

CENTRAL BANK OF THE REPUBLIC OF ARMENIA

FINANCIAL  
STABILITY  
REPORT

*2010*

2011

**This Financial Stability Report presents an assessment of potential risks that could threaten the stability of financial system of the Republic of Armenia as well as the capacity of the financial system to absorb such risks.**

**More detailed information on Armenia's macroeconomic environment and financial system analyses is available in the Central Bank's periodicals, such as Annual Report of the Central Bank, Inflation Report and Armenian Financial System: Development, Regulation, Supervision.**

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*Financial stability can be characterized as concurrence of financial and macroeconomic conditions when the financial system, i.e. financial institutions, markets and market infrastructures are capable to withstand the probable shocks and instability, in this way minimizing the probability of interruption of intermediation function.*

*In defining the financial stability, what is taken into consideration is that financial instability can emerge as a result of interruption of internal functions of the financial system as well as unfavorable developments in domestic and world economies, credit risk issues connected with major borrowers and lenders, shifts in economic policies and infrastructures.*

*Safeguarding the financial stability presumes the efforts for the identification of main risk sources, poor-managed financial risks, ineffective asset pricing and finally implementation of the policy as appropriate.*

## **PREFACE**

This report aims to identify key risks to financial stability of the Republic of Armenia and provide an opportunity to debate on how to minimize such risks and what policies are needed to handle them. Planned to be prepared on a semiannual basis, the financial stability report contains a broad assessment of the Central Bank of the Republic of Armenia pertaining to the risks as well as policy measures to tackle them.

The Central Bank of Armenia is in charge for maintaining the financial stability of Armenia. The Central Bank's statutory responsibility for the country's financial stability is directly related to the primary goal of price stability and maintaining the sustainability and functionality of the financial sector. Serious disruptions in the financial sector may create impediments to effective implementation of monetary policy. Contrariwise, the monetary, macroeconomic stability contributes to the reducing of the risks threatening financial stability.

The assessment of Armenia's financial system stability in this report is presented in two aspects: one to evaluate how effectively the financial system intermediates to macroeconomic processes and the other to measure the stability of the financial system of its own and its ability to mitigate and absorb risks. The report refers to the risks revealed in macro-environment and financial sector and to how they have influence on the developments in all sectors of the economy and financial system.

Risks affecting financial stability of Armenia can emerge in the domestic economy, external economy and the financial sector itself. In this sense, the main preconditions for financial stability are:

- a domestic and external macroeconomic environment with sustainable development whereby households and companies would be creditworthy enough,
- a stable and effective financial system with risks that are prudent and manageable,
- efficient financial infrastructures with operational continuity to the benefit of the functioning of the financial system.

As presented in this report, risks that can potentially undermine financial stability of Armenia derive from:

- developments in world economy,
- developments in macroeconomic environment in Armenia,
- developments in financial market in Armenia,
- financial institutions of Armenia, and
- financial infrastructures of Armenia.

The report addresses the risks revealed in those areas and attempts to measure their possible impact on the developments in the economy on the whole and all parts

of the financial sector. The report makes a special focus on the risks to the banking sector and development trends, by considering the vitality of the role the sector plays in overall financial system, since assets of commercial banks account for more than 90 percent of entire financial system assets. As a principal pillar to the financial system of today, banking sector determines overall financial stability and development trends. In this report, the assessment of banking sector stability includes reviews on credit, market and liquidity risks.

## **ABSTRACT**

Armenia's financial sector has been reasonably stable during the year. Reported economic growth was slower from expectations due to the downfall in agriculture. Instead, growth trend persisted in other branches of the economy. With private remittances and gross national disposable income growing, household incomes kept on increasing. However, inflation has diminished real incomes.

No worsening of risk levels was observed in the financial sector while further positive development expectations solidified instead. The banking system brought growth of lending back on track yet it broadly remained conservative in terms of assessing borrowers.

Inflation pressures transmitted from external commodity markets as well as reported slump in agriculture have altered inflation developments significantly. In response, the Central Bank had to revise policy tools to manage inflation adequately.

The global economic growth continued, outstripping the projected levels. However, economic growth asymmetry across developed and developing countries is a concern. Advanced economies and some emerging economies need to strengthen employment and financial standing of households, stabilize public debt and scale it down in the future, and to carry out reforms in financial systems.

An unprecedented rise of raw material and food prices built downside risks to the economic growth in advanced economies and high inflation risks for developing and emerging economies. The pace of recovery is even slower in Armenia's main partner countries, i.e. Russia, Euro-area (see details in *Developments in world economy* section).

There was 2.1 percent economic growth recorded in Armenia fuelled, by and large, by contributions from the services and industry branches. The decline in agriculture affected economic growth and prices increases on food products. In the second half of the year the official unemployment rate started to dwindle after a slight rise in the first half, and this decrease was associated with growing demand for labor. Growth of external trade and

private remittances bounced back albeit the pre-crisis level is yet to be achieved. Over the second half of the year, current account deficit has improved by 2.0 pp to roughly 14 percent of GDP amid accelerated growth rates of exports in dollar terms and slowed growth rates in imports.

In the first six months of 2010 the Central Bank has raised the refinancing rate by a total of 2.25 pp and limited the use of quantitative easing instruments. During the first half of the year the de-dollarization measures coupled with the tightening of monetary conditions made it possible to bring the 12-month inflation close to the upper border of the target band. In the second six months, however, the inflationary environment resurged, this time totally due to supply-side factors which are not a subject of monetary regulation. In a situation like this, in spite of accelerating inflation, the Central Bank withheld from further increasing the refinancing rate, since all estimations hinted that the domestic demand, then recovering at a slow pace, was not creating inflationary pressures (see details in *Development in macroeconomic environment in Armenia* section).

In 2010, Armenian commercial banks posted growth indicators while maintaining their capital adequacy and liquidity ratios above normative requirements and handling market risks within a comfortable territory of manageability. Banks and credit organizations further eased lending conditions and the growth rate in lending persisted (see details in *Stability of financial institutions in Armenia* section).

## **1. DEVELOPMENTS IN WORLD ECONOMY**

A slowly declining unemployment and risks to the banking system in advanced countries and probable overheating of the economy in emerging countries were the main bottleneck to the development of the world economy during 2010. These problems, when left unattended and unresolved in future, may remain an obstacle to the sustainable economic recovery.

Large-scale anti-crisis measures which governments launched at an early phase of the global turmoil have fostered the stabilization of financial markets and helped to jump-start an economic recovery. In the period 2009-2010 the anti-crisis support measures began to reduce and they are expected to be less supportive in the future. Reducing the anti-crisis programs of governments is stemming also from the concern over enlarged budget deficits and huge amounts of public debt faced by a number of countries. Governments of such countries (mostly advanced European countries) are already shifting towards tightening the fiscal policy in response to their need to address budget and debt troubles. A less expansionary fiscal impulse may hamper the pace with which the world economy could develop in the years ahead.

Despite notable progress with the banking sector in disposing of its troubled assets, multiple risks are still material to the banking sector. Possible deterioration of the situation in the real estate market at a later point, a weak credit growth, persistently high unemployment rate, among others, are worth mentioning.

Not less is the adverse effect of keeping in place policies of cheap money by different countries. This surely added new risks, such as increased exchange rate volatilities with the main currencies, unsteady short-term inflow of capital to emerging countries. These could create economic tightness and undermine the potential to economic recovery in the short run.

### **1.1. MACROECONOMIC ENVIRONMENT**

In 2010 global economy further recovered, at somewhat a slower pace though. The IMF projections suggest that economic growth will remain sluggish also in the period 2011-2012 if the problems that hamper the economic development are dragged on. According to preliminary estimations of the IMF, world economic growth in 2010 was 5.0 percent against the previous year's decline of 0.6 percent. This improvement across countries and regions is very uneven by economic growth

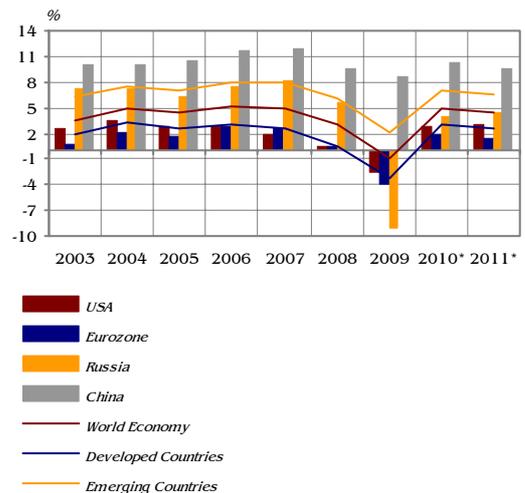
rates. A number of emerging and developing countries posted economic growth somewhat higher than it had been recorded in advanced countries. The IMF estimates suggest that in 2010 economic growth reached 7.1 percent in emerging countries and 3 percent in developed countries. The sluggish growth in developed countries is attributable mostly to weak private domestic demand, high rates of unemployment and a very moderate growth in lending. In the meantime in emerging countries, the economic growth has been fuelled by increasingly buoyant private consumption. Such an asymmetric nature of global growth presents a serious drawback to the sustainability and robustness of the economic growth.

Among emerging economies, China posted the fastest growth, as much as 10.3 percent, followed by India, 9.3 percent, and Brazil, 7.5 percent. A much modest economic growth, 4.2 percent, has been recorded in countries of Central and Eastern Europe and CIS. Of developed countries, the US economy is recovering slowly and is estimated to reach the pre-crisis levels in 2011-2012, while another 4-5 years would be required for a full recovery of the labor market. In many European countries, the economic growth will remain at a low level during 2011 as well, drained by relatively a stricter fiscal policy implementation.

In the period 2007-2009, more than 30 million jobs were lost worldwide as a result of global financial and economic crisis. Despite a rebound in employment, in some parts of the globe, emerging countries in particular, the global economy will need to recover 22 million more jobs in order to reach a pre-crisis level of global employment. It would take some 5 years for the world economy to create jobs to that amount provided that economic growth recovers at the current pace. As such, rapid recovery to acceptable employment levels becomes riskier when governments' fiscal tightening policy as well as increased share of structural and long-term unemployment in developed countries are considered. In some developing countries, the labor market began bouncing back since the second half of 2009 and managed to reach pre-crisis levels at the end of 2010.

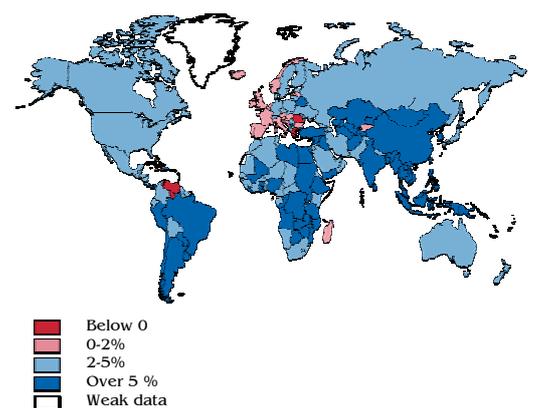
During 2010 currencies of such countries as USA, Great Britain, Euroarea countries, Russia demonstrated patterns of volatility amidst financial market instability. There has been a surge in capital inflows to emerging countries fuelled by the quantitative easing while upward pressures on the exchange rate have been observed. Emerging countries have responded by intervening in foreign exchange markets in order to exert pressure on appreciation of their currency. In some cases, there has been control established over capital flows.

**Regional growth rates**



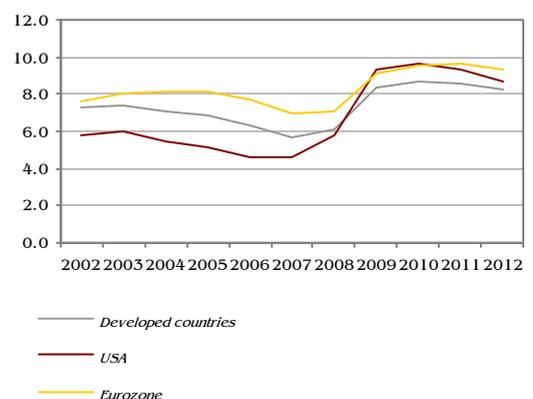
Source: IMF

**Average projected real GDP growth in 2010-2011**



Source: IMF

**The unemployment in developed countries**



Source: UNO

\* The indicators with asterisk in this chart and the ones following are the IMF estimates (January, 2011).

Currency volatilities, perceived misalignment from real equilibrium exchange rate may lead to taking protectionist measures globally, which would bring in additional risks to world economic growth and attempts to ensure stability in financial markets.

Over 2010, with world economic growth recovering and international prices of main commodities rising, the global trade has grown, having reached the pre-crisis growth rate levels. Strong growth of global trade recorded in the first six months of 2010 slowed down in the second half of the year, however. Some emerging countries, Brazil, China, India, among others, saw their export volumes bounced back to high pre-crisis levels. In advanced countries however, in spite of an 11.4 percent growth in exports in 2010, the export volumes are still some 6 percent behind the pre-crisis level. As January 2011 estimates of the IMF suggest, the global trade soared by 12 percent in 2010 instead of the 10.7 percent decline recorded in 2009, while some 7.1 percent growth of trade is predicted for 2011.

There are downside risks to the global trade for the period 2011-2012, which is determined by reducing demand for import on the brink of slow economic growth and high unemployment rates in developed countries. The shrinkage in demand, in turn, would suppress exports from emerging countries.

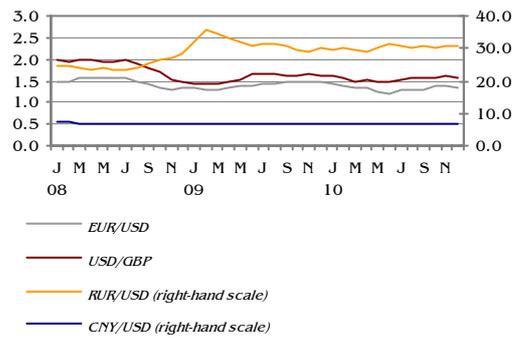
During 2010 countries saw their current account imbalances broaden to some extent, although they are considerably below the pre-crisis levels. The US current account deficit has grown to reach 3 percent of GDP in the light of a relatively fast recovering economy, whereas in China, though the current account surplus has grown in absolute value, the current account to GDP ratio has dropped to 4.7 percent.

Prices of primary goods and food in 2010 have risen considerably which is associated primarily with contracted supply in individual commodity markets and growing demand in emerging countries. Price increases were also affected markedly as the US Federal Reserve System launched its QE 2 exercise, which pushed excess liquidity to partially spill over to commodity markets. As a result of the aforementioned developments, the Reuters/Jefferies CRB index has climbed by nearly 25 percent in 2010.

During the year food prices behaved differently. Grain prices have fallen in the first half of the year by around 30 percent in relation to the previous year. In the second six months, however, the prices started going up again, due to bad weather resulting in both drought and floods in the main exporting countries.

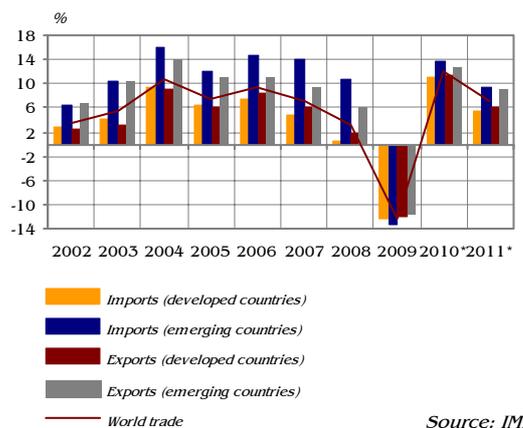
Based on the Food and Agricultural Organization of the United Nations data, in December 2010 food prices hit record levels worldwide. At the end of 2010, the food

#### Developments with main currencies



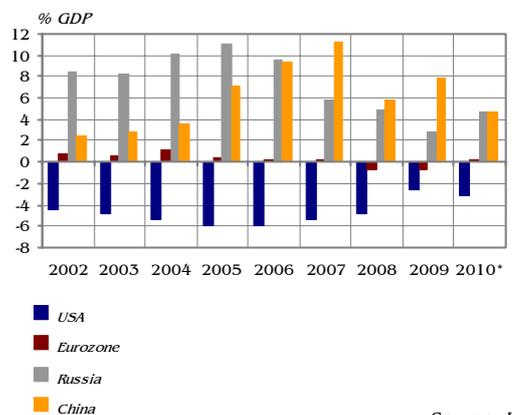
Source: central banks of different countries

#### Annual growth rate of world trade



Source: IMF

#### Current accounts of USA, Russia, China and Euroarea countries



Source: IMF

#### Reuters/Jefferies CRB Index Dynamics



Source: Bloomberg

price index<sup>1</sup> was 222.6 points, which means it had risen by 25.1 percent relative to the previous year. The second highest value recorded previously was 213.5 points, which was recorded in June 2008. According to FAO review, a general food price rise was driven by increased prices of maize, sugar, butter and meat. Price increases were recorded with regard to grains, and a respective price index posted an utmost level in August 2008. In the years ahead, if food price trends persist in an upward direction this could lead to inflation and social tensions in poor countries.

In 2010 the price of Brent oil has increased by 28.7 percent, and the average annual price amounted to USD 79.6 a barrel compared to USD 62 a barrel in the previous year. Oil prices are predicted to grow, as world economy further recovers, mostly owing to demand escalating in emerging countries, China and India in particular. In case the US remains committed to implementing a policy of quantitative easing, the US dollar depreciation may push up the dollar prices of oil and other goods, too.

Price increases were reported with regard to base metals, reflecting the world economic growth patterns. In 2010 the copper price has averaged USD 7525 per ton, having grown by 40 percent y-o-y, and the molybdenum price has grown by about 46 percent on average against the previous year.

Over 2010 prices of precious metals have grown continuously in the face of uncertainties over developments in global economy and volatilities at financial markets; the gold price has risen by an average 26 percent to USD 1225 per oz.

In the first six months of 2010, a low inflationary environment persisted, with only inflationary pressures seen in emerging economies due to steep food price increases and broadened capital inflows. These factors urged some governments to tighten monetary policy conditions considerably.

In advanced economies, inflation has been controllable owing to minor growth of domestic demand and well-anchored inflation expectations. For these countries, stimulating the economic growth and reducing the unemployment will still be a priority in deciding on the monetary policy directions.

In 2010 inflation was 1.5 percent in developed countries, 6.3 percent in emerging economies, and 7.4 percent in CIS, according to the IMF estimates<sup>2</sup>. Possible oil price upsurge globally may end up with pressures that would shove prices upward, yet sluggishness in economic

**Brent oil prices**  
(USD a barrel)



**Copper prices**  
(USD per ton)



**Molybdenum prices**  
(thousand USD per ton)



**Gold prices**  
(USD per troy oz)



<sup>1</sup> The Food and Agricultural Organization of the United Nations has a function to monitor price developments with regard to 55 items of food products.

<sup>2</sup> Source: [www.cisstat.com](http://www.cisstat.com).

Source: Bloomberg



Emphasizing the importance of reducing sovereign debt and budget deficit, the fiscal policy which the EU countries will be implementing in 2011 will have a lesser expansionary impulse compared to the previous year. The governments are planning to reduce the budget deficit to GDP ratio by cutting back public expenditures and anticipating a GDP growth.

Unlike the Euro-area countries, which are increasingly enforced to abandon expansionary fiscal policy implementation to meet their debt challenges, the US government launched the second phase of additional economic stimulation package at the end of the year. This action brought in a regained confidence in the US economy in the short run while injected extra excess funds drove the dollar to depreciate vis-à-vis other currencies. This initiative, coupled with the perspective to achieving a desired level of economic growth and unemployment, earned the US a competitive advantage in external trade, bringing further challenges to emerging countries. However, analysts reckon, in the USA long-term interest rates will fall a mere 0.2 - 0.3 pp, which would not be a material contribution to the economic growth.

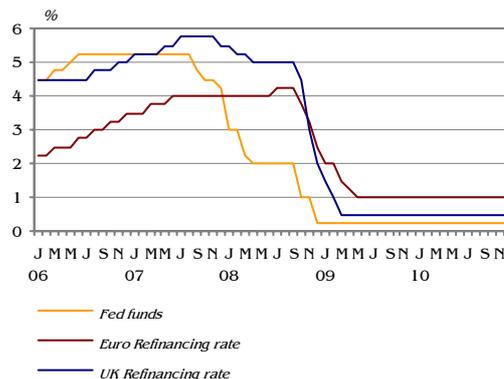
Over 2010, the US Federal Reserve System, the European Central Bank and the Bank of England have kept the refinancing rates at their historic lows, pointing out to sluggish economic and employment growth rates. Much to the investor expectations, the refinancing rates in these countries is very likely to remain at the low level in the course of the first six months of 2011, too. Some advanced and emerging countries, Canada, China, New Zealand, Norway, South Korea, among others, have lifted their refinancing rates in response to the launch of "exit strategy".

During the year in advanced countries, interbank rates were lower as well, on the back of unchanged baseline interest rates and further uncertainty over the speed and extent of recovery of the economies.

In the first half of the year, the US dollar continuously appreciated versus Euro determined by stronger investor confidence in the US economy and persisted dilemma on debt in the EU countries. In the fourth quarter, sparked by anticipation of the launch of the QE 2 exercise by the US Fed, the US dollar began to depreciate. During 2010 emerging countries saw exchange rate appreciation pressures as a result of invigorated capital inflows and currency policy implemented by developed countries.

