



European
University
Institute

ROBERT
SCHUMAN
CENTRE FOR
ADVANCED
STUDIES

CARIM EAST – CONSORTIUM FOR APPLIED RESEARCH ON INTERNATIONAL MIGRATION

Co-financed by the European Union

The Development and the Side Effects of Remittances in CIS Countries: the Case of Armenia

Lili Karapetyan, Liana Harutyunyan

CARIM-East Research Report 2013/24



© 2013. All rights reserved.
No part of this paper may be distributed, quoted
or reproduced in any form without permission from
the CARIM East Project.



CARIM-East
Creating an Observatory of Migration East of Europe

Research Report
CARIM-East RR 2013/24

**The Development and the Side Effects
of Remittances in CIS Countries:
the Case of Armenia**

Lili Karapetyan - Liana Harutyunyan

© 2013, European University Institute
Robert Schuman Centre for Advanced Studies

This text may be downloaded only for personal research purposes. Any additional reproduction for other purposes, whether in hard copies or electronically, requires the consent of the Robert Schuman Centre for Advanced Studies.

Requests should be addressed to carim.east@eui.eu
If cited or quoted, reference should be made as follows:

Lili Karapetyan, Liana Harutyunyan, The Development and the Side Effects of Remittances in CIS Countries: the Case of Armenia, CARIM-East RR 2013/24, Robert Schuman Centre for Advanced Studies, San Domenico di Fiesole (FI): European University Institute, 2013.

THE VIEWS EXPRESSED IN THIS PUBLICATION CANNOT IN ANY CIRCUMSTANCES BE REGARDED AS THE OFFICIAL POSITION OF THE EUROPEAN UNION

European University Institute
Badia Fiesolana
I – 50014 San Domenico di Fiesole (FI)
Italy

<http://www.eui.eu/RSCAS/Publications/>
<http://www.carim-east.eu/publications/>
<http://cadmus.eui.eu>

CARIM-East – Creating an Observatory East of Europe

This project which is co-financed by the European Union is the first migration observatory focused on the Eastern Neighbourhood of the European Union and covers all countries of the Eastern Partnership initiative (Belarus, Ukraine, the Republic of Moldova, Georgia, Armenia and Azerbaijan) and Russian Federation.

The project's two main themes are:

- (1) migration from the region to the European Union (EU) focusing in particular on countries of emigration and transit on the EU's eastern border; and
- (2) intraregional migration in the post-Soviet space.

The project started on 1 April 2011 as a joint initiative of the European University Institute (EUI), Florence, Italy (the lead institution), and the Centre of Migration Research (CMR) at the University of Warsaw, Poland (the partner institution).

CARIM researchers undertake comprehensive and policy-oriented analyses of very diverse aspects of human mobility and related labour market developments east of the EU and discuss their likely impacts on the fast evolving socio-economic fabric of the six Eastern Partners and Russia, as well as that of the European Union.

In particular, CARIM-East:

- builds a broad network of national experts from the region representing all principal disciplines focused on human migration, labour mobility and national development issues (e.g. demography, law, economics, sociology, political science).
- develops a comprehensive database to monitor migration stocks and flows in the region, relevant legislative developments and national policy initiatives;
- undertakes, jointly with researchers from the region, systematic and *ad hoc* studies of emerging migration issues at regional and national levels.
- provides opportunities for scholars from the region to participate in workshops organized by the EUI and CMR, including academic exchange opportunities for PhD candidates;
- provides forums for national and international experts to interact with policymakers and other stakeholders in the countries concerned.

Results of the above activities are made available for public consultation through the website of the project: <http://www.carim-east.eu/>

For more information:

CARIM-East

Robert Schuman Centre for Advanced Studies (EUI)

Convento

Via delle Fontanelle 19

50014 San Domenico di Fiesole

Italy

Tel: +39 055 46 85 817

Fax: + 39 055 46 85 770

Email: carim.east@eui.eu

Robert Schuman Centre for Advanced Studies

<http://www.eui.eu/RSCAS/>

Table of Contents

Abstract	
Executive Summary	
Introduction	1
What Are Remittances?	1
Statistical sources used in the paper	1
The importance of remittances in the CIS region	3
Improve Data on Remittances in CIS countries	4
The characteristics of remittances	4
The role of remittances in Armenia	4
I. Economic growth and remittances	7
Positive impact	7
Negative impact	8
Another negative affect of remittances on economic growth is Dutch disease.	8
Influence of remittances on growth in CIS countries	9
Influence of remittances on growth in Armenia	10
Survey results	10
Econometric results	12
II. Remittances, Investment and Financial Development	12
Remittances and investment	12
The influence of remittances on investment in CIS countries	13
Econometric and CBA Survey results	14
Remittances and financial development	15
The role of remittances in financial development	15
Informal remittances	15
The impact of remittances on the financial system in terms of credit	16
The impact of remittances on the financial system in terms of deposits	16
III. Employment and Remittances	18
IV. Remittances and Inflation	19
V. Remittances, Poverty and Income Inequality	20
Remittances and poverty in the CIS region	21
How do remittances contribute to poverty reduction in Armenia?	21
Econometric results	22
The impact of remittances on income inequality and formalized welfare.	22
VI. Remittances, public moral hazard and the policy trap	23
Channels leading to moral hazard	23
Do remittances cause a policy trap?	24
VII. Remittances and Human Capital formation	25
How do remittances influence human capital accumulation in Armenia and CIS countries?	25
Policy recommendation	27
Bibliography	28

Abbreviations	32
Annex	33
Appendix 1. Remittances in Armenia and Russian GDP	33
Appendix 2. The multiplier of expenditures in Armenia	35
Appendix 3. Pooled OLS for CIS countries	38
Appendix 4. OLS estimation results of remittances in relation with aggregate demand, supply, economic cycle and real effective exchange rate	39
Appendix 5. Durables and remittances	53
Appendix 6. Remittances and financial intermediation	55
Appendix 7. Employment and Remittances	58
Appendix 8. Remittances and Inflation	60
Appendix 9. Remittances and Poverty/ income inequality	62
Appendix 10. Government social spending and remittances	66
Appendix 11. Remittances and Education/Health	68

Abstract

This paper looks at the economic impact of remittances for Armenia and also for CIS countries more generally. For Armenia regression analysis shows that, over the short run, 10 percent remittance growth positively affects GDP growth by 0.3 percentage points through its multiplying effect on domestic demand. It is also an undeniable fact that remittances have a poverty-reducing effect and that 10 percentage point growth in remittances should lead to a 1.7 percentage point decrease in the poverty rate. However, a key question is whether remittances also serve to promote long-run economic growth. Empirical results show that a 10 percentage point increase in remittances negatively influences GDP growth by 0.2 percentage points over the long run.

This negative effect can create moral hazard in recipient households and, therefore, a contraction in labor supply. Another factor is that remittances do not sufficiently promote productive investments. So remittances have an important influence in terms of aggregate supply meaning the development of the construction and service sectors. Finally, remittances can lead to Dutch disease, as they increase the effective exchange rate and, therefore, non-tradable sector of economy are changed.

Countries like Armenia that receive significant remittances need to develop appropriate policies to deal with possible negative consequences. Remittances tend to be relatively stable over long periods so the appropriate policy response should be to learn to live with them.

Executive Summary

Remittances sent from abroad play an important social and economic role in many CIS countries, including Armenia. Among the CIS countries the ratio of remittances to GDP is especially high in Tajikistan, Kyrgyzstan, Moldova and Armenia. Thus, these nations are particularly exposed to external shocks, such as the recent economic and financial crisis, as domestic shocks are exacerbated by pressure in the labor market in destination countries (through lower demand for migrant labor force) and lower levels of consumption and investments (stemming from reduced remittance inflows).

The main purpose of the present research is to analyze the positive and negative effects of remittances on the main macroeconomic indicators of Armenia. On the basis of this we will suggest policy options for the more efficient use of remittances.

To this end we have looked at the following issues:

- Comparable data for CIS countries and Armenia,
- Surveys implemented by different organizations.
- Trends and statistical interrelations between different macroeconomic indicators and remittances.

The main characteristics of remittances in Armenia.

- Net remittance inflows to Armenia were 11.2% in 2011. In the early 1990s, after the collapse of the Soviet Union, remittances were not so significant. But since 1998 the remittance share of GDP has been continuously increasing.
- The share of remittances from temporary migrants is significant. Before the recent global financial crisis worker remittances was rising rapidly. While after the crisis the compensations of employees, including border, seasonal, and other workers also increased as Armenia recorded high economic slowdown: there was a 14.1% contraction in GDP. This can be explained by the fact that many people found themselves unemployed and these had to find jobs abroad despite remittances from migrants decreasing given lower incomes abroad.
- The main channel of transfers is the banking system (about 70% according to different surveys): another 30% is sent by special organizations, cash and postal services.
- In Armenia about 72% of remittances are spent on current consumption. The remaining expenses are directed towards children's education, business activities, real estate and land, savings etc.
- Remittances are a more stable source of foreign capital than foreign direct investments in Armenia, as well as in CIS countries.

The positive effects of remittances

- Net remittance inflows have, in the short run, a positive influence on GDP growth through its multiplicative effect on consumption and investment. Remitted money is directed towards additional demand for goods and services. Money transfers also help to finance demand for durables, especially the acquisition of real estate, land, repair etc.
- In terms of aggregate supply remittances had a significant and immediate influence on construction and the services, so before the crisis, in 2003-2008, the share of construction increased rapidly by about 10 percentage points. In the same period the share of services increased by about 3 percentage point, providing two digit growth rates in real GDP.

- Remitted money has a positive influence on the development of financial system, simplifying the process of lending and also contributing to deposits in the banking sector. But the elasticity of bank credit for remittances is higher as remittances are considered a stable source of income in credit decisions.
- In the case of the absence of remittances, poverty would be higher by some 8.9 percentage points. Extreme poverty would be two times higher than it is statistically registered.
- Something similar can be said about the relationship between income inequality and remittances. The Gini coefficient became worse after excluding remittances. In urban areas the influence of remittances is strongly expressed in terms of the Gini coefficient.
- The impact of remittances on human capital formation, on education and health is highly positive. The impact of remittances on health is higher than for education, something proven both by household surveys and econometric analysis.

The negative effects of remittances

- Net remittance inflows have a negative influence on GDP growth over the long run though: moral hazard effect, Dutch disease, under investment in productive sectors of economy and the contraction of productive labor force (brain drain).
- Net remittance flows reduce the competitiveness of the Armenian economy by making exports expensive and by increasing import attractiveness. In economically overheated period remittances positively affect the real effective exchange rate.
- Remittances increase non tradable sectors in the Armenian economy (such as construction and services).
- Remittances contribute to engagement of remittance-receiving households, in business activities (mainly in trade and agriculture). But according to the household survey remittances can have a potential negative impact on employment. This is explained by the leisure-work choice they produce.
- Remittances positively affect inflation as the Central Bank of Armenia (CBA) needs to “sterilize” these capital inflows by “printing money”. In Armenia this relationship has been demonstrated. But taking into consideration the fact that inflation is mostly dependent on other factors the impact of remittances is mitigated.
- One of the most discussed effects of remittances is moral hazard, which crops up in the public sector and in individual households. Remittances do not hamper the government to do its social expenditures but moral hazard in remittance-receiving households is a factor. It is expressed in the inverse relationship between employment, long-run GDP growth and remittances.
- Finally, the huge remittance inflows (capital inflows) may cause difficulties in implementing macro-economic policies and policymakers may fall into the “trap”. In the case of Armenia even though society does not put enormous pressure on the government. But existence of remittances can relax the government to direct more resources at high quality infrastructure and productive investments.

Introduction

What Are Remittances?

1. Remittances are classically defined as monetary funds sent by individuals working abroad to recipients in their home country.
2. In different studies remittances are described in different terms, meaning that the definition of remittances differ from country to country. The literature has highlighted three components of Balance of Payment in regard to statistics on remittances¹. We will use this methodology to estimate remittance data in Armenia in order to have cross-countries comparable data.
3. The first component, workers' remittances, records current transfers by migrants who are employed and considered resident in the countries that host them. A migrant in this case is a person who stays or who is expected to stay in his or her host country for a year or more. Workers' remittances normally involve persons related to one another and are recorded under current transfers in the fifth edition of the Balance of Payments Manual (IMF, 1993; hereafter BPM5).
4. The second component, employee compensation, includes wages, salaries, and other benefits earned by individuals abroad for work performed for and paid for by residents of foreign countries: typical examples include earnings of seasonal workers and embassy employees. According to BPM5, the compensation of employees is included under income in the current account.
5. Finally, the third component, migrants' transfers are contra-entries to the flow of goods and changes in financial items that arise from individuals' change of residence from one country to another. In BPM5, migrants' transfers are recorded in the capital account of the Balance of Payments under capital transfers of non-government sectors.
6. In Armenia, since 2012 the new methodology of Balance of Payment (BOP) is implemented, so remittances data will be, from now on, different and not fully comparable².

Statistical sources used in the paper

7. Our paper is based on an analysis of existing research and statistical data. For Armenia we have used the databases of Armenian National Statistical Service (NSS) (with data on 1996-2011), the household and migrant surveys provided by the CBA and NSS, and research in the International Labor Organization (ILO), UNDP and World Bank.
8. **Methodological frameworks rely on quantitative analysis.** Two key analytical approaches have been combined here - regression analysis (for instance, to estimate the impact of remittances on economic growth, employment, investment and financial development etc.) and comparative analysis of remittance receiving and non-receiving households. A combination of regression and comparative analyses provide a more realistic picture.

¹ Some other approaches are also used to calculate remittances.

² Changes also include the introduction of two additional categories, *total remittances* and *total remittances and transfers to nonprofit institutions serving households*. The former includes the new category *personal remittances* plus social benefits. The latter is based on the new category *total remittances* plus current and capital transfers to non-profit institutions serving households. Both items will also be regarded as supplementary. See Reinke (2007) for a additional discussion.

Table1. Net remittances in CIS countries

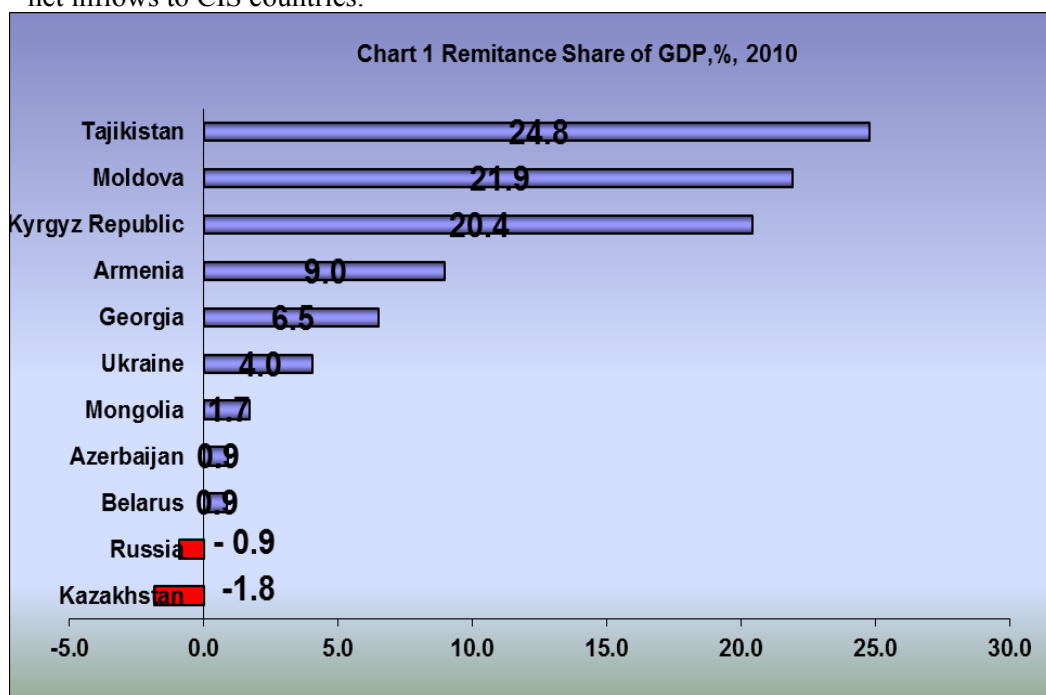
Migrant remittance net (US\$ mln.)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<i>Armenia</i>	89.2	82.3	82.8	73.9	106.9	140.8	296.4	346.2	504.4	669.7	877.0	624.3	839.1
<i>Azerbaijan</i>	-24.0	-22.5	-43.8	-37.8	-53.0	1.7	27.3	424.8	511.7	851.9	961.7	621.9	471.0
<i>Belarus</i>	204.1	111.8	80.8	72.5	72.6	157.4	175.1	160.1	247.1	245.0	538.8	476.4	485.1
<i>Georgia</i>	362.3	314.3	184.4	197.4	204.3	206.7	277.3	317.6	460.3	667.1	685.3	682.7	755.9
<i>Kazakhstan</i>	-399	-292	-318	-316	-390	-654	-1188	-1822	-2847	-4081	-3368	-2797	-2730
<i>Kyrgyz Rep.</i>	-25.1	-32.6	-36.5	-43.4	-20.7	22.9	105.7	196.5	331.4	495.1	1035.9	804.1	978.8
<i>Moldova</i>	100.4	86.8	132.6	184.8	267.2	419.2	638.0	851.9	1096.0	1411.5	1781.9	1106.8	1274.9
<i>Russia</i>	-626	-119	175.8	-420	-867	-1780	-2693	-3996	-8123	-13049	-20290	-13420	-13532
<i>Tajikistan</i>	26.7	33.4	41.7	52.2	65.2	81.6	133.0	321.2	623.9	1506.8	2345.2	1624.5	1398.6
<i>Turkmenistan</i>	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ukraine</i>	9	15	23	136	194	301	391	561	799	4461	5715	5048	5583
<i>Uzbekistan</i>	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: World Development indicators dataset, World Bank

9. The econometric analysis was performed using Eviews software and some databases were analyzed using Microsoft Excel. The estimate was made by the Ordinary Least Squares (OLS) method. We have used annual, quarterly and monthly data in our analyses. The monthly and quarterly series were seasonally adjusted by Tramo Seats or X12. A dummy variable for the year of crisis and structural changes was also used. All the models show that the combined impact of all estimated independent variables is significant (Prob. of F statistic). Also coefficients are significant at 1-10% levels. We checked the reliability of all our estimates using different tests and they satisfied at least all the following three requirements: residuals were normally distributed; autocorrelation and heteroscedasticity tests are satisfying.
10. Analyzing remittances within the CIS in the World Bank Database (Table 1) one can see that Turkmenistan and Uzbekistan do not provide remittances data.
11. Obtaining data on remittances is not easy as only a portion of the flows actually goes through official financial channels. There are many opportunities to send remittances informally: physically by another persons, letter, etc..

The importance of remittances in the CIS region

12. **In CIS countries remittances play a significant role.** The share of remittances in Tajikistan, Moldova and Kyrgyz Republic is more than 20% (see in Chart 1). Armenia is ranked fourth in the CIS region according to World Bank data. In 2010 the share of remittances in GDP was about 9% and since 1998 the volume of remittances has multiplied some nine times over. It is also important to note that net outflows from Russia have increased by some twenty-two times compared to 1998, which corresponds to the growth of net inflows to CIS countries.



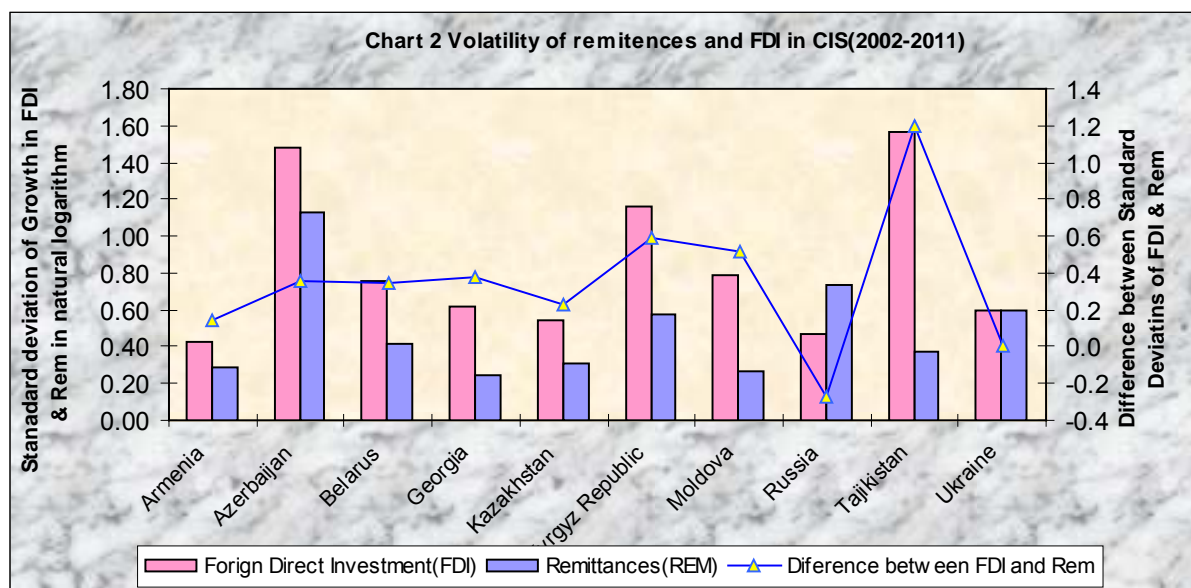
Source: World Development indicators dataset, World Bank

Improve Data on Remittances in CIS countries

13. Statistics related to remittances must be strengthened, including the official statistical frameworks and surveys. Building better databases on remittances would, indeed, help scholars better understand remittance flows and their impact on the economy. For instance, the Central Bank of Armenia (CBA) has started strengthening its statistical framework to support its monetary policy formulation and implementation. The CBA's objective is to analyze remittance flows and their potential impact on the Armenian economy in case of economic shocks in the main sending countries. The remittance data provided by the CBA also includes informal remittances (which do not go through official channels) in surveys and estimates.

The characteristics of remittances

14. Remittances are characterized by stability, in the sense that they are not as volatile as official flows and they do not vary substantially over time. In CIS countries the volatility of remittances are less than FDI, so they have high potential for economic development. The standard deviation of the series is commonly used in the literature for measuring volatility (see Chart 2).



Source: World Development indicators dataset, World Bank

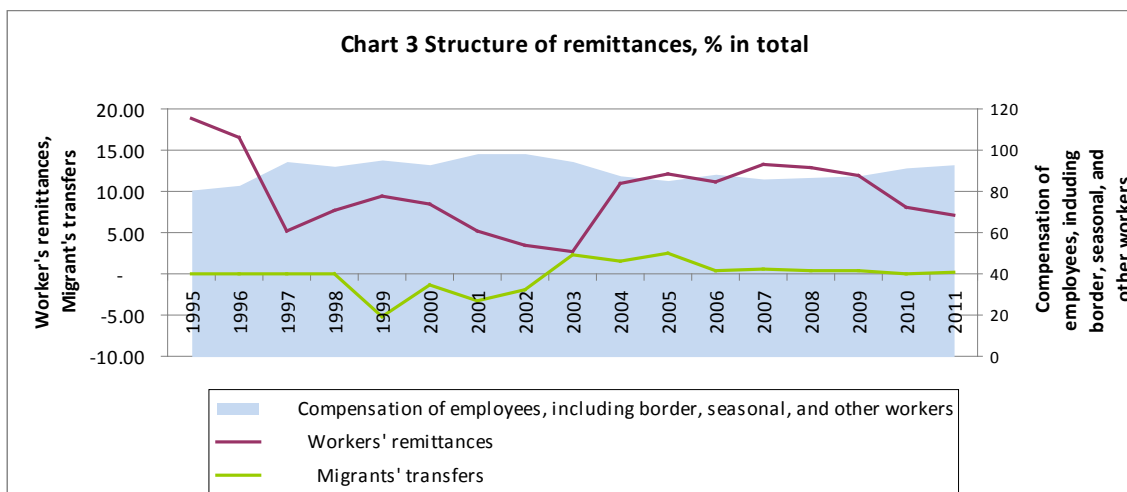
15. Remittances are a significant source of foreign exchange and improve current account. Therefore, they can increase the creditworthiness of the country. Unlike capital flows, remittances do not create debts servicing or other obligations. Thus, they can provide financial institutions with access to better financing than might otherwise be available.

