The Monetary Policy

PROGRAM

|2007|

of the Republic of Armenia

Approved by the
Central Bank Board Resolution
no. 718 A, 11.12.2006

TABLE OF CONTENTS

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GUIDELINES OF MONETARY POLICY

The primary objective of the Central Bank of the Republic of Armenia (CBA) is price stability, pursuant to the Republic of Armenia Law on Central Bank, Article 4. Ensuring price stability is the fundamental way in which CBA contributes to achieving high and sustainable economic growth. Price stability is the inflation rate low enough not to exert negative influence on investments, savings and other important decisions taken by economic agents. As such, a low and stable level of inflation has been admitted to be 3 percent for the Armenian economy in the medium-term, and this is the medium-term inflation target.

Each year CBA develops, approves and implements an annual program of monetary policy to realize its primary objective. The program contains the strategy and directions of monetary policy which CBA will use as a guideline in achieving the inflation target.

As laid down in the provisions of the CBA monetary policy program 2006 (CBA Board Resolution No. 563I, 19.12.2005), CBA has started moving to a fully-fledged inflation targeting strategy since 2006. The process will continue over 2007 too.

Currently, the inflation targeting strategy is more effective and transparent method of inflation management in a fast-changing economic environment, under changing economic fundamentals of the Armenian economy, and it suggests a direct rather than an intermediated (monetary targeting) targeting of inflation as it was in the past.

Under the inflation targeting strategy the CBA is steered by the following provisions:

1. The key and primary goal is price stability (the inflation target is 4 percent (± 1.5 percent) for 2007 and 3 percent (± 1.5 percent) for 2008).
2. Headline inflation, i.e. the growth of consumer price index which represents growth of prices of 470 consumer goods and of services tariffs, is set to be an inflation indicator.
3. The inflation forecast is set to serve as the nominal anchor.
4. A short-term interest rate is accepted as an operational target.
5. A repo (refinancing) rate set at the beginning of each month and for that month, is used as the main instrument for monetary policy. In fact, monetary policy will transmit impulses to the economy not only through a change in interest rates but also by leaving their level unchanged in a certain period of time.
6. At the beginning of each quarter CBA Board decides on the directions of monetary policy of the quarter ahead, relying on inflation forecasts and risks of the main sectors of the economy.
7. A 12-month period is determined to serve a time horizon for the target inflation indicator, which means that each quarter the 12-month inflation is forecast, while monetary policy is conducted to eliminate the deviation between the target and forecast. Apart from the quarterly inflation, CBA is keeping eye on the monthly

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indicators but it makes an actual inflation analysis on a quarterly basis.

8. In order to ensure the monetary policy's accountability and transparency, CBA releases an Inflation Report each quarter, which includes the inflation analysis of the previous period, the relevant factors and the inflation forecasts for the next period. Once the decision on interest rate is made, CBA issues a press-release, while a Board meeting's minutes on determination of interest rate (Minutes on Interest Rate, MIR) is released within the first 10 days of the given month. MIRs which are released at the beginning of quarter are extended and include the CBA Board discussions and decisions on the directions of monetary policy. MIRs also appear in CBA monthly bulletins as monetary overviews and quarterly inflation reports (CBA Newsletter), which comment on the policy of inflation management and inflation expectations.

9. More comprehensive analyses and comments will be devoted to those exceptions which are considered as non-monetary factors affecting inflation in international practice. These are:

- considerable divergence between forecast and actual levels of global prices;
- external-shock-driven significant exchange rate fluctuations, which does not reflect the economic fundamentals and the course of monetary policy;
- notable changes in agriculture, which are expressed in the form of significant changes in the prices of agricultural products; and
- natural disasters and other force-majeur situations that may trigger price shocks determined by supply or demand; the latter can generate mostly supply shocks which are non-recurrent and transient, and neutralizing their impact by means of monetary policy would hamper the growth of economic activity. Perhaps, such shocks in countries with short history of low inflation shape inflationary expectations, which is why CBA finds it useful to give a detailed comment on how these factors affect the inflation and what is its stance.

10. CBA will continue to monitor the developments of the demand for the dram and accelerating dedollarization in particular, and will meet the demand prioritizing the primary goal.

11. In implementing an inflation targeting strategy, CBA makes neither exchange rate forecasts under the floating exchange rate regime, nor interest rates forecasts.

12. The conditional inflation forecast will be published in 2007 as well, which involves a presentation of qualitative characteristics of the pace of monetary policy[1].

[1] *The publishing of the conditional inflation forecast involves a presentment of qualitative characteristics of the pace of monetary policy implementation whereas the issuance of non-conditional inflation level forecasts reveals both the qualitative and quantitative characteristics.*

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13. In 2007, the quarterly projection model (QPM) will be launched, which combines interest rates, inflation and business cycles designed to opt directions of monetary policy relevant to achieving the target indicator of inflation.

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14. Through both the inflation model and publications, CBA will further attempt to provide forward looking approach.

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CBA will implement the 2007 monetary policy program in accordance with the above-mentioned provisions, under high inflationary expectations and uncertainty from likely supply and demand side shocks.

MACRO-ENVIRONMENT AND INFLATION IN 2006

External environment

The global economy remained to post high growth rates during three quarters of 2006. Though economic growth in the USA has slowed down steeply in the second quarter and even down further in the third quarter, however it has been offset by accelerating economic growth in the European Union and East Asian countries – China and Japan in particular. Growing income and demand combined with high prices of raw materials has resulted in accelerating global inflation, which however started to show some subsidence at the end of the fourth quarter.

Over 2006, the global financial market conditions amidst high economic growth and accelerating inflation have further tightened, reflecting an outcome of interest rate growth policies of the US Federal Reserve System, European Central Bank, the central banks of England, Japan, China, Australia and of other countries. The currency market at the start of the year observed a trend of moderate appreciation of euro, after which the exchange rate has stabilized at US dollar 1.26-1.28 / euro. However, at the end of the year, a new rise of euro shaped an exchange rate level of US dollar 1.31-1.33 / euro.

Prices on commodity exchanges have further risen since the outset of 2006, reaching their highs in the period May-July, and then have got adjustment tending to go down and stabilize.

Terms of trade[1]**:** The above developments in the external world have explicitly reflected Armenia's terms of trade. The year on year high growth rates of export and import prices have been afoot throughout 2006, with growth rates of export prices starting to slow down and growth rates of import prices to climb. As a result, terms of trade in the period January-September 2006 have deteriorated by 6.8 percent.

The 14.8 percent price-rise of raw materials (copper and gold, in particular) has served as primary contribution to the growth of export prices that made up 10.0 percent in the period January-September 2006. However, prices of molybdenum have dropped.

Prices of tradable consumer goods have risen by 8.0 percent mostly determined by the Russian inflation and exchange rate appreciation, the impact of which made up 6.7 pp.

Prices of importable goods have risen in January-September 2006 by 17.8 percent, again mainly conditional on growth of prices of raw materials, oil products and natural gas.

The 36.9 percent rise in prices of import of raw materials in January-September has been chiefly determined by growth of gold prices

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[1] *Terms of trade have been calculated using the export and import prices of goods, and exclude the export and import prices of services.*

(39.3 percent), needless to say that prices of grain and granulated sugar have also risen by 25.5 percent and 66.5 percent, respectively.

Gas prices that increased twice as much starting April 1 2006, have led to the 66.7 percent growth in January-September, whereas oil prices have risen by 25.3 percent notwithstanding the slowdown of their growth rates at the end of the third quarter 2006.

Real exchange rate: With the global depreciation of the US dollar and persisting growth rates of financial inflows to Armenia, the real effective exchange rate of dram in the period January-September 2006, versus the same period of the previous year, has appreciated by 3.7 percent. This appreciation has been expressed mostly through 7.6 percent appreciation of the nominal effective exchange rate of dram and, to be more concise, through 7.0 percent appreciation of the Armenian dram / US dollar exchange rate.

As well as increased rates of private transfers and capital inflow, the process of dramization has fostered the appreciation nominal exchange rate, resulting in a reduced demand for foreign currency domestically.

Balance of payments[2]

General trends: Impact of shocks coming from the rest of the world onto the Armenian economy has persisted throughout 2006. Prices of raw materials, consumer and intermediate goods in the world markets kept on climbing which has created threats to supply push inflation in the economy on the one hand, and inflow of foreign currency funds into the economy carried on thus additionally stimulating the demand and exerting pressures on prices and exchange rate, on the other.

Recently, Armenia has been experiencing an indirect impact of economic developments in Russia determined by high level of global oil prices in the world markets. This is expressible by a record growth of immense inflow of foreign currency funds. Although, in consideration of the deficit financing of current account, this would be viewed as a positive event, CBA however was facing a dilemma as to financial and monetary stability.

The current account deficit indicator has been high enough over 2006 due to considerable worsening of the balance of trade deficit explained, accordingly, by higher growth rates of import over export. Such worsening however enabled to ease to some extent the pressures of the increased demand on prices of goods and services of the domestic economy, since part of that demand has been satisfied to the expense of imports while financial assets have flown out through imports.

Import and export volumes of the group 'Precious and semi-precious stones, precious metals and articles' holding a large share in exports and imports in 2006 have reduced, which had a great impact especially on the reduction of export volumes. High growth of import has been

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[2] *The Q3 indicators are CBA estimations.*

attributable to continuously increasing demand in the economy which served an offset for the reduced volumes of import of the said group. Poor performance in exports has been determined by developments in other branches of industry plus some technical difficulties in connection with exports.

The negative balance in services in the first nine months, versus the same period of the previous year, has reduced. Despite an increased negative balance in transport services, the adversity has been offset owing to growing positive balance in travel, computer and information services.

During the first three quarters 2006, the capital and financial account has noticeably exceeded the current account deficit, which contributed to reserve accumulation of CBA. With above-mentioned flows trend appreciation of the dram against US dollar continued over 2006 too.

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Evaluation of cash foreign currency flows

Relying on the results of survey conducted in 2006, the Statistics Department of CBA has evaluated net cash foreign currency inflow to Armenia via private non-bank sector to be USD 470.8 million in the period January-September. Part of the inflow was assessed as cash capital transfers and direct investment amounting approximately to USD 94.2 million, the other part as current account transactions (export of tourism, seasonal worker remittances and private transfers) amounting to USD 376.6 million. When these amounts are added to the current account and capital and financial account to produce an addition of other private sector cash foreign currency with the same amount as the other side of the transaction, one may consider that the current account proficit in January-September 2006 has been USD 125.5 million or 3.1 percent of GDP. With the estimations for 2006 calculated using the same method, the current account proficit will be USD 236.4 million or 3.6 percent of GDP.

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Current account: The current account deficit which had been deepening since 2005 has observed over 2006 too. Nine months' data show that it has risen in both absolute terms (by USD 117.5 million) and as a share in GDP (by 6.3 percent compared to 4.2 percent a year before). The substantial expanding of trade deficit was the main factor behind the widening of the current account deficit.

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Results of the first nine months showed that export of goods (credit) has decreased by 0.3 percent, and export has grown by 5.4 percent, without account of the group 'Precious and semi-precious stones, precious metals and articles'. Overall exports have reduced as export volumes of groups 'Precious and semi-precious stones, precious metals and articles', 'Base metals and articles' and 'Products of prepared food' decreased by 11.2 percent, 14.6 percent and 8.6 percent, respectively. In 2006 export volumes of the group 'Precious and semi-precious stones, precious metals and articles' reduced because of a drastic change in predilection and shrinking demand in the world markets that has created structural hardships in diamond processing[3]. The reduced volumes of

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[3] *There has been a structural shift in demand, i.e. demand for medium- and large-sized stones decreased while demand for small stones increased. In Armenia, processing of mainly medium-sized stones is developed. Nevertheless, in processing small-sized stones, the country is less competitive than India and China.*

export of these groups have been offset by 43.0 percent increase in export of the group 'Mineral production' having thus resulted in growth of export (without account of the group 'Precious and semi-precious stones, precious metals and articles'). Further, the growth of export volumes of this group in nominal terms has been attributable to the price-rise in raw material in global markets.

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High growth rates in import of goods have persisted throughout 2006, making up for the nine months' results 17.4 percent, but 27.7 percent without account of the group 'Precious and semi-precious stones, precious metals and articles'. Continuous growth of household income and the inertia of depreciating of the dollar have found reflection in persisted high growth rates in import. The increase of import has been chiefly a result of growth of the following groups: 'Mineral production' (19.9 percent), 'Products of prepared food' (9.5 percent), 'Transport means' (26.0 percent), 'Goods of chemical production' (27.1 percent) and 'Machinery and equipment' (43.2 percent).

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The increased volumes of import of these commodity groups were fully reflecting the growing demand for investment and consumer goods.

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The negative balance of services in the first nine months, compared to the same period of the previous year, has reduced to USD 32.2 million. Despite the fact that the negative balance of transport services has increased, it however has been offset by the increases of positive balances of travel, computer and information services. As a result, growth of export of services has been USD 26.4 million (10.8 percent) and growth of import of services USD 19.7 million (7.0 percent).

Indicator of the item 'Net factor income' in the first nine months has grown by 55.8 percent and totaled USD 56.7 million. There has been 26.2 percent increase of seasonal worker remittances owing to increased income of the Armenian expatriates who are employed in the non-tradable sector of the Russian economy. The latter indicator has outstripped the indicator of outflow of return on investment, thus resulting in the growth of the item 'Net factor income'.

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Growth of current transfers over 2006 has been high, as was the case a year before. Indicators of the first three quarters 2006 showed that current transfers have grown by 20.2 percent (21.3 percent for the private sector and 13.7 percent for the public sector) to USD 320.2 million. In 2006 too, traditionally high private sector transfers have been attributable to increased income in the Russia's non-tradable sector (construction, trade).

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Capital and financial account: Net inflow of capital as a result of capital and financial operations with the rest of the world in the first three quarters 2006 has totaled USD 379.8 million, up by USD 84.9 million or 28.8 percent against the same period of the previous year, and it has sizably exceeded the current account deficit.

Foreign direct investment has grown by 8.5 percent or USD 14.4 million to USD 182.6 million. The contribution to this growth has chiefly come from spheres such as communications, mining industry and air transport. Net inflow of public loans has grown by 54.7 percent or USD 17.9 million. Net foreign assets (NFA) of commercial banks have decreased

by USD 27.3 million (by USD 32.6 in the previous year). In the same period of time, private sector has realized substantial expenditures (USD 76.7 million) which were directed to finance the deficit of current account. The process of dedollarization has also had certain impact on the deficit financing.

Evaluating the year 2006: According to CBA estimations, deficit of current account will keep on worsening in absolute value and as a share of GDP. The current account / GDP ratio will be 5.5 percent, and it will increase in absolute value by USD 147.8 million. CBA estimates that the year 2006 will end up with a low 3.3 percent growth of export (credit) while total export will amount to USD 1038.1 million explained by unfavorable industrial performances, export-related technical hardships as well as unexpected changes of preferences in global markets. Growth of import will be 18.2 percent making it amount to USD 1883.1 million.

Deficit of the balance of services will reduce at the end of the year by USD 9.6 million to USD 49.7 million. Indicator of the item 'Revenue' will rise by 69.5 percent or USD 31.1 million. Growth of current transfers will be maintained until the end of the year to amount to USD 477.9 million, with private transfers to grow by 21.9 percent and official transfers to decrease by 9.2 percent.

In the respective year, the indicator of capital and financial account (USD 556.5 million) will again be higher in respect to the current account deficit, pushing gross reserves of CBA substantially up by USD 202.3 million.

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Domestic environment

Aggregate demand

Private sector expenditures[4]**:** High economic growth recorded during 2006 has been maintained due to increased domestic demand as was the case in the preceding two years. In the structure of domestic demand, growth rate of capital investment kept on moving faster reflecting the acceleration of growth rate of construction on the aggregate supply side. Meanwhile, real growth rate of aggregate consumption remained on the same level of the preceding year reaching about 10 percent.

Within the domestic demand structure, the low growth of public expenditures that constitute about 13 percent of domestic demand was combined with the continued high growth rates of private sector expenditures. Particularly, private sector expenditures grew by 15.2 percent while public sector expenditures rose by 1.8 percent. The latter has been mostly attributable to the expense of considerable increase in public investment.

Certain shifts have been observed in the structure of private expenditures over 2006. The trend of the accelerating growth rate of private consumption that has been recorded since 2003, continued in 2006 as well, especially in the first quarter. As a result, the growth of

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[4] *Numerical data used in this section are based on the actual indicators of 10 months and indicators forecast for Q4 of 2006. All the growth indicators presented in this subsection are real growths.*

private consumption reached 12 percent compared to 9.7 percent in 2005. This growth has been largely supported by continuous increase in household income due to high economic growth of previous years and increased salary as well as growing inflow of private transfers. Accelerated private consumption growth rate has created inflationary pressures in the consumer market inducing high inflationary expectations. These expectations coupled with a noticeable decline in agricultural production in the middle of the year have intensified the inflationary pressures, which is why the inflation target has been readjusted towards an increase.

Despite a declining trend in the growth rate of private investments in 2003-2005, in 2006 it has slightly quickened. Increasing household income on the one hand, and external financial inflows in form of investments and transfers on the other has fostered that growth. As a result, in 2006 growth of private investments made up 27.2 percent versus 23.2 percent in the previous year. The share of private investments in gross investments remained high, at around 85 percent.

Public sector expenditures: Recent years' positive shifts pertinent to the developing Armenian economy continued in the first nine months of 2006 too. Particularly, the economy continued reporting higher growths than foreseen, which has drawn essential influence in collecting more taxes during nine months than projected. Despite over-performance on taxes that has been demonstrated in almost all quarters, the tax growth rates for the nine months have nevertheless lagged considerably behind the GDP growth rates. The year on year results show that the tax / GDP ratio will uphold at the previous year's 14.4 percent level whereas the prediction for the year was 15.1 percent.

In the structure of tax revenue in nine months of 2006, the share of taxes on import has tended to decline as was the case in preceding years. In that period of time, taxes in import have comprised about 37.1 percent of tax revenue compared to 40 percent a year before. In nine months, taxes on import have increased by 12 percent whereas taxes and duties have increased by 19 percent. As for the import, it has increased by 20 percent instead of 13 percent forecast for the year. With such trends shown during the year, the budget revenue has had restrictive impact on aggregate demand, which made up 0.3 percent, according to the fiscal impulse indicator.

The key indicators illustrating the performance of the Armenian budget have demonstrated in the course of nine months the same patterns of the previous year, namely disproportional expenditures, and savings on expenditures. This has, logically, caused deviations from projected quarterly proportions of expenditures, which was reflected not only in state budget indicators but also indicators of communities and State Social Insurance Fund budgets. As a result, in the course of nine months there have been accumulations in the Treasury Unified Account (TUA) which made balance on the TUA depart from projected quarterly proportions for 2006.

In forecasting monetary policy indicators under the above-mentioned deviations in budget programs, CBA has relied on previous years' trends

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in quarterly arrangement of budgetary figures and monthly budgetary program-included indicators and adjustments thereof.

In nine months of 2006, the Armenian budget expenditures have increased by 18 percent, with this much growth referred to both current expenditures and capital expenditures. In the same period of time, budgetary expenditures on aggregate demand have had expansionary impact, which made up 0.7 percent, according to the fiscal impulse indicator.

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So, with the budget revenue and expenditures having drawn such impact on aggregate demand in nine months, the fiscal sector had a lightly expansionary impact, which made up 0.4 percent, according to the impulse indicator.

In nine months of 2006, the budget deficit has upheld the previous year's level for the same period, and the year on year results are expected to show 1.9 percent actual level of the deficit / GDP ratio instead of 2.3 percent planned for the year. As the deficit decreases in that fashion, the Armenia's public debt and, especially, its share in GDP will substantially reduce. In both 2006 and 2007, in terms of foreign public debt indicators, Armenia will rank among the countries with small and medium debt burden.

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In nine months 2006, the coordination of fiscal and monetary policies has been carried out within the framework of monthly fiscal sector programs, their adjusted versions and their matches to the monetary policy.

In nine months 2006 in the Armenian government securities market, some lengthening of maturities and slight rising of interest rates of securities have been observed. This event was explained by CBA having successfully reduced excess liquidity in order to ease inflationary pressures generated from increased household income, huge capital inflows as well as risen prices of agricultural products because of adverse weather conditions.

Net external demand: External demand over 2006 has reduced in real terms attributable to about 4.3 percent[5] decrease in volumes of export of goods and services, with merely 1.3 percent real growth of import of goods and services. Subsiding export volumes since the beginning of the year has been determined by reduced export of diamond that holds a large share in the structure of exports. Dropped export volumes have been due to structural changes in world markets having triggered price-rise and a resultant reduced demand. Decelerated growth rates in metallurgy as well as some technical problems in connection with export of brandy have had a say in the shrinkage of exports.

Main aggregate demand indicators growth in 2003 - 2006

Indicator	2003	2004	2005	2006
Real GDP	14.0	10.1	14.0	13.0
Domestic demand	11.4	10.7	13.3	13.5
Consumption, of which	7.6	9.1	10.8	10.0
Public	15.5	11.4	22.2	-4.4
Private	6.9	8.9	9.7	12.0

[5] *Real volumes of export of goods have dropped by 6.2 percent while real volumes of import of goods have grown by 1.4 percent. See the price forecast methodology in Annex 1.7.*

Capital investments, of which	30.7	17.5	23.2	25.7
Public	17.4	-26.8	23.4	17.1
Private	35.4	30.9	23.2	27.2
Export	29.5	-2.7	18.9	-4.3
Import	16.0	1.8	16.4	1.3

Aggregate supply[6]

The Armenian economy continued showing double-digit economic growth over 2006. However, sector developments have somewhat differed from past years' tendencies. The economic growth year on year will be 13 percent fuelled mostly by construction and services like in the previous year, with a tiny increase of growth reported in industry and agriculture.

Among the economy branches **Agriculture** on the consumer market. Adverse weather conditions during the year have caused substantial drops in plant vegetation, which constitutes about the half of the agriculture. More damage has been reported in production of fodder, fruit and vegetable, pushing their prices up and thus contributing to the inflation indicator by 2.4 pp*.

The gross output of the cattle breeding sub-branch in 2006 has increased by about 10 percent owing to both increased volumes of dairy and meat production. Meat production has increased owing to more cattle livestock as well as forced slaughter due to decreased fodder crops. As a result, agriculture's contribution to economic growth in 2006 has been merely 0.3 pp. compared to 2.5 pp. in the previous year.

