poverty, which became a new phenomenon of the social-economic situation. It is obvious that the fight against poverty requires comprehensive strategy rather than discrete measures. The situation becomes more dramatic as despite continuing economic growth there is no indication of a decrease of poverty incidence so far[1]. Poverty becomes a persistent structural challenge impeding social-economic development.

The reasons for poverty in Armenia are multi-layered. They are conditioned by social relations and are derived from characteristics of decision-making and behavior of different social groups and institutions, as well as individuals. The main reason causing poverty in Armenia at large relates with shocks of the transition period. Generally, poverty is explained by two factors:

1. reduction of the gross product and consequently, reduction of level of real consumption;

In 1991-1993 economic decline was so deep, that continuing economic growth since 1994 was not sufficient to reach the 1990 output level: the average annual economic growth for 1990-2001 is still negative (-2.9 percent). Sharp decline in real income and depreciation of wealth of many households resulted in quantitative and qualitative reduction of consumption and, hence, depreciation of human capital and resulting poverty. In this respect, the economic reason for poverty is limitation of an individual's self-realization as an economic resource.

2. increase of distribution inequality;

Apart from the fact that gross output is significantly below the pre-transition level, the generated income is distributed very unequally[2]. Decline of the share of wages and increase of the share of profit in total income worsened income distribution, as equal distribution of wages between households, as opposed to profit, is more likely, since labor market smooths wage discrepancies (however, given the current structural problems wage discrepencies are quite large). Not only the share of corporate profit is significant in GDP, which by itself is a characteristic of unequal distribution, but also profit is very concentrated, meaning concetration of business activity and high level of social polarization. At first sight one may assume that the most productive economic resources (including those in labor force, means of production, management, information, etc.) in Armenia are possessed by a small number of enterprises, representing the most efficient units. However, such concetration can not be explained only by market mechanisms. Studies show that current structural issues, such as corruption, protectionism and other challenges create privileges for a few enterprises, while restricting the potential of development for others: this is estimated as the main factor for business concetration.

High level of corruption in tax administration and budget expenditures facilitates the increase in inequality. As a result of corruption, the tax system actually becomes regressive, which directly increases income inequality. Investments in human capital and social programs financed from the budget are biased in favor of financing projects (for example investment projects) where the level of corruption tends to be high.

Thus, unequal distribution of income in Armenia is due to a set of problems such as market imperfection, governance and management inefficiency and constraints of economic freedom.

Below are groups of factors that caused poverty and contributed to its further increase:

[1] According to the survey of NSS, the poverty incidence was 54.7 percent in 1996, and 55.05 percent in 1998-99, while cumulative economic growth in 1996-99 was around 21.3 percent.
[2] Gini index by income is estimated 0.27 for 1987-90, while according to the survey of NSS it is 0.59 in 1996-99.

- sharp economic decline and increase of shadow economy;
- inefficient governance (high level of corruption, inefficient tax administration and public expenditure policy, etc.);
- challanges of structural policy and inperfect markets;
- knowledge based constraints of labor.

The analysis show that economic policy was not focused on poverty reduction issues so far and it failed to address institutional challenges. However we should consider many non-economic factors, such as earthquake, blockade, regional conflicts, etc. that had negative impact on policies.

In the framework of this study some analyses have been performed, results of which describe the picture of income distribution and poverty. **First, poverty incidence in Armenia would amount to 44%, instead of 55%, if income were distributed as it is distributed in the Russia, a country with very unequal income distribution. Second, there would not be a poverty problem in Armenia if income were distributed as it is distributed in Poland or in Latvia** (given the current official poverty line).

These analyses not only prove that income distribution in Armenia is acutely polarized, but it also shows that much lower level of poverty is attainable. Next argument supporting the idea that the country may overcome poverty is the small population of Armenia, which implies that relatively moderate financial resources are needed to overcome poverty at the current poverty line. Particularly, we have estimated that:

- the income deficit in Armenia[3] is more than 60 percent of the disposable income of the poor, which is approximetaly USD 170-200 mln. annualy.
- to finance income deficit of the poor (in other words-to overcome poverty) through economic growth, 10 percent of GDP growth is sufficient, if this growth is distributed only among the poor.

If the 9.6 percent actual economic growth of 2001 were distributed only among the poor, theoretically the poverty problem would have been solved.

However the prospectives of overcoming poverty may be less optimistic if we revise the current official poverty line, which will significantly rise the poverty incidence in Armenia. The current official poverty line, which is USD 22.4 per person per month is too low: if we use USD 45 (USD 1.5 per person per day) instead of USD 22.4, according to the results of our model currently the poverty incidence in Armenia is 70 percent.

It is important to mention that all transition countries faced increase of income distribution inequality in the early 90-of last century. However most of Eastern European transition countries experiences opposite tendencies since mid 90-s, when income distribution improved and in some cases it reached the pre-transition level. In contrast to those countries Armenia is expierencing countinuing deteroriation of income distribution since end 80-s and so far there is no indication of its improvement.

Summarizing, we may conclude that currently Armenia is characterised by a specific social-economic structure, which facilitates the increase in inequality of income distribution and formation of persistent long term poverty. This study is aimed at analysing economic causes of the poverty and at development of a set of policy directions that will contribute to poverty reduction through improvement of income distribution and sustainable economic growth. The key conclusions of the study are:

[3] The income deficit is the difference between income necessary to go above the poverty line (or to become non-poor) and the actual income of the poor (in cumulative terms).

1. Economic growth is not enough for poverty eradication in Armenia. The key focus of economic policy should be the improvement of income distribution, which implies explicit redistribution policy. Sustainable economic growth should be considered as an additional key source of poverty reduction.

Until recently, the opinion that economic growth is able to overcome poverty was dominant and was expressed in the policies of a number of transition countries, especially in the policy programs recommended by international financial organizations. However, a number of studies have proven that growth does not always facilitate poverty reduction. Years of economic growth in Armenia come to support this alternative view, as the distribution of income became worse in the period of growth.

Parallel to rather high pace of economic growth in Armenia during recent years, income distribution has polarized, causing an increase in poverty. Furthermore, according to our estimates, economic growth may limit the potential of poverty reduction in the future. This is explained by the fact that due to high level of business concentration, economic growth is limiting the potential usage of available resources by other economic agents, particularly poor, which are not involved in current economic activity. Therefore policies should support economic growth driven by equal opportunities, which will contribute to poverty reduction. It should be noted that the improvement of income distribution and redistribution function of the state is also important in terms of sustainability of growth.

2. To avoid long-term and persistent poverty and to overcome the current poverty in Armenia challenges in development of human capital, economic freedom and equal opportunities must be addressed.

In this respect policy should be aimed at improvement of governance, fight against corruption and protectionism, investment in human capital.

3. The current economic policy is not focused on poverty reduction issues. The forecast of income distribution presented in IPRSR is not realistic, which questions the eficiency of measures presented in this document.

The Government drafted an Interim Poverty Reduction Strategy Paper (IPRSP) in 2001, where the main emphasis is on the measures facilitating economic growth, which is seen as a precondition for poverty reduction. However along with growth, a sharp improvement of distribution is forecasted in this program as well, as it is assumed that in 2003 the Gini index will be reduced to 0.44 and 0.38 under the baseline and optimistic scenarios respectively. Our studies on the current character of distribution in Armenia and international experience as well (see Box 1) has shown that no market economy has yet succeeded in reducing the Gini index in a short period to such an extent. Evenmore, measures that may significantly improve the distribution are not scheduled in the Paper. As our study shows the main direction of economic policy should be the measures aimed at improvement of distribution and re-destribution.

Below are the main directions of public policy that are crucial for poverty reduction strategy:

- institutionalization of the fight against poverty
- fiscal policy and public expenditure programs
- labor market regulation
- investment in human capital
- regional development priorities
- price mechanisms

Institutionalisation of the Fight Against Poverty: Poverty eradication should be enatiled by formation of explicit public demand for poverty reduction, that is, the socety or certain strata of the society should demand and be willing to pay for such policy. Development of institutions and institutionalization will address issues like corruption, further reforms in the court system and increase of trust in the courts, fight against shadow economy, increasing the efficiency and purposefulness of state social policy, etc.

Fiscal Policy and Public Expenditures Programs: As the main tool of economic policy fiscal policy has a significant role in adjustment of income distribution and therefore the design of the tax system and the structure of public expenditures should focus on poverty eradication issues. Social programs are the most direct fiscal tool for poverty reduction, and the government should increase allocations on social spending either through re-allocation from other programs or by increase of total expenditures through improvement of tax administration. We should note that increase of allocations for social programs through debt accumulation may not serve as a stable mechanism. Moreover, if speaking about balanced fiscal policy we should consider the need for restraining public debt growth, i.e. the need for gradual reduction of budget deficit.

Labor Market Regulation: Labor market regulation should be aimed at improvement of primary income distribution. As the survey results show about 45.7 percent of employed populations are poor and 17.3 percent are very poor, which is explained by low wages and inefficient employment. Labor market regulations, such as minimum wage policy may decrease the number of employed poor. As the public sector is the biggest employer, low public service wages, are another important factor prohibiting the potential increase of wages. According to estimates salaries in public service have significant impact on the labor market and Government should undertake public sector reforms, which will be able to seriously adjust wages. It is should be noted that Government should focus on employment active policy as well, which includes training and retraining of employees.

Invetsment in Human Capital: As normally the only resource of the poor is human capital, participation of the poor in primary income distribution is possible only through investment in human capital and through increase in the value of human capital as a productive factor. In this respect revision of social and structural policies is crucial, especially in terms of improvement of education, health care, and environment to provide for efficient utilization of human capital. The latter implies improvement of labor quality, support of small and medium entrepreneurship, and development of business infrastructures.

Regional Developments Issues: There is a certain relation between income distribution in terms of different groups of population and regional distribution of income. The relative centralization of business in a certain region of the country implies greater possibility for concentration of income in hands of a small group of people as the chances for more people to be involved in business activity are decreasing. Thus geographical distribution of income also should be a subject for study. There are several economic indicators showing substantial differentiation of business activity in the regions of Armenia. In a number of regions unemployment rate is significantly diverging from the average (Table 4), especially in the earthquake zone (Shirak and Lori). The unemployment level still remains high in Syunik Marz, which is near-border region. These are official indicators, while the results of alternative survey of households conducted by the NSS in 1998-99 show that actual picture is much worse. Thus, the regional development is very important for overcoming poverty. In this respect a set of measures should be implemented aimed at strengthening of communities and introduction of mechanisms for good governance in regions. Taking into account that poverty incidence is higher in earthquake zone and near-border regions, Central Government should diversify policies, particularly in terms of tax administration and budget allocations.

Price Mechanisms and Income Distribution: Macroeconomic management may address income distribution issues through price indicators, as relative prices, interest rate and exchange rate have impact on income distribution. Along with macroeconomic stabilty macroeconomic management should be focused on price indicators which will contribute to poverty reduction.

Forecasts and Policy Recommendations

The main source of poverty reduction should be pro-poor economic growth and targeted distribution of income. In order to eradicate poverty it is necessary to involve poor in income generation, contributing to the improvement of primary income distribution.

"Macroeconomic Adjustment and Growth Model for Armenia"[4] (hereafter MAGMA) has been developed and applied for the forecast of economic trends and appropriations of the policies. In this model external environment is taken as a constant, which implies that we have skipped assessment of various scenarios of development that might result from solutions of Nagorno Karabakh conflict and other likely changes in the region.

For the period of 2002-2010 the macroeconomic framework is forecasted, which has pro-poor direction and meets a balance between sectors of the economy (see Appendix 3). The proposed macroeconomic framework includes the following main macroeconomic indicators and policy targets:

- 5% average annual economic growth
- 1,238 USD per capita GDP in 2010
- 3% average CPI inflation
- 0.9% average depreciation of AMD real exchange rate
- 10.8% private savings as percent of GDP in 2002 and 16% in 2010
- 16.6% private investments as percent of GDP in 2002 and 20% in 2010
- -9.0% current account deficit as percent of GDP in 2002 and -4.0% in 2010
- 41.4% external debt as percent of GDP in 2002 and 19.3% in 2010

According to our estimations, the following major directions should characterize pro-poor economic policy:

- Increase of tax revenue in GDP at least to the level of 21.4% percent by the 2010, through reduction of shadow economy and increase of efficiency of tax administration (State revenue program are presented in Table 16 and 17). We consider this scenario as quite realistic, as it is consistent with current tax legislation of the country.
- Gradual reduction of state budget deficit as percent of GDP in coming years and zero-level deficit by 2010, as a balanced budget is an important condition for the sustainability of government programs, including social programs. Also, zero-level budget deficit is an impetus for enhancing financial discipline in the country, as well as for a more efficient utilization of domestic savings.
- Gradual increase of current public transfers as a share of GDP in coming years to achieve at least 5.8% level by 2010.

[4] "Macroeconomic Adjustment and Growth Model for Armenia" is constructed by "Economic Development and Research Center" NGO for the purpose of developing public expenditure programs and macroeconomic policy.

- Increase of wages and salaries in public sector by 27% in 2003, and its 2.6% level as percent of GDP by 2010 through gradual growth. This will bring about a raise in the quality of public services and in the level of income of the socially insecure strata (particularly, teachers).
- Increase of financing of education and healthcare and achievement of, correspondingly, levels of 1.2% and 1.6% of GDP in 2010 (instead of 0.6% and 0.8% in 2002), which is important precondition for human capital sustainable development and poverty eradication in long run.
- Reduction of state capital expenditures and its level of 1.5% in GDP by 2010, instead of the current 3.4%. This implies a decrease in absolute value by 30%. Generally, the capital expenditures are inefficient as a considerable level of corruption characterizes it. The reduction of state capital expenditures will serve as a complimentary way of financing of social-programs. This should be supplemented by increase of efficiency of public investment programs, which will maintain the necessary level of infrastructure development.

Poverty in Projected Perspective

According to the results of the model, in 2002-2010 cumulative economic growth will be 54% and the nominal GDP will double by 2010. Economic growth will be driven by growth in nearly all sectors of economy: it is forecasted that services will provide 23% of total growth; 22% will be achieved due to industrial growth, 19% - due to agriculture, and 13% of the growth will be contributed by the growth in construction. Unemployment will decrease by only 5-6 percent points and will reach 14% in 2010. This is due to an existing potential of productivity increase, which assumes that economic growth would not be accompanied by an identical increase of number of employees. In particular, numbers of employees may increase in industry after 2005 and in agriculture-after 2009 only. By estimates unemployment along with structural challenges and low productivity will be main factor determining low level of wages.

According to suggested macroeconomic framework and policy priorities, the “Income Distribution Matrix” is projected for 2010, which is the key source for Gini index prediction (see Appendix 2). According to the Matrix, Gini index will equal to 0.49 in 2010. To assess the poverty incidence for this scenario, we should decide which poverty line may be used or, in other words, who are the poor? Given the current official poverty line, which is USD 22.4 per person, poverty incidence will be 13% in 2010. In case of USD 30 and USD 45 poverty lines poverty incidence will be 35% and 54% respectively (see Tables 5 and 6). Such significant difference among various estimates of poverty line and poverty incidence corresponding to them is explained by specific character of income distribution in Armenia. As the 60-70 percent of population is getting approximately similar low income, a minor change of poverty line may cause significant change in poverty incidence.

We may conclude that even the proposed pro-poor economic policy is not sufficient for overcoming poverty in Armenia by 2010. Therefore all structural challenges should be addressed by a comprehensive strategy on poverty reduction which will require a strong political will.

1. Economic Developments in the Transition and Poverty

1.1Economic Developments in 1990-2001 in Armenia

The Main Characteristics of Economic Development

1. Following the first steps of independence and liberalization, Armenian economy experienced a deep decline resulting in a sharp reduction of production and household income. Interconnected factors such as initial macroeconomic imbalance, lack of knowledge of institutions and individuals about market mechanisms, the inherited economic structure and reforms in the political system also contributed greatly to the intensification of the economic depression.

2. According to "World Development Indicators" (1999) issued by the World Bank (WB), Armenia is classified in the group of countries with low income[1]. Gross National Product (GNP) per capita was 724 USD[2] in 2001 and was distributed very unequally. Armenia is one of the transition countries with the highest Gini index (0.59), which also reflects the extreme polarization in distribution of household income and wealth. Hence, the poverty level of 55 percent, estimated in 1998-99 survey carried out by the National Statistical Service (NSS) with the WB support, is quite high. Share of the very poor in the population is estimated 23 percent[3].

3. Gross Domestic Product (GDP) fell by 53 percent in 1990-1993 as compared to the average indicator of 26.9 percent for the CIS countries in the same period. Economic recovery began from 1994 and for the first time, of CIS countries, an economic growth was recorded in Armenia. Average annual economic growth was 5.9 percent in 1994-2001. In spite of the economic growth, the level of the gross income produced in 2001 (as GDP) was significantly low, at 74.4 percent, as compared to the level in 1990. Even under unchanged income distribution and other things being equal, decline of living standards of the population by about 25 percent would definitely have led to an increase in poverty.

4. According to Interstate Statistical Committee of CIS, the key economic indicators for Armenia for 1999-2000 are close to the levels of 1970s; GDP and industrial production are on the same levels of 1977 and 1973 respectively. The situation is much worse in terms of construction; according to the same source the housing is on the level of 1946.

5. Before transition the industry was the biggest sector of economy. However, a decline of 57.9 percent was recorded in 1991-1993. Although 30 percent cumulative real growth during 1994-2001 is recorded, industry currently comprises only 55 percent of the level of 1990. Sub-branches of industry experienced

[1] According to the classification, countries with low income are those countries where GNP per capita is less than 785USD in 1997.
[2] Estimated by the EDRC assuming a population of 3 million.

big structural changes. In 1990 machinery and metal processing had the biggest share (32.8 percent) in industry. The shares of light and food industries were 24.6 percent and 13.2 percent, respectively. As a result of structural changes, machine and equipment production and metal processing have only 2.8 percent. As for food industry it has 38.3 percent share of the total industry in 2001. Nowadays, energy sector is one of the biggest sectors in the industry, which in spite of the decline in the previous years, produced 28.6 percent of the industrial output in 2001, compared to 3.4 percent in 1990.

The deepest contraction at 91 percent was recorded in construction in 1991-1993. This was due primarily to the sharp reduction of expenditures on financing of the capital construction from the state budget. Partly recovery in construction began only in 1996; however, the value added of the construction in 2001 totaled only 20 percent of the level of 1990.

The least economic decline was recorded in agriculture. In 1994, agricultural production totaled 89.7 percent of 1990 levels, which was mainly due to a decrease of imported agricultural goods under blockade, as well as increase in domestic demand for agricultural goods, under depletion of the quality of consumption. Privatization of land also facilitated the stabilization in agricultural output. As a result, currently agriculture is the only sector, which is above 1990 level. Particularly, the value added of this sector in 2001 exceeds the level of 1990 by approximately 13 percent.

6. During the recent eight years real growth of 58.8 percent was recorded in Armenia, of which 23 percent was due to agriculture; 15 percent - industry and 14 percent - construction. More than 25 percent of the economic growth was due to the services, which was mainly connected with trade development.

7. The absolute value of real private consumption in 2000 fell by 11.9 percent against 1990. It should be noted that in 1990 the private consumption comprised about 50 percent of GDP, while consumption expenditures in 1995-1998 exceeded the GDP level and in 2000 comprised 95.4 percent of GDP. Thus, nowadays all households mainly direct the income produced in economy at consumption. Obviously, savings are more affected by income reduction, than consumption.

8. Despite the significant decline in savings, beginning from 1995 gross investments have been quite stable within a range of 18-20 percent of GDP. The negative balance of investments and savings, which is equal to the foreign current account deficit, amounted to 16 percent in 1994, 21.3 percent in 1998, about 14.5 percent in 2000 against GDP.

9. According to the 2001 data, foreign trade turnover totaled 1217 mln. USD or 57.4 percent of GDP. 17.6 percent of the exports volume went to Russian Federation, 15.2 percent - USA, 13.6 percent - Belgium, 9.5 percent - Iran, 5.9 percent - Great Britain. At the same time 19.5 percent, 10.4 percent, 9.6 percent and 8.9 percent of imports, respectively from Russian Federation, Great Britain, USA and Iran.