The role of remittances in Armenia

16. **The impact of net private remittances has been significant in the economic history of Armenia.** In the early 1990s, after the collapse of the Soviet Union, remittances were not so large. But since 1998 the share of remittances in GDP has been increasing continuously: in 1998 it stood at 4.7%, while in 2011 it stood at 11.2%. During 2004-2008 remittance growth stood at about 47% on average. During the crisis the remittances declined by 28%. Recently, it has started to recover conditioned by economic activity in remittance-sending countries (especially Russia). In the period (2005-2008) when Armenia's economy was overheating

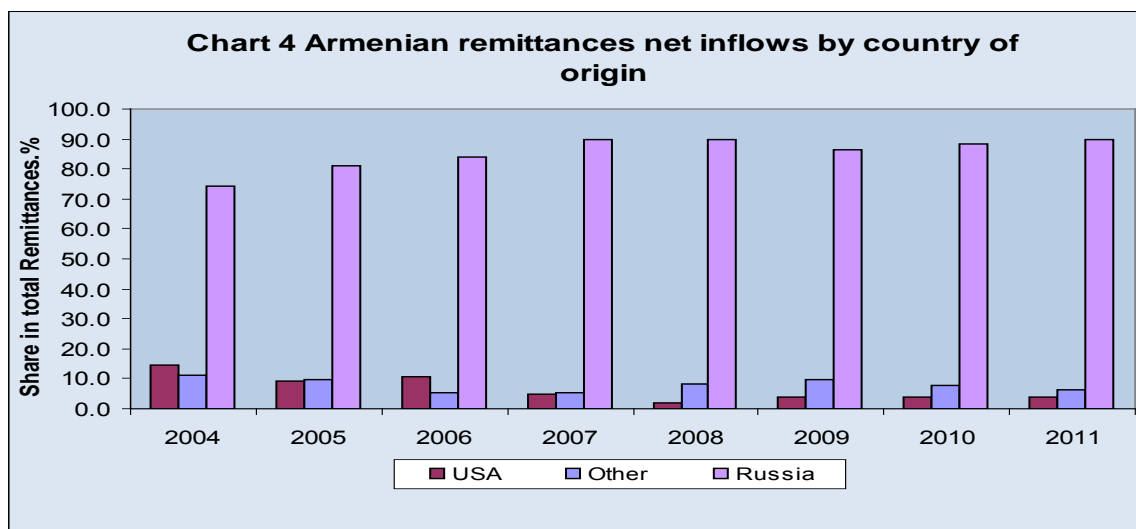
the growth of remittances contributed to private dwelling construction, where prices started to increase dramatically (Palacin and Shelburne, 2005). During those years private consumption also grew becoming the main driver of aggregate demand. In 2005-2008 growing remittances resulted in the appreciation of the national currency (Dram), which, in turn, reduced the competitiveness of domestic goods. Coupled with enhanced consumption, the real appreciation increased demand for imported goods and services, drastically deteriorating current account balance from -1.1 to -11.8 percent of GDP.

17. **Double-digit economic growth in the Armenian economy was concentrated in non-tradable branches.** Bryan Roberts and King Bananian mentioned how in the Armenian economy, as in other remittance-receiving countries, private remittance inflows developed a kind of “Dutch disease”: this became apparent during the crisis. But one must notice that the appreciation of national currency had a positive impact on the prices of imported goods: the share of imported goods in a CPI basket is about 40%. Thus it leaves room for expansionary monetary policy during the crisis.
18. In 2001 and 2002 short-term migrant remittances were about 100% of all remittances. After 2002 the share of short-term workers incomes was reduced which was compensated by long-term migrant remittances (see chart 3). This can be explained statistically as short-term migrant become residents of host countries so they remitted amounts recorded in the “other” item of BOP. However, over the last two years there has been a tendency for growth in short-term remittances. This was conditioned by the crisis, after which temporary migration increased. This, in turn, was conditioned by the fact that people sought working opportunities abroad as domestic production contracted and unemployment grew. The average growth rate in workers remittances in 2010-2011 was only 4%, while remittances from temporary migrants grew by about 40%.



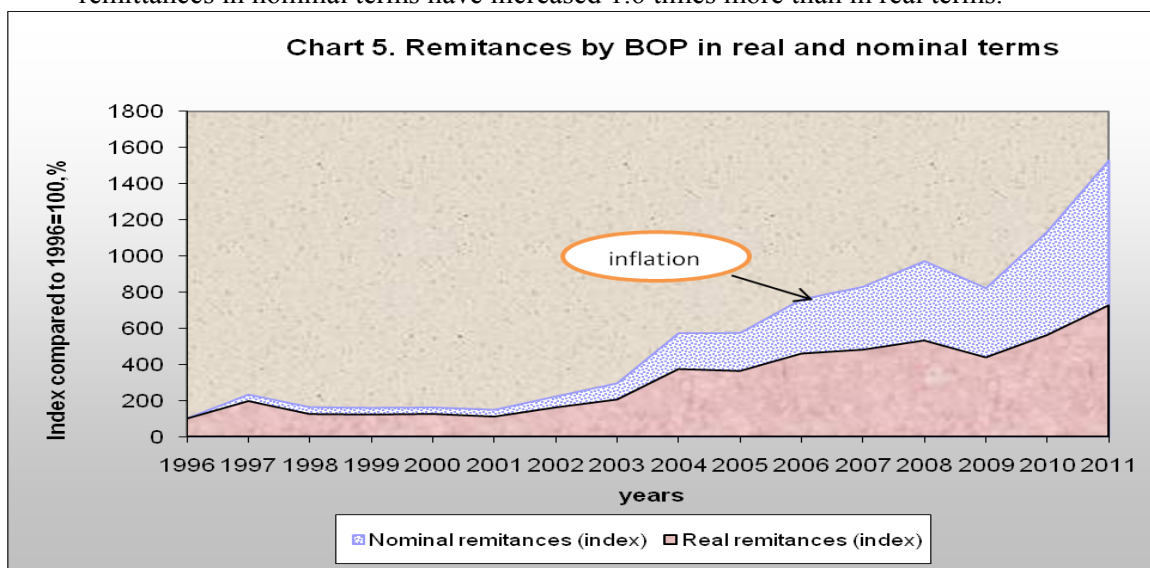
Source: Central Bank of Armenia

19. **By countries of origin the main part of remittances comes from Russia and the trend is upward.** It has increased from 72% in 2004 to 90% in 2011 (see chart 4). Also a notable part came from the US, but since 2004 this has declined from 14.5% to 3.7%. In 2008, compared to the previous year, the share of remittances from the US has decreased twice over, as a result of the financial crisis. The rest of remittances, admittedly a small part, comes mainly from Ukraine, Germany, France, Greece and Spain.



Source: Central Bank of Armenia

20. The structure of remittances in Armenia is dependent mainly on Russia. The regression shows that remittances are greatly affected by Russian economic activity. Change of GDP in Russia by 1 percentage point positively impacted remittance net inflows in Armenia by 0.23 percentage points (see Appendix 1).
21. **Remittance grew, in real terms, at a more moderate pace than nominal.** We compared deflated remittances (GDP deflator taking 1996 as base year) to nominal remittances in order to show the real value of remittances for Armenia (see chart 5). As we can see in chart 5 remittances in nominal terms have increased 1.6 times more than in real terms.



Source: National Statistic Service

22. Given the significant role of remittances this paper discusses the influence of remittances on main macroeconomic indicators especially GDP growth, inflation, poverty, income inequality, investment and financial development, employment, human capital accumulation and a possible policy trap. All this analysis will give opportunities to cover the existing knowledge gap in this field by summarizing positive and negative side effects.
23. The paper is organized as follows:
24. **In chapter 1** the influence of remittances on economic growth for CIS countries generally and separately for Armenia is discussed. The research was carried out in two directions:

Aggregate Demand and Supply. The results show that from the side of Aggregate Demand in Armenia remittances have a positive effect on consumption, investment and import but that they affect export negatively. On the side of Aggregate Supply remittances contribute to construction and services. Also, we estimated direct relations between remittances and GDP, which show that remittances positively affect GDP growth over the short run. But our results were not favorable for long-run economic growth, as remittances: negatively affect employment (brain drain); increase the danger of Dutch disease; increase wages and prices in non-tradable sector; reduce the work efforts of remittance-receiving households; and then they reduce the labor supply.

25. *In chapter 2* there is a detailed analysis of the channels through which remittances influence investment. In Armenia remittances tend to be directed towards investment when the sum of remittances grows. One important finding is that remittances strongly affect durables.
26. In this chapter the developments of financial intermediation through the impact of remittances on credit and bank deposits are also discussed. We have found that credit is dependent on remittances more than on deposits. And remittances promote improvements in the financial system facilitating credit and increasing deposits.
27. *In chapter 3* we examine the issue of employment under pressure of remittances flows. Employment in Armenia tends to decrease when families receive remittances, as they are used to living on not earned income and do not have strong enough incentives to work.
28. *In chapter 4* a possible relation between remittances and inflation is observed. For Armenia, remittances are one of the factors that cause inflation. But other factors of inflation (domestic food prices and import prices) are more important.
29. *In chapter 5* issues of poverty and income inequality are discussed. In the absence of remittances both poverty and inequality would be higher. In the present research we have found that growth in remittances decrease poverty and income inequality.
30. *In chapter 6* a few negative impacts of remittances are taken into account. It is concluded that, in CIS countries as well as in Armenia, there is a high probability of moral hazard in households. Also the results prove that despite growth in remittances government increases the spending on education and health. This is one of the arguments that moral hazard is not evident for Armenian government. However, in Armenia remittances complicate the implementation of monetary policy and to some extent policy-makers find themselves in a trap.

I. Economic growth and remittances

31. Researchers are particularly interested in the impact of remittances on longer-run growth and development. There is a lot of literature concerning both the positive and negative impact of remittances on economic growth.

Positive impact

32. Remittances can have a direct positive effect on economic growth, through investment in physical and human capital. They generally finance education, health and increase investment. So the remittances in an economy may lead to an increase in domestic investment. More recent econometric analyses have shown that remittances have a positive and statistically significant impact on growth (Mansoor and Quillin, 2006; Ang, 2007) and/or poverty reduction (Adams and Page, 2003).
33. Remittances can also promote development by creating specific kind of capital like increased commercial ties, ties which can stimulate trade and investment (Herander and Saavedra, 2005). This can come about because migrants have improved their job skills in the result of learning abroad.

34. Remittances can also increase consumption and non-productive investments in housing; they may also have various indirect effects on growth by increasing per capita income levels. Some economic researches show that even when remittances are not invested, they can have an important multiplier effect. One remitted dollar spent on basic needs will stimulate retail sales, which stimulates demand for goods and services further, as well as stimulating output and employment (Lowell and de la Garza, 2000). *The multiplier of expenditures in Armenia is estimated to stand at about 1.5 (see Appendix 2)*. We have estimated the equations of import, consumption and investment as a function of GDP to find out their marginal propensity to spend on imported goods and services, to consume and to invest. The impact of remittances on labor productivity depends on the standard of living of recipient families.
35. Economic growth is classically seen as a function of labor, capital and the total factor of productivity: a favorable business environment, strong institutions, and financial development may all contribute to the effectiveness of factors of production and, therefore, to economic growth. A good investment climate with well-developed financial systems and sound institutions may contribute to a higher share of invested remittances. The main factor in increasing the effectiveness of remittances is: to implement economic and governance policies that support a sound business environment; and to provide for the security of the financial sector and the quality of public services (e.g. education and health care). Indeed, recent research shows that remittances may promote financial development, which in turn can enhance growth³.

Negative impact

36. Several studies have discussed the possible negative impact of remittances on growth and development. This can be expressed by moral hazard or reduced incentives for recipients to work, by brain drain, Dutch disease.
37. The moral hazard problem was first formalized by Chami (2003). He has found out that remittances can negatively affect the labor supply, investment, and policymaking. The moral hazard problem manifests itself in two ways: recipients reduce their labor market effort and they make riskier investments reducing economic growth.
38. Another important factor is that large outflows of workers (especially skilled workers) can reduce growth in countries of origin. Despite remittances being invested in human capital, deterioration in the labor force caused by migration has a much larger negative short-term impact (on labor supply).

Another negative affect of remittances on economic growth is Dutch disease.

39. In small open economies theoretical analyses of Dutch disease effects (capital inflows, remittances in our case) have largely been based on the open economy model, also known as the “Salter-Swan-Corden-Dornbusch model”. Within this framework, higher disposable income triggers an expansion in aggregate demand, which for exogenously given tradable goods stimulates higher relative prices for non-tradable goods (spending effect) that corresponds to real exchange rate appreciation. The higher non-tradable price leads to an expansion in the non-tradable sector (which is relatively labor intensive) causing a further reallocation of resources toward the non-tradable (resource movement effect). In this case an additional transmission mechanism can operate: remittances have a propensity to increase household income and thus they result in a decrease in the labor supply. A reduction of labor supply is related to higher wages (in terms of the price of tradable output), that in turn leads to higher production costs and a further contraction of the tradable sector.

³ Natalia C atrinescu (European Commission), Miguel Leon-Ledesma (University of Kent), Matloob Piracha (University of Kent), Bryce Quillin (World Bank) (May, 2006) “Remittances, Institutions, and Economic Development”, IZA DP No. 2139

40. An increase in demand for non-tradable goods (like real estate) can lead to an increase in inflation. Similarly, negative effects can occur if domestic production cannot keep up with increased demand. This can result in an increase in imports and/or an appreciation of the exchange rate, impairing domestic production as exports become more expensive on the international market and, as a result, less competitive⁴.

Influence of remittances on growth in CIS countries

41. Garbis Iradian have analyzed the main factors according to their importance in explaining growth changes between 1996–2000 and 2001–2006 in CIS countries. It shows that the main factor which contributed to growth in all CIS countries is stabilization and reforms. But remittances are also mentioned as a key growth factor in Armenia, Moldova and Tajikistan. In Azerbaijan and Belarus growth is also conditioned by investments and external factors (terms of trade).
42. Some CIS countries are relatively less dependent on commodities; they depend strongly on Russian import demand. A slowdown in growth in the Russian economy and the possibility of more restrictive immigration laws could significantly reduce workers' remittances to Armenia, Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan.
43. Empirical evidence based on a partial equilibrium model confirms that remittance inflows contributed to pre-crisis GDP growth in Ukraine as well as in other CIS countries. However, the estimated impact of remittances on average GDP growth in 2001-2006 was less strong in Ukraine than in the smaller CIS economies, which are more dependent on remittance inflows from their migrants.⁵
44. During 2000-2008, across the CIS region, there was a positive relation between remittance flows and real exchange rate appreciation. There was also a negative relationship between remittances and tradable/non tradable output ratio, which may serve as a source for occurring Dutch disease. Following Oomes and Kalcheva's, selected symptoms of Dutch Disease in CIS countries including: appreciation of the real exchange rate (in 2002-2008 in Russia, Armenia, and Ukraine); service sector growth (most country's experience in the development process); a slowdown in manufacturing growth (in most CIS countries except Kyrgyzstan and Uzbekistan) growth in real wages (in some CIS countries); and export concentration (very high in most CIS countries, with the exception of Armenia, Georgia, and Ukraine)⁶. Based on our estimates for Armenia during 2002-2011 (see Appendix 4) we have found that a 1 percentage point increase in remittances will lift the real exchange rate by 0.04 percentage points.
45. We have found positive relations between remittances and GDP growth according to a pooled OLS in cross section of six CIS countries: Armenia, Belarus, Moldova, Tajikistan, Ukraine and Georgia. The estimate is made based on real GDP growth and net remittance series.
46. Real GDP growth is affected by lagged GDP and also the lagged acceleration of remittances growth. The estimate shows that positive relations are evident but not particularly tangible. This means that combined negative influences (moral hazard, labor force supply reduction, brain drain, and insufficient level of investments) of remittances are high and decrease the positive impact of the same (see Appendix 4).

⁴ Policy Brief, No.5, September 2006, "Remittances - A Bridge between Migration and Development?"

⁵ Olga Kupets, CARIM-East Research Report 2012/02, "The Development and the Side Effects of Remittances in the CIS Countries: the Case of Ukraine"

⁶ Garbis Iradian (2007) "Rapid Growth in Transition Economies: Panel Regression Approach" IMF Working Paper No. 07/170.

Influence of remittances on growth in Armenia

47. As mentioned above, the impact of remittances on growth is difficult to estimate. However we will take into account a simple OLS equation results between GDP growth and remittances in Armenia to understand whether they are in tandem or not. **The relationship between remittances and growth in Armenia is positive albeit mild. The 10 percentage point increase in remittances affects only 0.3 percent of GDP growth (see Appendix 4).** This influence may be reduced by several kinds of negative channels. During economic boom remittances have time to force their negative effects through Dutch disease, losing competitiveness, brain drain and decreasing initiatives to work, i.e. moral hazard.
48. In order to check the credibility of our results, we have run Pairwise Granger Causality Tests. **It shows that, in reality, remittances influence on GDP for Armenia and not vice versa. In addition, our regression analysis shows that the relations between the remittance and the GDP cycle (detrended using the HP filter) are likely to be pro-cyclical (see Appendix 4).** To the extent that remittances are used for investment purposes, they may behave pro-cyclically just as other investment flows do. But in some studies (Dilip Ratha and Sanket Mohapatra, Chami) scholars have argued that remittances are more likely to be countercyclical in poor countries. Remittances tend to rise when the recipient economy suffers from natural disasters, an economic downturn or political conflict. Migrants send more money home in hard times to help their families and friends. Remittances thus smooth consumption and contribute to the stability of home-country economies by compensating for foreign exchange losses due to macroeconomic shocks.
49. **There are two reasons why we should expect two-way causality between remittances and economic growth.**
50. **First**, domestic growth in the remittance-receiving economy can potentially drive remittance inflows. This can occur either through effects on migration, in which case low economic growth leads to higher outward migration and higher remittances; or through altruistic behavior on the part of the existing migrant community, in which case low economic growth in the home country leads altruistic migrants to increase compensatory transfers.
51. **The second** reason for two-way causality is that growth and remittance flows may both be affected by independent (not remittance-driven) causes. One such “third” variable could be poor domestic governance, which both motivates higher migration (leading to higher remittances) and retards economic growth. Another is high economic growth in a major trading partner country of a migrant-sending country and a major destination for these migrants. Higher growth in such countries will lead to higher remittances due to larger migrant incomes, as well as to higher growth in the migrant sending countries via higher export.⁷
52. **For a better understanding the channels through which the remittances affect economic growth in Armenia we look at survey results. Also we have run several OLS estimations, which include the aggregate demand and aggregate supply indicators.**

Survey results

53. **In the CBS survey (see Table 2) about 72% of remittances were spent on current consumption.**⁸ The Survey results at two years show that, compared to the previous year, total spending on consumption decreased conditioned by changes in Urban area. In rural areas the picture is a little different. They save for future expenses on the education of children, marriage, renovation, etc..

⁷ Reena Aggarwal (July 2006) “Do Workers’ Remittances Promote Financial Development?” World Bank Policy Research Working Paper No. 3957.

⁸ In contrast to CIS countries Puri and Ritzema (1999) review the evidence of remittances for a variety of Asian economies and conclude that remittances are often perceived as transitory income, and the marginal propensity to save from remittances is very high.

Table2. The directions of spending for remittances in urban and rural areas in Armenia

	<i>Current consumption expenditure</i>	<i>Education expenditure</i>	<i>Expenditure on real estate and land</i>	<i>Expenditure on agricultural machinery</i>	<i>Expenditure on repair</i>	<i>Business activity</i>	<i>Savings</i>	<i>Personal and households goods.</i>	<i>Other</i>
Urban area 2006	74.2	8.7	0.9	0.2	2.3	1.3	0.8	2.8	8.8
Urban area 2005	80.1	5.8	0.9	-	-	1	1.2	3.3	7.7
Rural area 2006	70.6	8.6	1.3	3.4	4.0	1.1	0.7	2.2	8.1
Rural area 2005	69.1	6.8	1.7	-	-	3.8	0.9	3.5	14.4
Total 2006	72.8	8.7	1.0	1.5	2.9	1.2	0.8	2.6	8.5
Total 2005	76.1	6.1	1.2	-	-	2.0	1.1	3.4	10.1

Source: CBA Survey

54. Looking at Table 2, at first sight, it seems that the share of expenditure on real estate, or business activities and savings have decreased compared to previous year: this is actually not so for this case, because the survey calculation methods used in 2005 and 2006 were different (in 2006, current expenses included spending on agricultural machinery and repair, but those were not included in 2005). So these numbers tell us that if the survey questionnaire included the expenditures on agricultural machinery and repair in 2005 (which can be considered savings) the expenditures on savings in previous year would be lower and the propensity for savings should be higher. Of course, this is the result of observations for only two years and it may not be very consistent.

Econometric results

55. Separate equations were given to assess the impact on aggregate demand (see Appendix 4).
56. The results of econometric estimates correspond to the Survey among remittance-receiving households. The estimate shows that remittances positively impacted imports (see Appendix 4). The marginal propensity to import is 0.13 per 1 percentage point increase in remittances. Second, from the demand side remittances affect private consumption. The marginal propensity of consumption on increased income due to remittances is 0.106 percentage points per 1 percentage point growth in remittances. We found that investments are also positively correlated with remittances. The coefficient (0.06 percentage point) is mild compared with the other components of aggregate demand, but it is important given the positive relationship between growth and remittances in Armenia. It is not surprising that the impact of remittances on export is negative (the coefficient is 0.18) as remittances contribute to national currency appreciation by loosening the competitiveness of domestic products and services in foreign markets (see Appendix 4).
57. From the side of aggregate supply estimated equations have statistical sense only for construction and services. The influence of remittances is higher on construction compared to the services. This is explained, in part, by higher investments in dwelling construction. Rapid increase in real estate prices from 2000 to 2008 created construction booms that initially helped to boost GDP growth. A subsequent reversal in property prices and the construction slowdown became one of the main reasons for the current crisis in many countries.
58. As Chami found when the growth equations are well specified and remittances are properly measured, one cannot find a robust significant positive impact of remittances on long-term growth. Indeed, often there is a negative relationship between remittances and growth. For Armenia we also concluded that over the long run remittances have negative influences on economic growth. After 8 lags a 1 percentage point increase of remittances leads to 0.02 decrease of GDP.

II. Remittances, Investment and Financial Development

Remittances and investment

59. Remittances often positively influence the investment climate, productivity and employment, stimulating institutional development and alleviating financing constraints. Remittances can produce an impulse for the creation of capital and labor market expansion in developing countries if they are used to finance business activities. Ratha (2003) indicated that if remittances are invested, they contribute to output growth, but if remittances are consumed they generate positive multiplier effects. Theoretically household productive investments depend on income, interest rates, stock prices, sound macroeconomic policies and stable economic growth.

60. There are different ways in which worker remittances can affect capital accumulation.
61. First of all, remittance inflows can directly finance the accumulation of physical and human capital.
62. Second, it can also improve the creditworthiness of domestic investors and large remittance inflows may decrease the cost of capital in the domestic economy. Improving credit ratings can also help attract other financial inflows.
63. Finally, remittances contribute to domestic capital accumulation through effects on domestic macroeconomic stability. As remittances make the domestic economy less volatile, they tend to reduce the risk premium that firms demand in order to undertake investment, and thus they make domestic investment more attractive. Chami, Hakura and Montiel's analysis (2009) based on a large sample of remittance-receiving countries shows that remittances do reduce output volatility.⁹

The influence of remittances on investment in CIS countries

64. In CIS countries remittances are one of the main channels through which migrants strengthen the integration of the host and recipient economies. There are tangible and intangible benefits of remittance flows across borders. A steady flow of remittances often makes a positive contribution to the investment climate, supporting institutional development and easing financing constraints. Migrant transfers can underpin credit ratings, which serve to attract other financial inflows. Remittances are just one of the channels through which migrants strengthen the integration of the host and recipient economies. Well-established communities abroad (diasporas) can also be a source of investment. Broadly speaking, migrants reduce the information costs incurred in developing economic relations between different countries, thus stimulating trade and financial flows.¹⁰
65. The 2005 survey of over 600 micro and small businesses conducted by the EBRD showed that workers' remittances have been a major source of investment in the low-income CIS countries (EBRD, 2006). A significant portion of the remittances received in the CIS were used to finance investment in existing small business and to finance the start-up of new businesses. Remittances also have the potential to bring a larger share of the population in contact with the formal financial system, expanding the availability of credit and saving products.¹¹
66. Well-established diasporas can also be an important source of investment. Armenia has a large diaspora: indeed, only one third of Armenians live in their homeland. During the transition period, the potential and development of certain sectors of the economy became guarantees for economic growth and attracted the attention of diaspora investors. The Armenian diaspora brought many investments to Armenia (Marriott, HSBC, KPMG, Coca-Cola, Synopsis, American University in Armenia and Zvartnots Armenia International Airport) and created branches of multinational corporations in the country.
67. In Armenia the propensity to save remittances is about 20% and investment is primarily in the housing and land sector, in business activity (machinery and shops) and education. Several studies (Adams (1991), Glytsos (1993), IOM (2003)) have also empirically assessed that about 62% of remittances is spent on consumption, another 38% on savings or investment, for housing, land and business activity. The improved income situation enjoyed by recipients of

⁹ Adolfo Barajas, Ralph Chami, D. S. Hakura, and Peter Montiel (2010) "Workers' Remittances and the Equilibrium Real Exchange Rate: Theory and Evidence", IMF Working Paper No. 10/287.

¹⁰ Robert C. Shelburne, Jose Palacin (November, 2007) "Remittances in the CIS: Their Economic Implications and a New Estimation Procedure" Discussion Paper Series No. 2007.5

¹¹ Garbis Iradian (2007) "Rapid Growth in Transition Economies: Panel Regression Approach" IMF Working Paper No. 07/170.

remittances also brings with it changes in spending habits. Additional financial resources are used primarily for daily expenditures, home construction, land purchase, medical care and education. Migrants often save their earnings for the purpose of coming back into their home country with a nest egg for investment either in a business or for a house.

Econometric and CBA Survey results

68. Poor households are most dependent on remittances (40% of households receiving remittances are poor or extremely poor) as they spend a large part of the remittances on day-to-day consumption needs. But middle class households consider remittances an additional income and tend to save more than poor households. Before the crisis middle class households changed their spending behavior. Current consumption spending has fallen and even vulnerable groups have kept it unchanged: before the crisis the poverty rate was decreasing and living standards were improving. The CBA survey results show that households receiving remittances annually over US \$ 10,000 spent the money mostly on real estate acquisition, business activities, or savings. But the results vary from rural to urban areas. Households in rural area receiving remittances over US 10000 spent most of their money on education and renovation (see Table 3).