The highest contributor (with contribution of 7.2pp.) to the economic growth was the **Construction** branch where growth rates started speeding up in the second quarter 2006. This was attributable to continuous increase in household income owing to high economic growth rates of previous years, increased salary and faster growth rate of inflow of private transfers and remittances observable since the second quarter. Influenced by the above-mentioned factors, the household-funded capital construction, making up approximately 60 percent of all construction funding sources, has increased by about 35 percent, and funds have been used mainly in housing construction. Volumes of construction funded by enterprises have increased as well, with funds directed mainly to the areas of gas supply, nonferrous metallurgy, transport and communications and other services areas.

Real production volumes in **Industry** have decreased at the start of the year due mainly to downturn in diamond processing, which has reached about 20 percent by the end of the year. The decline in this sub-branch has been attributable to structural shifts in the world markets of diamond leading to increased international prices and the resultant shrinkage in demand. Growth rates in nonferrous metallurgy production have slowed down due to technical difficulties in some enterprises. As a result, the total industry value added has risen by 0.6 percent making 0.1 pp. contribution to economic growth.

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[6] *Data used in this section are based on the actual indicators of 10 months and forecasts for Q4 of 2006. See the relevant forecast methodology in Annex 2.4. All the growth indicators presented in this subsection are real growths.*
** November 2006 versus November 2005.*

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High growth rates recorded in the **Services** sector in recent four years accelerated in 2006 making 4.5 pp. contribution to economic growth. Such growth has been attributable mainly to increasingly dynamic household income, broadening inflow of private transfers and remittances and the rapid development of the tourism sector (in 2006 the number of tourists increased by about 20 percent).

However, the highest growth rates in the services sector has been recorded in trade turnover, communications and other services. Trade turnover has reported significant rise (about 45 percent) in car sales, resulting in a 25 percent increase in volumes of import of cars. The growth in communications services has been driven mostly by increased value added in mobile phone services. The latter was due to increased range of mobile service products, some drop in tariffs and boosting demand for mobile services fuelled by growing household income.

Impact of services on inflation was mostly indirect, i.e. through the growth of household income.

Producer prices

The sector developments of the economy over 2006 and external factors such as price change in global markets have had significant impact on the producer price level in Armenia, pushing GDP deflator up by about 5 percent[7]. External factors have had tangible impact mainly on prices in the industrial and service branches.

In 2006 decreased global prices of nonferrous metals have led to about 8 percent decline in prices of nonferrous metallurgy. In the meanwhile, producer prices in production of building materials continued to rise due to boosting demand for building materials as the growth rate of construction volumes accelerated. As a result, industry deflator index has risen by 0.4 percent compared to 7.3 percent in the previous year.

The services branch has also felt the impact of external factors. Particularly, due to a notable increase in gas prices since April 2006, cargo fees rose by about 20 percent. In the same time, fees for mobile phone services have dropped during the year, stimulating an increase in volumes of communications services. As a result, the total services sector has reported 3.2 percent rise in prices as opposed to a slight fall in the previous year.

In 2006, the highest increase in producer prices of 9.7 percent has been recorded in capital construction owing to accelerated growth rate of construction volumes. The latter, combined with growing demand for labor force, has resulted in increase in real salary in the branch by more than 15 percent.

Producer prices in agriculture increased by 6 percent mostly due to notable increase in wholesale prices in plant cultivation sub-branch. This in its turn has resulted from a 10 percent decline in plant cultivation output over 2006 because of unfavorable weather. Particularly, a notable increase in wholesale prices was recorded on

[7] *The calculation is based on the actual data of 10 months of 2006.*

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fodder crop, vegetable and certain types of fruits. Nevertheless, prices have somewhat declined in cattle breeding owing to both increased livestock as of the start of the year and more slaughter because of expensive fodder crop.

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Labor market

The developments in the labor market during 2006 have created inflationary pressures in the economy because the growth of real wages far exceeded the growth of labor productivity. With 0.8 percent drop in the unemployment rate and 13.0 percent economic growth over the year, the labor productivity has increased by 12.2 percent, almost twice as less as the growth of real wages.

According to the CBA estimations, in 2006 the increase in real wages has contributed to the 12-month inflation indicator by 2.8 pp. whereas productivity growth has eased inflation by 1.1 pp. As a result, net impact of labor market on inflation has been expansionary by 1.7 pp.[8].

The average nominal wage level in 2006 increased by 22.6% over the previous year, whereas the real wages increased by 21.3%. Yet the mentioned average growth rates of nominal wages have been much higher in communication, trade and catering, municipal services, health, education and culture sectors. Notwithstanding the above, the level of wages in most of the mentioned sectors (particularly – in trade, education, health and municipal services) is still much less than the average wage in the whole economy.

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Main directions of monetary policy and inflation

The outset of monetary policy of 2006 has been heralded by implementing two major institutional reforms. Firstly, starting January 1, 2006, CBA has adopted a new strategy for monetary policy by moving to inflation targeting regime. Secondly, in order to improve the effectiveness of the new strategy, CBA has changed the mechanisms of utilization of the monetary policy instruments.

According to the inflation targeting strategy, CBA's ultimate goal is the inflation target while the inflation forecast comes as a nominal anchor. A short-term interest rate serves as an operational target but, in consideration of financial stability, CBA will use approaches of monetary targeting as well. CBA's policy includes forecasting of future inflation, evaluating its deviation from the target and conducting monetary policy to eliminate any discrepancies between the target and forecast values. CBA practices the *interest rate – inflation forecast – inflation* chain.

Aimed at activating the interest rate channel of monetary transmission and enhancing the role of a short-term interest rate, CBA has since April 2006 reduced the maturity of monetary policy instruments, making them more flexible.

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[8] *See Annex 2.1.*

The repo interest rate as a main instrument is being set at the beginning of each month for that given month, and operations are being carried out once a week.

Also, to tackle the reduction of excess liquidity in the banking system, CBA issues own securities that are viewed as a structural instrument, and the monthly calendar of issuances is being released at the start of each month.

In order to provide the market with a relatively longer-term liquidity or reduce excess liquidity, CBA is implementing the operations of purchase and sale of government securities in the secondary market.

CBA is also using instruments to adjust short-term fluctuations in liquidity and interest rates.

The maturity of repo agreement has been reduced, so has been done with standing facility instruments transforming them into one-day operations. The interest rates of standing facilities are moved proportionally aside the refinancing rate.

CBA is also implementing foreign currency purchase and sale operations to ease the impact of capital influx, smooth the exchange rate fluctuations and stimulate the process of dramization.

The monetary environment has been affected also by certain risks which had in part been pointed out in the monetary policy program 2006. The other part of these risks were actually shown up as a result of annual economic performance.

Particular importance has been attached to the risks from various sectors of the economy, as follows:

- in the real sector, risk of decreased crops in plant cultivation due to unfavorable weather conditions;
- in the external sector, rise of world prices of grain and energy resources, oil prices in particular;
- in the fiscal sector, disproportional distribution of annual expenditures and accumulation of the main part of the expenditures in Q4; and
- acceleration of the process of dramization.

The macro-environment and performance of inflation during the year showed that the risks anticipated have been mostly apparent. As a result, inflation has deviated from the forecast, mainly conditioned by certain inflationary risks of the real sector. So, the fall in agriculture has considerably weakened seasonal slowdown of prices of agricultural products, pushing the 12-month inflation in September to make up 5.9 percent instead of the forecast 3.0 percent (see the CBA October 3-rd Board Meeting Minutes), and 2.3 percent relative to the beginning of the year.

Accordingly, it was obvious that the up to 3 percent forecast at the end of the year would be exceeded conditional on the above-mentioned non-monetary factor, while conducting a more restrictive monetary policy would not be reasonable to avoid creating pressures and instability in

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the financial market. This is why CBA voiced its intention to the Government in September to appear at the Parliament with a plan to revise the inflation's end-year program level up to 5 percent ± 1.5 percent. As the same October 3-rd minutes recorded, the forecast end-year 12-month inflation had been announced to be 5.6 percent. The annual inflation in November amounted to 5.9 percent, and 3.5 percent against the beginning of the year.

The other factor which affected the pace of monetary policy was the dramization process. In the first six months of the year, this process has somewhat slowed down against the previous year but started accelerating since the second half, serving, partly, as a source for the option of the monetary instruments used during the year and for deviations of monetary indicators from forecast quarterly levels.

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Performance of inflation over 2006

In November 2006, inflation was much higher than in preceding years, reaching 5.9 percent against the same month in the year before, whereas the same indicator in the period 2000-2005 has averaged 2.4 percent.

The November's 5.9 percent inflation has been mainly due to rise in prices of items 'Food products' (7.0 percent); 'Non-food products' (0.8 percent); and 'Services' (4.9 percent), all having contributed to inflation by 3.8, 0.1 and 1.5 percentage points, respectively.

The 7.0 percent inflation in item 'Food products' has been determined mainly by inflations in items 'Vegetable' (36.4 percent); 'Fruit' (25.6 percent); 'Eggs' (21.2 percent); 'Granulated sugar' (22.6 percent); 'Meat and meat products' (2.7 percent); and 'Fish products' (58.0 percent), all having contributed to the 12-month inflation by 1.7, 0.7, 0.4, 0.3, 0.3 and 0.3 percentage points, respectively.

The 0.8 percent inflation in item 'Non-food products' has been determined mainly by inflations in items 'Detergents' (5.1 percent); 'Clothes and footwear' (3.9 percent); and 'Jewelry items' (28.5 percent). Inflation in this item has been eased by 6.6 percent deflation in item 'Personal cars and petrol' mainly due to 9.7 percent drop in prices of item 'Petrol' against November of the previous year.

The 4.9 percent inflation in tariffs of services has been mainly conditioned by an increase in tariffs of 'Medical care' (9.9 percent); 'Services in education system' (6.9 percent); 'Public utilities' (3.5 percent); and 'Communications services' (9.9 percent), all having contributed to inflation by 0.9, 0.3, 0.3 and 0.2 percentage points, respectively. The only drop has been recorded in tariffs of 'Transport services' (-2.4 percent).

The growth of prices in November 2006, compared to December 2005 has been 3.5 percent, and prices in the period January-November 2006, compared to the same period in the previous year, have risen by 2.7 percent.

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Table 1. Items most contributing to the quarterly inflation, by groups magnified

	Price index against the same month of the previous year				Contribution to the 12-month inflation			
	March, 2006	June, 2006	September, 2006	November, 2006	March, 2006	June, 2006	September, 2006	November 2006
CPI	98.9	102.7	105.9	105.9				
Food products, o/w:	98.1	103.4	106.1	107.0	-1.1	1.8	3.3	3.8
Bread	96.6	98.2	100.1	101.2	-0.5	-0.3	0.0	0.2
meat and meat products	104.7	105.1	104.1	102.7	0.4	0.5	0.4	0.3
fish products	81.2	136.9	143.3	158.0	-0.1	0.2	0.2	0.3
milk and dairy products	101.1	102.1	102.8	101.9	0.1	0.1	0.1	0.1
Eggs	89.5	90.3	115.5	121.2	-0.2	-0.2	0.3	0.4
Fruit	81.2	90.2	121.4	125.6	-0.5	-0.3	0.6	0.7
Vegetable	109.0	127.9	125.2	136.4	0.4	1.3	1.2	1.7
Sugar	116.3	136.6	128.5	122.6	0.2	0.5	0.4	0.3
fats and oils	98.1	100.7	98.6	97.9	-0.1	0.0	-0.1	-0.1
Non-food products, o/w:	102.0	105.1	103.3	100.8	0.5	0.8	0.5	0.1
textile articles and knitwear	100.9	102.6	103.7	103.9	0.0	0.1	0.1	0.1
Footwear	100.7	102.6	104.1	103.8	0.0	0.0	0.1	0.1
Detergents	106.5	111.7	108.8	105.1	0.1	0.2	0.1	0.1
personal cars and petrol	112.0	119.0	101.5	93.4	0.4	0.6	0.1	-0.2
jewelry items	128.4	138.9	134.2	128.5	0.0	0.1	0.1	0.0
Services, o/w:	103.5	102.2	104.5	104.9	1.0	0.7	1.3	1.5
public utilities	101.8	101.5	103.5	103.5	0.1	0.1	0.3	0.3
medical care	101.6	101.2	107.8	109.9	0.1	0.1	0.7	0.9
communications	117.9	112.3	113.2	109.9	0.3	0.2	0.2	0.2
education system	108.4	108.7	107.9	106.9	0.4	0.4	0.4	0.3
transport	103.3	102.0	98.5	97.6	0.1	0.1	-0.1	-0.1

Growth rates of items most contributing to inflation

	Price index against the same month of the previous year			Contribution to the 12-month inflation		
	November, 2004	November, 2005	November, 2006	November, 2004	November, 2005	November, 2006
Fruit	136.5	79.3	125.6	1.2	-0.7	0.7
Vegetable	89.4	105.8	136.4	-0.7	0.4	1.7
Granulated sugar	100.4	97.9	122.6	0.0	0.0	0.3
Petrol	114.7	115.5	90.3	0.1	0.1	-0.3

Interest rate: Over 2006, in order to achieve its primary goal, CBA has under the inflation targeting strategy conducted its monetary policy by adjusting the refinancing rate as an operational target. Considering the inflation expectations projected in Q1, and the trends in the financial market, CBA has raised at the end of January the interest rate of the main instrument to 4 percent from 3.5 percent. It however has left

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the interest rate unchanged for the months ahead while preferred raising the effectiveness of the interest rate channel of monetary transmission by being proactive in operations in the financial market. Nevertheless, high inflation expectations appeared again in August, September and October, impelling CBA to raise the repo interest rate by 0.25 pp. for each month to reach 4.75 percent in October. Accordingly Lombard credit and Deposit interest rates were raised by 0.25 pp. each to reach 7.75 percent and 1.75 percent, respectively.

Monetary instruments: The volume of repo operations carried out by CBA in the financial market since the start of the year until November has amounted to AMD 44.86 billion.

In the same time interbank repo market was experiencing discernible enlivening. The volume of operations carried out has amounted to AMD 147 billion, grown by AMD 63 billion against the same period the year before. Repo interest rate, while trending upward in an erratic fashion, stabilized in November at around 5.15 percent (see Annex 3.1).

In the period January-November 2006, CBA has made a net purchase of USD 170.802 million from commercial banks to ease impact of capital inflow observed since the start of the year, smooth out the exchange rate fluctuations and stimulate the process of dramization.

Since the beginning of the year the volumes of absorbing operations of CBA have grown substantially against the same period the year before. In particular, CBA has launched 71 issuances to absorb excess liquidity. The volume of allocations of CBA securities has amounted to AMD 66.1 billion, with an average yield of 5.42 percent (see Annex 3.2). The gross volume of commercial banks' deposit with CBA has amounted to AMD 159.1 billion, while the volume of reverse repo operations AMD 3.7 billion. Foreign currency swap (attraction) of USD 9.6 million has been carried out, too.

In the period January-November 2006 in the government security's market too, interest rates have risen. In November 2006 in the primary market, compared to the same period of the previous year, average yield of short-term t-bills has risen by 2.03 pp. to 5.77 percent and those of medium-term government securities by 1.72 pp. to 6.81 percent. Long-term (10- and 15-year) coupon bonds with an average yield of 9.28 percent have been issued since the start of the year.

Average yields in the secondary market have increased all along the yield curve. Prevailing part – 90.83 percent – of change in the curve's position has been conditioned by a parallel shift of the level of the curve, which made up 1.17 pp. due to increase of yields. The curve concavity has changed by 39.38 percent from 0.060 to 0.037, reflecting a decreasing spread between interest rates of long- and short-term securities. Residual factors in the curve change made up -30.2 percent (see Annex 3.3).

Exchange rate: Nominal exchange rate as an important and efficient channel of transmission affects the whole economy, which is reflected on import prices, export and import volumes and, accordingly, the current

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account balance. Nominal exchange rate affects also the dram value of transfers and, therefore, the aggregate demand.

The dram / US dollar exchange rate in the period January-November 2006, compared to the end-December and the same period of the previous year, has tended to appreciate. Appreciation in that period of time has been 21.98 percent, while average dram / dollar exchange rate as opposed to the previous year's average has appreciated by 8.80 percent, getting to AMD 420.68 from AMD 457.69. The trend was the same in the preceding year when the appreciation has been 7.91 percent, getting to AMD 450.19 from AMD 485.84. Gross volume of operations carried out in interbank market in the period January-November 2006 has amounted approximately to USD 4.315 billion, up by 64.75 percent from the volume in the same period the year before. The euro / dram operations market has also reported increases in volumes, by 46.87 percent. Gross volume has amounted to EUR 304.21 million against EUR 207.12 in the previous year, reflecting high growth rates of external trade turnover, external financial inflow and domestic economy.

Monetary policy indicators: With the matching of the above-noted goals and conducted monetary policy, volume indicators of monetary policy have performed in the following fashion: dram broad money for the past 11 months compared to the same period the year before, has grown by 49.1 percent, slightly down the previous year's growth of 51.5 percent. The dram broad money / GDP ratio having reached close to 13 percent in 2006 from 7.6 percent in 2004 is an indication of accelerating dramization.

The strong growth of dram broad money has been conditioned by high growth rates of currency in circulation (41.3 percent) and dram deposits (62.5 percent) (in the previous year the growth was 50.7 percent and 52.9 percent, respectively).

For the past 11-month period, foreign currency deposits have grown by 16.5 percent, compared to the same period of the preceding year (dram appreciation effect is excluded). The foreign currency deposits growth was lower than that of the previous year (28.3 percent) as the foreign currency substitution with dram remained strong. Further, in consideration of continued appreciation of the dram throughout the year, the foreign currency deposits indicator in dram terms has fallen by 11.2 percent against the same period of the preceding year.

The 12-month growth of broad money (November, 2006 against November, 2005) has been 33.8 percent compared to 27.2 percent of the previous year's indicator.

Growth of broad money by supply components has been mainly conditioned by huge growth of net foreign assets (NFA) of the banking system, by 42.4 percent or AMD 102.2 billion, while net domestic assets (NDA) have grown by 12.1 percent or AMD 11.6 billion. In this year too, commercial bank's NFA tended to decline, with the 12-month indicator dropped by AMD 18.4 billion, which means that banks, this year too, have used foreign currency reserves as a source for lending to the economy. However at the end of the year, a sizable foreign currency transaction

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implemented by a bank has caused a steep increase in NFA of the sector, contributing to their annual growth by AMD 1.6 billion.

Conditional on the dramization process, the dollarization of the economy (foreign currency deposits / broad money) in November 2006, compared to the same period of the previous year, has shrunk by 17.5 percent, which, under the same factors, found reflection in the performance of the economy lending indicator. The real growth of the economy lending in November, compared to preceding November was 45.4 percent. This indicator in the past 11 months 2006, in dram terms, has grown by 29.7 percent against the same period the year before.

The economy monetization and dramization ratios have performed over the year within underlying growth trends, 5.9 percent and 22.6 percent year on year, respectively, with the dramization indicator having grown faster due to extensive demand for the dram. However, the end-year results of 2006 showed that the 15.5 percent level of monetization has been low enough in comparison with the same indicator of other transition economies. But, when evaluated by effective broad money[9], the monetization makes up more than 35 percent[10].

Money multiplier in Q3 2006, compared to the same period the year before, has fallen by 3.7 percent, while dram multiplier has risen by 10.4 percent. These indicators proved lower than expected, because of higher growth rates of cash dram.

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In 2006, particularly in the third quarter, the process of dramization grew active driving CBA to satisfy increasingly bulky demand for the dram by ensuring faster-than-anticipated 12-month growth for monetary base (actually – 33 percent). In the meantime, this has been accompanied with a large-scale financial inflow, part of which was offset by CBA through foreign currency purchase operations, seeking, among other things, to ease impact of sharp appreciation of dram. However, since massive injection of dram, coupled with the risks ensuing from other sectors of the economy, had amassed a large inflationary potential for an end-year inflation indicator and quarterly indicators of the year ahead, CBA has used absorbing dram instruments, specifically, the allocation of own securities. For this reason, according to the 11-month period results of 2006, annual growth of monetary base (against November of the previous year) has been considerably behind the same indicator of the previous year (54.4 percent), since there've been deflationary risks at that time, and curbing money supply was not a necessity.

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Monetary base has grown over the year mainly due to AMD 99 billion or 44.4 percent increase of NFA of CBA, which has been concurrent with the decrease of NDA of CBA by AMD 14.9 billion or 48.3 percent.

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During the year CBA's relationship with banks has evolved through regulating the above issues of monetary policy. In other words, in order to absorb excess foreign currency generated from financial inflow and

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[9] *Effective broad money, while comprising currency outside the banking system, dram- and foreign currency-denominated demand and time deposits, includes also cash foreign currency in circulation. Source: Monetary and financial statistics manual, CBA, 2004.*

[10] *At the end-year 2006, cash foreign currency has been equivalent to AMD 649 billion (CBA estimations).*

dramization, CBA carried out massive buying operations in the foreign currency market and used absorbing dram instruments in part to offset the resultant dram excess liquidity. The allocation of own securities, was the main instrument through which CBA has successfully absorbed AMD 24.1 billion net liquidity over one year preceding November. However, the banking system in the past 11 months has been characterized with high level of excess liquidity of an average monthly indicator of about AMD 15.2 billion in November against AMD 12.9 billion in the same period of the previous year. Under such conditions banks have been proactive in using standing deposit facility instrument.

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FORECASTS FOR 2007

External environment

In 2007 in the global economy, high growth rates will persist. East Asian countries as well as other developing countries will remain as the main driving force for economic growth. It is expected that inflationary pressures would somewhat ease in both developed and developing countries. This will be determined mostly by slowing global prices of raw materials.

The risks of economic growth and inflation now are balanced, and evaluating directions of monetary policies of developed countries for the next year is perhaps not easy. Slowing economic growth and inflation will likely at least halt the rise in interest rates and even may lower. Or, otherwise, the rising of interest rates will continue. Where the first scenario is more likely for the USA, the second seems to suit Japan, UK and Australia.

Persisting huge deficit of current account of the USA still exerts pressures in global currency markets towards weakening of the US dollar. It is expected that this trend would remain over 2007 too, while other currencies – euro, British pound and Swiss franc, in particular – would smoothly but more slowly appreciate.