   Of the total volume of exported goods, cut and rough diamond, scrap of precious metals, jewelry make up 35.8 percent; non-precious metals and articles thereof – 12.7 percent, mining and mineral production - 11.2 percent, food products – 14 percent and machinery, equipment and mechanisms – 8.3 percent. The following have the biggest shares in imports: mining and mineral products – 21.1 percent; cut and rough

[3] Households with current average monthly expenses per capita below the value of estimated minimum consumption basket or food basket are considered as poor or very poor households, respectively.

diamond, scrap of precious metals, jewelry – 12.2 percent, machinery, equipment and mechanisms – 10.1 percent, products of plant origin – 9.7 percent, food products – 8.8 percent, products of chemistry and related industry branches – 7.4 percent:

10. Instability of markets is characteristic to the transitional period. This primarily is reflected in high rates of inflation and national currency depreciation, high level of unemployment and interest rates. Following the price liberalization and monetary reform in Russia, Armenia experienced "import" of inflation, causing four digit inflation in 1993 and 1994. By implementation of stabilization policy, supported by international financial organizations, inflation came down to nearly 30 percent in 1995. 1998-2001 was a period of low inflation with volatility of prices from –1.3 percent (deflation) to 2.9 percent annually.

11. As to the financial sector, an insufficient level of "financial depth", which is reflected in the low monetization indicator (14.6 percent in 2001), is recorded in the economy of Armenia. High level of dollarization and cash operations is prevailing in the economy. As of the end of 2001, the share of foreign currency deposits in the residents' total deposits structure was 81.3 percent. Positive patterns of deposit growth were observed in the banking system; in 1995-2001, broad money grew by more than four times, whereas the volumes of deposits grew by approximately seven times, resulting in a significant growth of the money multiplier. Commercial banks (the number of which at the end of 2001 was 30, of which seven currently are under conservatorship) are remarkable for the level of their development in the set of financial institutions. Activity of non-banking financial institutions is negligible.

12. Financial markets are still underdeveloped, in spite of adoption of a new law on securities market and implementation of reforms in the area. T-bills market is relatively active and includes developed secondary market. By the end of 2001 the total volume of T-bills in circulation is around 3 percent of GDP and the yield is 15-18 percent annually.

General Overview of the Economic Policy

13. The main challenges of economic policy in the transition period were attributable to complicated and peculiar economic conditions, as well as insufficient resources necessary for implementation of efficient macroeconomic policy and structural reforms. Lack of both experience and political confidence of the policy makers resulted in deviation of reforms from the required direction, thus, postponing the settlement of painful economic problems. On the other hand, economic policy tools were not functioning efficiently in terms of stabilizing the volatility following the reforms.

14. As a member of international financial organizations, Armenia adopted the general approach, assuming ensuring of macroeconomic stability and a policy of establishment of market infrastructures. Liberalization of the economy, privatization, establishment of legal environment, etc. were the main elements of the structural reforms. Macroeconomic stability assumes that the gaps between supply and

demand, investments and savings, as well as external current account and fiscal deficits to be small and manageable. Low inflation and national currency depreciation rates, overcoming of economic decline were the main indicators of macroeconomic stability. In this respect monetary tools were implemented, particularly foreign exchange operations that were supported by foreign loans.

15. First steps on market economy were made in 1988-90, when partial and initial decentralization in the economy took place and some elements of self-governance were introduced. In 1991-1994 the major decisions on the future of Armenian economy were made, as well as on such principle issues as legal environment, privatization of land, small and medium production units. Beginning from 1995 the pace of reforms implementation slowed down. This particularly refers to privatization of large enterprises and reforms in the quasi-fiscal sector. Some activation in implementation of structural reforms was observed in 1997-1998. However, the tension in the political environment during the following years suspended the quick pace of the reforms. Certain progress associated with some of structural measures, particularly improvements of business environment was recorded in 2001.

Fiscal Policy

16. The process of formulation and execution of an independent state budget of the Republic of Armenia began in 1993. Since then serious changes in the budgetary system were made. The revenue and expenditure parts of the budget, as well as the structure and volumes of deficit financing, were changed. The changes in budget revenues and expenditures reflect the pace of structural reforms' implementation. Alongside with the privatization of the state property, direct financing of industry and agriculture were removed from the state budget expenditures. Currently subsidies in amount of 0.5-1 percent of GDP is allocated annually to the energy sector. Expenditures on education, science and healthcare decreased significantly.

17. Change of the structure of budget revenues was due to privatization of state enterprises and introduction of new types of taxes. Direct and indirect taxes substituted allocations from the profit of state enterprises. The highest level of tax revenues against GDP was recorded in 1999. Along with economic growth in 2000-2001, there was some decline in tax revenues as a share in GDP, which reflects the problems in the tax administration.

18. The highest state budget deficit of 90s was recorded in 1995, at the level of 11 percent of GDP. The deficit gradually declined to around 3-4 percent for 2000-2001, associated both with increase in tax revenues and reduction of expenditures. In 1994 and 1995 the deficit was financed by foreign borrowings and loans from the Central Bank. Beginning from 1996, part of the deficit has been financed through T-bills, and beginning from 1997 the borrowings from the Central Bank to finance the deficit on annually basis was stopped. Currently, concessional foreign borrowings, privatization proceeds and T-bills are the sources of deficit financing.

Monetary Policy

19. The implementation of monetary policy started with the introduction of the national currency and establishment of a two-level banking system. In 1988, a two-level banking system was established in

Armenia, and since 1991 the process of privatization of specialized banks associated with establishment of a number of new commercial banks has begun. This process was reinforced after the laws "On the RA Central Bank" and "On Banks and Banking Activity" were adopted in 1993. New approaches of banking regulation increased the level of independence of lending policy of the commercial banks. The banking normative system was introduced and the mechanisms of bank supervision were improved. Overall, 1994 was the year when the principles of monetary policy were established.

20. Monetary policy in Armenia is aimed at price stabilization. Sterilization of budgetary expansions resulted by foreign borrowings in 1994-1997 was partially carried out through exchange rate policy by the Central Bank. Since 1997 indirect monetary policy tools such as open market operations and standing facilities have been introduced and improved. Since 1997 the Government has not received credit from the Central Bank for annual budget deficit financing, and since 1999 direct short term credits also have been suspended. Since 1998 the level of the Government liabilities to the Central Bank has been fixed. As a result, the Central Bank is not allowed to carry out long-term operations with T-bills. When interest rate policy is not set as a priority of monetary policy, long term changes in the money supply takes place mainly as a result of foreign currency inflows. Consequently, monetary policy is derived from external shocks, which have their implications on prices. 1999 is an example, when as a result of external shocks narrow money had negative growth.

Liberalization and Privatization

21. Liberalization started with price liberalization (1992-1995), and was followed by some other measures such as permission of agricultural land's purchase and sell (February 1994), elimination of export limitations (April 1995) and liberalization of the current account. Market mechanisms of price formation began to prevail in the country. However, liberalization was not associated with introduction of an efficient program of social security, which seriously affected vulnerable groups of the population. Hyperinflation in the beginning of 90s that immediately followed the price liberalization, had a very negative impact on living standards of the poor in particular.

22. The process of privatization in Armenia began in the agriculture with enactment of the Law "On Agricultural and Agricultural Collective Farms" (February 1991), which set the beginning of the privatization process of land, cattle and agricultural machinery. As a result of liquidation of previously functioning 860 collective and soviet farms and privatization of land, about 107.1 thousand agricultural farms and 10.1 thousand agricultural collective farms were established in Armenia as of May 1991. Parallel to the privatization of land, privatization of "small" units (of trade, public catering and services) took place, though at a slow pace. Since 1993 privatization of state owned housing capital and since 1994 privatization of large and medium enterprises has begun.

23. The process of privatization of industrial enterprises had some drawbacks too, constraining enterprise recovery and development. Furthermore, in many cases privatization led to the breakdown of fixed assets and collapse of enterprises. In certain cases privatization resulted in establishment of monopolistic markets, leading to inefficient developments in a given sector. Other structural problems, such as non-payments (including budgetary non-payments) and accumulated arrears, inequality of the tax burden,

lack and expensiveness of delivery routs, underdeveloped capital market, lack of non-banking financial institutions, etc., also impeded the development of enterprises. As a result of lack of enterprise restructuring, industrial enterprises worn out and became outdated and incompatible in the market.

1.2 Economic Causes of Poverty and Factors Impeding Poverty Reduction

Comprehensive household surveys of 1996 and 1998-1999 provide extensive data for studies of the social situation and quantitative assessment of poverty in Armenia. In order to estimate poverty, the minimum consumption basket was assessed and used as a general poverty line. The value of the consumption basket in the survey for 1998-1999 was 11735 AMD (or 22.4 USD) per month, including the value of the food basket of 7194 AMD (or 13.7 USD). Those households with consumption expenses per capita below the minimum consumption basket, i.e. the general poverty line, are considered as poor households. Those households with consumption expenses per capita below the minimum food basket are considered as very poor. 1998-1999 survey, in particular, suggests the following welfare patterns for the households or the population.

TABLE 1. **Poverty in Armenia** *(as a share in the population)*

	Households			Population		
	Total	**City**	**Village**	**Total**	**City**	**Village**
Non -Poor	50.33	47.39	54.89	44.95	41.73	49.24
Poor	30.53	33.03	26.69	32.14	35.10	28.21
Very Poor	19.14	19.58	18.45	22.91	23.17	22.55

Source: Social Situation and Poverty in the Republic of Armenia, Yerevan, 2001.

About 13.5 percent of the population is being exposed to poverty, since their expenses per capita are very close to the poverty line. At the same time, 16.9 percent of the population is slightly below the poverty line.

Urban population in Armenia is more susceptible to the risk of poverty. The main advantage of the rural population is its potential of steady level of food consumption, since they are food producers. Poverty density is especially high in the earthquake zone and near-boarder districts. The highest poverty level, at 73 percent, is recorded in Shirak Marz.

It should be noted that poverty in transition countries, particularly in Armenia, considerably differs from the poverty of other countries in the world. The clear-cut distinction is that, unlike other poor countries, cultural and educational level here is rather high.

Production and Distribution vs. Poverty

Economic Causes of Poverty

Reasons for increase of poverty in Armenia are multi-layer: they are conditioned by social relations and are derived from characteristics of decision making and behavior of different social groups and institutions, as well as individuals.

Notwithstanding that social security systems were functioning in the Soviet period, there was a risk to poverty at that time as well. The minimum social basket defined by the State Statistical Committee in 1989 was 90 rubles, whereas the income per capita of the 25 percent of the population was less than 100 rubles. This means that the risk to poverty and its generation could not be unexpected in Armenia and other newly independent countries, particularly under economic and political system reforms.

The main reason causing poverty in Armenia at large relates with shocks of the transition period. More precisely, poverty was explained by two factors – reduction of the gross product and consequently, reduction of real consumption level, and increase of inequality in the structure of the distribution thereof.

Sharp decline in real income and depreciation of wealth of many households under one time or gradual limitations of possibilities for a simple regeneration, resulted in quantitative and qualitative reduction of consumption and, hence, depreciation of the human capital and generation of poverty. In this respect, the economic reason for poverty is limitation of an individual's self-realization as an economic resource. Consequently, in the economic system the problem raises in improperly functioning labor market resulted from lesser compatibility and lack of required qualification of enterprises in the open market. Internal and external shocks in demand and supply, destruction of the financial system and decline of public expenditures resulted in a decline of production, and consequently - demand for labor force. On the other hand, qualitative developments of the supply of labor force and its adequacy to the free market slowed down. Thus, the level of employment reduced, non-payments increased and real wages declined, resulting in pauperization of the population.

The implemented economic policy failed to effectively address stabilization of the shocks in the transition period. This fact to some extent was connected with problems beyond the economic environment, including blockade, earthquake, foreign political problems and war, as well as institutional structure and characteristics of the political system in the beginning of the transition period.

Reasons of Growth in Inequality and Poverty

Economic causes of increase of poverty are primarily related to the depth of the economic declinel, which was so deep in 1991-1993, that economic growth recorded in 1994 and in the following years was not sufficient to reach the levels of 1990. Average economic growth in 1990-2001 has been -2.9 percent. The second key reason behind poverty was increase of inequalaty in distribution of income and capital. Thus, on one hand, the gross output is significantly below the pre-transition level and on the other hand, the generated income is distributed very unequally. Gini index by income that was 0.27 in 1987-90 increased to 0.59 in 1996-99. For instance, this indicator was 0.41 in Russia, 0.22 in Belarus, 0.40 in Estonia, 0.34 in Lithuania (data for 1993-1994).

The following forms of income distribution in economy are being considered: functional distribution; distribution between households; distribution between economic sectors; distribution between economic branches and distribution between regions. Functional distribution of income is distribution of the gross product (as gross income) between types of income or distribution of compensation between economic factors. Functional distribution of gross income is the distribution between wages, profit or self-employment income, interest, rent and indirect taxes.

As owners of economic factors, the households actually receive gross income according to the mentioned types of income (with the exception of undistributed profit and taxes). In transition economies with the highest inequality level (Armenia, Georgia and Russia) the weight of wages in the structure of functional income distribution has decreased. Decline of the wages and increase in the profit in total income create a ground for increase in an inequality of income distribution between households, as equal distribution of wages, unlike the profit, between households is more probable, since the labor market equalizes the wages through its regulatory role. However, given the current structural problems, dispersion of wages is significant. In terms of inequality the key form of distribution is distribution of profit (having the biggest share in total income) between households, which largely facilitated the polarization in the society.

Currently the considerable part of the gross output is generated or produced by a small number of enterprises, and correspondingly, is possessed by a small number of people. It might assume that the most productive economic resources (including labor force, means of production, management, information, etc.) in Armenia are possessed by a few enterprises, which are the most efficient units. However, such concetration can not be explained only by market mechanisms. Studies show that the current structural issues, such as coruption, protectionism and other challenges create privileges for a few enterprises, while restricting the potential of development of the others, and this is estimated as a main factor for busineess concetration.

Increase in inequality was partially due to the decline of state revenues resulting from institutional drawbacks, as well as economic developments. Decrease in state revenues led to limitations of the public funds for financing of public services and redistribution programs. It led to the increase in inequality of disposable income affecting the poor. It should be noted that in most CIS countries official transfers have a significant impact on distribution. However Armenia is among exceptions, where these mechanisms are not working efficiently.

High level of corruption in Civil Service, particularly in tax administration and budgeting facilitated the increase in inequality. As a result of corruption, the tax system actually becomes regressive, effectiveness and volumes of public social expenses reduce; investments in human capital are impeded in favor of funding of projects where the level of corruption is high (mainly investment projects). The aforementioned factors cause an increase in distribution inequality of income and assets.

Thus, unequal distribution of income in Armenia is due to a set of problems such as market's imperfection, management inefficiency, constraints of economic freedom and the existence of power elite monopolies and corruption.

Conclusions

Shortfall in production, financial crisis and hyperinflation of 90s caused significant losses in incomes and savings, deteroriating the picture of distribution in Armenia. Unfortunatelly, regional conflicts, economic blockade and institutional challenges prohibited the recovery of the economy under new age of market economy. Despite the economic decline and hyperinflation has been suspended in 1994, underdeveloped civil society, incomplete markets, corruption were those key factors, which restricted participation of all in economic activity. Genaerally, the causes of poverty in Armenia are as follows:

- sharp decline of income level in the economy
- sharp depreciation of savings and wealth of enterprises and households
- concetration of the profit generated in the economy
- shadow economy
- knowledges consraints, in terms of market requirements
- lack of market infrastructures
- incomplete competition;
- inefficient economic policy (taxation, public funds)
- inefficient social security system.

2. Macroeconomic Policy and Poverty

2.1 Impact of Economic Growth and Income Distribution on Poverty

Recently, economic distribution and inequality have caused much interest among analysts and policy makers. Some economists hold the view that a long-term economic policy aimed at sustainable and durable economic growth is sufficient to reduce poverty and to raise prosperity in a country. Until recently, this view was specifically expressed in the policies of a number of transition countries and in economic policy programs recommended by international organizations. However, a number of other economists have proven in their studies that growth does not always facilitate poverty reduction, and in some cases, when economic growth is high, poverty even changes its nature and turns into a structural problem.

Next to the rather high pace of economic growth in Armenia during recent years, income distribution has polarized, causing an increase in poverty. Furthermore, some households became subject to long-term poverty, due to the lack of simple tools to re-generate existing non-productive economic resources and depreciated human capital. The implicit link between growth and poverty reduction in Armenia proves that in the economy, distribution is implemented disproportionately. Thus, features of distribution in the economy are fundamental to the efficiency of a growth policy targeted at reducing poverty. Consequently, selection of policies targeted at poverty reduction should be carried out by means of a study of the interrelation between growth and distribution.

Notwithstanding that economic growth is the main source of poverty reduction, the policy of poverty reduction should primarily be targeted at redistributing income. The income distribution and redistribution process is also important on the background of sustainability of growth, as well as efficient distribution thereof. Traditional macro-economics tells that redistribution schemes, when distribution is unequal, lead to a decline in economic growth or its pace. Moreover, economic growth may primarily facilitate an increase in inequality of distribution.

Policies should be developed in the economy for redistribution of income, which will enhance the incentives to the creation and the capacity of physical and human capital, improve the quality of decision-making, and protect the ownership rights of the poor.

The policy making process should be based on an assessment of distribution patterns and the development of factors affecting them. For this purpose, the process of income distribution should be modeled. This will enable an analysis and evaluation of the policy impact and the factors affecting the distribution process. It is necessary to develop the Lorenz curve[4] for Armenia in order to study the distribution and redistribution of income and economic growth.

In Armenia, data on income distribution can be obtained from comprehensive household surveys carried out by the NSS in 1996, covering 5040 households, and in 1998-99, covering 3600 households. The survey provides information on the share of each decile (ten percent) of the population in total income or expenditures. However, for the purpose of the analysis, distribution should be modelled and developed as a function, to obtain an understanding of dstribution for each percentage of population.

To assess the cumulative Lorenz curve (as it is presented in detail in Appendix 2), we have developed a mathematic function of distribution, and thereafter, the value of the function coefficients, as they will describe and match the actual income distribution in Armenia, based on the results of the 1998-99 comprehensive household survey carried out by the NSS. The distribution function developed in our model generate the same Gini index, as it is estimated by NSS. The deviation of the income relative level per each decile of the population from the figure estimiated by the NSS has been minimized. Thus, we have assessed the Lorenz curve (see Figures 1), which offers many possibilities for various analyses.

We have also assessed the potential change in poverty if the equality of income (or expenditure) distribution were to change. Our assessment is based on the Gini index, as it features the level of equality. We have further assessed the new values of coefficients of the Lorenz curve function or new distribution functions, which would be caused by a change in the Gini index (see Appendix 2). Thus, the relevant Lorenz curve has been assessed for any change in distribution, which was then used to assess the new level of poverty (comparing with the poverty line).

To assess the impact of economic growth on poverty, it will be necessary to determine what share of new income would go to the poor, and how many people would rise up above the poverty threshold. Analysis has shown that pro-poor growth in Armenia is rather small, but for the sake of the simplicity in this model, we have assumed that economic growth (or income growth) is distributed in the population in a way similar to gross income distribution. Based on this assumption, we have distributed economic growth in accordance with the distribution function and the relevant poverty line indicator (assessed as a percentage of the new level of aggregate income), and the Lorenz curve was used to determine the new level of poverty generated as a result of economic growth (see Appendix 2).

Tables 5-7 show an assessment of simultaneous impact of distribution change and economic growth. It shows the level of absolute poverty under alternative combinations of the income growth index and the Gini index by income.

Figure 3 shows the non-cumulative curve of income distribution, calculated on the basis of the cumulative distribution Lorenz curve. The non-cumulative income distribution curve was used to assess:

- the income of the poor, which is equal to the area covered by the non-cumulative curve and the poverty level (the absolute level of poverty);
- the deficit in the income of the poor, which is equal to the area covered by the non-cumulative curve and the poverty line.

It is clear that these areas or the income of the poor may change if the Gini index and/or economic growth change (see Tables 8 and 9).

The findings of the aforementioned analyses and an assessment thereof may be found in the next section.

