Transmission Mechanisms of Monetary Policy in Georgia:

Evidence from VAR Analysis

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Abstract: The empirical study explores the monetary transmission mechanisms (MTM) in Georgia. The quarterly data are analyzed form 2000Q1 to 2012Q1. The work focuses on the interest rate channel, bank lending channel, and the exchange rate channel. The work mainly discusses how and through which channels the monetary authorities can impact the real economy and the overall prices. The investigation of MTM finds out that the exchange rate still remains the most powerful and effective channel in Georgian economy. The interest rate channel seems to be undeveloped. The bank lending channel is likely to have insignificant effects on the real economy. The effects of the monetary aggregates are partially supported by the results.

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Introduction

This empirical work studies the monetary transmission mechanisms in Georgia. The monetary transmission mechanisms (MTM) are channels through which monetary policy affects real economy (real GDP, inflation) of a country (Taylor, 1995; Mishkin, 1995). In the economic theory there are a lot of different views and opinions about the monetary policy transmission mechanisms. These views mainly differ in terms of placing the following macroeconomic variables in a framework: money, exchange rate, asset prices of financial institutions, interest rates, credits and deposits (Taylor, 1995).

The aim of this empirical work is to investigate the MTMs in Georgia and assess their effectiveness in affecting real economy. Although there are many MTMs in the monetary theory, the study focuses on the three main monetary channels: interest channel, exchange channel and, credit channel. In addition, the paper explores the effects of money supply shocks in the Georgian economy. It also must be noted that the study does not investigate other monetary channels such as expectation channel, wealth effect, and balance sheet channel. The reasons why I could not observe the validity of these channels are: insufficient data and undeveloped financial (stock) markets of the country. The study aims to answer the following research questions: Do monetary policy instruments have significant effects on real activities (output) and on the overall level of prices (inflation) in Georgia? Which MTMs are the most effective and reliable in the Georgian economy? What are the key links among the money supply, output and prices?

Moreover it is worth underlying that these questions are particularly considerable for the monetary policy. Hence, the research has been done mainly for the policy purpose.

It is important to mention that monetary policy plays very important role in the stabilization output and inflation not only in the developed countries but also in the developing and transition economies. Therefore monetary policy has always been at the center of the macroeconomic policymaking. In order to conduct an effective and successful monetary policy, "the monetary authorities must have an accurate assessment of the timing and effect (magnitude) of their policies in an economy. Thus, understanding the mechanisms through which monetary policy affects economy is crucial in monetary policymaking" (Mishkin, 1996).

Monetary and fiscal policies are the main economic tools for implementing and conducting the overall economic policy in a country. Georgia is not an exception. Presently, these policies play vital roles in the Georgian economy. Moreover Georgia is a developing country which is still its transition stage from command to market economy and that is why governmental interventions with different policy tools such as interest rate, taxes, exchange rate, etc. are common and often necessary. Taking into account these facts mentioned above it is very important and interesting to investigate and how and by which instruments and mechanisms monetary authorities can intervene and influence economic activities in order to achieve economic goals (low inflation, low unemployment etc.) in Georgia. In addition, recently monetary authorities adopted inflation targeting as a monetary policy framework (Bakradze and Billmeier, 2007). In this regard, the reliability and effectiveness of the MTMs in Georgia became one of the most subtle and relevant issues for monetary policymakers because inflation targeting can not be implemented properly and be successful monetary policy regime if the MTMs do not work well and could not transfer monetary decisions into real economy. In other words, if the

MTM in an economy do not work properly, it is practically impossible for monetary authorities to achieve the predetermined inflation target on time. So, the IT monetary framework becomes unsuccessful with the absence of the effective MTMs (Bakradze and Billmeier, 2007).

It must be highlighted that "the actual outcome of any policy change will depend on factors such as the extent to which it was anticipated, business and consumer confidence at home and abroad, the path of the fiscal policy, the state of the world economy, and the credibility of the monetary policy regime itself" (Bank of England, 2001). The present research work does not take into account the possible and relevant factors affecting the result from any policy changes related to the fiscal shocks, expectations, confidence, and external shocks (balance of payment effects). They are assumed to be constant in the investigation.

A VAR methodology is applied in the present study for detecting the responses of the inflation and output on the monetary shocks. The most important finding is that the exchange rate channel is still dominant transmission mechanism in Georgia. The validity of the interest rate channel is not supported by the investigation. As for the bank lending channel, it also seem not to have enough effectiveness to influence the real macro variables significantly. It also must be highlighted that the empirical study concentrates on the short and medium term effects of monetary shocks.

The paper is organizes as follows. There are four chapter in the work. In the first chapter I briefly make a review about the theory of the MTM and discuss the relevant literature. In the second chapter provides basic information about the Georgian economy and at the end I argue about the actual and potential impedimental factors of the MTM. The third part presents the research methodology and the data. The last chapter is devoted to the empirical results.