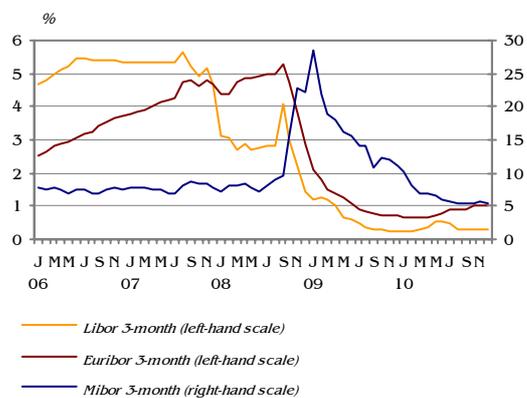
The so called "currency wars" is a real challenge to the sustainability of recovery of the world economy. In order to gain a competitive advantage, many countries seek to depreciate their currency. Anxious about this tendency, a handful of international organizations, leaders of countries and analysts are persuading to maintain exchange rates at

**Central bank policy rates**



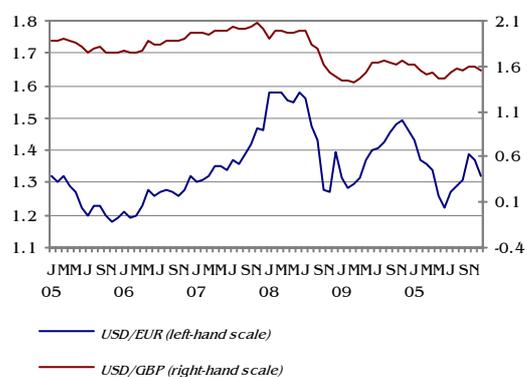
Source: Bloomberg

**Interbank interest rates**



Source: Bloomberg

**USD exchange rate versus EUR and GBP**



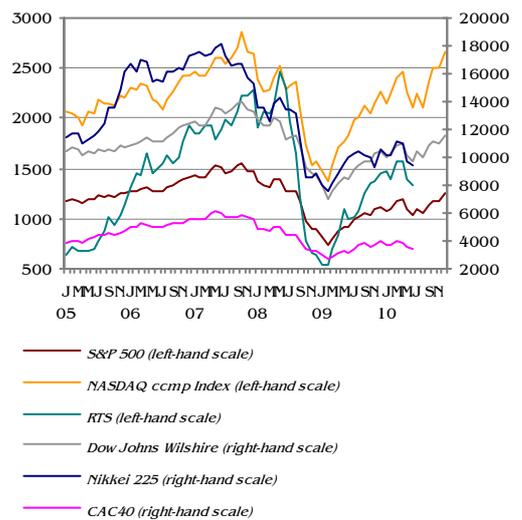
Source: Bloomberg

levels that only reflect the true economic fundamentals of the particular country. To reach this goal, the G20 leaders have agreed to an arrangement requiring that exchange rates of currencies be changed gradually and that exchange rate policies of different countries be monitored by using a certain suite of indicators. Avoiding adverse effects on trade balance of other countries would make it possible to keep the world economy immune to the problems stemming from trade imbalances.

Stock indexes in developed and emerging countries demonstrated an increase against the previous year, after some reported volatility. The increase has been attributable to both the improvement in the general macroeconomic environment across countries and partial inflow of liquidity injected to the financial markets as part of anti-crisis measures.

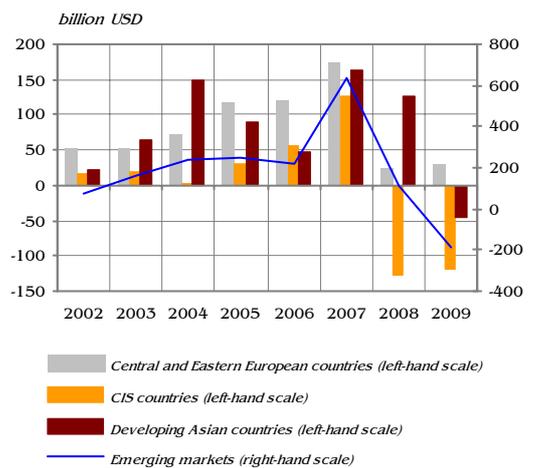
The capital inflow to emerging countries got significantly brisker in the light of stabilizing economic fundamentals there and persistently low interest rates in developed countries. The capital inflow to emerging economies now constitutes about 4 percent of GDP, which stands below the pre-crisis level of 6 percent though. The revamped capital inflow may be partly driven by structural factors underlying the decisions of investors. However these flows are also explained by carry trades, that is when investors find emerging countries' assets more lucrative in expectation of lofty speculative gains in view of interest rate differentials and exchange rate appreciation expectations. The capital flowing into the recipient country seems to be beneficial yet persistent influx could strain the absorptive capacity of local financial systems thus posing threat to unprecedented growth in asset prices and lending.

**Stock exchange indices**



Source: Bloomberg

**Net private investment inflow**



Source: IMF

**SUMMARY**

During 2010 economic recovery carries on despite a number of risks to economic growth asymmetries, fragility in employment, capital inflows and price stability. Finding right solutions to sovereign debts and budget deficits, preparing for a timely and effective exit strategy from anti-crisis measures and stimulus packages as well as keeping prices of raw materials stable are important for a sustainable economic recovery.

Financial markets are further relying on the government stimulus packages, which increases the likelihood of persisting volatilities. The global financial system stability is still fragile, and there are a number of problems that

remain unresolved. The bank balance sheet restructuring is incomplete, and elevated debt burden of the private sector is further a concern from the credit risk point of view. At the global level, regulatory reforms are still required, namely the need to introduce the Basle III without delay, which would help put the financial system on a more solid footing.

Acceleration of the capital inflow to the emerging economies brings new challenges to the monetary authorities as they are tasked to keep unprecedented price growth and surpassing lending rates under control in order to prevent economic overheating.

World economic developments in 2010 were favorable for Armenia in terms of recovery of the industrial growth. Some adverse shocks spilled over from food commodity markets as a result of record price increases, which created a high inflationary environment in Armenia.

According to the IMF forecasts, the world economy is estimated to grow by 4.4 percent in 2011 but risks to inflation and sustainability of economic growth are great, either. Slow recovery of the demand in developed countries may substantially hamper the growth of global trade.

An expected recovery of the world economic growth alone is not enough for scaling the high level of unemployment down. As predicted by the IMF, upside risks to increased prices of primary goods and food will persist during 2011, too, driven by augmenting demand and supply-side shocks.

The March 11, 2011 quake in Japan and fallouts subsequent to this catastrophe<sup>4</sup> generated tangible risks to the recovery of both Japanese economy and world economy. According to the World Bank assessment, the disaster will cause the Japanese GDP an expected decline of 0.25 - 0.5 percent. The disaster may have adverse effects on the East Asia region since estimations denote that net exports from this part of the world may contract by 1.5 percent, so may be with the Japanese investment in other countries.

Political developments in the Middle East and North Africa in early 2011 surely contributed to the increase of oil prices by causing reduction in oil supply and closure of transportation channels. However, given these tensions are not spread farther, the shortage of oil in global markets is perhaps possible to replenish through extraction elsewhere in the world by countries which have free production capacities. This may curb the prices from soaring up in the future.

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<sup>4</sup> *This financial stability report normally presents the developments that took place in 2010. When preparing the report, however, the world saw such political and force-majeure events which we found worthwhile to refer to, stressing the importance of risks to further developments in world economy.*

**Box 1.**

**Basle III principal clauses**

Basle III is the integrity of recommendations to make changes to internationally accepted requirements pertaining to capital, liquidity and other fields of banking supervision. The goal of this arrangement is to ensure the stability of the global financial system by establishing stricter requirements to bank capital and liquidity standards.

The main changes proposed under the Basle III regulatory paper are as follows:

- higher capital adequacy requirements
- input of a leverage ratio
- higher risk weights assigned for assets available in trading books
- elimination of softer forms of capital
- deductions from capital
- higher capital requirements for the counterparty risk
- new liquidity requirements
- contingent capital
- capital conservation buffer
- countercyclical buffer

To risk weighted assets with interest	Main capital requirements							Additional capital requirement
	Core capital			Tier-1 capital		Total capital		Anti-cyclic buffer
	Minimum	Buffer	Required	Minimum	Required	Minimum	Required	
Basle II	2	-	-	4	-	8	-	-
Basle III	4.5	2.5	7	6	8.5	8	10.5	0-2.5

**1.3. DEVELOPMENTS IN REGIONAL ECONOMIES**

As an open economy, Armenia can not stay immune to potential influences from the developments that take place in neighboring and partner countries. This section has been prepared to introduce the main developments in selected regional countries which may determine, directly or indirectly, the developments in the Armenian economy and affect the country’s financial stability.

**RUSSIAN FEDERATION**

Developments in the Russian Federation have a significant impact on CIS countries, including Armenia. According to the IMF expert assessment, the Russian economy mainly influences the growth in CIS countries through the channel of private remittances<sup>5</sup>.

<sup>5</sup> According to the IMF expert assessment, a 10 percent increase of private transfers from Russia to the CIS countries results in 0.3 percent growth of GDP; moreover, these transfers have a slightly greater impact on the growth of GDP (making up 0.4 percent) in countries that import oil, in comparison with the oil exporting countries in CIS.

According to preliminary estimates, Economic growth in Russia in 2010 reached 4.0 percent, and almost half of the economic decline is thought to have been offset. The recovery was prominent in the branches of the economy which suffered to a greater extent as a consequence of the financial and economic crisis, i.e. the processing and machinery industries. Fastest growth in industrial output was recorded during the first half of the year but the second six months saw the growth rates slowing down.

Unfavorable weather conditions – drought and floods in particular – brought about a considerable decline of 11.9 percent in agricultural product. Slowdowns were reported in construction and transport branches. The volumes of construction works has shrunk by 3 percent relative to the previous year and residential housing lost to the 2009 level by 4.1 percent.

The growth of industrial output has been fuelled primarily by increases reported in such sub-branches as food production, chemical production and metallurgy, which has outgrown the previous year's level by 8.2 percent. Increased wages and social allowances as well as persisted growth in savings of previous years determined a sustained recovery of retail trade, with an annual growth having reached 4.9 percent.

In the meantime, slowing corporate lending by banks, mounting volume of underutilized capacities were an obstacle to the enlivening of the investment climate. The growth of investment demand has been just 1.3 percent in relation to the previous year and remained volatile. Considerable escalation of investment activity is expected in 2011 mostly owing to planned investments in projects designed to boost up infrastructures.

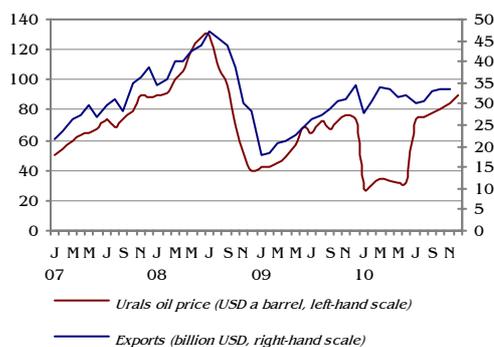
The rate of unemployment has subsided to amount to 7.7 percent of economically active population. Increased production and reduced unemployment contributed to the wage increase. As a result, early in the second quarter of 2010 the level of real wages had topped the pre-crisis peak.

Over 2010 the Russian export has grown by 31.2 percent compared to the previous year which is explained not only by increased volumes in physical terms (by 9.6 percent) but predominantly risen prices on commodities that constitute the main items of export. So, the average price of Urals crude oil has been USD 78.2 a barrel, a 28.1 percent increase over the previous year's average.

The domestic demand kept on growing due largely to the consumption of import goods. In 2010 the import of goods and services has grown by 29.7 percent, where physical volumes accounted for 21.4 percent and prices, 3.4 percent, of the growth.

During the year, capital flows trended differently. Over the first six months in particular, the inflow of capital has accelerated notably, reporting some 16 percent increase

**Oil price and Russia export trends**



Source: Ministry of Economic Development of RF

in relation to the previous year, while the outflow of capital has reduced nearly thrice as much. Starting the second half of the year, net outflow of private sector capital was observed, which amounted to USD 18.3 billion. As a result, foreign direct investment to the Russian Federation has decreased by 13.2 percent relative to the previous year. Based on annual results, the general FDI level, however, has grown by 40.1 percent. In the outcome, as of end-2010, international reserves of the Russian Federation have totaled USD 480 billion, representing 6.3 percent increase against the previous year. According to preliminary estimates, in 2010 Russia's current account deficit amounted to USD 14.3 billion in annualized terms, having decreased by USD 1.8 billion relative to the previous year.

The situation in the foreign exchange market has been steady throughout the year, notwithstanding short-term exchange rate fluctuations. The Russian ruble appreciated vis-à-vis the US dollar by 3.5 percent while it depreciated against Euro 12.1 percent. Over 2010, the average nominal exchange rate appreciation of the Ruble has been 4.3 percent, the real effective exchange rate appreciation, 9.5 percent.

In the first half of 2010, inflation persisted at a low level, 5.5 percent, mostly owing to low food prices and somewhat a humble demand. The increase of broad money which came about as part of economic recovery measures, as well as the record upsurge in grains and other food prices in international markets have pushed prices of food and agricultural products sharply up in the domestic market in the mid of the year. Inflation grew continuously, making up 8.7 percent at the end of the year.

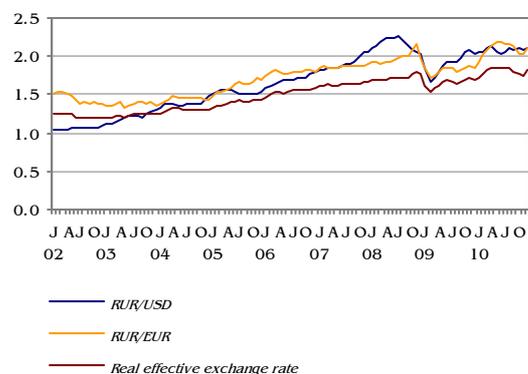
With relatively a low level of inflation throughout the year, and seeking to spur up lending, in the first half of the year the Russian Central Bank had lowered the refinancing rate by a total 1 percentage point to 7.75 percent. In the second half, in view of the risks to diminishing economic activity, the refinancing rate was left unchanged.

## GEORGIA

Based on the National Bank of Georgia estimates, the economy posted relatively a high growth of 6.7 percent against the 3.8 percent decline recorded in the previous year as a consequence of the financial and economic downturn. Economic activity was recovering as exports were growing, inbound transfers perking up and the real estate market and construction enlivening.

Exports have grown by 39.7 percent yet the growth of imports has been somewhat moderate, 16.7 percent. Based on the first nine month results of 2010, foreign direct investment has diminished by 6.8 percent and still lagging behind the pre-crisis level.

**Ruble real exchange rate**  
(January 1995 = 1)



Source: Ministry of Economic Development of RF

In 2010, narrowed flows of foreign currency promoted the Georgian Lari to depreciate by 6.4 percent y-o-y. During the year, in order to cushion sharp fluctuations of the exchange rate under pressures of foreign currency flows, the National Bank repeatedly intervened into the foreign exchange market by selling a total USD 153 million on an annual basis.

Over 2010, there have been positive developments in the banking sector, too. The economy lending has grown by 21 percent as opposed to the previous year's contraction of 13 percent. Deposits attracted by the banking sector have increased by around 40 percent. The banking system profitability indicators showed improvement versus the performance in the previous year. In particular, return on assets (ROA) reached 1.7 percent (0.8 percent in the previous year) and return on equity (ROE) made up 9.6 percent in contrast to -4.3 percent recorded in the previous year.

Estimations suggest that a further growth of the Georgian economy will chiefly depend on more private investments and increased volumes of bank lending. Exports, too, will definitely be a key driver of the economic growth, and some forecasts denote that in the period 2011-2013 it will have reached 38 percent of GDP. Notwithstanding positive expectations, there is still a great amount of uncertainty about, and downside risks to, the economy for further growth and recovery, since the developments with the Georgian export and inflow of financial resources are heavily reliant on external markets.

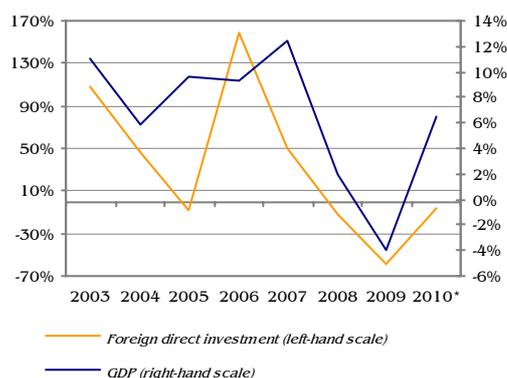
In 2010, the country posted a high inflation (11.2 percent as of end-year) which more than tripled the 2009 inflation indicator of 3 percent. In pursuit of curbing inflation, the National Bank has gradually raised, since June, the refinancing rate by a total 2.5 percent, to 7.5 percent at the end of the year.

## **TURKEY**

The financial stability assessment for 2010, credit ratings issued by rating agencies and reduced risks in general point to the economic recovery of Turkey. During the year, accelerated capital inflow combined with reported positive developments in the economy resulted in the falling of market rates and appreciation of the Turkish lira, thus bringing forward new risks.

Preliminary results suggest that economic growth in Turkey has been 7.8 percent, greatly fuelled by an augmented domestic demand. Increased domestic lending contributed to high growth in imports. This, coupled with weak external demand, led to the deterioration of trade balance and current account deficits. Positive developments along with economic growth have been observed in the labor market, too. However, the rate of unemployment remained above the pre-crisis level in spite of its continued subsidence during the year.

**Georgia GDP and FDI growth**



Source: National Bank of Georgia

An impressive growth of bank lending contributed to a stronger financial intermediation, and the ratio of loans to GDP amounted nearly to 46 percent, based on the third quarter results. However, the level of financial intermediation in Turkey is rather low in comparison with other similar countries. Relative to the previous year, the share of non-performing loans has shrunk to 4.1 percent in total, which is explained by improved lending as well as subdued unemployment and increased borrower incomes.

Profitability of the banking system has grown owing to improved credit quality and reduced provisioning on bad loans. Yet the profitability indicators had trended down. Based on the third quarter of 2010 results, return on assets has been 3.1 percent; return on equity, 24.7 percent.

At the end of the year, the inflation rate was 6.4 percent, almost reaching the yearend inflation target. In the first half of 2010, in pursuit of curbing high inflationary expectations, the Central Bank of Turkey has lifted the one-week repo rate by 0.5 pp to 7 percent. At the end of the year, when inflation indicator was within the target band, the one-week rate was lowered back by 0.5 pp. During the year, the Central Bank embarked on a phase by phase tightening of the reserve requirement ratio as part of its quantitative easing policy.

According to the Turkish Central Bank forecasts, economic growth in the country is expected to reach 4 percent. Downside risks to the economic growth would mostly depend on the developments with exports and the demand for imports in European countries.

## **SUMMARY**

Economic recovery went on in neighboring countries during 2010. This contributed to the growth of private remittances flowing to Armenia from Russia and stimulated the external commodity turnover. Private demand further recovered in these countries, so Armenia's exports, items of prepared food and agricultural products in the main, have increased.

Keeping transportation costs steady – and the only transport corridor functional for importing goods to Armenia – was possible owing to the political and economic stability in Georgia. High inflation recorded in neighboring countries provoked price increases on some goods that are imported to Armenia.

## 2. DEVELOPMENTS IN MACROECONOMIC ENVIRONMENT IN ARMENIA

### 2.1. MACROECONOMIC DEVELOPMENTS

In 2010, the real annual GDP growth was 2.1 percent and GDP output by current prices amounted to AMD 3509.52 billion. The faster recovery of the economic activity was seen in the first five months of the year, which was in part attributable to a profound decline of GDP recorded for the same period of the previous year. In the second half, however, economic growth rates slowed down as a result of reported downfall in agriculture.

Caused by unfavorable weather conditions, agriculture reported 15.7 percent decline totally due to 20.3 percent reduction in plant growing, and agriculture's total negative contribution to the GDP made up 2.2 pp. During the year, reported increases in industry and services came as the largest contribution to the economic growth.

Industry reported 9.5 percent growth driven by the surge in metals prices in global markets and growing global industrial demand; the highest growth rate, 24.3 percent, was recorded in ore mining sub-branch.

Production of beverage has increased by 31.6 percent as the demand in countries traditionally consuming imported beverage of Armenian manufacture rebounded. There has been a noticeable growth in other branches of processing industry, such as food, metallurgy, building materials as well as other sub-branches, as world and domestic economies further improved.

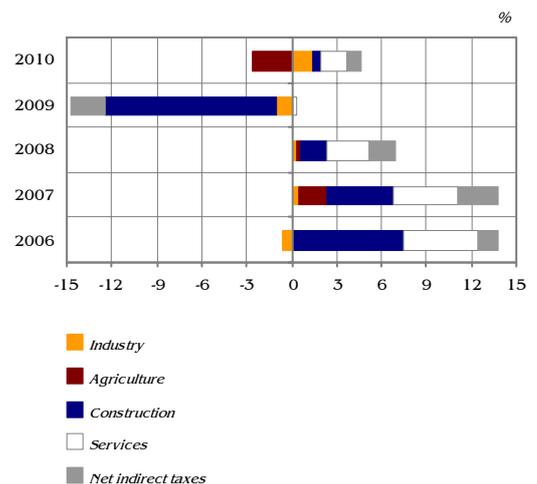
Construction posted 3.0 percent growth driven mainly by increased volumes of construction in various sectors of the economy. The decline in residential housing, which boasted a large share in total construction works previously, reported somewhat slower rates of decline, yet it plunged further in the course of the entire year, down to 11.4 percent, mostly due to 38.5 percent shrinkage in volumes of household-financed construction.

The sluggish growth rates in construction are explained in part by the lack of new major construction projects, modest growth rates in mortgage lending as well as slowly progressing prices in the real estate market.

Growth in services has been 4.5 percent mostly due to 12.0 percent increase in the volumes of wholesale trade, while retail trade has grown merely by 0.6 percent, reflecting still insufficient growth of household incomes and domestic demand.