Table 3. The directions of spending of remittance in urban and rural areas in 2006

Amount,\$	Area	Current consumption	Education expenditure	Expenditure on real estate and	Expenditure on agricultural	Expenditure on repair	Business activity	Savings	personal and households	Other
Below 500	Urban	75.0	6.4	0.2	0.1	1.2	0.9	0.4	2.8	13
	Rural	76.9	5.1	0.7	2.4	2	1.4	0.2	1.7	9.5
500-1000	Urban	76.7	8.9	1.6	0.0	2.4	2.2	1.0	2.2	5.0
	Rural	72.9	7.4	1.6	6.1	2.8	1.5	0.3	1.6	5.9
1001-2000	Urban	78.2	11.8	1.1	0.6	2.1	0	1.0	2.4	2.8
	Rural	67.0	13.2	1.9	2.6	5.0	0.6	0.7	1.8	8.1
2001-3000	Urban	70.9	11.1	0.6	0.3	3.6	1.2	1.6	2.9	7.8
	Rural	66.3	12.2	1.3	3.3	5.9	0.5	1.8	2.7	6.0
3001-5000	Urban	60.8	15	1.9	1.1	5.9	3.2	1.6	3.7	6.9
	Rural	52.9	14.9	2.3	5.4	8.9	0.9	1.2	4.3	9.2
5001-7000	Urban	60.3	15.1	0.9	0	8.2	6.5	1.4	5.2	2.4
	Rural	49.9	11.5	0	10.7	12.9	3.6	7.1	4.3	0
7001-10000	Urban	57.2	15.4	5	0	8.2	0	3	9.7	1.5
	Rural	43.0	5.0	8.0	0	16.0	0	16.0	10.0	2.0
10001-15000	Urban	44.3	7.1	17.1	0	4.3	0	11.4	15.7	0
	Rural	40.0	20.0	0	0	20.0	0	0	20.0	0
Over 15001	Urban	25.0	0	25	0	0	25	0	0	25
	Rural	40.0	0	0	0	30.0	0	0	0	30.0

Source: CBA Survey

69. We have estimated the impact of remittances on expenditure on durables. Durables can be explained as something intermediate between consumption and investments. The estimates show that a 1 percentage point growth in remittances will lead to an 0.28 percentage points increase in the consumption of durables (see Appendix 5). So the high elasticity of durables means that remittances are invested in long-term consumption. To sum up, the estimate from the above discussed regression equation and CBA survey show that, when remittances grow,

households tend to spend those amounts on investment, followed, in the order of priorities, by land and other real estate acquisitions, education, savings and renovation etc. People, particularly those from rural areas invest in land and real estate because they understand it. To invest in business activity they need to have complementary resources (e.g., technical and business skills) which migrants mostly do not have unless they invest in the retail trade and rather unspectacular service provision (e.g., goods repair).

Remittances and financial development

The role of remittances in financial development

70. The level of development in the financial sector has a direct bearing on the flow of remittances. Remittances can lead to financial development in developing countries (Orozco and Fedewa, 2005) based on the concept that money transferred through financial institutions paves the way for recipients to demand and gain access to other financial products and services. Remittances can make a positive contribution to the growth of the capital stock either through their impact on widening the deposit base of the banking system or directly through financing business investments.
71. This opinion is particularly true for the CIS countries which have an under-developed financial system. **The growth in remittances contributes to the availability of loans and expands the use of different financial instruments.** Remittances are considered a secondary source of income when banks make credit decisions. Banks can offer special deposit products to remittance receivers.
72. But remittances can also have a negative effect, as they can help relax individuals' financing constraints and they might lead, in time, to a lower demand for credit. Also, a rise in remittances might not translate itself into an increase in credit in the private sector if these flows are going to finance the government or if banks prefer to hold liquid assets. Finally, remittances might not increase bank deposits if they are immediately consumed or if remittance recipients distrust financial institutions and prefer other ways to save these funds¹².

Informal remittances

73. **In CIS countries a significant proportion of remittances are received informally.** According to the CBA survey and Households survey of NSS informal remittances in Armenia stand at about 20-25% of total remittances (see Table 4). For Ukraine this proportion is estimated at anywhere from 15% to 200%¹³.
74. **In case of the formalization of remittances additional resources for the financial sector will appear which might contribute to the development of the economy.** There are a lot of reasons why migrants prefer to send money home via informal channels. First, the high transfer costs, for example, a fee on financial flows negatively affect the decision of migrants to send money home via the banking system. Second, migrants use informal channels because they do not trust banks. Third, many migrant workers are illegal and thus they do not report their earned income to their host country. It goes without saying that full formalization of informal remittances would bring additional resources to the country, resources which are estimated at about 5% of GDP.

¹² Reena Aggarwal (July 2006) "Do Workers' Remittances Promote Financial Development?" World Bank Policy Research Working Paper No. 3957.

¹³ Olga Kupets, CARIM-East Research Report 2012/02, "The Development and the Side Effects of Remittances in the CIS Countries: the Case of Ukraine".

Table 4. Remittances received by different channels in Armenia

TRANSFER	CBA SURVEY 2005	CBA SURVEY 2006	CBA DO LLARIZATION SURVEY 2006	HOUSHOLDS SURVEY NSS
Total banking system	78.0	77.3	68.5	73.2
Special organizations	8.6	5.5	10.0	
Cash	12.5	16.5		24.9
Postal services	0.5	0.3		1.9
Other	0.3	0.5	21.5	
Total	100	100	100	100

Source: CBA Survey and NSS Survey

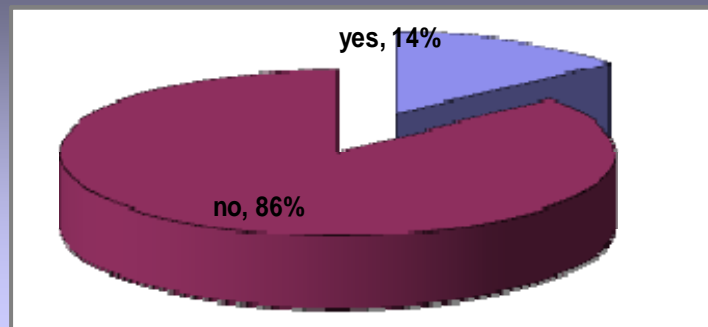
The impact of remittances on the financial system in terms of credit

75. According to the Survey in Armenia in most cases banks and other lending organizations require statements or receipts from remittance recipients to prove remittance flows. But there are rare cases when the bank relies solely on the client's words when considering remittances as a source of secondary income: this is an individual approach and works only for clients with a long credit history. In microfinance, the situation is slightly different. There are highly experienced agents working in the marzes (the Armenian regional unit), who are very well informed of the clients' financial situation, and who know whether or not they have migrants sending remittances. In small areas it is easy to get information and often there is no need to prove remittance flows by documents or statements and a more informal approach is used. Usually, it is preferable that clients provide proof on monthly flows, though sometimes, quarterly flows are also enough if regular. Beneficiaries of these schemes are individuals, and sometimes, even businesses.
76. We have estimated the impact of remittances on bank credit. The results of the regression show that 1 percentage point growth of remittances will lead to 0.31 percentage points increase in credit (see Appendix 6).

The impact of remittances on the financial system in terms of deposits.

77. **In Armenia relatively little remittance income appears to flow into the formal financial sector as savings.** According to representatives of financial institutions, banks manage to keep only 15%-20% of remittances within the institutions, as they are mainly sent home for current consumption.
78. **The ILO survey has also shown that unfortunately only 14% of remittance recipients reported has an active bank account** (see Chart 6). Another part of remittance-receiving households receive their money through different payment systems (Unistrim, Anelik, Contact etc.), which do not require a bank account. The proportion of people having a bank account is much greater in the capital city, than in rural and other urban communities. But, in recent years, the number of credit-cards owners have increased rapidly and the result of Survey is a little outdated as it was carried out five years ago.

Chart 6. Having an active bank account



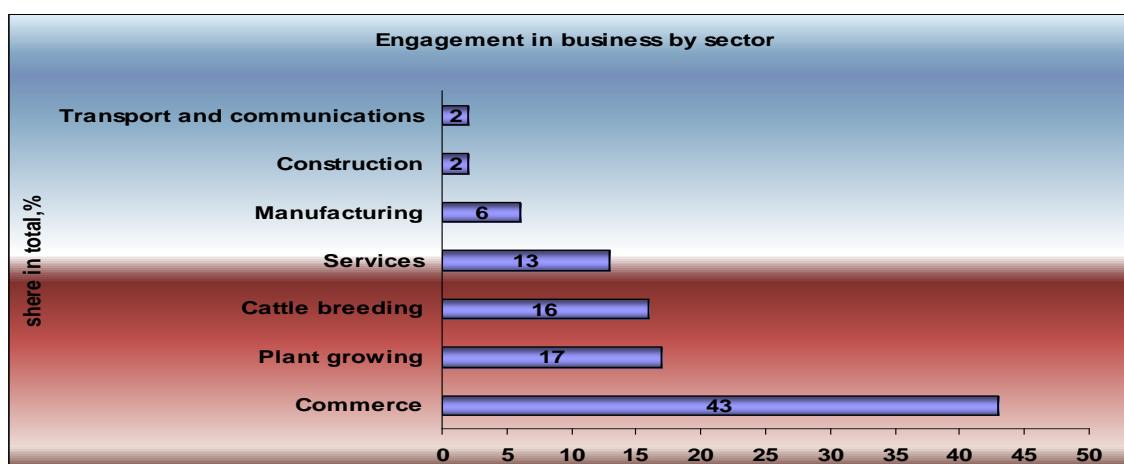
Source: ILO Survey

79. A high proportion of remittance-receiving households (85%) reports that they are unable to save a proportion of their income: 10% of households manage to save up to 20% of their income, but in reality the savings may be even higher as people avoid revealing their income. **However, these savings are almost never kept in banks. This reluctance to use banks comes down to the following reasons:**
80. *People tend to be quite conservative in changing their habits and they traditionally keep money at home.*
81. *Mistrust of banks is mentioned by around 30% of respondents. And in rural areas clients tend to avoid giving information on remittances they receive, as they believe that the banks are agents of the government. This mistrust is connected with bad memories after the collapse of the Soviet Union, when people lost their bank savings. It is also notable that in rural areas, as young workers migrate, mostly old people receive remittances who are not interested in financial instruments.*
82. *Accessibility.* Some financial institutions do not have an expanded branch network: this is especially true in rural areas.
83. *Awareness.* People do not have enough financial literacy in the financial system.
84. *Low level of income and high unemployment.* The low level of income in rural areas results in an inactive use of existing financial products.
85. The impact of remittances on bank deposits is also confirmed statistically. There is a positive relationship between remittances growth and deposits. A 1 percentage point growth of remittances will lead to 0.17 percentage points increase in deposits (see Appendix 6).
86. **In our estimates, we find that remittances have a positive affect both on credits and deposits in Armenia.** But the elasticity of bank deposits on remittances is lower than bank credit. This can be explained by remittance-receiving household's behavior. People save some part of received income for a "rainy day" or to reach some saving target, and most prefer "to keep cash under the mattress" (often in foreign currency) rather than saving money in bank accounts or in securities. Banks credit elasticity on remittances is higher as remittances are considered a stable source of income in credit decisions.

III. Employment and Remittances

87. We have already discussed the impact of remittances on capital, but it is also important to illustrate the way in which they affect labor force. A literature review on remittances is contradictory here.
88. **On the one hand, remittances have a positive impact on productivity and employment through their effect on investment.** Lucas (2005) cites several case studies where remittances may, indeed, have accelerated investments in remittance-receiving countries, and contribute to the creation of new businesses and rising employment. Additionally, the results of the analysis conducted by León-Ledesma and Piracha (2001) for 11 transition economies in Eastern Europe 1990–99 support the view that remittances have a positive impact on productivity and employment.
89. **According to the Armenian Survey only 12% of remittance-receiving households is engaged in any kind of business activity.**
90. Engagement in business (see Chart 7) are mainly concentrated in commerce at a micro level (small shops, selling groceries by the village road etc, 43%) and agricultural business activity (plant growing and cattle breeding, 33% in total).

Chart 7 Engagement in business by sector



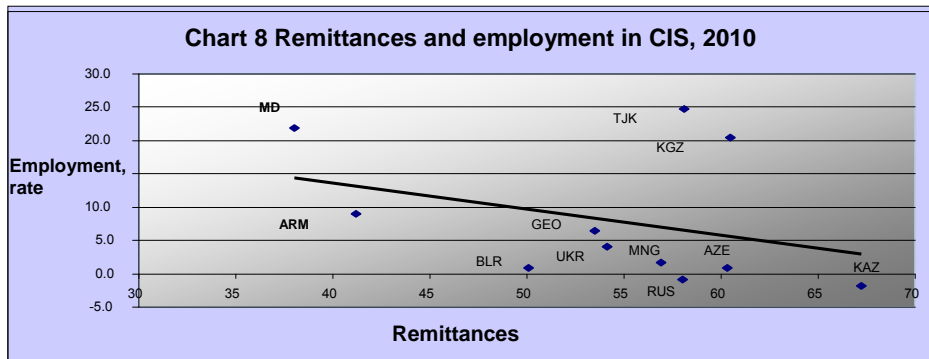
Source: ILO Survey

91. **On the other hand, the income from remittances may be plagued moral hazard,** permitting the migrant's family members to reduce their work effort (Chami et al, 2003).
92. The impact of remittances on the decision to work has been examined by Rodriguez and Tiongson (2001), Funkhouser (1992) and they came to the conclusion that remittances reduce employment and sometimes increase self-employment. Quibria, (1997) argued that if low-skilled migrants emigrate, the welfare of the source country rises as much as remittances are in excess of domestic income loss. If highly-skilled persons emigrate and/or if emigration is accompanied by capital, remittances have a welfare increasing effect for the non-migrants only when the capital/labor ratio of the source economy remains unchanged or rises. If the capital/labor ratio falls, the welfare effect is indeterminate or even negative.¹⁴
93. According to the neoclassical model of labor-leisure choice (Killingsworth 1983) remittances are a source of non-labor income and so they may: shift up budget constraints;

¹⁴ International Migration Outlook, (2006) "International Migrant Remittances and their Role in Development" Part III.

raise reservation wages; and reduce the likelihood of employment for remittance-receiving individuals through an income effect.

94. **In CIS countries notices from Chart 8 that remittances and employment are inversely related.** Thus, in countries where the ratio of remittances to GDP is high the employment seems to be low. This can be explained by moral hazard or insufficient investment levels.



Source: World Development indicators dataset, World Bank

95. In Armenia only 2% of remittance-receiving households refuse to work under any condition and any salary and about 50% agreed to work for higher wages (than average). According to the CBA Survey results, answers were different in rural and urban areas. Households from rural area agreed to work even for lower wages, while the opposite was true in the capital city.
96. As the theoretical aspects contradict each other we have checked whether remittances affect employment in Armenia. The estimate was made with annual data from OLS for 1996 to 2011. We have taken the official employment data (base year 1996), as the series for them is longer. But there are also short data series from the household survey, which also includes informal employment. This data is higher than official data by about 10%.
97. Remittances have a potential negative impact on employment which is significant and which outweighs positive effects.

The results of the equation (see Appendix 7) showed that a 1 percentage point growth in remittances will lead to a 0.04 percentage point decrease in employment. This can be explained by insufficient levels of investments in small and medium businesses, moral hazard and also by informal employment.

IV. Remittances and Inflation

98. There is a large and growing literature on the determinants of inflation, but none of them have examined the impact of remittances on inflation rate. But recently Narayan, Paresch Kumar; Seema; Mishra, Sagarika¹⁵ have some discussion on this problem. They extend the work on the determinants of inflation for developing countries using a panel data set based on the GMM estimator and found a link between inflation and remittances.
99. **The effect of remittances on inflation can be discussed in different ways:**
100. *First, from the point of view of appreciating exchange rates.* The rising level of remittances in developing economies can lead to spending. Under a flexible exchange rate regime (in Armenia) relative international prices can be adjusted, following a large remittance inflow.

¹⁵ Narayan, Paresch Kumar; Narayan, Seema; Mishra, Sagarika (April, 2011) "Do remittances induce inflation? Fresh evidence from developing countries".

Rodrik (2007) provides evidence that the overvaluation of the real exchange rate (following an increase in remittances) causes an underestimate of long-term economic growth, particularly in developing economies. For these countries, the production of tradable goods suffers from weak institutions and market failures. This can potentially lead to an increase in inflation. But, on the other hand, the appreciation of national currency can reduce prices of imported goods in domestic currency. If the share of imported goods in the CPI basket is large (in Armenia it is about 40 %) then inflation will decrease.

101. In most CIS countries remittances have contributed, at least partly, to inflationary pressures in the non-tradable sector, significantly affecting land and house prices and also private sector wages (EBRD, 2007; Kireyev, 2006; World Bank, 2011).
102. Analyzing determinants of house prices in former Soviet Union countries (except for Kyrgyzstan, Turkmenistan, and Uzbekistan) in 1994-2009, Stepanyan *et al.* (2010) came to the following conclusions. They found that remittances and foreign inflows were main drivers of house prices in the region. Their estimates for two separate sub samples of countries suggest that foreign inflows play a significant role in the Baltic countries, Kazakhstan, Russia, and Ukraine while remittances are an important determinant in smaller and poorer countries.
103. *Second from the point of view of increasing money supply:* remittances can temporarily increase inflation and generate an increase in the domestic money supply under a fixed regime. They can temporarily decrease inflation and generate no change in the money supply under a flexible regime.
104. When large inflows of foreign exchange are remitted to the home country, the conversion of this foreign exchange into domestic currency raises the money supply. Usually remittances are not absorbed into productive sectors (or capital investment); rather, they go toward consumption expenditure and this fuels inflation.
105. According to our estimate remittances positively influence inflation: 1 percentage point growth in remittances will lead to a 0.07 percentage point increase in inflation rate (see Appendix 8).
106. The results of econometric estimations correspond to the CBA Survey among remittance-receiving households. According to the Surveys in Armenia about 70% of remittances are spent on current consumption. This proves the hypothesis that remittances have a spending effect. They create short-term excess demand, which drives up price levels. An increase in demand for non-tradable goods like property and real estate also increases the price level. But it does not influence inflation as a share of those goods in the CPI basket is very low. **To sum up, we can assume that despite the impact of remittances being positive, the key determinants of inflation mainly come from external environment, inflation expectations and domestic food prices.**

V. Remittances, Poverty and Income Inequality

107. Most studies have proven the assumption that remittances contribute in a positive manner to poverty reduction, either directly or indirectly. Adams and Page (2005) concluded that international migration and remittances significantly reduce the level, depth and severity of poverty in the developing world. Sabates-Wheeler (2005) have found that the largest determinant of current poverty status for all groups was their past poverty situation highlighting the existence of poverty traps.
108. Remittances seem to flow directly to the people who really need it. Also they do not require a costly bureaucracy on the sending side (Kapur 2003). But the potential of remittances in reducing poverty and inequality is exaggerated. The observation that remittances significantly contribute to income stability and welfare in developing

countries does not necessarily imply that they contribute to poverty alleviation. This issue is related to the selectivity of migration. Because of the costs and risks associated with migration, it is generally not the poorest who migrate the most. Moreover, initially the non-migrant poor might be affected indirectly through the economy-wide effects of remittance expenditure on wages, prices and employment. As soon as migration networks are established, the cost of migrating decreases significantly, making it possible for the poorer class to emigrate.

109. Remittances have positive effects on family welfare, but their social costs for the relevant families may outweigh their economic benefits (Tolstokorova, 2009). In particular, the long-term absence of family members compensated by regular transfers from abroad: fosters consumerism among those who stay behind; erodes emotional ties; inverts gender roles; changes important family functions (including reproduction, the socialization of children, financial management, division of home labor); and increases the risk of divorce.¹⁶

Remittances and poverty in the CIS region

110. Remittances sent by labor migrants in the CIS region are considered as a form of social insurance, helping family members finance the purchase of life's necessities and pulling many of them out of poverty.
111. For example, it is estimated that the presence of a migrant increases household expenditure among poor Moldovan households by up to 40 percent. Remittances seem to be even more effective in reducing poverty than the government's social protection programs which are mostly untargeted (World Bank, 2011).
112. Remittances play an important role in reducing the incidence and severity of poverty in Ukraine. In particular, remittances are mentioned as one of the mechanisms that have contributed to the considerable reduction of absolute poverty in Ukraine since 2001. However World Bank's report on poverty in Ukraine (World Bank, 2007) points to real wage growth and an increase in public transfers (in particular, pension, childbirth assistance, housing subsidies, social assistance to poor families, etc.) instead of remittances as the main drivers of declining poverty since 2005.¹⁷

How do remittances contribute to poverty reduction in Armenia?

113. Absence of remittances would significantly decrease absolute and relative welfare levels for remittance-receiving households. The number of households in Armenia that receive remittances from abroad is about 36%. Most remittances are spent on current consumption needs which indicate that households in Armenia greatly depend on these flows and that, therefore, remittances are a key factor in poverty reduction.
114. Research carried out by the Asian Development Bank mentioned that in the case of the deduction of remittances from disposable income poverty levels would be higher. This would have no table impact on households living in rural and other urban areas (as remittances have the largest share of their income).
115. As seen in Table 5, by excluding remittances, poverty would reach 54% for the country as a whole, which is 8.9 percentage points higher than at present. The difference is significant especially in other urban areas. Extreme poverty in the country would be two times higher than at present. Poverty in the capital has been reduced more than in any other area.

¹⁶ Olga Kupets, CARIM-East Research Report 2012/02, "The Development and the Side Effects of Remittances in the CIS Countries: the Case of Ukraine".

¹⁷ Ibid.

Table 5. Poverty and Income Inequality Indicators among Sample Household Members (based on *per adult equivalent population*)

	Poverty Incidence	Extreme Poverty Incidence	Poverty Gap	Poverty Severity	Gini Coefficient
When remittances are included in total income of remittance-receiving households					
COUNTRY	45.1	12.6	16.5	8.3	0.406
Capital	31.5	5.5	9.7	4.4	0.412
Other Urban Areas	47.3	11.8	17.1	8.3	0.367
Rural Areas	56.4	20	22.6	12.2	0.387
When remittances are excluded from total income of remittance-receiving households					
COUNTRY	54.0	20.7	23.4	13.8	0.424
Capital	36.5	10.8	13.8	7.8	0.424
Other Urban Areas	59.1	22.6	26.5	15.8	0.392
Rural Areas	66.8	28.8	30.1	18	0.383

Source: Asian Development Bank, (December, 2008) “Remittances and Poverty in Central Asia and South Caucasus” Country Report on Remittances of International Migrants and Poverty in Armenia, Project Number: 40038.

116. You can also see that remittances considerably reduce the poverty gap. If no remittances were received the poverty gap would have increased by 6.9 percentage points and would stand at 23.4 percent among members of remittance-receiving households.

Econometric results

117. We have estimated the impact of remittances on the poverty rate in Armenia (see Appendix 9). The results have shown that a 1 percentage point growth in remittances will lead to a 0.17 percentage point decrease in poverty rate.
118. The above mentioned surveys and OLS results show that remittances have positively influenced the living standards of households in Armenia.
119. In the literature the possibility of Reverse causality between poverty and remittances is often discussed. Since higher poverty might lead to larger remittances, perhaps through increased poverty, more people had to migrate, so contributing to higher remittances.
120. But in the case of Armenia Granger Causality Tests between poverty and remittances show that remittances influence poverty (see Appendix 9).

The impact of remittances on income inequality and formalized welfare.

121. Comparing the Gini coefficient by income and expenditure one can see that welfare inequality in Armenia is higher by income than it is by consumption (see Table 6). This can be explained by the psychology of respondents. Usually people underreport their income sources during household surveys for various reasons: part of income is informal; they have expectations of benefits; and they want to show that governance is bad. Answers concerning consumption are flatter, as they reflect actual spending.
122. From Table 5 we can see as in the case of poverty indicators how the Gini coefficient also deteriorates when remittances are excluded. In other urban areas the influence of remittances is strongly expressed through the Gini coefficient.

Table 6 Armenia: Consumption and Income Inequality, 2008-2010

	2008	2009	2010	2008	2009	2010
	By consumption			By income		
Gini coefficient	0.242	0.257	0.265	0.339	0.355	0.362
Theil mean log deviation E(0)	0.096	0.108	0.119	0.201	0.224	0.227
Theil entropy E(1)	0.110	0.124	0.152	0.215	0.259	0.308

Source: ILCS 2008-2010

123. We also have estimates for the impact of remittances on the Gini coefficient in Armenia. The results show that a 1 percentage point growth in remittances will lead to a 0.23 percentage point decrease in the Gini index. **OLS estimates show that remittance inflows have decreased the poverty rate in Armenia and positively affected income distribution and living standards (see Appendix 9).**

VI. Remittances, public moral hazard and the policy trap

124. Several studies have shown that the potential costs of remittances have largely to do with moral hazard. Substantially differing from the private capital flows in terms of their motivation and effects, remittances have a negative impact on labor supply, investment, and government policymaking.

Channels leading to moral hazard

125. **Remittances may pose a moral hazard problem by reducing political will to enact policy reform.** Remittances may reduce households' incentives to pressure governments to implement the reforms and improvements necessary to facilitate economic growth.
126. **Remittances would be expected to have a negative effect on labor force participation,** for the following two reasons. Income from remittances may permit remaining family members to reduce their work effort and therefore the labor supply. The moral hazard theory also supports the idea that remittance-receiving households will remain unproductive, preferring to direct their energies into attracting support from relatives living abroad.
127. When the level of remittances increases, "badly" governed countries tend to reduce the level of public spending on social sectors as education and health (Shabbaz *et al.* (2008)). In this countries the negative effect of remittances on public spending in social sectors amounts to two reinforcing effects: (i) *public moral hazard* - the government has more incentive to reduce and divert resources, rather than providing subsidies since it thinks that remittances will do the "job". (ii) *household moral hazard* - remittances mollify the recipient households which do not have an incentive to monitor the government and so leave the cost of insurance to the migrant.
128. In terms of households in Armenia only 2% of remittance-receiving households refused to work under any conditions preferring to find finance from relatives working abroad (as mentioned above). About 50% agreed to work for higher-than-average wages.
129. In order to find out whether public moral hazard is present in Armenia we tested a hypothesis for the influence of remittances on social expenditure consistent with the

governance quality. Do they indicate that Armenian society pressures the government to undertake the necessary expenses?