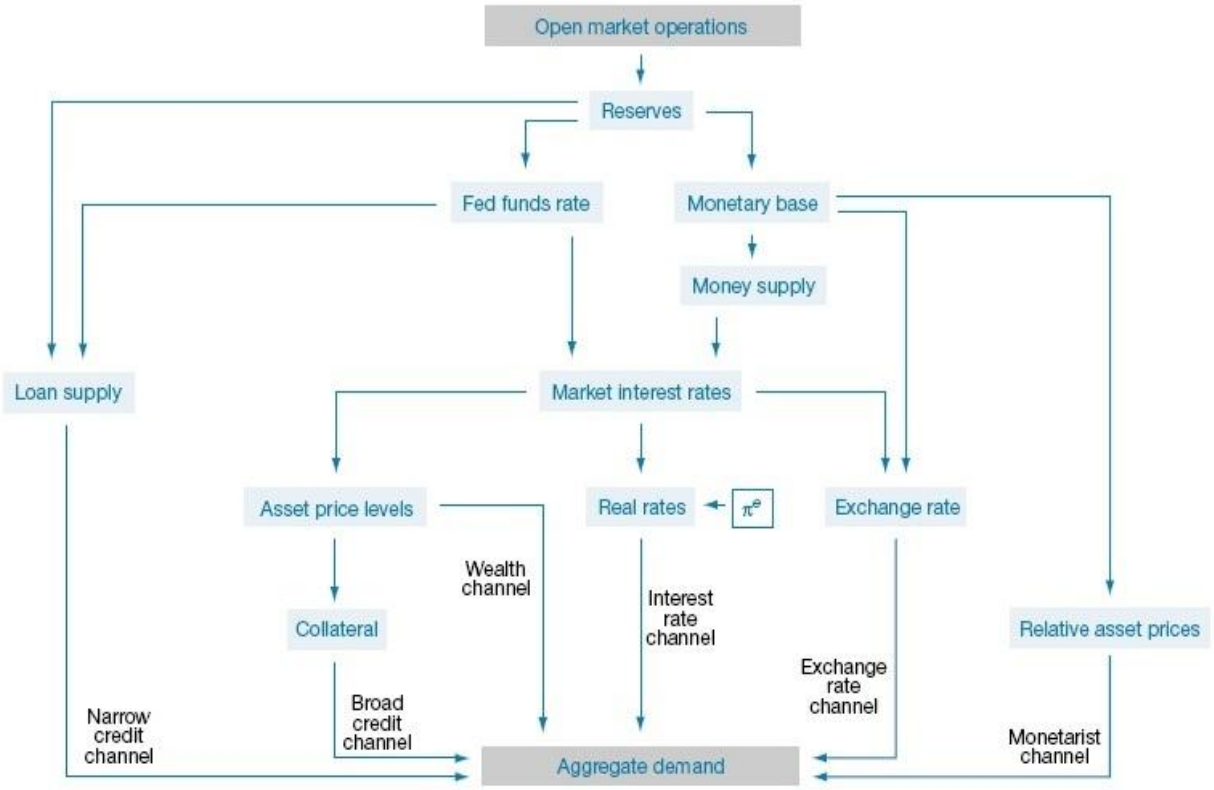
Chapter 1. The Theory and Empirical Research Review of the Monetary Transmission Mechanism

In chapter is devoted for presenting the theory and the literature review of the MTM. It consists of two parts respectively. In the first section, I discuss and briefly develop the theory of the MTM. The discussion basically is based on the literature written by Frederic Mishkin in 1996 where he perfectly explains the major channels on the monetary transmission and considers their importance for an economy. As for the second part, it is dedicated to the literature review of the MTM. It must be underlined that the review basically concentrates on the empirical studies accomplished in the developing and transition countries.

1.1. The Theory of the Monetary Transmission Mechanism

The monetary transmission mechanism (MTM) describes how monetary policy-induced changes in the interest rate or money supply impact on the key macroeconomic variables such as inflation, employment, and aggregate output (Ireland, 2008). In other words, the MTM is a channel through which monetary policy actions affect real economy. In fact, the MTM is the most important issue for monetary authorities because it gives the answer to the essential question: How will an economy react on a monetary policy decision? The general picture of the MTM is given in the Figure 1. The figure 1 shows that there are several channels through which the central bank (CB) can impact the aggregate demand (output). From the figure it can been seen that CB has a few policy instruments for stabilizing an economy through affecting the demand side of it. These policy tools are: money supply (reserve money (see Glossary), base money), exchange rate, and the short run interest rate (FED fund rate). Besides the CB possesses less frequently used instruments such as the reserve requirements and discount rate.

Figure 1. General Scheme of the Monetary Transmission



Source: Kuttner, Mosser (2002), FRBNY Economic Policy Review, p.16

Mishkin (1995) clearly explains the various monetary policy channels by which monetary policymakers conduct their policies and try to attain the main economic goals (low inflation, sustainable growth, low unemployment). He claims that monetary policy can be an effective device to stabilize (minimize economic fluctuations) an economy and identifies the main tools (channels) of a central bank through which it can achieve this goal. These channels are:

1. The interest rate channel (IRC);
2. Other asset price channels (including exchange rate channel, stock market prices, real estate prices);

3. The credit channel (CC) (including bank lending channel and balance sheet channel).

The interest rate channel (IRC) is the most relevant channel in the monetary theory and practice. It is based on the traditional Keynsian IS/LM model (Mishkin, 1996). This mechanism can be described by the following schematic form:

$$M \Rightarrow i \Rightarrow I, C \Rightarrow Y$$

where M indicates money supply, i is the real interest rate, I represents investment spending, C is consumption and Y – output.

The IRC is the most commonly discussed issue because it plays the central role in the transmission of the monetary impulses into an economy. It works the following way: an increase in the money supply lowers the real interest rate which stimulates investment and therefore GDP (Mishkin, 1996). In addition consumption can also be affected by the interest rate (short-term) movements as it influences the future price of consumption (Bank of England, 2001; Mishkin, 1996). Besides the short term interest rate has an income effect through the lending or borrowing activity of households' consumption decisions (Taylor, 1995).

It must also be noted that the IRC operates under the assumption of sticky prices in the short run (Ireland, 2008). Furthermore, this channel has some impact on the expectations and confidence of economic agents. But the latter effects are out of the scope this study.

The exchange rate channel becomes more relevant resulting from the internationalization and globalization of economic relations (Mishkin, 1995). This channel works through the net export. The schematic representation of the exchange rate mechanism can be written the following way:

M => i => E => NX => Y

Where NX is the net export and E indicates the exchange rate. The idea behind this channel is as follows: when a central bank raises (or reduces) the money supply, it leads the nominal interest rate to fall. The real interest also drops. Lower real interest rate causes falling in the demand for the national currency dominated assets (because they yield less return). Consequently, the demand for a national currency decreases which leads depreciation. This depreciation makes domestic goods cheaper than foreign ones. As a result, exports start to increase faster compared to imports which leads net export to raise and therefore GDP grows (Mishkin, 1996).

The subsequent channel of the monetary policy is credit channel. There are two main channels by which a central bank impacts an economy through credit markets (Mishkin, 1995). They are the bank lending and the balance sheet channels. The bank lending is based on the fact that the financial institutions, especially commercial banks, play a very important role in conducting monetary policy.