Analysis of Social Polarization and Poverty

Modeling of income and expenditure and the analysis of the results allow to clarify the distribution features and the existing patterns. An analysis of income and expenditure shows that the poor, who amount to 55 percent[5] of the population, receive only about 16 percent of the total income, and make about 28 percent of the total expenditure; of this, the very poor receive 5.3 percent of the total income, and make about 9.9 percent of the total expenditures. On the other hand, half of the generated income and expenditure in the economy belongs to 12 and 22 percent of the richest, respectively. This proves that polarization of income distribution is much higher than polarization of expenditures, which could be explained by the fact that average propensity to consume against income is much less by the rich than the poor.

An analysis of the findings is sufficient to argue that smooth distribution of income in Armenia is far more significant for reducing poverty than economic growth is. In terms of poverty reduction, one percentage point decrease in the Gini index is the equivalent of about 3.5- 4 percent economic growth provided that growth were distributed in the same manner as total income. Still, economic growth is not conducive of improving distribution, and most often, it exacerbates polarization. To present a better view of polarization, some analyses have been performed:

[4] Lorentz curve shows what share of income is distributed to a given percentage of the population (cumulative).
[5] "poor" are determined based on 11,735 dram poverty line.

- It has been found that in Armenia, poverty would amount to 44, instead of 55 percent, if income were distributed as it is distributed in the Russian Federation or in the Kyrgyz Republic;
- There would not be a poverty problem in Armenia, if the income was distributed as it is distributed in Poland or in Latvia.

These analyses prove that income distribution in Armenia is acutely polarized; it is eminent that in Armenia, a much lower level of poverty is attainable.

On the other hand, the population of Armenia is rather small. Consequently, notwithstanding the fact that poverty is widespread in Armenia, large financial resources would not be needed to overcome poverty at the current poverty line[6]. The following analysis of income deficit of the poor should be presented to justify these assumptions:

- We have estimated that the income deficit in Armenia[7] is more than 60 percent of the disposable income of the poor, which is the approximate equivalent of 170-200 USD (annually).
- To fund the income deficit with economic growth (per year), it would be sufficient to have a 10 percent economic growth, and to distribute it only amongst the poor.

Obviously, large resources are not necessary to overcome poverty in Armenia; however, can the economic system alone, only with the state policy of market promotion impede poverty? Or, does economic growth in Armenia facilitate poverty reduction? And if yes, then to what extent? In this sense, the nature of economic growth and its distribution should be analyzed. It is important to know what sectors of the economy and what groups of the population generate economic growth, and how it is distributed and redistributed.

The analysis of the model we developed shows that the situation is as follows:

- pro-poor growth is only 10 percent of the total reported growth.
- It would take about 20 years to overcome poverty, provided the growth in that period is rather high (an average annual growth of 4 percent).

If structural issues in the country are not addressed, and if there is no fundamental policy to facilitate redistribution of income, economic growth in Armenia will continue to lead to further polarization of income. Consequently, pro-poor growth will be much smaller. Assuming that in the near future, distribution remains unchanged, and economic growth is not distributed more inequally than it is now, but rather, is distributed in accordance with the present income distribution:

- to reduce poverty by half, it would be necessary to generate about 80 percent economic growth, and

[6] Economic Development and Research Center, and a number of experts believe that the poverty line indicator adopted by Armenia is too low (as it is currently the equivalent of 22.4 US dollars per capita per month).
[7] The income deficit is the difference between income necessary to go above the poverty line (or to become non-poor) and the actual income of the poor (in cumulative terms).

- to overcome poverty and to eliminate it in full, GDP would have to more than double.

Considering the geopolitical developments in this region, it would not be reasonable to believe in "unprecedented economic miracles" provided under the current level of regional integration. Consequently, the conclusion is unequivocal: in order to eliminate poverty in the shortest possible time, a major change in the redistribution scheme would have to be the focus, in addition to sustainable economic growth.

Current Economic Policy and Macroeconomic Assessment of the IPRSP

The Government of the Republic of Armenia has declared reduction of poverty to be the main goal of its economic policy.[8] In 2001, the Government drafted an Interim Poverty Reduction Strategy Paper (IPRSP) on the basis of two scenarios of macroeconomic development (a baseline scenario and an optimistic one). Both scenarios contemplate the continuation of broad reforms and the implementation of a policy aimed at maintaining macroeconomic stability. The difference between the two scenarios is due to underlying assumptions on FDI, other foreign flows, incoming tourism, progress in resolution of the Nagorno-Karabagh conflict, and issues of migration. The baseline scenario of macroeconomic development was effectively reflected in the medium-term Macroeconomic Framework underlying the Law on state budget for 2002.

According to the Government's Budget Message, GDP real growth in the medium term will stabilize at around 6 percent, with a 3 percent inflation. The budget deficit will decline in 2003, reaching about 2.9 percent of GDP, and about 1.6 percent of GDP in 2004. In 2003, the current account deficit will decrease up to about 10.7 percent of GDP, and to about 8.1 percent in 2004.

The optimistic scenario in the IPRSP foresees a higher economic growth: 8.5 percent in 2002, and about 9 percent in 2003. This will require a significant increase in investments, reaching about 22 percent of GDP in 2003. The budget deficit/GDP would amount to 2.8 percent in 2003, and the current account deficit would significantly decline, reaching about 9.6 percent in 2003.

Through these policies and an enhancement of the macroeconomic stability, the objective of the Government is to reduce poverty in the medium term and to improve income distribution. In particular, the baseline scenario foresees that in 2003, poverty would amount to 48 percent of the total population, and that extreme poverty would reduce to 18 percent. Under the optimistic scenario, poverty would reach 44 percent in 2003, and extreme poverty would fall to 12 percent.

[8] See the Budget Message 2002 of the Government of the Republic of Armenia.

The view of the Government is that significant progress in reducing poverty is due to higher economic growth.[9] Consequently, the baseline scenario of macroeconomic development foresees slower poverty reduction, as opposed to the optimistic scenario.

In 2001-2003, according to the baseline scenario, cumulative economic growth will reach about 23.2 percent, versus 29.6 percent under the optimistic one (including the actual economic growth for 2001). In these circumstances, poverty will fall by 7 and 11 percentage points, respectively. However, studies of the Armenian economy have shown that economic growth has not facilitated poverty reduction. In particular, cumulative economic growth of 21.3 percent was reported for 1996-1999, with no poverty reduction in the same period.

BOX 1.

Trends of the Gini index in Other Countries

Here is an attempt at analyzing income distribution inequality in other countries, the declining trends thereof, and the factors behind them. Any significant change in the Gini index, as it describes the distribution process for a specific country, is due to the impact of certain fundamental factors. Studies have shown that the Gini index increases in the following cases:

- At the initial stage of economic growth in new industrial developing countries (South Korea, Malaysia);
- In periods when inflation accelerates (the USA in the late '70s and the early '80s); and
- In the whole period following the period of transition in transition countries.

Furthermore, some countries are experiencing a stable increase in the Gini index, including some developed countries (such as Australia and New Zealand), as well as a number of developing ones. Taking into account the stability of economic growth in the majority of the countries in question (with the exception of countries in transition), it is obvious that these countries witnessed a reduction in poverty, while the Gini index for them increased.

Such a decline trend in the Gini index mainly concerns the following cases:

- Some developed countries in the period from 1960 to 1990;
- New industrial developing countries in the middle stages of development (South Korea, Malaysia);
- When political systems change; specifically, in the period when colonies were gaining independence in the 1960s (India, Bangladesh, Sri-Lanka, and so on); and
- When demographic changes take place.

In 1960-1990, smoother income distribution in some developed countries was due to the increase in public expenditure/GDP, when industrial countries (such as France, Italy, Canada, Finland, Norway) took a new approach to social policies in a post-war period. Nevertheless, in countries like France and Italy (witnessing an eminent improvement in income distribution), a significant decline in the Gini index is noticeable in a long run only. In particular, in 1950-1990, the Gini index reduced from 50 units to about 30.

As for demographic changes, the assessment is that the significant decline in the birth rates in most of the developing countries (Bangladesh and others) in 1970-1990 led to an improvement in the Gini index.

The analyses also show that economic growth is distributed much more unequally than total income. This means that economic growth may lead to an deepening inequality in distribution. In order to facilitate poverty reduction, the public at large must participate in the process of economic growth, enabling the poor to increase their income. Nevertheless, the IPRSP does not clearly specify the policies and tools that would ensure the targetting of economic growth at poverty reduction.

[9] See the Interim Poverty Reduction Strategy Paper.

Our studies have already proven that the reduction of the Gini index is more important in terms of poverty reduction than economic growth. Therefore, significant progress in poverty reduction may be determined by a more smooth income distribution, rather than strong economic growth.

Notwithstanding that the Government is planning a more smooth distribution than there is now, it is not justified. In particular, it is assumed that in 2003, the Gini index will reduce to 0.44 and 0.38 under the baseline and optimistic scenarios, respectively.[10] However, our analysis of the international experience (see Box 1) has shown that no country with a market economy has yet succeeded in reducing the Gini index in a short period to such an extent as mentioned in this paragraph.

Thus, our analyses show that the economic program underlying the IPRSP will not achieve poverty reduction in Armenia. As the income distribution scenario is quite optimistic, the anticipated level of poverty is not realistic.

2.2 Evaluation of Distribution Inequality and Poverty through the Upcoming Decade

In this Section we will attempt to evaluate distribution of income in Armenia, the main factors conditioning its structure and their sustainability, as well as the possible trends of distribution process under passive public policy. We will also try to answer the question whether the current situation in Armenia and potential developments allow for ensuring adjustment of income polarization independently, without introduction of active public mechanisms aimed at improvement of distribution and distribution equalization in a long-term perspective (in 10-15 years).

It is also worthwhile mentioning that in our research we exclude the possibility of choosing a policy, which will contradict the principles of market economy, in particular, with ideas of private property and business initiative, as an option of development of society.

As a result of development of social relations, income polarization in Armenia has grown in the last decade, and in the process of policy preparation it is important to evaluate sustainability for those trends. Changes in distribution of wealth and income within the economy and their trends possibly have the following two manifestation:

- a short-term deviation has occurred and in the mid-term perspective it is to be corrected
- a long-term adjustment has taken place and income distribution smoothing is possible only in long-term perspective

The latter means that a radical reassessment of relations has taken place within the society and an age characterizing Armenia's new reality has been formed parallel to wealth redistribution. In this case, it is possible to improve the situation in long run only by applying an intensive targeted policy.

In order to evaluate the possible trends of further development of distribution process we distinguish the following three directions:

1. economic developments;
2. demographic developments;
3. trends of the world economy.

1. Economic Developments

New economic structure was formed during Soviet years in Armenia as a result of industrialization of the economy. Can they play a dominant role today in ensuring a certain income level and in its distribution process? Productive capacities, the general quality level of labor force, presence of certain infrastructures, urbanization, etc. are the arguments that can substantiate the short-term nature of changes in distribution in transition period, and at least in mid-term perspective they are subject to stabilization and positive development.

However, the issue of effectiveness of those productive capacities and the economic effectiveness of their allocation in Armenia is arguable and in the past the decisions referring to allocation of productive forces were not fully based o n principles of organizing the economy in the most effective way and comparative advantages. It is also worthwhile mentioning that the pace of physical wear out and becoming out of date of productive capacities in Armenia is higher than the pace of developments necessary for putting those capacities back into operation.

The fact that the relatively qualified staff is tied to productive capacities mainly out of operation is also negative. Thus, other things held constant, the mentioned labor force will not facilitate economic growth in short run, decreasing the potential for improvement of income distribution.

On the other hand, one should take into account that many theorists consider the Soviet period and social-economic relations characterizing it as a deviation from the general human development framework formed during the last 200 years. This is based on an opinion that, as a whole, the "Soviet" system was running not by voluntary and full acceptance of suggested new scheme of social relations (elimination of private property and business initiative) by all groups of society, but by a mechanism of forced introduction and coercion of those by the ruling political elite.

It is worthwhile mentioning that nowadays Armenia, in terms of income distribution, is close to those with whom it has almost the same geographical situation (Turkey, Iran) or has shared the same level of human development at the beginning of the 20th century (Turkey, Iran, certain Middle East and South America countries). This also states that redistribution processes recorded in 1990s tend to be a stable and long-term factor affecting the overall income distribution.

2. Demographic Developments in Armenia

The character of income distribution in Armenia will be much dependent on demographic developments in the future. It is known that at present the families that have many children or are consisting of elderly people, ceteris paribus, are exposed to the risk of poverty and have limited participation in the income distribution process. Therefore the research regarding population age structure for upcoming 10-15 years is important for assessment of income distribution. This research should be based on results of 2001 population census conducted in Armenia and on forecasts to be implemented on that basis.

However, let us try to represent the relative picture of probable demographic developments in Armenia for coming years abstracting from migration patterns. Referring to families that have many children it should be noted that we will not have a drastic fall in their number in upcoming 5-7 years, because the total number of children will remain relatively stable till 2005-2007. This is explained by the baby boom in 1989-91, as children born in that period will become adults only in 2007-2009. Although population growth is seen as a positive factor, in this case increase in the number of children under given distribution function increases the risk for inequality and vice versa.

According to the estimations, by 2005-2006 the total number of juveniles will be reduced by 10-12 percent against 2001, which will not have significant impact on overall pattern of income distribution. The decline of natural increase rate that has started in 1992 and is continuing today will have its main impact on the total number of juveniles after 2007, and if the birth rate will not grow in the subsequent years then the total number of juveniles for 2010 will decrease by approximately 30 percent against the year 2001.

A greater risk of becoming poor exists for the elderly population and in that respect it is necessary to evaluate the dynamics of that group during the coming years. It is known that the morbidity rate has declined and, respectively, life expectancy has also decreased in 1990s. According to estimates those trends will stabilize and, ceteris paribus, life expectancy will not exercise any significant changes

during the next few years. It is also necessary to note that emigration in 1990s refers mainly to younger and middle-aged groups, which means that we would expect the number of elderly population to decrease conditioned by the mentioned factor only starting from 2007-2010. On the other hand we should also take into account the substantial increase in birth rate in 40-50s of the twentieth century and its decline in the 60s. This assumes that having life expectancy approximately at the rate of 67 years the number of elderly population will decrease only started from the year 2010.

Therefore no essential decline in the number of both juveniles and elderly people and a decrease in their unit weight in overall population structure will take place till 2007-2010, which means that improvement in income distribution conditioned by the demographic factor is not expected within the first decade of the 21st century.

3. World Economy Trends

Researches on the world economy in particular on income distribution in terms of periods of time and countries allow us to evaluate, ceteris paribus, the framework of probable changes in income distribution in Armenia (see Textbox 1). In general, any structure of income distribution for a given country is a rather stable variable, which is not liable to considerable short-term fluctuations and which has a relatively stable behavior through decades. The above-mentioned is also proven by researches referring to income distribution in the post-war period in the world economy as well as in individual countries.

The analysis shows that the Gini index is quite stable in most of the countries and in some countries it has stable decline trends, which are well-revealed in 20-40 years. The new history of the world economy shows that with the exception of regions and periods, which experience considerable changes in the political system, Gini index is moderately and significant changes would emerge only in the long-term period.

Summarizing we may conclude that a long-term adjustment has taken place in the economy, which assume that distribution of wealth and income is likely to be significantly improved only in long run, as the challenges are going deep into the structure of economy and society. In this respect we believe that the primary goal of current economic policy, i.e. poverty reduction will be difficult to achieve if no significant changes occur in the economic policy.

2.3 Economic Policy aimed at Improvement of Income Distribution

This section will represent those main directions of economic policy that both theoretically and practically can affect the current scenario of income distribution in Armenia. In our opinion solution of problems of shadow economy, corruption and those impeding free competition is extremely important in terms of income distribution equalization and effective redistribution. Here we are going to analyze the following elements and factors of policy:

- Institutionalization of the fight against poverty;
- Labor market regulation;
- Investments in human capital;
- Regional development priorities;
- Fiscal policy and public expenditures programs
- Price mechanisms and income distribution.

We do not have pretensions of presenting undoubted truths or definitive estimations of impact of recommendations and policy suggestions. Instead, we will attempt to justify the logical connection of impact of proposed policy changes with the targets and will try to pick out those main principles, which in our opinion will definitely lead to poverty reduction. The indicated factors will be considered independently as integral components of complex policy of poverty reduction; only its harmonious and complementary implementation will lead to significant outcomes.

We would also like to note that the mentioned factors would be addressed purely in terms of strategy outline because their detailed and factorial processing is itself an issue requiring an extremely considerable research works, which also can serve as a subject for further analysis of this material.

Institutionalization of the Fight against Poverty

Today it is evident that macroeconomic stability and economic growth gained in recent years are not sufficient to solve social problems in the country. It is necessary to take active steps towards development of the business environment as well as formation of institutional basis that will ensure economic development.

The reforms implemented in Armenia during the last decade were aimed at increasing the number of private economic entities and formation of a decentralized system of free entrepreneurship and

economic decision-making under conditions of macroeconomic stability. As a matter of fact, it is not difficult to conclude in the context of strategy of the reforms that they mostly had a "top-down" nature. This means that, consistent with those reforms, institutions that are meant to ensure the self-regulation of economic phenomena were not created or are far from being perfect.

In this age of globalization and growing interconnection between countries the prosperity issues, in all probability, depend on numerous factors. In addition to issues connected with geopolitics, cross effect of countries and natural resources, today the "wealth of nations" is very much conditioned by legal and economic institutions protecting economic activity. Modern institutionalization followers state that only in cases when countries have an active institutional system based on the rule of law and competitive markets, their citizens will have an opportunity to work productively and freely enjoy the products of their work and that only the work will lead to wealth and freedom – to prosperity[10].

The main and most important role of institutions in political, economic and social processes is ensuring the direct participation of the society in those processes. Until now Armenia has failed to make the society a participant in implemented reforms. In fact, the mechanisms of influence (organization of appropriate study courses, public opinion formation by the mass media, regular appearances, articles, other propaganda tools) that would contribute to strengthening of the liberal economy and formation of an organized society, have not been used or have been used very poorly, alongside with economic reforms.

Today we can practically unequivocally claim that as the first step on the way "to poverty eradication" primarily we should create an organized social demand directed to eradication of that phenomenon. Certainly no poor can be or is pleased with their state but there are no appropriate mechanisms to unite the demands of separate individuals and to shape a public demand thereof.

What refers to possibilities of reducing poverty by improving the income distribution, here in the first place it is essential to find solutions for such extremely important issues as the fight against corruption, further improvement of the judicial system and increase of its trustworthiness, fight against the shadow economy, increase in efficiency of social policy and making it more targeted, etc.. It is notable that discussions of these issues have become intensive during the recent years, which is positive itself.

Labor Market Regulation

The adopted strategy regarding the labor market regulation area, as well as issues connected with its effective implementation in fact play a significant role not only in restoration of the natural unemployment rate in the country but also from the perspective of facilitating the resolution of the poverty problem. It is obvious that the chain "economic growth – employment – poverty reduction"

has its justified logic and, *ceteris paribus*, can operate very well. The state shall also consider the labor market regulation policy as one of the most important mechanisms by which it can influence the income distribution. Improvement of income distribution in Armenia will contribute to having such an increase in employment, which in its turn will lead to poverty reduction.

According to the results of several researches conducted in Armenia poverty risk groups are classified as follows[11]:

- unemployed
- households with many children
- pensioners and disabled people
- persons with low education level

Today in Armenia being employed is not a guarantee of not being poor, which unlike the Eastern Europe transition countries is also characteristic for other former Soviet Union countries. This is due to peculiarities of employment regulation during the transition period. Parallel to production decline a lesser decline occurred in employment area in Armenia which resulted in salary rates not reflecting the real income necessary for labor force reproduction. This employment regulation policy had a negative social impact and did not lead to the improvement of labor quality and labor prequalification. As a result, a huge portion of the labor force is now specialized in non-competitive areas of the market. According to results of the comprehensive survey of households conducted by the NSS (see Table 2) 45.7 percent of the employed are poor, at the same time 17.3 percent of the employed are very poor. This means that the employment is highly inefficient and is not leading to poverty reduction. In this sense implementation of efficient policies of minimum salary rate regulation, becomes an important issue.