130. In our case, regression results show that remittances do not limit government to do social spending. According to this estimate, the overall measure of public spending on education or health as a percentage of GDP (“Soc”) is dependent on remittances as a percentage of GDP (“Rem”) and the index of governance quality (*Gov*) (see Appendix 10).
131. We use the World Bank Governance Indicators dataset since it has provided measures of governance for a large number of countries since 1996. Six dimensions of governance are reported: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and corruption control.
132. **Moral hazard (in terms of government spending on education and health) is not evident in Armenia.** In the model the negative sign of governance quality indicator demonstrates that the improvement in governance quality influences a rise in government social spending on education and health. When remittances are rising, these positively influence government social expenditure. Thus improvements in governance quality are positively correlated with the willingness of government to undertake social expenditure.
133. The other estimate of moral hazard was made by C. Ebeke *et al.* using a cross-country analysis. They have found a correlation between the prevalence of the working poor and remittance inflows, but Armenia stands outside the trend line.

Do remittances cause a policy trap?

134. **In general remittances complicate the implementation of effective macroeconomic policy and lead to a policy trap.** As Roberts B. and K. Banaian have noted the use of informal channels to transfer remittances inhibits the ability of the Central Bank to measure the presence of foreign exchange in the system. This complicates the conduct of monetary policy and eases pressure on governments faced with large external deficits, so they can no longer engage in difficult structural reforms.
135. Recently, Abdih *et al.* (2008) have found that remittance flows adversely impact the quality of institutions in recipient countries. In particular, remittances expand the tax base, enabling the government to manage and distribute more resources.
136. **In Armenia the implementation of monetary policy has faced some difficulties. This is particularly true given the high dollarization partly fueled by remittances, the existence of shadow economy (27% by estimates of NSS) and an underdeveloped financial system.** Since 2006 the CBA implements an inflation targeting strategy. The capability of monetary policy to influence economic activity and inflation is still limited, as important channels of monetary transmission are not fully functional. In particular, the interest rate channel remains weak, even though there is some evidence of transmission to changes in the repo rate, the central bank's new operating target for inflation. As in other emerging and transition economies with a high degree of dollarization, the exchange rate channel has a strong impact on inflation. In the case of high dollarization the exact measurement of money is complicated. This is also an expression of a trap in the framework of floating exchange rate policy, as during the announced exchange rate the CBA can intervene in foreign exchange markets only to mitigate extreme fluctuations. The remittances trap is also there in fiscal policy. Remittances distract government and especially after crisis it becomes clear that it would be better to direct more resources towards high quality infrastructure and productive investments (not construction of residential buildings as was done in Armenia). **So we can assume that remittances do produce some version of moral hazard among households. We can also assume that the CBA faces a remittance trap in trying to implement its policies.**

VII. Remittances and Human Capital formation

137. The literature on the macro impacts of remittances on human capital formation is fragmented. Many studies focus on human-capital formation and inequality as key determinants of productivity that have an impact on growth (see Chami *et al.* 2003 and Rapoport and Doquier, 2005 for a discussion). Adams (2006) has found that households receiving international remittances spend 58.1 percent more on education than households that do not receive remittances.
138. Researchers argue that remittances have negative effects on economy because of “brain drain”. But this hypothesis has been increasingly questioned as not all migrants are highly skilled. In a quantitative assessment of brain drain, Adams (2003) concluded that migrants do not include a very high proportion of the best educated.
139. It is also important to note that the short-term effect of remittances can be negative. However, in the long run the departure of the highly-skilled may have beneficial effects in the form of a counter flow of remittances, investments, trade relations, skills, knowledge, innovations, attitudes and information.
140. Also “brain drain” can be accompanied by a significant “brain gain” (Lowell and Findlay 2002; Stark *et al.* 1997), because the prospect of moving abroad may encourage stay behinds to pursue education. This situation might explain how a country ends up with more educated workers (a brain gain) despite the existence of a brain drain and “educated unemployment” so prevalent in a number of developing countries.

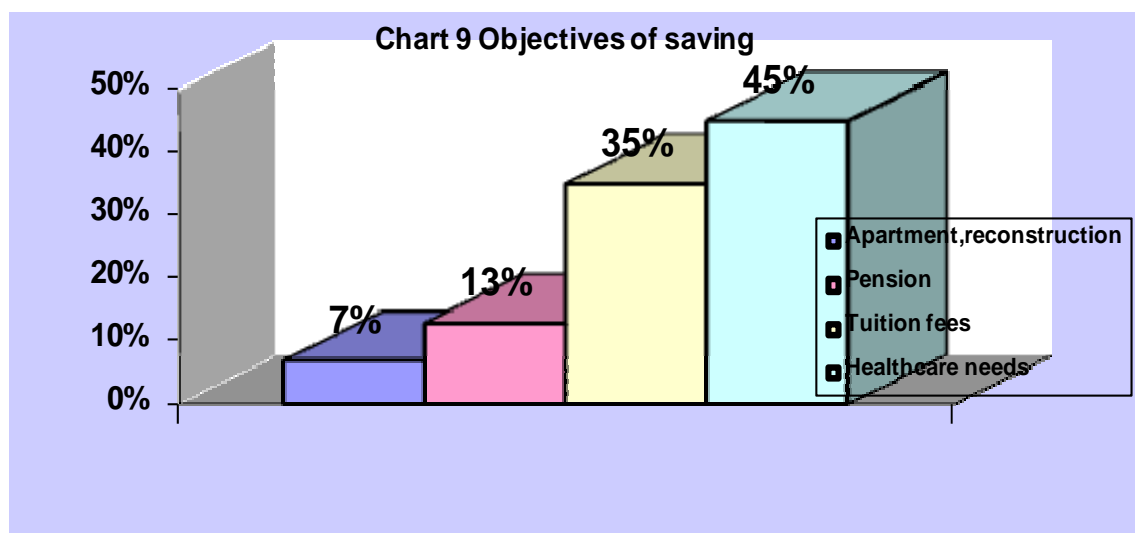
How do remittances influence human capital accumulation in Armenia and CIS countries?

141. Remittances seem to have positive impact on human capital accumulation. In Armenia a part of remittances are spent on education and health services which have an upward trend. Even during the crisis when remittances declined remittance-receiving households did not stop spending on education¹⁸. Indeed, the amount allocated for this is worthy of attention as Armenian households traditionally consider education a priority regardless of circumstances. So remittances from abroad can be considered an additional stimulus for education spending. According to CBA estimates education and health expenditure have the second significant share after expenditure on the first and most urgent need, consumption; about 9-10% of remittances were spent on education. But remittances may also cause brain-drain, and this can be a serious challenge for long-run economic development. In the case of Armenia, the emigration of skilled human resources (from the IT, financial and construction sectors) was and still is a serious problem. Working conditions (especially wages), offered by the Armenian companies are not competitive in the international labor market, while developed and rapidly developing economies (for example about 60,000 labor migrants go to seek jobs in Russia, in the construction industry) can easily absorb skilled labor from Armenia.
142. As a rule, migrants return to Armenia to visit their families at least once a year. They do not wish to relocate their families to Russia to settle there permanently. At the same time, they do not want to return to Armenia permanently, because they cannot find job in their home country that would pay sufficiently to sustain their families. If they were able to find such a job, they would be ready to return to Armenia permanently. In Armenia among remittance-receiving households the negative social influence of remittances is not evident and most migrants are responsible for the welfare of their families.
143. Before the crisis some people thought that the double digit economic growth and tendencies of salary increases would contribute to the return of skilled labor. However, after the crisis

¹⁸ UNDP “Migration and Human Development: Opportunities and Challenges” National Human Development Report 2009.

they become more skeptical, since the economic situation and the business environment in Armenia are still poor compared to more developed countries.

144. The Central Bank’s survey showed that 27% of migrants had higher education and 70.5% of them were employed abroad in vacancies requiring high qualifications.
145. In Armenia most saved remittances is spent on education and healthcare needs (respectively 35% and 45%, see Chart 9). Some findings suggest that remittances might have a negative impact on the labor supply of working age family members, but that they have a positive impact on keeping children in school. For a country like Armenia, where child labor is not apparently an important issue, remittances are more likely to improve the quality of a child’s education rather than the quantity (time spent in school).¹⁹
146. In CIS countries like Kyrgyzstan about 10% of remittances are spent on investment and the creation of human capital (education and treatment). In Ukraine expenditure on education (predominantly of children) is the fourth most popular way of spending remittances. Moreover, anecdotal evidence and sociological surveys in Ukraine show that the need to finance children’s education is among the major motives for labor migration, particularly for women²⁰.



Source: ILO Survey

147. We have estimated the impact of remittances on education and health for Armenia. The results show that 1 percentage point growth in remittances will lead to respectively an 0.11 and 0.21 percentage point increase of value added in education and health (see Appendix 11). The impact of remittances on education expenditure in Armenia is also discussed in an UNDP paper. Education expense coefficients are highly significant, proving that remittances positively influence development.²¹ So the impact of remittances on health is higher than on education, which is proven both by the household survey and econometric analysis results.

¹⁹ USAID/Armenia, (October, 2004) “Remittances in Armenia size, impacts, and measures to enhance their contribution to development”.

²⁰ Olga Kupets, CARIM-East Research Report 2012/02, “The Development and the Side Effects of Remittances in the CIS Countries: the Case of Ukraine”.

²¹ UNDP “Migration and Human Development: Opportunities and Challenges” National Human Development Report 2009.

Policy recommendation

148. Countries like Armenia that receive large remittances need to develop appropriate policies to deal with possible negative consequences. Policy responses can include fiscal measures and the sterilization of remittance inflows as a short-term response. Over the long-term structural reforms, improvement of labor productivity and the competitiveness of the economy are needed²².
149. Remittances tend to be relatively stable and persistent over long periods. The appropriate policy response is not to sterilize remittance flows, but to learn to live with them.
150. Following Chami's research our estimates show that remittances in Armenia have a positive impact on economic growth over the short term and negative effects over the long term. Governments should develop appropriate policies to escape the second round of "Dutch disease" in Armenia. Governments should think about other more reliable sources of growth which in turn will affect returning migrants or will prevent additional migration. This can be reached by implementing the right education policy. In Armenia, as a result of ineffective education policy, unemployment among young workers is very high. As a result about 40 percent of migrants are 18-35 years old. This policy does not reflect the true skill and knowledge needs of the economy. Governments should also raise growth potential by improving the business environment, developing export-oriented policies, improving infrastructure which will contribute to the development of tourism, using the Diaspora's potential to attract business investments. So implementation of these measures will prevent the emigration of skilled human resources (brain-drain) and will also attract migrants returning from abroad, which, in its turn, will seriously foster economic development and which will increase the labor force quality in Armenia.
151. But over the short term the government can strengthen the benefits of remittances by taking several measures. The CBA should restore trust in the national currency (decrease dollarization) as after the depreciation of 2009 (about 20%) the level of dollarization is still high. The CBA should also take care to increase financial literacy. The formalization of remittances should also be implemented by the following actions.
 - Reduction of transaction costs and an improvement in the payment system (for example, to introduce a terminal through which a remittance-receiving household can check a remitted amount and transfer it to his/her account, as receiving money from the bank takes a lot of time).
 - Easing the impediments that keep migrants from transferring money through bank accounts.
 - Internationally negotiating temporary identity cards for illegal migrants.
 - Providing financial incentives by offering preferential interest rates.

²² Dilip Ratha and Shanket Mohapatra, (November, 2007) "Increasing the Macroeconomic Impact of Remittances on Development", The World Bank.

Bibliography

- Abdul Azeez and Mustiary Begum (2009) “Gulf Migration, Remittances and Economic Impact”.
- Adolfo Barajas, Ralph Chami, Connel Fullenkamp, Michael Gapen and Peter Montiel (July 2009) “Do Workers’ Remittances Promote Economic Growth?” IMF Working Paper No.09/153.
- Adolfo Barajas, Ralph Chami, D. S. Hakura, and Peter Montiel (2010) “Workers’ Remittances and the Equilibrium Real Exchange Rate: Theory and Evidence”, IMF Working Paper No. 10/287.
- Aleksandr Gevorkyan (January, 2006) “Economics of Labour Migration from Armenia: a Conceptual Study”, Armenian International Policy Research Group, Working Paper No. 06/05.
- Alexei Kireyev (January 2006) “The Macroeconomics of Remittances: The Case of Tajikistan” IMF Working paper No. 06/2
- Ali Mansoor and Bryce Quillin (2006) “Migration and Remittances: Eastern Europe and the Former Soviet Union”, World Bank, Washington, D.C.
- Asian Development Bank, (December, 2008) “Remittances and Poverty in Central Asia and South Caucasus” Country Report on Remittances of International Migrants and Poverty in Armenia, Project Number: 40038.
- Aziz Atamanov, M. Lücke, O. T. Mahmoud, R. Mogilevskiy, K. Tereshchenko, N. A. Tourdyeva, A. Uzagalieva, and V. Vavryschuk (2009) “Income and Distribution Effects of Migration and Remittances: An Analysis Based on CGE Models for Selected CIS Countries”, Center for Social and Economic Research (CASE) Network Report No. 86.
- Barro R.J. (1999 June) “Inequality and Growth in a Panel of Countries”, Harvard University.
- Bimal Ghosh, “Migrants’ Remittances and Development: Myths, Rhetoric and Realities”, International Organization for Migration (IOM).
- Boris Ghencea and Gudumac Igor, (March, 2004) “Labour Migration and Remittances in the Republic of Moldova”.
- Borjas, George J. (1999) “Economic Research on the Determinants of Immigration” World Bank Technical Paper No. 438, Europe and Central Asia Poverty Reduction and Economic Alignment Series,
- Brown R., F. C. Armignaniand, and G. Fayad (2011) “Migrants’ Remittances and Financial Development: Macro- and Micro-level Evidence of a Perverse Relationship”, Research Paper No. 59, Oxford Centre for the Analysis of Resource Rich Economies .
- Bryce Quillin, Carlo Segni, Sophie Sirtain, Ilias Skamnelos (July 2007) “Remittances in the CIS countries a study of selected corridors”, Europe and Central Asia (ECSPF) Vol. 2, No. 2.
- Central Bank of Armenia, “Survey of Households to Estimate the Volume of Migrants’ Remittances Flowing into Armenia”, implemented by Alpha Plus Consulting, Armenia 2005.
- Christian Hubert, Xavier Camille Ebeke (June, 2011) “Essays on the macroeconomic consequences of remittances in developing countries” .
- Christopher Ball, Claude Lopez, Javier Reyes and Cruz-Zuniga (May 2010) “Remittances, Inflation and Exchange Rate Regimes in Small Open Economies”.
- Dennis Jansen, George S. Naufal and Diego Vacaflores (February, 2008) “The Macroeconomic Consequences of Remittances”.

- Dilip Ratha and Sanket Mohapatra, (November,2007) "Increasing the Macroeconomic Impact of Remittances on Development", The World Bank.
- Dovelyn Rannveig Agunias (2006) "Remittances and Development: Trends, Impacts and Policy Options", Migration Policy Institute, Washington, D.C.
- European Commission Second EU Survey on "Workers' Remittances from the EU to Third Countries" Summary Report, October 2006.
- Farid Makhlouf (June 2011) "Remittances, Dutch Disease, and Competitiveness - A Bayesian Analysis".
- Garbis Iradian (2007) "Rapid Growth in Transition Economies: Panel Regression Approach" IMF Working Paper No. 07/170.
- Hein de Haas (October 2007) "Remittances, Migration and Social Development" Social Policy and Development Program Paper No. 34.
- International Labour Organization (2008) "Migrant Remittances to Armenia: the potential for savings and economic investment and financial products to attract remittances".
- International Labour Organization (2010) "Migrant Remittances to Tajikistan: The Potential for Savings, Economic Investment and Existing Financial Products to Attract Remittances".
- International Labour Organization (2009) "Migration and Development: Armenia Country Study.
- International Labour Migration and Development: The International Labour Organization perspective, "61st Session of the General Assembly High-Level Dialogue on International Migration and Development New York, 14-15 September 2006".
- International Bank for Reconstruction and Development/The World Bank (2011) "Migration and Remittances Factbook 2011" Second Edition.
- International Migration Outlook, (2006) "International Migrant Remittances and their Role in Development" Part III.
- Jacques Bouhga-Hagbe (October, 2004) "A Theory of Workers' Remittances With an Application to Morocco IMF Working Paper No. 04/194.
- José Jorge Mora Rivera, United Nations expert group meeting on international migration and development (June 2005) "The impact of migration and remittances on distribution and sources income: the Mexican rural case".
- Jorgen Carling (July, 2006) "Interrogating remittances: Core questions for deeper insight and better policies", International Peace Research Institute.
- Judith van Doorn, Social Finance Programme International Labour Organization, "Migration, remittances and development".
- King Banaian, St. Cloud State University, Bryan Roberts, U.S. Department of Homeland Security "Remittances in Armenia II: The impacts of remittances on the economy and measures to enhance their contribution to development".
- Narayan, Paresh Kumar; Narayan, Seema; Mishra, Sagarika (April, 2011) "Do remittances induce inflation? Fresh evidence from developing countries".
- Natalia C atrinescu (European Commission), Miguel Leon-Ledesma (University of Kent), Matloob Piracha (University of Kent), Bryce Quillin (World Bank) (May, 2006) "Remittances, Institutions, and Economic Development", IZA DP No. 2139.
- Olga Kupets, CARIM-East Research Report 2012/02, "The Development and the Side Effects of Remittances in the CIS Countries: the Case of Ukraine".

- Paola Giuliano & Marta Ruiz-Arranz (June, 2006) “Remittances, Financial Development and Growth” IZA Discussion Paper Series 2160, IMF Working Paper No. 05/234
- Pablo A. Acosta, Emmanuel K.K Larrey, and Federico S. Mandelman (August, 2009) “Remittances and the Dutch Disease”. Working Paper 2007-08a, Federal Reserve Bank of Atlanta.
- Policy Brief, No.5, September 2006, “Remittances - A Bridge between Migration and Development?”. Poverty Reduction Strategy Paper, Armenia, 2008.
- Ralph Chami, Adolfo Barajas, Thomas Cosimano (2008) “Macroeconomic Consequences of Remittances”, Occasional paper 259, IMF, Washington, D.C.
- Ralph Chami, Thomas Cosimano, & Gapen, M. (2006) “Beware of Emigrants Bearing Gifts: Optimal Fiscal and Monetary Policy in the Presence of Remittances”, IMF Working Paper No. 06/61. Jorgen Carling (2005) “Migrant Remittances and Development Cooperation”, PRIO Report No. 1/2005,
- Ralph Chami, Connel Fullenkamp, and Samir Jahjah, September 2003, “Are immigrant remittance flows a source of capital for development?”, IMF Working Paper No. 03/189 ,
- Rania Roushdy, (May, 2009) “International Migration, Remittances and Household Poverty Status in Egypt”.
- Reena Aggarwal (July 2006) “Do Workers’ Remittances Promote Financial Development?” World Bank Policy Research Working Paper No. 3957.
- Robert C. Shelburne, Jose Palacin (November, 2007) “Remittances in the CIS: Their Economic Implications and a New Estimation Procedure” Discussion Paper Series No. 2007.5
- Rosemary Vargas-Lundius, Guillaume Laly (2008) “International migration, remittances and rural development”, International Fund for Agricultural Development (IFAD) .
- Samagan Aitymbetov (June, 2006) “Emigrant remittances: Impact on economic development of Kyrgyzstan”, Working paper No. 31, The Economic Policy Institute.
- Serdar Sayan (February 2006) “Business Cycles and Workers’ Remittances: How Do Migrant Workers Respond to Cyclical Movements of GDP at Home?” IMF Working Paper No. 06/52.
- Shikha Jha, Guntur Sugiyarto, and Carlos Vargas-Silva (December 2009) “The Global Crisis and the Impact on remittances to Developing Asia”.
- Sudharshan Canagarajah and Matin Kholmatov, World Bank (January 2010) “Migration and Remittances in CIS Countries during the Global Economic Crisis” ECA Knowledge Brief Volume 16.
- Shyam S. Gouri Suresh “The Macroeconomic Impact of Migrant Remittances”.
- Timmer Hans, Head of assessing the prospects for development, The World Bank “Migration and Remittances: facts and figures - 2011” Second Edition.
- UNDP “Migration and Human Development: Opportunities and Challenges” National Human Development Report 2009.
- USAID/Armenia, (October, 2004) “Remittances in Armenia size, impacts, and measures to enhance their contribution to development”.
- Vahram Stepanyan, Tigran Poghosyan, and Aidyn Bibolov (April, 2010) “House Price Determinants in Selected Countries of the Former Soviet Union” IMF Working Paper No. 10/104.
- Veronica Bayangos and Karel Jansen (March, 2009) “The Macroeconomics of Remittances In the Philippines” Working Paper No. 470.
- Violeta Diaz “Analysis of the effect of remittances on economic growth using path analysis”, University of Texas-Pan American.

www.worldbank.org

www.cisstat.org

<http://armstat.am/am/>

www.imf.org

<http://europeandcis.undp.org/data>

Abbreviations

<i>Abbreviation in Eviews file</i>	<i>Indicator</i>	<i>Description</i>
RD_GDP_NOM_SA	GDP of Russian Federation	Quarterly Seasonally adjusted index in natural logarithm (2003=100)
REM_SA	Remittances in Armenia	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
Y?	GDP series in pool of CIS countries	Annual index in natural logarithm (1998=100)
R?	Remittances series in pool of CIS countries	Annual index in natural logarithm base year (1998=100)
Y_SA	GDP in Armenia	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
PC_SA	Private Consumption in Armenia	Quarterly Seasonally adjusted index in natural logarithm base year (1996=100)
DUM	Dummy variable	Given 1 value in crisis year and years of structural changes
INV_SA	Investment in Armenia	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
IMP_SA	Import of goods and services in Armenia	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
INFL_SA	Inflation, Y/y deflator	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
EX_SA	Export of goods and services in Armenia	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
HPCYCL	GDP Cycle	Calculated with HP filter on quarterly Seasonally adjusted index in natural logarithm base year (1996=100)
REM_CYCLE	Remittances Cycle	Calculated with HP filter on quarterly Seasonally adjusted index in natural logarithm (1996=100)
CONST_SA	Value added in construction	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
SERV_SA	Value added in services	Quarterly Seasonally adjusted index in natural logarithm (1996=100)
REER	Real effective exchange rate	Quarterly index in natural logarithm (1996=100)
DEP	Total deposits in banking sector	Annual index in natural logarithm (1996=100)
Cred	Total credits in banking sector	Annual index in natural logarithm (1996=100)
REM	Remittances in Armenia	Annual index in natural logarithm (1996=100)
EMPL	Employment in Armenia	Quarterly index in natural logarithm (2003=100)
CPIAVE	Consumer price index	Annual index in natural logarithm (1996=100)
POV	Poverty rate	Annual index in natural logarithm (1996=100)
Gini	Gini coefficient	Annual index in natural logarithm (2003=100)
SOC	Social expenditure of state budget	Annual index in natural logarithm (1996=100)
GOV	Governance quality	Annual index in natural logarithm (1996=100)
EDU_SA	Value added in education	Quarterly Seasonally adjusted index in natural logarithm (2000=100)
Health_sa	Value added in health care	Quarterly Seasonally adjusted index in natural logarithm (2000=100)
Durables_sa	Spending on durables	Monthly Seasonally adjusted index in natural logarithm (2004=100)

Annex

Appendix 1. Remittances in Armenia and Russian GDP

Dependent Variable: REM_SA

Method: Least Squares

Sample (adjusted): 2003Q2 2011Q4

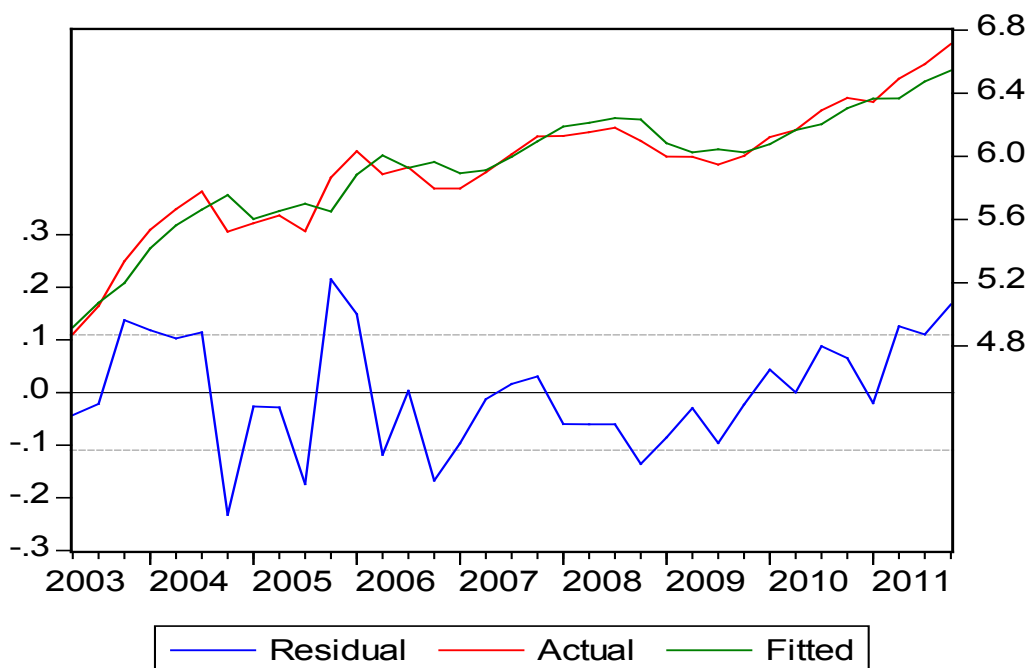
Included observations: 35 after adjustments

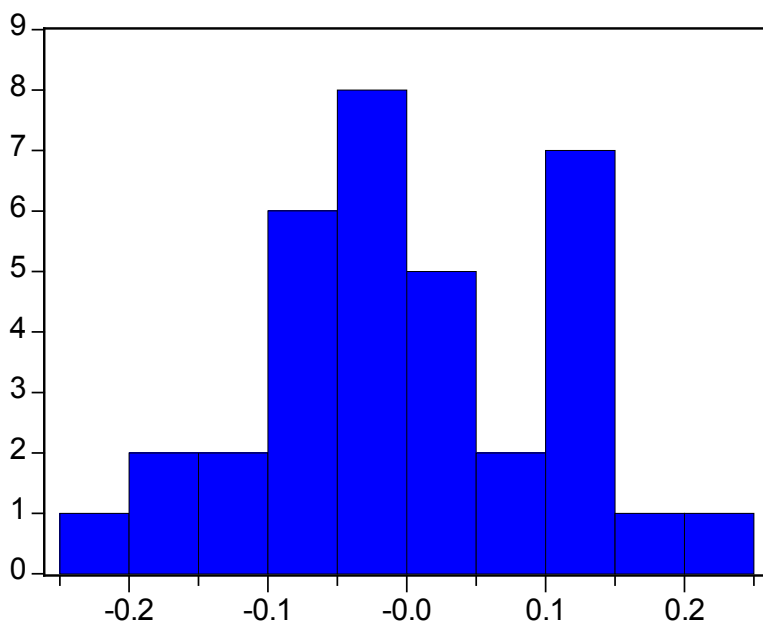
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RD_GDP_NOM_SA	0.234563	0.109605	2.140069	0.0401
C	0.774868	0.261400	2.964297	0.0057
REM_SA(-1)	0.650721	0.119232	5.457615	0.0000

R-squared	0.927267	Mean dependent var	5.926670
Adjusted R-squared	0.922721	S.D. dependent var	0.393704
S.E. of regression	0.109446	Akaike info criterion	-1.504958
Sum squared resid	0.383308	Schwarz criterion	-1.371642
Log likelihood	29.33676	F-statistic	203.9835
Durbin-Watson stat	1.488230	Prob(F-statistic)	0.000000

$$REM_SA = 0.2345626421 * RD_GDP_NOM_SA + 0.7748682469 + 0.6507205412 * REM_SA(-1)$$

Remittances as a function in relation with Russian GDP





Series: Residuals	
Sample 2003Q2 2011Q4	
Observations 35	
Mean	-1.51e-16
Median	-0.020019
Maximum	0.215211
Minimum	-0.232289
Std. Dev.	0.106178
Skewness	-0.015131
Kurtosis	2.421011
Jarque-Bera	0.490210
Probability	0.782623

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.152048	Probability	0.329575
Obs*R-squared	2.496383	Probability	0.287023

White Heteroskedasticity Test:

F-statistic	1.694091	Probability	0.177387
Obs*R-squared	6.449055	Probability	0.168029

Appendix 2. The multiplier of expenditures in Armenia

$$\text{Multiplier} = 1 / (1 - \text{MPC} - \text{MPI} + \text{MPM}).$$

Marginal product of consumption on investment and import we may take from following regressions.