Two transmission channels can be underlined from the other asset price channels besides the exchange rate one: equity price channel and wealth effect (Mishkin, 1996). The equity price channel operates through Tobin's q theory and has the following schematic form:

M => Pe => q => I => Y

Where Pe represents the equity prices and q identifies Tobin's q variable (see glossary). The idea behind this channel can be explained the following way: when the central bank increases money supply, interest rate falls and bond prices rises. This leads equities to become more attractive compared to bonds and therefore the demand for stocks raises and prices increase for them as well. This causes Tobin's q to increase also. And as a consequence, investments start to rise

because the market value of firms becomes higher than the replacement cost of capital (Mishkin, 1996),

As for the wealth effect, it works through consumption and is based on Modigliani's life cycle model (Mishkin, 1996). The general scheme of this channel has the form:

M => Pe => wealth => Y

The idea behind this channel is that when prices of equity rise resulting from the expansionary monetary policy, economic agents (individuals, firms etc), possessing stocks, have more available financial funds which leads spending to increase and it has positive effect on output.

It is relevant to note that these two lastly discussed channels are heavily dependent on the level of development of the domestic financial (stock, bond etc) markets. That is why in case of Georgia these type of transmission mechanisms are not worth to studying because the financial markets are weakly developed in the country (Bakradze and Billmeier, 2007; Samkharadze, 2008). The research study, as it is mentioned above, does not consider other asset price channels.

Some economists and researchers (Dabla-Norris and Floerkemeier; Mayes, Chow) highlight the expectation channel of the MTM. In fact, the monetary policy can affect the expectations of economic agents and change their behavior and decisions through it (Bakradze and Billmeier, 2007). For instance, change in interest rate can affect the expected future profit, exchange rate, sales, income etc. (Samkharadze, 2008). The issue is that the effectiveness of the expectation channel highly depends on the credibility of the central bank (Dabla-Norris, 2006; Bakradze and Billmeier, 2007) and in case of Georgia this channel is not likely to work properly because the National Bank of Georgia has not gained enough confidence yet in order to trust and

use this mechanism (Samkharadze, 2008). That is why I decided not to study this channel. Besides it is quite difficult to model the transmission mechanism through expectations in practice for investigation purpose.

1.2. Literature Review

This section provides the overview of the empirical studies about the monetary transmission mechanisms (MTM) in different countries. I basically focus on developing and transition countries as I believe that considering the empirical evidences of the MTM in these economies are more relevant before observing and working on Georgia's MTMs. It is important to note that recently a number of empirical studies were devoted to exploring the transmission mechanisms in different countries. Many researchers got interested in this monetary issue, especially in developed countries.

Mishra, Montiel, Spilimbergo (2010) provide a discussion about the difference of MTM between advanced developed and emerging countries and consider the MTM in low income economies. The relevance of this study is that they discuss and analyze various aspects and factors of the MTM in advanced and emerging countries in detail. The authors identify institutional and environmental (mainly financial) factors that potentially can impact and determine the reliability and the effectiveness of the MTM in developing economies. These reasons are: size of the financial sector, independence of the CB, the quality of the institutional and regulatory environment, money and interbank market development, development level of the domestic secondary markets of the securities, stock market size and liquidity, efficiency of the real estate market, competition in the domestic banking sector, financial integration and exchange rate flexibility. In addition, they compare advanced and emerging economies using the criteria listed above and find the significant differences between them. Based on the comparison

they make the following considerable conclusions: In low income countries financial markets (money, capital, stock, etc) can not intermediate and allocate funds appropriately and therefore the major MTMs (IRC, CC, and asset price channel) are impaired; Weak and relatively undeveloped institutional environment in emerging countries significantly reduces the role of the financial markets and this fact weakens the bank lending channel; Each monetary transmission channel is highly specific and vary across countries; the domestic institutional environment and development level of the domestic banking sector are significant forces of determining the effectiveness and reliability of the monetary transmission in low income counties (LIC). The analysis is quite considerable for Georgia as it can seem from this study the potential problems related to the Georgian monetary system regarding the validity of the MTM.

Juks (2004) provides a summary and discussion of the MTM in developing and developed countries. He briefly makes a theoretical overview of the MTM and discusses the empirical evidences done in different countries. The author focuses on Euro Area and South American developing countries. The discussion presented by Juks concentrates on the interest rate (IRC), credit channel (CC), and other asset price channels. Besides he argues that effects of different channels on prices and the aggregate output are very complicated and issues as there is the close interaction between them. The main findings of the research are: the IRC and the CC are not dominant monetary policy channels in the euro area; the IRC and the exchange rate channel have more prominent role relative to the CC and asset price channel. On the other hand in developing countries like Chile, Mexico, Peru the IRC plays the relatively important role in the transmission process. But there are economies (Poland, Brazil, Slovakia) where the role of the IRC is limited. The author states that the validity and the effectiveness of specific channel varies across countries and depends on the structure of an economy.

Samkharadze (2008) investigates the MTM in Georgia. He analyses monthly data within 2002-2007 period. The VAR approach is used to observe the MTM in the country. He states that the exchange rate channel is still important in determining inflation in Georgia and the interest rate has significant effect on the GDP and inflation. He also finds that the credit channel is not a strong and effective mechanism in Georgia and adds that the validity of this mechanism is weak and partially supported by the empirical results. Moreover he highlights that national currency dominated bank loans have positive impact on output. On the other hand the total bank loans are insignificant in affecting GDP in Georgia. At the end of his study he examines the money supply shocks and concludes that monetary aggregates (both narrow and broad money) have positive and highly significant impact on the real output and inflation. The relevance of this study for my work is strengthened by the fact that the author uses the same methodology and and observes the same macroeconomic shocks (monetary),

Bakradze and Billmeier (2007) examine whether Georgia is ready or not for adopting the inflation targeting (IT) monetary framework. They also checked how effectively operate the MTMs in the country. They used quarterly data from 1999Q1 to 2006Q4. A VAR analysis is used to detect whether the MTM are active or not. In other words they checked strengths of the links between monetary policy tools and key macroeconomic variables (GDP, inflation). The main findings of their empirical study are: monetary aggregates have significant effect on CPI in Georgia; the bank lending channel is an working mechanism and is effective in influencing prices in the country; the reserve money and M2 money aggregate have the strongest effects on the inflation level. Although the objective of the empirical study is different from the aim of my work, the investigation made by Bakradze and Billmeier is very informative and important. It

perfectly explains the current and potential problems existing in the Georgian monetary system. In addition it uses the same econometrical method for research.