TABLE 2. **Poverty Level In Terms of Employment** *(as a share in the population)*

	Total	**Not active**	**Unemployed**	**Employed**
Non-poor	44.95	41.50	36.35	54.26
Poor	32.14	33.69	34.79	28.42
Very poor	22.91	24.81	28.86	17.32
Total	100	100	100	100

The next important element of labor market regulation should be the active policy aimed at efficient employment within the economy. The analysis of RA Law "On Population Employment" dated 1996 shows that legal preconditions for active employment policy implementation do exist in nowadays

[10] Feulner E.J., 1999 Index of Economy Freedom, The Heritage Foundation, Washington D.C., 1999, pp.1-20

Armenia. However, the results of funding of the employment programs for the years 1995-2000 speak of the fact that in practice mainly a passive policy for employment is implemented (see Table 3).

Basically, implementation of an active employment policy in Armenia has begun only since 1997. In that year 0.4 percent of funds of general employment programs were spent on professional education of the unemployed. In the next years funding directed to active employment policy was increased and in 2000 has reached 5.2 percent of the total funding. However 90 percent of funds of Employment Fund were directed to passive policy, by providing unemployment allowances and financial aid.

Because of insufficient financing of this area the practical outcomes of active employment policy are negligible today; according to the data of Republican Service for Work and Employment in 1994-99 only 1127 unemployed have received professional training.

TABLE 3. **Financing of Employment Policy in Armenia** *(million Drams)*

Expenditure directions	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001** preliminary
Total Expenditures	679.7	850.9	842.5	766.6	1673.4	1036.0	1920.2
Including							
a) financing of passive employment policy, including	679.7	850.9	839.1	714.7	1563.9	982.6	1564.6
Unemployment allowances	669.6	836.6	771.6	533.6	1257.0	680.5	1016.5
Financial aid	0.5	0.1	53.5	169.4	280.8	285.7	521.8
Banking services	9.6	14.2	14.0	11.9	26.1	16.4	26.2
b) financing of active employment policy, including	-	-	3.4	51.9	109.5	53.4	351.0
Professional training	-	-	3.4	22.4	33.3	44.4	160.2
Facilitation of unemployed in conducting business activity				24.1	60.6	4.2	89.8
Professional orientation, training and returning to work of disabled people				0.5	10.8	-	96.0
Scientific research activities in employment area				5.0	4.8	4.8	5.0

Comparison with other countries in terms of funds allocated to employment policy again shows the passive nature of employment policy in Armenia. For example in Russian Federation 37.9 and 19.7 percent of total funds of Federal Employment Fund were spent on active employment policy in 1995, and 1997 respectively. As for developed market economies generally from 29-42 percent of all funds of employment programs were allocated to active policy measures.

Summarizing ideas on employment policy at present it is extremely important to:

- Implement an effective active employment policy, stressing the importance of creation of new jobs and retraining the unemployed by supporting of business plans emphasizing on public assistance for small and medium business development, implementation of social work programs and etc.

[11] see The Social Situation and Poverty in the Republic of Armenia, page 59

- Strengthen the organization of state regulation of labor market and to improve the appropriate legal system.

Investments in Human Capital

As the labor is the most important capital of the economy the problem of poverty needs to be considered also from the point of view of country's overall investment strategy seriously considering the vital issue of qualitative reproduction of labor force. The issue at question is making investments in labor force and increasing its production potential as a premise of economic growth. Strategic significance should be given to the policy, which ensures reproduction and improvement of the quality of its productive feature, assuming that the state carries out investment activity in human phenomenon (both as a producer and consumer). If an individual has steady opportunities for labor force reproduction (qualitative and quantitative), increasing the capacity for work and viability he/she starts taking a bigger role in the economic process.

So far the growth of human capital in Armenia has been hindered by the opportunities of economy. The labor force which is on the edge of poverty and incapable of being reproduced restricts the future economic efficiency and the growth in general, constraining the aggregate supply. This is the very reason for the need of reviewing the investment system, which assumes growth of human productive force based on extending the labor force efficiency period, creation of means assisting the usage of experience and information accumulated throughout all human culture, enlargement of self-realizations opportunities, reduction of diseases. In this respect education and health care are of primary significance in Armenia.

Regional Development Priorities

There is a certain relation between the income distribution in terms of different groups of population and the regional distribution of income. The relative centralization of business in a certain region of the country assume more possibility for concentrating the significant share of income produced in the economy in the hands of a small group of people as the chances for more people to be involved in the business process are decreasing. Taking into account the problem the geographical distribution of income also should be subject for study.

There are several economic indicators showing the substantial differentiation of business activity in the regions of Armenia. In a number of regions the unemployment, which is one of the characteristics of poverty level is significantly diverging from the average (Table 4), especially in the earthquake zone (Shirak and Lori). The unemployment level still remains high in Syunik Marz, which is near-border

region. These are official indicators, while the results of alternative survey of households conducted by the NSS in 1998-99 shows that the picture in reality is much worse.

TABLE 4. **The Unemployment Level by the RA Marzes in 1999-2000**

Marzes	**1997**	**1998**	**1999**	**2000**
Aragatsotn	2.0	2.1	2.5	2.3
Ararat	5.7	3.3	5.4	5.5
Armavir	7.8	3.9	8.4	8.7
Gegharkunik	6.7	3.7	7.4	7.6
Lori	13.4	14.7	17.1	17.0
Kotayk	10.2	8.9	10.8	11.0
Shirak	24.8	20.6	23.3	23.3
Syunik	16.2	17.8	19.3	20.8
Vayots Dzor	6.2	5.3	5.5	5.2
Tavush	7.3	6.6	7.6	7.8
Yerevan	11.1	7.4	11.0	12.2

Therefore, we can insist that not only in the context of poverty eradication but also in general for the development of the whole country at present the development of regions and provision of supplementary activities are of exceptional significance. Indeed, it can be argued investment and business initiatives flow into any region merely for economic motives and the Government has got little to do in this respect. However we believe that the authorities have a lot to do. Currently there is not a clear-cut regional management strategy developed in the Republic. Only the latter will allow developing a social-economic program based on revealing and using the maximum of its own productive potential for each region. This will enable the policy makers to develop approaches for integrating the economic and social-economic developments of regions.

We consider that the regional development strategy should be based on such important principles as:

- further decentralization of public management
- introduction of effective and manageable mechanisms for local budgeting
- clarification of authorities of Heads of Marzes and Chiefs of Communities
- differentiated approach to the earthquake zone, near-board and highland regions
- formation and development of institutions for implementation of condominium, community, inter-community programs within the communities etc.

Being the main tool of economic policy the fiscal policy has significant role in adjustment of income distribution. Therefore the current design of tax system and structure of public expenditures should focus on poverty eradication issues.

As for improvement of income distribution through tax policy, the increase in tax revenue is very important factor. In this respect the taxation should lead to increased tax progressiveness. This may be achieved by increase of direct tax revenues, which presumes both reduction of share of shadow economy as well as potential increase in direct tax rates in a long-term perspective. Apart from direct taxes it is necessary to increase the indirect tax revenues as well. Despite the fact that at the moment indirect taxation is more efficient compare to direct taxation, the problems in the area of indirect taxes worsen the total income distribution.

As for improvement of income distribution through public expenditures, the main policy tools should be the transfers. Potential enhancement of transfer policy can be financed from three sources. Those are:

- reallocation of funds between categories of transfers and introduction of more targeted transfers;
- reallocation of funds by cutting non-social public programs;
- increase of public funds as result of improvement of tax administration or increase of budget deficit;

Currently transfer policy can be considered as partly non-targeted, because in cases of some transfers both less poor and poor households receive equal transfers. This basically happens when the indigence level is deliberately overstated (in cases of family allowances) and with allowances for children and pensions as those transfers are not based on indigence level of household (families with children and elderly people do not need to be poor in order to receive transfers). However it is not realistic to assume that the current system of such transfers are subject for change, as, given other priorities, policy here should focus not only on poverty reduction issues but other principles as well. By our estimates the only way to increase the efficiency of the transfer's structure is largely introduction of "social work - allowance" mechanism.

Second option is the reallocation of resources from other expenditure programs to transfers. Taking into consideration the scarcity of resources allocated for other state expenditure programs this measure is also hard to implement in practice. But it should also be noted that the efficiency of non-social expenditures is quite low. It is estimated that there is a significantly high level of corruption in state investment programs and, in general, state non-social expenditures have significant potential to worsen the distribution. Therefore, transfers financed by reallocation of resources from other expenditure programs will foster the income growth of the poor and certain improvement of distribution.

The increase in allocations to social programs by overall increase of public funds is the main option of transfer increase within the GDP structure, which will lead to a significant improvement of distribution. Public expenditures can be increased either by increasing the budget deficit or the tax revenue. Social program's enhancement through increase of budget deficit is definitely a risk, at least for ensuring the stability of the social program itself as the growth of public debt reduces the disposable income of the Government in the long run. Thus, increase of the expenditures for social programs by increasing the public debt, can not be a stable mechanism. Moreover, if speaking about balanced fiscal policy we should consider the need for restraining public debt growth, i.e. the need for gradual reduction of budget deficit.

Price Mechanisms and Income Distribution

It is known that the price variables affect the income distribution and in this respect the main regulation tools are those of the monetary policy. Let's consider the influence of consumer prices, interest rates and exchange rate on the distribution patterns. In general, consumer price fluctuations may affect the distribution mainly in two ways. First, when given fixed contractual liabilities and interest rates the unexpected inflation increases the income of purchasers and creditors on one hand, and reduces the income of sellers and lenders on the other hand. Respectively, unexpected decline in prices has the opposite effect. But we will not consider this option as it is presumed that in a long-term perspective the stability and predictability of prices will be ensured in Armenia. Second, unequal changes in commodity prices in different branches take place (changes in relative price) resulting in changes of branch's shares in nominal income. Price changes in different branches can be determined by demand or supply factors and it is important to study the impact of both on price fluctuations in the long run.

Analyzing price movement for a long-term period it must be noted, that price increase as a result of supply factors will be more significant, as structural changes are still in process. According to estimates, increase in electricity, water supply, telecommunication and some other prices is expected. Therefore, total income redistribution towards those branches will take place fostering faster growth of income against other branches. Taking into account the specifics of income distribution in those branches (where the employed are believed to be well above the poverty line) it can be concluded that such changes in relative prices will worsen the overall distribution.

It is characteristic, that usually the low income branches are determined by demand factors. For example prices in industry branches oriented to domestic consumption and agriculture are basically determined by demand factors. Agriculture is the largest branch of economy constrained by demand and the supply in the branch is not flexible and does not respond to the short-term demand fluctuations.

Therefore significant price fluctuations are more likely to occur in agriculture compare to other branches. Particularly in 1999-2000 agriculture suffered drastic decline in relative prices and, in the result, income of those employed in agriculture and the average weight of agriculture in GDP has been considerably reduced. Although the decline in prices of agricultural products leads to increase in the purchasing power of the poor, there may be no improvement in income distribution because redistribution occurs between the low income groups as agricultural producers are in low income group as well. Summarizing we may assume that the aggregate demand policy will improve income distribution improvement through mechanism of relative prices.

Interest rates influence the income distribution either directly or indirectly. In the first case, high interest rates increase the profits of those having capital and worsen distribution, as capital owners are in the high income group, whereas borrowings can be made by lower income groups. Another example of direct influence is the increase of cost of public debt service as a result of higher interest rates. This constrains the possible growth of social expenditures and worsens the potential of income distribution's improvement. The indirect impact of interest rates on income distribution is determined by potential constraint of business initiatives as many of them become non-competitive when real interest rates are high. In any respect it is apparent that high interest rates worsen the income distribution function. As the researches show high interest rates in Armenia reflect problems both in macroeconomic management and structural challenges. In this respect, along with macroeconomic policies the structural policies also are of significant value, especially those focused on improvement of financial intermediation. Given the low inflation environment of Armenian economy macro-economic management holds the tools facilitating the decrease of high real interest rates.

At first sight low interest rates may assume an appreciated exchange rate as the Central Bank should sterilize the increase of money supply by foreign exchange sales (if monetary authority will still be aimed at very low inflation as it did in 1998-2000). This may end up in exchange rate appreciation and, hence, in certain decline in prices of imported goods restricting the domestic production and promoting income redistribution towards import servicing sectors.

Exchange rate depreciation as a possible approach of macroeconomic policy may increase income in exchange rate-elastic export branches or branches having imports substitution potential. However, given the need of the a balanced budget and expected large amount of foreign debt service, depreciated exchange rate may load the debt servicing burden and worsen the overall budget position.

The analyses show that appreciation of the real exchange rate as well as significant depreciation can worsen income distribution or constrain the potential for improvement of distribution through different channels. Evidently, it is necessary to provide a relatively stable scenario of real exchange rate of national currency for a long-term period. At this point we do not consider the general influence of exchange rate appreciation or depreciation on economic growth as it is obvious that certain depreciation of real exchange rate is more preferable in the sense of ensuring economic growth.

3. Policy Choice and Poverty in Projected Perspective

The Policy Choice and Poverty in Projected Perspective

Based on the results of the study, it can be asserted that notwithstanding the low level of GDP per capita, the poverty in Armenia is mainly determined by a considerably unequal distribution of incomes among households. This implies that the main source of poverty reduction should be pro-poor economic growth and targeted distribution of income. In order to eradicate poverty it is necessary to involve poor in the income generation, contributing to the improvement of primary distribution. As for function of income redistribution, which refers to economic policy, it should have an accented social course, as the level of income of extremely poor households largely depends on state transfers. By estimate, the existence of significant number of extremely poor households in Armenia is partly explained by the low level of public transfers, which is 3.4 % of in GDP[13], one of the lowest in transition countries.

As the main and only resource of the poor is human capital, participation of the poor in primary distribution of income is likely only by enlargement of investment in human capital and it's appreciation as a productive factor. In this respect the revision of social and structural policies are crucial, especially in terms of improvement of health care, education, and environment for the efficient utilization of human capital. The latter implies the improvement of labor qualification, support of small and medium entrepreneurship, and development of business infrastructures.

Along with measures aimed at the improvement of primary distribution, policy on income redistribution has significant role in poverty reduction general strategy. Currently one of constraints contracting redistribution function is the shadow economy, as it limits the opportunity of income redistribution and financing of social programs in one hand, and hidden incomes usually are redistributed through bribery in other hand, causing more polarization of incomes. If the state does not take measures in this respect the shadow economy tends to increase, crowding out "formal" businesses. Thus, reduction of the shadow economy and expansion of the "formal sector" are important factors regarding both redistribution of incomes and protection of competition.

[13] source State Budget, 2002

The main source of poverty reduction should be pro-poor economic growth and targeted distribution of income. In order to eradicate poverty it is necessary to involve poor in income generation, contributing to the improvement of primary income distribution.

"Macroeconomic Adjustment and Growth Model for Armenia"[14] (hereafter MAGMA) has been developed and applied for the forecast of economic trends and appropriations of the policies. In this model external environment is taken as a constant, which implies that we have skipped assessment of various scenarios of development that might result from solutions of Nagorno Karabakh conflict and other likely changes in the region.

For the period of 2002-2010 the macroeconomic framework is forecasted, which has pro-poor direction and meets a balance between sectors of the economy (see Appendix 3). The proposed macroeconomic framework includes the following main macroeconomic indicators and policy targets:

- 5% average annual economic growth
- 1,238 USD per capita GDP in 2010
- 3% average CPI inflation
- 0.9% average depreciation of AMD real exchange rate
- 10.8% private savings as percent of GDP in 2002 and 16% in 2010
- 16.6% private investments as percent of GDP in 2002 and 20% in 2010
- -9.0% current account deficit as percent of GDP in 2002 and -4.0% in 2010
- 41.4% external debt as percent of GDP in 2002 and 19.3% in 2010

According to our estimations, the following major directions should characterize pro-poor economic policy:

- Increase of tax revenue in GDP at least to the level of 21.4% by the 2010, through reduction of shadow economy and increase of efficiency of tax administration (State budget revenue program are presented in Table 16 and 17). We consider this scenario as quite realistic, as it is consistent with current tax legislation of the country.
- Gradual reduction of state budget deficit as percent of GDP in coming years and zero-level deficit by 2010, as a balanced budget is an important condition for the sustainability of government programs, including social programs. Also, zero-level budget deficit is an impetus for enhancing financial discipline in the country, as well as for a more efficient utilization of domestic savings.

[14] "Macroeconomic Adjustment and Growth Model for Armenia" is constructed by "Economic Development and Research Center" NGO for the purpose of developing public expenditure programs and macroeconomic policy.

- Gradual increase of current public transfers as a share of GDP in coming years to achieve at least 5.8% level by 2010.
- Increase of wages and salaries in public sector by 27% in 2003, and its 2.6% level as percent of GDP by 2010 through gradual growth. This will bring about a raise in the quality of public services and in the level of income of the socially insecure strata (particularly, teachers).
- Increase of financing of education and healthcare and achievement of, correspondingly, levels of 1.2% and 1.6% of GDP in 2010 (instead of 0.6% and 0.8% in 2002), which is important precondition for human capital sustainable development and poverty eradication in long run.
- Reduction of state capital expenditures and its level of 1.5% in GDP by 2010, instead of the current 3.4%. This implies a decrease in absolute value by 30%. Generally, the capital expenditures are inefficient as a considerable level of corruption characterizes it. The reduction of state capital expenditures will serve as a complimentary way of financing of social-programs. This should be supplemented by increase of efficiency of public investment programs, which will maintain the necessary level of infrastructure development.

Poverty in Projected Perspective

According to the results of the model, in 2002-2010 cumulative economic growth will be 54% and the nominal GDP will double by 2010. Economic growth will be driven by growth in nearly all sectors of economy: it is forecasted that services will provide 23% of total growth; 22% will be achieved due to industrial growth, 19% - due to agriculture, and 13% of the growth will be contributed by the growth in construction. Unemployment will decrease by only 5-6 percent points and will reach 14% in 2010. This is due to an existing potential of productivity increase, which assumes that economic growth would not be accompanied by an identical increase of number of employees. In particular, numbers of employees may increase in industry after 2005 and in agriculture-after 2009 only. By estimates unemployment along with structural challenges and low productivity will be main factor determining low level of wages.

According to suggested macroeconomic framework and policy priorities, the “Income Distribution Matrix” is projected for 2010, which is the key source for Gini index prediction (see Appendix 2). According to the Matrix, Gini index will equal to 0.49 in 2010. To assess the poverty incidence for this scenario, we should decide which poverty line may be used or, in other words, who are the poor? Given the current official poverty line, which is USD 22.4 per person, poverty incidence will be 13% in 2010. In case of USD 30 and USD 45 poverty lines poverty incidence will be 35% and 54% respectively (see Tables 6 and 5). Such significant difference among various estimates of poverty line and poverty incidence corresponding to them is explained by specific character of income distribution

in Armenia. As the 60-70 percent of population is getting approximately similar low income, a minor change of poverty line may cause significant change in poverty incidence.

We may conclude that even the proposed pro-poor economic policy is not sufficient for overcoming poverty in Armenia by 2010. Therefore all structural challenges should be addressed by a comprehensive strategy on poverty reduction which will require a strong political will.

Appendix 1. Poverty Indicators

To assess poverty, first of all it is important to decide whether the indicators characterizing it are to be assessed in terms of household income or household expenses. Selection of the approach to be used has to do with availability of reliable information. Definition of the level of income and expenses (poverty line) by means of which the non-poor can be distinguished from the poor is essential for poverty assessment. Nowadays, various approaches are used to determine the poverty line. However, poverty line assessment is very disputable, since a slight change might lead to a shift of a large group of households or population into or out of the category of the non- poor. Others completely reject the concept of "poverty line", contending that there is not a single acceptable approach for classification of the welfare level for those with income slightly above or below the "poverty line".

Surveys of poverty assessment carried out in developed and developing countries differ from each other in that estimation of "relative poverty" is used in developed countries, whereas estimation of "absolute poverty" is used in developing countries. In many countries the poverty threshold is set between 40 percent and 60 percent of the per capita national income. This approach is used to assess the relative poverty level, according to which the poverty level of Indonesia is very close to the same indicator for the USA.