Prices of raw materials will behave differently. Prices of metals will tend to decline, although it is likely that that drop would be negligible or non-existent at all. Growth of oil prices in 2007 is expected to resume. However, risks pertaining to oil products will be routed on the opposite side, and it is likely that such growth rates would be considerably lower from the predicted level. All in all, whatever the case, much will depend on further geopolitical developments, conditions in financial markets, situation in currency markets and other hard-to-predict factors. However, it can be said that growth rates of raw material prices and global inflation are starting to slacken as global monetary terms get more tightening.

Terms of trade[1,2]***:*** In the event of persisting metal prices and growing oil prices, Armenia's terms of trade in 2007 will deteriorate by 2.4 percent.

The main contribution to the growth of export prices, which will be 1.3 percent in 2007, will come from 7.6 percent growth of prices of consumer goods, whereas prices of raw goods will even decline by 0.6 percent.

Prices of importable goods will grow by 4.0 percent, with the main impact coming from 6.8 percent growth of prices of consumer goods that will be accompanied with the growth of oil products by 11.1 percent and natural gas by 14.3 percent. Some 0.8 percent fall in prices is expected in respect of the other raw materials. This will be determined mostly by

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[1] *The foreign trade price forecast methodology is provided in Annex 1.7.*
[2] *Terms of trade are calculated using the prices of export and import goods, and do not include the prices of export and import of services.*

an expected drop in prices of grain in the second half of 2007 in connection with more harvested area in Russia.

The rise of prices of both export and import consumer goods will incur Russia's impact which will be 5.7 pp. and 2.3 pp., respectively.

Real exchange rate: With the US dollar depreciation in global markets and expectations for persisting growth rates of financial inflows to Armenia, the real effective exchange rate of the Armenian dram over 2007 will appreciate by 7-16 percent[3]. The forecast indicators of exchange rates and inflation of partner countries and the level of inflation in Armenia serve a basis to affirm that the nominal exchange rate of the dram will account for the main part of appreciation[4], since it is a residual value. This means that the estimated level of nominal exchange rate will change as developments in the rest of the world change, and such level may, with the same forecast of real exchange rate, essentially deviate from the point calculated.

The assumption that the dram would appreciate vis-à-vis the US dollar over 2007 will depend chiefly on continued high growth rates of capital inflow. The process of well-going dramization is expected to carry on over 2007 too, exerting pressures toward appreciation.

Expected balance of payments developments in 2007[5]

General trends in 2007: Sustained growth rates of global economy, global oil price-rise, expected price-drop in nonferrous metals in Armenia's export markets, and persisting high economic growth rates in the country over 2007 will shape the developments in the external sector.

The past years' trends in the external sector will show up over 2007 too. Particularly, current account deficit will deepen both as an absolute value and as a share in GDP. The current account deficit / GDP ratio will rise by 0.2 pp. to make up 5.7 percent, and it will deteriorate as an absolute value by USD 141.5 million to reach USD 482.5 million. This will be determined by faster growing import volumes in relation to exports. Although no further price-rise is anticipated in global copper and molybdenum markets, growth of export, however, is expected due to real volumes increased against the previous year, and resolution of structural problems in the sector of diamond processing. Persisting high growth rates of import over 2007 will be fuelled by a further increase in incomes in the economy and demand for investments.

The capital and financial account in 2007 will have somewhat different features compared to the previous year. Particularly there is expectation of considerable growth of direct investment owing to some business in Armenia intending to make investments to re-equip production

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[3] *See Annex 1.3 'Wage, production and price changes in terms of international trade', Annex 1.5 'The trade elasticity model', and Annex 1.4 'Model 1-2-3'.*

[4] *See Annex 1.6 'Real effective exchange rate'.*

[5] *The balance of payments indicators 2007 are CBA forecasts based on the balance of payments indicators officially published by the National Statistics Service. However, the BoP indicators do not entirely cover volumes of financial assets flowing into Armenia (part of which is inflowing to the economy as a cash and in no way is recorded, i.e. refers to the country's shadow economy). Nevertheless, as general trends in official BoP figures over years have been consistent with domestic and external sector developments, the idea of consistency with the country's development trends is underlying CBA's forecasting of external sector indicators.*

capacities. The other feature for the year will be implementation of the new investment project 'Millennium Challenge', which will contribute to the growth of capital transfers. It is expected that as a result of such inflows the capital and financial account in 2007 would exceed the deficit of current account, and CBA would record a considerable increase of its reserves.

In the event the CBA-estimated net cash foreign currency inflow trends for 2006 continue over 2007 too, one may evaluate that the previous year's current account proficit of 3.7 percent in GDP or USD 317.5 million would be maintained.

Current account[6]**:** The expected export growth over 2007 will depend on a recovery of the industry and finding solution to structural difficulties in diamond processing. The effect will be that export (credit) would increase by 7.8 percent to total USD 1119.0 million. The increase in volumes of export of the main 4 commodity groups will contribute to the growth of export. Growth of the group 'Base metals and articles' will be 8.1 percent, as opposed to the previous year's 13.4 percent drop. Owing to increased exports of brandy, growth of the group 'Products of prepared food' will be 14.0 percent. Though Russia remains the main export market for this group, entering new markets over 2007 is, however, anticipated. Besides, continuous increase in incomes in Russia will boost up these exports. In 2007, export volumes of the group 'precious stones and metals' will increase by 6.0 percent as unfavorable developments prevailing in the diamond processing throughout 2006 will eliminate. Growth rates of export volumes of the group 'Mineral production' will slow down because of an expected drop in prices of raw materials, in spite of the forecast growth of real volumes.

Import (debit) will increase over 2007 by 17.4 percent to total USD 2210.2 million, according to CBA forecasts. High growth rates of import will persist as a result of continued increase of household income and growing demand for investments.

The contribution to overall growth of imports will mainly come from imports of the groups 'Products of prepared food', 'Mineral production', 'Machinery and equipment', 'Transport means' and 'Base metals and articles', to grow by 16.2 percent, 15.6 percent, 27.0 percent, 19.0 percent and 15.3 percent, respectively.

With higher growth rates of import, the trade balance deficit in dollar terms will grow by USD 246.2 million to reach USD 1091.3 million. However, its share in GDP will improve by 0.6 pp. to make up 12.9 percent, because the GDP growth rate in dollar terms will exceed the growth rate of the 2007 trade balance deficit.

External trade turnover in 2007 will increase by 13.9 percent to amount to USD 3329.2 million. The figure, compared with the 2006 indicator [of 12.4 percent growth], will increase by 1.5 pp., which will be attributable to recovering export growth rates.

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[6] *See Annex 1.1 for the export and import forecast methodology.*

The services balance deficit over 2007 will not change almost in respect of the previous year's level, to amount to USD 50.6 million, while its share in GDP will drop by 0.2 pp. to make up 0.6 percent of GDP. The growth of export of services over 2007 will be 17.4 percent against 10.3 percent in the previous year. Meantime, the growth of import of services will be 15.5 percent smaller than that of export of services.

The growth of export of services will be attributable to increased export volumes of transport, travel, computer, and information services. The growth of import of services will also be determined by increased imports of travel and transport services, as was the case in the previous year.

The indicator of item 'Net factor income' will rise in 2007 by 30.3 percent or USD 23.0 million. This increase, notwithstanding payments, on investments, will be determined by rising remittances of the seasonal workers, and proceeds from management of gross reserves. The growth of income in the Russian non-tradable sector will contribute to the increase of the income of seasonal workers[7].

The growth of current transfers over 2007 will be 17.3 percent compared with 16.8 percent in the previous year. That growth will be determined by USD 81.4 million (19.5 percent) increase in the private sector[8] and USD 1.2 million (2.0 percent) increase of the public sector. Under this scenario, the nominal value of current transfers will be USD 560.5 million. Where global prices of oil, keep on rising over 2007, which would be reflected on the growth of Russia's oil, export and, therefore, an increase, of income[9] in that country's non-tradable sector, the private, transfers inflow, to Armenia will remain high this year too.

Capital and financial account: Foreign direct investment in 2007 is expected to grow by 14.3 percent (by USD 37.4 million). These investments will completely be conditioned by expansion of production capacities of enterprises. Investment this year too, will be driven chiefly to areas of mining industry, food production, construction, and air transport. Capital transfers will increase against the preceding year by USD 10.4 million to amount to around USD 50.0 million that will be determined mainly by implementation of the 'Millennium Challenge' project.

Public loans (as net value) will increase against the preceding year by 48.8 percent to amount to USD 98.4 million. This growth, will be explained by faster growth of attracted loans in relation to the growth of amortization payments. The attraction of loans will amount to USD 114.0 million while amortization payments, will amount to USD 15.6 million.

In 2007, the private sector will be featured with spending of foreign currency that, along with the above-noted capital inflow, will lead to 22.4 percent growth of net inflow of capital and financial account in comparison with the previous year. As a result, the capital

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[7] *In the period January-October 2006, Russia's share in the structure of non-commercial transfers via the banking system has been 82.1 percent.*
[8] *See procedure of estimation of private transfers and seasonal workers, remittances in Annex 1.2.*
[9] *Armenian expatriates are mainly employed in Russia's non-tradable sector.*

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and financial account will reach USD 680.9 million[10]. Should the private sector attempt converting foreign currency into drams, and thus driving CBA to absorb extra foreign currency liquidity, there'd be recorded a substantial increase in gross reserves of CBA.

NFA of commercial banks is forecast to decline by USD 15.0 million, determined mainly by growing volume of foreign currency loans to Armenian residents.

The 2007 balance of payments flows show that the capital inflow will outstrip the current account deficit by USD 198.4 million, reflecting an increased volumes of gross foreign reserves of CBA. Gross foreign reserves of CBA will total USD 1073.6 million. The foreign currency funds received through CBA will exceed amortization payments of foreign debt (interest payments included) carried out by CBA. As a result of these flows and other operations by CBA, gross foreign reserves of CBA will increase by USD 194.4 million. The import coverage indicator will rise to 4.8 months compared to the previous year's 4.6. NFA of CBA will grow by USD 198.4 million to reach USD 893.3 million (KfW funds included).

Inflationary risks of external sector: The forecasts concerning external sector indicators of monetary policy program 2007 may deviate from the baseline scenario when following risks will occur:

- Higher volumes of export than expected. This is possible if adverse consequences of the previous year's decline with the main exporting businesses are quickly eliminated which would be seen in the utmost activation of production capacities.
- Higher growth of import volumes. It is likely to see a lasting high demand for consumer and investment goods as a result of increasing incomes and appreciating exchange rate. Further, much higher import volumes are possible if technical problems with cargo transfer via Georgia, which arose in 2006, do not reoccur.
- There are risks associated with oil prices, with forecast that these would rise. Nevertheless, there are risks as well that growth rates may be lesser than expected.
- The former risk derives a risk of slowing private transfers and remittances of seasonal workers. A slowdown of private transfers and remittances of seasonal workers from Russia is likely as a result of slower-than-expected rise in international oil prices.
- There are much uncertainties in currency markets concerning further outlook of the dollar / euro exchange rate. This may significantly affect dollar prices of raw materials and global inflation.

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Domestic environment

[10] *The spending of foreign currency by private sector is indicated in line 'Other private sector' of the capital and financial account with the sign 'plus'.*

Aggregate demand

Private sector expenditures: The aggregate demand over 2007 will grow owing to faster growing domestic demand, as was the case in past years, given a noticeable increase in net imports. In the structure of domestic demand, expenditures of private sector will continue growing faster over public expenditures[11].

Real growth of private sector expenditures is expected to amount 9.2 percent which is 5 pp. less than in 2006. Both private consumption and private investment growth rates are expected to decline. However, real growth of private investment will be around 14 percent due to continuous increase in household incomes and expected considerable investments by enterprises. These investments will go to the mining and metallurgy industries, gas supply and services (mostly communications and transport), as well as chemical industry, that have become traditional areas for investment in the last four years.

Concerning the dynamic of private expenditures, there may be risks regarding more than projected growth in both consumption and investment. Particularly, higher-than expected growth of private consumption may be recorded as a result of accelerating inflow of private transfers and net factor incomes. In the area of private investment, the risk of a higher-than expected growth can result from the implementation of sizable investment projects, which are now in a discussion phase and will seek approval.

The risks regarding higher growth of aggregate demand may generate some inflationary pressures in the consumer market.

Public sector expenditures: In the area of tax collection over 2007, there is a forecast of 21.1 percent growth against the previous year, in which case growth of taxes in GDP will be 1 pp. Given increasingly positive shifts in the tax collection in the last couple of years and the forecast high level of GDP for 2007, one may expect that collection of taxes over 2007 will be effective, too.

In the event the projected nominal growth rates of GDP and taxes persist, i.e. ensuring faster growth rates of taxes over growth rate of GDP, the tax smoothness coefficient[12] in 2007 will make up 1.7 percent.

Where the above-mentioned level of revenues is maintained, the consolidated budget revenue impulse in 2007 will have a 0.5 restrictive impact.

For solving priority issues under the Poverty Redaction Strategy and Medium Term Expenditure Framework the expenditures policy of consolidated budget of the Republic of Armenia in 2007 will be driven to ensure 0.8 pp. more growth of expenditures in GDP against the previous year's expected indicator. Such growth will be mainly to the expense of increased current expenditures while capital expenditures will remain at the same level projected for the previous year.

The Armenian budget expenditures in 2007 will have a slightly expansionary impact on aggregate demand over 2007, which will be 0.6

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[11] *The private consumption and private investments forecast methodology is presented in Annex 2.2.*
[12] *Calculated as a ratio of tax revenue percentage growth to GDP percentage growth.*

percent[13], according to the fiscal impulse indicator. With such budgetary expenditures and revenue proportions in GDP, the state budget deficit / GDP ratio in 2007 is expected to make up 2.3 percent in GDP, just slightly up by 0.7 pp. from the same expected indicator of the previous year. In 2007, external sources will prevail in the state budget deficit financing sources, with a share making about 60.5 percent in total. In domestic sources, proceeds from privatization will prevail, while receipts from sales of government securities will constitute the rest of sources.

According to the CBA-published debt sustainability calculation methodology, the debt will decrease over 2007 (as was in 2006) and rest with a level required for sustainability. Particularly, the ratio of debt / GDP will be 19.1 percent (24.7 percent in 2005 and 22.9 in 2006). Further, the debt sustainability-related indicators will demonstrate some encouraging performance. For instance, there will be some easing of the external debt service burden as a result of reduction in interest fees (rescheduling of some non-preferential external loans).

The fiscal sector's impact on aggregate demand over 2007 will be neutral and will make up 0.1 percent, according to the impulse indicator.

Under inflation targeting strategy the effectiveness of coordination of the monetary and fiscal policies over 2007 will depend on better preparation of programs and better forecasts, flexible and efficient adjustments to these programs, as well as openness of the actual pace and implementation such programs and forecasts.

Aggregate supply

The patterns of sector developments recorded in 2006 are expected to change in 2007. Particularly, parallel to a rebounding growth rate of production volumes in industry and agriculture, some slowdown is expected in real growth rate of value added in capital construction and services. As a result, the economic growth, though lagging behind the 2006 level, is expected to be high, at around 9.0 percent[14].

The GDP deflator is expected to rise by 4.5 percent in 2007 due to some slackening of the growth rate of producer prices in sectors of the economy. An exception will be the industry sector where producer prices are expected to rise higher due to a certain increase in global prices of nonferrous metals, and persisting high growth rate of prices in the production of building materials.

Starting the first quarter of 2007 ***Industry*** is expected to report a recovering growth rate, within 6.8 percent. The recovery will mainly be attributable to new production capacities resulted from the previous years' investments that had been made in the mining and nonferrous metallurgy industries. No essential change of situation is expected in the area of diamond processing since, reportedly, in international diamond market unfavorable developments of 2006 will prevail also in 2007. Some activation is expected in the food industry as growth rates in

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[13] *The fiscal impulse calculation methodology is presented in Annex 2.3.*
[14] *The forecast methodology is presented in Annex 2.4.*

production of alcohol and non-alcohol beverages will speed up. The industry's impact on inflation in 2007 will be rather indirect (transmitted through increased household income) and negligible due to the growth of productivity in the branch.

In industry in 2007, the major risks are connected with possible acceleration of growth rates in the chemical, mining and metallurgy industries.

Agriculture is expected to report some moderation in seasonal fluctuation of growth rates of 2006, providing a 3-4 percent growth throughout 2007 to reach 3.2 percent by the year-end. The growth of value added in agriculture in the first months of the year will come from increasing growth in production of cattle breeding, resulting from a considerable increase in costs due to the previous year's limited fodder crops that would lead to increased animal slaughter.

During the next months of the year, small but proportional growth both in plant vegetation and cattle breeding is expected, considering that productivity in agriculture will remain unchanged. The latter will be conditioned by long-term nature of the ongoing and anticipated investments into the branch (including investments into irrigation and road infrastructures).

As a result, the impact of increased agricultural production volumes on inflation in 2007 will be somewhat expansionary. Yet since plant vegetation, having a notable (about 10 percent) share in the consumer basket depends entirely on weather conditions, the risks coming from the agriculture can either add up or reduce inflation in 2007.

Capital construction is expected to report slowing of growth rates over 2007, with a resultant annual real growth of value added of construction to reach 12.9 percent. The double-digit growth volumes of construction will be achieved due to continuously growing household income and the long-term nature of the ongoing construction projects as well as realization of new investment projects in areas such as energy, mining, metallurgy, chemical industry, transport and communications.

There is a risk of higher than forecast growth rates in construction, attributable to unexpected increase in household income and implementation of investment projects that are yet to be approved.

Services in 2007 are expected to keep high growth rates, at about 11.3 percent year on year. As such, growth is anticipated virtually in all spheres of the services sectors due to growing household income and developing tourism infrastructures.

The impact of services on inflation will be mainly implicit as it contributes to creating inflationary pressures through increased household income. Increasing domestic demand resulting from growing household income will contribute to a slight price increase in services sector that hold about 30 percent share in the consumer basket.

In the area of services, a new telephone operator may launch its activities in order to broaden the volume and range of services and capture a new market niche. Further investment in the area of transport is expected as there are plans to hand the 'Armenian Railways' CJS

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company over to fiduciary management, and to utilize new passenger service terminals at the airport.

Producer prices

In 2007, producer price growth in some of the sectors of the economy will somewhat slow, resulting in a 4.5 percent in the GDP deflator indicator[15].

Particularly, in construction, prices will continue rising, by 9 percent year on year, fueled by expected continuous growth of construction volumes due, as noted earlier, to the increased household income and transfers as well as investment projects anticipated in industry and services sector.

No essential changes are expected in the producer price level in services and agriculture, and these two areas are estimated to contribute to the GDP deflator by 1.2 pp.

In industry, about 4 percent increase in producer prices is forecast, explained with both persisting high growth rates of prices in production of building materials and rising prices in light and jewelry industries since the previous year.

In respect of affecting inflation, risks coming from the agriculture are perhaps the primary ones among potential risks associated with producer prices. These risks are double-sided and depend heavily on weather conditions. The price risk associated with services depends on the price policy of a new telephone operator, and this may entail certain inflationary pressures in he consumer market.

Labor market

Recent developments in the labor market – particularly faster growing salary over the growth of productivity, and subsiding unemployment – will persist also in 2007.

The average nominal salary growth will be 22.1 percent, according to CBA estimations. In the event the real GDP growth makes up 9 percent and unemployment reduces by 1 pp., the growth of productivity will be 8 percent, considerably lagging behind the expected real salary growth indicator of 16.6 percent.

Under such developments, labor market will keep on exerting inflationary pressures during 2007.

Inflation forecasts and monetary policy prospects for 2007

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[15] *The forecast methodology is presented in Annex 2.3.*

In the context of forecasts of sectors of the economy, the 2007 indicator of inflation has been forecast as well, making up 4.1 percent provided interest rates remain unchanged. According to the results of survey with 21 commercial banks, the inflation expectations for the end of 2007 have been averaged at around 4.2 percent.

The inflation forecast has been made using econometric models developed and applied by CBA (the inflation forecast model by commodity groups, Annex 3.4, and the P-Star model, Annex 3.5).

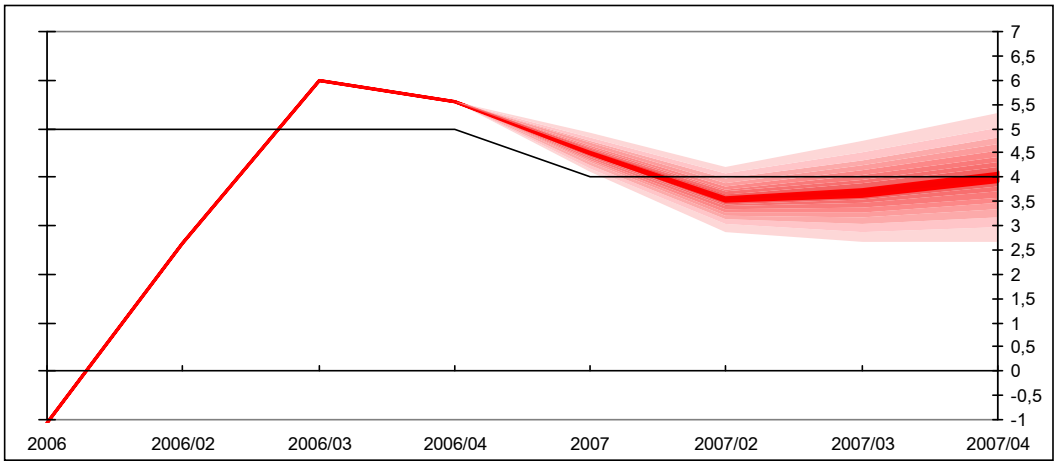
The inflation forecast model includes both variables driving the inflation and the consumer basket broken down and analyzed by groups. The break-down has been made relying on the sectoral attribution of the goods, whether they are imported or produced domestically, and using the results of comparative analysis of price-change thereof. The model summarizes not only potential impacts of aggregate demand and aggregate supply on inflation but also analyzes their long- and short-term influence on inflation. The 2007 inflation forecasts have also considered the 2006 structural change of the demand for money, i.e. the dramization of the economy.