Dabla-Norris and Floerkemeier (2006) study and present the MTM in Armenia. They used monthly time series data for 2000-2005. A reduced form VAR analysis is used in this investigation. In fact this empirical work considers only effects of three policy instruments in Armenia. These policy tools are: interest rate, exchange rate, and money supply. The authors concluded that the capability of the monetary policy to influence economic activities and inflation are limited in Armenia. Especially the interest rate channel is very weak and unreliable. On the other hand the exchange rate channel seems to be more effective (compared to other channels) in determining inflation. This empirical study is quite considerable as Armenia and Georgia have several common features in terms of economic history, location, size of an economy, developmental level of the financial market (both countries have rudimentary financial systems).

Catik, Martin (2012) investigate the changes of the MTMs in Turkish economy resulting from the radical reforms done in the monetary system in 2000. They use different method of VAR analysis called the Threshold VAR. Monthly data are analyzed for this research. They find that the MTMs sharply changed in Turkey after the reforms. This evidence supports the idea that the MTM often change and therefore each monetary channel needs to be observed regularly. The authors estimate a simple 5 variable (endogenous) TVAR model and conclude that Turkish economy experienced a huge progress after reforms because it started to response to the monetary shocks similar to the modern economies.

Kubo (2007) study the MTM in Thailand. He focuses on the IRC, CC and international channels. The author uses the structural vector autoregressive (SVAR) methodology for estimations. He finds that the Bank of Thailand (BOT) actively and successfully used the CC channel in order to impact consumption. He also states that the MTM in Thailand has strong international dimensions (the country is very open, export-oriented and export dependent). The relevance of this work comes from the fact that the BOT operated under the IT monetary regime and it is clearly be seen how important are MTMs' reliability and validity during the IT framework.

Mayes (2005) presents a discussion about the MTM in Baltic countries. The relevance of this work can be seen in terms of similarity of Georgia and Baltic transition, and developing as well, economies. He mainly makes statistical analysis with the financial, external and structural indicators. The author states that the bank lending channel is very weak and undeveloped and it needs the development of the financial sector at certain level to become it an active channel. He also suggests that parallel to the development of the financial markets (stocks, bonds, derivatives) the importance of the exchange rate will be reduced relative to the IRC. Moreover Mayes asserts that the best defense is highly developed financial markets to avoid deteriorating effects from the external shocks.

Chow (2004) uses a VAR methodology to explore the MTMs in Singapore. He uses impulse reaction functions and the variance decomposition tools to examine the MTMs in this state. His main findings are: output immediately and significantly reacts to the monetary shocks imposed by the CB; the exchange rate movements are more important source for explaining output fluctuations than the interest rate shocks; the IRC appears to be weakly developed in the country.

Arnostova and Hurnik (2005) explore the effects of monetary shocks in Czech Republic. They analyze quarterly data from 1994 to 2004 and from 1998 to 2004 (two samples). VAR analysis is used in the empirical work. The main findings of the study are: unexpected monetary actions have significant effect on output but not on the prices; the exchange rate responses depend on the data sample. NEEDED expansion Why is it considerable?

Citu (2003) presents the empirical study about the MTM in New Zealand. The importance of this work is strengthened by the fact that New Zealand, like Georgia, is a small and open economy (though there is a big income gap between these countries) and therefore it is worth considering the results of this investigation. Besides, the author, in his paper, develops a VAR analysis using Granger causality, variance decomposition and impulse response function methods. The study aims to capture the effects of unexpected monetary policy changes related to the interest rate, the exchange rate and the money supply. The key findings can be summarized the following way: investment component of the GDP responds stronger than other GDP components; the exchange rate channel is the most powerful transition mechanism in New Zealand; monetary aggregates (M1 and M2) have immediate and significant impact on output and inflation.; prices react more sluggishly caused by the rise in short-term interest rate in the country.

Chapter 2. Background Information of Georgian Economy

This chapter is devoted for providing some important information about Georgian economy. This part of the study basically concentrates on the monetary sector of the state. The chapter consists of the three parts. In the first section I briefly make an overview about the economy of Georgia. The goal of this part is to give the basic information to a reader about the real, monetary and external sectors of the country. In the second subsection I focus on the monetary sector of the economy and discuss the legal and macroeconomic frameworks of the National Bank of Georgia. In the final section of the chapter I discuss the impedimental factors that can mitigate the effects of monetary policy actions in the country.

2.1. Brief Overview of the Georgian Economy

Georgia, as a developing country, has own specific characteristics which should be considered while assessing the monetarty trasnmission mechanisms. Georgia is a small and open (trade to GDP ratio – 90.6 percent) market economy. The real GDP growth rate was approximately 6.38 percent in 2010 (see Table 1). In addition, the real GDP growth over 2002 - 2010 period averaged 6.53 percent annually which can not be rated as a good economic perfomance for Georgia as a transition country with the low level of income. And unemployment was high (16.3 percent) last year. As for the monetayr statistics, the monetarization coeficient (M3-GDP ratio) was 26 percent, whereas private sector credit amounted about 30.1 percent in 2011. The margin (spread) between lending and borrowing rates, though decreasing slowly, is still quate high and it amounted 9.82 percent in 2011. Moreover the price of money (interest rate) in the economy remains quite high. Presently, it is approximately 18 percent. Georgia's interational position is undesirable. Imports dominate over exports (import is approximately twice more than export). Net export and CA deficit were -2.68 billion USD and 6.42 percent of GDP respectively in 2011 (see table1). The main sources of financing CA deficit were

investments (FDI) and loans from abroad. In addition, the FDI is characterised as the most volatile variable in the economy and it amounted about 973 million USD in 2011 (see table 1). The NBG often intervenes in the foreign exchange markets to influence on the nominal exchange rate. As a consequence, the exchange rate can be featured as one of the least fluctuated macroeconomic variable in the economy (see table 1).