If the minimum spending under prices P to reach the level of welfare of U is defined as C(P;U), then the amount of Z=C(P;Uz) will show the income level consistent with the welfare level Uz on the poverty line. Some poverty indicators can be written in this general way:

$$P=P(Z/M,L) \quad (1),$$

where Z is the poverty line, M – average income, L – indicators enabling to define the Lorenz curve (e.g. information on unequal distribution of income). Assuming that $Z=t*M$, where $0<t<1$, and t is constant and shows the ratio of the poverty line and average income, we may write equation (1) as $P=P(t,L)$, which here is conditioned only by the indicators of Lorenz curve.

If all income increases by the same proportion when using this approach, then P(t,L) will remain constant and only the poverty threshold will increase. Then one can infer that parallel to the economic growth, the poverty threshold tends to increase.

Obviously, the approach of "absolute poverty" is more appropriate for countries with lower income level, whereas the approach of "relative poverty" is more acceptable for countries with higher income level.

Of all indicators characterizing absolute poverty, we will focus on the most applicable ones and will consider their advantages and disadvantages.

Poverty index, showing the weight of the population below the poverty line in total population is the simplest and the most commonly used indicator. When assuming that the number of population is n, of which q is considered as the poor, the poverty index will be as follows:

H=q/n, (2)

Because of being simple and easy to use, this indicator is widely used for comparative assessment of poverty reduction in a certain period. However, this indicator may cause considerable deviations when used in some analyses and assessments of the impact of some economic policy measures. For example, the poverty index does not reflect the growing or declining patterns of the population income while it is below the poverty line.

In this respect, the indicator of "poverty depth" based on the deviation of the poverty line and the relevant welfare indicator (in our case it is the difference of income and poverty line) is more applicable. To understand the meaning of this indicator the household income should be arranged in ascending order. Let's assume that the most poor have income y_1, the next less poor have income y_2, and finally the least poor households considered as the poor have income y_q, which cannot exceed the level of the poverty line z. Then $(1-y_i)/z$ will show how far the household is from the poverty line, and

$$PC = 1/n \sum_{i=1}^{q} (1 - y_i / z) \quad (3)$$

which is considered as "poverty depth" index and is the value of weighted average deficit of the population income.

Through the "poverty depth" index the minimum expense required for poverty eradication can be assessed. Here the amount necessary to increase the income level of a person to the poverty line is defined. The overall sum of the expenses is as follows:

$(z-N_z)*q$, where N_z is the average income of the poor.

Equation (3) can be written in a more simplified way:

$P_c=I*H$ (4)

where I is the income deficit coefficient and is defined by the following equation:

$I=1-N_z/z$ (5)

This coefficient cannot be considered as a good indicator characterizing poverty. For reliability of this assertion let us examine an example of a very poor household, which has risen up above the poverty line through improvement of its welfare standards. Thereafter the average income of the poor will decrease, resulting in an increase in the income deficit coefficient; hence, a seeming deterioration will be observed. Consequently, one cannot make assumptions about dynamics of poverty using only this indicator.

As to the poverty depth index, which is the best indicator characterizing poverty and which answers to a number of questions on macroeconomic level, it also has some drawbacks. Particularly, it does not

respond to unequal distribution of income of the poor population. Sen[15] suggests to offset this omission through another indicator, "poverty acuteness", which is defined through the following equation:

$$P_s = H*(I+k*(1-I)*G_p) \quad (6)$$

where k=q/(q+1), and Gp is the Gini index for the poor population. Under high values of q, k is tending to 1. If the income of the poor are distributed unequally, i.e. Gini index is equal to 0, then the equation (6) will assume the form of the equation (4).

Another indicator of "poverty acuteness" is recommended by Foster-Grerra-Thorbecke,[16] which unlike Sen indicator, is summable for different groups and is more simple and applicable for practical calculations. It is written the following way:

$$P2 = 1/n\sum_{i=1}^{q}(1-y_i/z)^2 \quad (7)$$

This is merely a self-weighted "poverty acuteness indicator", which means that summed numerals (1-yi/z) are weighted by themselves.

The drawback of the "poverty acuteness" indicator lies in the fact that it is difficult to explain it economically; however it can be used for appropriate assessments within different time periods. If we write equation (7) in the following way

$$P_\alpha = 1/n\sum_{i=1}^{q}(1-y_i/z)^\alpha$$

then, given different values of α, similarity of structures of above indicators can be observed. If $\alpha = 0$, poverty level index is H, and if $\alpha = 1$, then the poverty depth index is Pc, and if $\alpha = 2$ the poverty acuteness index is P2.

[15] Sen, Amartya K. "Poverty: An Ordinal Approach to Measurement" 1976.
[16] Foster James, J. Grerra and Thorbecke "A Class of Decomposable Poverty Measures" 1984.

Growth and Distribution Model,
Development of Lorenz Curve

"Growth and Distribution Model" is used to estimate the poverty incidence under certain levels of income and distribution. The outcomes of comprehensive household surveys carried out by the National Statistical Service with the assistance of the World Bank (1996 and 1998) have been used in the model. "Growth and Distribution Model" is based on weights of different layer of population in total income or expenditures. Through decile weights an f(x) function (which may better represent the character of the Lorenz curve) has been estimated. Here x is the percentage expression of population and f(x) is the percentage of income gained by x percent of population. The estimated function should meet the following constraints:

1. f(0) = 0, f(100) = 100,
2. f(x) function in [0;100] interval should be positive and uninterrupted,
3. f(x) function in [0;100] interval should be monotonically increasing (as the function is cumulative) and should have first and second derivatives at each point,
4. f(x) function in [0;100] interval should be non-convex (partial derivative of order 2 should be higher than zero), as the variables are classified in ascending order.

In order to get a function, which better describes the distribution, it is necessary for f(x) to satisfy the actual Gini index condition, i.e. satisfy the following constraints:

5. $$\frac{5000-\int_0^{100} f(x)dx}{5000}=G$$

where G is Gini index defined by 1998-1999 survey, which is equal to 0.59 by income and 0.32 by expenditures.

For selection of a distribution function the logarithmic, exponential and combined functions and polynomials of 2nd-6th power were observed. The following are dispersions of some functions considered for estimation income distribution function.

Function	**Dispersion**
$y = ax/(1+bx^2)$	4.9582
$y = ax^6 + bx$	10.8967

$y = ax^b$	32.6763

To choose the best function we should take one with minimum dispersion from actual decile values (in case of similar dispersions we might chose the function, with fewer coefficients to be assessed). Thus, the following function is most appropriate for Lorenz curve in Armenia:

$$f(x) = \frac{ax}{1 + bx^2} \quad (1)$$

Curves of income distribution are generated by putting in already calculated coefficients for that function (see Figures).

Determination of Poverty. The distribution curve shows what percentage of total income (or expenditure) is allocated to x% (cumulative) of population. In order to determine the share of the poor in total population the function (1) needs to be differentiated, which will result the following expression:

$$\frac{a - abx^2}{(1 + bx^2)^2} \quad (2)$$

(2) characterizes non-cumulative distribution and after its solution we will determine the poverty incidence against per capita income, which is equal to poverty line.

Modeling of the Distribution. In order to evaluate the impact of income redistribution on poverty first we need to determine distribution curves for different pattern of distribution. That is, using the same methodology, the function (1) is estimated for different Gini indices. It is assumed that the function will not change its type in case of change of distribution and coefficients of function are only subject for change. We have solved the following set of equations for coefficients of function (1):

$$\frac{a}{2b}\ln(1 + 100^2 b) = 5000 - 5000 \cdot G \quad (3)$$

$$\frac{100a}{1 + 100^2 b} = 100 \quad (4),$$

Equation (3) expresses the relation between the selected function and Gini index, and equation (4) is the equation satisfying the condition x=100; y=100 (because the condition x=0; y=0 is satisfied in the selected function (1)).

In order to assess the level of poverty under a change in distribution (Gini coefficient) equation (2) is solved with respect to the poverty line.

Modeling the impact of the economic growth. To assess the impact of the economic growth on poverty the following equation was solved with respect to x:

$$\frac{a - abx^2}{(1 + bx^2)^2} = cg \quad (5),$$

Where the left part of the equation is a non-cumulative distribution function, c is the percentage of total income received by population gaining income lower than the poverty line z, g is income growth coefficient. Non-negative solutions (6) of equation (5) reflect the relation between poverty level and income growth (economic growth) under unchanged distribution.

$$x = -\frac{g}{2cb}\left(-2cgb\left(a + 2cg - \left(a^2 + 8acg\right)^{1/2}\right)\right)^{1/2} \quad (6)$$

Income Deficit Assessment. Income deficit is the total amount that is needed to overcome the poverty. Income deficit is equal to the area below poverty line and above function (2), which is represented by following equation:

$$D = zk - \int_0^k \frac{a - abx^2}{(1 + bx^2)^2} gx \quad (7)$$

where D is income deficit, z is the poverty line, k is the poverty level, g is the income growth index.

Figure 1: **Lorenz Curve (estimation, 1999)**

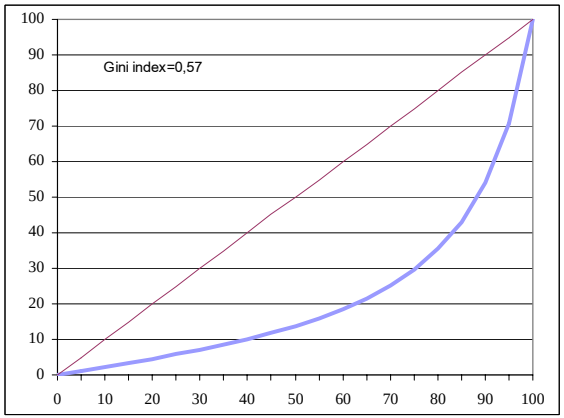

Figure 2: **Lorenz Curve (forecast, 2010)**

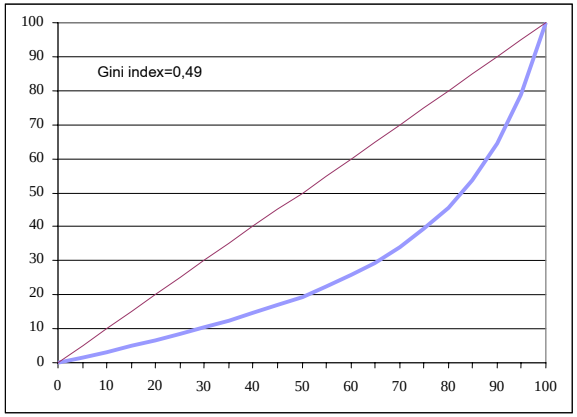

Figure 3: **Non-Cumulative Distribution Curve, 1999**

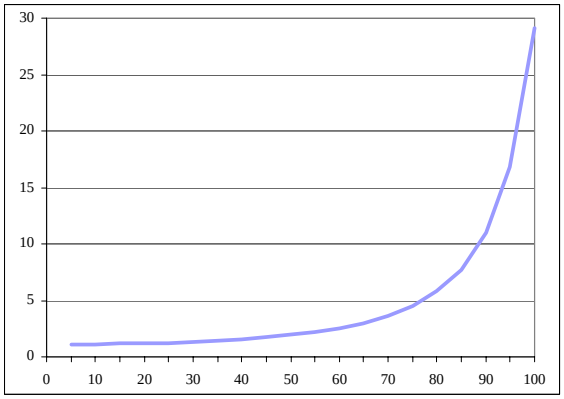

Figure 4: **Non-Cumulative Distribution Curve, 2010**

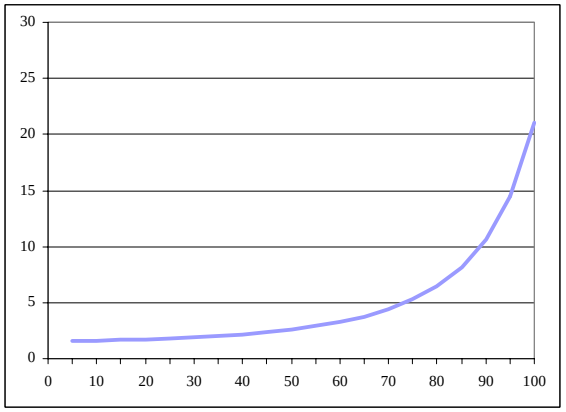

TABLE 5 **Poverty Incidence: Income Growth and Distribution** (as a percent of total population)

Gini coefficient	**0.57**	**0.56**	**0.55**	**0.54**	**0.53**	**0.52**	**0.51**	**0.50**	**0.45**	**0.40**	**0.35**	**0.30**	**0.25**	**0.20**
Growth index	*Poverty line is 1.5 USD per capita, per day*													
1.00	72.2	71.7	71.3	70.9	70.4	70.0	69.6	69.1	67.0	64.8	62.4	59.9	57.0	53.4
1.05	71.1	70.6	70.1	69.7	69.2	68.7	68.3	67.8	65.4	63.0	60.3	57.3	53.7	49.0
1.10	70.0	69.5	69.0	68.5	68.0	67.5	67.0	66.5	63.9	61.2	58.2	54.7	50.4	44.4
1.15	69.0	68.4	67.9	67.4	66.8	66.3	65.8	65.2	62.4	59.4	56.0	52.0	46.9	39.5
1.20	67.9	67.4	66.8	66.2	65.7	65.1	64.5	63.9	60.9	57.6	53.9	49.3	43.4	34.1
1.25	66.9	66.3	65.7	65.1	64.5	63.9	63.3	62.7	59.4	55.9	51.7	46.6	39.6	27.9
1.30	65.9	65.3	64.7	64.0	63.4	62.8	62.1	61.4	58.0	54.1	49.5	43.8	35.6	20.2
1.35	64.9	64.3	63.6	62.9	62.3	61.6	60.9	60.2	56.5	52.3	47.3	40.9	31.2	7.1
1.40	63.9	63.3	62.6	61.9	61.2	60.4	59.7	59.0	55.0	50.5	45.1	37.8	26.3	0.0
1.45	63.0	62.3	61.5	60.8	60.1	59.3	58.5	57.8	53.6	48.8	42.8	34.6	20.4	
1.50	62.0	61.3	60.5	59.7	59.0	58.2	57.4	56.6	52.1	46.9	40.4	31.2	12.3	
1.55	61.1	60.3	59.5	58.7	57.9	57.1	56.2	55.3	50.7	45.1	38.0	27.5	0.0	
1.60	60.1	59.3	58.5	57.7	56.8	55.9	55.0	54.1	49.2	43.3	35.5	23.2		
1.65	59.2	58.3	57.5	56.6	55.7	54.8	53.9	52.9	47.7	41.4	32.8	18.3		
1.70	58.3	57.4	56.5	55.6	54.7	53.7	52.7	51.7	46.2	39.5	30.0	11.5		
1.75	57.3	56.4	55.5	54.6	53.6	52.6	51.6	50.5	44.7	37.5	27.0	0.0		
1.80	56.4	55.5	54.5	53.5	52.5	51.5	50.4	49.3	43.2	35.4	23.7			
1.85	55.5	54.5	53.5	52.5	51.5	50.4	49.3	48.1	41.7	33.3	20.0			
1.90	54.6	53.6	52.6	51.5	50.4	49.3	48.1	46.9	40.2	31.1	15.5			
1.95	53.7	52.6	51.6	50.5	49.3	48.2	47.0	45.7	38.6	28.8	9.2			
2.00	52.8	51.7	50.6	49.5	48.3	47.1	45.8	44.5	37.0	26.4	0.0			
2.05	51.9	50.8	49.6	48.4	47.2	45.9	44.6	43.3	35.3	23.7				
2.10	51.0	49.8	48.6	47.4	46.1	44.8	43.5	42.0	33.6	20.8				
2.15	50.1	48.9	47.7	46.4	45.1	43.7	42.3	40.8	31.9	17.5				
2.20	49.2	48.0	46.7	45.4	44.0	42.6	41.1	39.5	30.1	13.5				
2.25	48.3	47.0	45.7	44.3	42.9	41.4	39.9	38.2	28.2	7.7				
2.30	47.4	46.1	44.7	43.3	41.8	40.3	38.6	36.9	26.2	0.0				
2.35	46.5	45.1	43.7	42.2	40.7	39.1	37.4	35.6	24.1					
2.40	45.6	44.2	42.7	41.2	39.6	37.9	36.1	34.2	21.8					
2.45	44.7	43.2	41.7	40.1	38.5	36.7	34.8	32.8	19.3					
2.50	43.8	42.3	40.7	39.0	37.3	35.5	33.5	31.4	16.5					
2.60	41.9	40.3	38.6	36.9	35.0	33.0	30.8	28.4	8.8					
2.70	40.1	38.4	36.5	34.6	32.6	30.3	27.9	25.2	0.0					
2.80	38.2	36.3	34.4	32.3	30.0	27.6	24.8	21.7						
2.90	36.3	34.3	32.1	29.9	27.3	24.6	21.4	17.5						
3.00	34.3	32.1	29.8	27.3	24.5	21.2	17.4	12.3						
3.10	32.2	29.9	27.4	24.5	21.3	17.4	12.3	0.0						
3.20	30.1	27.6	24.7	21.5	17.7	12.7	2.4							
3.30	27.9	25.1	21.9	18.1	13.2	4.6	0.0							
3.40	25.6	22.4	18.7	14.0	6.5	0.0								
3.50	23.1	19.5	15.0	8.3	0.0									
3.60	20.3	16.0	10.1	0.0										
3.70	17.2	11.8	0.0											
3.80	13.5	4.9												
3.90	8.4	0.0												
4.00	0.0													

TABLE 6 **Poverty Incidence: Income Growth and Distribution** (as a percent of total population)

Gini coefficient	**0.57**	**0.56**	**0.55**	**0.54**	**0.53**	**0.52**	**0.51**	**0.50**	**0.49**	**0.48**	**0.47**	**0.46**	**0.45**	**0.44**	**0.43**	**0.42**	**0.41**	**0.40**	**0.39**	**0.38**	**0.37**	**0.36**	**0.35**	**0.30**	**0.25**
Growth index	*Poverty line is 1 USD per capita, per day*																								
1.00	62.0	61.3	60.5	59.7	59.0	58.2	57.4	56.6	55.7	54.8	54.0	53.1	52.1	51.2	50.2	49.1	48.1	46.9	45.8	44.5	43.3	41.9	40.4	31.2	12.3
1.05	60.6	59.8	59.0	58.2	57.3	56.5	55.6	54.7	53.8	52.9	51.9	51.0	49.9	48.9	47.8	46.6	45.4	44.2	42.9	41.5	40.0	38.4	36.8	25.4	0.0
1.10	59.2	58.3	57.5	56.6	55.7	54.8	53.9	52.9	52.0	51.0	49.9	48.8	47.7	46.6	45.4	44.1	42.8	41.4	39.9	38.3	36.6	34.8	32.8	18.3	
1.15	57.8	56.9	56.0	55.1	54.1	53.2	52.2	51.1	50.1	49.0	47.9	46.7	45.5	44.2	42.9	41.5	40.0	38.5	36.8	35.0	33.1	30.9	28.6	5.7	
1.20	56.4	55.5	54.5	53.5	52.5	51.5	50.4	49.3	48.2	47.0	45.8	44.6	43.2	41.8	40.4	38.8	37.2	35.4	33.5	31.5	29.2	26.7	23.7	0.0	
1.25	55.1	54.1	53.0	52.0	50.9	49.8	48.7	47.5	46.3	45.1	43.7	42.4	40.9	39.4	37.8	36.1	34.2	32.3	30.1	27.7	24.9	21.8	17.9		
1.30	53.7	52.6	51.6	50.5	49.3	48.2	47.0	45.7	44.4	43.1	41.6	40.1	38.6	36.9	35.1	33.2	31.1	28.8	26.3	23.4	19.9	15.6	9.2		
1.35	52.3	51.2	50.1	48.9	47.7	46.5	45.2	43.9	42.5	41.0	39.5	37.9	36.1	34.3	32.3	30.1	27.8	25.1	22.0	18.3	13.5	4.7	0.0		
1.40	51.0	49.8	48.6	47.4	46.1	44.8	43.5	42.0	40.5	39.0	37.3	35.5	33.6	31.6	29.3	26.9	24.1	20.8	16.9	11.4	0.0	0.0			
1.45	49.6	48.4	47.2	45.9	44.5	43.1	41.7	40.1	38.5	36.8	35.0	33.1	31.0	28.7	26.1	23.2	19.8	15.6	9.5	0.0					
1.50	48.3	47.0	45.7	44.3	42.9	41.4	39.9	38.2	36.5	34.6	32.7	30.5	28.2	25.6	22.6	19.1	14.6	7.7	0.0						
1.55	46.9	45.6	44.2	42.8	41.3	39.7	38.0	36.2	34.4	32.4	30.2	27.8	25.1	22.1	18.5	13.9	6.2	0.0							
1.60	45.6	44.2	42.7	41.2	39.6	37.9	36.1	34.2	32.2	30.0	27.6	24.9	21.8	18.1	13.4	5.1	0.0								
1.65	44.2	42.7	41.2	39.6	37.9	36.1	34.2	32.1	29.9	27.5	24.8	21.7	18.0	13.2	4.5	0.0									
1.70	42.8	41.3	39.7	38.0	36.2	34.2	32.2	30.0	27.5	24.8	21.7	18.0	13.2	4.7	0.0										
1.75	41.5	39.8	38.1	36.3	34.4	32.3	30.1	27.7	25.0	21.9	18.2	13.5	5.4	0.0											
1.80	40.1	38.4	36.5	34.6	32.6	30.3	27.9	25.2	22.2	18.6	14.0	6.6	0.0												
1.85	38.7	36.8	34.9	32.9	30.7	28.3	25.6	22.6	19.1	14.6	7.9	0.0													
1.90	37.2	35.3	33.3	31.1	28.7	26.1	23.1	19.7	15.4	9.3	0.0														
1.95	35.8	33.7	31.6	29.2	26.6	23.8	20.4	16.4	10.8	0.0															
2.00	34.3	32.1	29.8	27.3	24.5	21.2	17.4	12.3	0.0																
2.05	32.8	30.5	28.0	25.2	22.1	18.4	13.7	6.0																	
2.10	31.2	28.8	26.1	23.1	19.6	15.2	8.9	0.0																	
2.15	29.6	27.0	24.1	20.7	16.7	11.2	0.0																		
2.20	27.9	25.1	21.9	18.1	13.2	4.6																			
2.30	24.3	21.0	16.9	11.5	0.0	0.0																			
2.40	20.3	16.0	10.1	0.0																					
2.50	15.5	9.0	0.0																						
2.60	8.4	0.0																							
2.65	0.0																								