Using the above-mentioned model, CBA has also analyzed the risks coming from the macroeconomic environment, their potential impacts on inflation and the probability of deviations up and down the forecast level of inflation. The latter is presented through the Inflation forecast with the fan chart[16].

Inflation Forecast for Q4 2007 - 4.1 percent

Inflation	below 2%	2%-3%	3%-4%	4%-5%	5%-6%	over 6%
Probability	<1	9.9	39.4	39.4	9.9	<1

Annual Price Percentage Change



[16] *The methodology of deriving the fan chart for the inflation forecast diagram has been published in the CBA Courier, Q3, 2002.*

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The forecast level of inflation is nearly not deviated from the target indicator and the inflation forecast with the fan chart displays that probabilities of deviating from the central value forecast are distributed proportionally, that is the risks of higher or lower inflation are so far not dominant in any direction.

With moderate inflationary risks, the 2007 inflation target would be met by conducting a relatively neutral monetary policy, i.e. keeping a stable level of interest rates.

However, in the event the risks coming from external and domestic environment emerge, CBA will respond adequately to achieve the inflation target. Should risks of high inflation prevail over the year – particularly, more-than-expected growth of real household income, faster growing real wage over the productivity growth, reducing agricultural output due to unfavorable whether conditions, more-than-expected rise in global oil prices and, as a result, more-than-expected growth of private transfers from Russia – CBA would pursue relatively restrictive policy, raising the refinancing rate. The opposite policy would be conducted in the event of unexpectedly favorable weather, less global price-rise of oil and resultant declining private transfers from Russia.

CBA will constantly keep track of domestic and external economic developments and changes. CBA will, if needed, adjust the policy directions for the 12-month period and use repo interest rates to eliminate the risks that cause inflation to deviate from the target indicator.

The monetary policy instruments

CBA will carry out repo, reverse repo and foreign currency swap operations in order to moderate short-term fluctuations in liquidity and interest rates. CBA will issue bonds and will conduct outright operations as structural instruments in order to manage structural liquidity for a relatively longer-term. The mechanism of reserve requirement will be applied to solve the systemic liquidity problems for a much longer period. Foreign currency purchase and sale operations will be carried out to ease sharp fluctuations of the dram exchange rate. CBA will apply the Daily Lombard Credit and Daily Deposit as standing facility instruments.

The end-year 2007 forecasts of monetary indicators under a relatively neutral monetary policy are as follows. The demand for money, in order not to impede the forecast 9 percent economic growth, is forecast to be at least 20 percent (Annex 3.6). The supply of money under a relatively neutral monetary policy would grow by about 22 percent. The growth of dram broad money is forecast to be more than 30.2 percent. In the structure of broad money, both cash and dram-denominated deposits are forecast to increase by almost 30 percent, related to medium- and long-term factors determining the dramization of the economy. These include high economic growth rates and high growth rates of credits to the economy (more than 20 percent increase in lending over 2007 is anticipated), and continuous increase in confidence in the national currency. No growth of foreign currency-denominated deposits (in dram terms) is anticipated, pushing the dollarization of the economy down by

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about 17 percent. Faster growth of dram broad money over broad money will make the dramization to grow twice as much against the monetization of the economy, by 14.3 percent against the 7 percent.

With such trends of monetary indicators, money multiplier will drop by 3.5 percent but dram multiplier will rise by 7.8 percent, pushing the monetary base to increase by 24 percent as a result.

In the meantime, CBA will be proactive in meeting the increasing demand for the dram under the acceleration of dramization of the economy recorded in the last two years, which has been a significant structural change. CBA finds it reasonable to meet such demand through operations in the foreign currency market. CBA will attempt offsetting possible impact from increased dram liquidity on actual inflation by issuing CBA bonds.

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DEVELOPMENT OF FINANCIAL SYSTEM[1]

Financial market participants in 2006

Staring January 1 2006, CBA acquired the function of regulation and supervision of the Armenian financial sector. The main goal of creating a consolidated supervisory framework was oversight of overall risks in the financial market. Normally, trends of merger of banking, insurance and securities businesses are relevant to the financial system developments, which requires the supervision to make a complex study of behavior of various parts of the financial market, measure the intrinsic risks and the likely impact on the overall financial market.

The most important participants of the Armenian financial market are commercial banks, with assets constituting close to 95 percent of total financial system assets, as of the end of Q3 2006. The developments in the banking system in 2006 remained in harmony with the trends of the past years, and the banking system over the year has reported growth of total assets, liabilities, and capital.

Banking system in 2006

There have been noticeable changes over the year in the currency structure of assets and liabilities of the banking system. In the first 11 months of 2006, the dram-denominated assets and liabilities have grown by 34 percent and 41 percent, and foreign currency-denominated assets and liabilities by 3 percent and 4 percent, respectively. As a result, the share of dram assets in the banking system assets rose by 7 pp. to make up 54 percent of the total, as of 30/11/2006 (the volume of dram assets has exceeded for the first time the volume of foreign currency assets), and the share of dram liabilities rose by 8 pp. to make up 41 percent of total liabilities.

As of the end-November 2006, the banking market numbered 21 commercial banks, with 297 branch offices. Over the year, the French Credit Agricole has bought a sizable equity participation in a bank, and the Ukrainian Ukrprombank acquired participation in another bank.

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In the first 11 months of 2006, total liabilities of the banking system have increased by 16.1 percent or AMD 55.8 billion to reach AMD 401.8 billion at end-November. This growth has been boosted up by the increase of deposits of individuals and enterprises, liabilities to banks (CBA included), other financial organizations, and other liabilities (such as bank-issued coupon bonds, transit accounts, liabilities on L/Cs and other accounts).

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Gross deposits of individuals and enterprises have grown by 14.1 percent or AMD 36.9 billion. Dram-denominated deposits have increased by AMD 32.9 billion, foreign currency-denominated deposits by AMD 4.0 billion.

[1] *The indicators on deposits and loans may not coincide with the indicators in other sections of the Program as this section includes funds of both residents and non-residents, whereas the others include funds of residents only.*

The 2006 liabilities of the banking system are forecast to reach nearly AMD 399.0 billion.

In the 11 months of 2006, the growth rate of total capital of the banking system has exceeded growth rates of liabilities and assets, contributing 1.2 percentage point increase to the capital / assets ratio. Total capital has increased by 24 percent or AMD 23.0 billion and reached AMD 117.8 billion as of 30/11/2006.

In the reporting period, 9 banks have completed statutory fund paid-ins. The statutory fund of the banking system has increased by AMD 19.4 billion of which AMD 17.4 billion owing to two banks. One of these two banks has paid-in the statutory fund through investment by a new equity participant, and the other one has used the entire AMD 4.3 billion-worth dividends from the previous period's profit to pay in. Another 6 banks have paid dividend with the total amount of AMD 2.6 billion.

In the 11 months of 2006, the banking system generated AMD 15.0 billion profit, exceeding the previous period's figure by 29.6 percent. This increase of profit is explained by growth of net interest income owing to fast growing rate of loans to the economy.

The forecast is that the banking system would end the year 2006 with AMD 119.5 billion-worth total capital.

In the 11 months of 2006, total assets of the banking system have increased by 17.9 percent or AMD 78.8 billion, 54.1 percent of which has been used by the banking system to invest in loans to the economy. As of 30/11/2006, the amount of assets of the banking system has been AMD 519.5 billion. The growth rate of loans to the economy has exceeded the growth rate of total assets, making up 23.2 percent. Lending to individuals has increased by 38.4 percent or AMD 28.3 billion; lending to enterprises by 13.5 percent or AMD 14.0 billion.

A noteworthy event in the year has been the steep reduction in net foreign assets (particularly, nostro correspondent accounts and other claims with foreign banks) with one of the biggest banks, determined by funds flows for lending to the economy.

The growth of mortgage lending has been high enough (104 percent). Consumer loans, and loans to commerce and food industry have grown considerably. The seasonality of loan investment by branches has remained almost unchanged against the preceding year. It is forecast that the amount of assets of the banking system at end-year 2006 would be AMD 518.5 billion and the amount of loans AMD 233.0 billion.

Credit organizations in 2006

Over 2006, 7 universal credit organizations (4 closed JS companies: FINKA, NORVIK, GARNIINVEST and AREGAK, and 3 limited liability companies: NOR HORIZON, MALATIA, and Ecumenical Church Loan Fund) have received activity licenses. Currently, 17 credit organizations with 12 branch offices operate in Armenia.

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In the 11 months of 2006, liabilities[2] of credit organizations have increased by 191 percent and reached AMD 10.1 billion. The 20 percent portion of total liabilities as of 30/11/2006 has constituted the liabilities to other financial (non-bank) organizations. The borrowing from enterprises and individuals has comprised 50 percent of total liabilities, with enterprises accounting for 87 percent and individuals accounting for 13 percent of AMD 5.0 billion-worth borrowing.

In the period January-November 2006, total capital of credit organizations has increased by 75 percent and amounted to AMD 7.7 billion. The growth has been fuelled by statutory fund paid-ins by 7 newly-licensed credit organizations and 4 credit organizations already operating. Undistributed profit of credit organizations has been AMD 150 million.

Total assets of credit organizations have increased by 126 percent and reached AMD 17.8 billion or 3.4 percent of assets of the banking system. In the structure of assets, the main increase referred to loans to individuals. In loan investments, trade loans and agricultural loans have grown considerably, by AMD 2.9 billion and AMD 1.6 billion, respectively.

Insurance market in 2006

In the period January-September 2006, activity licenses of 8 insurance companies (2 closed JS companies: Avuar and Ermed, and 6 limited liability companies: Yerashkhik, Inorient, Goba, Renaissance Insurance, Samgas and H & F) have been terminated. Currently, there are 15 licensed insurance companies operating in Armenia.

There are 7 insurance brokerage firms currently in operation, with an activity license of one firm currently suspended. The amount of assets of insurance brokerage firms as of 30/09/2006 has been AMD 200 million, and the amount of equity AMD 69 million.

Liabilities[3] of insurance companies have decreased by 36 percent and amounted to AMD 3.5 billion. This has been attributable to AMD 2.4 billion reduction in total insurance reserves due mainly to AMD 1.6 billion decrement of the loss reserve.

Capital of insurance companies has increased by 29 percent and reached AMD 5.7 billion, owing to AMD 1.1 billion increment of statutory fund of insurance companies. The minimum normative statutory fund requirement, which should have a threshold of AMD 350 million starting January 1 2007, and AMD 500 million starting January 1 2008, has been a significant contribution to the growth of statutory fund. Net profit of insurance companies has been AMD 360 million.

Assets of insurance companies have reduced by 7 percent and amounted to AMD 9.2 billion. The amount of written insurance premiums has been AMD 5.1 billion of which AMD 3.3 billion transferred to reinsurers. The

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[2] *The credit organization activity has been reviewed by comparing general indicators of 10 credit organizations operative as of 31/12/2005 with general indicators of 15 credit organizations operative as of 30/09/2006.*
[3] *The insurance brokerage firm activity has been reviewed by comparing general indicators of 23 firms operative as of 31/12/2005 with general indicators of 17 firms operative as of 30/09/2006.*

amount of insurance compensation has been AMD 27.1 billion, of which AMD 26.9 billion is the portion of reinsurers.

Securities market in 2006

The number of securities market professional participants increased by 2. These were Tamrazyan and Co. brokerage firm Ltd., having received a brokerage activity license, and Ecapital Asset Management closed JS company, having received brokerage and trust operations activity licenses. There are currently 20 companies that deal with the specialized securities business in the Armenian securities market. Apart from brokerage license, 7 companies out of 20 hold a trust operations activity license and one holds also a depository activity license.

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The amount of total assets of the above-noted companies as of 30/09/2006 has been AMD 10.5 billion. The trade volumes of transactions within the framework of activity of the securities market brokers / dealers in the course of 9 months have been AMD 143.4 billion, and the transactions on t-bills (including repo operations) have accounted for 98 percent of those volumes.

The CBA Board's March 1 2006 Resolution No.85 S has determined the size of 'net assets' in order to qualify as a reporting issuer, as was provided for in the Republic of Armenia Law on Securities Market Regulation, to be AMD 500 000 instead of the previous AMD 50 000.

As of 30/09/2006 there have been 36 reporting issuers operating under supervisory framework of CBA, with net assets of AMD 85.3 billion and number of shareholders reaching 28 914.

The Armenian financial market is also place to the Armenian Central Depository self-regulating organization and the Armenian Stock-Exchange self-regulating organization. The trade volumes of transactions at the stock-exchange carried out in the course of 9 months has amounted to AMD 2.6 billion.

Other financial market participants in 2006

Over 2006, activity licenses of 7 pawnshops have operated revoked, and other 10 pawnshops have received activity licenses. As of 30/09/2006 there have been 64 pawnshops operating in Armenia, with total volume of provided loans amounting to AMD 1.7 billion, and total assets amounting to AMD 1.8 billion.

At the start of the year, 376 exchange offices (including branches) have been licensed to perform foreign exchange purchase and sale operations. At present, however, there are 270 of them. Over the year, activity licenses of 147 exchange offices have operated revoked (of which 21 upon their request), and 41 exchange offices have received activity licenses.

ARMANE GAZPA Ltd., has been licensed to perform as a currency dealer. There are 7 legal entities that have received licenses to perform as currency dealers in Armenia.

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There are 2 money transfer organizations operating in the Armenian financial market: these are Haypost closed JS company and Armenian Express closed JS company. There is an organization (Armenian Card closed

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JS company) involved in processing and clearing of payments instruments and payments and settlements documents. The volume of assets of Armenian Card has been AMD 1.1 billion, as of 30/09/2006.

Banking system developments forecast for 2007

The recent years' developments in the banking system will persist over 2007: there will be a record of growth of capital, liabilities and assets. The forecasts show that in 2007 loan investments will again grow faster over total assets.

Total capital of the banking system in 2007 is forecast[4] to grow approximately by 25 percent (by AMD 31 billion).

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The amount of profit of the banking system over 2007 will exceed undistributed profit by 25 percent, reaching about AMD 20 billion. This growth will be mainly attributable to increased interest income on loan investments.

It is expected that total liabilities of the banking system over 2007 will grow by 10 percent (by AMD 38 billion). This growth will be mostly determined by a forecast nearly 10 percent increase in deposits (by AMD 30 billion), owing exclusively to the growth of resident deposits. The main factors for measuring such growth of deposits included the recent trends on deposit growth with individual banks, increased household income and interest rate of savings accounts, and banks' demand for deposits, household sensitivity to the individual deposits guarantee scheme, and etc. The growth of total liabilities will be boosted up to a certain extent by increased amounts of funds disbursable to banks under various international projects over 2007 and other non-deposit resources.

In 2007, total assets of the banking system are forecast to grow by 13 percent (by AMD 69 billion).

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The forecasting of growth of the banking system assets is a result of an expected increase in liabilities and capital. About 70 percent of excess assets is forecasted to be placed with loan investments and 10 percent to be invested with government securities. As a result, the growth of loan investments over 2007 will be 20 percent (AMD 49 billion), and the growth of investments with government securities will be 8 percent (AMD 7 billion).

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[4] *The forecast made for this section was based on:*

- *Strategic programs submitted by commercial banks, and expert assessment made by summarizing and analyzing these programs;*
- *Recent trends in the banking sector;*
- *Typical features of the banking sector in 2006, and the likelihood that such features would persist and the new ones would emerge over 2007; and*
- *The impact of anticipated developments in the real sector on generalized banking system indicators in 2007.*

[5] *Here, financial sector institutions include banks, credit organizations, insurance companies, and specialized securities market dealers.*

Measures to be taken by CBA in 2007

CBA is planning a handful of measures over 2007 to foster a healthy competition environment in the Armenian financial sector, make sure the system is liquid and stable, and to enhance the role of financial intermediation.

In 2007, CBA will virtually revise and introduce a new supervision framework. This will presume moving from a financial sector institution-based[5] supervision model to a functional regulation / supervision model. Specifically, there will be a clear distinction between the prudential functions and the regulatory / supervisory functions to ensure market conduct and defend the financial system consumer interests. As such, plans include preparing a program of actions to defend the interest of consumers, which would help enhance confidence in the financial market and raise financial intermediation.

CBA will pay great attention to make sure quality financial services and products are accessible to different segments of consumers. A methodology for creating ratings will be developed to measure these criteria, and the results of measurement will be used to issue ratings to financial organizations, which will be published periodically.

In view of structural changes to approaches of supervision of the financial system over 2007, plans will include amending regulatory papers that govern the supervisory function of CBA, making relevant changes thereto and developing new ones.

In light of securities market development, it will be important to take a handful of measures to support the strategy of increasing the number of the securities market users.

CBA will continue studying the perspectives for the Armenian securities market development with the Swedish stock exchange operator OMX and implementing the program of development recommendations.

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There will be a sum-up of the work of drafting the Republic of Armenia Law on Securities Market. Adopting a new law is motivated with a need to comply the regulatory framework with the European criteria, and implementation of a policy designed to foster the securities market development.

The securities market development concept envisages some other measures, such as continued active work with potential issuers, change of status of the stock-exchange and central depository from a self-regulating entity to a commercial organization, access of banks to the securities market, and etc.

Pursuing improvement on the sub-legislative field regulating the securities market, there'll be changes over 2007 relating to direct access of banks and credit organizations to the securities market, creation of a two-tier custodian system, determination of prudential economic standards to specialized securities market dealers, revision of content of information in the securities prospectus and, thereby, in the reports by issuers, and changes relating to some other areas. CBA in the meantime will envisage to support the issuance of securities through public offer.

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Efforts commenced in 2006 in the area of insurance will carry on consistent with the concept of reforms for development and oversight of the Armenian insurance market. Plans will include making sure that the domestic insurance legislation complies with the European criteria and those of developed by International Association of Insurance Supervisors (IAIS), on the one hand, and establishing requisite infrastructures for a normal functioning of the insurance market in the form of actuaries, registration and evaluation of insurance events and, concurrently, creating an adequate supervision and regulation framework, on the other.

A new draft to the law on insurance will be submitted to the Government over 2007. The draft will contain solutions to a number of issues that are not regulated clearly or have failed at all to be included in the applicable Republic of Armenia Law on Insurance. Specifically, from the regulation and supervision point of view, there is need to classify insurance by type, category and subcategory, differentiate between life and non-life insurances, introduce corporate governance principles for insurance companies, determine a regime for activities of foreign insurance firms, clarify provisions that regulate activities of insurance brokers, introduce the concept of insurance secret, determine a procedure for liquidation of insurance companies, and develop new approaches to sanctions and restructuring of insurance companies.

Plans for 2007 include putting further effort to establish mechanisms for an effective performance of the insurance market, which is a material precondition for a mandatory insurance. The following four projects were already developed in 2004:

The project of registration of events of road accidents pursues defining clear and effective procedures that would raise confidence of the insured in the system.

The insurance statistics center would promote the creation of a reliable database for measuring and managing insurance risks and determining respective tariffs.

The goal of the project of establishing actuaries is to introduce, educate and develop the specialty of an actuary in Armenia.

The input of the mechanism of appraisal would shape a reasonable price for evaluation of insurance risks and recompense for the damage caused.

The creating of an insurance regulation and supervision framework will remain as one of the principal directions for the development of insurance. In 2006, the Board of CBA approved a number of normative regulations that will take effect in 2007. These are: a new chart of accounts and guidelines to usage, new regulations on regulatory requirements and insurance reserves, a regulation on insurance rates justification, a directive for filling up and presentment of reports to CBA by insurers, template reporting forms and filling up of financial reports published by insurers. Over 2007, there'll be revision of the regulation of typical activities of insurance agents, and of the requirements to insurance brokers' reporting to CBA. Further in 2007, CBA will also focus on designing tools for early warning of financial

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deterioration of insurance companies and preparing manuals for implementation of inspections. Consistent with legislative and sublegislative changes, further tests for qualification assessment of managers of insurance industry will be reviewed. The regulatory and supervisory field for Armenian insurance companies and insurance brokers business will be complied with European directives and principles of IAIS.

In 2007, CBA will prepare a draft law on Financial Conglomerates and required regulatory sub-legislative acts pursuant to the law.

For improving sound banking supervision, as well as enhancing the quality of supervision, CBA intends a number of measures, particularly:

- Preparation and input of additional requirements and standards for raising staff qualification; and
- Input of new principles for evaluation of supervisory work effectiveness.

Over 2006, seminars relating to Basle II Accord have been organized for bank managers and staff. A workgroup from representatives of commercial banks and CBA has been composed to coordinate the process of Accord introduction. Besides, drafts for relative changes have been prepared concerning the standardized approach to part 1 of the Basle II Accord (adjustment of risk weights, inclusion of market risk in a calculation of capital adequacy) and the input of methodology for operational risk assessment. The above-mentioned normative changes are expected to enter into force in 2007.

Over 2006, there has been a considerable demand for mortgage loans in Armenian economy. In 2007, CBA will take several actions about the improvement of mortgage loans practice. Particularly, CBA will continue cooperating with KfW: the German Development Bank will provide on-lending to eligible banks and credit organizations during 2007 at the amount of EUR 12 million under the mortgage market development project.

CBA expects to be proactive in 2007 in supporting the development of the secondary mortgage market. Specifically, a draft law on Assets Securitization and Asset-backed Securities will be prepared. Adopting this law is important as it would enable banks and credit organizations to issue mortgage securities for mortgage loans financing and also borrow from the capital market. On the other hand, the mortgage securities would serve as an alternative instrument for investors.

Over 2007, CBA will continue its active participation in the processes regarding reforms in the pension system.

The purpose of an improved system input is to increase effectiveness of the pension system performance, hence its further enlargement and development by means of increasing financial intermediation and creating long-term funds in the economy.

Under the Concept of Financial System Stability Framework of CBA, over 2007 actions will be continued to identify risks emerging from the activities of financial system players, to disclose and review risks coming from the domestic and external economies, and to evaluate their impact in respect of financial stability. To ensure sustainability of the

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financial sector performance, CBA will carry on supervising and regulating banking, insurance and securities markets and activities of other financial system players.

DEVELOPMENT OF PAYMENTS AND SETTLEMENTS RELATIONS

CBA will carry out work over 2007 to develop the Armenian payments and settlements system in the following directions:

1. Improving the regulatory framework for, and determining general principles of, activities of payments and settlements organizations;
2. Implementing oversight of the payment and settlements system; and
3. Supporting development of non-cash payments in Armenia.