Dependent Variable: PC_SA

Method: Least Squares

Date: 08/21/12 Time: 01:31

Sample: 2000Q1 2011Q4

Included observations: 48

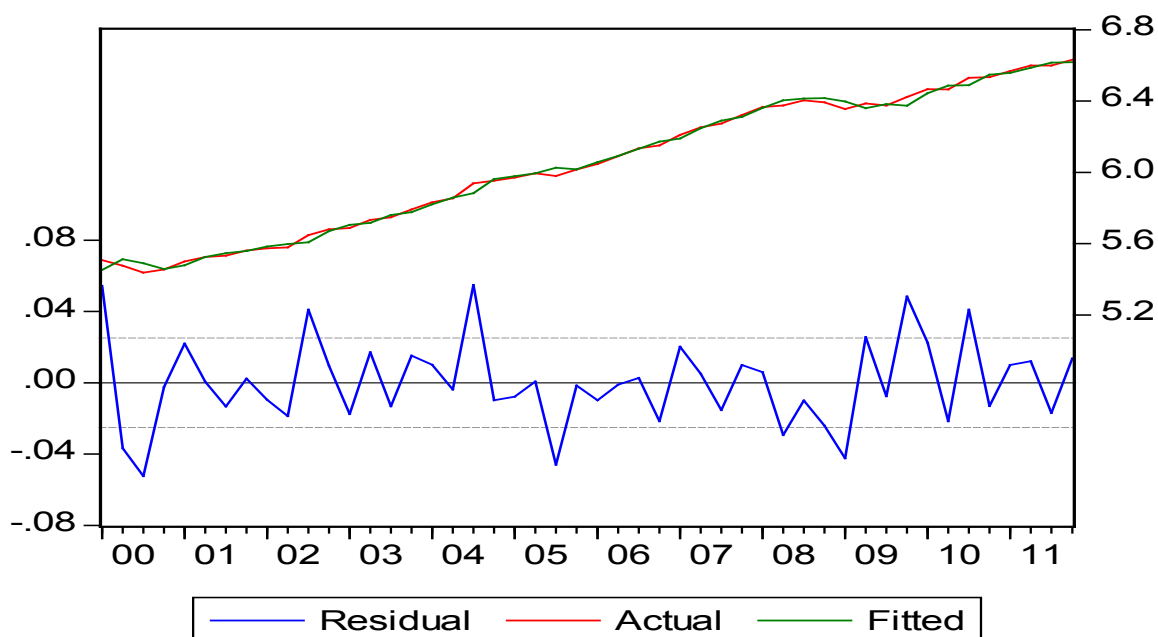
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_SA(-1)	0.111107	0.049227	2.257008	0.0290
C	0.101400	0.077914	1.301439	0.1999
PC_SA(-1)	0.869195	0.061422	14.15129	0.0000
DUM	-0.025539	0.012562	-2.033003	0.0481
R-squared	0.995943	Mean dependent var		6.040206
Adjusted R-squared	0.995666	S.D. dependent var		0.380806
S.E. of regression	0.025068	Akaike info criterion		-4.454774
Sum squared resid	0.027650	Schwarz criterion		-4.298840
Log likelihood	110.9146	F-statistic		3600.570
Durbin-Watson stat	2.156716	Prob(F-statistic)		0.000000

Estimation Equation:

$$\text{PC_SA} = \text{C}(1)*\text{Y_SA}(-1) + \text{C}(2) + \text{C}(3)*\text{PC_SA}(-1) + \text{C}(4)*\text{DUM}$$

Substituted Coefficients:

$$\text{PC_SA} = 0.1111067464*\text{Y_SA}(-1) + 0.1014000683 + 0.8691951139*\text{PC_SA}(-1) - 0.02553877749*\text{DUM}$$



Dependent Variable: INV_SA

Method: Least Squares

Sample: 2000Q1 2008Q4

Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV_SA(-2)	0.466798	0.117948	3.957643	0.0004
C	-1.554643	0.297797	-5.220481	0.0000
Y_SA(-1)	0.853829	0.175555	4.863608	0.0000
DUM	-0.255940	0.041275	-6.200851	0.0000
R-squared	0.997073	Mean dependent var		6.987985
Adjusted R-squared	0.996798	S.D. dependent var		0.661062
S.E. of regression	0.037406	Akaike info criterion		-3.629514
Sum squared resid	0.044775	Schwarz criterion		-3.453568
Log likelihood	69.33125	F-statistic		3633.016
Durbin-Watson stat	1.352207	Prob(F-statistic)		0.000000

Dependent Variable: IMP_SA

Method: Least Squares

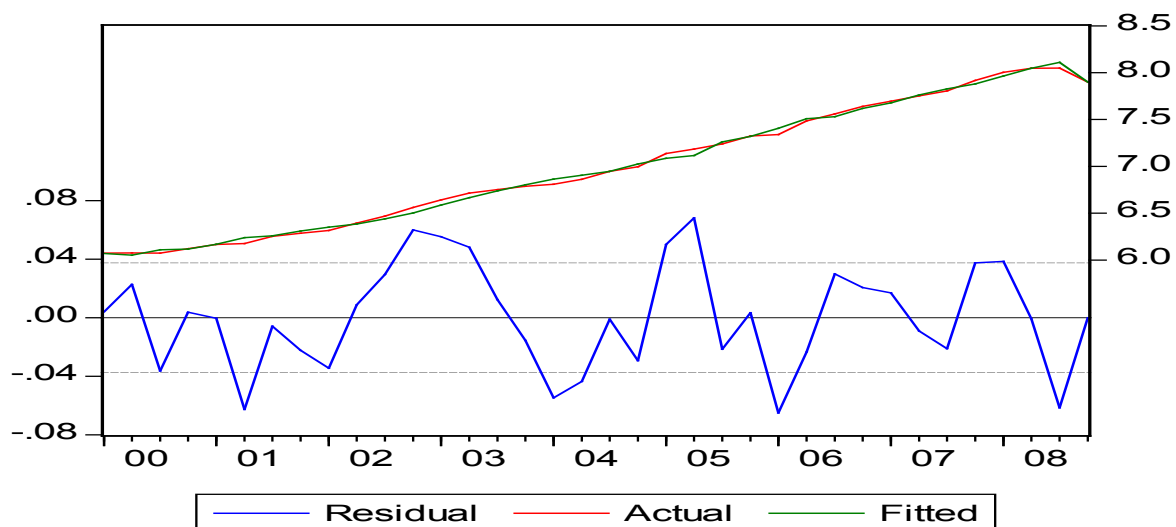
Date: 08/21/12 Time: 01:38

Sample: 2000Q1 2011Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.238598	0.186124	1.281933	0.2066
Y_SA(-1)	0.380646	0.112680	3.378122	0.0015
IMP_SA(-1)	0.550316	0.130121	4.229271	0.0001
DUM	-0.043964	0.042150	-1.043033	0.3026

R-squared	0.959925	Mean dependent var	5.919917
Adjusted R-squared	0.957193	S.D. dependent var	0.404396
S.E. of regression	0.083669	Akaike info criterion	-2.044235
Sum squared resid	0.308024	Schwarz criterion	-1.888302
Log likelihood	53.06165	F-statistic	351.3139
Durbin-Watson stat	1.882471	Prob(F-statistic)	0.000000



$$\text{Multiplier} = 1 / (1 - 0.11 - 0.46 + 0.23) = 1.5$$

Appendix 3. Pooled OLS for CIS countries

	t-Stat.	Prob.	R-squared	Durbin-Watson stat	F-statistic (prob.)
Short run equation					
$Y = 0.066 * D(R(-1)) + 0.326 - 0.127 * Dummy + 0.957 * Y(-2)$	3.143	0.003	0.929	0.888	301.1 (0.0)

Long run equation

$$Y = -0.008 * R(-3) + 0.958 * Y(-1) + 0.324$$

- 0.038 0.960 1.828 749.2(0.0)
2.118

Pairwise Granger Causality Tests

Date: 05/05/05 Time: 05:30

Sample: 1996Q1 2012Q4

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
Y_SA does not Granger Cause REM_SA	66	2.81790	0.06753
REM_SA does not Granger Cause Y_SA		3.98984	0.02353

Appendix 4. OLS estimation results of remittances in relation with aggregate demand, supply, economic cycle and real effective exchange rate

Equation 1: Consumption function

Dependent Variable: PC_SA

Method: Least Squares

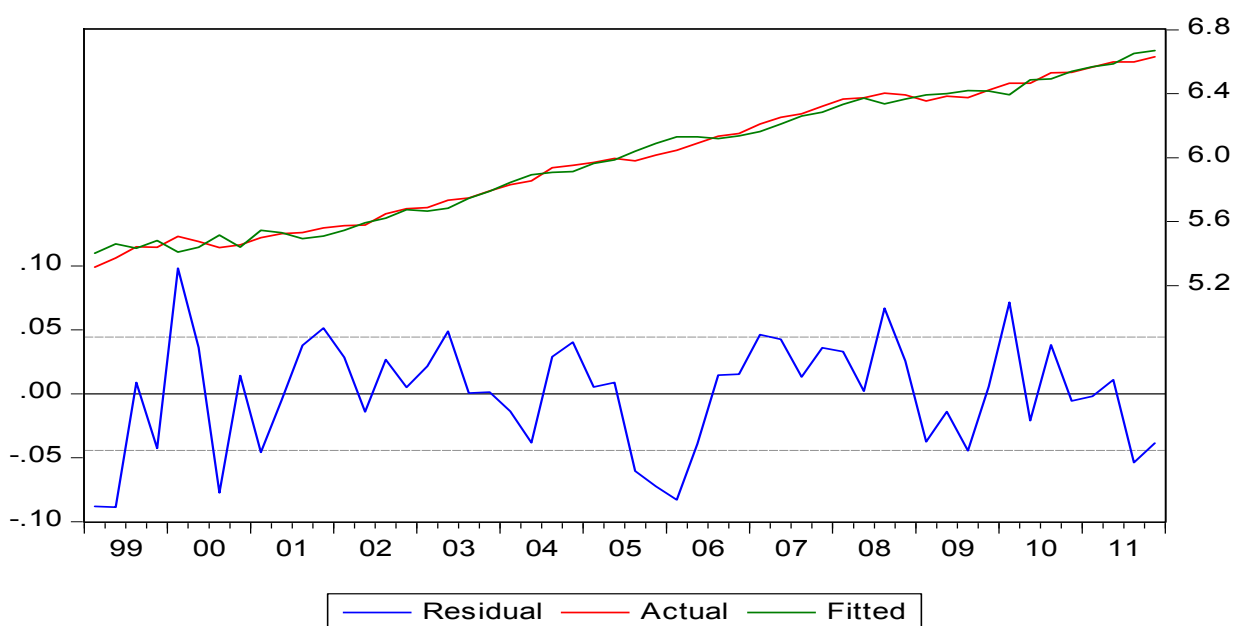
Sample: 1999Q1 2011Q4

Included observations: 52

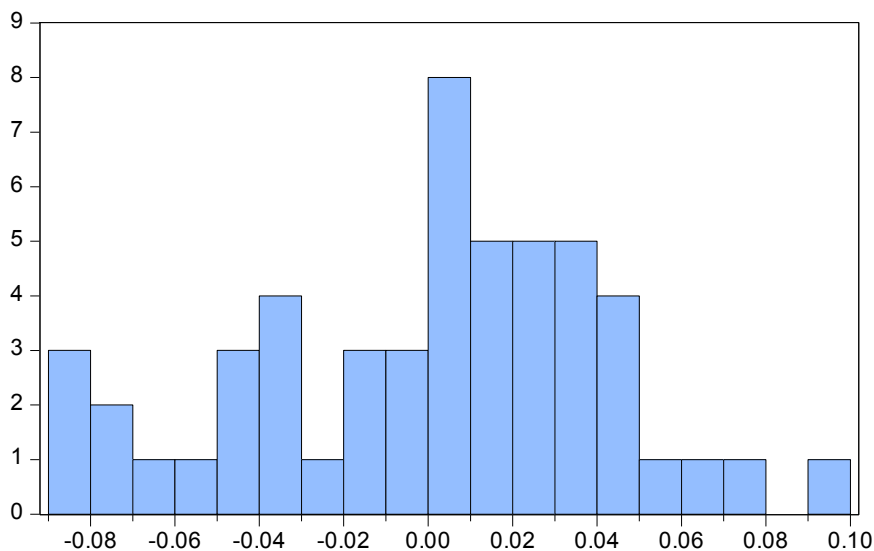
Variable	Coefficient	Std. Error	t-Statistic	Prob.	
REM_SA	0.10	6068	0.025546	4.152017	0.0001
C	0.32	6559	0.149810	2.179823	0.0342
PC_SA(-4)	0.83	7194	0.052397	15.97778	0.0000
DUM_C	-0.058	885	0.018510	-3.181190	0.0026

R-squared	0.988745	Mean dependent var	5.990405
Adjusted R-squared	0.988042	S.D. dependent var	0.405218
S.E. of regression	0.044312	Akaike info criterion	-3.321301
Sum squared resid	0.094252	Schwarz criterion	-3.171205
Log likelihood	90.35382	F-statistic	1405.593
Durbin-Watson stat	1.368056	Prob(F-statistic)	0.000000

Fitted values



Residuals tests



Series: Residuals	
Sample 1999Q1 2011Q4	
Observations 52	
Mean	5.75e-16
Median	0.005393
Maximum	0.098270
Minimum -	0.088664
Std. Dev.	0.042989
Skewness	-0.303653
Kurtosis	2.629806
Jarque-Bera	1.096038
Probability	0.578094

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.908089 Prob. F(2,46)	0.1599
Obs*R-squared	3.983471 Prob. Chi-Square(2)	0.1365

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.873619 Prob. F(3,48)	0.1466
Obs*R-squared	5.450950 Prob. Chi-Square(3)	0.1416
Scaled explained SS	3.784894 Prob. Chi-Square(3)	0.2856

Equation 2: Investment function

Dependent Variable: INV_SA

Method: Least Squares

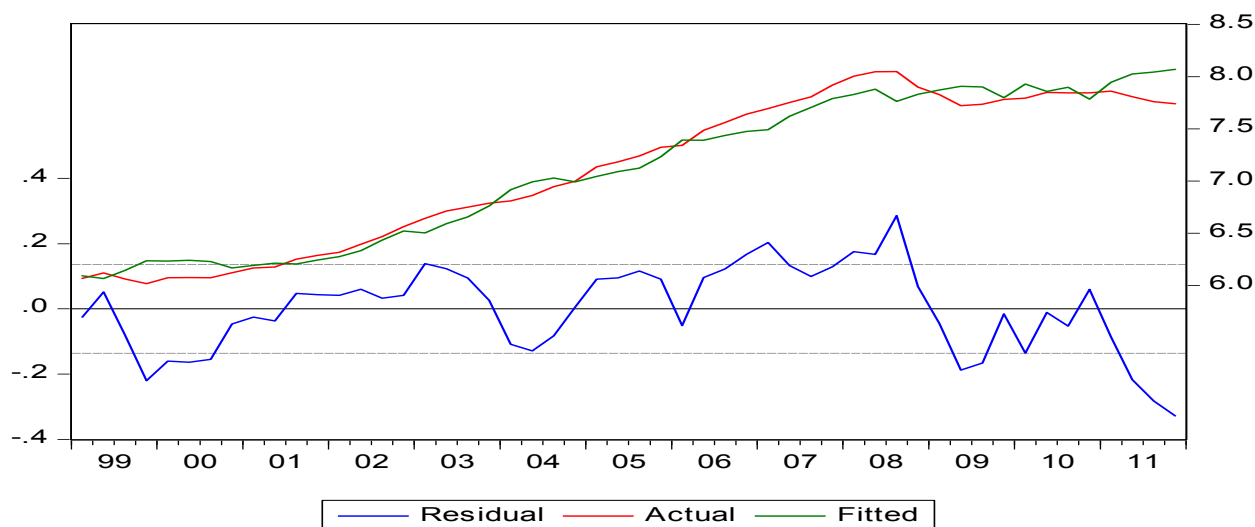
Date: 08/17/12 Time: 21:34

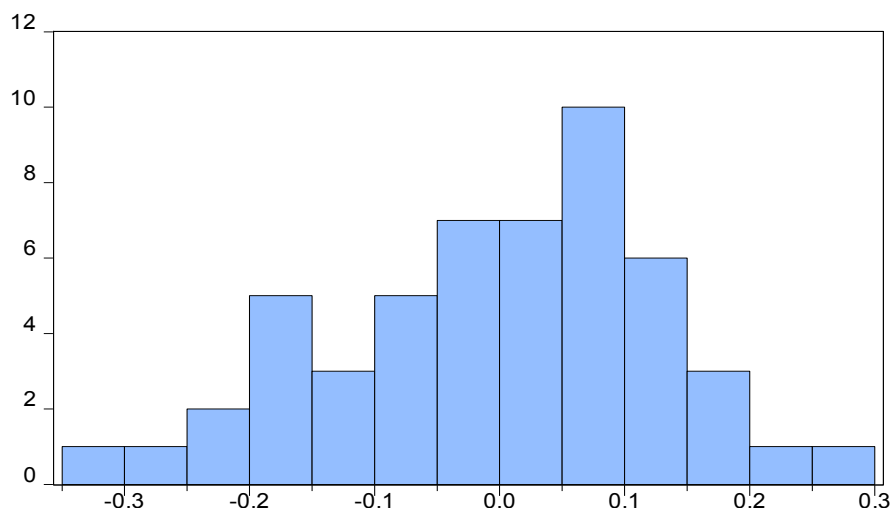
Sample: 2000Q1 2011Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
REM_SA(-1)	0.05	9945	0.033411	1.794169	0.0800
Y_SA(-7)	0.11	6959	0.082859	1.411549	0.1654
DUM_I	-0.081	660	0.021506	-3.797089	0.0005
INFL_SA(-1)	-0.690	224	0.221221	-3.120070	0.0033
C	2.23	7081	0.645326	3.466590	0.0012
INV_SA(-1)	0.99	8024	0.044509	22.42301	0.0000

R-squared	0.996365	Mean dependent var	7.190304
Adjusted R-squared	0.995933	S.D. dependent var	0.671865
S.E. of regression	0.042848	Akaike info criterion	-3.345837
Sum squared resid	0.077111	Schwarz criterion	-3.111937
Log likelihood	86.30009	F-statistic	2302.742
Durbin-Watson stat	1.888336	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.352247	Probability	0.705265
Obs*R-squared	0.83076	2 Probability	0.660089

Equation 3: Short run GDP

Dependent Variable: Y_SA

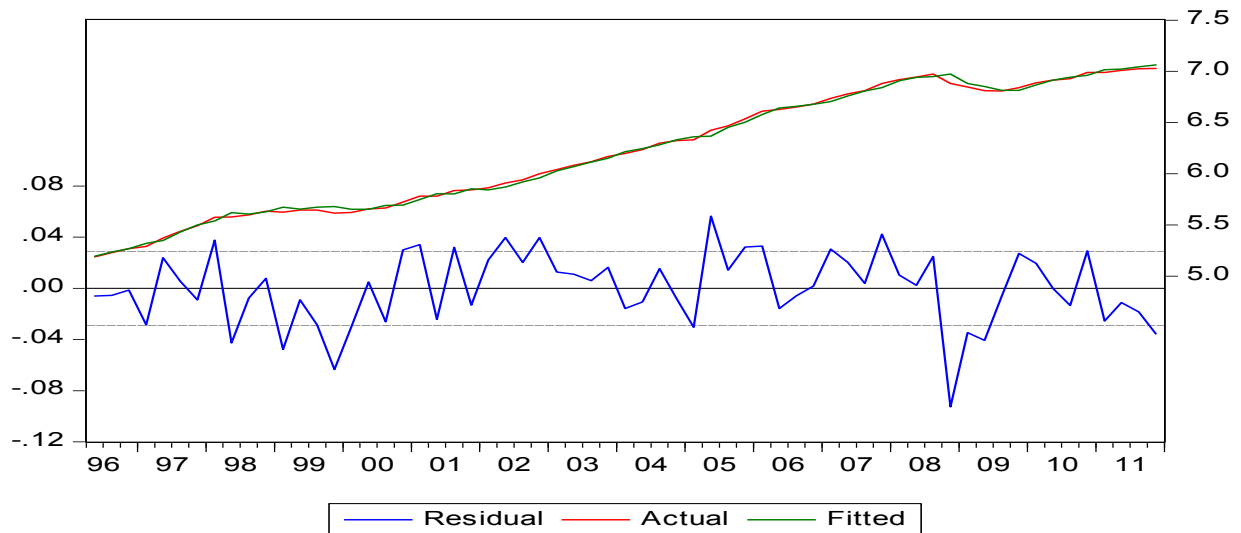
Method: Least Squares

Sample (adjusted): 1996Q2 2011Q4

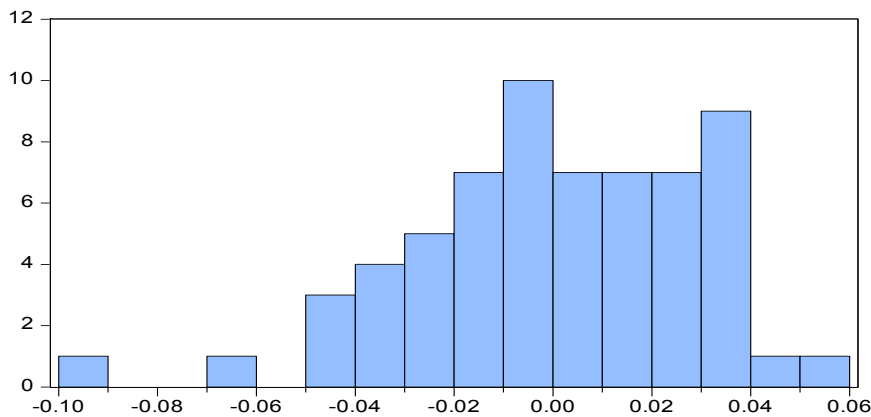
Included observations: 63 after adjustments

Variable	Coefficient		Std. Error	t-Statistic	Prob.
REM_SA	0.03	3136	0.014716	2.251710	0.0281
C	0.13	2688	0.046280	2.867076	0.0057
Y_SA(-1)	0.94	7619	0.021106	44.89854	0.0000
DUM_Y	-0.019	124	0.010686	-1.789566	0.0787

R-squared	0.997676	Mean dependent var	6.215835
Adjusted R-squared	0.997558	S.D. dependent var	0.586062
S.E. of regression	0.028960	Akaike info criterion	-4.184396
Sum squared resid	0.049483	Schwarz criterion	-4.048324
Log likelihood	135.8085	F-statistic	8443.887
Durbin-Watson stat	1.682102	Prob(F-statistic)	0.000000