TABLE 7 **Poverty Incidence: Income Growth and Distribution** (as a percent of total population)

Gini coefficient	**0.57**	**0.56**	**0.55**	**0.54**	**0.53**	**0.52**	**0.51**	**0.50**	**0.49**	**0.48**	**0.47**	**0.46**	**0.45**	**0.44**	**0.43**	**0.42**	**0.41**	**0.40**	**0.39**	**0.38**	**0.37**	**0.36**	**0.35**	**0.34**
Growth index	*Poverty line is 22.4 USD per capita, per month*																							
1.00	55.1	54.1	53.0	52.0	50.9	49.8	48.7	47.5	46.3	45.1	43.7	42.4	40.9	39.4	37.8	36.1	34.2	32.3	30.1	27.7	24.9	21.8	17.9	12.7
1.01	54.7	53.7	52.7	51.6	50.5	49.4	48.3	47.1	45.8	44.6	43.2	41.8	40.3	38.8	37.1	35.4	33.5	31.4	29.2	26.6	23.8	20.4	16.2	10.1
1.02	54.4	53.3	52.3	51.2	50.1	49.0	47.8	46.6	45.4	44.1	42.7	41.3	39.8	38.2	36.5	34.7	32.7	30.6	28.2	25.6	22.5	18.9	14.2	6.4
1.03	54.0	53.0	51.9	50.9	49.7	48.6	47.4	46.2	44.9	43.6	42.2	40.7	39.2	37.5	35.8	33.9	31.9	29.7	27.3	24.5	21.3	17.3	12.0	0.0
1.04	53.7	52.6	51.6	50.5	49.3	48.2	47.0	45.7	44.4	43.1	41.6	40.1	38.6	36.9	35.1	33.2	31.1	28.8	26.3	23.4	19.9	15.6	9.2	
1.05	53.4	52.3	51.2	50.1	48.9	47.8	46.5	45.3	43.9	42.6	41.1	39.6	38.0	36.3	34.4	32.5	30.3	27.9	25.3	22.2	18.5	13.7	5.3	
1.06	53.0	51.9	50.8	49.7	48.5	47.3	46.1	44.8	43.5	42.0	40.6	39.0	37.4	35.6	33.7	31.7	29.5	27.0	24.2	21.0	17.0	11.5	0.0	
1.07	52.7	51.6	50.5	49.3	48.1	46.9	45.7	44.3	43.0	41.5	40.0	38.4	36.8	35.0	33.0	30.9	28.6	26.1	23.1	19.7	15.3	8.8		
1.08	52.3	51.2	50.1	48.9	47.7	46.5	45.2	43.9	42.5	41.0	39.5	37.9	36.1	34.3	32.3	30.1	27.8	25.1	22.0	18.3	13.5	4.7		
1.09	52.0	50.9	49.7	48.6	47.3	46.1	44.8	43.4	42.0	40.5	38.9	37.3	35.5	33.6	31.6	29.4	26.9	24.1	20.8	16.8	11.3	0.0		
1.10	51.7	50.5	49.4	48.2	46.9	45.7	44.3	43.0	41.5	40.0	38.4	36.7	34.9	33.0	30.8	28.5	26.0	23.0	19.6	15.2	8.7			
1.15	50.0	48.8	47.5	46.3	44.9	43.6	42.1	40.6	39.0	37.4	35.6	33.7	31.6	29.4	27.0	24.2	21.0	17.1	11.7	0.0	0.0			
1.20	48.3	47.0	45.7	44.3	42.9	41.4	39.9	38.2	36.5	34.6	32.7	30.5	28.2	25.6	22.6	19.1	14.6	7.7	0.0					
1.25	46.6	45.2	43.8	42.4	40.8	39.2	37.5	35.7	33.8	31.8	29.6	27.1	24.3	21.2	17.3	12.3	0.0	0.0						
1.30	44.9	43.5	42.0	40.4	38.7	37.0	35.2	33.2	31.1	28.8	26.2	23.3	20.0	15.8	10.0	0.0								
1.35	43.2	41.7	40.1	38.4	36.6	34.7	32.7	30.5	28.1	25.5	22.5	19.0	14.5	7.7	0.0									
1.40	41.5	39.8	38.1	36.3	34.4	32.3	30.1	27.7	25.0	21.9	18.2	13.5	5.4	0.0										
1.45	39.7	38.0	36.1	34.2	32.1	29.8	27.4	24.6	21.4	17.7	12.7	3.1	0.0											
1.50	37.9	36.1	34.1	32.0	29.7	27.2	24.4	21.2	17.3	12.3	0.0	0.0												
1.55	36.1	34.1	32.0	29.7	27.2	24.4	21.1	17.3	12.1	0.0														
1.60	34.3	32.1	29.8	27.3	24.5	21.2	17.4	12.3	0.0															
1.65	32.4	30.1	27.5	24.7	21.5	17.7	12.7	2.7																
1.70	30.4	27.9	25.1	21.9	18.2	13.3	4.9	0.0																
1.75	28.3	25.6	22.5	18.8	14.2	6.8	0.0																	
1.80	26.2	23.1	19.6	15.1	8.6	0.0																		
1.85	23.9	20.4	16.2	10.4	0.0																			
1.90	21.4	17.4	12.1	0.0																				
1.95	18.6	13.8	5.8																					
2.00	15.5	9.0	0.0																					
2.05	11.6	0.0																						
2.10	5.5																							
2.15	0.0																							

TABLE 8 **Disposable income of the population under the poverty** (as a percent of total income)

Gini coefficient	**0.57**	**0.56**	**0.55**	**0.54**	**0.53**	**0.52**	**0.51**	**0.50**	**0.49**	**0.48**	**0.47**	**0.46**	**0.45**	**0.44**	**0.43**	**0.42**	**0.41**	**0.40**	**0.39**	**0.38**	**0.37**	**0.36**	**0.35**	**0.34**
Growth index	*Poverty line is 24 USD per capita, per month*																							
1.00	16.0	16.1	16.2	16.2	16.2	16.2	16.2	16.1	16.1	15.9	15.8	15.6	15.4	15.1	14.8	14.4	13.9	13.4	12.7	11.9	10.9	9.7	8.1	5.9
1.05	15.2	15.3	15.3	15.3	15.3	15.3	15.2	15.1	15.0	14.8	14.6	14.3	14.0	13.7	13.2	12.7	12.1	11.4	10.5	9.4	8.0	6.0	2.4	0.0
1.10	14.5	14.5	14.5	14.5	14.4	14.3	14.2	14.1	13.9	13.7	13.4	13.1	12.7	12.2	11.7	11.0	10.2	9.2	8.0	6.3	3.7	0.0	0.0	
1.15	13.8	13.8	13.7	13.7	13.6	13.5	13.3	13.1	12.9	12.6	12.2	11.8	11.3	10.7	10.0	9.2	8.1	6.7	4.7	0.0	0.0			
1.20	13.1	13.1	13.0	12.9	12.8	12.6	12.4	12.1	11.8	11.5	11.1	10.5	9.9	9.2	8.3	7.1	5.6	3.0	0.0					
1.25	12.5	12.4	12.3	12.2	12.0	11.8	11.5	11.2	10.8	10.4	9.9	9.2	8.5	7.5	6.3	4.5	0.0	0.0						
1.30	11.8	11.7	11.6	11.4	11.2	10.9	10.6	10.3	9.8	9.3	8.6	7.8	6.9	5.5	3.6	0.0								
1.35	11.2	11.1	10.9	10.7	10.4	10.1	9.8	9.3	8.8	8.1	7.3	6.3	4.9	2.7	0.0									
1.40	10.6	10.5	10.3	10.0	9.7	9.3	8.9	8.3	7.7	6.9	5.8	4.4	1.8	0.0										
1.45	10.1	9.9	9.6	9.3	8.9	8.5	8.0	7.3	6.5	5.5	4.0	1.0	0.0											
1.50	9.5	9.3	9.0	8.6	8.2	7.6	7.0	6.2	5.2	3.8	0.0	0.0												
1.55	8.9	8.7	8.3	7.9	7.4	6.8	6.0	5.0	3.6	0.0														
1.60	8.4	8.1	7.7	7.2	6.6	5.8	4.9	3.5	0.0															
1.65	7.8	7.5	7.0	6.4	5.7	4.8	3.5	0.8																
1.70	7.3	6.8	6.3	5.6	4.8	3.6	1.4	0.0																
1.75	6.7	6.2	5.6	4.8	3.7	1.8	0.0																	
1.80	6.1	5.6	4.8	3.8	2.2	0.0																		
1.85	5.6	4.9	4.0	2.6	0.0																			
1.90	4.9	4.1	2.9	0.0																				
1.95	4.3	3.2	1.4																					
2.00	3.5	2.1	0.0																					
2.05	2.6	0.0																						
2.10	1.2																							
2.15	0.0																							

TABLE 9 **Income Deficit for the population under the poverty** (as a percent of total income)

Gini coefficient	**0.57**	**0.56**	**0.55**	**0.54**	**0.53**	**0.52**	**0.51**	**0.50**	**0.49**	**0.48**	**0.47**	**0.46**	**0.45**	**0.44**	**0.43**	**0.42**	**0.41**	**0.40**	**0.39**	**0.38**	**0.37**	**0.36**	**0.35**	**0.34**
Growth index	*Poverty line is 24 USD per capita, per month*																							
1.00	9.9	9.3	8.8	8.3	7.7	7.2	6.7	6.2	5.7	5.2	4.8	4.3	3.9	3.4	3.0	2.6	2.2	1.8	1.5	1.1	0.8	0.5	0.3	0.1
1.05	9.9	9.3	8.8	8.2	7.7	7.2	6.7	6.2	5.7	5.2	4.7	4.3	3.8	3.4	3.0	2.5	2.1	1.8	1.4	1.1	0.7	0.4	0.1	0.0
1.10	9.8	9.3	8.7	8.2	7.7	7.1	6.6	6.1	5.6	5.1	4.7	4.2	3.7	3.3	2.8	2.4	2.0	1.6	1.2	0.8	0.4	0.0	0.0	
1.15	9.7	9.2	8.6	8.1	7.6	7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.6	3.1	2.6	2.2	1.7	1.3	0.8	0.0	0.0			
1.20	9.6	9.0	8.5	7.9	7.4	6.9	6.4	5.8	5.3	4.8	4.3	3.8	3.3	2.8	2.3	1.8	1.3	0.6	0.0					
1.25	9.5	8.9	8.3	7.8	7.2	6.7	6.2	5.6	5.1	4.6	4.0	3.5	3.0	2.4	1.9	1.2	0.0	0.0						
1.30	9.3	8.7	8.1	7.6	7.0	6.5	5.9	5.4	4.8	4.3	3.7	3.1	2.5	1.9	1.1	0.0								
1.35	9.1	8.5	7.9	7.3	6.8	6.2	5.6	5.0	4.5	3.9	3.3	2.6	1.9	1.0	0.0									
1.40	8.9	8.3	7.7	7.1	6.5	5.9	5.3	4.7	4.1	3.4	2.7	1.9	0.7	0.0										
1.45	8.6	8.0	7.4	6.8	6.2	5.5	4.9	4.3	3.6	2.8	1.9	0.4	0.0											
1.50	8.3	7.7	7.1	6.4	5.8	5.1	4.5	3.7	2.9	2.0	0.0	0.0												
1.55	8.1	7.4	6.7	6.1	5.4	4.7	3.9	3.1	2.1	0.0														
1.60	7.7	7.1	6.4	5.7	4.9	4.1	3.3	2.2	0.0															
1.65	7.4	6.7	6.0	5.2	4.4	3.5	2.4	0.5																
1.70	7.0	6.3	5.5	4.7	3.8	2.7	1.0	0.0																
1.75	6.6	5.8	5.0	4.1	3.0	1.4	0.0																	
1.80	6.2	5.3	4.4	3.3	1.8	0.0																		
1.85	5.7	4.7	3.7	2.3	0.0																			
1.90	5.1	4.1	2.8	0.0																				
1.95	4.5	3.3	1.3																					
2.00	3.8	2.1	0.0																					
2.05	2.8	0.0																						
2.10	1.4																							
2.15	0.0																							

TABLE 10 **Income Distribution Matrix for 1999** (estimation, as a percent of gross income)

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Wages and Salaries	**0.03**	**0.47**	**1.25**	**1.94**	**2.78**	**4.04**	**4.38**	**5.73**	**6.09**	**20.45**	**47.16**
Industry	0.00	0.04	0.11	0.45	0.90	1.44	1.44	1.56	1.56	2.99	10.46
Agriculture	0.01	0.37	0.68	0.68	0.90	0.90	1.47	1.76	2.05	4.78	13.61
Construction	0.00	0.00	0.00	0.12	0.15	0.28	0.29	0.36	0.36	2.65	4.21
Trade	0.00	0.00	0.00	0.17	0.19	0.31	0.31	0.44	0.54	3.41	5.38
Public Services	0.02	0.03	0.35	0.16	0.48	0.74	0.50	0.62	0.49	0.03	3.43
Other Services	0.00	0.03	0.11	0.37	0.15	0.38	0.37	0.99	1.09	6.59	10.07
Profit	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.82**	**4.34**	**8.67**	**24.26**	**40.09**
Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.94	1.88	5.26	8.70
Agriculture	0.00	0.00	0.00	0.00	0.00	0.00	1.08	1.66	3.32	9.29	15.35
Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.38	0.76	2.12	3.51
Trade	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.35	0.70	1.95	3.22
Services	0.00	0.00	0.00	0.00	0.00	0.00	0.66	1.01	2.01	5.63	9.31
Transfers	**0.67**	**1.43**	**1.65**	**2.06**	**2.22**	**2.36**	**0.90**	**0.63**	**0.53**	**0.29**	**12.76**
Private	0.00	0.80	1.04	1.47	1.65	2.14	0.71	0.44	0.35	0.23	8.84
Government	0.67	0.64	0.61	0.59	0.57	0.22	0.20	0.19	0.18	0.06	3.92
Total	**0.7**	**1.9**	**2.9**	**4.0**	**5.0**	**6.4**	**8.1**	**10.7**	**15.3**	**45.0**	**100.0**

* The rows of ID Matrix represent the income distribution among the ten groups of population classified according to their well-being status. The columns represent sources of income generation for each group.

TABLE 11 **Income Distribution Matrix for 2010** (as a percent of gross income)

	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Wages and Salaries	**0.04**	**0.59**	**1.57**	**2.44**	**3.50**	**5.09**	**5.51**	**7.22**	**7.68**	**25.75**	**59.38**
Industry	0.00	0.04	0.13	0.56	1.12	1.80	1.80	1.95	1.95	3.74	13.09
Agriculture	0.02	0.48	0.86	0.86	1.15	1.15	1.87	2.25	2.62	6.11	17.39
Construction	0.00	0.00	0.00	0.22	0.27	0.50	0.52	0.64	0.64	4.73	7.53
Trade	0.00	0.00	0.00	0.15	0.17	0.27	0.27	0.38	0.46	2.92	4.61
Public Services	0.02	0.03	0.31	0.13	0.42	0.63	0.43	0.54	0.43	0.03	2.95
Other Services	0.00	0.04	0.27	0.52	0.37	0.74	0.62	1.46	1.57	8.22	13.82
Profit	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.83**	**2.81**	**5.62**	**15.72**	**25.98**
Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.77	1.53	4.29	7.09
Agriculture	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.52	1.03	2.88	4.77
Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.41	0.81	2.26	3.74
Trade	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.32	0.64	1.79	2.96
Services	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.80	1.61	4.49	7.43
Transfers	**1.16**	**1.82**	**1.90**	**2.22**	**2.33**	**2.29**	**1.05**	**0.82**	**0.73**	**0.33**	**14.63**
Private	0.00	0.67	0.88	1.24	1.40	1.82	0.60	0.37	0.30	0.20	7.49
Government	1.16	1.15	1.01	0.98	0.93	0.47	0.46	0.44	0.43	0.13	7.14
Total	**1.2**	**2.4**	**3.5**	**4.7**	**5.8**	**7.4**	**8.4**	**10.8**	**14.0**	**41.8**	**100.0**

* The rows of ID Matrix represent the income distribution among the ten groups of population classified according to their well-being status. The columns represent sources of income generation for each group.

Appendix 3. Modeling of the Economic Developments

"Macroeconomic Adjustment and Growth Model for Armenia"

Explanation of certain forecasted indicators

Macroeconomic Adjustment and Growth Model for Armenia" (MAGMA) is developed for forecasting of macroeconomic indicators for both mid-term and long-term periods. It ensures all macroeconomic identities and the balance between economy sectors, at the same time allowing to use the macroeconomic policy simulation approach. Thus the model allows checking the consistency of policy targets with macroeconomic environment.

The exogenous and endogenous variables are identified in order to be used in the model. Exogenous variables are divided into two groups – "free" variables and policy variables. "Free" variables are forecasted by various statistical methods and expert evaluations, while policy variables reflect the choice of policy makers. As for endogenous variables, they are output of the model.

The key output of the model is GDP, which is presented by income, expenditure and value added of economic branches. Macroeconomic main indicators are measured based on the following set of equations:

$$Y = C + G + Ip + Ig + X - M + NFY$$

$$YR = CR + IR + GR + XR - MR + NFYR$$

$$GDP = Y - NFY$$

$$CR / YR = APC$$

$$MR / YR = APM$$

$$Y / YR = d1$$

$$C / CR = d2$$

$$X / XR = d3$$

$$M / MR = d4$$

$$G / GDP = g1$$

$$Ig / GDP = g2$$

Below is the list of variables, both exogenous and endogenous. It should be mentioned that some of exogenous variables presented in the set of equations are endogenous in the model, as they are output of the model.