In 2010, the banking sector took the growth of lending back on track in the light of better expectations about economic activity and positive developments with a number of macroeconomic indicators. Commercial banks

Economy sector contribution to GDP



Source: National Statistics Service of Armenia

and credit organizations, while responding to the surveys<sup>6</sup>, believed that, unlike the previous year, terms and procedures of SME lending and lending to major companies were loosened substantially in 2010. Easing of the terms of lending was more pronounced during the second and third quarters of the year, driven predominantly by increased competition among banks, plans to gain more market share and expand in the marketplace and positive expectations over accessibility to money markets and recovery of economic activity. The falling of interest rate on almost all types of loans was highlighted as the most straightforward alteration in lending terms.

With a 28 percent increase in corporate lending, the quality of credit portfolio has improved by 1.7 pp to reach 3.1 percent. The share of non-performing loans has dropped in construction (more than two times) and some improvement has been seen also in trade and agriculture.

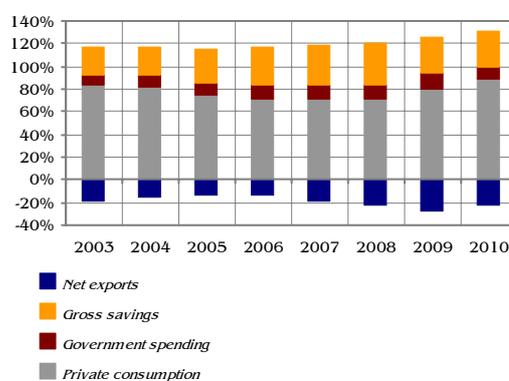
During 2010, the composite indices<sup>7</sup> of Economic Activity and Business Climate trended upward in relation to the previous year by 14.5 percent and 7.7 percent, respectively. The indices moving up positively point to the improved expectations about further development of the economy in comparison with the previous year and to the reduced risks.

In the GDP expenditures structure point of view, in 2010 the real growth of consumption reached 4.9 percent, which was determined by some increase in real household incomes as a result of rebounded inflow of private remittances, faster wage growth rates and improved consumer confidence. Moreover, as the Central Bank estimates show, public consumption has grown faster, 5.5 percent, whereas annual growth of private consumption has been 4.8 percent. Capital investment has reduced by 1.6 percent (mostly on the part of public investment) albeit business climate improvement and economic activity indices kept on moving upward during the year.

With exports growing faster over imports, and GDP growth reporting nominal volumes, the negative share of net exports in GDP has diminished by 8.0 percent to reach 23.0 percent.

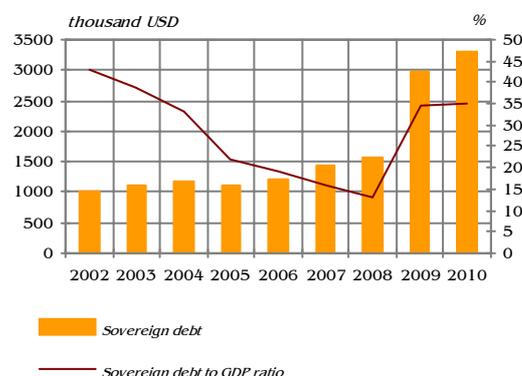
In 2010, relative to the previous year, the total public debt has increased by 11.2 percent to reach USD 3299 thousand. The debt to GDP ratio posted a slight increase to 35.1 percent in relation to the previous year, which is largely attributable to the amount of foreign debt pacing faster than GDP.

**GDP expenditure components**  
(share in GDP)



Source: National Statistics Service of Armenia

**Sovereign debt and sovereign debt to GDP ratio**



Source: Ministry of Finance of Armenia

<sup>6</sup> Source: surveyed results on "Loans made by commercial banks and credit organizations of the Republic of Armenia", as conducted by the Central Bank in the course of four quarters of 2010.

<sup>7</sup> For more details on indices calculated on the basis of the Central Bank surveys please see the CBA website.

The structure of external public debt has incurred a change as well. During 2010, the share of concessionary loans in the structure of public debt further contracted to 62.6 percent. The share of loans with floating interest rate has somewhat increased in relation to the previous year to amount to 36.4 percent.

**Qualitative indicators describing Armenia's debt**

Item	2005	2006	2007	2008	2009	2010
Debt/GDP (limit 50%)	22%	19%	16%	14%	34.7%	35.1%
Debt/Export	78% (less indebted)	80% (less indebted)	82% (less indebted)	90% (less indebted)	227% (moderately indebted)	182.1% (moderately indebted)
Debt service/Export	4.6% (less indebted)	4.2% (less indebted)	2.9% (less indebted)	3.1% (less indebted)	6% (less indebted)	5.0% (less indebted)
Interest/Export	0.9% (less indebted)	0.7% (less indebted)	0.6% (less indebted)	0.7% (less indebted)	2.0% (less indebted)	2.4% (less indebted)

Source: Ministry of Finance of Armenia

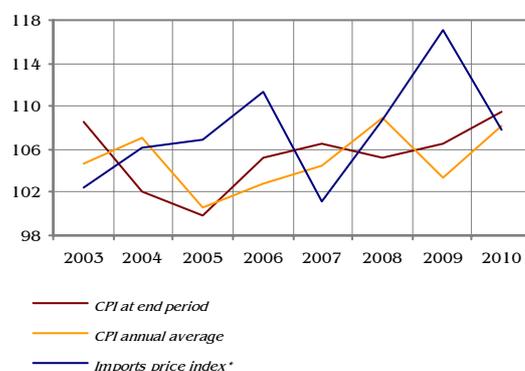
Positive developments observed in the domestic economy in 2010 mirrored the state budget. There has been a noticeable increment in collection of revenues in the first six months of the year which, however, slowed down concurrent with retardation in the rates of economic recovery during the second half. The budget revenues have increased by 10.6 percent, and the budget expenditures, by 3.9 percent. High growth has been reported on the tax revenues side, as much as 14.1 percent. In the expenditures structure, expenses on internal and external interest payments grew fast, by 79.4 percent and 95.1 percent, respectively. This was determined by a considerable increase of foreign public debt and of the government securities portfolio. The budget deficit has reduced by about 32 percent as a result of surpassing growth of revenues and reached 2.9 percent of GDP.

During 2010, an inflationary environment persisted in Armenia influenced by impulses coming from the global economy and lagged effect from the previous year's expansionary policy. The 12-month inflation amounted to 9.4 percent which is substantially higher from the 4±1.5 percent target by 3.9 pp. The 12-month inflation figure is below the Georgia's respective indicator which is 11.2 percent but above the 7.6 percent inflation in Azerbaijan and 8.3 percent inflation indicator in Russia.

As high inflationary environment persisted and external and domestic economies further recovered, the Central Bank had tightened the monetary policy conditions in the first half of the year by raising the refinancing rate a total of 2.25 pp to 7.25 from the 5.0 level at the start of the year.

Starting the second quarter of the year, the Dram exchange rate tended to appreciate vis-à-vis the US dollar, which is explained mainly by improving economic situation and growing foreign currency supply on the back of rebounding capital flows, private transfers and factor

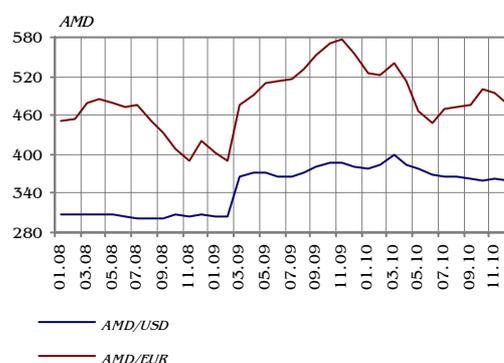
**Consumer price and imports price indices**



\* The National Statistics Service of Armenia started a new methodology for calculation of imports prices in 2007; the 2002-2006 indicators have been estimated by the Central Bank based on the former methodology for calculation of imports prices.

Source: Central Bank of Armenia; National Statistics Service of Armenia

**AMD exchange rate versus USD and EUR**



Source: Central Bank of Armenia

income. At the end of the year, relative to the end of the previous year, the Dram exchange rate has appreciated versus the USD dollar by around 4.0 percent. Seeking to mitigate sharp, undesired foreign exchange fluctuations, the Central Bank intervened into the currency market by selling USD 198.7 million and purchasing USD 122.7 million.

## 2.2. FOREIGN TRADE <sup>8</sup>

In the light of developments in global and domestic economies, the current account deficit has improved in relation to the previous year and is estimated to have amounted to USD 1310 million. The volumes of foreign commodity turnover have increased by nearly 22 percent to reach USD 43 billion.

Imports (CIF) have increased by 13.9 percent to USD 3.8 billion. The import growth rates started to slow down markedly, since the second half of the year, which was determined by speeding up growth rates in import prices under budget constraints experienced by economic agents. According to the Central Bank estimates, the import volumes in real terms began decreasing starting from the second half of the year, and the decline has been 2.7 percent in annual terms.

There has been increment in the volumes of various import groups recorded for items such as “machinery and equipment”, “mineral produce”, “transport means” and “items of prepared food and agricultural product”.

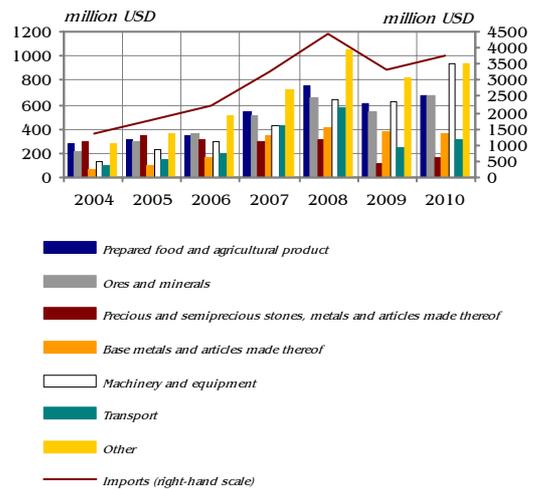
Exports (FOB) have increased by 48.9 percent (USD 355.6 million) to USD 1082.4 million. High growth of exports has been attributable to the increase of prices of raw materials in world markets as well as relatively high growth in industry branch. Based on the Central Bank estimates, the export volumes in real terms have grown by 15 percent in annual terms.

In the structure of exports, the main increases were recorded for items such as “mineral produce”, “items of prepared food”, “non-precious metals and articles made thereof” and “precious and semi-precious stones, precious metals and articles made thereof”.

With the exports growing faster than imports, the trade balance deficit has increased moderately by USD 59 million to USD 2126.1 million. In terms of geographic distribution of external trade, major concentrations remain, and the composition of the main partner countries has not changed much either. In the exports structure, the share of EU states has increased by nearly 6 pp while the share of the USA has decreased by 2 pp. In terms of imports, the EU states and the CIS, which together constitute a 46 percent share, remain the main partners to Armenia.

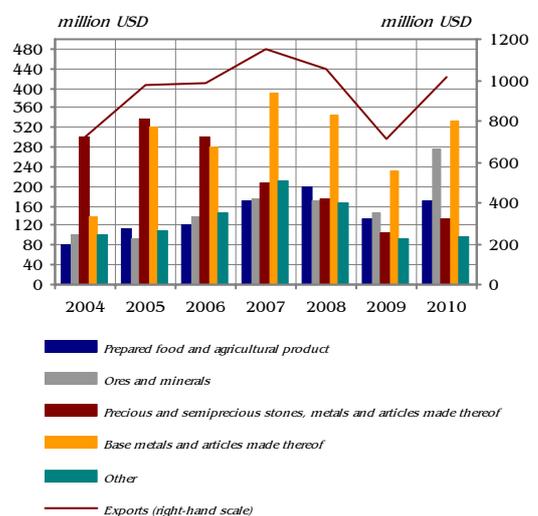
<sup>8</sup> Data according to the Balance of Payments provided from the National Statistics Service of Armenia.

Armenia’s imports by commodity groups



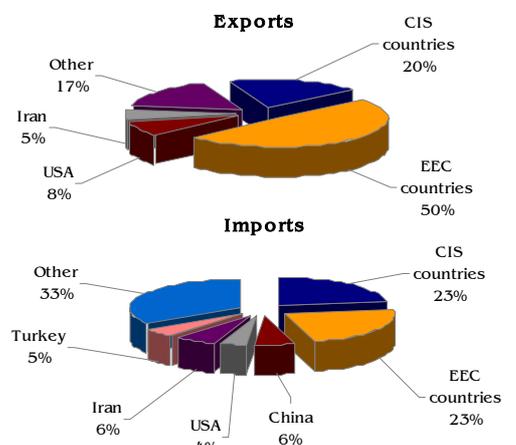
Source: Central Bank of Armenia

Armenia’s exports by commodity groups



Source: Central Bank of Armenia

Armenia’s foreign trade, by country, as of 31.12.2010



Source: National Statistics Service of Armenia

## 2.3. NET FACTOR INCOMES AND REMITTANCES

The inflow of factor incomes and remittances has been back on track as domestic and external economies recover. Most private remittances come from Russia which has seen positive economic developments during 2010 (see details in *Regional country developments* section). This, naturally, has positively affected the net factor incomes and remittances dynamics.

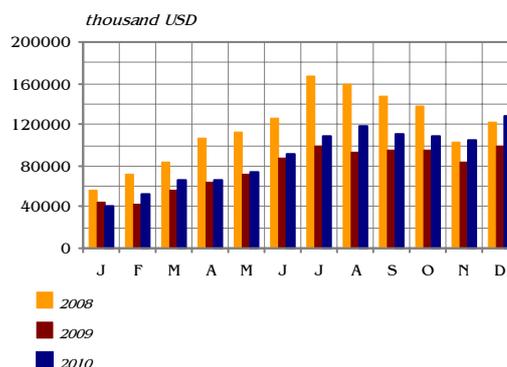
In 2010, procedures on granting permission for migrant work, especially high-quality labor-force, in the Russian Federation were eased. For migrants from Armenia, an important development was the introduction of patents that allow them to work for the individuals who are legitimate by status. The change in quotas for work granted to foreign nationals has not been an obstacle for people who travel Russia to work there. Armenian migrants in Russia are involved mainly in the construction sector, 44.1 percent; services, 27.2 percent; and transport and communications, 12.1 percent<sup>9</sup>.

The inflow of net private remittances and factor incomes has broadened by 15.3 percent to amount to AMD 374.8 billion in which private remittances alone have increased by 18.4 percent. As a result, in 2010 the share of net factor incomes and private remittances in Gross National Disposable Income has risen by 0.3 pp to make up 9.7 percent, compared to 9.4 percent recorded as of yearend 2009.

Private remittances and seasonal worker incomes are mainly used for current consumption as well as to finance private construction needs and real estate purchases. In 2010, relative to the previous year, an increased inflow has positively influenced the domestic consumption growth rates despite continued shrinking volumes of private sector-supported construction.

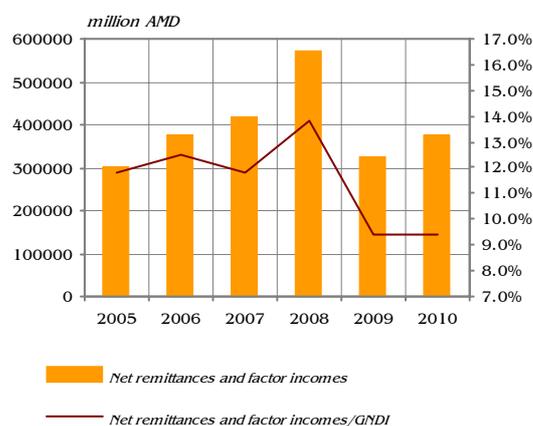
In 2010, relative to the previous year, the net inflow of non-commercial transfers of individuals executed via the banking system has grown by 15.4 percent (33.3 percent decline was recorded in 2009) and totaled USD 1.1 billion. While in the first six months of 2010, this figure had climbed by 6.6 percent against the same period of the previous year, in the second half of the year it had grown at much a faster pace, 21.0 percent. Given the performance like this is further maintained, in the course of 2011 the private remittances may gradually reach the pre-crisis levels. The breakdown of non-commercial transfers of individuals executed via the banking system is as follows: 88.2 percent from the Russian Federation and 4.0 percent from the USA.

**Net non-commercial transfers of banking system**



Source: Central Bank of Armenia

**Net factor incomes and remittances**



Source: Central Bank of Armenia; National Statistics Service of Armenia

<sup>9</sup> Based on the estimates provided from the Federal Migration Service of Russia to Armenia.

## 2.4. HOUSEHOLD INCOMES AND DEBT BURDEN

With household incomes recovering at a slow pace, during 2010 the risks inherent in this sector remained comfortably manageable, however.

Based on the 2010 results, the unemployment subsided in conjunction with the economic recovery. Over the first six months of 2010, relative to the previous period in 2009, the rate of unemployment has risen by 0.3 pp to 7.2 percent. In the second half, however, it scaled gradually down to 7.1 percent at the end of the year. Geographically, the unemployment has been higher in Yerevan only, having increased by 1.4 pp to make up 8.1 percent, but it has been mostly unchanged or even fallen down in the regions of Armenia. Yet, in some regions – Lori, Syunik, Shirak – the rate of unemployment exceeded the country average indicator, making up 10-11 percent.

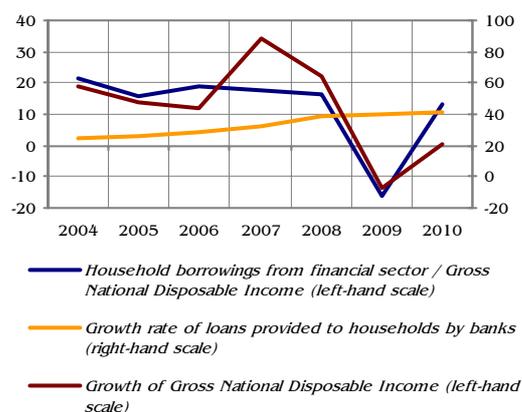
Average monthly nominal wages have increased by 6.1 percent against the previous year but stood below the previous year's growth of 10.7 percent as well as the pre-crisis growth level. Despite high inflation, there has been a reported 1.9 percent reduction in real wages, in contrast to 7.1 percent increase in the previous year.

Continued recoveries in net factor incomes and private remittances, with their large share in total household incomes in Armenia, coupled with increased wage level and reduced unemployment, contributed to the overall increase of household incomes.

According to the Central Bank surveys<sup>10</sup>, commercial banks and credit organizations also expect improvement in financial conditions of households. These expectations too, helped to regain momentum in the market of consumer credits. In particular, some banks have plans to take auto crediting back to normal since the demand for cars is large enough and it tends to grow. The funds which the commercial banks had attracted prevalingly in foreign currency was an impediment to the growth of consumer credits. This fact also points out to the situation that interest rates of consumer credits remained higher than interest rates of other types of credit.

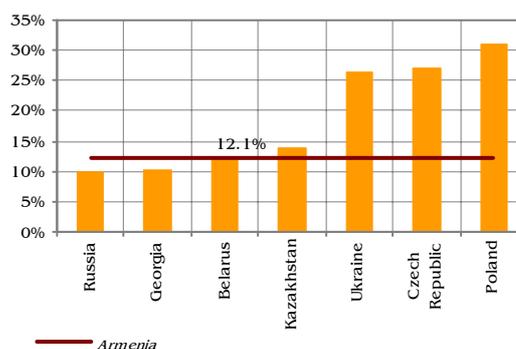
In 2010, total liabilities of households to the financial sector have grown by 21.1 percent. The liabilities to commercial banks still prevailed in the household debt burden, making up 88.7 percent. Loans provided to household by the banking sector have increased by 19.5 percent (compared to 6.4 percent decrease recorded in 2009). This indicator, however, stood below the growth of total loans, which amounted to 27.2 percent. The regained growth of lending has been attributable primarily

**Household debt and household income Indicators (%)**



Source: Central Bank of Armenia

**Household debt to depository Institutions/GDP in some countries**



Source: Central Bank of Armenia; other central banks

<sup>10</sup> Source: surveyed results on "Loans made by commercial banks and credit organizations of the Republic of Armenia", as conducted by the Central Bank in the course of four quarters of 2010.

to the economy recovering, to the terms of lending which were somehow eased, and to households expecting increment in their incomes. The liabilities to credit organizations and pawnshops have grown at a faster rate, by 28.7 percent and 68.1 percent, respectively. The ratio of household debt to income (inclusive of liabilities to banks, credit organizations and pawnshops) has amounted to 10.6 percent.

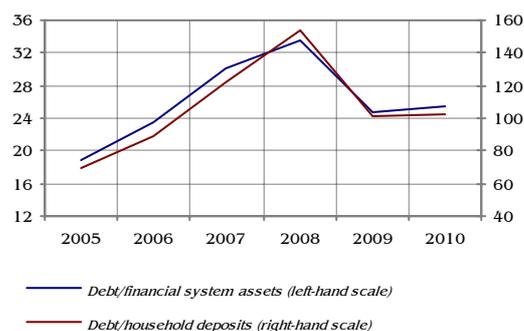
The household debt burden in Armenia is much lower in comparison with debt burden in the countries of Central Europe and CIS. Moreover, the debt burden is growing at a slow pace which is, surely, attributable to a low level of financial intermediation in Armenia. In 2009, because of the crisis, the ratio of household debt to deposits had reduced sharply in Armenia, and for the last two years now it is stable, staying in the range of 101 percent. Under such circumstance, a further increase of the household debt burden, in conjunction with economic growth, would not be a source of risks to undermine the stability of the financial system.

In 2010, commercial bank and credit organization losses on loans to households had downward trends. The share of non-performing loans has contracted by 1.4 pp to 3.7 percent of the consumer credit portfolio, and by 0.8 pp to 5.6 percent of the mortgage loan portfolio. At the end of the year, the volume of consumer and mortgage loans considered as a loss has not quite changed and constituted 4.9 percent of the total consumer and mortgage loan portfolio.