Table 1. Basic Macroeconomic Statistics of Georgia

variable	2003	2004	2005	2006	2007	2008	2009	2010	2011
Real GDP growth (%)	11.09	5.85	9.61	9.38	12.35	2.41	-3.8	6.38	
Exchange rate (GEL/USD)	2.08	1.83	1.79	1.72	1.59	1.67	1.68	1.77	1.64
Trade-GDP ratio	57.63	60.49	64.87	68.96	69.53	67.90	57.46	64.40	90.6
CA deficit (% of GDP)	9.62	6.92	11.07	15.15	19.75	22.78	11.24	11.44	6.42
FDI (mill. USD)	334.6	492.3	452.7	1,170.1	1,750	1,564	658.4	814.5	973.3

Source: Databeses of the National Bank of Georgia.

2.2. The Legal and Macroeconomic Frameworks of Georgia's monetary system

The main monetary institution of the state is the National Bank of Georgia (NBG). It was established in 1991. But at that time its functions were not well determined. In 1995 Georgia adopted the Organic Law on the National Bank of Georgia which was enacted in the next year. Actually, the functions, authorities and responsibilities were clarified by this law. The NBG is independent in conducting monetary policy. It is also responsible for managing the international reserves. The NBG also serves the government as a fiscal agent (mainly through the common budget account). In addition, it has a few macroeconomic objectives. They are: price stability, sustainability of the national currency's purchasing power parity and ensuring stability of the financial and credit markets. It is also worth noting that "the NBG intends to conduct monetary policy to provide a noninflationary supply of money and foster a gradual increase of

monetization of the economy, consistent with economic growth and demand for money" (Bakradze and Billmeier, 2007).

The legal status of the NBG is the essential issue (Bakradze and Billmeier, 2007). In this respect, the NBG has a sufficient independence from the law about the National Bank of Georgia.

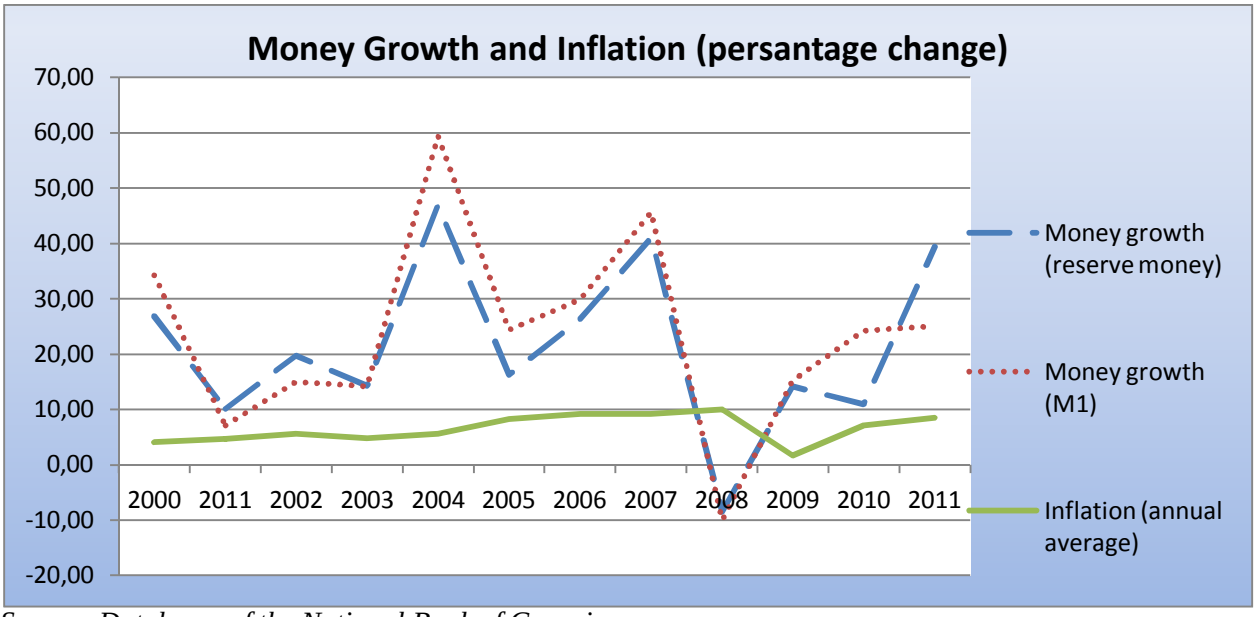
The National Bank of Georgia possesses sufficient policy instrument in order to affect prices and the real economy and attain certain economic goals. The major following policy tools can be underlined: 1. Open market operations; 2. Foreign exchange intervention; 3. Minimum reserve requirements for the national and foreign currency; 4. Discount rate; 5. Issuance of the overnight loans with overnight daily interest rate.

At the end of 2010 Georgia opted inflation targeting regime as a monetary policy rule. The major monetary institution of Georgia, the NBG, started to set and publicly announce the medium-term inflation target. Accourding to the Organic Law „On the National Bank of Georgia", the first goal of the NBG is to ensure price stability in the country. The priorities of the monetary and foreign exchange policies must be aimed at meeting the medium-term target of the CPI inflation. For 2011-2013 years inflation target is defined at the level of 6 percent. It must be noted that inflation has always been one of the most vulnarable and important economic problem in Georgia. During the last seven years the average infaltion was 7.72 percent (see table 2). So, high inflation is still a problematic issue in the country.

While conducting its monetary policy, the NBG measures some indicators of inflation. In this respect, the most important measurements are: monetayr aggregates and the exchange rate. Usually, the NBG monitors various types of money aggregates. For instance the reserve money,

currency in circulation, and M1 aggregate. They are basically used to evaluate and gauge the inflationary pressures in the economy (Bakradze and Billmeier, 2007). The graphical representation of the relationaship between inflation and monetary aggregates is given in the figure 2 where it is noticeable that there is a positive correlation among these variables.