Discribtion of Variable	Variable	In the set of eguastions		In the MAGMA	
		endogenous	exogenous	endogenous	exogenous
Gross domestic product	GDP	+		+	
Gross national dispose bal income	Y	+		+	
Real gross national dispose bal income	YR	+		+	
Private consumption	C	+		+	
Real private consumption	CR	+		+	
Public consumption	G	+		+	
Real public consumption	GR		+	+	
Private investments	Ip		+	+	
Public investments	Ig	+		+	
Real gross investments	IR			+	
Exports	X		+	+	
Real exports	XR	+		+	
Imports	M	+		+	
Real Imports	MR	+		+	
Net Factor Income and Transfers from abroad	NFY		+	+	
Real Net Factor Income and Transfers from abroad	NFYR		+		+
GNDI Deflator (CPI)	d1		+		+
Deflator of Consumption (CPI)	d2		+		+
Deflator of Exports	d3	+		+	
Deflator of Imports	d4		+	+	
Average Propensity to real consumption	APC		+		+
Average Propensity to Import	APM		+		+
Public consumption / GDP	g1		+		+
Public Investments / GDP	g2		+		+

For the solution of the set of equations the software “Mathcad 2000 Professional” was used. As a result we have the following solution for endogenous variables of the set[1].

[1] Solutions for the real export and the deflator of export are not presented here.

$$\text{submatrix}(\text{Find}(GDP, Y, C, G, Ig, M, YR, CR, MR, XR, d3), 0, 8, 0, 0) \rightarrow \begin{bmatrix} \frac{(d1 \cdot Ip + X \cdot d1 + NFY \cdot d2 \cdot APC - NFY \cdot d4 \cdot APM)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ d1 \cdot \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ d2 \cdot APC \cdot \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ -g1 \cdot \frac{(-d1 \cdot Ip - X \cdot d1 - NFY \cdot d2 \cdot APC + NFY \cdot d4 \cdot APM)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ -g2 \cdot \frac{(-d1 \cdot Ip - X \cdot d1 - NFY \cdot d2 \cdot APC + NFY \cdot d4 \cdot APM)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ d4 \cdot APM \cdot \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ APC \cdot \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \\ APM \cdot \frac{(-g1 \cdot NFY + NFY - g2 \cdot NFY + Ip + X)}{(-g2 \cdot d1 - d2 \cdot APC - g1 \cdot d1 + d1 + d4 \cdot APM)} \end{bmatrix}$$

Deflators of components of GDP by expenditures and also of branches of the economy are based on estimations of CPI inflation's. The imports deflator is endogenous and is forecasted based on estimations of effective exchange rate of national currency and CPI inflation of trade partners. CPI inflation is an exogenous variable, as it is the result of policy choice. As for nominal exchange rate, it is derived based on assumptions on real exchange rates and CPI inflation of trade partners.

The GDP both by expenditures and value added of economic branches are forecasted simultionasly. The GDP by income side is derived based on total GDP estimations. The value added of industry is endogenous, and is derived from the residual of GDP (in factor prices) and the sum of value added of all anther branches. In its turn, GDP on factor prices is the residual of GDP in market prices and net indirect taxes, which is the difference of total indirect tax and subsidies, taken from public sector indicators (policy tools).

The value added in agriculture is calculated based on real growth in the sector and agriculture deflator, which is exogenous. The value added in construction is based on the investment growth rate and investment deflator (both are exogenous). Value added in trade and services is calculated on assumptions of unit weights of those branches in GDP. The wage component of the of GDP by income is residual. Capital stock consumption and net profit and mixed income are calculated using their exogenous unit weights in GDP. Based on above mentioned indicators, the economic growth, real and nominal structure of GDP are forecasted.

Population and Employment

The population number of given year is calculated based on estimations of population growth and migration. Forecast of employment is based on value added in the economy and estimations of productivity growth. Having the number of economically active population and total employment we may have the unemployment rate.

Fiscal Sector

Fiscal sector represents revenue and expenditure sides of the state budget, as well as the financing of the deficit. The share of budget revenues and deficit in GDP are exogenous variables as they are policy tools. The deficit is presented by the structure of its financing, based on assessment of financial markets and external environment. Total budget expenditures are endogenous, while its structure is based on policy choice.

External Sector Indicators

Dollar value of the exports of goods is exogenous variable, which is mainly based on assumptions on economic growth of partner countries. The value of the export in national currency is endogenous. Factor income is equal to the sum of interest and other incomes. Forecast of interest is based on estimations of external debt and other capital flows. Other incomes and private transfers are estimated based on forecast of growth in the countries where main centers of Armenian Diaspora are located, as these flows are explained mainly by factor of Armenian Diaspora. As for official transfers, we estimated sharp decline in coming years.

The value of capital transfers is an exogenous variable. The financial account of the balance of payment is calculated as the sum of direct (exogenous), portfolio and other investments. Portfolio investments are the sum of net financing of the budget deficit through T-bills by non-residents and other exogenous portfolio investments.

Table 12 Macroeconomic Framework

	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
Nominal GDP (billion of AMD)	955.4	987.4	1033.3	1176.7	1284.7	1406.0	1533.5	1670.2	1809.1	1950.3	2099.6	2253.0	2398.5
GDP Real Growth Rate	7.3	3.3	6.0	9.6	6.0	6.0	5.7	5.5	5.0	4.5	4.3	4.0	3.2
Nominal GDP (million of USD)	1892.2	1845.4	1915.3	2119.9	2275.3	2446.2	2621.2	2804.6	2984.4	3160.7	3342.8	3541.5	3740.9
GDP Per Capita (USD)	620.6	608.2	638.4	706.7	758.3	814.9	872.7	932.8	991.6	1049.1	1108.5	1173.2	1238.0
GDP Deflator	110.7	100.1	98.7	103.9	103.0	103.2	103.2	103.2	103.2	103.2	103.2	103.2	103.2
CPI (average)	108.7	100.6	99.2	103.1	103.0	103.0	103.0	103.0	103.0	103.0	103.0	103.0	103.0
Exchange Rate (AMD/USD average)	504.9	535.1	539.5	555.1	564.6	574.8	585.0	595.5	606.2	617.0	628.1	636.2	641.2
Population (1000 people)	3048.8	3034.2	3000.0	2999.9	3000.4	3001.7	3003.7	3006.7	3009.7	3012.7	3015.7	3018.7	3021.7
Employment (1000 people)	1074.4	1036.4	1007.9	1010.2	1018.5	1023.1	1027.9	1033.9	1041.0	1049.2	1058.5	1068.8	1079.3
Unemployment rate		21.1	22.0	19.1	18.4	18.1	17.7	17.3	16.9	16.3	15.6	14.9	14.1
Average Wages (in 1000 AMD)	30.6	34.1	38.5	44.0	48.1	53.1	58.0	63.1	68.8	74.6	80.7	87.0	92.9
Average Wages (USD)	60.6	63.7	71.3	79.3	85.2	92.3	99.1	105.9	113.5	120.9	128.5	136.7	144.8
(as percent of GDP)													
Private Consumption	103.6	98.8	96.3	90.7	87.6	85.4	83.7	82.0	80.5	79.0	77.7	76.4	75.2
Private Investments	12.9	11.3	13.8	15.3	16.6	17.3	18.1	18.6	18.9	19.3	19.6	19.7	20.0
Private Savings	-4.7	-0.1	3.8	9.7	10.8	11.4	12.1	12.6	13.1	13.8	14.4	15.2	16.0
State Budget Indicators (billion of AMD)													
Revenues and Grants	177.1	200.4	180.7	193.6	219.2	247.3	278.6	316.5	355.1	396.1	442.8	487.1	531.8
Expenditures and Net Lending	212.3	251.9	230.4	239.8	260.1	286.7	309.3	343.2	376.8	411.7	451.2	493.8	531.8
Fiscal Deficit	35.1	51.5	49.7	46.2	40.9	39.4	30.7	26.7	21.7	15.6	8.4	6.8	0.0
Deficit Financing	35.1	51.5	49.7	46.2	40.9	46.2	10.9	-2.9	-7.6	-14.5	-7.9	-8.8	-10.0
Demand for Financing	0.0	0.0	0.0	0.0	0.0	-6.8	19.8	29.6	29.3	30.1	16.3	15.6	10.0
State Budget Indicators (as percent of GDP)													
Revenues and Grants	18.5	20.3	17.5	16.5	17.1	17.6	18.2	18.9	19.6	20.3	21.1	21.6	22.2
Tax Revenues	14.3	16.8	15.4	14.3	15.1	15.9	16.7	17.8	18.4	19.1	20.1	20.7	21.4
Expenditures and Net Lending	22.2	25.5	22.3	20.4	20.2	20.4	20.2	20.5	20.8	21.1	21.5	21.9	22.2
Fiscal Deficit	3.7	5.2	4.8	3.9	3.2	2.8	2.0	1.6	1.2	0.8	0.4	0.3	0.0
External Sector Indicators (million of USD)													
Current Account Balance	-402.5	-306.9	-278.3	-200.8	-205.4	-211.9	-208.5	-212.1	-209.2	-199.9	-187.1	-169.8	-150.4
Trade Balance	-577.5	-474.0	-463.5	-409.1	-393.4	-393.5	-388.3	-389.2	-386.6	-380.6	-374.3	-364.8	-354.3
Exports	359.6	383.1	446.9	509.1	536.6	574.2	614.4	657.4	701.8	747.4	794.1	841.7	887.5
Imports	-999.9	-919.1	-966.2	-952.4	-976.9	-1011.0	-1040.9	-1081.0	-1117.8	-1151.6	-1185.9	-1217.2	-1246.0
External Debt	732.4	834.1	826.5	881.0	943.0	1034.5	1016.8	973.6	919.6	854.4	804.5	761.0	721.2
External Debt/Export (%)	203.7	217.7	185.0	173.0	175.7	180.2	165.5	148.1	131.0	114.3	101.3	90.4	81.3
External Sector Indicators (as percent of GDP)													
External Debt	38.7	45.2	43.2	41.6	41.4	42.3	38.8	34.7	30.8	27.0	24.1	21.5	19.3
Current Account Balance	-21.3	-16.6	-14.5	-9.5	-9.0	-8.7	-8.0	-7.6	-7.0	-6.3	-5.6	-4.8	-4.0
Trade Balance	-30.5	-25.7	-24.2	-19.3	-17.3	-16.1	-14.8	-13.9	-13.0	-12.0	-11.2	-10.3	-9.5
Exports	19.0	20.8	23.3	24.0	23.6	23.5	23.4	23.4	23.5	23.6	23.8	23.8	23.7
Imports	-52.8	-49.8	-50.4	-44.9	-42.9	-41.3	-39.7	-38.5	-37.5	-36.4	-35.5	-34.4	-33.3

Table 13 Gross Domestic Product by Branches

In nominal terms (billion AMD)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 Forecast
GDP	**955.4**	**987.4**	**1033.3**	**1176.7**	**1284.7**	**1406.0**	**1533.5**	**1670.2**	**1809.1**	**1950.3**	**2099.6**	**2253.0**	**2398.5**
Industry	190.0	208.9	228.7	245.6	265.6	291.6	319.2	350.0	381.8	413.9	446.7	480.6	512.4
Agriculture	294.7	266.2	238.5	274.4	295.4	317.9	341.9	367.3	394.2	422.7	452.8	484.5	515.0
Construction	76.6	82.0	105.9	126.7	148.5	162.9	179.2	196.9	214.6	231.7	248.9	265.4	282.6
Trade	82.9	88.7	95.0	110.3	117.9	129.3	138.0	147.0	155.6	163.8	174.3	184.7	191.9
Services	222.7	257.7	271.0	305.9	327.6	358.5	388.0	415.9	450.5	485.6	522.8	561.0	597.2
GDP in Factor Prices	866.9	903.5	939.1	1062.9	1154.9	1260.3	1366.2	1477.1	1596.6	1717.7	1845.5	1976.3	2099.1
Net Indirect Taxes (- subsidies)	88.5	83.9	94.2	113.8	129.8	145.7	167.3	193.1	212.4	232.5	254.1	276.7	299.4

Structure of Nominal GDP (GDP = 100)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GDP	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Industry	19.9	21.2	22.1	20.9	20.7	20.7	20.8	21.0	21.1	21.2	21.3	21.3	21.4
Agriculture	30.8	27.0	23.1	23.3	23.0	22.6	22.3	22.0	21.8	21.7	21.6	21.5	21.5
Construction	8.0	8.3	10.2	10.8	11.6	11.6	11.7	11.8	11.9	11.9	11.9	11.8	11.8
Trade	8.7	9.0	9.2	9.4	9.2	9.2	9.0	8.8	8.6	8.4	8.3	8.2	8.0
Services	23.3	26.1	26.2	26.0	25.5	25.5	25.3	24.9	24.9	24.9	24.9	24.9	24.9
GDP in Factor Prices	90.7	91.5	90.9	90.3	89.9	89.6	89.1	88.4	88.3	88.1	87.9	87.7	87.5
Net Indirect Taxes (- subsidies)	9.3	8.5	9.1	9.7	10.1	10.4	10.9	11.6	11.7	11.9	12.1	12.3	12.5

Real Growth (Compared to Previous Year)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GDP	**107.3**	**103.3**	**106.0**	**109.6**	**106.0**	**106.0**	**105.7**	**105.5**	**105.0**	**104.5**	**104.3**	**104.0**	**103.2**
Industry	97.8	105.2	106.4	103.5	105.2	106.4	106.1	106.3	105.7	105.1	104.6	104.3	103.2
Agriculture	112.9	101.4	97.6	111.6	104.5	104.5	104.4	104.3	104.2	104.1	104.0	103.9	103.2
Construction	110.6	107.7	128.4	112.8	113.5	105.9	106.2	106.1	105.2	104.2	103.7	102.9	103.1
Trade	106.7	109.8	108.5	111.8	103.7	106.3	103.4	103.2	102.6	102.0	103.1	102.7	100.6
Services	103.3	103.0	103.6	108.7	104.0	106.0	104.9	103.9	105.0	104.5	104.3	104.0	103.2
GDP in Factor Prices	106.0	104.0	105.2	108.9	105.5	105.7	105.0	104.8	104.7	104.2	104.1	103.8	102.9
Net Indirect Taxes (- subsidies)	122.9	96.0	114.4	116.2	110.8	108.7	111.3	111.9	106.6	106.1	105.9	105.5	104.9

Table 14 Gross Domestic Product by Branches

Contribution to the Real Growth	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	actual	actual	actual	estimat.	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast
GDP	**7.3**	**3.3**	**6.0**	**9.6**	**6.0**	**6.0**	**5.7**	**5.5**	**5.0**	**4.5**	**4.3**	**4.0**	**3.2**
Industry	-0.5	1.0	1.4	0.8	1.1	1.3	1.3	1.3	1.2	1.1	1.0	0.9	0.7
Agriculture	3.8	0.4	-0.6	2.7	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.7
Construction	0.9	0.6	2.4	1.3	1.5	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.4
Trade	0.6	0.9	0.8	1.1	0.4	0.6	0.3	0.3	0.2	0.2	0.3	0.2	0.1
Services	0.8	0.7	0.9	2.3	1.0	1.5	1.2	1.0	1.2	1.1	1.1	1.0	0.8
GDP in Factor Prices	5.5	3.6	4.8	8.1	5.0	5.2	4.5	4.2	4.2	3.7	3.6	3.3	2.6
Net Indirect Taxes (- subsidies)	1.8	-0.4	1.2	1.5	1.0	0.9	1.2	1.3	0.8	0.7	0.7	0.7	0.6

Productivity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
(Growth rate 2001=100)	actual	actual	actual	estimat.	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast
GDP	**78.4**	**83.9**	**91.4**	**100.0**	**105.1**	**111.0**	**116.8**	**122.5**	**127.7**	**132.3**	**136.8**	**140.9**	**144.0**
Industry	72.9	82.8	96.8	100.0	105.2	111.9	118.7	126.1	133.0	138.9	144.5	149.8	153.7
Agriculture	88.9	91.6	89.8	100.0	104.9	110.5	116.4	122.5	128.8	135.2	141.6	148.2	154.5
Construction	51.7	59.3	88.8	100.0	102.0	104.0	106.1	108.2	110.4	112.6	114.9	117.2	119.5
Trade	69.8	79.9	89.7	100.0	103.7	110.3	114.0	117.7	120.7	123.2	127.0	130.4	131.3
Services	82.2	88.0	92.2	100.0	102.0	105.9	108.5	109.9	112.2	113.9	115.1	115.8	115.3

Productivity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
(Difference Between Growth and Productivity)	actual	actual	actual	estimat.	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast
GDP	**-4.2**	**-3.8**	**-3.0**	**0.2**	**0.9**	**0.5**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**	**1.0**
Industry	-10.5	-8.4	-10.6	0.2	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.6	0.5
Agriculture	-1.2	-1.6	-0.4	0.2	-0.4	-0.8	-1.0	-1.0	-0.9	-0.9	-0.8	-0.8	-1.0
Construction	-7.4	-7.0	-21.4	0.2	11.5	3.9	4.2	4.1	3.2	2.2	1.7	0.9	1.1
Trade	-3.7	-4.8	-3.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services	-4.3	-4.1	-1.2	0.2	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6

Table 15 Gross Domestic Product by Expenditures

In nominal terms (billion of AMD)	1998 actual	1999 ÷³ëï.	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GNDI	**1075.5**	**1110.0**	**1163.3**	**1311.3**	**1417.3**	**1535.2**	**1661.1**	**1796.1**	**1934.5**	**2076.3**	**2228.2**	**2383.8**	**2531.9**
Factor Income	30.5	29.4	28.5	29.4	35.1	37.3	39.6	40.6	41.7	43.0	45.3	47.1	49.0
Transfers	89.6	93.2	101.5	105.1	97.5	91.9	88.0	85.3	83.7	83.1	83.3	83.7	84.4
GDP	**955.4**	**987.4**	**1033.3**	**1176.7**	**1284.7**	**1406.0**	**1533.5**	**1670.2**	**1809.1**	**1950.3**	**2099.6**	**2253.0**	**2398.5**
Consumption	**1095.8**	**1093.0**	**1118.6**	**1186.1**	**1255.9**	**1352.7**	**1448.3**	**1554.6**	**1660.4**	**1766.8**	**1880.6**	**1996.0**	**2100.5**
Private	990.2	975.4	995.1	1066.9	1125.0	1201.1	1283.0	1369.4	1455.5	1541.5	1632.0	1722.2	1803.9
Government	105.6	117.6	123.5	119.2	130.9	151.6	165.3	185.3	204.9	225.3	248.6	273.8	296.6
Investment	**182.8**	**181.2**	**197.8**	**236.6**	**277.4**	**304.3**	**334.7**	**367.8**	**400.9**	**432.9**	**465.1**	**495.9**	**527.9**
Private	123.4	112.0	143.0	179.6	213.4	243.2	277.1	310.1	342.8	376.4	410.6	444.5	479.9
Government	59.5	69.2	54.8	57.0	64.0	61.1	57.6	57.8	58.2	56.5	54.5	51.3	48.0
Net Export	**-323.3**	**-286.8**	**-283.1**	**-246.0**	**-248.6**	**-251.0**	**-249.5**	**-252.2**	**-252.2**	**-249.4**	**-246.1**	**-238.8**	**-229.9**
Export	181.6	205.0	241.1	282.6	303.0	330.0	359.4	391.5	425.4	461.2	498.8	535.5	569.0
Import	-504.9	-491.0	-524.2	-528.6	-551.6	-581.1	-609.0	-643.7	-677.6	-710.6	-744.9	-774.3	-798.9

Structure of GDP (Nominal GDP =100)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GNDI	**112.6**	**112.4**	**112.6**	**111.4**	**110.3**	**109.2**	**108.3**	**107.5**	**106.9**	**106.5**	**106.1**	**105.8**	**105.6**
Factor Income	3.2	3.0	2.8	2.5	2.7	2.7	2.6	2.4	2.3	2.2	2.2	2.1	2.0
Transfers	9.4	9.4	9.8	8.9	7.6	6.5	5.7	5.1	4.6	4.3	4.0	3.7	3.5
GDP	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Consumption	**114.7**	**110.7**	**108.2**	**100.8**	**97.8**	**96.2**	**94.4**	**93.1**	**91.8**	**90.6**	**89.6**	**88.6**	**87.6**
Private	103.6	98.8	96.3	90.7	87.6	85.4	83.7	82.0	80.5	79.0	77.7	76.4	75.2
Government	11.1	11.9	12.0	10.1	10.2	10.8	10.8	11.1	11.3	11.6	11.8	12.2	12.4
Investment	**19.1**	**18.4**	**19.1**	**20.1**	**21.6**	**21.6**	**21.8**	**22.0**	**22.2**	**22.2**	**22.2**	**22.0**	**22.0**
Private	12.9	11.3	13.8	15.3	16.6	17.3	18.1	18.6	18.9	19.3	19.6	19.7	20.0
Government	6.2	7.0	5.3	4.8	5.0	4.3	3.8	3.5	3.2	2.9	2.6	2.3	2.0
Net Export	**-33.8**	**-29.0**	**-27.4**	**-20.9**	**-19.4**	**-17.9**	**-16.3**	**-15.1**	**-13.9**	**-12.8**	**-11.7**	**-10.6**	**-9.6**
Export	19.0	20.8	23.3	24.0	23.6	23.5	23.4	23.4	23.5	23.6	23.8	23.8	23.7
Import	-52.8	-49.7	-50.7	-44.9	-42.9	-41.3	-39.7	-38.5	-37.5	-36.4	-35.5	-34.4	-33.3