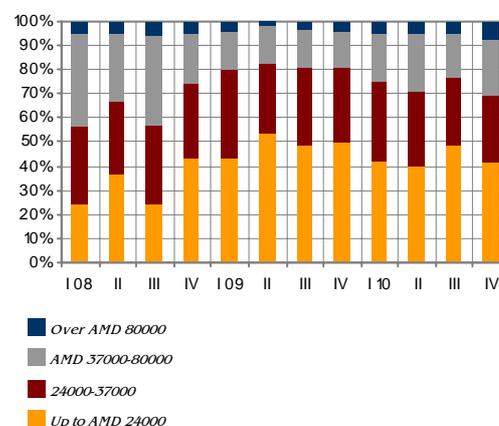
The components of consumer confidence index<sup>11</sup> with its elements can indirectly point out to the economic standing of households and expectations about their incomes. Based on the results of each of the four quarters of 2010, relative to each of the four quarters of the previous year, the composite consumer confidence index has risen. The index posted its lowest value in the third quarter explained mainly by the substantial diminishment in assessing Armenia's economic situation on the back of the downfall in agriculture as well as price rise in some food products in world markets. The ascend of the index in the first two quarters of the year was determined chiefly by the rising of the index of future conditions, whereas indices of present and future conditions posted an increase in the second half and especially in the fourth quarter of the year.

The share of middle-income population in Armenia has grown in relation to the previous year (based on the results of the Central Bank surveys) amid economic growth and broadened inflow of private remittances. The share of population with middle-level incomes, however, was markedly lower from the pre-crisis levels while the share of low-income population was still prevailing.

**Household debt burden (%)**



**Household income groups**



Source: Central Bank of Armenia

<sup>11</sup> The consumer confidence index is calculated by striking an average of current conditions index and future conditions index. Please, visit the Central Bank website for more details.

## 2.5. REAL ESTATE PRICES

Monitoring the developments in a real estate market is vital in terms of assessment of financial stability. On the one hand, the extent to which the real estate market is buoyant and can mean that the construction branch develops steadily and investment attractiveness boosts up. On the other hand, changes in the real estate market can affect the price of property pledged at financial institutions and hence results in a greater amount of credit risk.

The Armenian real estate market continues recovering after the crisis in 2008-2009. In 2010, the number of real estate transactions as an indicator of market activity has climbed by 12.6 percent relative to the previous year. Transactions involving home sales constituted 20.9 percent in total real estate transactions, which represented a 10.4 percent increase in relation to the previous year.

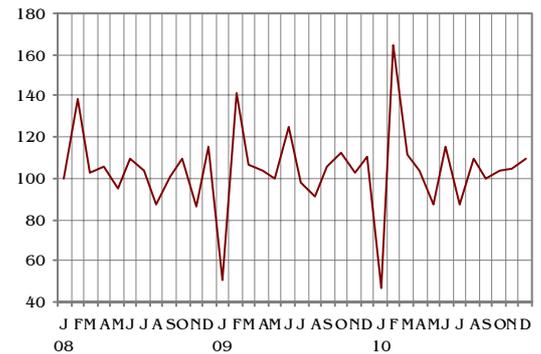
Real estate transactions remain concentrated in Yerevan which accounted for 36.1 percent of the number of home sales. Relative to the previous year, the number of home sales in Yerevan has climbed by 13.8 percent. The second largest concentration is Kotayk region accounting for 13.1 percent of real estate transactions. The smallest amount of transactions has been reported for Vayots Dzor and Tavush regions, with home sales not exceeding 4 percent. The number of home sales in regions of Armenia has grown by 8.5 percent.

Average market price of 1 sq m of floor space has risen in line with the growing number of transactions in the real estate market, although prices have fallen in the second half of the year. The price of 1 sq m of floor space in multi-apartment homes went up by 2.5 percent in Yerevan and by 3.0 percent in regions.

The rise in prices can be explained by the slowing supply on the one hand, and recovering demand, on the other. As such, the demand has been fuelled by an increased accessibility to mortgage loans, eased lending conditions and some rise in household incomes. As a result, mortgage loans are offered for a maturity period of 10-15 years, with a starter 12 percent p.a. There has been some tightening introduced to the collateral requirement, the loan to value ratio and the assessment of credibility.

Though mortgage lending originated by commercial banks and credit organizations has become livelier, loanable funds disbursed under special-purpose programs prevailed in total mortgage loan portfolio. According to the results of survey, commercial banks expect further dynamism in the demand for real estate as financial standing of customers stabilizes. This may push up the lending of own funds while the terms and procedures of lending will tend to ease further.

**Real estate transactions index**



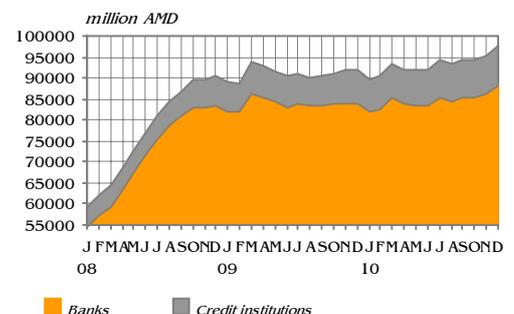
Source: State Committee of Real Estate Cadastre at the Government of Armenia

**Average apartment price index in Yerevan (sq m)**



Source: State Committee of Real Estate Cadastre at the Government of Armenia

**Mortgage loan portfolio of banks and credit organizations**



Source: Central Bank of Armenia

During 2010, commercial banks and credit organizations generated mortgage loans of AMD 38.1 billion by value or 4669 loans by number. In terms of regional concentration, the mortgage lending has been in line with the number of the transactions involving home sales.

The National Mortgage Company had 975 mortgage loans by number, with a total amount of AMD 7.3 billion, re-financed in 2010, of which 71.0 percent or AMD 5.2 billion were loans for home purchases. More than 81 percent of such loans were provided in Yerevan.

Mortgage loans of AMD 1.8 billion by value or 223 loans by number have been re-financed under the program "Affordable Housing for Young Families", of which 147 with a total amount of AMD 1.4 billion provided in Yerevan. Because lending in Yerevan is livelier than elsewhere in Armenia, the terms of lending for home purchases in regions have been eased further.

***Dwelling house operation by sources of financing***

Source of financing	Operated residential apartments in 2010 (sq m)	Share in total	Percentage change to 2009
<b>Total, o/w:</b>	496432	100%	20%
state budget	128693	25.96	1140%
resources from organizations	137069	27.6	94%
household funds	229030	46.1	-31%

*Source: National Statistics Service of the Republic of Armenia*

Financing for residential apartments has started to pick up since the second half of 2010 only. In 2010, relative to 2009, the volume of residential apartments commissioned has increased by 20 percent, whereas the first six months of 2010 posted some 35.2 percent decline in relation to the first half of 2009 and 74 percent decline against the second half. The shrinkage in volumes of household-supported construction has drastically affected the residential apartment volumes, driving the share of the latter to diminish to 46.1 percent (66.6 percent in the first half of 2010 and 80.4 percent in December of 2009). The less-than-expected growth of household incomes, private remittances in particular, was the principal cause for such contraction. The volume of construction financed by organizations has increased by 93.5 percent.

The share of transactions with rents in total real estate transactions is as low as 5.9 percent, yet this market, too, is very sensitive to the happenings in the financial system. The results of the survey conducted by an independent audit firm<sup>12</sup> suggest that two thirds of commercial firms in

<sup>12</sup> The "Commercial Yerevan Real Estate Market Survey", conducted by KPMG, an audit firm.

Yerevan are using a rented space for their business. Respondents argued that the rent fee was affected by the exchange rate and location rather than interest rates of term deposits. The survey mentioned that there is great potential for the Armenian real estate market since it is attractive also in terms of speculative investment when assets for alternative investment are lacking.

## **SUMMARY**

The economy of Armenia started to gradually return to normal after a reported downfall in the previous year. The recovery has been associated, by and large, with positive impulses coming from the world economy. The rising of prices of raw materials as well as increased transfers and recovering domestic demand all contributed to the GDP growth. The decline in agriculture has notably decelerated the GDP growth rate, driving the inflationary environment to deepen further.

Prices of primary goods kept on growing amid recoveries in global economy, and even at a faster pace during the second six months of the year. The price increases on commodities in international markets were reflected in the dynamic with which Armenia's exports and imports performed, on the one hand, and contributed to the generation of a high inflationary environment in the country, on the other hand.

With positive developments observable in the macroeconomic environment, there has been some improvement in labor market indicators, namely the subdued unemployment rate and the annualized growth of average monthly nominal wages. There has been some increment in household incomes along with private remittances recovering to their previous growth.

Commercial banks have begun to ease the terms and conditions for both corporate and household lending through increasing accessibility to loan resources. The lending growth rates have not reached the pre-crisis levels, however. Given the present low level of financial intermediation and household debt burden, a further advancement of the economy lending, with all else being equal, will not actually be a source of major risks to loan recoverability.

The economic growth for 2011 is forecast to be in the range 4.1 – 5.7 percent, which will largely depend on how quickly and to what extent the world economy and Armenian domestic demand will recover. The level of inflation would be possible to keep within the target band unless food and energy crises at a global scale spark off. Also, in 2011 Armenia's exports and imports are expected to boost up in the light of continued world economic recovery and greater optimism for further growth of the Russian economy.

### 3. FINANCIAL MARKET STABILITY IN ARMENIA

#### 3.1. MONEY AND CAPITAL MARKETS

Average daily supply of repo agreements signed with the Central Bank has reduced in line with the limitation of quantitative easing<sup>13</sup>, as part of gradual tightening of monetary policy conditions which the Central Bank carried out during the first half of the year. Interest rates have risen to some extent over the first half of the year but fallen in the second half, persisting at somewhat a higher level relative to the previous year. There has been a noticeable increase in volumes of interbank repo market transactions accompanied with slowly growing interest rates. Interest rates of interbank repo transactions have begun to fall since the extra demand for dram funds, which were generated as a result of a changed reserve requirement mechanism, further contracted. In December 2010, the repo market rate was 7.84 percent, an increase of 2.05 pp against the previous year.

The second six months of 2010 have seen a stronger trading on the platform of interbank loan resources at NASDAQ OMX Armenia, the stock exchange operator. Interestingly, in spite of an increased dynamism on the trade platform, the average weighted interest rate of loan resources has sloped down steadily to 5.11 percent on December from 10.4 percent in April. The average daily interbank loan trades have grown manifold, reaching AMD 6.9 billion from AMD 902 million.

The Central Bank has twice changed the reserve requirement ratio during 2010 as part of the measures to reduce the dollarization of the economy<sup>14</sup>. This alteration resulted in substantial reductions in the balance of commercial banks' correspondent accounts with the Central Bank. Reduction of ample liquidity<sup>15</sup> was in part attributable to the average daily balance on deposit attracted by the Central Bank as such daily balances have augmented more than 3-fold during the second half of the year.

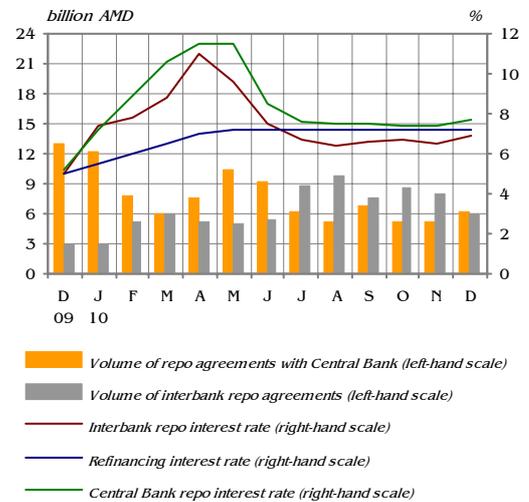
There has been an interest rate increase in the government securities market over the first six months of 2010, which was consistent with the performance demonstrated by the Central Bank refinancing rate and

<sup>13</sup> The limitation of quantitative easing deals with the reductions in an announced amount of supply of repo agreements signed with the Central Bank.

<sup>14</sup> Back in the second quarter of 2010, the reserve requirement mechanism allowed to keeping 25 percent of foreign currency funds, attracted by commercial banks, in Armenian Dram, and 75 percent of foreign currency funds, in a respective foreign currency. Starting from the third quarter, however, the mechanism was changed whereby 50 percent of foreign currency funds had to be kept in Armenian Dram and 50 percent, in foreign currency, respectively.

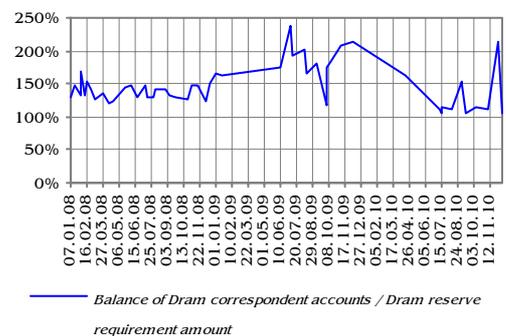
<sup>15</sup> Combination of the funds on the balance of correspondent account with the Central Bank and the funds subject to reserve requirement.

Repo agreements and repo interest rates



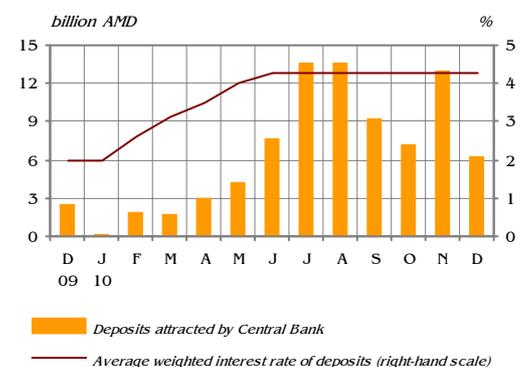
Source: Central Bank of Armenia

Dram correspondent accounts of commercial banks with Central Bank and Dram reserve requirement amount



Source: Central Bank of Armenia

Average daily volumes and interest rates of deposits attracted by Central Bank



Source: Central Bank of Armenia

interbank repo market rates. In the second six months, however, interest rates dropped in conjunction with increased allocation volumes. As for the yields in t-bills market, most transposition of the yield curve was driven by a parallel shift in the curve line, which made up 1.93 pp, owing to augmented yields. Convexity of the curve sloped slightly down, from 0.37 to 0.32, which points to the narrowed spread in short-term and long-term interest rates.

The ratio of Average Modified Duration Indicator ( $D_M$ )<sup>16</sup> calculated to evaluate interest rate risk was 2.1 for government bonds in circulation as of end-December 2010. The level of the ratio has sunk by 0.15 relative to the previous year.

At the end of 2010, relative to the same period of the previous year, average maturity (duration) of government bonds in circulation has reduced by 57 days to 855 days.

**Modified duration of outstanding government securities as of 31.12.2010 for different maturity baskets**

$D_M$	up to 6 months	from 6 months to 1 year	2-5 years	5-7 years	7-10 years	2-5 years
	0.24	0.61	1.38	2.71	5.18	6.1

Source: Central Bank of Armenia.

**Modified duration of available-for-sale and trading government securities of commercial banks as of 31.12.2010 and probable profit/loss in case of 1% change in yield for different maturity baskets**

	up to 6 months	from 6 months to 1 year	1-2 years	2-5 years	5-7 years	7-10 years	total
Trading government securities (million AMD)	25007.0	5835.0	22887.0	28675.0	7325.0	6414.0	96143.0
Share in total portfolio	26.0%	6.1%	23.8%	29.8%	7.6%	6.7%	100%
$D_M$	0.2	0.6	1.4	2.7	4.5	6.1	2.0
Price change +/- (million AMD)	51.5	33.9	321.8	811.7	293.5	333.6	1846.0

Source: Central Bank of Armenia.

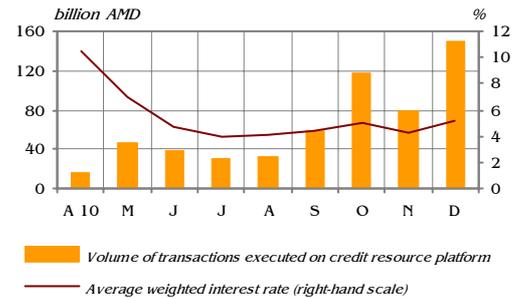
In case of 1 percent increase of the yield, the potential loss in commercial banks' portfolio of government securities may reach AMD 1.8 billion. As such, most loss is likely to come from medium-term securities as they have a larger share in the securities portfolio.

Operations in securities markets (including repo transactions, excluding operations with the Central Bank) carried out by investment service providers<sup>17</sup> amounted to

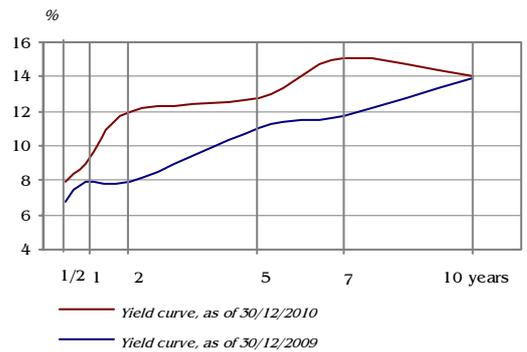
<sup>16</sup> The ratio of Average Modified Duration Indicator denotes the level of change in the price in relation to the change in yield.

<sup>17</sup> As of 31.12.2010, investment service providers included 21 commercial banks and 8 investment companies.

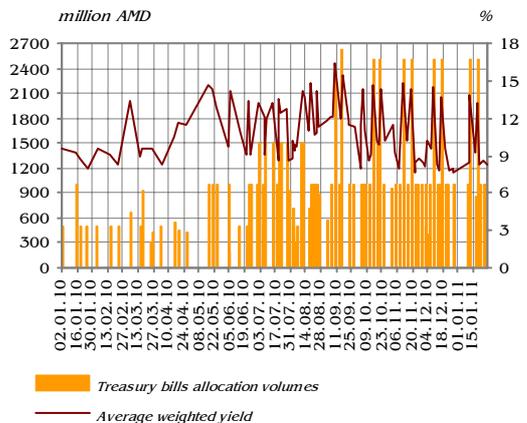
**Volume of transactions on credit resource platform and average weighted interest rate**



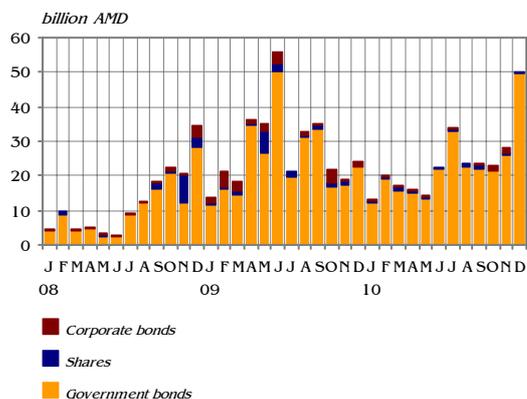
**Government bond yield curves**



**Treasury bills allocation volumes and average weighted yield**



**Securities trades by investment service providers**



Source: Central Bank of Armenia

AMD 1 trillion 757 billion. Transactions involving securities trades constituted 16 percent of the above said operations, which represented a 15 percent decrease against the previous period. The share of operations with government securities in total transactions involving securities trades remained the largest, 94 percent; the share of corporate bonds and equity shares amounted to 3 percent each.

In 2010, the volatility of the government securities market liquidity<sup>18</sup> has diminished in relation to the previous year, with the standard deviation of the liquidity having reached 5.6 versus 11.2 recorded in the previous year.

The share of medium-term securities was as large as 59 percent of total transactions involving government securities trades. The share of short-term and long-term securities amounted to 31 percent and 10 percent, respectively.

Repo transactions (excluding operations with the Central Bank) carried out by investment service providers amounted to AMD 1 trillion 470 billion. Again, operations with government securities accounted for the largest share, 97.7 percent, of repo transactions. Repo transactions with corporate bonds and with equity shares constituted, respectively, 2.2 percent and 0.1 percent of total transactions executed.

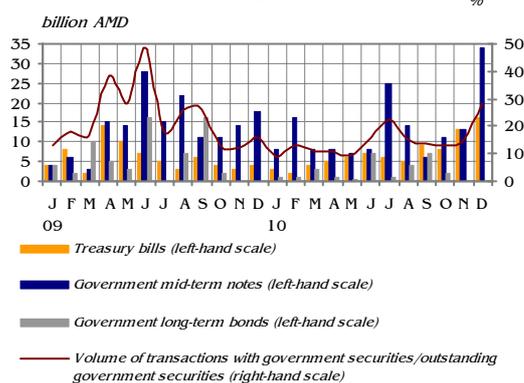
In the structure of transactions with securities trades carried out by investment service providers, the share of transactions in regulated market remained small, a mere 2.9 percent.

In the structure of transactions with securities trades in the regulated market, the share of transactions with corporate bonds constituted 64.8 percent in total stock exchange turnover. The transactions with government bonds and with equity shares constituted, respectively, 33.6 percent and 1.6 percent.

As of December 31, 2010, the ratio of gross securities market turnover to GDP<sup>19</sup> has been 8.2 percent (10.8 percent recorded in 2009), which is mainly attributable to the recovering GDP. Also, the ratio of securities market capitalization to GDP<sup>20</sup> has been 1.5 percent, representing 0.2 pp fall in relation to the respective indicator recorded in 2009.