Figure 2.Money Growth and Inflation in Georgia



Source: Databeses of the National Bank of Georgia.

As for the exchange rate of the national currency (Georgian Lari, GEL) the NBG pays sizable attantion to stabilize it, realizing that the exchange rate channel is likely to be the dominant one in the economy.

In the monetary policy transparency of the CB plays a crucial role. In this regard Georgian economy is not an exception. In order to raise transparency and gain additional trust of the public, the NBG regularly publishes various types of monetary, financial and also legal documents (press releases, data analysis, economic reviews, etc). They mainly contain

information about the NBG's activities. In addition, the bank permanently, with high frequency, publishes different types of statistical and financial (analytical) data.

2. 3. Impedimental factors of the MTM in Georgia

The effectiveness of the monetary transmission mechanism can be substantially reduced by several factors. In generally, the operation of the MTMs constantly varies and depends on the different economic conditions and factors. Basically, a capacity of a monetary transmission channel is influenced by the following conditions: health, size and concentration of the financial system, development level of capital and money markets and structure of the economy (Dabla-Norris and Floermeier, 2006).

In Georgia there exist some economic conditions that actually hamper the monetary policy actions. In this section these potential impedimental factors are discussed and I argue for this reason some MTMs are likely to be ineffective.

In fact, Georgian economy is characterized by the features that create such an economic environment where it is hard to be convinced that the interest rate (IRC) and the credit channels (CC) work properly. First of all, in this respect, weakly developed financial intermediation should be noted. The bank asset-GDP ratio was 52.33 percent in 2011 (see table2) which reflects the low developmental level of financial system in the country compared to other transition economies. In spite of the fact that this indicator increases over time with high speed, still the financial markets are feeble. And for this reason the MTMs are harmed by them (Bakradze and Billmeier, 2007; Samkaradze, 2008).

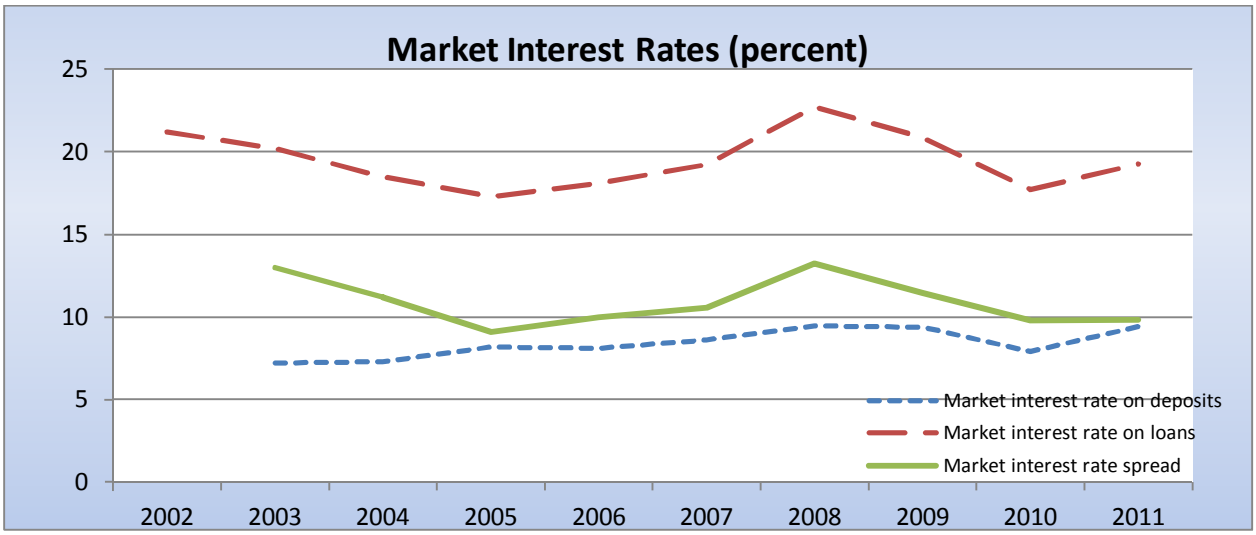
Table 2.Major Financial Sector Indicators of Georgia

Indicator	2003	2004	2005	2006	2007	2008	2009	2010	2011
M2/GDP (%)	6.19	8.72	9.50	10.68	13.32	10.48	12.96	14.24	15.61
Bank Assets -GDP ratio (%)	15.60	17.27	21.93	30.67	42.40	46.49	46.20	50.81	52.33
Bank deposits--GDP ratio(%)	7.23	9.12	10.11	13.49	16.84	16.89	19.10	23.58	24.42
Bank credits to private Sector /GDP (%)	8.84	9.47	14.63	19.18	26.55	30.59	28.00	29.28	31.03
Average real deposits rate	4.11	1.94	0.15	-0.81	0.01	-0.54	7.21	1.06	0.08
Average inflation (12 months)	4.79	5.66	8.25	9.16	9.25	10.00	1.73	7.11	8.54

Source: Databeses of the National Bank of Georgia.

Additional factors that must be considered regarding the impedimental effects of the monetary transmission channels in Georgia are: the level of domestic credits in national currency and the interest rate margin (spread). The level of the national currency dominated loans is also quite low relative to other developing countries. It is about 33 percent of the total domestic loans. As for the interest rate spread, although it decreases gradually, it reamins relatively high. At the end of 2011 it equaled to 9.8 percent (see figure 3). The latter indicator reflects two important feature of Georgian economy; first, commercial banks are not effective by having problems in credit risk assessment (Dabla-Norris and Floermeier, 2006) and second, there is a weak competition among financial institutions (mainly commercial banks).