Table 16 Gross Domestic Product by Expenditures

Real Growth (Compared to Previous Year)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GNDI	**101.3**	**103.1**	**106.1**	**108.5**	**104.9**	**105.0**	**104.9**	**104.8**	**104.4**	**104.0**	**104.0**	**103.7**	**102.9**
Factor Income	56.9	95.8	97.8	99.3	115.8	103.2	103.0	99.6	99.6	100.2	102.4	100.8	101.1
Transfers	75.7	103.4	109.8	99.7	90.0	91.5	92.9	94.1	95.3	96.4	97.3	97.6	97.9
GDP	**107.3**	**103.3**	**106.0**	**109.6**	**106.0**	**106.0**	**105.7**	**105.5**	**105.0**	**104.5**	**104.3**	**104.0**	**103.2**
Consumption	**103.2**	**99.2**	**103.1**	**102.9**	**102.8**	**104.6**	**104.0**	**104.2**	**103.7**	**103.3**	**103.3**	**103.0**	**102.2**
Private	103.8	97.9	102.8	104.0	102.4	103.7	103.7	103.6	103.2	102.8	102.8	102.5	101.7
Government	97.8	110.7	105.9	93.6	106.6	112.4	105.9	108.8	107.4	106.8	107.1	106.9	105.2
Investment	**105.2**	**95.6**	**108.7**	**112.8**	**113.5**	**105.9**	**106.2**	**106.1**	**105.2**	**104.2**	**103.7**	**102.9**	**103.1**
Private	NA	NA	127.1	118.5	115.0	110.0	110.0	108.0	106.7	106.0	105.3	104.5	104.5
Government	NA	NA	78.8	98.1	108.7	92.2	91.0	96.8	97.2	93.8	93.0	91.0	90.5
Net Export	**93.4**	**85.1**	**96.8**	**85.2**	**97.8**	**98.4**	**96.9**	**98.6**	**97.5**	**96.5**	**96.3**	**94.8**	**94.7**
Export	NA	NA	111.8	107.9	102.1	103.9	104.0	104.1	103.9	103.7	103.5	103.5	102.9
Import	NA	NA	103.2	95.6	100.1	101.4	100.9	101.8	101.4	101.0	101.0	100.7	100.4

Contribution to the Real Growth	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GDP	**7.3**	**3.3**	**6.0**	**9.6**	**6.0**	**6.0**	**5.7**	**5.5**	**5.0**	**4.5**	**4.3**	**4.0**	**3.2**
Consumption	**3.9**	**-1.0**	**3.5**	**3.1**	**2.8**	**4.5**	**3.8**	**4.0**	**3.4**	**3.0**	**3.0**	**2.7**	**1.9**
Private	4.1	-2.1	2.8	3.8	2.2	3.2	3.2	3.0	2.6	2.3	2.2	1.9	1.3
Government	-0.3	1.2	0.7	-0.8	0.7	1.3	0.6	0.9	0.8	0.8	0.8	0.8	0.6
Investment	**1.0**	**-0.8**	**1.6**	**2.5**	**2.7**	**1.3**	**1.3**	**1.3**	**1.1**	**0.9**	**0.8**	**0.6**	**0.7**
Private	NA	NA	3.1	2.6	2.3	1.7	1.7	1.4	1.2	1.1	1.0	0.9	0.9
Government	NA	NA	-1.5	-0.1	0.4	-0.4	-0.4	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
Net Export	**2.5**	**5.0**	**0.9**	**4.1**	**0.5**	**0.3**	**0.6**	**0.2**	**0.4**	**0.5**	**0.5**	**0.6**	**0.6**
Export	NA	NA	2.4	1.8	0.5	0.9	0.9	1.0	0.9	0.9	0.8	0.8	0.7
Import	NA	NA	-1.6	2.2	0.0	-0.6	-0.4	-0.7	-0.5	-0.4	-0.4	-0.2	-0.1

Table 17 Gross Domestic Product by Income

In nominal terms (billion. of AMD)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GDP	**955.4**	**987.4**	**1033.3**	**1176.7**	**1284.7**	**1406.0**	**1533.5**	**1670.2**	**1809.1**	**1950.3**	**2099.6**	**2253.0**	**2398.5**
Wages	394.4	423.7	465.5	533.6	587.8	651.6	715.3	782.3	859.4	939.5	1025.4	1115.4	1202.8
Gross Profit and Mixed Income	465.2	461.6	473.6	529.4	567.1	608.7	650.9	694.8	737.3	778.3	820.1	861.0	896.2
Amortization	130.6	138.9	144.7	164.7	179.9	196.8	214.7	233.8	253.3	273.0	293.9	315.4	335.8
Net Profit and Mixed Income	334.6	322.7	328.9	364.6	387.2	411.9	436.2	461.0	484.0	505.3	526.2	545.5	560.5
Net Taxes	95.8	102.1	94.2	113.8	129.8	145.7	167.3	193.1	212.4	232.5	254.1	276.7	299.4

Structure of GDP (Nominal GDP =100)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
GDP	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Wages	41.3	42.9	45.1	45.3	45.8	46.3	46.6	46.8	47.5	48.2	48.8	49.5	50.1
Gross Profit and Mixed Income	48.7	46.7	45.8	45.0	44.1	43.3	42.4	41.6	40.8	39.9	39.1	38.2	37.4
Amortization	13.7	14.1	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Net Profit and Mixed Income	35.0	32.7	31.8	31.0	30.1	29.3	28.4	27.6	26.8	25.9	25.1	24.2	23.4
Net Taxes	10.0	10.3	9.1	9.7	10.1	10.4	10.9	11.6	11.7	11.9	12.1	12.3	12.5

Table 18 State Budget Indicators

(billion of AMD)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	actual	actual	actual	estimat.	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast
Total Revenues and Grants	**177.1**	**200.4**	**180.7**	**193.6**	**219.2**	**247.3**	**278.6**	**316.5**	**355.1**	**396.1**	**442.8**	**487.1**	**531.8**
Tax Revenues and Duties	**136.5**	**165.5**	**159.2**	**168.8**	**194.6**	**223.7**	**255.9**	**296.8**	**333.7**	**373.0**	**422.2**	**467.2**	**513.1**
VAT	59.5	68.3	66.8	79.5	92.0	103.5	115.9	129.6	144.0	159.1	175.5	192.8	210.1
Personal Income tax	15.2	18.8	14.8	11.2	13.3	18.3	23.0	30.1	36.2	42.9	56.7	64.2	72.0
Enterprise Profit tax	12.3	21.5	20.4	16.3	22.3	28.1	35.3	43.4	52.5	62.4	73.5	85.6	98.3
Excise Tax	19.9	21.7	26.1	31.0	32.8	36.6	41.4	50.1	54.3	58.5	63.0	67.6	72.0
Customs Duties	10.5	8.1	8.7	9.8	12.3	13.2	14.1	15.0	15.9	16.7	17.6	18.4	19.7
Other	19.0	27.1	22.5	21.0	22.0	24.1	26.3	28.6	31.0	33.4	36.0	38.6	41.1
Non-Tax and Capital Revenues	**24.6**	**19.8**	**13.0**	**15.5**	**8.8**	**9.6**	**10.4**	**11.4**	**12.3**	**13.3**	**14.3**	**15.3**	**16.3**
Grants	16.1	15.1	8.5	9.3	15.8	14.1	12.3	8.4	9.0	9.8	6.3	4.5	2.4
Total Expenditures	**212.3**	**251.9**	**230.4**	**239.8**	**260.1**	**286.7**	**309.3**	**343.2**	**376.8**	**411.7**	**451.2**	**493.8**	**531.8**
Current Expenditures	**151.7**	**182.6**	**175.6**	**182.8**	**196.1**	**225.5**	**250.8**	**282.9**	**316.8**	**350.2**	**385.2**	**423.5**	**459.9**
Wages	28.6	21.1	23.3	20.0	19.5	24.8	28.6	33.5	38.2	43.3	49.1	55.4	61.4
Goods and Services	71.5	86.3	98.2	99.2	111.4	126.8	136.8	151.8	166.6	182.0	199.5	218.4	235.2
Interest Payments	18.4	19.8	13.9	14.8	15.8	14.7	15.0	16.7	18.3	19.8	20.3	21.1	21.6
Subsidies	1.6	14.0	7.4	6.6	7.2	7.5	4.1	1.5	1.7	1.8	2.0	2.1	2.3
Transfers	31.5	41.4	32.9	42.2	42.2	55.7	66.3	79.4	91.9	103.3	114.3	126.4	139.5
Capital Expenditures	**45.6**	**43.1**	**39.2**	**36.0**	**51.7**	**48.4**	**44.8**	**44.6**	**44.9**	**43.2**	**41.2**	**38.4**	**35.6**
Net Lending	**13.8**	**26.1**	**15.6**	**21.0**	**12.3**	**12.7**	**12.8**	**13.1**	**13.3**	**13.3**	**13.2**	**13.0**	**12.4**
Deficit	**35.1**	**51.5**	**49.7**	**46.2**	**40.9**	**39.4**	**30.7**	**26.7**	**21.7**	**15.6**	**8.4**	**6.8**	**0.0**
Deficit (without privatization)	14.5	40.5	49.7	38.6	39.6	39.4	30.7	26.7	21.7	15.6	8.4	6.8	0.0
Financing Gap	0.0	0.0	0.0	0.0	0.0	-6.8	19.8	29.6	29.3	30.1	16.3	15.6	10.0
Deficit Financing	**35.1**	**51.5**	**49.7**	**46.2**	**40.9**	**46.2**	**10.9**	**-2.9**	**-7.6**	**-14.5**	**-7.9**	**-8.8**	**-10.0**
Domestic Financing	**20.2**	**5.2**	**49.7**	**18.9**	**12.8**	**2.2**	**2.6**	**2.7**	**2.8**	**2.9**	**3.0**	**3.1**	**3.2**
Banking Sector	2.2	-6.0	0.0	4.3	9.8	1.9	2.3	2.4	2.5	2.6	2.6	2.7	2.8
Non-Banking Sector	18.0	11.2	49.7	12.5	3.0	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
External Financing	**15.0**	**46.3**	**0.0**	**27.3**	**38.6**	**44.0**	**8.2**	**-5.7**	**-10.4**	**-17.4**	**-10.9**	**-11.9**	**-13.2**

Table 19 Fiscal Policy

(As percent of GDP)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
Total Revenues and Grants	**18.5**	**20.3**	**17.5**	**16.5**	**17.1**	**17.6**	**18.2**	**18.9**	**19.6**	**20.3**	**21.1**	**21.6**	**22.2**
Tax Revenues and Duties	**14.3**	**16.8**	**15.4**	**14.3**	**15.1**	**15.9**	**16.7**	**17.8**	**18.4**	**19.1**	**20.1**	**20.7**	**21.4**
VAT	6.2	6.9	6.5	6.8	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8
Personal Income tax	1.6	1.9	1.4	1.0	1.0	1.3	1.5	1.8	2.0	2.2	2.7	2.9	3.0
Enterprise Profit tax	1.3	2.2	2.0	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.1
Excise Tax	2.1	2.2	2.5	2.6	2.5	2.6	2.7	3.0	3.0	3.0	3.0	3.0	3.0
Customs Duties	1.1	0.8	0.8	0.8	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Other	2.0	2.7	2.2	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Non-Tax and Capital Revenues	**2.6**	**2.0**	**1.3**	**1.3**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
Grants	1.7	1.5	0.8	0.8	1.2	1.0	0.8	0.5	0.5	0.5	0.3	0.2	0.1
Total Expenditures	**22.2**	**25.5**	**22.3**	**20.4**	**20.2**	**20.4**	**20.2**	**20.5**	**20.8**	**21.1**	**21.5**	**21.9**	**22.2**
Current Expenditures	**15.9**	**18.5**	**17.0**	**15.5**	**15.3**	**16.0**	**16.4**	**16.9**	**17.5**	**18.0**	**18.3**	**18.8**	**19.2**
Wages	3.0	2.1	2.3	1.7	1.5	1.8	1.9	2.0	2.1	2.2	2.3	2.5	2.6
Goods and Services	7.5	8.7	9.5	8.4	8.7	9.0	8.9	9.1	9.2	9.3	9.5	9.7	9.8
Interest Payments	1.9	2.0	1.3	1.3	1.2	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
Subsidies	0.2	1.4	0.7	0.6	0.6	0.5	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Transfers	3.3	4.2	3.2	3.6	3.3	4.0	4.3	4.8	5.1	5.3	5.4	5.6	5.8
Capital Expenditures	**4.8**	**4.4**	**3.8**	**3.1**	**4.0**	**3.4**	**2.9**	**2.7**	**2.5**	**2.2**	**2.0**	**1.7**	**1.5**
Net Lending	**1.4**	**2.6**	**1.5**	**1.8**	**1.0**	**0.9**	**0.8**	**0.8**	**0.7**	**0.7**	**0.6**	**0.6**	**0.5**
Deficit	**3.7**	**5.2**	**4.8**	**3.9**	**3.2**	**2.8**	**2.0**	**1.6**	**1.2**	**0.8**	**0.4**	**0.3**	**0.0**
Deficit (without privatization)	1.5	4.1	4.8	3.3	3.1	1.8	1.0	1.6	1.2	0.8	0.4	0.3	0.0
Financing Gap	0.0	0.0	0.0	0.0	0.0	1.4	1.9	1.8	1.7	0.8	0.7	0.4	0.9
Deficit Financing	**3.7**	**5.2**	**4.8**	**3.9**	**3.2**	**3.3**	**0.7**	**-0.2**	**-0.4**	**-0.7**	**-0.4**	**-0.4**	**-0.4**
Domestic Financing	**2.1**	**0.5**	**4.8**	**1.6**	**1.0**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Banking Sector	0.2	-0.6	0.0	0.4	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Non-Banking Sector	1.9	1.1	4.8	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
External Financing	**1.6**	**4.7**	**0.0**	**2.3**	**3.0**	**3.1**	**0.5**	**-0.3**	**-0.6**	**-0.9**	**-0.5**	**-0.5**	**-0.6**

Table 20 Public Expenditures Policy

(Structure of Expenditures)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
Total Expenditures	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Current Expenditures	**71.5**	**72.5**	**76.2**	**76.2**	**75.4**	**78.7**	**81.1**	**82.4**	**84.1**	**85.1**	**85.4**	**85.8**	**86.5**
Wages	13.5	8.4	10.1	8.3	7.5	8.7	9.2	9.8	10.2	10.5	10.9	11.2	11.5
Goods and Services	33.7	34.3	42.6	41.4	42.8	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2
Public Health	0.0	0.0	0.0	6.5	3.6	3.9	4.4	4.9	5.4	5.9	6.4	6.9	7.4
Education	0.0	0.0	0.0	12.1	2.8	3.0	3.3	3.6	4.0	4.3	4.6	4.9	5.2
Other	0.0	0.0	0.0	22.8	36.4	36.0	36.6	35.7	34.9	34.1	33.3	32.4	31.7
Interest Payments	8.7	7.9	6.0	6.2	6.1	5.1	4.9	4.9	4.9	4.8	4.5	4.3	4.1
Domestic	5.0	5.1	0.0	2.8	3.0	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5
External	3.7	2.8	6.0	3.4	3.0	2.9	2.7	2.8	2.9	3.0	2.8	2.7	2.6
Subsidies	0.8	5.6	3.2	2.8	2.8	2.6	1.3	0.4	0.4	0.4	0.4	0.4	0.4
Transfers	14.8	16.4	14.3	17.6	16.2	19.4	21.4	23.1	24.4	25.1	25.3	25.6	26.2
Capital Expenditures	**21.5**	**17.1**	**17.0**	**15.0**	**19.9**	**16.9**	**14.5**	**13.0**	**11.9**	**10.5**	**9.1**	**7.8**	**6.7**
Net Lending	**6.5**	**10.4**	**6.8**	**8.8**	**4.7**	**4.4**	**4.1**	**3.8**	**3.5**	**3.2**	**2.9**	**2.6**	**2.3**

Table 21 Balance of Payments

(million of USD)	1998 actual	1999 actual	2000 actual	2001 estimat.	2002 forecast	2003 forecast	2004 forecast	2005 forecast	2006 forecast	2007 forecast	2008 forecast	2009 forecast	2010 forecast
Current Account Balance	**-402.5**	**-306.9**	**-278.3**	**-200.8**	**-205.4**	**-211.9**	**-208.5**	**-212.1**	**-209.2**	**-199.9**	**-187.1**	**-169.8**	**-150.4**
CAB/GDP %	**-21.3**	**-16.6**	**-14.5**	**-9.5**	**-9.0**	**-8.7**	**-8.0**	**-7.6**	**-7.0**	**-6.3**	**-5.6**	**-4.8**	**-4.0**
Trade Balance	-577.5	-474.0	-463.5	-409.1	-393.4	-393.5	-388.3	-389.2	-386.6	-380.6	-374.3	-364.8	-354.3
Export F.O.B.	220.5	231.7	300.5	342.6	376.8	403.2	431.4	461.6	492.8	524.8	557.6	591.1	623.6
Others	8.4	15.6	9.4	10.8	11.8	12.7	13.5	14.5	15.5	16.5	17.5	18.5	19.6
Import F.O.B.	-794.7	-697.3	-759.5	-748.6	-767.9	-794.7	-818.2	-849.7	-878.7	-905.3	-932.2	-956.8	-979.4
of which humanitarian aid	-81.6	-65.9	-75.6	-74.1	-59.3	-47.4	-37.9	-30.3	-24.3	-19.4	-15.5	-12.4	-9.9
Others	-11.6	-24.0	-14.0	-13.8	-14.1	-14.6	-15.0	-15.6	-16.2	-16.6	-17.1	-17.6	-18.0
Services	**-62.8**	**-62.0**	**-55.8**	**-34.2**	**-46.9**	**-43.3**	**-38.2**	**-34.3**	**-29.4**	**-23.6**	**-17.6**	**-10.7**	**-4.2**
Income	**60.4**	**54.9**	**52.9**	**53.0**	**62.2**	**64.9**	**67.7**	**68.2**	**68.7**	**69.7**	**72.2**	**74.0**	**76.5**
Current Transfers	**177.4**	**174.1**	**188.1**	**189.4**	**172.7**	**160.0**	**150.4**	**143.2**	**138.1**	**134.6**	**132.6**	**131.6**	**131.6**
Official	112.7	93.8	102.5	100.5	80.4	64.3	51.4	41.1	32.9	26.3	21.1	16.9	13.5
Private	64.7	80.3	85.6	89.0	92.4	95.7	98.9	102.1	105.2	108.3	111.5	114.8	118.2
Capital and Financial Account	399.3	294.5	261.3	200.8	205.4	211.9	208.5	212.1	209.2	199.9	187.1	169.8	150.4
Capital Transfers	9.7	12.6	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
Financial Account	389.6	281.9	233.0	172.5	177.1	183.6	180.2	183.8	180.9	171.6	158.8	141.5	122.1
Direct investment	220.8	122.0	104.2	60.0	80.0	83.0	86.0	89.0	91.8	94.6	97.4	100.3	103.2
Portfolio investment	**-15.9**	**1.6**	**-18.9**	**-0.7**	**2.9**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
of which Government	**35.0**	**80.2**	**44.3**	**33.2**	**54.1**	**64.1**	**47.3**	**39.6**	**30.5**	**19.9**	**7.9**	**5.1**	**-5.7**
Other	71.0	15.2	10.4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Errors & Omissions	3.5	12.5	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Balance	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0