Over 2007, CBA will continue regulating the payments and settlements system of Armenia. Particularly, there will be further improvement of the regulatory field based on the Republic of Armenia Law on Payment System and Payments and Settlements Organizations, adopted by the National Assembly in 2004. This will enable to regulate payments and settlements operations as well as activities of and control over payments and settlements organizations in Armenia. Besides, CBA will place focus on payment instruments / products introduced and applicable on the basis of new technologies.

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CBA will continue circulating government and corporate securities and developing clearing and payment procedures that contain minimal risks.

Given the policy of identifying and managing risks in financial systems and considering the trends of development of the payments and settlements system, CBA will continue introducing the principles of the payments and settlements system oversight in Armenia and regulating related processes.

CBA will, in consultation with the Government, continue taking actions to encourage non-cash payments and develop the retail market. In the meantime, in collaboration with the banking system, government departments and other concerned parties, efforts will be made to prevent and, where needed, to minimize and/or find solution to the factors that hinder the execution of non-cash payments.

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Methodology to Forecast Movement in Items "Goods" and "Services" of BoP Current Account

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The approach for a forecast of items "Goods" and "Services" of the current account of the balance of payments has been almost the same as for forecasts of indicators in the monetary policy programs in the past years. The quarterly data[1] on Armenia's foreign trade turnover serves as a basis for a forecast of "Goods" and "Services" of the BoP current account by commodity and service (inclusive of the period from 1996 to the second quarter of 2006).

In forecasting the export of the commodities, these commodities have been broken down into two groups, according to two versions of forecast:

1. The forecast of the volume of commodities of the first group relies on the trends of the previous year. Economic growth in partner countries in recent years, investments in Armenia in 2006 and in coming 2007, and information on the anticipated developments in different sectors of the economy is considered in the forecast. The growth (decrease) rate for each commodity in the group is computed. The indicator of such a rate is then multiplied by the 2006 data to produce the 2007 data. The above method is used to assess the volume of the commodities as follows:
   - Fats and oils,
   - Mineral production
   - Goods of chemical production,
   - Plastics and articles thereof,
   - Skins and articles of leather
   - Wood and articles thereof,
   - Paper and article of paper,
   - Textile articles
   - Footwear, headgear, umbrellas,
   - Stone, plaster, cement,
   - Machinery and equipment,
   - Industrial manufacturing
   - Works of art and antiques
   - Products of vegetable origin,
   - Products of prepared food,
   - Machinery and apparatus
   - Means of transport,
   - Base metals and articles thereof.
2. The second group comprises commodities, the turnover of which depends on public agreements or international private contracts. The group includes item "Precious and semi-precious stones, precious metals and articles thereof" which is expected to report

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[1] *The commodity turnover data are taken from the NSSA bulletin and are presented in million of US Dollars.*

an increase in exports and imports over 2007 comparing to the previous year decrease of export and import volumes.

For a forecast of imports, the commodities included in imports have been grouped as follows, according to three versions of forecast:

1. *Consumer goods*, which include:
   - Animals and products of animal origin,
   - Fats and oils of animal and vegetable origin,
   - Products of prepared food,
   - Footwear, headgear, umbrellas,
   - Textile articles.

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The import of consumer goods is forecast as a function of the private sector's gross national disposable income and the nominal exchange rate. The forecasts are made by the ADL regression model. In using the Census X-12 Multiplicative method, time series of dependent and independent variables, opted for regression, is smoothed, and then regression is made using smoothed series. The actual figures are computed using the growth rate of smoothed indicators after forecasts. The results of the regression analysis for imported consumer goods are presented in Table 1.1.1.

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Table 1.1.1. Results of the regression analysis for consumer goods imports

Independent variable / Dependent variable	C intercept	GNDI private (-1) lag, logarithmic	Nominal exchange rate, logarithmical	D*	Ratio of determination (R^2)
Import of consumer goods, logarithmical expression	3.60 (2.42)**	0.51 (10.3)	-0.48 (-2.47)	-0.14 (-3.15)	0.93

* *D – dummy variable.*
** *The figure in parenthesis is the value of T- statistics.*

2. *Raw materials*, which include:
   - Mineral production,
   - Goods of chemical production,
   - Plastic, rubber
   - Skins and articles of leather
   - Wood and articles thereof,
   - Paper and articles thereof,
   - Stone, plaster, cement,
   - Base metals and articles thereof.

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Import of raw materials is forecast as a function of GDP (as these commodities further contribute to the process of production in the domestic economy and thus contribute to the GDP) and its previous lag. Services which do not consume raw materials and net indirect taxes are excluded from GDP. The forecasts are made through the ADL model.

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Table 1.1.2. Results of the regression analysis for imports of raw materials

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Independent variable / Dependent variable	C intercept	GDP (net), logarithmic	Raw materials import (-1) lag	D*	ratio of determination (R^2)
Import of raw materials, logarithmical expression	0.37 (1.5)**	0.43 (5.85)	0.37 (2.96)	-0.19 (-4.1)	0.86

* *D – dummy variable.*
** *The figure in parenthesis is the value of T statistics.*

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3. *Investment goods*: the forecast for the import of these goods is based on the trends of previous years and the 2007 economic activity, and information on expected foreign investment. Investment goods include:
   - Machinery and equipment,
   - Machinery and apparatus.

4. "*Precious and semi-precious stones, precious metals and articles thereof*" are forecast taking into account the volume of these exports executed on a contractual basis, and information on the possible extension of output of the sector.

5. Other goods, which include the commodity groups not included in the above items. The forecast for the exports is based on the trends of the previous years. These goods are:
   - Products of vegetable origin,
   - Means of transport,
   - Industrial manufacturing
   - Works of art and antiques.

The forecasts for different commodities groups are presented in the data as Exports (FOB) and Imports (CIF), as the existing statistics on the commodities is expressed in FOB prices for exports, and CIF prices for imports. The monetary policy program relies on this data to evaluate the Exports (credit) and the Imports (debit) data in the following manner:

- The balance of payments data for 2005-2006 are used to calculate the ratios for Exports (credit)/Exports (FOB), and for Imports (debit)/Imports (CIF). The quarterly forecast for "Commodities" for 2007 is based on the average ratio of 2005-2006 quarterly data. The calculation is provided in the table.
- The forecasted Exports (FOB) of US$ 1082.5 million and Imports (CIF) of US$ 2509.1 million are multiplied by the ratios above mentioned to produce the result for the amount of the Exports (credit) of US$ 1119.0 million and the Imports (debit) of US$ 2210.2 million.

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Table 1.1.3. Methodology of estimation of Exports (credit) and Imports (debit) data using the Exports (FOB) and Imports (CIF) data

	2003	2004	2005	2006*	2007
Exports (credit)	696.1	738.3	1004.9	1038.1	1119.0
Exports (FOB)	688.5	722.9	973.9	1003.1	1082.5
Ratio	1.011	1.021	1.032	1.035	
Imports (debit)	1130.2	1196.3	1592.8	1883.1	2210.2
Imports (CIF)	1279.5	1350.7	1801.7	2141.3	2509.1
Ratio	0.883	0.886	0.884	0.879	

* *2006 year data are the estimations of the CBA.*

The forecast for the export and import of non-factor services is made on the basis of data of the non-factor services of BoP (Table 1.1.4). Non-factor services have been grouped into the several groups:

- Transportation,
- Traveling,
- Computer and information service,
- Other nonfactor services.

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The forecast of the export of non-factor services is made as follows: for each sector, the forecast covers the exports based on the previous trends taking into consideration the dynamics of these exports and the development prospects. The exports of all four groups are then added to achieve an assessment of the total exports of the non-factor services.

The imports of the non-factor services are forecast as a function of the imports of the goods and the private sector's gross national disposable income (GNDI). The results of the regression analysis are presented in Table 1.1.4 below.

Table 1.1.4. Regression analysis for import of services

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Dependent variable \ Independent variable	C intercept	Import of goods (first difference)	GNDI private	D'043	D'061	Ratio of determination (R^2)
Import of services (first difference)	-0.16 (-0.2)**	0.061 (2.2)	0.062 (4.2)	-13.4 (-3.9)	-8.87 (-2.61)	0.77

* *D – dummy variable.*
** *The figure in parenthesis is the value of T- statistics.*

Table 1.1.5. Exports (million US Dollars)

		2004	2005	2006	2007	2005/2004	2006/2005	2007/2006
1	Animals and products of animal origin	6	7	9	10	16%	30%	7%
2	Products of vegetable origin	7	10	15	16	31%	56%	6%
3	Fats and oils of animal and vegetable origin	0	0	4	4	315%	1549%	9%
4	Products of prepared food	69	97	102	116	40%	5%	14%
5	Mineral production	100	93	129	140	-6%	38%	8%
6	Goods of chemical production	2	3	5	5.9	54%	71%	10%
7	Plastic and rubber goods	10	9	30	32	-14%	247%	7%
8	Skins and articles of leather	1	2	3	3	36%	86%	11%
9	Wood and articles thereof	2	2	4	4	-2%	110%	10%
10	Paper and articles thereof	1	5	6	6	475%	2%	9%
11	Textile articles	44	37	40	42	-16%	8%	5%
12	Footwear, headgear, umbrellas	0	0	2	2	-13%	1539%	12%
13	Stone, plaster, cement	3	5	12	13	84%	123%	8%

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14	Precious and semi-precious stones, precious metals, articles thereof	299	336	303	321	12%	-10%	6%
15	Base metals and articles thereof	138	322	279	301	134%	-13%	8%
16	Machinery and equipment	22	28	29	32	28%	5%	10%
17	Means of transport	9	11	15	16	18%	34%	6%
18	Machinery and apparatus	7	5	13	13	-32%	160%	6%
19	Industrial manufacturing	1	1	2	2	-56%	201%	11%
20	Works of art	0	0	1	1	148%	246%	15%
	Total (FOB)	723	974	1003	1083	35%	3%	8%
	Total (credit)	738	1005	1038	1119	36%	3%	8%

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Table 1.1.6. Imports (million US Dollars)

		2004	2005	2006	2007	2005/2004	2006/2005	2007/2006
1	Animals and products of animal origin	40	45	42	49	13%	-7%	15.9%
2	Products of vegetable origin	109	98	101	121	-10%	3%	19.4%
3	Fats and oils of animal and vegetable origin	21	26	30	35	27%	16%	15.9%
4	Products of prepared food	113	146	166	192	30%	13.4%	16.2%
5	Mineral production	209	297	359	415	42%	20.8%	15.6%
6	Goods of chemical production	85	118	149	171	39%	26%	15.0%
7	Plastic and rubber goods	36	48	68	78	36%	40%	15.5%
8	Skins and articles of leather	2	3	4	5	66%	30%	16%
9	Wood and articles thereof	10	13	22	25	35%	67%	15.2%
10	Paper and articles thereof	25	33	41	47	32%	24%	15.2%
11	Textile articles	47	46	60	70	-2%	31%	16.2%
12	Footwear, headgear, umbrellas	5	12	18	21	120%	52%	16%
13	Stone, plaster, cement	22	34	45	52	51%	34%	15.6%
14	Precious and semi-precious stones, precious metals, articles thereof	292	348	302	321	19%	-13.0%	6.1%
15	Base metals and articles thereof	61	94	154	178	55%	64%	15.3%
16	Machinery and equipment	136	232	301	382	72%	29.3%	27.0%
17	Means of transport	93	152	192	229	64%	27%	19.0%
18	Machinery and apparatus	29	30	50	75	5%	66%	50.8%
19	Industrial manufacturing	18	22	34	41	24%	57%	18.4%
20	Works of art	0	3	2	2	22512%	-24%	-9.5%
	Total (CIF)	**1351**	**1802**	**2141**	**2509**	33%	**18.8%**	**17.2%**
	Total (debit)	**1196**	**1592.8**	**1883**	**2210**	33%	**18.2%**	**17.4%**

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Table 1.1.7. Balance of payments (million US Dollars)

	2003	2004	2005	2006					2007				
				I Q	II Q	III Q	IV Q	2006	I Q	II Q	III Q	IV Q	2007
Current account/GDP													
Current account (including official transfers)	-190.6	-161.6	-193.3	-97.5	-90.2	-61.5	-91.9	-341.0	-120.7	-114,5	-93,8	-153,5	-482,5
Current account (excluding official transfers)	-250.8	-222.6	-260.6	-106.9	-115.4	-70.2	-109.7	-402.2	-132.9	-131,9	-106,2	-173,9	-544,9
Trade balance	-434.1	-458.0	-587.9	-174.7	-198.0	-221.2	-251.1	-845.0	-218.4	-263,3	-279,9	-329,7	-1091,3
Export	696.1	738.3	1004.9	193.4	261.9	270.8	312.0	1038.1	222.6	275,6	299,7	321,1	1119,0
Export (excluding precious and semi-precious stones and metals)	345.4	439.1	668.5	135.1	181.6	186.3	232.0	735.0	159.5	192,0	208,7	237,6	797,8
Import	-1130.2	-1196.3	-1592.8	-368.1	-459.9	-492.0	-563.1	-1883.1	-441.0	-538,9	-579,6	-650,7	-2210,2
Import (excluding precious and semi-precious stones and metals)	-797.1	-904.7	-1245.1	-297.2	-380.8	-410.5	-492.4	-1580.8	-363.4	-451,6	-498,7	-575,1	-1888,9
Services (net)	-68.3	-70.7	-59.3	-9.7	-15.8	-6.7	-17.5	-49.7	-11.0	-18,6	-2,1	-18,8	-50,6
Credit	207.4	246.6	331.8	64.4	86.5	118.7	96.3	365.9	76.2	99,9	142,7	110,7	429,6
Debit	-275.7	-317.4	-391.0	-74.1	-102.3	-125.4	-113.9	-415.7	-87.2	-118,6	-144,9	-129,5	-480,1
Income (net)	93.4	36.7	44.7	17.6	8.0	31.0	19.2	75.8	23.4	25,1	31,8	18,6	98,8
Private transfers (net)	158.3	269.4	341.9	59.9	90.4	126.7	139.8	416.7	73.1	125,0	144,0	156,0	498,1
Official transfers (net)	60.2	61.0	67.3	9.4	25.1	8.7	17.9	61.1	12.3	17,4	12,4	20,4	62,4
Capital and financial account	236.3	189.8	376.8	92.8	172.4	114.6	176.7	556.5	144.8	186,3	151,7	198,1	680,9
Capital transfers	89.9	34.3	50.9	10.2	19.4	5.0	5.0	39.6	12.5	12,5	12,5	12,5	50,0
Foreign direct investments	120.5	216.5	251.5	45.5	62.1	75.0	80.0	262.6	52.0	70,9	85,7	91,4	300,0
Portfolio investments	0.3	-2.9	-1.6	-0.6	8.8	0.0	0.0	8.2	0.0	0,0	0,0	0,0	0,0
Public sector (net)	-3.1	38.5	36.1	7.4	28.6	14.5	15.6	66.2	38.6	20,4	19,2	20,2	98,4
Disbursements	92.3	87.7	49.7	11.9	31.7	18.6	18.6	80.9	43.5	23,5	23,5	23,5	114,0
Amortization	-95.5	-49.3	-13.7	-4.6	-3.1	-4.1	-3.1	-14.8	-4.9	-3,1	-4,3	-3,3	-15,6
Other capital	28.7	-96.7	40.0	30.5	53.4	20.0	76.1	180.0	41.7	82,5	34,4	74,0	232,5
Privatization account	2.2	-19.9	-57.4	-0.1	43.0	-43.0	43.6	43.6	0.0	42,0	0,0	0,0	42,0
Net foreign assets of banks	-42.4	-30.5	63.7	15.9	8.5	2.8	2.8	30.1	3.8	3,8	3,8	3,8	15,0
Other private sector	69.0	-46.3	33.7	14.6	1.9	60.2	29.6	106.3	38.0	36,7	30,6	70,2	175,5
Overall balance	45.7	28.1	183.5	-4.6	82.1	53.1	84.8	215.4	24.1	71,8	57,9	44,6	198,4
Change in gross international reserves (-growth)	-46.3	-25.5	-162.1	6.6	-74.6	-49.9	-84.4	-202.3	-28.3	-69,1	-56,3	-40,8	-194,4
Change in gross international liabilities (+growth)	2.1	-1.1	-26.0	-2.9	-9.1	-3.2	-0.5	-15.6	4.2	-2,8	-1,7	-3,8	-4,0
International Monetary Fund (net)	1.6	-6.4	-26.0	-5.2	-6.3	-2.2	-7.5	-21.3	-3.3	-2,8	-1,7	-3,8	-11,5
Purchase/disbursement	27.1	28.2	10.2	0.2	4.5	0.2	4.7	9.6	0.0	4,7	0,0	4,7	9,4
Repurchase/repayment	-25.5	-34.6	-36.1	-5.4	-10.8	-2.4	-12.2	-30.9	-3.3	-7,5	-1,7	-8,4	-20,9
Other (net)	0.6	5.3	0.0	*2.3*	*-2.8*	*-1.0*	*7.1*	5.6	*7.5*	*0,0*	*0,0*	*0,0*	7,5
Financial gap	1.6	1.5	-4.5	-0.9	-1.6	0.0	0.0	-2.5	0.0	0,0	0,0	0,0	0,0
Errors and omissions	-1.6	-1.5	4.5	*3.9*	*0.0*	*0.0*	*0.0*	3.9	0.0	0,0	0,0	0,0	0,0
Vertical check	0.0	0.0	0.0	3.0	-1.6	0.0	0.0	1.4	0.0	0,0	0,0	0,0	0,0

Forecast of Private Transfers and Income of Seasonal Workforce

Although Russia has been obviously benefiting from high oil prices in world markets in the recent years, the reliance of its economy on world oil prices is rising. Moreover, the Russian economy is starting to see symptoms of the "Dutch disease" that is reflected through real exchange rate appreciation and growing prices and incomes in construction and in service sectors[2]. These phenomena would possibly demonstrate themselves in the Armenian economy, too.

As well as being one of the main economic partners to Armenia, Russia is the main source of private transfers and income of seasonal workforce in the factor incomes[3]. And, most importantly, Russia is a country where a prevailing part of the Armenian compatriots is employed in the nontradable sector, i.e. trade and construction[4]. Considering the above circumstance and high transfers concentration, and that transfers are an essential factor in financing of current account and stimulating of domestic demand, it may be concluded that Armenia indirectly bears the consequences of such a disease.

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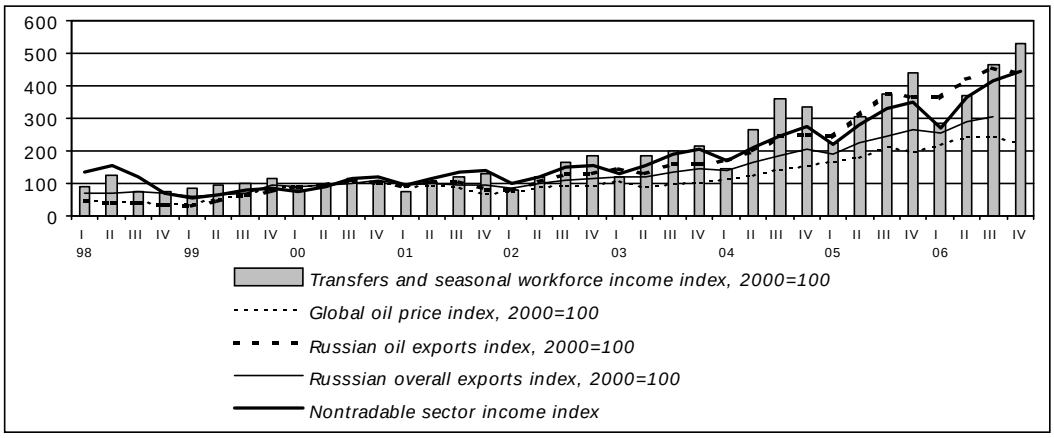
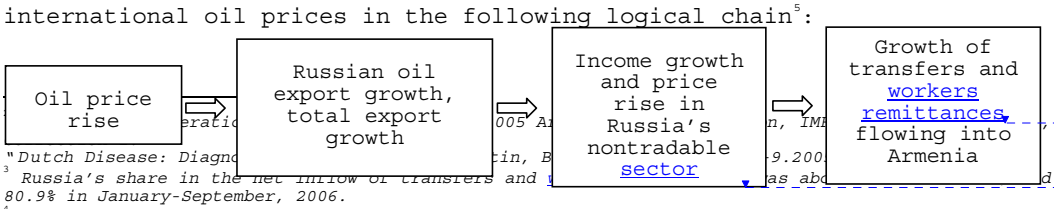
Chart 1.2.1



According to the chart, the inflowing transfers depend on international oil prices in the following logical chain[5]:



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"Dutch Disease: Diagno tin, B 9.200

[3] Russia's share in the net inflow of transfers and as abo d 80.9% in January-September, 2006.

[4] Source: the CBA's survey on disclosing the structure of transfers received from abroad on behalf of physical persons for non-commercial purposes.

[5] Total private transfers and seasonal workforce income were used in the chart as the transfer and seasonal income indicators by country are for several years. Since Russia ranks atop in terms of net inflow of money transfers, the total private transfers and seasonal workforce income may be used as a proxy indicator.

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Unlike 2006 when yearly figures were used and elasticity ratios computed, now the regression analysis has been made on the basis of quarterly time series of the same logical chain.

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Table 1.2.1. Results of regression analysis of Russian oil export and of international oil prices

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Independent variable / Dependent variable	C intercept	International oil price (first difference)	Previous lag of oil export	D052*	D062*	Ratio of determination (R2)
Oil export (the first difference)	4.03 (2.20) **	0.85 (7.08)	0.24 (2.55)	24.65 (3.46)	13.85 2.72	0.82

**D – dummy variable.*

*** The figure in parenthesis is the value of T- statistics.*

1. The increase of FX funds inflow in the case of oil export contributes to the growth in income and prices in the nontradable sector. Chart 1.2.2 provides the dynamics of oil export and incomes in the nontradable sector. That said, the nominal growth in the nontradable sector (retail trade and construction) is taken as a proxy for income. This nominal growth is brought into dollar terms as the transfers inflowing from Russia are mainly in US dollars, and the growth of dollar income of the Armenian compatriots employed in the nontradable sector is important.