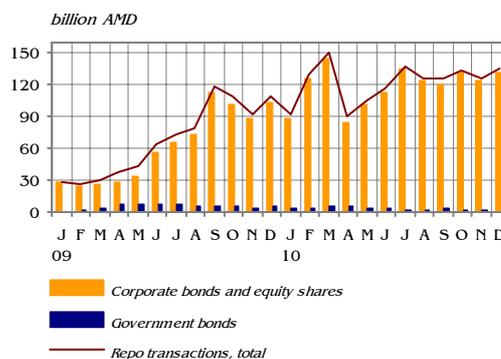
Concentration of 11 reporting issuers admitted to trading in the regulated market is still very high by capitalization, although it plunged a little in 2010.

**Volume of transactions with government securities and volume of transactions with government securities / outstanding** %

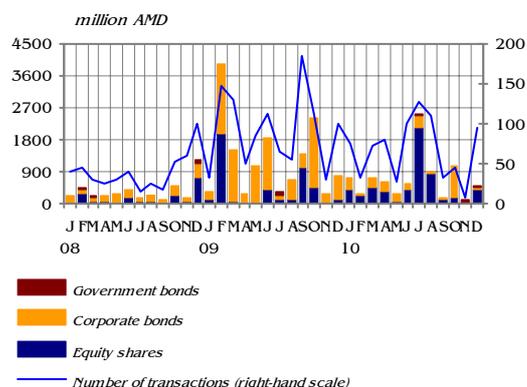


Source: Central Bank of Armenia

**Repo transactions by investment service providers, by types of security (excluding transactions with Central Bank)**



**Securities trades at regulated market of securities**



Source: Central Bank of Armenia

<sup>18</sup> The liquidity of government securities market is calculated as ratio between an amount of monthly trade transactions executed by investment service providers in the secondary market of government bonds and an amount of government bonds outstanding.

<sup>19</sup> This comes as a ratio of gross market turnover of investment service providers to the GDP.

<sup>20</sup> This comes as a ratio of market price of listed securities to the GDP.

**The 3 and 5 largest concentration of issuers of shares, by capitalization**

	Share of the 3 largest company capitalization (%)	Share of the 5 largest company capitalization (%)
31.12.2008	89.2	99.2
31.12.2009	83.7	98.2
31.12.2010	80.1	94.7

Source: NASDAQ OMX Armenia

### 3.2. FOREIGN EXCHANGE MARKET

Notwithstanding volatilities observed in the foreign exchange market over the first six months of 2010, the Armenian dram tended to appreciate vis-à-vis the US dollar and relative to the end of the previous year it showed 4 percent appreciation. However, the exchange rate volatility has been much lower in comparison with the previous year as the AMD/USD variation coefficient reached 160.9, representing a 4-fold reduction from the respective figure of 682.12 reported in 2009.

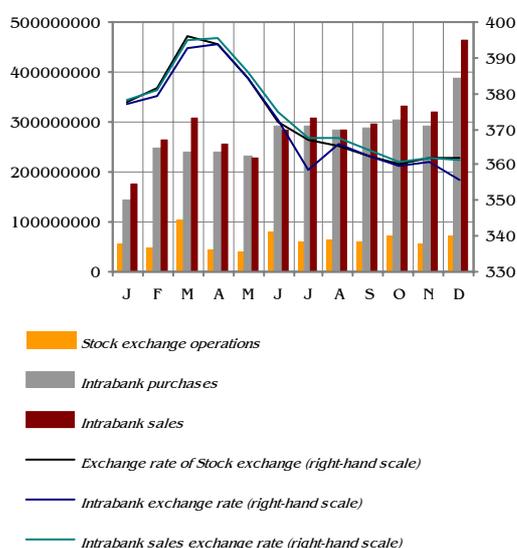
#### SUMMARY

The developments in the Armenian financial market in 2010 were associated, by and large, with the Central Bank's tightening of monetary conditions. There have been interest rate hikes and increment in volumes of transactions. Interest rates have grown consistent with the tightening of monetary policy conditions and added demand for dram resources. So, the demand for dram resources has increased as a result of the change in reserve requirement mechanism as part of anti-dollarization measures. This development, coupled with the Central Bank's action to limit quantitative easing, spurred up the stock exchange trading and transactions in interbank repo market which, in turn, created mechanisms facilitating an effective delivery of liquidity.

Repo transactions with government bonds still prevail in the structure of transactions carried out by investment service providers, whereas the share of operations executed with other financial instruments is very low.

There has been some appreciation of the local currency observed in the light of recovering growth rates of foreign currency inflow.

**Volumes of operations in Armenian foreign exchange market and exchange rates**



Source: Central Bank of Armenia

#### 4. FINANCIAL INSTITUTION STABILITY IN ARMENIA

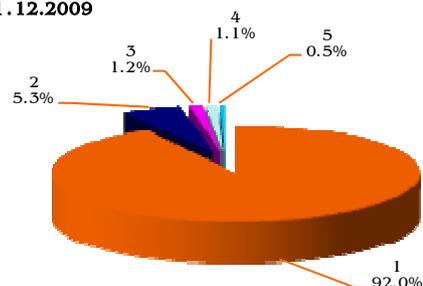
Armenian banking system holds 90.9 percent of the financial system assets. Therefore, from the financial stability point of view, assessing and disclosing risks inherent to the banking activities is rather important. Insurance companies, securities market participants and other financial organizations are small enough in comparison with the banking system, so their potential impact on financial stability in Armenian financial system is estimated to be minor.

In 2010, risks associated with the banking sector were reduced and further development of the economy became more predictable. The year was favorable for the banking system especially in the second half of the year as the sector tracked success in maintaining a reasonably high level of profitability through an aggressive lending. Nevertheless, profitability of the banking system was still below the pre-crisis levels. At the same time, banks managed to broaden their customer base by branching out and providing more quality services and products.

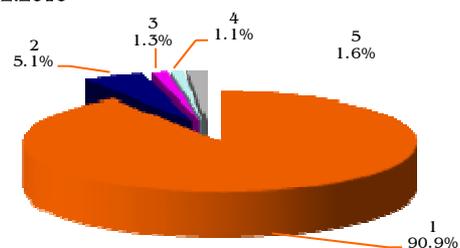
Starting from the end of 2009 and during 2010, the lending market was demonstrating steadily growing patterns owing to post-crisis development trends for stability and income growth expectations among borrowers and banks, on the one hand, and to the action taken on by the Central Bank, on the other. Increased private transfers and household incomes, fairly a stable AMD/USD exchange rate on the brink of borrower expectations for a reduced foreign exchange risk to US dollar-denominated loans and the developments in real sector added to the further stimulation of the lending market. Faster growth in lending to legal persons over natural persons persisted in 2010.

**Financial system assets, by financial institutions**

31.12.2009



31.12.2010



1. Banks, 2. Credit organizations, 3. Insurance companies, 4. Investment service providers, 5. Other financial institutions

Source: Central Bank of Armenia

## 4.1. COMMERCIAL BANKS

### *Banking System Stability Map*

A banking system stability map<sup>219</sup> has been designed to illustrate the behavior of the banking system stability. It denotes how values in the set of indicators of banking risks have improved relative to previous periods. In 2010, relative to 2009, risks have reduced substantially. Only a small increment of risk has been observed with regard to the capital adequacy and liquidity ratios, which is associated with the growth of lending and a changed methodology for the capital adequacy standard calculation<sup>22</sup>.

#### *4.1.1. Financial intermediation; concentration*

Over 2010, a rapid growth of the banking system assets has been reported in line with the nominal GDP growth, thus pushing the ratio of banking system assets to GDP up by 2.6 pp to have reached 44.5 percent at the end of the year (this indicator still lags behind the respective indicator of other countries). Similarly, the ratio of banking system loans to GDP has risen by 3.1 pp to 25.3 percent, as a result of faster growing loans in relation to the GDP growth.

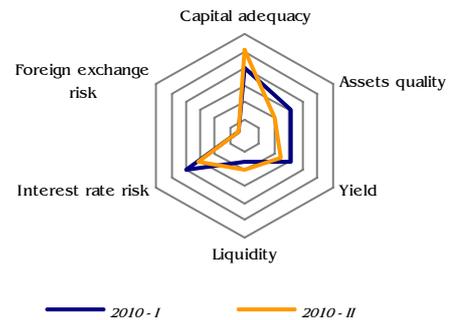
Two more ratios denoting financial intermediation, namely broad money to GDP and deposits attracted by banking system to GDP, have slowed down by 0.6 percent, to 26.0 percent and 19.2 percent, respectively. The ratio of deposits to GDP has plunged because of the reduction of deposits of legal persons. In 2010, amid trends for recovering economic growth and business activity, legal persons embarked on using their deposit funds, which were on their bank accounts way back in 2009 and had already generated 36 percent increase, to invest in the economy.

In 2010, statutory capital of the banking sector has increased by AMD 15.2 billion, of which AMD 12.7 billion replenished from external sources. As a result, the share of non-resident participation in the statutory capital has climbed by 4.9 pp to make up 78.9 percent at the end of the year.

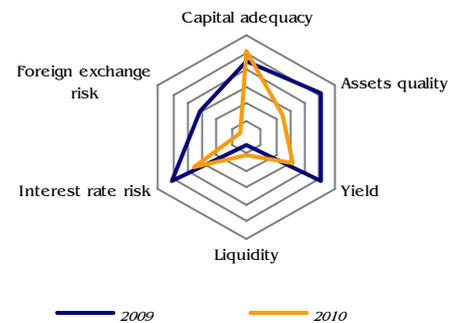
<sup>21</sup> The banking system stability map contains indicators of the system's stability indices which, before usage, have been measured within a 1 to 10 scale and calculated in accordance with the IMF methodology. On the map, note that away from the center signifies higher risks, and nearer to the center signifies lower risks. The banking system stability map shall not be interpreted as an eventual reflection of the level of financial stability, rather it provides a picture whether the level of risks involved has increased or decreased.

<sup>22</sup> There has been a change, effective September 19, 2010, made to the Central Bank Regulation 2 "Regulation of Banking and Prudential Standards for Banking", whereby the risk weight assigned for each foreign currency in the calculation of credit risk shall have been 50 percent more than those assigned for the respective dram asset.

**Banking system stability map (H1, 2010 average to H2, 2010 average)**

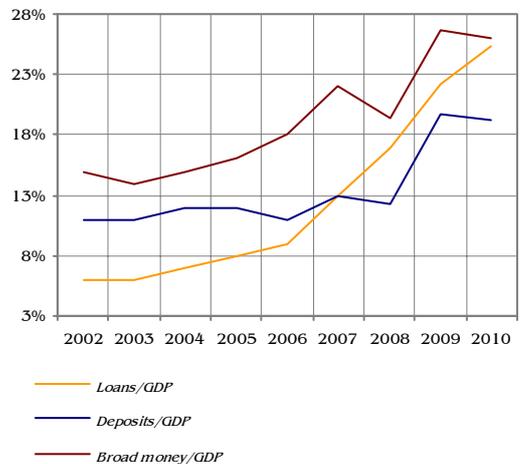


**Banking system stability map (2010 annual average to 2009 annual average)**



Source: Central Bank of Armenia

### **Financial Intermediation**



Source: Central Bank of Armenia

Total capital of the banking sector has grown by 14.6 percent or AMD 40.7 billion; total assets, by 17.7 percent or AMD 234.7 billion. The ratio of capital to assets, which denotes how risks are covered to the expense of own funds, remained almost unchanged, at the level of 0.2.

#### The Herfindahl-Hirschman Index of Concentration

	31.12.07	31.12.08	31.12.09	31.12.10
Total assets	0.08	0.07	0.07	0.07
Total liabilities	0.08	0.08	0.07	0.07
Total capital	0.07	0.06	0.06	0.06

Source: Central Bank of Armenia

The Herfindahl-Hirschman Index of Concentration<sup>23</sup> for some balance sheet items (assets, liabilities, capital, loans, and deposits) of the banking system signifies a low level of system concentration, which restricts the likelihood of the impact of risk concentration on the financial stability.

In Armenia, the share of assets and liabilities of 4 largest commercial banks out of 21 has decreased by 2 pp and 3 pp, respectively, whereas the share of participation in capital increased by 4 pp, owing to a major bank having acquired another bank<sup>24</sup>.

#### 4.1.2. Credit risk

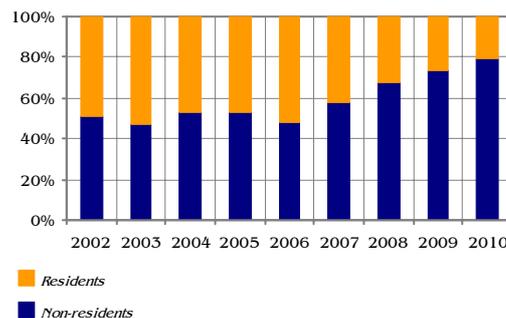
Over 2010, lending has grown by 26.3 percent, which is 1.9-fold increase from the reported 14.0 percent growth in 2009. As a result of rebounding economy and certain expectations over stabilizing household incomes, lending market had started to revive since the second half of 2009, which carried on throughout 2010.

Yet, the banking system remains heavily selective of borrowers, using an approach of “cherry picking”, i.e. eventually lending to borrowers which are highly creditworthy and with reliable credit history. Notwithstanding a low level of financial intermediation (the ratio of loans to GDP), the number of potential borrowers is still great. This means that lending could expand and financial intermediation could grow stronger on the back of economic growth. This further means continued increase in household incomes and notably loosened terms of lending.

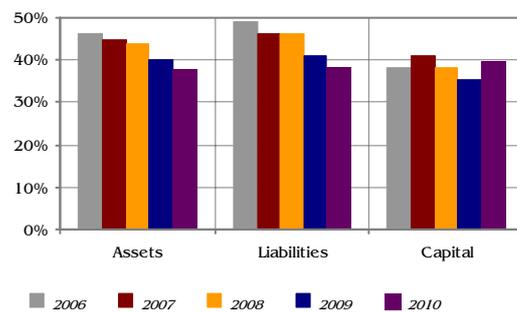
<sup>23</sup> The Herfindahl-Hirschman Index of Concentration varies between 0 and 1, characterizing the level of concentration (values near to 0 denote lower concentration).

<sup>24</sup> In June of 2010, Ameria Bank acquired the complete package of shares of Cascade Bank.

#### Foreign participation in Armenia's banking capital

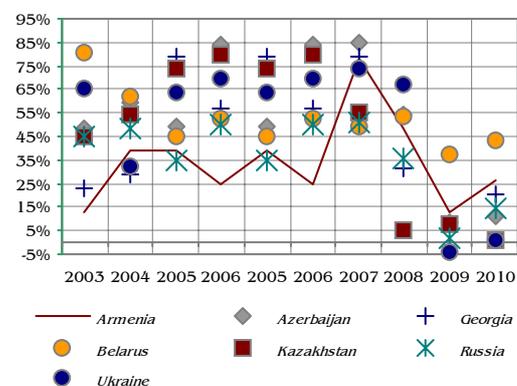


#### Share of 4 largest bank assets, liabilities and capital in total banking system



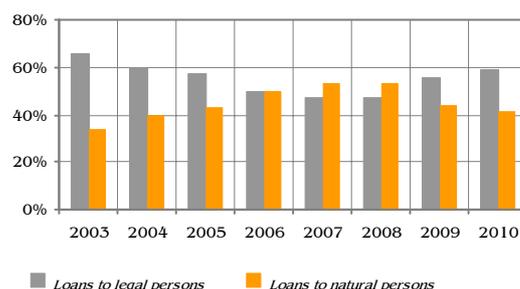
Source: Central Bank of Armenia

#### Annual growth of loan portfolio



Source: IMF

#### Share of loans to legal persons and natural persons in total loans



In 2010, the growth rate of lending exceeded the growth rate of total assets. As a result, the share of loans in total assets has increased by 4.0 pp to 57.0 percent at the end of the year.

The share of non-performing loans (classified as “watching”, “non-standard”, and “doubtful”) further tended to decrease throughout 2010. Relative to the beginning of the year, it has dropped by 1.7 pp to have reached 3.1 percent at the end of the year, which is rather low compared to the same indicators in some CIS countries.

In the total loan portfolio structure in 2010, loans to legal persons again prevailed. As a result, their share had grown by 2.4 pp in relation to the previous year to make up 58.6 percent. This trend explains banks’ intention to restructure their portfolios by currency and segment, on the one hand, and the households’ expectations over precarious nature of their incomes, on the other. Seeking to prevent credit risk from going up in the face of expanding lending in foreign currency, the Central Bank has set stricter risk weights for foreign currency assets in the calculation of the capital adequacy standard.

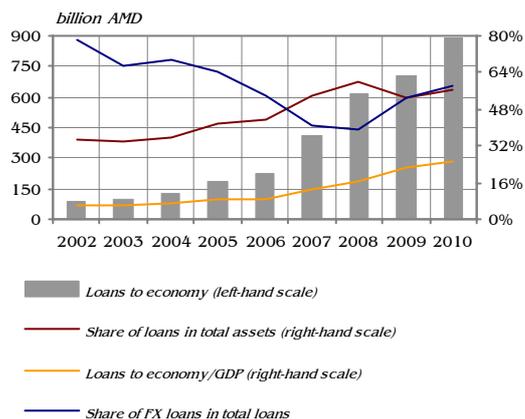
Concentration of loans by sectors of the economy has not been high – the share of loans to industry and construction branches and financial sector kept on increasing while the share of consumer and mortgage loans decreasing. Industry loans had the largest share, 21.3 percent, followed by trade loans, 19.3 percent, and consumer loans, 17.1 percent, in total.

Until 2009, the growth of consumer and trade loans has been associated with stable economic growth, continuous growth of household incomes (including private remittances) and availability of various foreign financing programs. In 2009, however, the growth rate of lending to these sectors decelerated as the household income growth rate slowed down and banks were more cautious about their lending policies. The growth of lending to industry and construction sectors was fuelled by lending as part of anti-crisis programs launched by the Armenian Government. In 2010, the growth of consumer loans significantly lagged behind the growth in industrial and trade sectors, which was determined by the supply of foreign exchange loans offered by commercial banks. This has suppressed the growth of consumer loans in spite of growing potential of household credibility.

In 2010, relative to 2009, in line with the trend of reducing share of non-performing loans, the ratio of net provisioning against assets loss to assets has dropped by 1 pp to 0.6 percent at the end of the year.

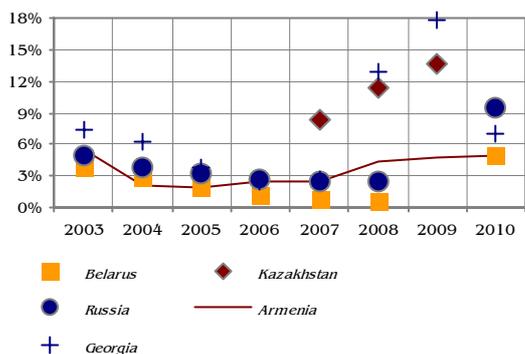
In 2010, the amount of net provisioning (difference between provisioning against assets loss and recoveries from such provisioning) executed by the banking system has reduced along with a general improvement in assets quality, driven by the gradually recovering economy.

#### Volume of loans to the economy



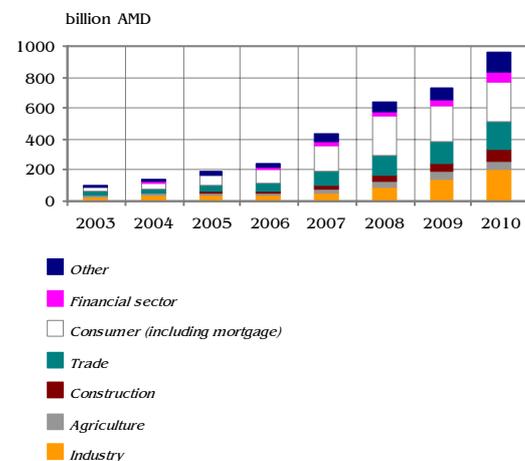
Source: Central Bank of Armenia

#### Share of non-performing loans in total loan portfolio



Source: IMF

#### Balance of bank loans to residents, by sectors



Source: Central Bank of Armenia

### Credit risk stress-scenarios<sup>25</sup>

31.12.2010	25 percent of loans in watching, substandard and doubtful categories classified into loss loans	75 percent of loans in doubtful category classified into loss loans	30 percent of loans in standard category classified into watching loans
Loss of the banking system	AMD 5.4 billion or 1.8 percent of regulatory capital of the banking system	AMD 2.2 billion or 0.7 percent of regulatory capital of the banking system	AMD 24.5 billion or 8.1 percent of regulatory capital of the banking system
Total capital adequacy of the banking system in case of stress scenario	21.9%	22.1 %	20.8%

The results of credit risk assessment test scenarios<sup>26</sup> showed that the amount of potential banking system loss has decreased in relation to the previous year. Even in case of worst possible stress-scenarios, the banking system losses will not bring in major problems with solvency for banks and will have no stressed negative impact on Armenia's financial stability.

#### 4.1.3. Liquidity risk

Over 2010, the banking system liquidity has trended down as lending grew. During the entire year, however, the level of liquidity has been more than two-fold higher from the prudential requirement. The prudential standards of total liquidity and current liquidity<sup>27</sup> have fallen by 3.3 pp and 6.1 pp to amount to 31.2 percent and 134.8 percent, respectively, at the end of the year.

In terms of assets and liabilities maturity, the assets and liabilities duration gap is estimated to have been insignificant, with an exception of the 1-3-year and 3-year and more maturity groups where assets exceed liabilities by 1.8-fold and 1.5-fold, respectively. Therefore, the banking system, while keeping current maturity structure of assets and liabilities unchanged, will not face liquidity shortages in any maturity basket.