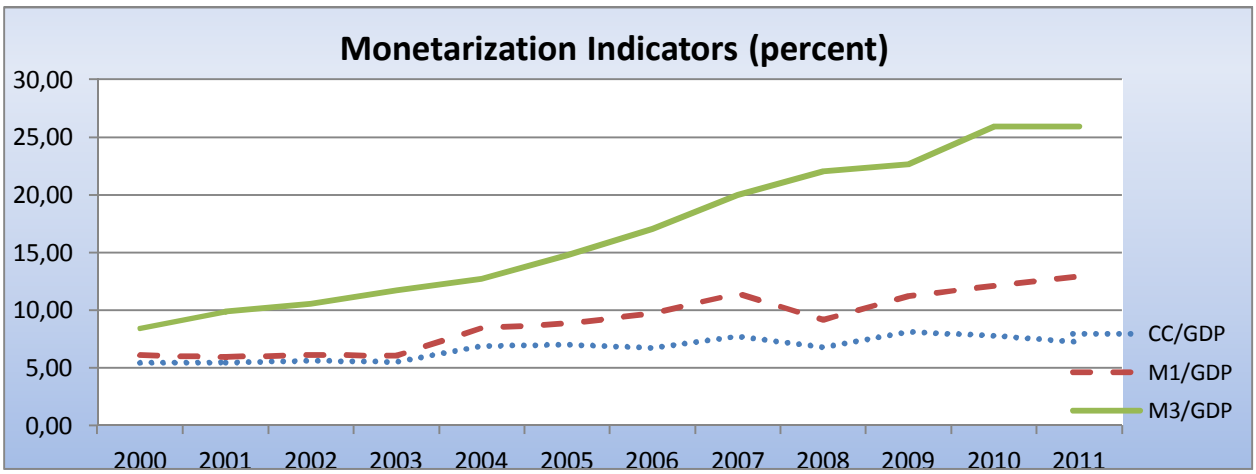
Figure 3. Deposit Rate, Lending Rate and Interest Spread in Georgia.



Source: Databeses of the National Bank of Georgia.

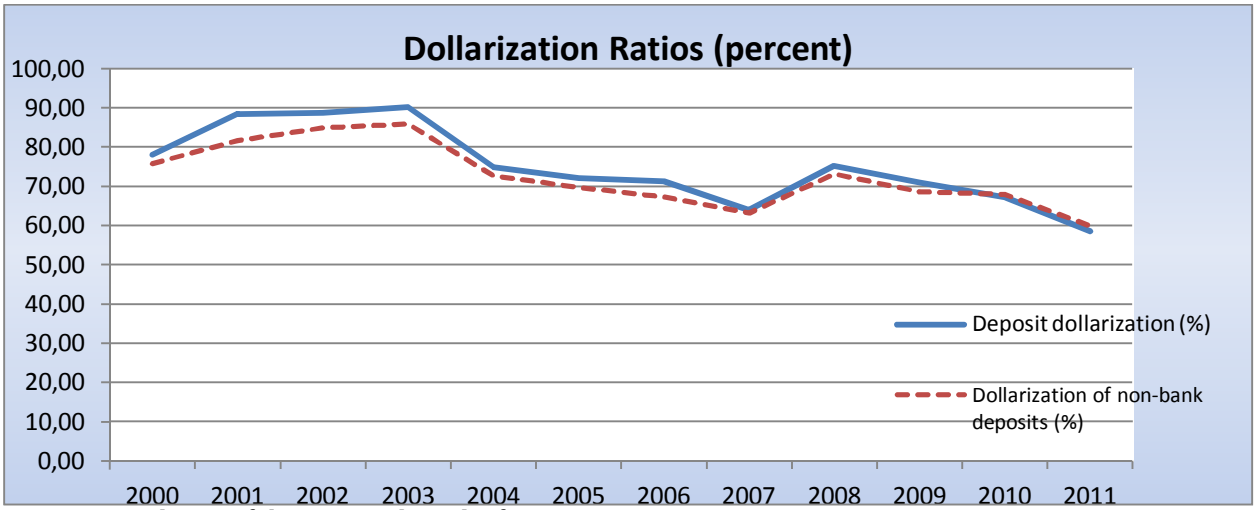
Monetarization and deposit dollarization indicators can also have negative impact on the validity of the MTMs in Georgia, particulartly on the IRC and the CC (Bakradze and Billmeier; Samkaradze, 2008). Monetarization level (M2/GDP) is at the low level in the country as well. It was 15.61 percent at the end of 2011 (see table 4).

Figure 4.Monetarization Indicators in Georgia.



Source: Databeses of the National Bank of Georgia.

Figure 5.Deposit Dollarization Ratios in Georgia.



Source: Databeses of the National Bank of Georgia.

The figure 4 illustrates different monetarization indicators. As it is shown, broadest measurement (M3-GDP ratio) is equivelent to 26 percent. As for other ones, they are at the very low level 13 and 8 percent respectively. The low level of monetarization can have harmful effects on the monetary channels, especially for the IRC (Dabla-Norris and Floerkemeier, 2006).

As for the dollarization of deposits, it amounted approximatelly 60 percent (see figure 5) which is quite high for Georgia as a small economy. In spite of the fact, this indicator gradually decreases over time, it remains at the high level. In case of high deposit dollarization, the borrowers become less sensitive (elasticity changes) with respect to the interest rate and consequently the IRC is hampered by it (Samkaradze, 2008).

Besides the facotrs mentioned above there are additional conditions (less relevant but worth considering) in the country that can mitigate the effects occuring from the monetary shocks. For instance, shadow markets in financial sector, low level of outstanding government securities (basically treasury bonds), limited interbank ativities, low level of domestic credits in the national currency and the elasticity between the interest rate and the bank credits.

A shadow economy especially in the financial sector can significantly damage the MTMs in the state, particularly in a transition country. This effect mainly works through the credit channel because economic agents involving in the informal transition are less sensitive to the interest rate changes (Dabla-Norris and Floerkemeier, 2006).

Low level of outstanding governmental bonds and limited interbank activities are features of the Georgian economy. These facts can also potencial become impedimental forces in the monetary trasmission process as they limit the power of the NBG to influence on the market interest rate (Bakradze and Billmeier, 2007).