Chart 1.2.2

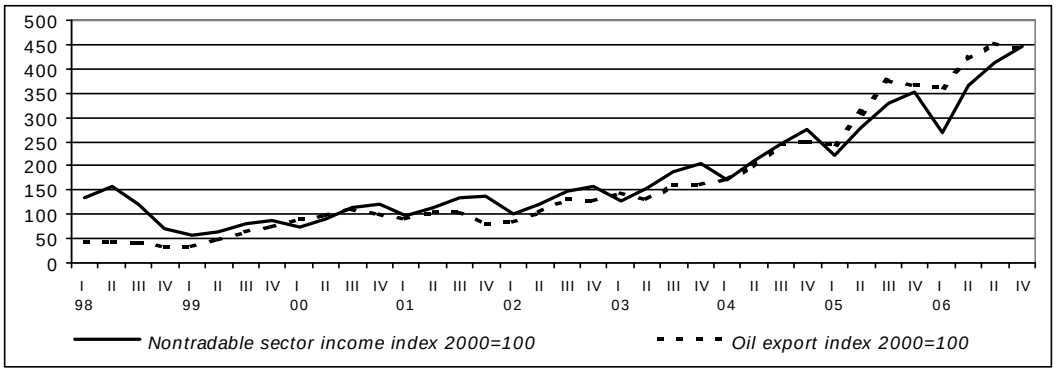

Table 1.2.2. Results of regression analysis of income on oil export and nontradable sector

Independent variable / Dependent variable	C intercept	Export of oil (first difference)	Seasonal variable	D062*	Ratio of determination (R2)
Income on nontradable sector (the first difference)	18.28 (6.35) **	0.53 (6.43)	-62.68 (-11.64)	47.01 5.55	0.91

D – dummy variable.
** The figure in parenthesis is the value of T -statistics.*

2. Economic activity in the nontradable sector boost growth of transfers and income of seasonal workforce from Russia.

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Chart 1.2.3

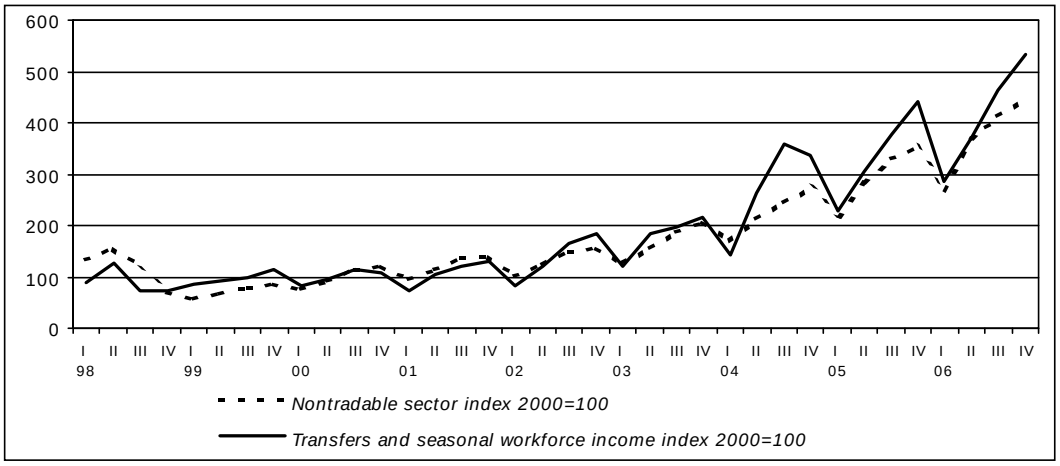

Table 1.2.3. Results of regression analysis of income on Russian nontradable sector and of transfers and income of seasonal workforce

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Independent variable / Dependent variable	C intercept	Income on nontradable sector (first difference of logarithmical expression)	Ratio of determination (R2)
Transfers (first difference of logarithmical expression)	-0.04 (-1.86)*	1.54 (11.83)	0.82

The figure in parenthesis is the value of T- statistics.

By the first regression equation the volume of Russian oil export is forecast, and then considering the export volume the income on nontradable sector is estimated, and after that the indicators of the latter are used to forecast the transfers and remittances.

Considering the above logical chain, the change of the world oil prices may be used as a leading indicator to estimate the growth of transfers and seasonal workforce income from Russia.

According to the CBA estimates the international oil prices in 2007 would average US$ 73.1 per barrel[6] or grow by 10.6%, and Russian oil exports would increase by 16.0%. According to this scenario it is anticipated that private transfers and seasonal workforce income would rise over 2007 by 19.5%.

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At the same time, if there occurs a risk of decrease in oil price, or the international oil price remains the same as the previous year, the transfers and seasonal workforce income will rise by 14.5%.

[6] *See the detailed estimations for international oil prices in section "Export prices" ".*

Analysis of the Results of the Model "Changes in Wages, Production and Prices under International Trade"

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The model is focused on comparing productivities and wages in Armenia and the rest of the world, and evaluating their impacts on output and relative prices[7].

Depending on the economic relations between Armenia and the rest of the world, the relative prices in the model are represented through the formula as follows:

$$\ln\left(\frac{P}{P^*}\right) = -\frac{1-\exp/GDP}{1-\exp/GDP+imp/GDP} \qquad (1)$$

where:

P – is dollar price of domestic goods,

P- is world prices in dollars,*

$\exp/GDP$ *- is real export/GDP ratio,*

imp/GDP *- is real import/GDP ratio.*

If we substitute Dollar prices of domestic goods by Dram prices times USD/AMD nominal exchange rate in the $\left(\frac{P}{P^*}\right)$, the real exchange rate will be produced. So, the real exchange rate can be used instead of the $\left(\frac{P}{P^*}\right)$. Since the formula includes total exports and total imports, rather than just trade relations with any partner country, the real effective exchange rate would be correct to use:

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$$\ln REER = -\frac{1-\exp/GDP}{1-\exp/GDP+imp/GDP} \qquad (2)\text{, while}$$

$$Z^H = \frac{1-\exp/GDP}{1-\exp/GDP+imp/GDP} \qquad (3)$$

where: $\ln REER = -Z^H$

$\ln REER$ *- is the index of Armenian Dram's real effective exchange rate in terms of logarithms,*

Z^H *- is the range of goods produced in the country.*

The theoretical logic lies in the following: the relationship between the range of domestically produced goods and the relative prices is negative that is the decrease in the range of domestically produced goods (Z^H) will lead to a price rise, and vice versa. The increase in domestically produced goods (Z^H) means that the imported goods are substituted by relatively cheap domestically produced goods, owing to comparative advantages obtained in the nontradable sector of the economy.

[7] *The model is detailed in "Changes in wages, production and prices in terms of international trade", the CBA Bulletin, Q3, 2003.*

According to the formula (1), export growth has a dual impact. On the one hand, the growth of exports, due to increasing productivity, will mean that the part of the nontradable goods turns into tradable goods, owing to price advantages. On the other hand, the productivity growth in the tradable sector gives rise to wages both in the tradable and nontradable sectors, which leads to the loss of external competitiveness in the nontradable sector, decline in the range of domestically produced goods (Z^H) and substitution of the part of the nontradables by the imported goods. Besides, the wage growth, due to the productivity growth, will lead to an increase in demand and stimulate new quality imports, which in turn will result in the shrinking range of domestically produced goods and a price rise. As a result, the second factor prevails among the above-mentioned factors, and the export growth entails a decrease in the range of domestically produced goods and a price rise.

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The import growth leads Z^H to decline. It implies not only a loss of the comparative advantages in the nontradable sector due to a price rise in the same sector, but also means the growth of imports of new quality goods, owing to increasing demand. That is to say, the decline of the range of domestically produced goods is determined by a widened range of imported goods rather than a substitution of the domestically produced goods by the imported ones.

There is another important circumstance: besides the impacts created by fundamental factors in the long run, the relative prices in the short run are also affected by transfers. The model enables measuring the impact of transfers on the relative prices[8].

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So, in addition to the key factors described in the model which are *per se* included in the export and import dynamics, the transfers can be taken as another variable that would describe short-term fluctuations:

$$\ln REER = -Z^H + \ln(TR) \qquad (4)$$

where:

$\ln(TR)$ - *is transfers inflowing to Armenia, in terms of logarithms.*

The transmission channel of transfers is as follows: the country-transferee will spend a certain part of the transfer on nontradable goods produced domestically, and such an excessive demand raises not only prices of nontradables, but also wages. The latter causes movement of resources from the tradable sector and reduction in volumes of output in the tradable sector. As a result, a relative supply of tradable goods reduces in terms of foreign country exports, and, under such conditions, relative wages and relative prices in Armenia rise. An increase in relative wages, with all else being equal, means a loss in external competitiveness. This leads a certain part of domestically produced tradable goods to become nontradable goods and a certain part of

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[8] The model includes the Keynesian approach of transfer impact on relative prices. See the detailed Keynes and Ohlin approaches in "Foundations of International Macroeconomics", Maurice Obstfeld and Kenneth Rogoff, 1996.

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nontradable goods of foreign countries to become tradable, hence pushing Z^H domestically produced range of goods to decline.

The forecast of the real effective exchange rate of the Armenian Dram for 2007 involved as follows: a behavioral equation was built and coefficients of the real effective exchange rate dependent on Z^H and transfers were estimated through regression. Then, the equation (3) was used to calculate Z^H for 2007, based on the CBA's forecast for quarterly indicators of imports and exports. The item "Precious stones and metals" was excluded from the calculations. The calculations made for 2007 show a reduction in the range of domestically produced goods in comparison with the previous year. Such a reduction, despite a dropping ratio of real exports/GDP (the growth of real GDP will outstrip the growth of real exports), will be determined by a rising ratio of real imports/GDP (real import will grow in both absolute value and as a share in GDP). Further, the quarterly estimations of Z^H for 2007 were used in the regression analysis in order to forecast the level of real effective exchange rate for 2007. As for the transfers, the time series of private transfers and remittances of seasonal workers was used in the model, while 19.5% growth, as stated in the program, was used for the 2007 indicator.

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Table 1.3.1. Results of regression analysis

Dependent variable \ Independent variable	C intercept	Range of domestically produced goods (ZH)	Transfers Log(TR(-1))	D1*	D2*	Ratio of determination (R^2)
Armenian Dram's real effective exchange rate D(LOG(REER))	0.05 (0.98)**	-0.25 (-4.24)	0.03 (3.45)	-0.05 (-2.11)	0.05 (3.22)	0.67

* *D - dummy variable.*

** *The figure in parenthesis is the value of T- statistics.*

Due to the expected developments of external sector in 2007 and according to the results of regression analysis the real effective exchange rate would appreciate by 11.4%.

Model 1 – 2 – 3

The Model defines by how much the country's real effective exchange rate is consistent to the country's fundamental development, how large a shock it must sustain, and what is the equilibrium real effective exchange rate due to key objectives of the economy.

Model DLR (Devarajan, Lewis, Robinson)[1] is an economic model with a definite primary equation, where the real exchange rate or domestic price in dollar depends on foreign inflation (purchasing power parity theory) and it includes components typical for the models of foreign and domestic equilibrium (elasticity of export transformation and import substitution). Moreover, the pass-through effect of equation 1 is assumed, which is realistic for a small, open economy.

The output of nontradable[2] and exported goods is assumed to be imperfect substitutes, which also refers to nontradables and imported goods in consumption. The main equations of the Model are as follows:

$$\frac{E}{D} = k_1 \left[\frac{P^e}{P^d} \right]^{\Omega} \qquad (1)$$

where

$k = (\frac{1-\lambda}{\lambda})^{\Omega}$,

E - *is export supply,*

D - *is domestic goods supply,*

P^e *and* P^d - *are prices of exportable and nontradable goods, respectively.*

Equation (1) states that the relative supply of export goods depends on their relative prices and on elasticity of export transformation:

$$\frac{M}{D} = k_2 \left[\frac{P^d}{P^m} \right]^{\sigma} \qquad (2)$$

where

$k_2 = (\frac{\delta}{1-\delta})^{\sigma}$,

M - *is import demand,*

D - *is domestic production demand.*

Equation (2) states that the relative demand for imports depends on their relative prices and on elasticity of consumption substitution. The Model includes also limitation of the balance of trade (written as imports minus exports), which assumes that the balance of trade is datum:

$$B = (\lambda - 1)\pi^e E = \pi^m M - \pi^e E \qquad (3)$$

[1] *S. Devarajan, J. D. Lewis, S. Robinson "External Shocks, Purchasing Power Parity, and the Equilibrium Real Exchange Rate", The World Bank Economic Review v.7, 1993, pp. 45-63.*

[2] *Nontradables in the model include also import substitutes.*

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The parameter λ can be interpreted as the country's sustainable balance of trade, or the proportion by which imports can exceed exports. Actually, the parameter λ reflects changes in capital inflow. Considering the function of country's production volume and consumers' demand, by rearranging the equations we obtain the following:

$$\hat{P}^{d} - \hat{R} = \frac{(\sigma\hat{\pi}^{m} + \Omega\hat{\pi}^{e})}{\sigma+\Omega} - \frac{(\hat{\pi}^{m} - \hat{\pi}^{e})}{\sigma+\Omega} + \frac{\hat{\lambda}}{\sigma+\Omega} \qquad (4)$$

where symbols

^ - is variables' changes,

σ, Ω - are elasticity of substitution in consumption and elasticity of transformation in supply, respectively.

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Actually, the equation gives equilibrium changes of domestic prices in foreign currency. The first term on the right of equation accounts for world prices with adjusted elasticities of substitution and transformation, the second term accounts for any change in terms of trade, and the third term accounts for any change in the sustainable balance of trade.

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The Model is used to compute **σ**, **Ω** ¨ **λ** or to choose them. In Model applications, for elasticity of **σ** and **Ω** the elasticity factors[3] and their average indicators calculated by S. Devarajan, D.S. Go and N. Li for about 60 countries have been used, which served as a basis for many analytic materials. Furthermore, it has been accepted that **σ** equals to 0.81, and **Ω** equals to 0.95.

Another essential factor is the calculation of parameter **λ**. It is the ratio of imports of goods and services to exports of goods and services, and in fact it serves as a capital inflow proxy.

The next core thesis is the choice of basic year, which shall correspond to the level of **λ** and terms of trade estimated as equilibrated. According to that principle the last actual year 2005 has been taken as a basic year, because the developments of that year are considered to be permanent (it mainly refers to private transfer inflows).

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CPI has been used as prices of domestic output and domestic consumption (P^{d}).

In 2006, according to Model 1-2-3, the dollar price equilibrium exceeded the registered actual price level in Armenia by 16.1 percent. This misalignment can be an evaluation of the real exchange rate appreciation in 2007.

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Table 1.4.1. 2006 price deviations (against basic year)

Country	Basic year	Terms of trade	Trade balance	Dollar inflation	Actual dollar inflation	Misalignment
Armenia	2005	3.5	13.1	34.8	13.0	-16.1

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[3] *See S. Devarajan, D. S. Go, N. Li "Quantifying the Fiscal Effects of Trade Reform", The World Bank Policy Research Working Paper 2162, Washington, 1999.*

Trade Elasticity Model

The aim of the Model is to estimate changes in the equilibrium real exchange rate by using trade equations. It has three key objectives:

1. To estimate the relationship of the real exchange rate with the resource balance by using trade equations or elasticity of trade,
2. To define the equilibrium or the aim of the trade balance, using estimations of the savings-investment balance, sustainable capital inflows or targeted reserves,
3. To estimate the deviation of the balance of actual resources, adjusting the balance of resources of the given year for periodic, exogenous and political changes.

The analytic system of trade equations for developed countries comprises the following three formulas:

$$\log M = \varepsilon_M \log RER + \eta_M \log Y_D + f(Z_M) \quad \textbf{(1)}$$

$$\log X = \varepsilon_X \log RER + \eta_X \log Y_F + g(Z_X) \quad \textbf{(2)}$$

$$\Delta RB = \Delta X - \Delta M \quad \textbf{(3)}$$

where

M – is the volume of imports,
X – is the volume of exports,
Y_D *- is the country's real income,*
Y_F *- is the foreign country's real income,*
Z_M " Z_X *- other exogenous variables,*
RB – is the real resource balance,
ΔRB – is the difference between actual and equilibrium resource balances or necessary adjustment,
ε_M " ε_X *- elasticity of import and export prices,*
η_M " η_X *- elasticity of import and export incomes.*

The system of equations has three unknowns. Domestic and foreign incomes are here exogenous variables. Change in resource balance is estimated exogenously as the difference between the balances of the targeted and adjusted resources. It is necessary to obtain the levels of exports, imports and real exchange rate by the system of equations.

In case of Armenia these equations comprise also internal real exchange rate, because imports depend on rather internal than external real exchange rates. To estimate the system of the Model we have constituted a link between internal and external real exchange rates (the

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latter – as endogenous). As a result, the internal real exchange rate is equilibrium variable, and the equilibrium internal real exchange rate is calculated by these equations.

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Below are calculations for Armenia:

Table 1.5.1. Regression relationship of export with foreign real exchange rate and partner countries' consumption

Dependent variable \ Independent variable	C intercept	Real exchange rate LOG(RER)	Consumption of partner countries LOG(WCONS)	Ratio of determination (R^2)
Real export	-1.943	-1.01	2.46	0.92
LOG(REXP)	(-0.75)	(-3.08)	(9.56)	

Table 1.5.2. Regression relationship of imports

Dependent variable \ Independent variable	C intercept	Internal real exchange rate LOG(TNT)	Real GDP LOG(GDP)	Ratio of determination (R^2)
Real import		1.56	0.39	0.73
LOG(IMPR)		(5.40)	(8.35)	

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Table 1.5.3. Dependence of Armenian external real exchange rate upon internal real exchange rate and the real exchange rate of tradable goods

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Dependent variable \ Independent variable	C intercept	Internal real exchange rate LOG(TNT)	Real exchange rate at tradable prices D(LOG(RERPPI))	Ratio of determination (R^2)
External real exchange rate	-0.007	0.31	0.49	0.70
LOG(TNT)	(-1.92)	(6.72)	(4.93)	

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The logic of these equations and of the total model can be expressed by the following chart:

Chart 1.5.1. Model of foreign trade elasticity

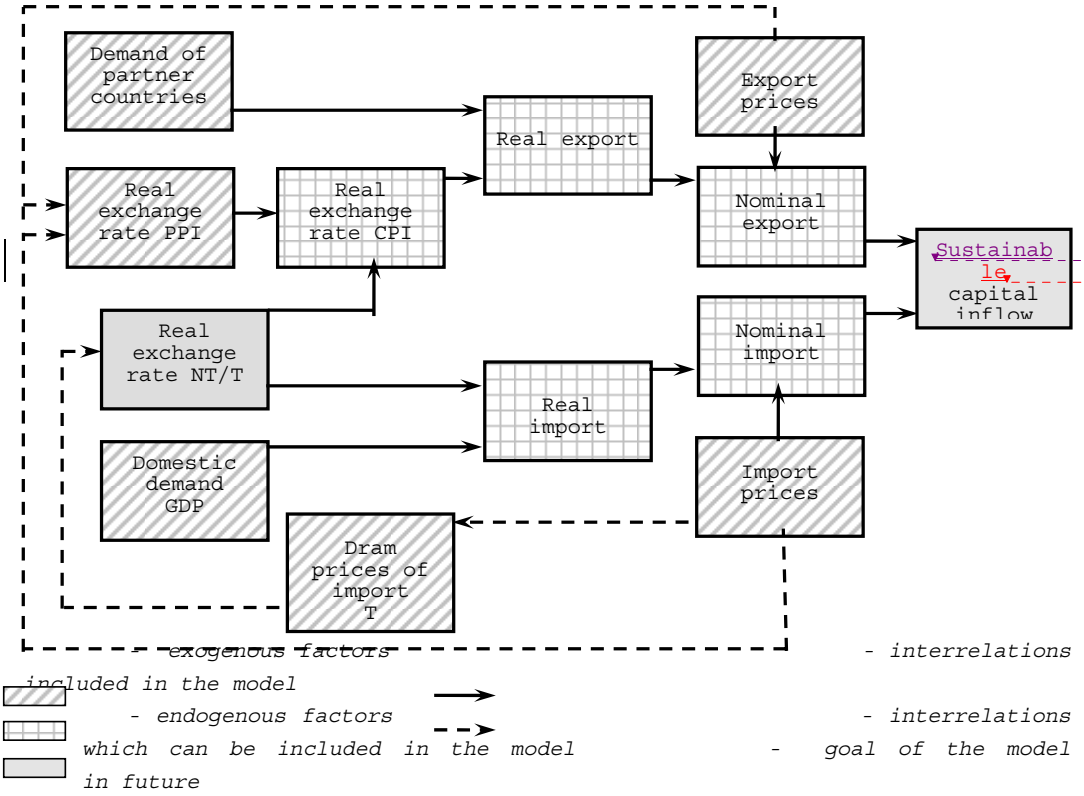

Table 1.5.4. Results of foreign trade elasticity model for 2007

Indicators	2005	2007	Change (%)
Demand of partner countries	139.2	160.2	15.1
Domestic demand	377.4	461.4	22.3
Real exchange rate PPI	153.9	185.1	20.3
Real export	244.1	229.5	-6.0
Real import	404.8	459.2	13.5
Export prices	136.5	168.5	23.4
Import prices	122.0	146.0	19.6
Nominal export	334.2	387.1	15.9
Nominal import	496.0	672.6	35.6
Sustainable capital inflow	168.5	300.0	78.0
Internal real exchange rate	126.1	137.5	9.0
Real exchange rate CPI	101.4	123.3	-7.2

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Real Effective Exchange Rate

The real effective exchange rate for the Armenian economy is calculated as follows:

$$REER_i = \prod_{i \neq j} \left[\frac{ER_i \times CPI_i}{ER_j \times CPI_j} \right]^{W_{ij}}$$

Where:

Π - is product,

REER - is real effective exchange rate of the country "i",

CPI - are consumer price indices of the countries "i" and "j",

ER - are direct nominal exchange rates of the countries "i" and "j" in US Dollars (e.g. AMD 1 or RUR 1in terms of US Dollars),

W_{ij} - are competitive weights, which are based on the volume of trade turnover of the countries "i" and "j", and are assessed as follows:

$$W_{ij} = \frac{E_{xij} + I_{mij}}{E_{xi} + I_{mi}}$$

where:

E_{xij}, I_{mij} - is trade turnover between the countries "i" and "j" (exports and imports),

E_{xi}, I_{mi} - is volume of exports and imports of the country "i".