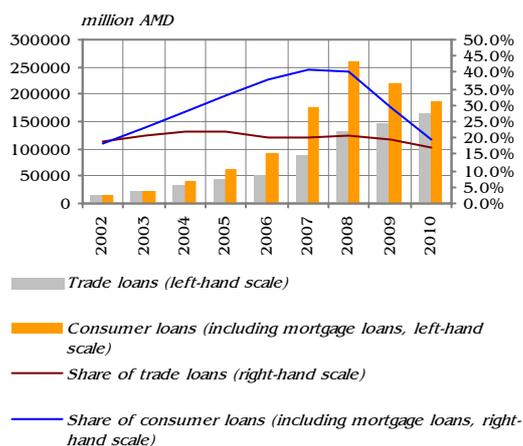
The liquidity risk assessment stress tests prove that the level of liquidity management in Armenian banking

<sup>25</sup> This stress-scenario and the other ones following have not been prepared to forecast emergence of any risks, but aim to reveal the weaknesses of the financial system, as well as assess its ability to absorb such risks.

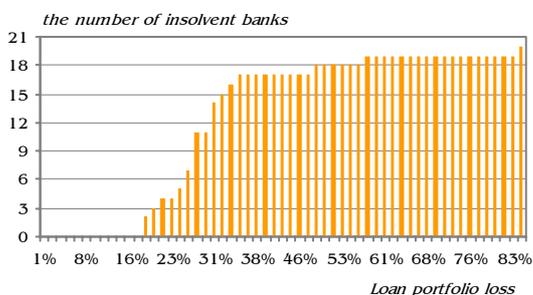
<sup>26</sup> Stress-scenarios are built on an assumption that the amount of bank loans is unchanged and the collateral is ignored (which means that where loans are classified, a possible sale of the collateral is not considered).

<sup>27</sup> The prudential standard of total liquidity is calculated as a ratio of high liquid assets to total assets while the prudential standard of current liquidity, as a ratio of high liquid assets to demand liabilities; the minimum prudential requirement of these standards are, respectively, 15 percent and 60 percent.

### Volumes of consumer, trade and industrial loans, and their share in loan portfolio

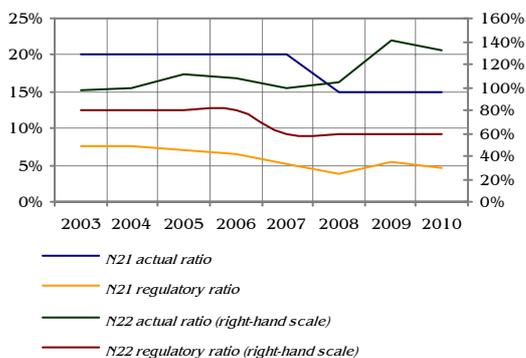


### Change in the number of insolvent banks under loan losses

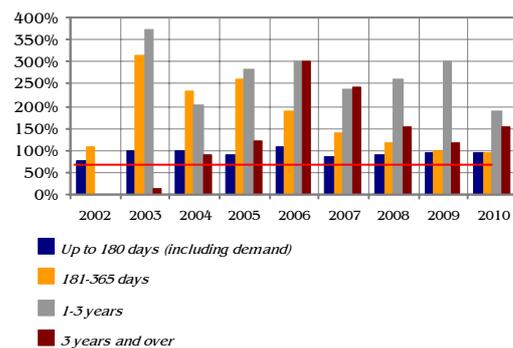


Source: Central Bank of Armenia

### Actual and regulatory banking system liquidity ratio dynamics



### Assets to liabilities ratio by maturity baskets



Source: Central Bank of Armenia

system is adequate. Based on stress-tests results, in case of worst possible stress-scenarios there is likelihood of breaching the total liquidity and the current liquidity prudentials. Nevertheless, the likelihood of liquidity problems in banking system as a whole is low.

Foreign borrowings of commercial banks have grown by 24.6 percent to AMD 181.8 billion. Funds attracted from international financial institutions have lessened by 5.3 percent and accounted for 29.2 percent of total foreign borrowings. The main lender countries to the banks included Russia, 14.2 percent (20.8 percent in the previous year), Luxemburg, 12.2 percent (12.2 percent), Germany, 8.9 percent (11.6 percent), France, 8.6 percent (13.8 percent), and Netherlands, 6.0 percent (1 percent). Interestingly, concentration by country has reduced in relation to the previous year. In the meantime, the share of long-term loans remained the largest, 90.1 percent in total, which makes the likelihood of refinancing of liabilities almost zero.

There has been a reported decline in risks to the concentration of banking system liabilities. In 2010, relative to the year before, the share of major debt<sup>26</sup> in total has reduced by 5.3 pp to 27.6 percent at the end of the year.

#### Liquidity risk stress-scenarios

31.12.2010	Repayment of 25 percent of term deposits of natural persons	Repayment of 25 percent of demand liabilities	Repayment of 25 percent of demand liabilities and repayment of 25 percent of time deposits of natural persons
Ratio of high liquid assets to total assets of the banking system	25.5%	25.3%	20.8%
Ratio of high liquid assets to demand liabilities of the banking system	107.2%	141.0%	109.7%

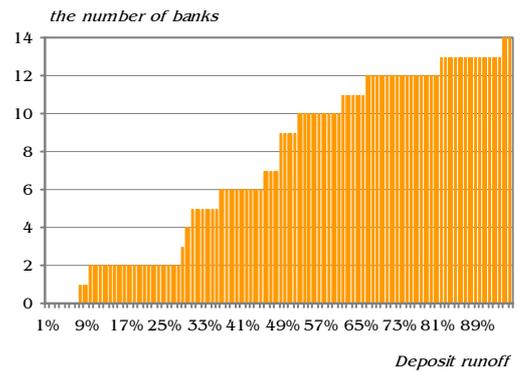
In case of worst possible stress-scenarios, no liquidity problems will appear for the banking system as a whole and for individual banks, and the likelihood of emergence of risks undermining the financial stability is very low.

#### 4.1.4. Market risk

In 2010, the Dram fluctuations against other currencies led to a situation where the banking system incurred AMD 1.1 billion-worth Dram revaluation losses, which

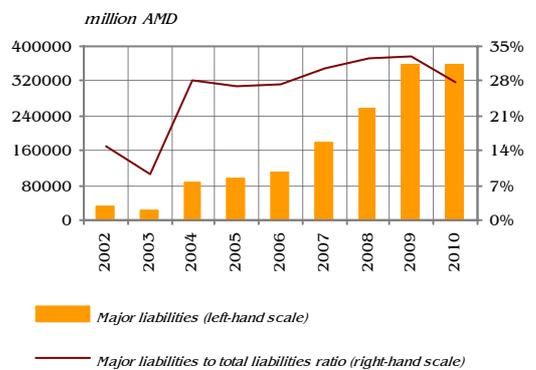
<sup>26</sup> This represents the sum of all liabilities to one person, which individually exceed the 5 percent margin of total liabilities of a bank, without taking affiliation into account

#### The number of banks in breach of total liquidity requirement in case of household deposit runoff



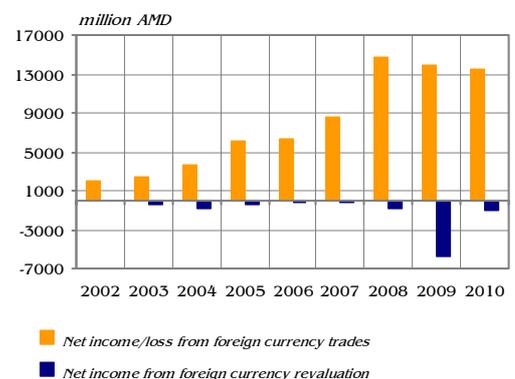
Source: Central Bank of Armenia

#### Major liabilities to total liabilities ratio in the banking system



Source: Central Bank of Armenia

#### Net income of the banking system from foreign currency trades and revaluation



Source: Central Bank of Armenia

constituted 0.4 percent of regulatory capital in contrast to 2.2 percent recorded in the previous year (the huge loss was due to sharp depreciation of the dram versus other currencies in March 2009). As a result of FX revaluation, 17 banks incurred losses and 4 banks reported profit. The banking system generated revenue of AMD 13.5 billion from foreign exchange transactions, which was 2.3 percent less compared to the revenue reported in the previous year.

One negative aspect which the global economic crisis brought in was the dollarization getting deeper along with the depreciation of the Dram. This drove the share of foreign currency loans up by 5.6 pp, compared to the beginning of year, to constitute 58.5 percent in total, whereas the share of foreign currency deposits has reduced by 4.2 pp and to make up 69.7 percent in total. During 2010, commercial banks' Group 1 net position (inclusive of derivative instruments) has shrunk to amount to AMD 3.3 billion (1.1 percent of regulatory capital) at the end of the year.

*Foreign exchange risk stress-scenarios<sup>29</sup>*

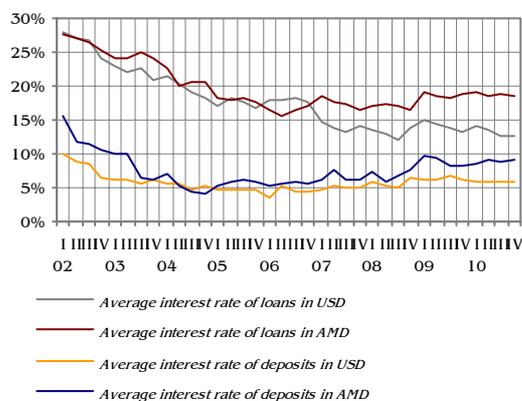
31.12.2010	AMD/USD appreciation (depreciation) by 20%	AMD/EUR appreciation (depreciation) by 20%	Possible maximum annual loss estimated through VaR Model
Banking system's profit/loss from foreign currency revaluation	AMD 182 billion or 0.06 percent of regulatory capital	AMD -71.5 billion or 0.02 percent of regulatory capital	AMD 665.2 billion or 0.2 percent of regulatory capital

Source: Central Bank of Armenia

In case of worst possible stress scenarios reviewed in this stress-test, bank losses incurred as a result of foreign exchange risk are estimated to have been insignificant and so can be neutralized by banks. So, the impact of such losses on the financial stability is hardly possible.

There has been a reported rise in interest rates of dram deposits fuelled by growing demand for dram resources, as a result of an altered reserve requirement mechanism as well as some tightening of monetary policy conditions. Also, interest rates of foreign currency loans have fallen, reflecting commercial banks' intention to spur up demand for such loans, since foreign currency resources prevail in the structure of liabilities.

**Average interest rates of bank deposits and loans**



Source: Central Bank of Armenia

<sup>29</sup> The calculation of losses estimated through stress-scenarios and the VaR Model (the VaR Model is not considered as a stress-scenario since the calculation of the model takes historical exchange rate series of currencies) is based on an assumption that the foreign currency position of the banking system would not change during the year.

### Interest rate risk stress-scenarios

31.12.2010	Impact of 2 pp increase (decrease) of market interest rates on total portfolio, estimated through the duration	Where market interest rates decrease (increase) by 2 pp, there will be deviation of net interest income from expected income of the three months ahead, estimated through the "Gap Method" (a method of interest rate-sensitive assets and liabilities gap)
Banking system's profit/loss	AMD -2.2 billion or 0.7 percent of banking system capital (AMD 2.2 billion or 0.7	AMD -105.2 million or 0.03 percent of banking system capital (AMD 105.2 million or 0.03 percent of banking system

Source: Central Bank of Armenia.

The gap of average weighted maturity of assets and liabilities has reduced slightly in relation to the previous year, resting with approximately a 0.4-year range. If the gap like this persists, possible fluctuations in market rates will not entail major losses in the banking system during 2011.

In case of worst possible stress scenarios, the share of commercial banks' losses of the capital of the system will not be significant and will not leave the system vulnerable to financial stability.

The share of available-for-sale and trading securities in total assets reached 7.9 percent, and price risk in the Armenian banking system is estimated to be rather low. Reported gain from revaluation of available-for-sale and trading securities has amounted to AMD 109 million (0.04 percent of capital); reported gain from revaluation of fixed assets has been AMD 11.6 million.

### Real estate price change stress-scenarios

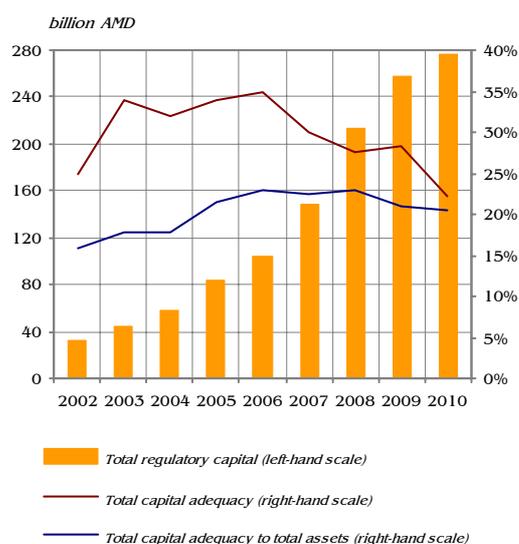
31.12.2010	30 percent depreciation of real estate
The banking system's loss due to revaluation of own property (price risk)	AMD 17.3 billion (or 6.0 percent of banking system capital)
The banking system's loss due to a 30 percent loss of vulnerable credit portfolio <sup>30</sup> (taking into consideration that the collateral involved has been sold at a depreciated cost), if a stress-scenario occurs (credit risk)	AMD 4.8 billion (or 1.6 percent of banking system capital)
The banking system's loss due to a 100 percent loss of vulnerable credit portfolio (taking into consideration that the collateral involved has been sold at a depreciated	AMD 16.0 billion (or 5.3 percent of banking system capital)

Source: Central Bank of Armenia.

Risks associated with real estate price volatility remained within a comfortable territory of manageability.

<sup>30</sup> A vulnerable credit portfolio involves the sum of loan residuals for which the residual value exceeds the 30 percent depreciated collateral value.

### Banking system capital adequacy



Armenian commercial banks originate mortgages at no more than 60-80 percent of the loan to value ratio while taking quite a strict approach in evaluating borrower credibility. Such restrictions are very instrumental for they hold back potential risks from real estate price volatilities.

In case possible stress scenarios for a 30 percent devaluation of real estate price emerge, potential maximum commercial bank losses will trend upward. However, real estate prices do not usually demonstrate dramatic volatility.

#### 4.1.5. Capital adequacy and profitability

Capital adequacy and profitability of the Armenian banking system has always been higher in comparison with East European and a number of CIS countries. High level of profitability and capital adequacy of banks provide cushion for absorbing risks with its own resources. In 2010, as a result of brisker lending policy, the growth of risk weighted assets outpaced the growth of regulatory bank capital thus driving the capital adequacy ratio of banking system down by 6.2 pp to 22.2 percent at the end of the year (an established minimum requirement threshold is 12 percent). The growth of risk weighted assets has been attributable to an increased weight of loans and tightened risk weights assigned to foreign currency loans.

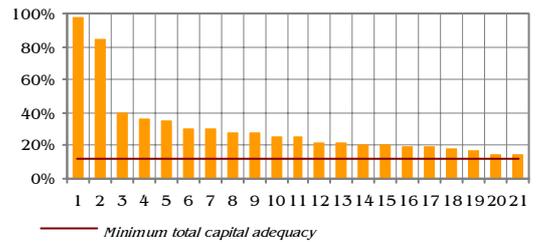
During the year, 8 banks added a total of AMD 15.2 billion to the statutory capital. By individual banks, the capital adequacy ratio is above 14 percent. Banks remained strongly capitalized; no violation of the capital adequacy requirement has been committed by commercial banks.

Profit and profitability indicators of commercial banks have improved substantially thanks to heightened activity in the lending market and to the absence of sharp fluctuations of the exchange rate of foreign currency. In 2010, relative to the previous reporting period, the banking system's profit, calculated in accordance with Central Bank requirements<sup>31</sup>, has grown by 2.5-fold to have amounted to AMD 30.2 billion. In the same period, 20 banks reported profit, 1 bank reported loss. During the year, the banking system succeeded in bringing the pre-crisis level of profitability back on track almost entirely, so return on assets was 2.2 percent and return on equity was 10.7 percent.

In the period under review, gross revenues of the banking system have grown by 12 percent to amount to AMD 239.7 billion, whereas gross expenditures have reduced to some extent, reaching AMD 200.7 billion as of end-year.

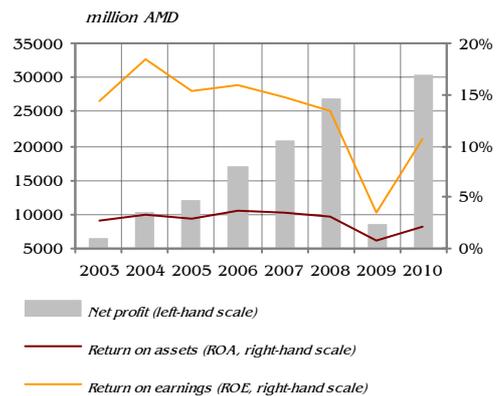
<sup>31</sup> The main difference between the Central Bank and IFRS reporting modules pertains to the way with which provisioning of standard loans is done.

Total capital adequacy by banks, as of 31.12.2010



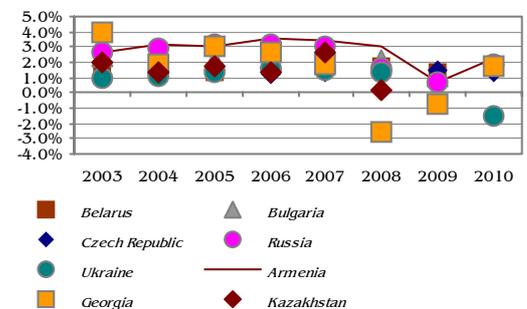
Source: Central Bank of Armenia

Profitability ratios in the banking system



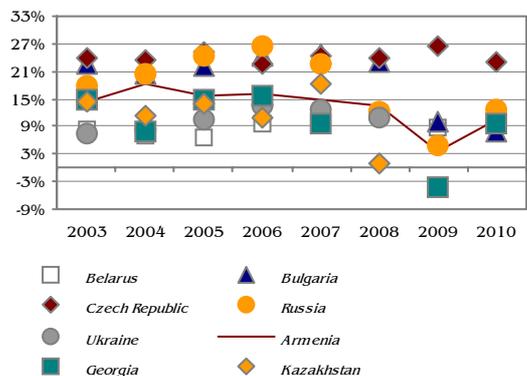
Source: Central Bank of Armenia

Banking system RoA in selected East European and CIS countries



Source: IMF

Banking system RoE in selected East European and CIS countries



Source: IMF

Overall, the share of interest incomes, interest expenditures and non-interest expenditures has increased in the income and expense structure, while the share of allowance and return to/from assets loss provisioning has decreased, relative to the previous year.

Profit of the banking system calculated in accordance with IFRS amounted to AMD 32.3 billion in 2010, and in this episode, return on assets was 2.3 percent and return on equity was 11.1 percent.

#### 4.2. CREDIT ORGANIZATIONS

The second largest sector of Armenia's financial system is credit organizations, with assets constituting about 5.1 percent of total financial system. Credit organizations generated growth of assets, liabilities and capital in 2010.

##### *Assets, liabilities, capital and profit of credit organizations (thousand AMD)*

	31.12.09	31.12.10	Growth (%)
Assets	75822821	87204906	15.1
Liabilities	49573440	51232047	4.2
Capital	26249381	35972742	37.2
Net profit	2589929	4308688	68.1

Source: Central Bank of Armenia.

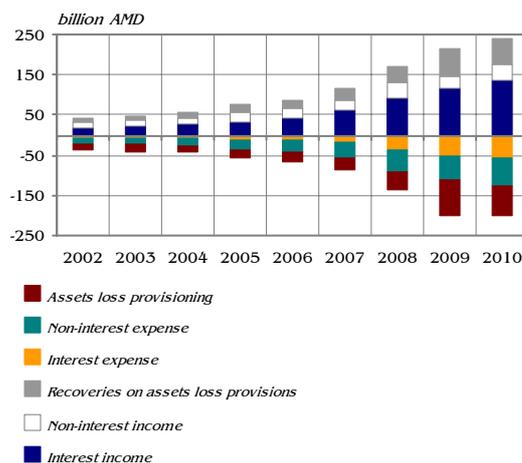
Compared to the commercial banks, capitalization and profitability of credit organizations stronger, and according to various stress scenarios, they are fully capable to absorb possible risks. During the year, the ratio of total capital to total assets of credit organizations has increased by 6.7 pp to have reached 41.3 percent at the end of the year. In the same period, 26 credit organizations out of 32 posted profit. As a result, relative to the previous period, return on assets and return on equity have increased by 1.3 pp and 2.2 pp, to have reached 5.0 percent and 14.0 percent, respectively.

Profit of credit organizations calculated in accordance with IFRS amounted to AMD 4.7 billion; return on assets was 5.6 percent and return on equity was 15.4 percent.

In terms of credit risk, the share of standard loans of credit organizations grown by 1.6 percentage point, with the share of non-performing loans having made up 2.6 percent. In terms of loans, the share of non-performing loans is the highest in transport and communication sector, 16.6 percent, and industry, 6.2 percent. In 2010, relative to 2009, the ratio of net provisioning against assets loss to total assets has reduced by 2.5 pp to amount to 1.2 percent.

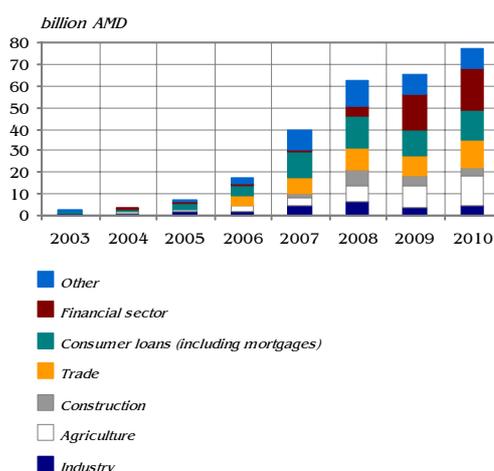
In all maturity baskets of assets and liabilities (demand and up to 180 days, from 180 days up to one year, more

#### Banking system income and expense account



Source: Central Bank of Armenia

#### Balance of credit organization loans to residents, by sectors



Source: Central Bank of Armenia

than one year), the assets volumes outstripped the liabilities volumes, pointing out to the low level of liquidity risk, other things being equal, with credit organizations.