Residuals tests



Series: Residuals	
Sample 1996Q2 2011Q4	
Observations 63	
Mean	-6.84e-16
Median	0.001832
Maximum	0.056373
Minimum	-0.092476
Std. Dev.	0.028251
Skewness	-0.579684
Kurtosis	3.542463
Jarque-Bera	4.300804
Probability	0.116437

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.724933 Prob. F(2,57)	0.1874
Obs*R-squared	3.595402 Prob. Chi-Square(2)	0.1657

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.152251 Prob. F(3,59)	0.1032
Obs*R-squared	6.214415 Prob. Chi-Square(3)	0.1016
Scaled explained SS	6.928637 Prob. Chi-Square(3)	0.0742

Equation 4: Long run GDP

Dependent Variable: Y_SA

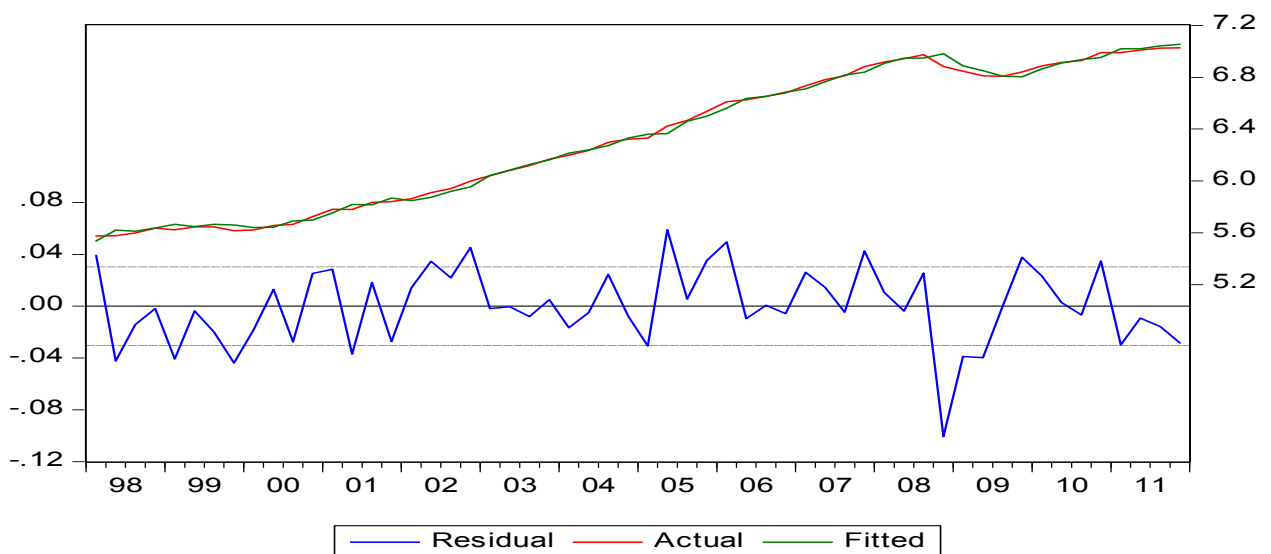
Method: Least Squares

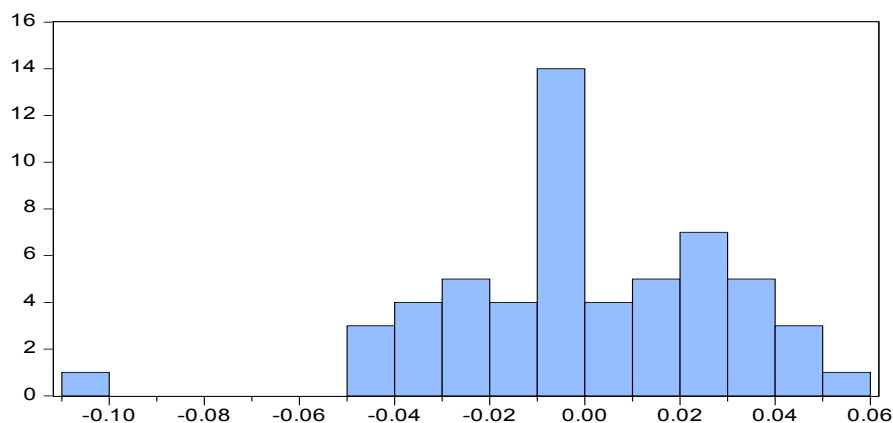
Sample (adjusted): 1998Q1 2011Q4

Included observations: 56 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
REM_SA(-8)	-0.023	850	0.014081	-1.693688	0.0963
C	0.00	8259	0.058046	0.142276	0.8874
Y_SA(-1)	1.02	8643	0.020993	48.99851	0.0000
DUM_Y	-0.025	814	0.010732	-2.405357	0.0197

R-squared	0.996802	Mean dependent var	6.327214
Adjusted R-squared	0.996617	S.D. dependent var	0.521688
S.E. of regression	0.030343	Akaike info criterion	-4.083737
Sum squared resid	0.047877	Schwarz criterion	-3.939069
Log likelihood	118.3446	F-statistic	5401.920
Durbin-Watson stat	1.806945	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.638886 Prob. F(2,50)	0.5321
Obs*R-squared	1.395444 Prob. Chi-Square(2)	0.4977

Heteroskedasticity Test: Breusch-Pagan-Godfrey

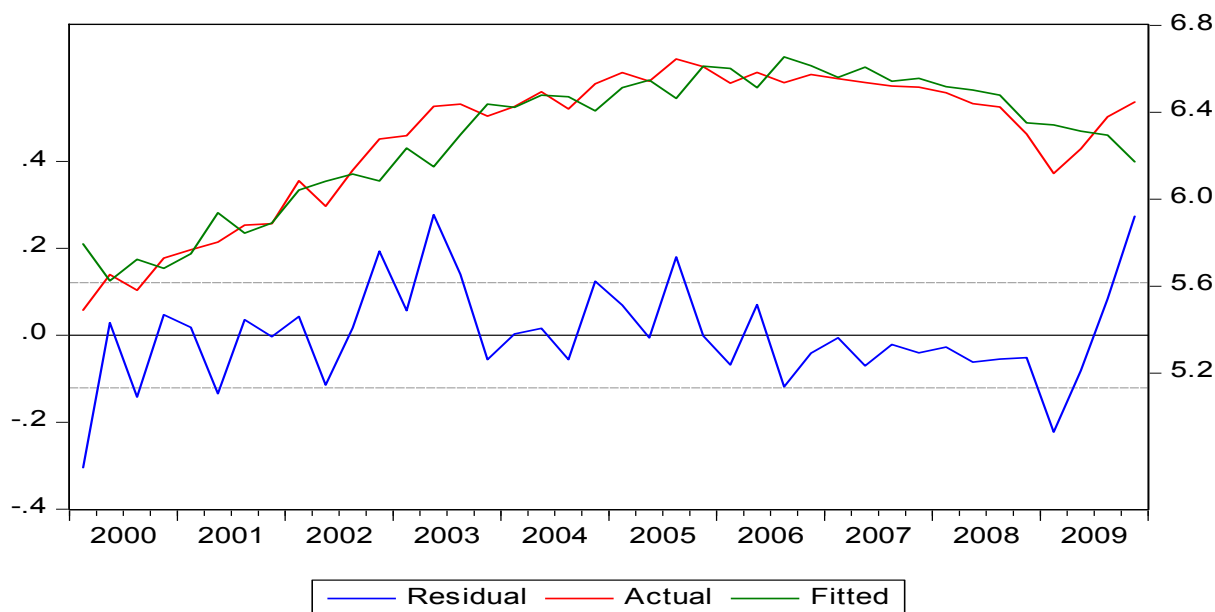
F-statistic	2.393819 Prob. F(3,52)	0.0789
Obs*R-squared	6.795400 Prob. Chi-Square(3)	0.0787
Scaled explained SS	8.522031 Prob. Chi-Square(3)	0.0364

Equation 5: Export function

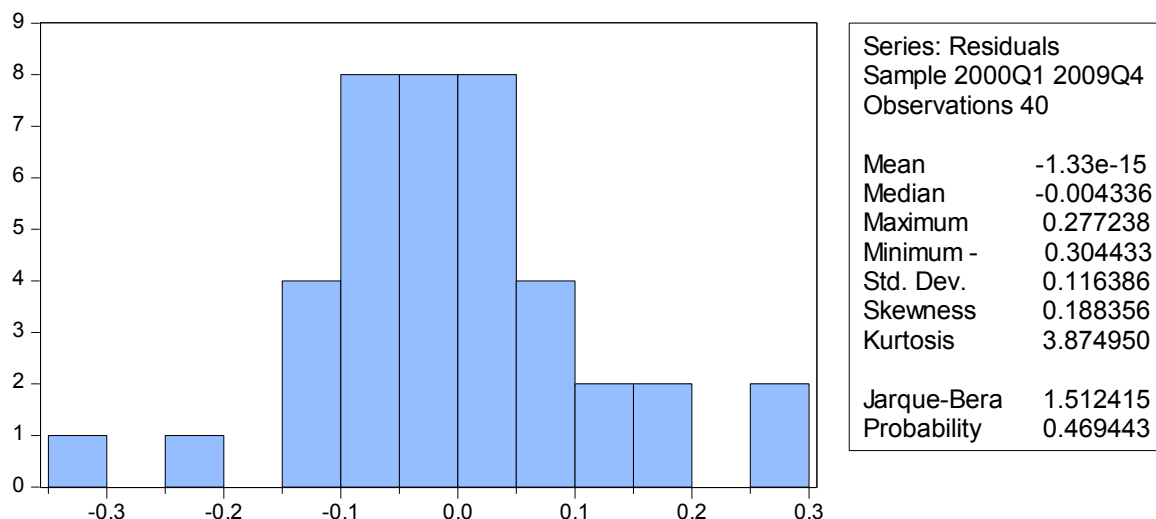
Dependent Variable: EX_SA
 Method: Least Squares
 Sample: 2000Q1 2009Q4
 Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM_SA(-1)	-0.187	0.086247	-2.174512	0.0363
C	1.14	0.395686	2.902360	0.0063
DUM_IMP	-0.112	0.059437	-1.892283	0.0665
EX_SA(-4)	1.03	0.144687	7.170297	0.0000

R-squared	0.871129	Mean dependent var	6.280852
Adjusted R-squared	0.860389	S.D. dependent var	0.324208
S.E. of regression	0.121138	Akaike info criterion	-1.289125
Sum squared resid	0.528283	Schwarz criterion	-1.120237
Log likelihood	29.78250	Hannan-Quinn criter.	-1.228060
F-statistic	81.11618	Durbin-Watson stat	1.392303
Prob(F-statistic)	0.00		0000



Residual tests



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.146590 Prob. F(2,34)	0.3297
Obs*R-squared	2.527394 Prob. Chi-Square(2)	0.2826

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.394480 Prob. F(3,36)	0.2602
Obs*R-squared	4.164342 Prob. Chi-Square(3)	0.2443
Scaled explained SS	4.848772 Prob. Chi-Square(3)	0.1832

Equation 6: Import function

Dependent Variable: IMP_SA

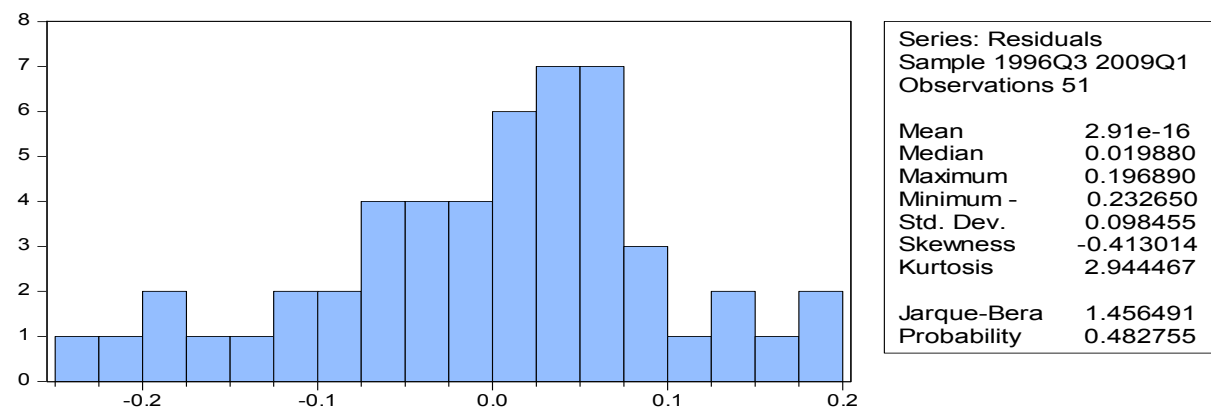
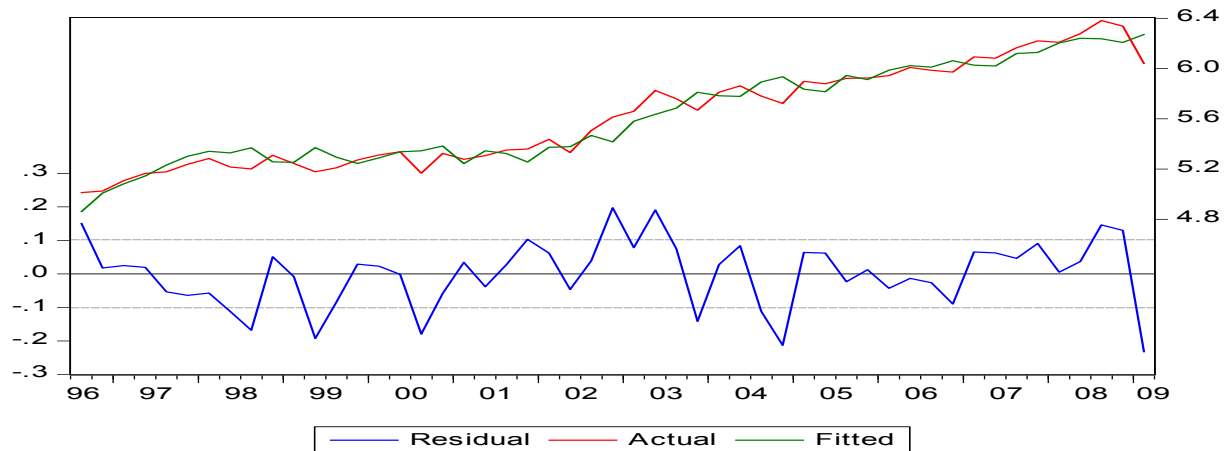
Method: Least Squares

Date: 08/24/12 Time: 03:01

Included observations: 51 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM_SA(-1)	0.13	0.0682	2.170900	0.0350
C	0.73	0.4008	2.584183	0.0129
IMP_SA(-2)	0.72	0.5199	6.441367	0.0000
DUM_IMP	-0.085	0.195	-1.319592	0.1934

R-squared	0.938112	Mean dependent var	5.615064
Adjusted R-squared	0.934162	S.D. dependent var	0.395764
S.E. of regression	0.101549	Akaike info criterion	-1.661375
Sum squared resid	0.484669	Schwarz criterion	-1.509859
Log likelihood	46.36507	Hannan-Quinn criter.	-1.603477
F-statistic	237.4805	Durbin-Watson stat	1.433943
Prob(F-statistic)	0.00		0.000



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.911185 Prob. F(2,45)	0.0647
Obs*R-squared	5.842720 Prob. Chi-Square(2)	0.0539

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.143179 Prob. F(3,47)	0.1074
Obs*R-squared	6.137176 Prob. Chi-Square(3)	0.1051
Scaled explained SS	5.067508 Prob. Chi-Square(3)	0.1669

Equation 7: GDP and remittance cycles

Dependent Variable: HPCYCL

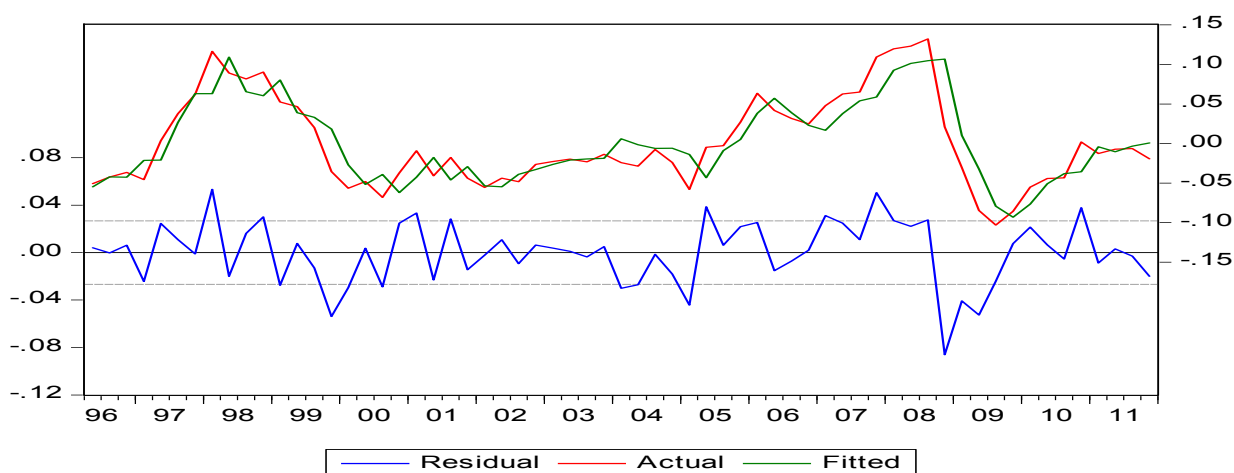
Method: Least Squares

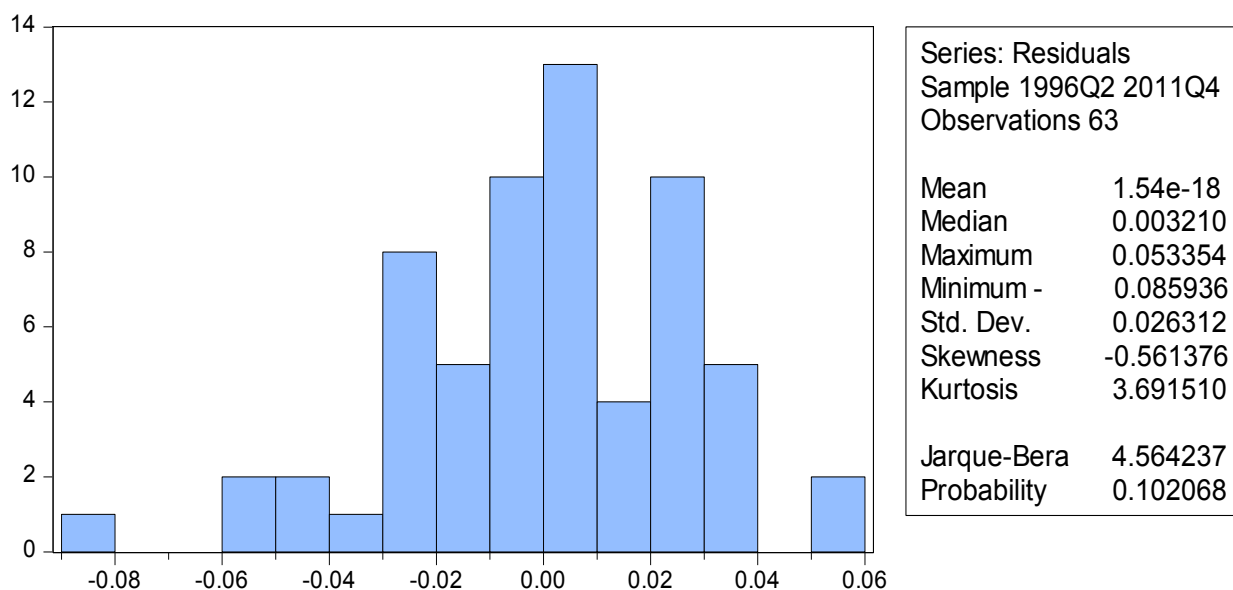
Sample (adjusted): 1996Q2 2011Q4

Included observations: 63 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
REM_CYCLE	0.04	3468	0.015789	2.753089	0.0078
C	0.00	0382	0.003370	0.113278	0.9102
HPCYCL(-1)	0.80	7738	0.063374	12.74555	0.0000

R-squared	0.783422	Mean dependent var	0.000703
Adjusted R-squared	0.776203	S.D. dependent var	0.056539
S.E. of regression	0.026747	Akaike info criterion	-4.358334
Sum squared resid	0.042924	Schwarz criterion	-4.256280
Log likelihood	140.2875	F-statistic	108.5182
Durbin-Watson stat	1.689799	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.050867 Prob. F(2,58)	0.1378
Obs*R-squared	4.161064 Prob. Chi-Square(2)	0.1249

Equation 8: Construction function

Dependent Variable: CONST_SA

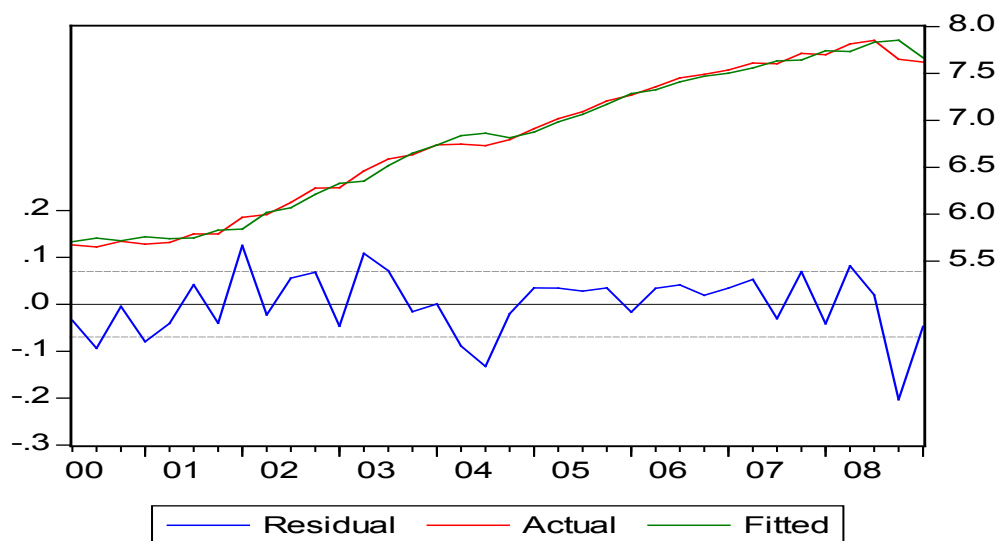
Method: Least Squares

Sample (adjusted): 2000Q2 2009Q1

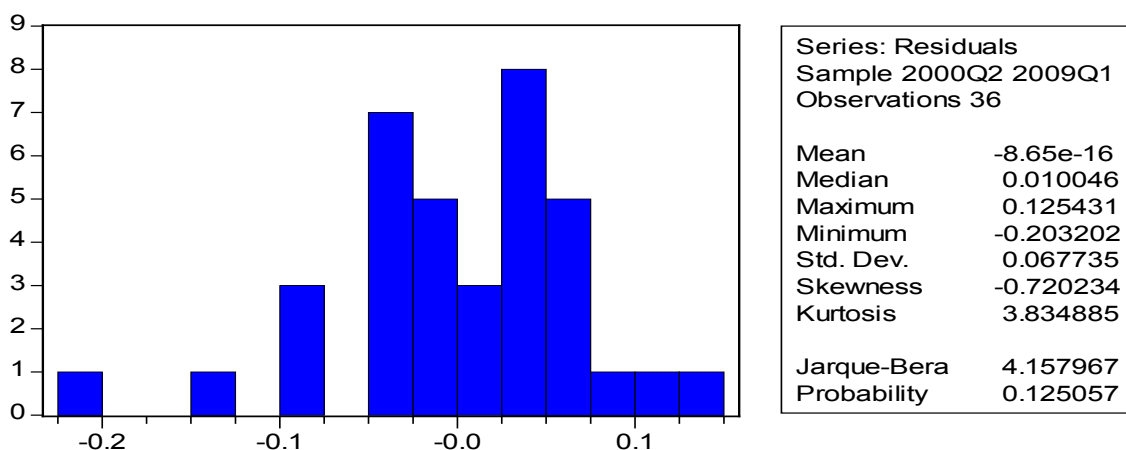
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
_SA	0.14	7924	0.073069	2.024437	0.0511
REM C	0.202167	0.106406	1.899961	0.0662	
CONST_SA(-1)	0.85	2305	0.066218	12.87129	0.0000
R-squared	0.991797	Mean dependent var		6.784286	
Adjusted R-squared	0.991300	S.D. dependent var		0.747876	
S.E. of regression	0.069757	Akaike info criterion		-2.407938	
Sum squared resid	0.160580	Schwarz criterion		-2.275978	
Log likelihood	46.34288	F-statistic		1995.000	
Durbin-Watson stat	1.800714	Prob(F-statistic)		0.000000	

Fitted values



Normality test



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.258984	Probability	0.773489
Obs*R-squared	0.591626	Probability	0.743926

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.755249	Prob. F(2,40)	0.0757
Obs*R-squared	5.206522	Prob. Chi-Square(2)	0.0740
Scaled explained SS	2.961175	Prob. Chi-Square(2)	0.2275