These formulas show that an increase in the CPI and nominal exchange rate of the country or their decrease in partner countries would appreciate REER of the present country, which implies better terms for the imports, and worse for the exports.

The REER for the Armenian Dram was is using the data on the average weight of the partner countries involved in foreign trade turnover during the period from 1999 to 2003[12]. Humanitarian aid, natural gas and oil product and diamonds values are excluded from imports, and only diamonds are excluded from exports, as their prices are considered to be relatively inelastic to price changes.

The weights for the calculation of the real exchange rate and the country contributions for the period 1999-2007 are provided in Table 1.6.1.

[12] *From 2004 custom statistics data for import are colleted according to country of origin and can not be compared with the previous principle of data collection according to importing country.*

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Table 1.6.1. Weights for the calculation of the real effective exchange rate and the impact of countries

%

	1999	2000	2001	2002	2003	2004	2005	2006	2007[13]	Weight
REER (1997=100)	112.3	111.9	108.0	98.4	88.4	91.4	99.6	106.3	119.3	
	4.5%	-0.4%	-3.5%	-8.9%	-10.2%	3.4%	9.0%	6.7%	11.4%[14]	
Armenia's inflation	0.7%	-0.8%	3.2%	1.1%	4.7%	7.0%	0.6%	3.0%	4.1%	
Armenia's exchange rate	-5.6%	-0.8%	-2.8%	-3.2%	-0.6%	8.8%	16.4%	10.4%	16.9%	
Impact of partners' inflation[15]	-18.5%	-9.9%	-8.9%	-7.6%	-6.9%	-5.8%	-6.3%	-5.5%	-5.7%	
United Kingdom	-0.1%	-0.2%	-0.1%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	7.2%
Switzerland	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%
Iran	-2.2%	-1.6%	-1.3%	-1.6%	-1.8%	-1.6%	-1.5%	-1.3%	-1.8%	11.9%
Russia	-12.4%	-3.8%	-3.9%	-3.0%	-2.6%	-2.1%	-2.4%	-1.9%	-1.7%	20.5%
USA	-0.2%	-0.4%	-0.3%	-0.2%	-0.2%	-0.3%	-0.4%	-0.4%	-0.3%	10.8%
Turkey	-2.6%	-2.3%	-2.2%	-2.0%	-1.2%	-0.4%	-0.4%	-0.4%	-0.3%	5.3%
Euro Area	-0.4%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%	-0.8%	32.1%
Georgia	-0.8%	-0.2%	-0.2%	-0.2%	-0.2%	-0.3%	-0.4%	-0.4%	-0.3%	4.6%
Ukraine	-0.8%	-1.0%	-0.4%	0.0%	-0.2%	-0.3%	-0.5%	-0.3%	-0.5%	3.9%
Impact of partners' exchange rate[16]	34.1%	12.2%	5.7%	0.7%	-6.9%	-5.5%	-0.6%	-0.6%	-2.8%	
United Kingdom	0.2%	0.5%	0.4%	-0.3%	-0.6%	-0.8%	0.0%	-0.1%	-0.5%	7.2%
Switzerland	0.1%	0.4%	0.0%	-0.3%	-0.5%	-0.3%	0.0%	0.0%	-0.2%	3.7%
Iran	0.0%	0.1%	-0.1%	0.0%	0.4%	0.6%	0.5%	0.3%	0.6%	11.9%
Russia	23.5%	2.8%	0.7%	1.5%	-0.4%	-1.3%	-0.4%	-0.8%	-0.7%	20.5%
USA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%
Turkey	2.5%	2.2%	3.5%	1.2%	0.0%	-0.3%	-0.3%	0.3%	0.1%	5.3%
Euro Area	1.6%	4.8%	0.9%	-1.6%	-5.7%	-3.0%	-0.1%	-0.2%	-1.9%	32.1%
Georgia	1.8%	-0.1%	0.2%	0.3%	-0.1%	-0.5%	-0.3%	-0.1%	-0.1%	4.6%
Ukraine	2.1%	1.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	3.9%

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[13] *2007 forecast is based upon the IMF §World Economic Outlook| September 2006 indicators and the CBA estimations.*

[14] *Real exchange rate by 12.4% appreciation is computed according to the results of model "Changes in wages, production and prices under international trade" (Annex 1.3). If we use other models the results will differ in the view of real exchange rate and nominal exchange rate. According to those models the limits of estimated real exchange rate are 7-16%.*

[15] *Negative impact on Armenian Dram real exchange rate means inflation of a partner country, whereas positive impact means deflation.*

[16] *Negative impact on Armenian Dram real exchange rate means partner country's currency appreciation against US Dollar, whereas positive impact means depreciation.*

Export and Import Price Forecast Methodology

The forecast for the export and import prices is made using the BEC (Broad Economic Classification) classifier, which enables to review the commodity groups according to their economic significance.

Table 1.7.1. BEC classification group weights in imports

%

	2000	2001	2002	2003	2004	2005
Consumer goods	24.5	28.7	21.4	21.6	25.0	24.0
Raw materials	36.1	36.0	36.2	34.0	35.2	35.0
Investment goods	7.3	5.3	7.0	8.0	7.5	8.0
Petrol	8.9	11.4	9.4	7.1	9.4	10.0
Diamonds	12.0	9.9	19.7	23.7	17.1	17.0
Natural gas	11.2	8.6	6.3	5.5	5.7	6.0

Table 1.7.2. BEC classification group weights in exports

%

	2000	2001	2002	2003	2004	2005
Consumer goods	30.5	25.8	22.3	20.5	21.7	20.0
Raw materials	44.9	40.2	34.8	33.6	44.9	50.0
Investment goods	5.8	6.8	3.6	2.6	2.3	2.0
Diamonds	18.8	27.2	39.2	43.2	31.0	28.0

The tables show that petroleum, diamonds, and natural gas have been separated from the total imports, as prices on petroleum are directly linked to international prices, and the prices in international futures contracts serve a basis for the forecast. Prices on natural gas are determined by interstate agreements, thus they remained unchanged for the forecast; prices on diamonds are also constant as they are imported for reprocessing and further export.

Previous trends for investment goods serve as a basis for the forecast, where the prices on investment goods (machinery and equipment) are constant.

The prices on raw material are viewed by commodities that hold key weights in the group. The prices are forecast based on the futures quoting at world commodity-exchanges and the world supply and demand dynamics (Table 1.7.3).

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Table 1.7.3. Weghts of raw materials in exports and imports

%

2007	Price change	Export	Import	Impact on export prices	Impact on import prices
Copper	1.8	28.9		0.5	
Gold	3.9	19.5	47.4	0.8	1.8
Iron	0.0	29.0		0.0	
Wheat	-0.5		41.3		-0.2
Molybdenum	-3.8	22.6		-0.9	
Sugar	-20.0		11.3		-2.2
Total		**100.0**	**100.0**	**0.9**	**-0.6**

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The forecast for prices on consumer goods relies on the methodology of the calculation of unit value per partner countries. According to the methodology, the export and import unit values of consumer goods are broadly determined by the inflation and exchange rate levels in the partner countries by weighing through the formula of geometric mean.

Because these countries are positioned differently in the export and import structure, the CBA has used different methods for forecasting. So, if there is not a strict country concentration in the import of consumer goods, the EU, Russia and the USA account for the biggest share of export of consumer goods. The forecast of the import and export prices on consumer goods relies on the weight of the partner countries for 2003, the 2007 inflation and exchange rates (Table 1.7.4).

Table 1.7.4. Weight of partner countries in consumer goods' import and export in 2003 and forecasts for 2007

%

Country	Weight in 2003		Changes in 2007			
	Import (%)	*Export (%)*	*Inflation*	*Exchange rate*	*Impact on import prices*	*Impact on export prices*
Euro Area	22.9	19.5	2.4	1.9	1.2	1.0
Iran	4.9		16.9	-4.8	0.5	
Panama	5.3		0.0	0.0	0.0	
Russia	22.0	53.8	8.5	1.9	2.3	5.7
Switzerland	5.2		1.2	1.0	0.1	
Turkey	4.6		5.1	-3.2	0.1	
United Arab Emirates	13.8		0.0	0.0	0.0	
Ukraine	6.9		13.2	0.0	0.9	
United Kingdom	9.1		2.5	-2.9	0.5	
USA	5.2	26.8	3.0	0.0	0.1	0.8
Total	**100.0**	**100.0**			**6.8**	**7.6**

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In the partner country shares, the so-called "third country effect" can be observed, when goods are imported from a country that is not the producer of the goods (e.g. Panama, UAE). These countries are therefore viewed as "fictitious", keeping their inflation and exchange rates on a constant level. The inflation and exchange rate data of the other countries have been taken from the IMF International Financial Statistics database, and the data of the IMF "World Economic Outlook" is used in the estimations.

In the outcome, the prices of commodity groups of imports and exports are weighed by shares of corresponding groups and we obtain export and import prices in terms of dollar.

The calculation of total price index of goods and services must also include price indices of exported and imported services. Armenia's economic statistics deflator of service sector is used for price index of exported services. The deflator has been taken as a ratio to the change of Armenian dram/US dollar exchange rate, in order to be calculated in terms of dollar. The price index of imported consumer goods has been used for price index of imported services, which partly reflects price changes of nontradable sector.

Weighting the price indices of goods and services exports and imports by their volume weights we shall obtain the dollar deflator of goods and services exports and imports. Then multiplying dollar price indices by Armenian dram/US dollar average quarter exchange rate, we shall compute dram prices of exports and imports.

Table 1.7.5. Prices of export and import

Indicators	2003	2004	2005	2006					2007				
				I Q	II Q	III Q	IV Q	2006	I Q	II Q	III Q	IV Q	2007
Export (goods and services)	100.0	112.1	114.1	103.5	104.8	108.5	109.8	109.8	116.0	110.0	107.5	106.0	106.0
Total services	103.1	125.0	105.0	105.3	98.6	104.1	108.9	108.9	124.2	122.1	121.3	119.1	119.1
Total goods	98.9	107.8	117.6	102.9	107.0	110.0	110.1	110.1	113.2	106.0	102.7	101.3	101.3
Investment goods	102.3	99.9	97.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Consumer goods	108.9	112.6	109.1	104.7	106.5	108.0	109.0	109.0	109.6	108.2	107.7	107.6	107.6
Diamonds	90.1	98.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Intermediate goods	103.7	113.7	131.5	103.2	109.8	114.8	114.7	114.7	119.5	107.3	101.8	99.4	99.4
Total export (Dram)	100.9	103.3	98.1	97.8	100.5	101.4	99.7	99.7	95.2	91.7	90.4	90.7	90.7
Import (goods and services)	104.9	110.4	106.5	110.8	115.0	115.1	114.2	114.2	108.2	104.6	103.9	104.5	104.5
Total services	112.4	111.0	107.6	102.4	103.8	105.1	106.1	106.1	108.2	107.2	106.9	106.8	106.8
Total goods	103.1	110.1	106.3	113.2	118.1	117.8	116.3	116.3	108.3	104.0	103.2	104.0	104.0
Investment goods	93.8	100.6	99.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Consumer goods	112.4	111.0	107.6	102.4	103.8	105.1	106.1	106.1	108.2	107.2	106.9	106.8	106.8
Intermediate goods	98.7	105.8	101.5	129.8	137.9	136.9	131.4	131.4	103.1	98.7	98.2	99.2	99.2
Petroleum	99.5	125.8	142.1	130.0	132.7	125.3	121.0	121.0	108.8	105.1	106.0	111.1	111.1
Diamonds	101.9	119.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Natural gas	99.5	99.6	100.0	100.0	150.0	166.7	175.0	175.0	200.0	133.3	120.0	114.3	114.3
Total import (Dram)	105.9	101.7	91.5	104.7	110.3	107.6	103.7	103.7	88.8	87.2	87.4	89.5	89.5
Exchange rate (period average)	578.8	533.4	458.3	451.0	436.8	402.4	375.0	416.3	370.0	370.0	345.0	340.0	356.3
Exchange rate (cumulative)	578.8	533.4	458.3	451.0	443.9	430.1	416.3	416.3	370.0	370.0	361.7	356.3	356.3
Exchange rate index (cumulative)	100.9	92.2	85.9	94.5	95.9	93.5	90.8	90.8	82.0	83.4	84.1	85.6	85.6

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Methodology of Estimation of Impact of Real Wages and Labor Productivity on Inflation

The impact of real wages and labor productivity on inflation is estimated using Ordinary Least Squares Method. The time series used in the regression model are logarithmic magnitudes. The real wages are calculated as a ratio of nominal wages to inflation, whereas labor productivity is calculated as a ratio of real GDP to the volume of total employment in economy.

Table 2.1.1. Methodology of •stimation

Dependent variable \ Independent variable	C intercept	Real wages	Work output	Inflation indicator for the previous quarter	Ratio of determination (R^2)
Inflation (cumulative)	1.721 (2.16) *	0.13 (3.96)	-0.09 (-4.32)	0.47 (2.04)	0.83

* *The figure in parenthesis is the value of T- statistics.*

Real Private Consumption Expenditure Forecast Methodology

Private consumption is forecast as a function of GDP. The forecasts have been made with the ADL (Autoregressive Distributed Lags) model using the indicators adjusted through the Tremo/Seats Method. The unadjusted figures are calculated using the seasonal coefficients on the obtained forecasts.

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Table 2.2.1. Results of regression analysis of real GDP and real private consumption expenditures*

Dependent variable \ Independent variable	First difference of real GDP	Real private consumption for previous quarter	Real private consumption for the same quarter of the previous year	Ratio of determination (R^2)
The first difference of real private consumption expenditures	0.21 (4.44)**	0.02 (2.00)	0.77 (14.10)	0.99

** All variables are expressed in logarithms.*
*** The figure in parenthesis is the value of T -statistics.*

Real Private Capital Investments Forecast Methodology

The estimation of the relationship between the real private capital investments and the real GDP has been also made by the ADL (Autoregressive Distributed Lags) regression model using the indicators adjusted by the Tremo/Seats Method. The unadjusted indicators are calculated using the seasonal coefficients on the obtained forecasts.

Table 2.2.2. Results of regression analysis of real GDP and real private capital investments*

Dependent variable \ Independent variable	C intercept	First difference of real GDP	Real capital investments for the previous one year (AR4)	Ratio of determination (R^2)
The first difference of real private capital investments	-10.6 (-3.7) **	1.70 (8.27)	0.88 (990)	0.99

** All variables are expressed in logarithms.*
*** The figure in parenthesis is the value of T- statistics.*

Fiscal Indicators Forecast Methodology

The CBA's estimations of the consolidated budget are used in the 2007 monetary program. These estimations are based on the first nine months' actual indicators for state budget performance, the financial flows expected in the fourth quarter, and on the strictly primary data of the local and social security fund budgets.

The Republic of Armenia Law on the State Budget 2007 has been the source for indicators of the consolidated budget 2007. The quarterly distribution of the 2005-2006 budgets and the CBA expert estimations have served as a basis for setting the quarterly proportions of fiscal indicators.

Fiscal impulse indicator

The fiscal impulse indicator is used to evaluate the fiscal policy impact on the overall demand and, therefore, the prices. The fiscal impulse indicator represents the sum of the budget revenue impulse and the expenditures impulse, and is calculated by the formula as follows:[1]

$$FI_t = FI^T_t + FI^G_t = (t_0 - \Delta T_t/\Delta Y_t)*\Delta Y_t + (\Delta G_t/\Delta PY_t - g_0)*\Delta PY_t$$

Where:

FI, FI^T_t, FI^G_t	*are the fiscal, revenue and expenditure impulses, respectively,*
t_0, g_0	*are the revenue/GDP and expenditures/GDP ratios, respectively, in the base period,*
T_t, G_t	*are the revenue and expenditure levels, respectively, in the current period,*
Y_t, PY_t	*are the nominal and potential GDP levels, respectively, in the current period.*

The calculation of fiscal impulses for 2006 and 2007 resulted in the following:

Indicator	Income impulse	Expenditures impulse	Fiscal impulse
2006			
Annual (expected)	-0.1	0.02	-0.08
2007			
Annual (program)	-0.47	0.6	0.13

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In case of the execution of the 2007 budget program, the impact of fiscal sector on aggregate demand will be neutral.[2]

[1] *The detailed methodology of computation is provided in the annexes of the Monetary Policy Program 2000.*
[2] *The indicators of impulses in the table are computed as percentage to GDP.*

Real GDP Growth and GDP Deflator Forecast Methodology

The real GDP growth and GDP deflator are forecast by sectors of the economy. First, both the real growth and the deflator are forecast for individual sectors (industry, agriculture, construction, services) and net indirect taxes. Then, the real GDP growth is computed by the following identity:

$$(I_{-1}/GDP_{-1}) \times I + (A_{-1}/GDP_{-1}) \times A + (C_{-1}/GDP_{-1}) \times C + (S_{-1}/GDP_{-1}) \times S + (T_{-1}/GDP_{-1}) \times T = \text{GDP growth},$$

Where:

I is real industry growth rate forecast for 2007;

A is real agriculture growth rate forecast for 2007;

C is real construction growth rate forecast for 2007;

S is real services growth rate forecast for 2007;

T is real net indirect taxes growth rate forecast for 2007.

The GDP deflator is computed using the logic of the above identity, with the difference being that the sector deflators are taken instead of real growth.

The real growth of the sectors of the economy and deflators are forecast through the adaptive forecasting method which is provided in detail in the Monetary Policy Program 2006.

Real GDP growth and deflator forecasts by sectors of economy

Yielding	Indicators	Value added (million drams)					
		Industry	Agriculture	Construction	Services	Net taxes	GDP
1	January-December 2006	426484.7	453686.3	688813.2	850899.0	216300.3	2636183.7
2 = 1/GDP nom.	Share in GDP	0.16	0.17	0.26	0.32	0.08	
3	**Real growth forecast for 2007**	**106.8**	**103.2**	**112.9**	**111.3**	**104.3**	**109.0**
4 = (3 - 100) x 2	Contribution to growth	1.1	0.6	3.4	3.6	0.4	9.0
5 = 1 x 3/100	Sectoral real GDP	455387.5	468263.2	777882.0	947087.7	225539.0	2874159.4
6 = 5/GDP real	Share in GDP	0.16	0.16	0.27	0.33	0.08	
7	**Forecast deflators for 2007**	**104.4**	**103.0**	**108.7**	**102.4**	**102.1**	**104.5**
8 = 6 x (7 - 100)	Share in deflator	0.70	0.49	2.35	0.79	0.16	4.5
9 = 1 x 3 x 7/10000	Nominal GDP	475424.5	482311.1	845557.7	969817.8	230275.3	3003386.5

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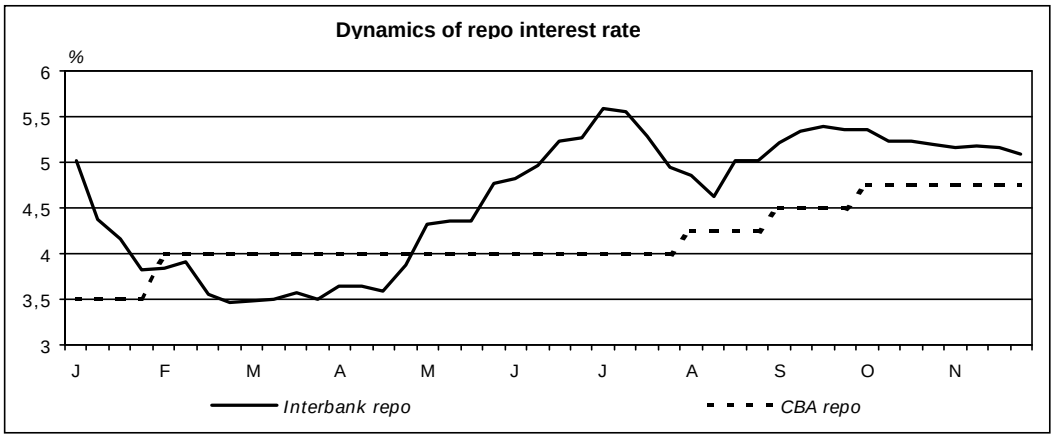

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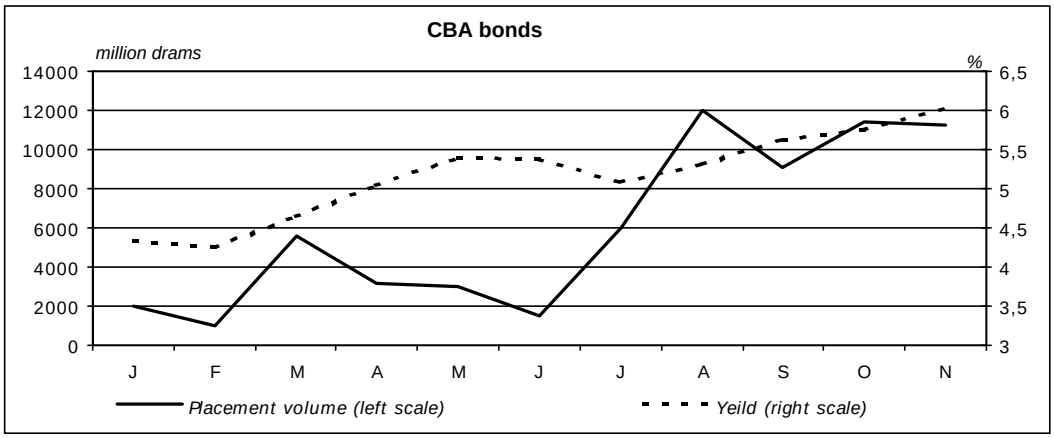

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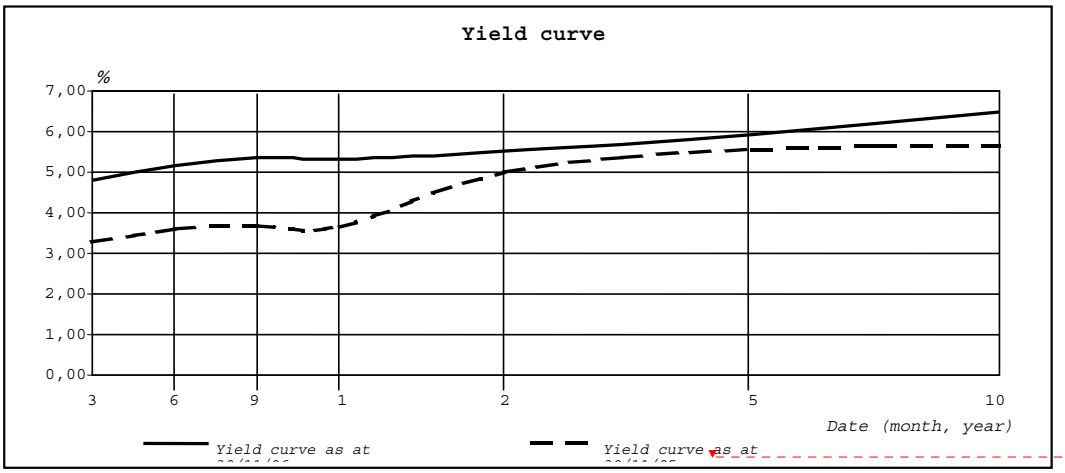

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Model of Inflation Forecast by Groups of Commodity

For a forecast of the inflation for 2007, the inflation model built yet in the previous year has been applied. In building the model, consumer basket goods were classified into individual groups of commodities. Classification has been made by sectors, imports and domestic production and relied on the results of the comparative analysis of respectrive price changes. The consumer basket comprised groups of commodities as follows:

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- Food products, *including:*
  - Meat and meat produce
  - Fruit
  - Vegetables
  - Milk and dairy food
  - Alcohol and non-alcohol drinks
  - Eggs
  - Confectionery, oil and fat
  - Sugar
  - Tobacco
  - Fish
  - Coffee, tea and other
  - Breadstuff
- Non-food products, *including:*
  - Petrol, diesel oil and liquid gas
- Services

New variables describing the inflation behavior have been included in the model, and the consumer basket underwent even more detailed grouping and special analysis. The model comprises not only the likely impacts of aggregate demand and aggregate supply on inflation, but also applies econometric approaches to review their short- and long-term impacts on inflation. During the year, depending on the developments in the macroeconomic environment and actual quarterly inflation indicators, a number of variables (monetary aggregates, interventions) directly and indirectly monitored by the CBA, may be changed within the framework of the model. This would allow managing the inflation within the program.