**Credit risk assessment stress-scenarios<sup>32</sup>**

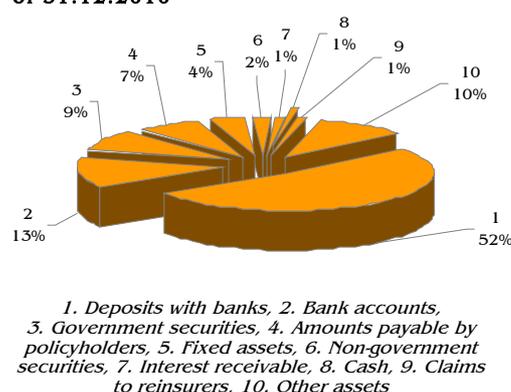
31.12.2010	25 percent of loans in watching, substandard and doubtful categories classified into loss loans	75 percent of loans in doubtful category classified into loss loans	30 percent of loans in standard category classified into watching loans
Total loss of credit organizations	AMD 379 million or 1.1 percent of regulatory capital	AMD 154 million or 0.5 percent of regulatory capital	AMD 1.9 billion or 5.7 percent of regulatory capital

**4.3. INSURANCE COMPANIES**

As of end-year 2010, there have been 9 insurance companies functioning in the territory of the Republic of Armenia.

In the period under review, assets of insurance companies have grown by 50.9 percent to AMD 25.6 billion; liabilities, by 180.2 percent to AMD 13.1 billion; and total capital, by 1.7 percent to AMD 12.5 billion, at the end of the year. Such an increase of liabilities and assets has been attributable to the growth of insurance payments provided for the compulsory third party motor liability insurance contracts, effective from January 1, 2011. As of the end-year 2010, relative to the previous period, the share of insurance companies in the financial system of Armenia has increased by 0.2 pp to make up just 1.6 percent. In December 2010, relative to December 2009, the main indicator that describes activity of the insurance market – the premiums accrued – has increased merely by 1.8 percent to AMD 8.3 billion (in 2009, the growth of the indicator was 4.3 percent), which points to the fact that the penetration level of insurance market remains low. The ratio of insurance premiums to GDP further remained low, a mere 0.24 percent in December 2010 (0.24 percent in 2009, 0.21 percent in 2008, and 0.16 percent in 2007). With the compulsory third party motor liability insurance scheme entering into force on January 11, 2011, the said ratio is estimated to have risen steeply, at the end of 2011, to get closer to the respective figure observed in emerging countries<sup>33</sup>. The indicator of

**Assets structure of insurance companies, as of 31.12.2010**



Source: Central Bank of Armenia

<sup>32</sup> Stress-scenarios are built on an assumption that the amounts of credit institution loans are unchanged and the secured property is ignored (which means that where loans are classified as loss, a possible sale of the collateral is not considered).

<sup>33</sup> In leading industrialized countries, based on the 2009 data, the ratio of insurance premiums on non-life assurance to GDP has averaged 3.61 percent, whereas in emerging countries, 1.33 percent (source: Swiss Re, Sigma No 2/2010, December 2010).

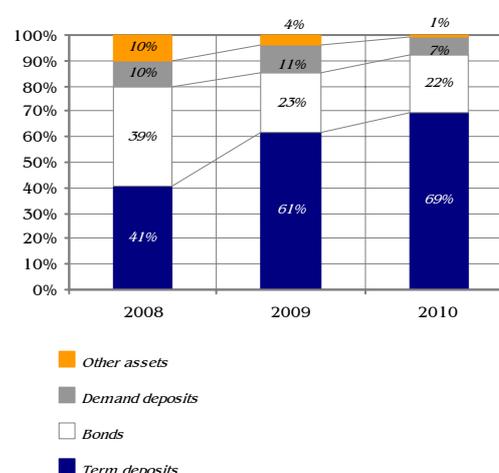
insurance premiums per capita amounted to AMD 2 532<sup>34</sup>. Given an insufficient penetration rate and a low level of risks in the insurance market, the likelihood that insurance companies would contribute to instabilities in the financial system is very low.

Circumstances described below further point to the low level of risks to the activity of insurance companies, as follows:

- A major part of risks insured by insurance companies is reinsured: a reinsurer's share in insurance amounts is 79.7 percent. Domestic insurance companies primarily use the services of highly-rated reinsurers<sup>35</sup>, thus minimizing the risk of non-performance of reinsurers;
- The loss ratio<sup>36</sup> of insurance companies as of December 2010 was 22.5 percent, which is fairly good indicator for a financially sound insurance market;
- As of the end-year 2010, the average prudential solvency indicator of insurance sector has been 9.1 percent of regulatory total capital.

Considering that the compulsory third party motor liability insurance contracts will be effective from January 1, 2011, a considerable growth of insurance premiums will be expected, while more car accidents in winter time because of adverse weather is likely. In case of worst possible stress-scenarios shown below, the solvency of insurance companies is estimated not to have incurred notable changes, so the likelihood of emergence of risks to the financial stability of insurance sector is very low.

**Distribution of assets equivalent to technical reserves, by transaction**



**Solvency assessment stress-scenario<sup>37</sup>**

31.12.2010 p.	Growth of insurance premiums 5-fold and growth of insurance indemnity 2-fold	Growth of insurance premiums 5-fold and growth of insurance indemnity 3-fold	Growth of insurance premiums 5-fold and growth of insurance indemnity 4-fold
Ratio <sup>38</sup> of required insurance system solvency to average daily total capital, where a stress-scenario occurs	38.8%	42.3 %	46.3 %

Source: Central Bank of Armenia

<sup>34</sup> In leading industrialized countries, based on the 2009 data, an insurance premium per capita amounts, on average, to USD 1427 (AMD 539,249), whereas in emerging countries, USD 43 (AMD 16,249), (source: Swiss Re, Sigma No 2/2010, December 2010).

<sup>35</sup> As of 31.12.2010, the share of the risks which local insurance companies had transferred to reinsurers that comply with the Central Bank eligibility criteria established in respect of reinsurers, has amounted to 93.8 percent in total risks transferred to reinsurers.

<sup>36</sup> The loss ratio is calculated as the ratio between compensations accrued during the year and the difference of changes of accrued premiums and unearned premiums.

<sup>37</sup> For a tightened stress-scenario, it was assumed that:  
a) insurance companies have their risks reinsured with insurance companies not eligible under the Central Bank of Armenia reliability criteria,  
b) insurance companies will have earned only 50 percent of insurance premiums as of the end of the year.

<sup>38</sup> The required insurance system solvency prudential is calculated using the insurance premium method, and it should not exceed the average daily amount of total capital.

Since January 1, 2011, the prudential solvency standard of insurance companies has incurred a change in calculations to include other financial risks as well, namely credit risk, foreign exchange risk and operation risks. Foreign exchange and credit risk stress-scenarios have been reviewed to assess the impact of such a change.

***Credit risk assessment stress-scenarios***

31.12.2010	Classifying 30 percent of "standard" assets into "watched" category	Loss of an insurance company due to the major borrower gone bankrupt
Loss of the insurance sector (thousand AMD)	540665	2482775

***Foreign exchange risk assessment stress-scenarios<sup>39</sup>***

31.12.2010	AMD/USD depreciation by 20 percent	AMD/EUR depreciation by 20 percent	Maximum potential loss valued through a VaR method
Loss of the insurance sector (thousand AMD)	-1374358 or 11 percent of total regulatory capital	-226778 percent or 2 percent of total regulatory capital	-1757571

***Investment risk***

Allocating funds of the insurance sector in low-risk assets allows keeping investment risk at a low level, and the fact described below supports this statement, as follows:

- Over 2010, assets equivalent to technical reserves have grown by 7.6 percent to amount to AMD 2.9 billion. Assets equivalent to technical reserves are invested primarily in government and non-government bonds as well as time and deposit accounts with commercial banks;
- Assets which are considered to be equivalent to technical reserves have exceeded technical reserves 6.6-fold as of 31.12.2010 (5.0-fold in 2009 and 3.9-fold in 2008), which means that the rapid growth of the reserve of unearned insurance premiums since January 1, 2011, owing to the compulsory third party motor liability insurance scheme, is secured by a huge pool of reliable assets.

**4.4. SECURITIES MARKET PARTICIPANTS**

As of 31.12.2010, there have been 21 banks providing investment services and 8 investment companies in the Armenian securities market.

<sup>39</sup> The calculation of losses estimated through stress-scenarios and the VaR Model (the VaR Model is not considered as a stress-scenario since the calculation of the model takes historical exchange rate series of currencies) is based on an assumption that the foreign currency position of the insurance sector would not change during the year.

As of 31.12.2010, relative to the previous period, total assets of investment companies have grown by 26 percent, to AMD 19.6 billion; total capital, by 9 percent, to AMD 3.2 billion. Net profit of investment companies has reached AMD 301 million, growing by 49 percent in relation to the previous year. In 2010, 7 investment service providers out of 8 posted profit.

In the period under review, credit risk of investment companies amounted to 41 percent of regulatory capital; market risk, to 33 percent; and operational risk, to 2 percent. Remarkably, interest risk had the largest share (60 percent of market risk), which made up nearly 20 percent of regulatory capital. Foreign exchange and share price risks of investment companies constituted, respectively, 9 percent and 1 percent of regulatory capital.

As of 31.12.2010, a total of 19 classes of securities of 15 reporting issuers have been admitted to trading in the regulated market. Of these issuers, 4 were banks accounting for 13 percent of debt securities and for 38 percent of equity shares. The total amount of shares admitted to trading in the regulated market was AMD 32.4 billion and the total amount of bonds, AMD 4.4 billion. As such, 59 percent of bonds were issued by one company. One issuer is accountable on both shares and bonds. In the period under review, there have been 21.4 thousand equity shares in number issued by 11 reporting issuers, with the number of shareholders totaling 7381, of which 78 were non-resident shareholders and 35 were shareholders holding more than 5 percent of the issue volume.

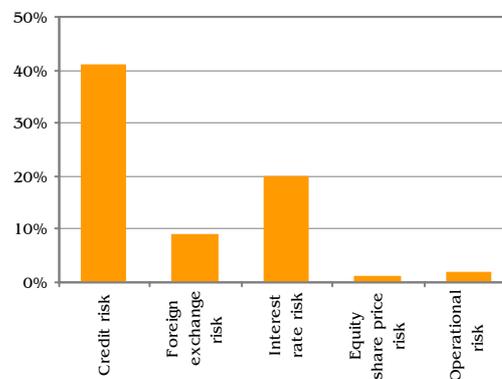
At the end of the year, there have been 1570 issuers of securities listed and 111676 individuals as owners of securities issued by companies running registries.

Further, in addition to Central Depository of Armenia, two investment service providers in the securities market run registries of 220 companies with a total of 13748 persons involved as owners of registers.

#### 4.5. OTHER FINANCIAL SYSTEM PARTICIPANTS

The participants of the Armenian financial system, other than those mentioned above, include 116 pawnshops (excluding branches), 238 foreign exchange offices (excluding branches), 5 insurance brokers, 10 payment and settlement organizations, and 2 currency dealers. All these organizations' potential impact on the financial stability of Armenia is estimated to be very low as their share in the financial system assets is far too small.

**Investment company risk profile (share in regulatory capital), as of 31.12.2010**



Source: Central Bank of Armenia

## SUMMARY

Banks remain a prevailing part in overall financial system in Armenia, and the impact from other sectors on financial stability remains negligible. During 2010, along with positive developments in macroeconomic environment, the banking system spurred up lending, bringing the sector's profitability closer to the pre-crisis levels. Despite accelerated growth rate in loan investments by commercial banks, which affected prudential standards of capital adequacy and liquidity downward, the levels of these two ratios are almost double the minimum established thresholds. The indicator of quality of loans has improved, too.

During the year, 8 banks added to the statutory capital, which provides for an additional cushion so that the commercial banks are able to cover the risks. Overall, risks in the financial system have been manageable along with positive developments in the macroeconomic environment.

## 5. FINANCIAL MARKET INFRASTRUCTURES STABILITY

Given the importance and impact that the payment and settlement system has on Armenia's monetary policy and financial stability, the Central Bank further pays due attention to the country's systemically important payment and securities settlement systems and the telecommunication network supporting their activities.

In Armenia, most interbank settlements are made via the Central Bank systems<sup>40</sup>. The largest value, 98.2 percent, of interbank payments is made via the Central Bank systems, merely 0.1 percent less from the previous year's level. In 2010, the value of gross payments made via the Central Bank systems exceeded the GDP by 3.8-fold.

### 5.1. INTERBANK PAYMENTS

#### *The Central Bank electronic payment system*

In 2010, 55.6 percent of gross payments via the Central Bank systems were made through the Electronic Payments System of the Central Bank, and the share of the payments has grown by 4.2 percent in relation to the previous year.

#### *Credit risk*

Credit risk of the settlement bank (the Central Bank) in the system lacks since no mechanism has been designed for lending to system participants in case of insufficient funds. Nor is there credit risk to the recipient as it receives the notice of the payment only after the payment is made final and irrevocable<sup>41</sup>.

#### *Liquidity risk*

An indicator of average daily payments to the expense of own resources has been used for assessment of liquidity risk. The indicator was calculated using the ratio of opening balances of dram correspondent accounts to debits (payments) through the account. Incoming payments are not included in the indicator so that a stress-scenario can assess the likelihood of bank rejections if additional liquidity is not available within a day, namely to which extent would banks generate their payments using only opening balances of their own funds<sup>42</sup>.

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<sup>40</sup> Payments via the Central Bank systems involve the payments through: i) Electronic Payments System, EPS, excluding stock exchange trades, ii) Paper-based Gross Settlement Systems, PGSS, and iii) Government Securities Accounting and Settlement Systems, GSASS. For details, see the paper "Payments and Securities Clearance and Settlement Systems in the Republic of Armenia", 2007.

<sup>41</sup> For details, see the "Financial Stability Report", 2007, and the paper "Payments and Securities Clearance and Settlement Systems in the Republic of Armenia", 2007.

<sup>42</sup> Cash fixing of accounts by commercial banks are not included in the calculation.

In 2010, opening balances of dram correspondent accounts outnumbered the same-day-payments by 18 percent on average, with no account of incoming payments. Relative to the previous year, the indicator has risen (1.08 in 2009 and 1.18 in 2010), which was result of 50 percent increase of opening balance and 32 percent growth of payments annually.

Analysis of monthly dynamics of payments and liquidity showed that in the first four months of the year there has been fairly no growth in payments, with just 6 percent increase on average in relation to the first four months in 2009. However, starting from the last two months of the first half of the year, the payments surged, which prompted banks to keep more funds in their opening balances of correspondent accounts. This has positively affected the value of the indicator. Further, the second six months reported somewhat a different dynamics as the average daily opening liquidity growth rate outpaced the average daily payments growth. The absence of overnight repo operations between commercial banks and the Central Bank since March 2010 points to the excess liquidity.

So, the monthly dynamics of the daily indicator points out to the banks' ability of having, in 2010, more opening liquidity on average than they needed for making payments within a day. There was somewhat a different picture back in 2009 when during the year the said indicator was close to and in the third quarter was even below the marginal ratio. Also, considering that incoming payments (crediting with the account) and/or other sources of liquidity are not included in the calculation of the indicator, the likelihood of the liquidity risk to the system and emergence of systemic problems is estimated to be very low.

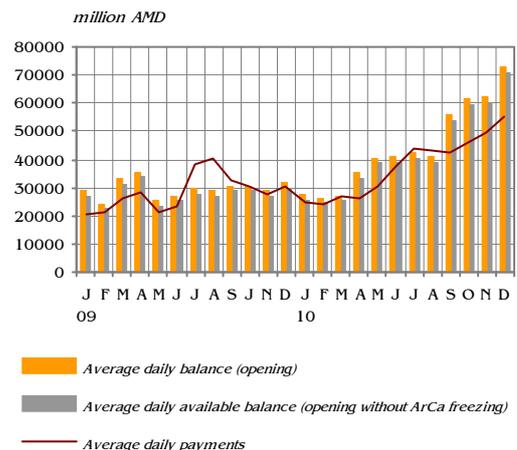
The number of rejections because of insufficient liquidity, sharply reduced in the reporting period in relation to 2009 while making a negligible part in payments through the EPS in terms of value and number, provided more evidence that there were no problems connected with liquidity (more details in the sub-section "Rejections").

### Rejections

Rejections reported in the system and their share in total payments made through the system provide signals of insufficient liquidity and serve as criteria for the disclosure of other associated problems.

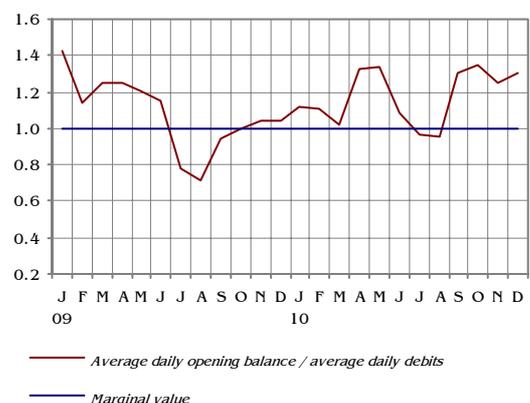
In 2010, relative to 2009, the number of rejections of payments through EPS (Electronic Payment System) has reduced by 55 percent. Further, 76 percent rejections were generated because of insufficient liquidity, which represented a 61 percent reduction compared to the previous year, however.

**Average daily payments, average daily opening balances, average daily available liquidity comparative analyses (all banks)**



Source: Central Bank of Armenia

**Average daily opening balance to average daily payments (debit)**



Source: Central Bank of Armenia

Most rejections (83 percent in total; of which 94 percent due to insufficient liquidity) were reported in the first half of the year. In the second six months, however, there has been a notable reduction of rejections (7-fold and 23-fold, respectively).

The decrement in rejections has been a positive tendency. Also, given the small share of rejections in payments through EPS (0.02 percent in terms of total rejections by number and value, and 0.02 and 0.2 percent in terms of insufficient liquidity, by number and value, respectively), one may confirm that there has been an adequate liquidity for payments with the system and that they would not entail systemic problems (see also the *Liquidity risk* subsection).

### *System capacity*

Preliminary expert assessment by the system Operator suggested that since 2008 EPS had been generating more than 4300 payments per hour through EPS (an average 30000 payments per day).

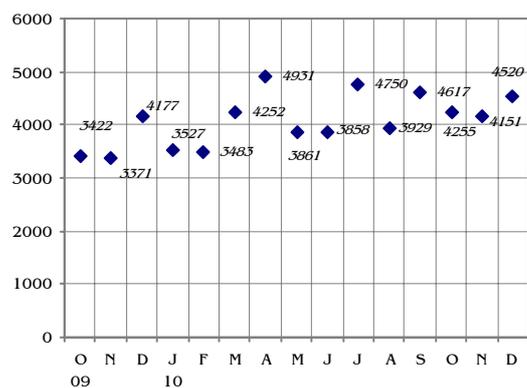
In 2010, the maximum number of payments per hour (4931 payments) through EPS has been notably higher (by 18 percent) from the fourth quarter of 2009 result of 4177 payments per hour. The number of payments in the peak hour has exceeded the potential minimum capacity level of 4300 payments per hour, as reported by the Operator on the basis of preliminary expert assessment. The peak was reported for the time span 4:00-5:00 pm on the closing business day of the month, making up 27 percent of the number and 70 percent of the value of payments<sup>45</sup>.

One remarkable trend was that during 2010 the monthly peak hour levels have exceeded 4-fold and, in the rest of cases (i.e. months), were very close to the potential minimum capacity. As such, reported peak levels were very close to the closing hours of EPS, i.e. in the time span 3:00-4:00 pm. During September, the maximum number of payments per hour (4750 payments) was reported for the time span 5:00-6:00 pm, constituting 32 percent of the number and 51 percent of the value of payments executed on that day.

Such concentration of payments, both by number and value, in peak hours and especially at the closing of the day could bring in considerable risks to the system if the system faced any operational problem or failure. As a result, the payments would be rejected or delayed thus leading to the extension of the operational day of the system.

In 2010 however, no problems with the system capacity were reported as incidences in this period of time actually lacked thanks to the system reliability. So, the system operation has been fluent (see the *Operational availability of the system* subsection).

**Maximum number of payments per hour during a month**



Source: Central Bank of Armenia

<sup>45</sup> Excluding stock exchange trades.

The concentration of payments in terms of value at the closing of the day could result in the rejection of payments because of insufficient liquidity. Yet, the analysis of the rejections by number and value, reported in the system, showed that these rejections were virtually a small part in total (see the *Rejections* subsection). This would point to the fact that commercial banks managed their liquidity effectively and/or had much more liquidity than they needed for making payments (see the *Liquidity risk* subsection).

In the period under review, there has been a considerable increase in payments per hour, making up a considerable share in operational hours.

In the fourth quarter of 2010, there were twice as much reports of payments exceeding the 2500 per hour threshold, and 4-fold more reports of payments exceeding the 3500 per hour threshold, compared to the same period of the previous year, making up 21 percent and 4 percent, respectively, of operational hours pertinent to that quarter.

Interestingly, the payments made in a peak hour of each month topped the level of 3500 payments per hour. Moreover, there were reported 4 incidents (in the course of four months of the year) when the number of payments per hour outstripped the potential minimum capacity level of 4300 payments per hour, whereas no incidents like this were recorded in the fourth quarter of 2009.