Equation 9: Services function

Dependent Variable: SERV_SA

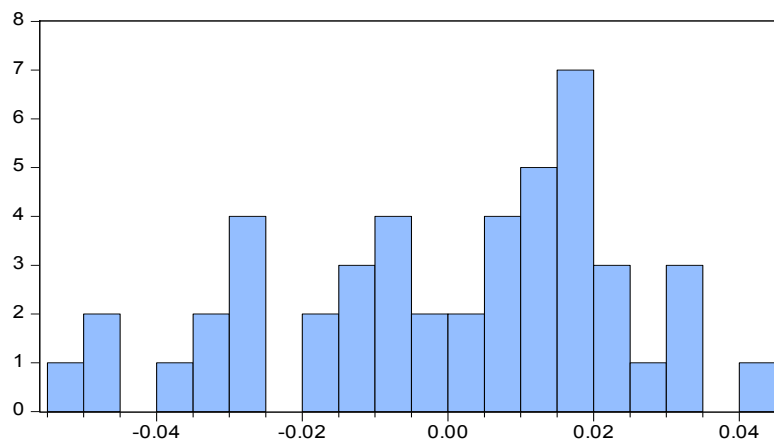
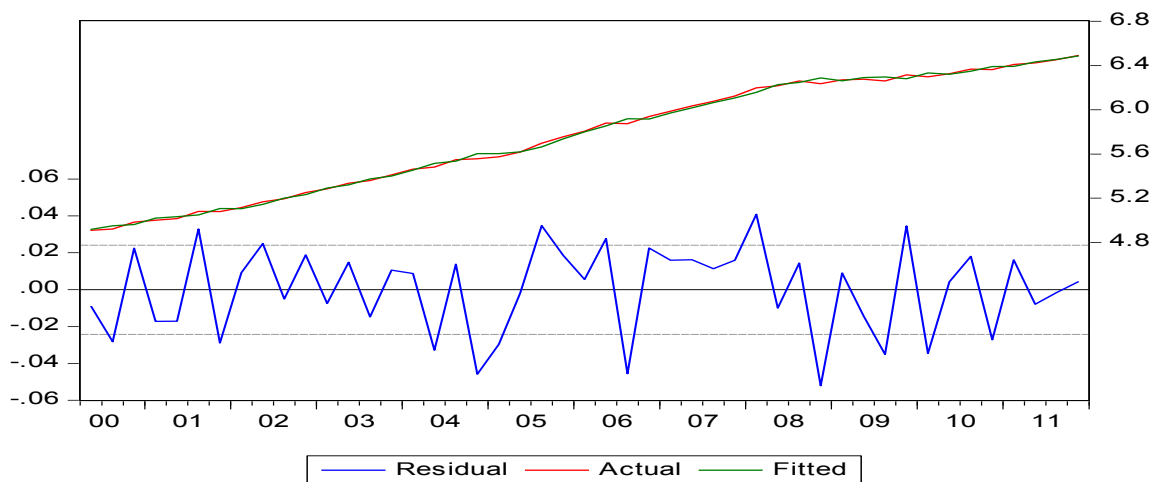
Method: Least Squares

Sample (adjusted): 2000Q2 2011Q4

Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
REM_SA(-1)	0.03	7460	0.016520	2.267575	0.0283
C	0.15	6201	0.049907	3.129817	0.0031
SERV_SA(-1)	0.94	0138	0.023329	40.29936	0.0000

R-squared	0.997855	Mean dependent var	5.759273
Adjusted R-squared	0.997758	S.D. dependent var	0.511188
S.E. of regression	0.024207	Akaike info criterion	-4.542623
Sum squared resid	0.025784	Schwarz criterion	-4.424529
Log likelihood	109.7517	F-statistic	10234.43
Durbin-Watson stat	2.576358	Prob(F-statistic)	0.000000



Series: Residuals	
Sample 2000Q2 2011Q4	
Observations 47	
Mean	-1.19e-15
Median	0.005500
Maximum	0.040871
Minimum	-0.052133
Std. Dev.	0.023675
Skewness	-0.445066
Kurtosis	2.284152
Jarque-Bera	2.555184
Probability	0.278708

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.068590 Prob. F(2,42)	0.1390
Obs*R-squared	4.214550 Prob. Chi-Square(2)	0.1216

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.417905 Prob. F(2,44)	0.6610
Obs*R-squared	0.876154 Prob. Chi-Square(2)	0.6453
Scaled explained SS	0.493033 Prob. Chi-Square(2)	0.7815

Equation 10: Real effective exchange rate function

Dependent Variable: REER

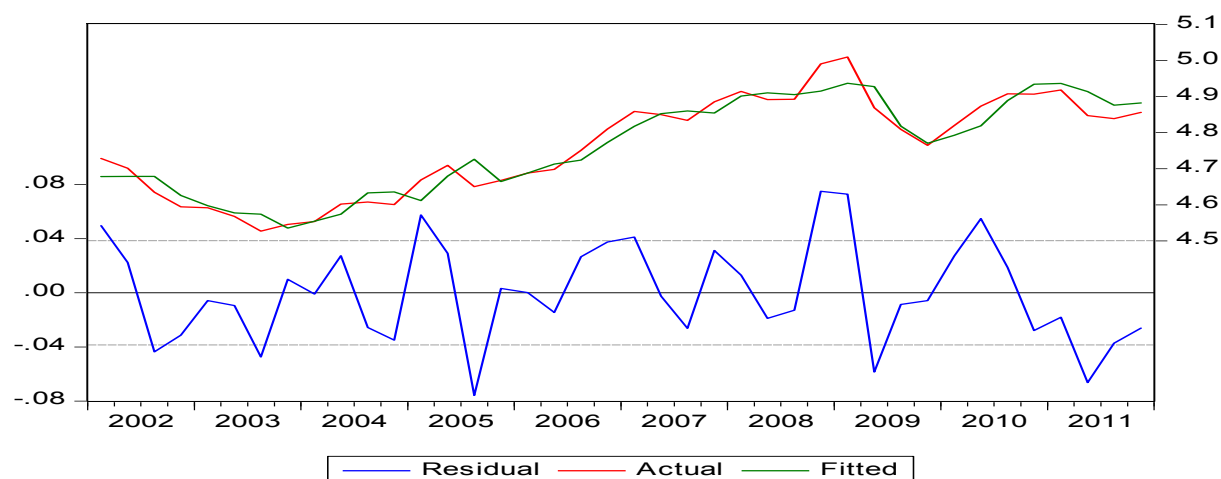
Method: Least Squares

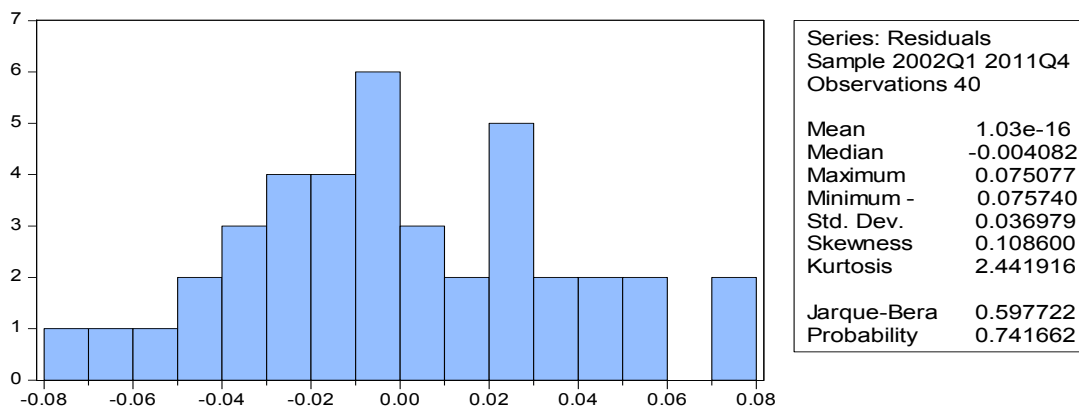
Sample: 2002Q1 2011Q4

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM(-1)	0.035540	0.011713	3.034140	0.0045
C	0.232778	0.254565	0.914415	0.3666
REER(-1)	0.905570	0.060884	14.87370	0.0000
DUM	-0.061281	0.022348	-2.742116	0.0094

R-squared	0.924539	Mean dependent var	4.760708
Adjusted R-squared	0.918251	S.D. dependent var	0.134614
S.E. of regression	0.038489	Akaike info criterion	-3.582274
Sum squared resid	0.053329	Schwarz criterion	-3.413386
Log likelihood	75.64548	F-statistic	147.0229
Durbin-Watson stat	1.619602	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.767327 Prob. F(2,34)	0.0770
Obs*R-squared	5.599800 Prob. Chi-Square(2)	0.0608

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.266778 Prob. F(3,36)	0.3003
Obs*R-squared	3.819399 Prob. Chi-Square(3)	0.2816
Scaled explained SS	2.230438 Prob. Chi-Square(3)	0.5260

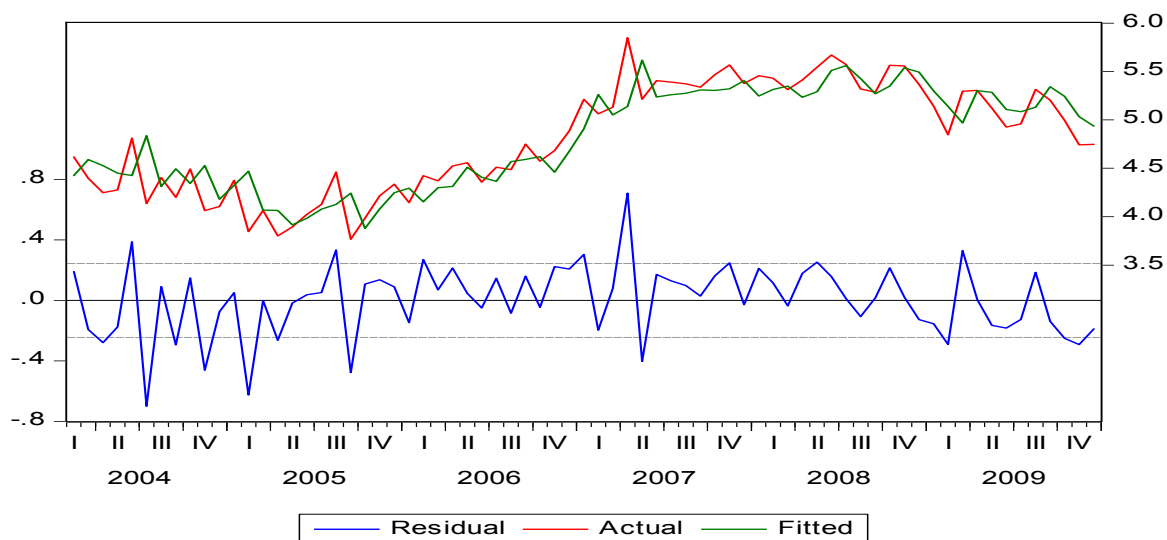
Appendix 5. Durables and remittances

Dependent Variable: DURABLES_SA
 Method: Least Squares
 Sample (adjusted): 2004M02 2009M12
 Included observations: 71 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REMIT_SA	0.283930	0.093867	3.024806	0.0035
C	-0.090435	0.326018	-0.277392	0.7823
DURABLES_SA(-1)	0.689252	0.083719	8.232901	0.0000

R-squared	0.816827	Mean dependent var	4.808143
Adjusted R-squared	0.811440	S.D. dependent var	0.560630
S.E. of regression	0.243446	Akaike info criterion	0.053488
Sum squared resid	4.030070	Schwarz criterion	0.149094
Log likelihood	1.101180	F-statistic	151.6169
Durbin-Watson stat	2.305880	Prob(F-statistic)	0.000000

Fitted values



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.704069	Probability	0.189848
Obs*R-squared	3.486304	Probability	0.174968

White Heteroskedasticity Test:

F-statistic	1.136305	Probability	0.347163
Obs*R-squared	4.574523	Probability	0.333802

Appendix 6. Remittances and financial intermediation

Deposit function

Dependent Variable: DEP

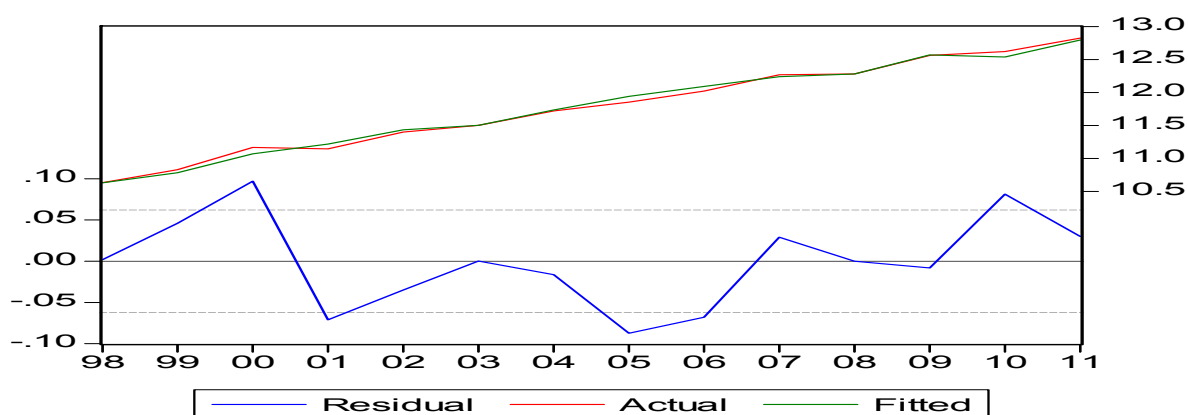
Method: Least Squares

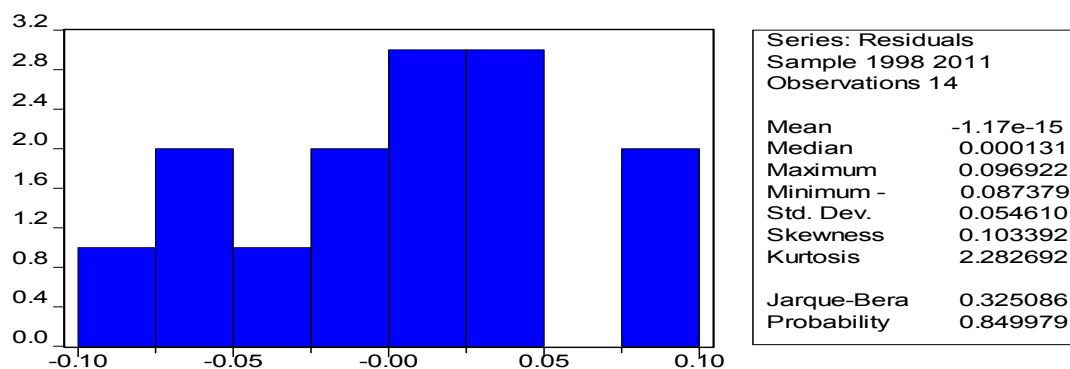
Sample (adjusted): 1998 2011

Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM(-1)	0.218028	0.050071	4.354373	0.0014
C	2.358241	0.265245	8.890788	0.0000
DEP(-2)	0.720786	0.038507	18.71829	0.0000
DUMMY	-0.091041	0.067532	-1.348132	0.2074

R-squared	0.993724	Mean dependent var	11.77436
Adjusted R-squared	0.991842	S.D. dependent var	0.689352
S.E. of regression	0.062265	Akaike info criterion	-2.479884
Sum squared resid	0.038769	Schwarz criterion	-2.297296
Log likelihood	21.35919	F-statistic	527.8184
Durbin-Watson stat	1.599355	Prob(F-statistic)	0.000000



**Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	0.621876	Probability	0.561005
Obs*R-squared	1.883708	Probability	0.389904

White Heteroskedasticity Test:

F-statistic	0.276721	Probability	0.913361
Obs*R-squared	2.064287	Probability	0.840180

Credit function

Dependent Variable: CREDIT

Method: Least Squares

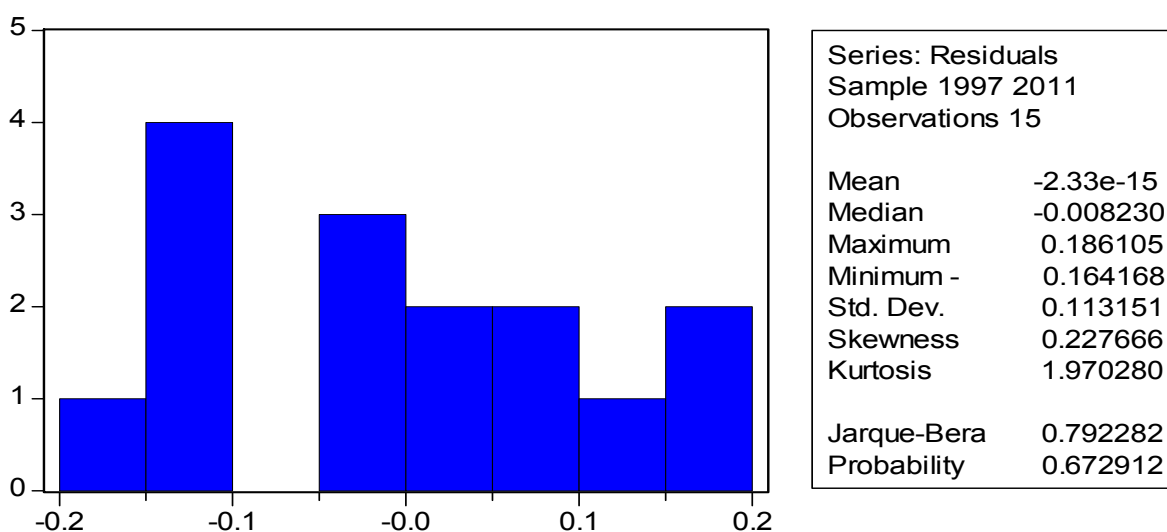
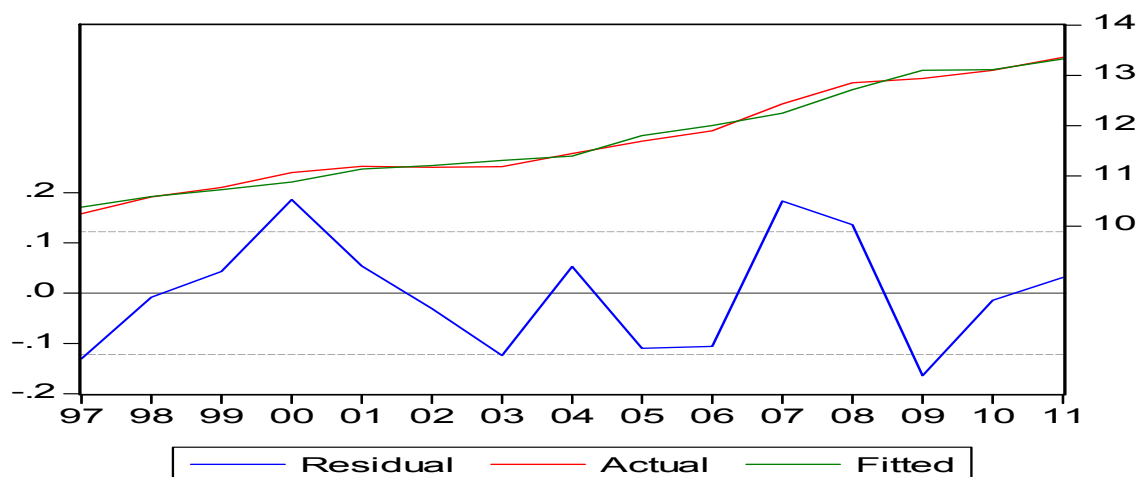
Date: 05/06/05 Time: 23:18

Sample (adjusted): 1997 2011

Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM(-1)	0.313997	0.099310	3.161791	0.0082
CREDIT(-1)	0.845202	0.068345	12.36663	0.0000
C	0.267208	0.421606	0.633786	0.5381

R-squared	0.986840	Mean dependent var	11.72874
Adjusted R-squared	0.984646	S.D. dependent var	0.986339
S.E. of regression	0.122217	Akaike info criterion	-1.189178
Sum squared resid	0.179244	Schwarz criterion	-1.047568
Log likelihood	11.91884	F-statistic	449.9175
Durbin-Watson stat	1.840215	Prob(F-statistic)	0.000000



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.945029	Probability	0.193410
Obs*R-squared	4.200909	Probability	0.122401

White Heteroskedasticity Test:

F-statistic	1.376465	Probability	0.309634
Obs*R-squared	5.326238	Probability	0.255431

Appendix 7. Employment and Remittances

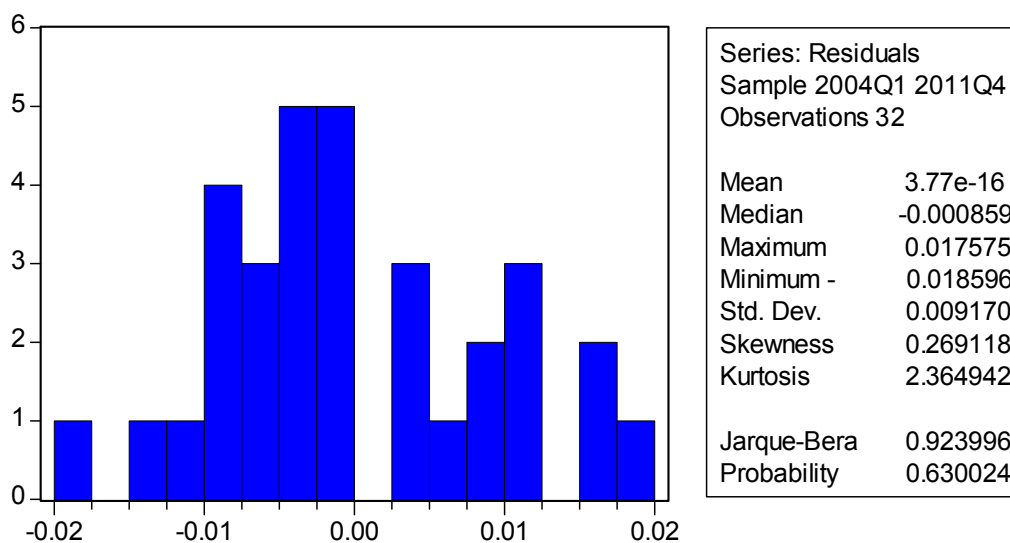
Dependent Variable: EMPL

Method: Least Squares
Sample: 2004Q1 2011Q4

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM SA(-1)	-0.045743	0.018584	-2.461456	0.0208
C	-0.075357	0.312290	-0.241305	0.8112
Y SA(-3)	0.123767	0.038883	3.183106	0.0038
EMPL(-1)	0.946698	0.082221	11.51409	0.0000
DUM	-0.047347	0.008752	-5.409868	0.0000
INV SA	-0.031413	0.023313	-1.347428	0.1895
R-squared	0.944613	Mean dependent var		3.958003
Adjusted R-squared	0.933962	S.D. dependent var		0.038965
S.E. of regression	0.010013	Akaike info criterion		-6.202470
Sum squared resid	0.002607	Schwarz criterion		-5.927644
Log likelihood	105.2395	F-statistic		88.68499
Durbin-Watson stat	1.947582	Prob(F-statistic)		0.000000

Employment function and its fitted values

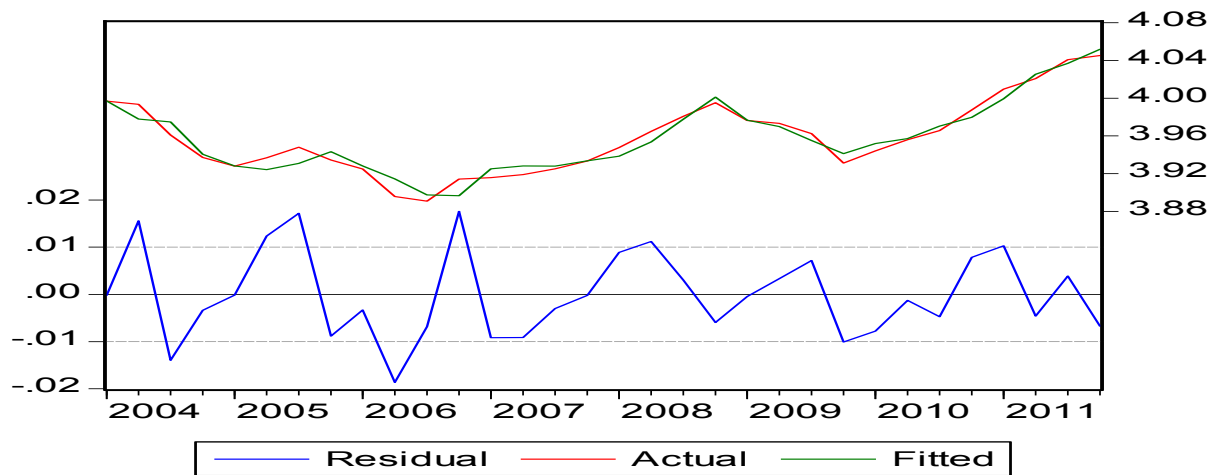


Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.827184	Probability	0.449365
Obs*R-squared	2.063577	Probability	0.356369

White Heteroskedasticity Test:

F-statistic	1.073718	Probability	0.418984
Obs*R-squared	9.766174	Probability	0.369744