The table below provides summary results of a regression analysis that describes the changes in price of each individual type of commodity, estimated within the framework of the inflation model. Particularly, the coefficients of exogenous variables impact on endogenous variables are presented. The CBA expert estimations are used for forecasting the prices of some types of commodity. A relatively precarious price of the given

commodity or the fact that the below provided exogenous variables do not materially affect the price of the commodity serve a basis for these estimations. Particularly, this refers to the changes of prices of 'Services' and the item 'Fish' in the basket.

Table 3.4.1. Ratio of impact of exogenous variables on endogenous variables

Endogen. / Exogenous	LNFI	LFRUIT	LVEG	LMEAT	LMILK	LALKO	LCAN	LEGG	LSUG	LB
LNFI(-1)	0.436									
LNEER	0.142					0.119	0.227			
LNEER (-1)	-0.068			0.197		0.123	-0.089			
LULC					0.588	0.369	0.320	1.988		
LULC(-1)	0.030			0.373	-0.588	0.164	-0.226	-1.507		
RESM2(-1)	0.037			0.248						
LGAGR		-0.285	-0.207							
LFRUIT(-1)		0.530								
LRM2										
LRM2(-1)							0.072			
LRM2(-2)		0.503	0.537				-0.072			
Seas(1)								0.080		
Seas(2)		0.496								
Seas(3)										
Seas(4)		0.529	0.146		0.046			0.186		
LMEAT(-1)				0.678						
LMILK(-1)					0.771					
LALKO(-1)						0.333				
LCAN(-1)							0.750			
LEGG(-1)								0.20		
LSUG(-1)									0.272	
LEXCH									0.302	0.297
LEXCH(-1)									-0.197	
LBI										0.300
LBI(-1)										0.159

LNFI – prices for non-foodstuff, in terms of logarithms,
LFRUIT – prices for fruit, in terms of logarithms,
LVEG – prices for vegetables, in terms of logarithms,
LMEAT – prices for meat and meat produce, in terms of logarithms,
LMILK – prices for milk and dairy foods, in terms of logarithms,
LALKO – prices for alcohol and nonalcoholic drinks, in terms of logarithms,
LCAN – prices for confectionary, oils and fats, in terms of logarithms,
LEGG – priced for eggs, in terms of logarithms,
LSUG –prices for sugar, in terms of logarithms,
LB – domestic price for petrol, in terms of logarithms,
LNEER – nominal effective exchange rate, in terms of logarithms,
LULC – unit costs of workforce, in terms of logarithms,
LBI – international price for petrol, in terms of logarithms,
LGAGR – volume of production of agricultural products, in terms of logarithms,

LEXCH – USD/AMD exchange rate,

LRM2 – dram broad money, in terms of logarithms,

LRESM2- variable for disequilibrium in money market,

Seas(1,2,3,4) – seasonal dummy variable.

The following scenario of macroeconomic indicators and exogenous variables of the model for 2007 has been adopted:

Table 3.4.2. Scenario of exogenous variables used in the model for 2007

Date	Real dram broad money growth rate (%)	Real GDP growth rate (%)	Change of international prices for mineral oil (%)	Workforce unit costs growth rate (%)	Agricultural product growth rate (%)	Average monthly wage growth rate (%)
2007						
I Q	44.3	7.1	8.8	10.5	2.8	18.3
II Q	44.9	8.0	1.8	10.7	2.9	19.6
III Q	36.3	9.4	7.6	10.1	4.2	20.5
IV Q	35.6	9.8	27.6	11.2	2.2	22.1

Under this scenario, the following forecast will be achieved for prices (Table 3.4.3).

In order to get a more complete picture of inflation trends, indicators of the table are shown in a 12-month growth span, which allows the avoidance of seasonal price fluctuations. However, there is some seasonality in the annual inflation indicator, particularly determined by the vegetation period developments.

Table 3.4.3. Inflation forecast (12-months)

Date	Food price growth rate in CPI	Non-food price growth rate in CPI	Service price growth rate in CPI	CPI growth rate
2007				
I Q	7.7	-0.2	3.5	5.1
II Q	7.8	-0.9	2.9	4.9
III Q	5.7	1.9	1.4	3.7
IV Q	6.3	2.1	1.4	***4.1***

Brief Theoretical Description of the P - STAR Model Analysis of Inflation in Armenia [1]

P-STAR is a simplified model that describes the price dynamics. The model allows for the forecasting of short-term price fluctuations as a process with which the actual prices are brought in compliance with the equilibrium prices. The P-STAR model-yielded price gap (P*-P) can be treated as a benchmark indicator that allows for the predicting of future changes in prices, or otherwise, it reflects the inflationary potential of an economy. The P-STAR model of inflation is based on the quantity theory of money, whose basic identity is the following:

$$p + y = m + v \quad (1),$$

where p is the level of prices, y is the real GDP, m is the money supply, v is the velocity of money (all variables are in logarithms).

According to the model, the long-term equilibrium price level (p*) is determined as follows:

$$p^* = m + v^* - y^* \quad (2),$$

where p^* is the long-term equilibrium price level, v^* is the equilibrium level of the velocity of money, y^* is the potential GDP.

The difference between the equations (1) and (2) produces the price gap (p*-p)

$$GAP = p^* - p = (y - y^*) + (v^* - v) \quad (3)$$

The above expression denotes that the price gap represents a combination of two other gaps, as

(y-y*) - the capacity utilization gap or the GDP gap, and

(v*-v) - the velocity gap.

The followers of the P-STAR model believe that the main reason for the occurrence of inflation lies in the difference between the long-term equilibrium price level (p*) and the current price level. They insist that the excess supply of money, not yet reflected in the current prices, may cause the velocity of money to decline from the equilibrium price level and/or raise the GDP from its potential level. A situation like this will create inflationary pressures in the economy. So, the implication is that when the real GDP and the velocity of money are consistent with their equilibrium levels, the price level moves together with the money supply and inflation is a monetary phenomenon.

[1] *The complete material is provided in the CBA's Q2 2002 report. The P-STAR model is practiced internationally – in some EU countries, Canada, Czech Republic.*

The P-STAR model may be turned into an equation for inflation, as follows:

$$\pi_t = \alpha\ (p^*_{t-1} - p_{t-1}) + \pi_{t-1} \quad (4), \qquad \text{or, otherwise:}$$

$$\pi_t = \gamma_1\ (y_{t-1} - y^*_{t-1}) + \gamma_2 (v^*_{t-1} - v_{t-1}) + \pi_{t-1} \quad (5)$$

Below are the results of the regression analysis of the P-STAR model for Armenia. It should be noted that the equilibrium levels of the GDP (y*) and the velocity of money (v*) were calculated using the Hodrick-Prescott filter.

$$INF = \gamma_1 * YGAP_{t-1} + \gamma_2 * VGAP_{t-1} - \gamma_3 * INF_{t-1} - \gamma_4 * SEAS + C \quad (6)$$

Table 3.5.1. Results of regression analysis

Dependent variable \ Independent variable	GDP gap indicator with one quarter lag ($YGAP_{t-1}$)	Liquidity gap indicator with one quarter lag ($VGAP_{t-1}$)	Inflation indicator with one quarter lag (INF_{t-1})	Dummy variable seasonal (seas – III Q)	C intercept	Ratrio of determination (R^2)
Inflation (INF)	0.114	0.107	-0.265	-0.064	0.03	0.87
	(3.169)*	(2.831)	(-3.541)	(-9.375)	(9.040)	

** The figure in parenthesis is the value of T- statistics*

The equation (6) may be treated as a model that brings the Philips Curve and the monetarist model of inflation together. That is, equation (6) includes two competing aspects for shaping inflation. Philips is arguing that inflation is a result of disequilibrium in the goods market. The monetarist theory's argument is that inflation is a result of money market disequilibrium.

Below are the 12-month indicators of inflation by quarters, forecast through the P-STAR model for 2007.

Table 3.5.2. Inflation forecast for 12 months

%

2007	I quarter	II quarter	III quarter	IV quarter or inflation as at the end of period
Forecast indicators of inflation	5.6	5.3	3.8	4.1

Basic Monetary Indicators Forecasting Methodology

The forecast for dram broad money for 2007 has been made using the Autoregressive Distributed Lags (ADL) model. A regression equation underlying the analysis is as follows:

$$M2_t = c + \alpha_1 M2_{t-1} + \alpha_2 GDP_{t-1} + \alpha_3 DUM_{1t} * GDP_t + \alpha_4 DUM_{2t} + \varepsilon_t \quad (1)$$

where:

M2 is the real dram broad money (quarterly average),

GDP is the real GDP

*DUM*GDP and DUM* variables express impact of dramization trends in Armenia.

The time series stationarity test has indicated that each variable is integrated by order one I(1). In other words, the first differenced time series ΔM2 and ΔGDP, which have been included in the equation above, are stationary I(0). The stationarity has been tested by the Dickey-Fuller test. Below are the results of the test for the time series ΔM2 and ΔGDP:

ΔM2

ADF Test Statistic	-3.121617	1% Critical Value	-3.653730
		5% Critical Value	-2.957110
		10% Critical Value	-2.617434

ΔGDP

ADF Test Statistic	-9.214382	1% Critical Value	-3.626784
		5% Critical Value	-2.945842
		10% Critical Value	-2.611531

The advantage of the model is that by use of corresponding "dummy" variables the structural changes of dram broad money which are due to dramization have been separated. Before estimating the model, the existence of cointegration between the variables has been tested. It's been found, that dram broad money and GDP are cointegratedindicating that the long-run relationship between these variables exists.

Actually, the model shows that dram broad money depends on its own lag and GDP.

Table 3.6.1. Results of regresssion analysis*

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Dependent variable \ Independent variable	Intercept (C)	Real dram broad money indicator of previous quarter ($M2_{t-1}$)***	Real GDP indicator of previous quarter (GDP_{t-1})	Dummy variable (DUM_{t1}*GDP_t)	Dummy variable (DUM_{t2})	Determination coefficient (R^2)
real dram broad money (M2)	-2.91 (-2.79)**	0.64 (6.10)	0.55 (3.37)	0.01 (2.54)	-0.01 (-1.92)	0.98

** Dram broad money and GDP indicators are in logarithms.*
*** The figure in parenthesis is the value of T- statistic.*
**** GDP data are smoothed.*

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Monetary indicators[1]

	2006					2007				
	I Q	II Q	III Q	IV Q	2006	I Q	II Q	III Q	IV Q	2007
Net foreign assets, including KfW loans*	213485	251456	274633	312824	264051	273211	300510	322523	339455	339455
o/w KfW	10274	10290	10290	13484	11381	14231	14231	14231	14231	14231
Net foreign assets	223759	261746	284922	326308	275432	287442	314741	336755	353686	353686
Net domestic assets	-24394	-52341	-43541	-52934	-4161	-21636	-28401	-24982	-13541	-13541
Net lending	-40917	-46274	-49722	-55578	-55578	-70127	-74108	-66138	-54576	-54576
Net liabilities of the banking system**	10620	12471	10624	13818	13818	16668	16668	16668	16668	16668
o/w KfW	10963	10979	10979	14173	14173	17023	17023	17023	17023	17023
Net liabilities of the Government	-22457	-35026	-27891	-34678	-34678	-47945	-76642	-59095	-36092	-36092
CBA securities	-29078	-24896	-34956	-34718	-34718	-38851	-14134	-23711	-35152	-35152
Other items net	16523	-6067	6181	2644	51417	48491	45707	41156	41034	41034
Monetary base (end of period)	189091	199115	231092	259890	259890	251575	272109	297541	325913	325913
Currency outside the CBA	141266	154389	182931	214716	214716	205716	225716	250216	278216	278216
Correspondent accounts with the CBA	47825	44726	48161	45174	45174	45859	46393	47325	47697	47697
In drams	22425	21774	28697	26745	26745	27730	28727	30124	30961	30961
In FX	24645	22274	18691	17929	17929	17629	17166	16702	16236	16236
Other accounts	755	678	773	500	500	500	500	500	500	500
Note:										
Monetary base (period average)	190256	187886	216337	245491	216571	257118	261842	284825	303041	276707
in percentage changes										
Net foreign assets, including KfW loans*	-0,6	17,8	9,2	13,9	22,9	3,5	10,0	7,3	5,2	28,6
Net domestic assets	-71,3	-114,6	16,8	-21,6	70,8	-420,0	-31,3	12,0	45,8	-225,4
Net lending	-18,4	-13,1	-7,5	-11,8	-60,9	-26,2	-5,7	10,8	17,5	1,8
Net liabilities of the banking system	151,2	17,4	-14,8	30,1	226,9	20,6	0,0	0,0	0,0	20,6
o/w KfW	0,0	0,1	0,0	29,1	29,3	20,1	0,0	0,0	0,0	20,1
Net liabilities of the Government	-29,9	-56,0	20,4	-24,3	-100,5	-38,3	-59,9	22,9	38,9	-4,1
CBA securities	-35,4	14,4				-12				
Other items net	-18,6	-136,7	201,9	-57,2	153,2	-5,7	-5,7	-10,0	-0,3	-20,2
Monetary base (end of period)	-5,7	5,3	16,1	12,5	29,6	-3,2	8,2	9,3	9,5	25,4
Currency outside the CBA	-9,0	9,3	18,5	17,4	38,3	-4,2	9,7	10,9	11,2	29,6
Correspondent accounts with the CBA	5,6	-6,5	7,7	-6,2	-0,3	1,5	1,2	2,0	0,8	5,6
In drams	0,8	-2,9	31,8	-6,8		3,7	7	4,9	2,8	
In FX	10,6	-9,6	-16,1	-4,1		-1,7	-4,3	-2,7	-2,8	
Other accounts	-0,9	-10,2	14,0	-35,3		0,0	0	0,0	0,0	
12-month monetary base growth	53,0	32,0	32,9	29,6	29,6	33,0	36,7	28,8	25,4	25,4
Note:										
Monetary base (period average)	4,8	-1,2	15,1	13,5	42,3	4,7	1,8	8,8	6,4	27,8

[1] *Annexes 4.1 and 4.2 include the actual data for quarters I - III, 2006, the data for quarter IV are assessments, and the data for four quarters of 2007 are forecasts.*

The indicators of the monetary sector (Annexes 4.1, 4.2) of the 2007 Monetary Policy Program changed considerably since the Program had been approved, therefore we present the CBA new and changed assessments of the main monetary indicators of the year-end. The 2007 growth rate, presented in the annex, will remain unchanged.

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Indicators	***December 2006, million drams***	***December 2006 against December 2005, %***
Monetary base	282 505	41
CBA foreign assets net	309 325	44
CBA domestic assets net	-26 820	-88
Broad money	499500	36
Dram broad money	345406	54

** Loans from KfW are included in the NFA as foreign liabilities and are not included in "Other items net".*

*** Loans to the CBA from KfW are included in "Net foreign assets, including KfW loans" as foreign liabilities. Such funds lent to commercial banks by the CBA are included in "Net liabilities of the banking system".*

Monetary sector

	2006					2007				
	I Q	II Q	III Q	IV Q	2006	I Q	II Q	III Q	IV Q	2007
Net foreign assets (NFA)	224 907	259438	284157	321243	272470	280168	306079	326818	342530	342530
The Central Bank	213485	251456	274633	312824	264051	273211	300510	322523	339455	339455
Commercial banks	11422	7982	9524	8419	8419	6957	5569	4294	3076	3076
Net domestic assets (NDA)	133 563	111321	121239	122973	171746	162548	164447	179530	198424	198424
Domestic credit	200303	205621	221685	232556	232556	229284	237967	261601	289117	289117
Public sector	2061	-8892	-195	-4480	-4480	-16372	-42719	-22922	2631	2631
Government	-1298	-13432	-3840	-8125	-8125	-20017	-46364	-26567	-1014	-1014
Public organizations	3359	4540	3645	3645	3645	3645	3645	3645	3645	3645
Private sector	198242	214513	221880	237036	237036	245656	280686	284523	286486	286486
Other items net	-66 740	-94300	-100446	-109583	-60810	-66736	-73520	-82071	-90693	-90693
Broad money (M2X end of period)	358 470	370759	405396	444216	444216	442716	470526	506348	540954	540954
Currency in circulation	130 268	144270	172716	207716	207716	197716	217716	242716	270716	270716
Dram deposits	80 642	85195	104160	110000	110000	118500	126010	136532	142838	142838
FX deposits	147 560	141294	128520	126500	126500	126500	126800	127100	127400	127400
Dram broad money (M2 end of period)	210 910	229466	276876	317716	317716	316216	343726	379248	413554	413554
Note:										
Broad money (M2X average)	355 276	362393	393570	407048	379572	439434	458037	488437	523651	477390
Dram broad money (M2 average)	208 969	219377	253060	279538	240236	312934	331387	361487	396401	350552
Broad money velocity (GDP/M2X average)*	0,75	1,50	2,31	2,25	6,95	0,67	1,34	2,14	2,01	6,29
Dram broad money velocity (GDP/M2 average)*	1,27	2,48	3,60	3,28	10,97	0,95	1,85	2,89	2,65	8,57
Money multiplier (M2X)**	1,87	1,93	1,82	1,66	1,75	1,71	1,75	1,71	1,73	1,73
Dram multiplier (M2)**	1,10	1,17	1,17	1,14	1,11	1,22	1,27	1,27	1,31	1,27
in percentage changes										
Net foreign assets (NFA)	-4,0	15,4	9,5	13,1	16,2	2,8	9,2	6,8	4,8	25,7
The Central Bank	-0,6	17,8	9,2	13,9	22,9	3,5	10,0	7,3	5,2	28,6
Commercial banks	-41,6	-30,1	19,3	-11,6	-57,0	-17,4	-19,9	-22,9	-28,4	-63,5
Net domestic assets (NDA)	1,8	-16,7	8,9	1,4	30,9	-5,4	1,2	9,2	10,5	15,5
Domestic credit	2,4	2,7	7,8	4,9	18,9	-1,4	3,8	9,9	10,5	24,3
Public sector	-84,4	-531,4	97,8	-2197,4	-134,0	-265,4	-160,9	46,3	111,5	158,7
Government	-118,4	-934,8	71,4	-111,6	-214,9	-146,4	-131,6	42,7	96,2	87,5
Public organizations	-45,1	35,2	-19,7	0,0	-40,4	0,0	0,0	0,0	0,0	0,0
Private sector	8,7	8,2	3,4	6,8	29,9	3,6	14,3	1,4	0,7	20,9
Other items net	-3,6	-41,3	-6,5	-9,1	5,6	-9,7	-10,2	-11,6	-10,5	-49,1
Broad money (M2X end of period)	-1,9	3,4	9,3	9,6	21,5	-0,3	6,3	7,6	6,8	21,8
Currency in circulation	-9,7	10,7	19,7	20,3	43,9	-4,8	10,1	11,5	11,5	30,3
Dram deposits	0,2	5,6	22,3	5,6	36,7	7,7	6,3	8,4	4,6	29,9
FX deposits	4,8	-4,2	-9,0	-1,6	-10,1	0,0	0,2	0,2	0,2	0,7
Dram broad money (M2 end of period)	-6,0	8,8	20,7	14,8	41,5	-0,5	8,7	10,3	9,0	30,2
Note:										
Broad money (M2X average)	2,4	2,0	10,8	3,4	22,3	8,0	4,2	11,2	7,2	25,8
Dram broad money (M2 average)	0,5	5,0	15,4	10,5	39,9	11,9	5,9	9,1	9,7	45,9
Broad money velocity (GDP/M2X average)	-18,2	-6,8	2,0	-1,2	-3,9	-10,2	-10,9	-7,6	-10,8	-9,4
Dram broad money velocity (GDP/M2 average)	-30,8	-16,3	-12,0	-13,8	-16,0	-25,8	-25,5	-19,7	-19,1	-21,9
Money multiplier (M2X)	-2,3	3,3	-2,6	-8,9	-14,1	3,1	2,4	0,3	0,8	-1,6
Dram multiplier (M2)	-4,2	6,3	6,5	-2,7	-1,7	6,9	4,0	4,3	3,1	14,2

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** Money and dram velocity are computed on basis of quarterly adjusted indicators.*
*** Money and dram multipliers are computed using average quarterly indicators.*