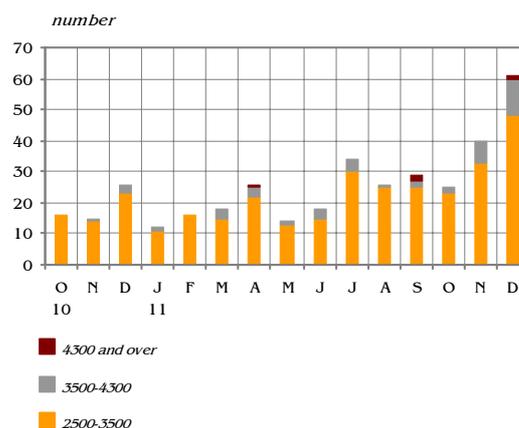
The rapid growth of such marginal indicators in 2010 necessitated an additional testing for the assessment of the potential maximum capacity of the system, which could enable to identify trends as to the risk level for the system capacity and evaluate the likelihood of emergence of problems connected with the system capacity.

Though a considerable growth was reported with regard to all capacity indicators, this has not been a large amount in total payments, however. Also, taking into account that this potential capacity level provided by experts of the Operator is considered the minimum, rather the maximum, the capacity of the system is assessed to be sufficient for processing the incoming payments. At the same time, the operational availability of the system remains in compliance with international standards while the system reliability is estimated to be at a high level (see *Operational availability of the system* subsection).

#### *Intraday distribution of payments*

The concentration of payments at any given time of the day can be a source for potential risks: in the event of insufficient liquidity or operational failures occurred at the closing of the day such concentration of payments may, for example, lead to rejections or delays of most payments during the day. Therefore, a regular monitoring of indicators of the payments in terms of number and value within a day could be the right decision.

**Payments exceeding potential capacity level of 2500, 3500 and 4300 payments per hour**



Source: Central Bank of Armenia

In 2010, the intraday distribution of payments by value and number on an average quarterly basis remained uneven. Over the years, this kind of irregularity has been smoothed out to some extent for a time spanning 10:00 am to 3:00 pm of the day, yet concentration of the payments at the closing of the day remains high in average intraday distribution of payments.

In the first half of 2010, the time span of 3:00-4:00 pm has been the peak hour for execution of payments, which was typical to the banks' policy of delaying payments up until the closing of the day. This, however, has not entailed major risks as it constituted merely 24.4 percent of value and 22.4 percent of number of the intraday payments for the quarter. Further, in spite of reported 50 percent reduction of payments made after 4:00 pm these, however, constituted 8.9 percent of value and 8.7 percent of number of the intraday payments.

Starting from the second quarter of 2010, the intraday distribution of payments fluctuated again. High concentration has been seen in the time span of 3:00 - 5:00 pm (making up about 50 percent of value and nearly 32 percent of average payments executed during the three quarters). The payments executed within 4:00-5:00 pm have increased rapidly – thrice as much for the indicator by value and twice as much for the indicator by number, in relation to the first quarter. In the third quarter, the indicator reached its peak of 40 percent of the intraday payments by value.

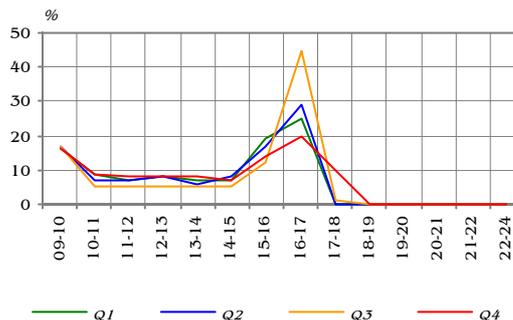
The results of monitoring suggested that, over the last two years, any major increase in total payments had occurred roughly within the closing hours of the day instead of even or smooth distribution during a day. This fact is supported by the smooth dynamics with which the payments (by number) were executed in other hours of the day. This finding manifests that commercial banks remain assertive in their strategy to execute payments at the closing hours of the day.

An uneven intraday distribution of payments like this and the concentration of payments at the closing of the day as well as the considerable growth of payments executed after 4:00 pm could result in adverse effects to the system participants and the system as a whole, further leading to systemic risks. Considering the positive dynamics of the liquidity and availability of the system, a sufficient capacity of the system as well as absence of material incidence and a negligible amount of rejections within a day, an uneven intraday distribution and concentration of payments at the closing of the day have not brought in problems while the likelihood of the risk to the system is estimated still low on the whole.

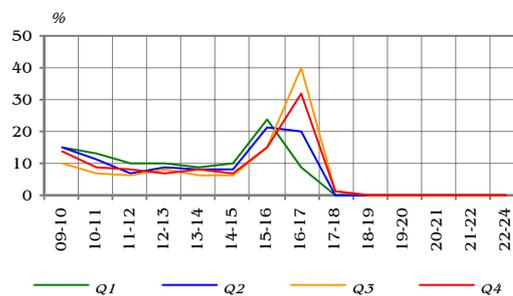
*Operational availability of the system*

There have been 10 incidents (approximately 3 hours altogether) occurred in the software system *Operational*

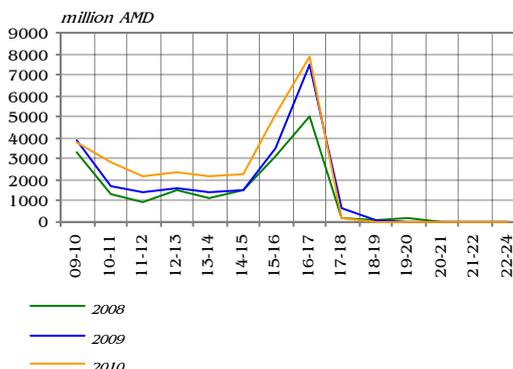
**Intraday distribution of the value of payments on an average quarterly basis, 2010**



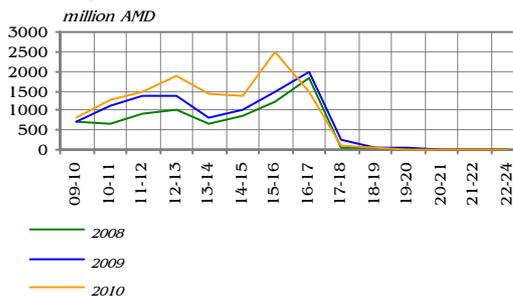
**Intraday distribution of the number of payments on an average quarterly basis, 2010**



**Hourly dynamics of the value of average annual payments via EPS (excluding stock exchange trades)**



**Hourly dynamics of the number of average annual payments via EPS (excluding stock exchange trades)**



Source: Central Bank of Armenia

*Day* that affected sound operation of EPS. The analysis showed that both the number and duration of incidents in the system were too small to disrupt the system availability. Of these incidents, only two were somewhat material, having entailed, respectively, up to 55 and 65 minutes of hold-ups, which is a moderate indicator according to international criteria<sup>44</sup>. The other 8 incidents were minor, so these have not much affected the system availability.

For 2010, an estimated operational availability to EPS has been 99.9 percent, which is again a good indicator according to international criteria<sup>45</sup>.

Thus, the EPS risk assessment allows assuming that the structure and reserve facilities of the system are more than sufficient to prevent possible systemic risks.

#### *CBANet availability*

In 2010, disruptions of the CBANet nodes were minor and, as a result, the operational availability of all nodes of the network was 99.95 percent and the calendar availability was 99.96 percent. Availability of nodes installed in Yerevan was 100 percent.

Over 2010, the number of lasting failures has reduced sharply. In the regions of Armenia the longest failures of the network were registered in Armavir, Syunig and Kotayk. In these regions, however, the operational availability has been rather high, 99.99 percent, 99.90 percent and 99.94 percent, respectively.

Nonetheless, considering that in aforementioned regions the EPS payments constituted merely 0.38 percent of the EPS payments initiated in the regions of Armenia and only 0.80 percent of the total EPS payment, one may conclude that the delays in interbank payments due to the disorders of CBANet regional nodes had just a minor effect on the total interbank payments, with no negative impact in terms of financial stability.

No disorders were recorded for Yerevan nodes during 2010.

Over 2010, there have been only two reported incidents of disruption at head office subscriber. The results of the finding showed, however, that these incidents had not much affected the payments. Reduced number of incidents (in 2009, there were 9 reported disruptions) at the head office subscribers was mainly determined by the increase of the share of head office banks that own reserve communications.

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<sup>44</sup> *The 2008 Financial Stability Report of the National Bank of Denmark states that maximum down time indicator for systemically important RTGS system, which is compliant to ESCB system requirements, is 2 hours.*

<sup>45</sup> *The 2008 Financial Stability Report of the National Bank of Denmark states that operational availability for systemically important RTGS system, which is compliant to ESCB system requirements, should be very high, e.g. operational availability of TARGET was 99.65 percent, which is considered a good indicator.*

In general, the hardware and software environment and reserve capacities of CBANet are estimated to provide for a sustainable EPS operation.

## 5.2. SECURITIES SETTLEMENT SYSTEMS

In Armenia, settlement of securities is executed based on two systems: 1/ the Central Depository of Armenia for corporate securities, and 2/ the Government Securities Accounting and Settlement System of the Central Bank for government (treasury) securities and the Central Bank-issued securities.

In 2010, relative to 2009, the total value of transactions executed in the secondary market through the GSASS has amounted to AMD 1787551 million, which represented an 81 percent increase in relation to the previous year. In 2010, the transactions executed through the GSASS have made up 98 percent of the transactions in secondary market, which was an 8 percent increase compared to 2009. In terms of financial stability, the GSASS of the Central Bank is considered as a systemically important system.

***Transfers of securities through the GSASS of the Central Bank pertaining to the transactions with securities in the secondary market<sup>46</sup>***

31.12.2010	2009	2010
Over-the-counter transactions (trades of securities and repo agreements), in nominal value, AMD	984374.736	1781748.727
Stock exchange transactions (trades of securities and repo agreements), in nominal value, AMD	2403.029	5802.422
Total	986777.765	1787551.149

*Source: Central Bank of Armenia*

The GSASS uses the DVP (delivery versus payment) principle for settlements with over-the-counter transactions. The stock exchange trades are executed by preliminary deposition of securities and monetary assets which allows reducing the counterparty risk. The gross settlements and irrevocability principles applied in the GSASS rule out emergence of credit risk in the system.

During 2010, there were 8 incidents reported in the GSASS, which has reduced two-fold in relation to 2009.

There have been reported three incidents that affected the process of primary auction of government securities, and timely and effective interference made it possible to remedy the process for final settlement.

<sup>46</sup> The statistical information here presents the settlements executed through the GSASS, and does not include local transfers which the sub-custodians executed for their clients.

Three more incidents affected the stock exchange transactions, which was caused by the software failure due to interruption in local network communications of the Central Bank. Yet, these disruptions have not affected the final settlements for stock exchange transactions. Four disruptions of this kind were reported in 2009, as well.

The rest two incidents occurred due to the software failure in the system, which affected the secondary market operations. Nevertheless, the failures were remedied in a timely and effective fashion.

So, one may conclude that operational availability of the GSASS is strong and the system can be estimated as reliable and safe.

In the period under review, the Central Bank and NASDAQ OMX Armenia JSC further cooperated in developing the securities market infrastructures, using the liquidity effectively and improving the settlement mechanisms. NASDAQ OMX Armenia introduced two more deposition mechanisms for 11:30 am and 1:00 pm of the day in order to raise the effectiveness in liquidity management.

In April of 2010, a platform for trading of interbank loan resources opened at NASDAQ OMX Armenia. This product made it possible to enter into interbank credit transactions, a large segment in the financial market, through the trading platform. At present, overnight loans in dram are traded at NASDAQ OMX Armenia, and the participants to the platform are Armenian commercial banks. Trade sessions are held each business day, from 11:00 am to 3:00 pm. Like in other trading platforms, trade on this platform is executed on a dual ongoing auction basis, in an anonymous regime. Transactions on this platform are executed by the use of preliminary deposition of resources, which allows to prevent from the counterparty risk. The Central Bank acts as a guarantor for the repayment of transactions.

In 2010, further work included design of electronic formats and system programming for the *Repo and Reverse Repo Transactions* module. Plans for 2011 include testing procedures of the system, endorsement of a number of documents that regulate the system operation and further implementation of the system in cooperation with commercial banks.

## **SUMMARY**

Generally, the EPS operation is estimated to be adequate. However, the dynamics of the indicators points to need of carrying out regular monitoring so that problems in connection with the system capacity are dealt with and risks to the concentration of payments at the closing of the day are prevented. The GSASS operates on a sound basis and generates no systemic risks.

### 5.3. GUARANTY OF DEPOSITS

Amendment and supplements to the Republic of Armenia Law on Guarantee of Compensation of Bank Deposits of Individuals introduced in 2010 doubled the extent to which an amount of deposit is guaranteed. Further, the Board of Trustees of the Deposit Guaranty Fund decided to revise the established thresholds for guaranty on a regular basis.

Legislative changes introduced clarified as to how the Deposit Guaranty Fund would raise funds in the event resources of the funds are not sufficient.

In 2010, the Central Bank, Ministry of Finance and Deposit Guaranty Fund signed a Memorandum of Understanding on Cooperation in Maintaining Financial Stability and Crises Management. The provisions of MoU set forth the rights and obligations of each party as well as which roles they will take in the crisis situations.

In 2010, the number of natural persons holding guaranteed deposits has increased by 257356, in line with the 20 percent growth of bank deposits, and totaled 1028197 (excluding former ArmSavings Bank depositors who are registered in VTB Armenia Bank CJSC). The share of depositors who hold only deposits in dram accounts for 81.4 percent of the depositors holding guaranteed deposits. As estimated by the Fund, the number of depositors who hold deposits not exceeding the amount to which the deposit is guaranteed constitutes more than 98 percent of the total number of depositors.

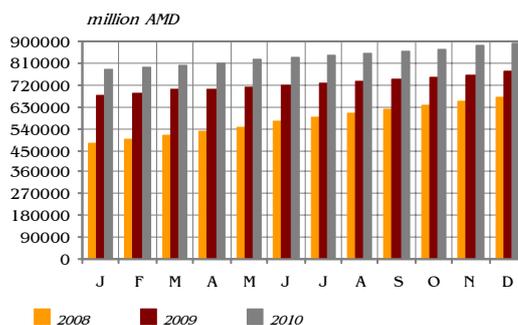
### 5.4. CREDIT REGISTRY AND ACRA CREDIT BUREAU

#### *The Central Bank Credit Registry*

Since January 1, 2003, a credit registry has been functioning within the Central Bank. The Credit Registry is designed to collect data on credit history of borrowers, to process such information and provide it to commercial banks, credit organizations, and borrowers. The Credit Registry must enter into its records loans in excess of AMD 1.5 million and loans in the amount less than AMD 15 million that were overdue and were classified. In the end-year 2010, the number of loans recorded in the Credit Registry reached 893448 from which 821076 were loans to natural persons and 72372 were loans to legal persons. The total number of loans registered with Credit Registry has increased by 153333 in relation to the previous year.

As of end-year 2010, the Credit Registry possessed information on 130636 loans in use and 762812 loans repaid. Relative to the previous year, the number of loans entered the Credit Registry has grown by 1.2-fold, pointing

**The number of loans entered Credit Registry, by months**



Source: Central Bank of Armenia

to recovering lending activity. Yet, note that this indicator has reduced compared to the 2007-2008 levels (in the period 2007-2008 some 1.4-fold increase has been reported) associated with the downfall in lending market. The amount of information entered has changed in line with increasing number of loans registered. In 2010, the average entry rate of information was 8000 registrations per day, growing by 6 percent compared to the previous year. In the outcome, information used to determine borrower creditworthiness has become more integral and instrumental for supervision purposes, which made it possible to evaluate borrower credit risk more effectively and prevent from non-diligent borrowers.

Most commercial banks and credit organizations had their requests filed to the Credit Registry on an automated basis, allowing for an increased efficiency of the system. Improved *Credit Registry* software of the Central Bank made it possible to provide banks and credit organizations with information on credit history within a maximum of one day after receipt of such a request. The share of errors in data presented to the Credit Registry has reduced to a minimum.

In 2010, the number of requests has increased in relation to the previous year, which was driven by the reported increment in the number of loans granted. The assessment of client creditworthiness by using credit history reduces time spent on assessment of borrower credibility and enables curtailing credit risk and thus avoiding dealing with non-diligent borrowers. Commercial banks and credit organizations are increasingly stressing the importance of credit history, especially when it comes to making loans to new clients.

As shown in charts, the number of loans provided and requests received has increased.

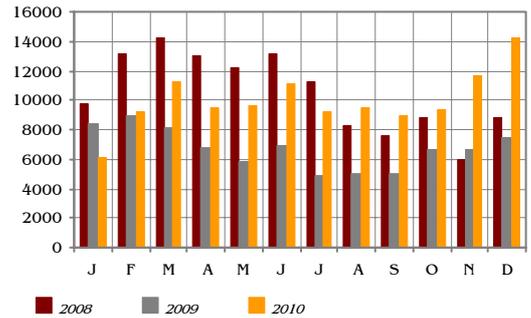
The Credit Registry's activity has improved business discipline of borrowers and scaled down the delays in installments, reflecting clients' understanding of the importance to their credit history.

The amount of registered information and utilization rate in the Credit Registry would probably increase during 2011 as well. Work done by commercial banks and credit organizations suggest that all creditors involved would have the provision of information to the Credit Registry automated. More methodological change would come in to reduce weaknesses and raise efficiency of the Credit Registry.

### *The ACRA Credit Bureau*

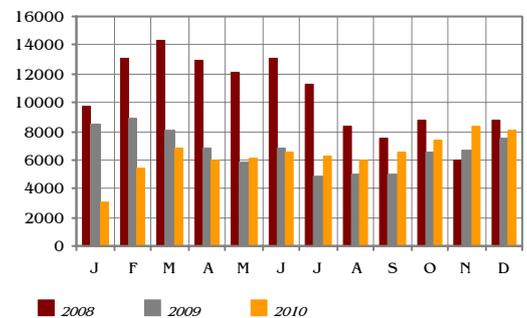
The ACRA Credit Reporting Company is the first private credit bureau in Armenia, and it has already concluded many service contracts with Armenian commercial banks and credit organizations, meaning that it will receive,

**The number of new loans and loans entered Credit Registry, by months**



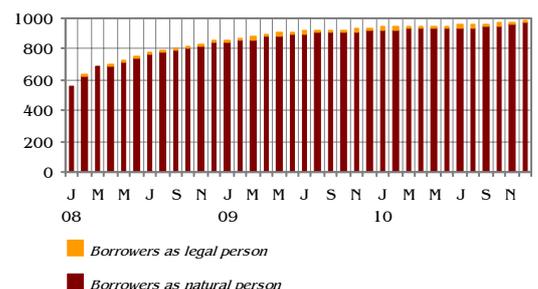
Source: Central Bank of Armenia

**The number of requests received by Credit Registry, by months**



Source: Central Bank of Armenia

**The number of borrowers registered in ACRA database (in thousand)**



Source: ACRA

process and provide information on the borrowers. In 2010, the number of the borrowers entered with the Bureaus has increased by 5.1 percent to amount to 990.4 thousand borrowers as of the end of the year, of which 97.8 percent are natural persons.

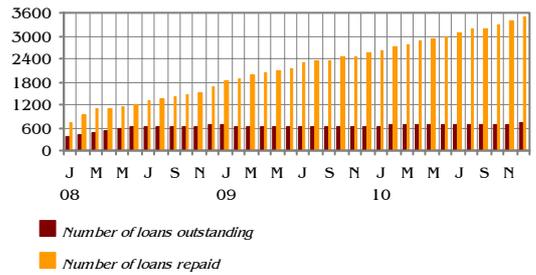
The number of loans available with the database has grown by more than 1.3-fold to reach 4.2 million at the end of the year.

Any natural person or legal person is entitled to receive information from the Bureau concerning his personal credit history. For the legal persons to get credit history of its client or counterparty, it should enter into a service contract with the Bureau and receive consent in writing from the borrower.

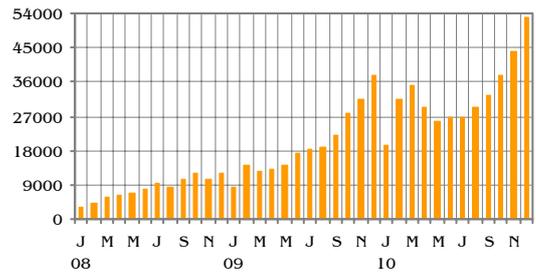
The Bureau started to provide credit reports since April of 2007. The number of credit reports provided in 2010 has grown by 1.7-fold compared to the number of reports provided in 2009.

A multi-level coding system, supported by special firewall hardware, has been developed to protect information owned by the Bureau and to prevent its illegal usage by the third parties whatever. The system traces all actions as well as an ongoing monitoring of the system is in place to prevent suspicious and unauthorized action.

**The number of loans registered in ACRA database (in thousand)**



**The number of reports provided by ACRA**



Source: ACRA

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## ABBREVIATIONS

<b>CBA</b>	Central Bank of the Republic of Armenia
<b>GDP</b>	Gross Domestic Product
<b>GNDI</b>	Gross National Disposable Income
<b>IMF</b>	International Monetary Fund
<b>UNO</b>	United Nations Organization
<b>CIS</b>	Commonwealth of Independent States
<b>ECB</b>	European Central Bank
<b>USA</b>	United States of America
<b>RF</b>	Russian Federation
<b>IFRS</b>	International Financial Reporting Standards
<b>MLIC</b>	Motor Liability Insurance Contracts
<b>CDA</b>	Central Depository of Armenia
<b>GB</b>	Government Bonds
<b>TB</b>	Treasury Bills
<b>EPS</b>	Electronic Payments System
<b>GSASS</b>	Government Securities Accounting and Settlement System