Appendix 8. Remittances and Inflation

Dependent Variable: CPIAVE

Method: Least Squares

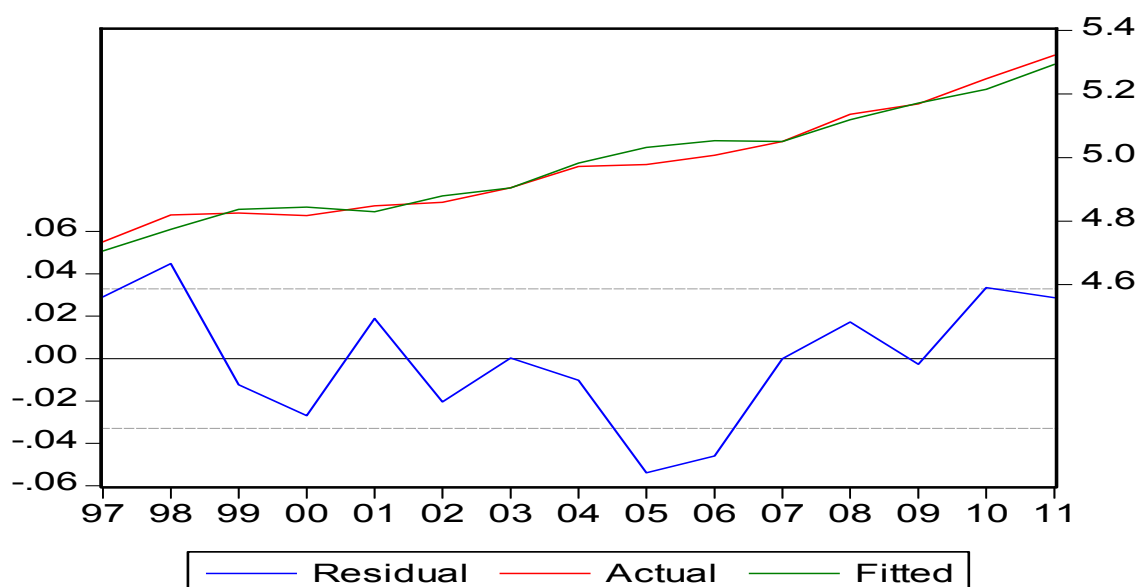
Sample (adjusted): 1997 2011

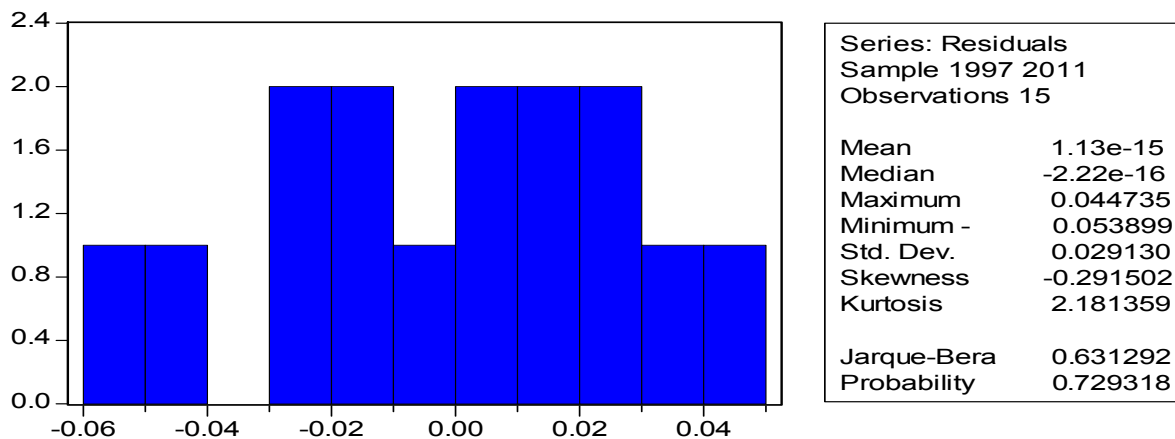
Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM	0.069965	0.025005	2.798011	0.0173
CPIAVE(-1)	0.771188	0.093563	8.242432	0.0000
DUMMY	-0.028621	0.035348	-0.809681	0.4353
C	0.784828	0.352651	2.225509	0.0479

R-squared	0.972294	Mean dependent var	4.979333
Adjusted R-squared	0.964738	S.D. dependent var	0.175003
S.E. of regression	0.032863	Akaike info criterion	-3.769784
Sum squared resid	0.011879	Schwarz criterion	-3.580970
Log likelihood	32.27338	F-statistic	128.6742
Durbin-Watson stat	1.180138	Prob(F-statistic)	0.000000

Inflation function and its fitted values





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.956022	Probability	0.420256
Obs*R-squared	2.628350	Probability	0.268696

White Heteroskedasticity Test:

F-statistic	0.327276	Probability	0.884258
Obs*R-squared	2.307712	Probability	0.805134

Appendix 9. Remittances and Poverty/ income inequality

Dependent Variable: POV

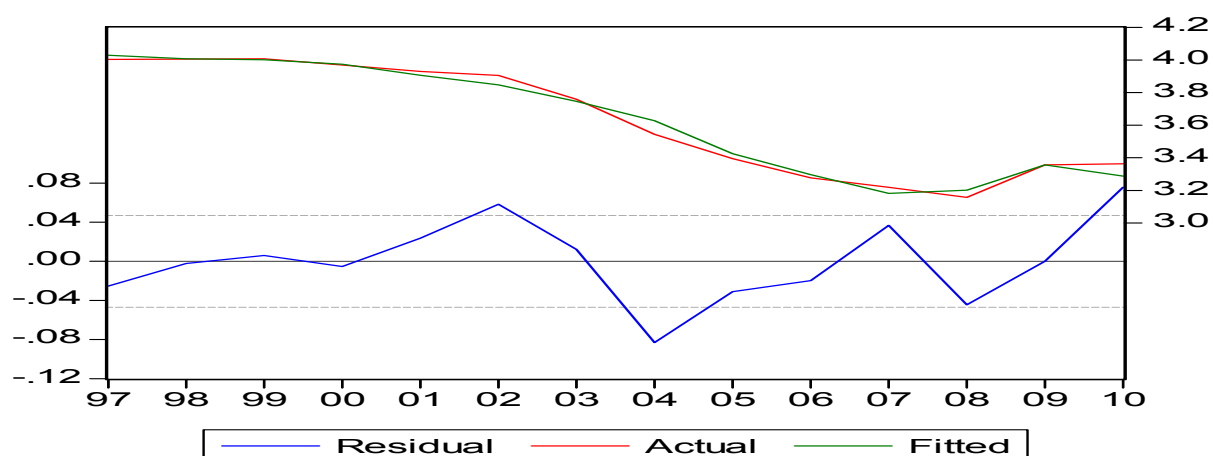
Method: Least Squares

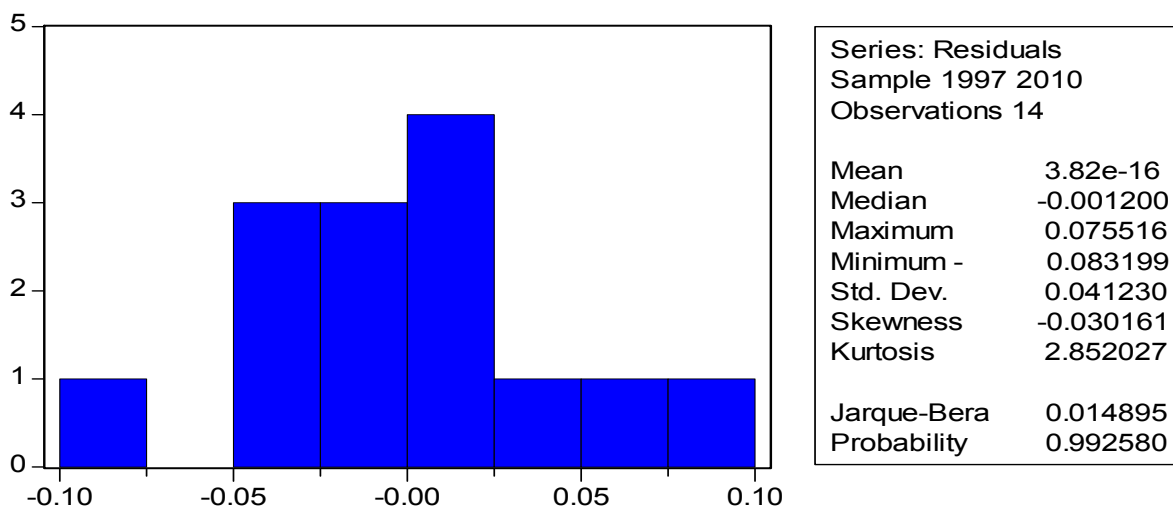
Sample (adjusted): 1997 2010

Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM	-0.167537	0.041727	-4.015039	0.0025
C	1.907914	0.561672	3.396847	0.0068
POV(-1)	0.781374	0.079742	9.798789	0.0000
DUM	0.179486	0.061413	2.922624	0.0152

R-squared	0.984721	Mean dependent var	3.635221
Adjusted R-squared	0.980138	S.D. dependent var	0.333552
S.E. of regression	0.047009	Akaike info criterion	-3.042000
Sum squared resid	0.022098	Schwarz criterion	-2.859413
Log likelihood	25.29400	F-statistic	214.8336
Durbin-Watson stat	1.549960	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.763816	Probability	0.231953
Obs*R-squared	4.284214	Probability	0.117407

White Heteroskedasticity Test:

F-statistic	1.319529	Probability	0.345727
Obs*R-squared	6.327529	Probability	0.275641

Pairwise Granger Causality Tests

Sample: 1996 2015

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
REM does not Granger Cause POV	13	13.6702	0.00263
POV does not Granger Cause REM		2.30396	0.16210

Gini coefficient and remittances

Dependent Variable: GINI

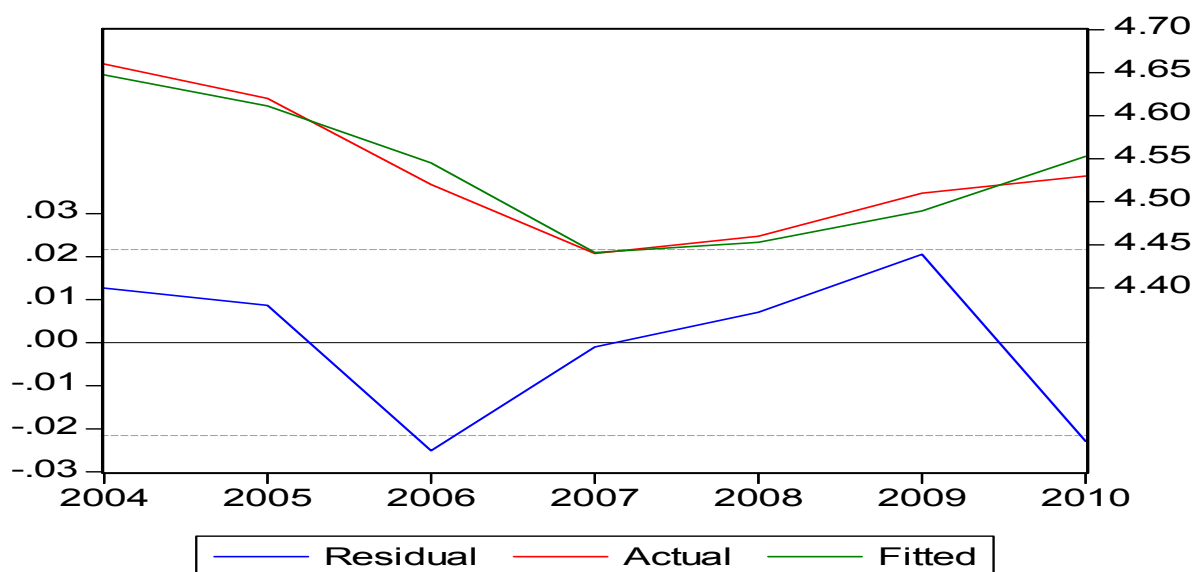
Method: Least Squares

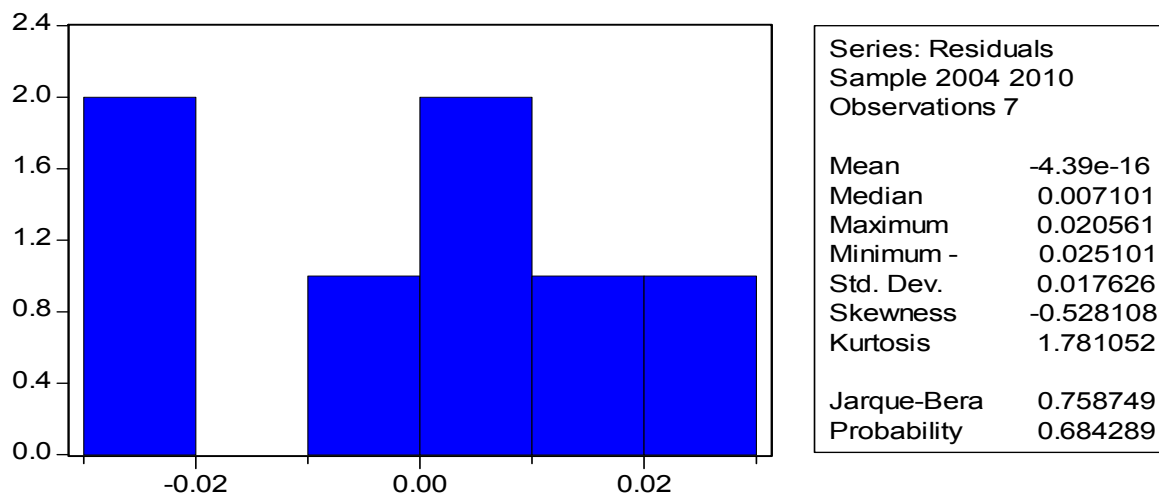
Sample (adjusted): 2004 2010

Included observations: 7 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM2(-1)	-0.228193	0.029352	-7.774411	0.0015
C	7.261528	0.350001	20.74714	0.0000
D(GINI(-1))	0.593592	0.115920	5.120713	0.0069

R-squared	0.951422	Mean dependent var	4.534286
Adjusted R-squared	0.927133	S.D. dependent var	0.079970
S.E. of regression	0.021587	Akaike info criterion	-4.535919
Sum squared resid	0.001864	Schwarz criterion	-4.559101
Log likelihood	18.87572	F-statistic	39.17100
Durbin-Watson stat	2.076960	Prob(F-statistic)	0.002360





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.676616	Probability	0.373606
Obs*R-squared	4.384758	Probability	0.111651

White Heteroskedasticity Test:

F-statistic	13.45267	Probability	0.070387
Obs*R-squared	6.749152	Probability	0.149753

Appendix 10. Government social spending and remittances**Government social expenditure and remittances**

Dependent Variable: SOC

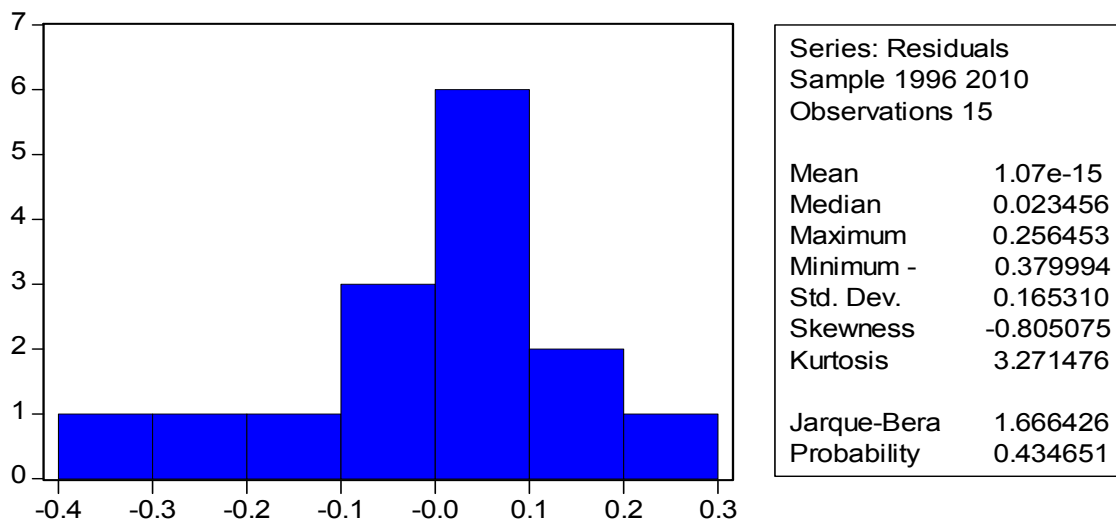
Method: Least Squares

Sample: 1996 2010

Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM	0.377474	0.176220	2.142064	0.0534
GOV	-0.971111	0.186083	-5.218689	0.0002
C	4.475033	0.992545	4.508644	0.0007
R-squared	0.827316	Mean dependent var		0.991434
Adjusted R-squared	0.798535	S.D. dependent var		0.397807
S.E. of regression	0.178555	Akaike info criterion		-0.430985
Sum squared resid	0.382582	Schwarz criterion		-0.289375
Log likelihood	6.232386	F-statistic		28.74553
Durbin-Watson stat	1.592161	Prob(F-statistic)		0.000027

Fitted values of social spending of Government



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.005365	Probability	0.400086
Obs*R-squared	2.511167	Probability	0.284909

White Heteroskedasticity Test:

F-statistic	1.260081	Probability	0.347645
Obs*R-squared	5.026812	Probability	0.284557

Appendix 11. Remittances and Education/Health

Dependent Variable: EDU_SA

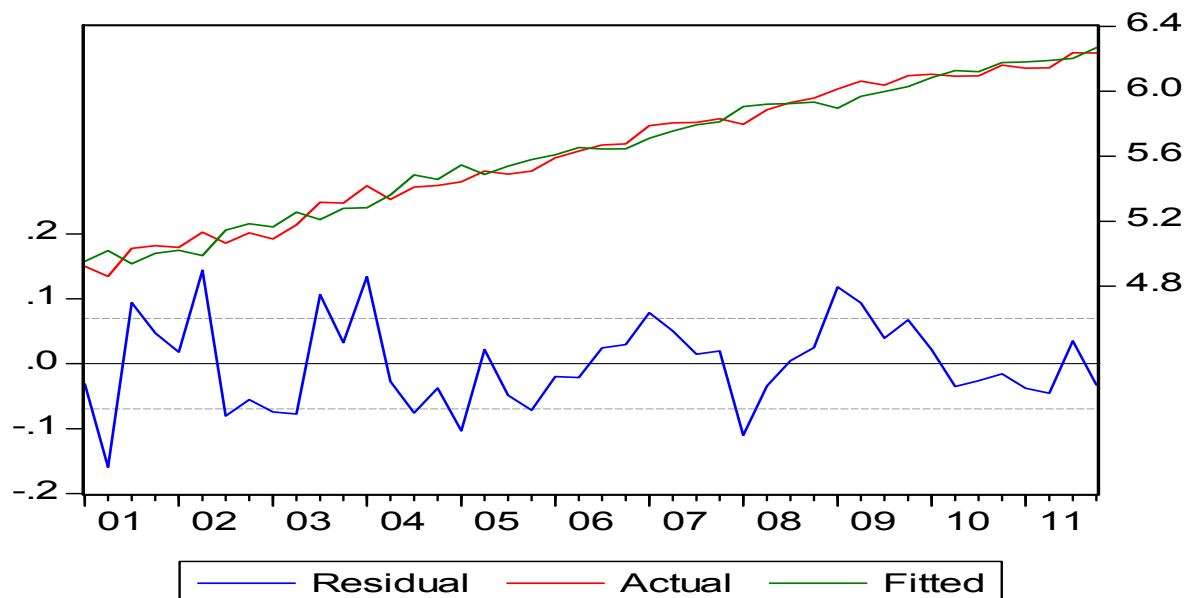
Method: Least Squares

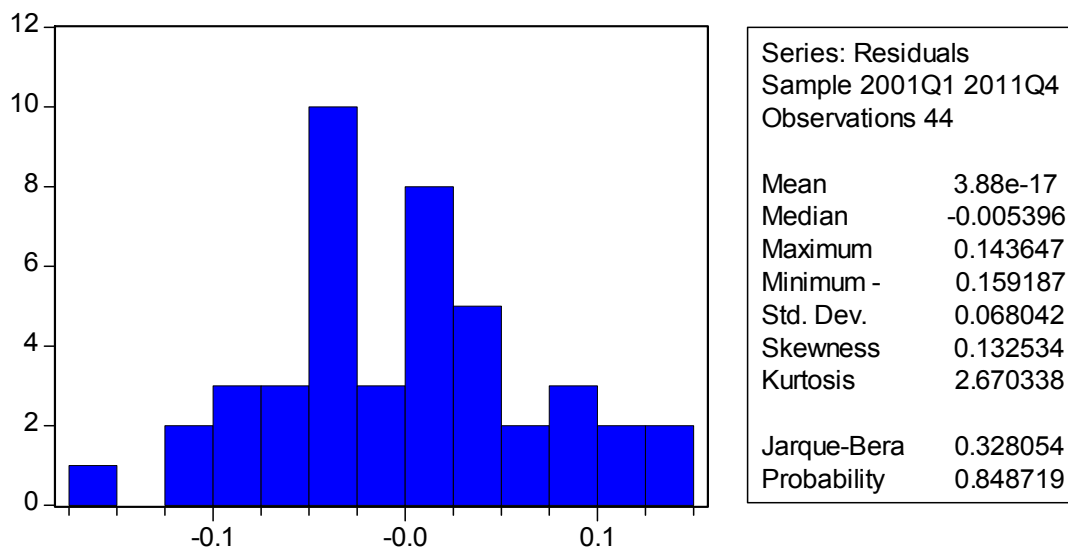
Sample (adjusted): 2001Q1 2011Q4

Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM_SA	0.107923	0.040973	2.634035	0.0118
C	0.556523	0.167332	3.325870	0.0019
EDU_SA(-4)	0.802338	0.066618	12.04391	0.0000

R-squared	0.972747	Mean dependent var	5.623779
Adjusted R-squared	0.971417	S.D. dependent var	0.412161
S.E. of regression	0.069682	Akaike info criterion	-2.424015
Sum squared resid	0.199077	Schwarz criterion	-2.302365
Log likelihood	56.32832	F-statistic	731.7053
Durbin-Watson stat	1.605236	Prob(F-statistic)	0.000000





Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.869328	Probability	0.427198
Obs*R-squared	1.877845	Probability	0.391049

White Heteroskedasticity Test:

F-statistic	2.205970	Probability	0.086148
Obs*R-squared	8.118344	Probability	0.087338

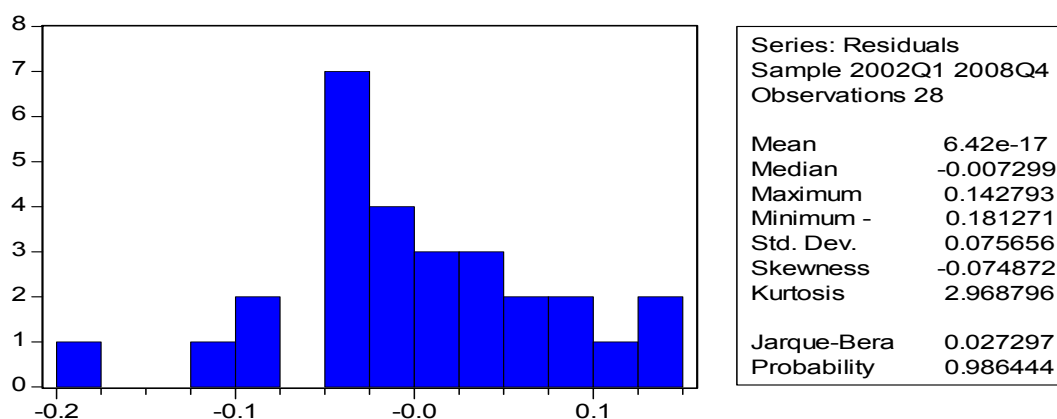
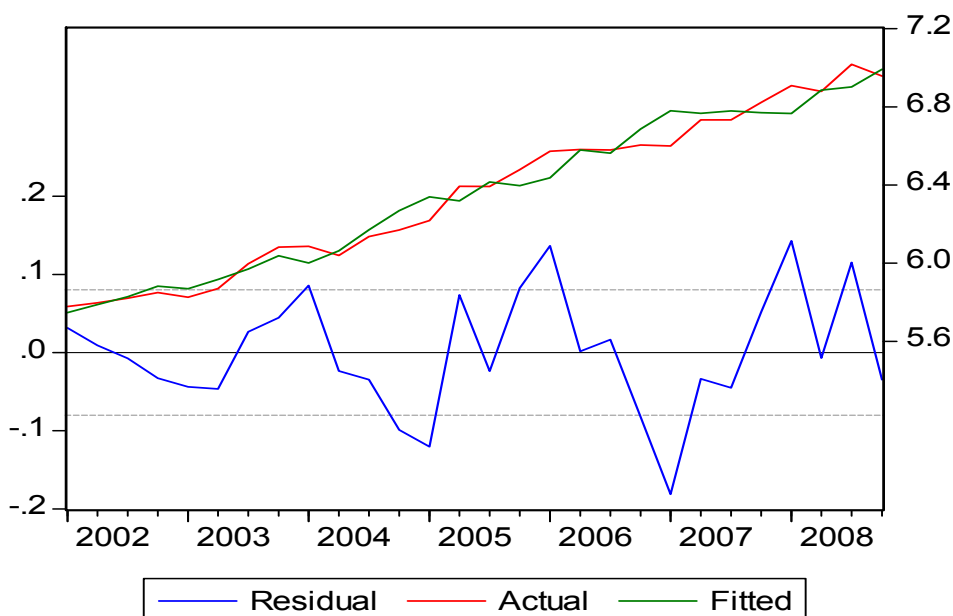
Dependent Variable: HEALTH_SA

Method: Least Squares

Sample: 2002Q1 2008Q4

Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM_SA(-4)	0.206429	0.078141	2.641757	0.0143
C	0.647546	0.353225	1.833241	0.0792
HEALTH_SA(-4)	0.733196	0.113091	6.483224	0.0000
DUM	0.487609	0.078023	6.249564	0.0000
R-squared	0.964454	Mean dependent var		6.354071
Adjusted R-squared	0.960011	S.D. dependent var		0.401283
S.E. of regression	0.080246	Akaike info criterion		-2.075887
Sum squared resid	0.154544	Schwarz criterion		-1.885572
Log likelihood	33.06242	F-statistic		217.0617
Durbin-Watson stat	1.452433	Prob(F-statistic)		0.000000



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.943091	Probability	0.404609
Obs*R-squared	2.211031	Probability	0.331040

White Heteroskedasticity Test:

F-statistic	0.916423	Probability	0.488683
Obs*R-squared	4.826525	Probability	0.437416