Equally important characteristic of the Georgian economy is gap of the growth rates between the bank assets to GDP and the loans to GDP ratios. In Georgia the former ratio grows faster than the domestic credits to GDP ratio (see table 2). This fact reflects some problems in terms of providing funds to the real sector because commercial banks try to acquire their assets from the different sources than from the giving loans to the real industries (Samkaradze, 2008).

Chapter 3. Background of Empirical Analysis

In this chapter I briefly provide the necessary information about the empirical methodologies and data that are used in the investigation. The chapter consists of the two parts: research methodology and data description. In the research methodology section I describe which econometrical methods and models are used in the research. As for the second part, it presents a description of variables of the data analyzed in the study.

3.1. Research Methodology

The vector autoregression (VAR) econometric methodology is used in the study. Actually, a VAR analysis is a widely applied estimation method in macroeconomic time series analysis. “A VAR is an n-equation, n-variable linear model in which each variable is a in turn explains by its own lagged values , plus current and past values of the remaining n-1 variables” (Stock and Watson, 2001). A VAR is a statistical toolkit that perfectly captures the dynamics of time series variables. It is particularly useful for forecasting macroeconomic data and for policy analysis. Moreover, VAR methodology is reliable and credible approach and it is quite easy to use and interpret (Stock and Watson, 2001).

The general formula representing a VAR approach can be written the following way:

$$Yt = A(L)Yt\text{-}1 + B(L)Xt + \varepsilon t$$

Where Yt identifies a vector of endogenous variables, Xt is a vector of exogenous ones and εt represents a vector of structural shocks. In fact, all models introduced in the present empirical work including the baseline model are based on this equation.

The baseline model contains 6 endogenous variables. They are: real GDP (Yt), the consumer price index (Pt), the lending rate (it), the money aggregate M1 (M1t), and the real effective exchange rate ($neer_t$). Hence, the equation of the endogenous variables is:

$Yt = [yt, pt, it, M1t, neer_t]$

In VAR analysis the ordering choice is important and can change the results that is why my ordering choice is based on the degree of endogeneity of variables (the same method was used by Dabla-Norris and Floerkemeier (2006) for Armenian economy and by Bakradze and Billmeier (2007) for Georgian economy. I follow their logic and I assume that the real GDP adjusts with less speed compared to the CPI. There is a suggestion that in developing countries prices are more flexible and adjust (Dabla-Norris and Floerkemeier, 2006). As for the ordering of the policy variables, I assume that exchange rates adjest quicker than other variables and therefore it is ordered last. With the same logic I make ordering of the rest of variables. So, the ordering process highly depends on the present economic situation.

In addition the baseline model includes some exogenous variables. They are descussed more detailed in the next section.

It also must be noted that I use the baseline model for getting the preliminary results and afterwards change it by adding other variables in order to observe the effects of the monetary policy transmission channels.

The investigation, done in the present work, involves the following standard tools of macro-economic analysis: 1. Granger causality test; 2. Impulse response functions; and 3. Veriance decomposition (Viegi, 2010). Futhermore, before estimation I consider the issues related to the problems: seasonality, stationarity, determination of the optimal lag length and

stability condition. It is important to mention that VAR coefficients are not valid for interpretation (Stock and Watson, 2001; Viegi, 2010) and that is why heteroskedasticity and multicolinearity issues are not relevant in the analysis (Wooldridge, 2009). Taking into consideration all facts listed above I do not present and interpret estimation coefficients in results.

3.2. Data Description

In my study I used quarterly time series data from 200Q1 to 2012Q1. The number of observations is 49 for each variable. But there are some missing values in the data (see table 3). The data are not seasonally adjusted and include 12 variables (9 endogenous and 3 exogenous). The summary statistics for these variables are given in the table 3..

Table 3.Descriptive Statistics of the Original Data

Variable	Label	Unit	Mean	Median	Maximum	Minimum	Std.dev.	Obs.
in level								
Real GDP (Geo)	rgdp	mill.GEL	2551.28	2526.54	3436.32	1664.02	560.61	47
CPI (Geo)	cpi	index	146.37	139.70	210.80	100.00	35.36	49
Currency in circulation	cic	thous.GEL	869698.20	803260.40	1753584.00	249040.00	471936.60	49
M1	m1	thous.GEL	1257050.00	1034555.00	3137907.00	272940.80	835961.20	49
M2	m2	thous.GEL	1426734.00	1131935.00	3783180.00	281270.50	1018988.00	49
M3	m3	thous.GEL	2782665.00	2068041.00	7097777.00	447078.30	2050005.00	49
Lending rate	lendr	percent	19.91	19.36	23.80	16.90	1.93	40
Nominal effective exchange rate	neer	index	210.49	206.74	253.17	173.60	20.37	49
Total bank credits	totcr	thous.GEL	3715644.00	3984760.00	7754517.00	669325.60	2386947.00	37
Real GDP (Russia)	rrugdp	bill.RUB	6644.42	6036.64	15461.67	1527.42	3927.24	48
CPI (Turkey)	turcpi	index	144.85	140.13	203.96	98.12	31.52	37
rosrev	rosrev	dummy	0.69	1.00	1.00	0.00	0.47	49

Source: Author's calculations

The main sources of the data are the databases of the National Statistics Office of Georgia and the National Bank of Georgia. There are nine endogenous macroeconomic variable in the model: real GDP in Georgia, the consumer price index in Georgia, four money aggregates (currency in circulation, M1, M2, and M3), the lending interest rate, the nominal exchange rate, total bank loans. It must be clarified that the real GDP is calculated in constant prices of 2003. The reason of taking this lending rate as a measure in the study is that the NBG did not have at all such a policy tool because it focused on the money supply targeting in the past. The policy interest was introduced in 2008. As a result, because of lack data, it was not appropriate to use it in this work.

Table 4.Augmented Dickey-Fuller Test Results

Variable	***lag length***	***exogenous***	***t-statistics***	***p-value***
Data in level				
Real GDP (Georgia)	0	c	-0.1942	0.9318
CPI (Georgia)	1	c	0.5781	0.9877
Currency in circulation	0	c	0.5803	0.9875
M1	0	c	0.8189	0.9934
M2	0	c	1.3812	0.9986
M3	0	c	1.3364	0.9985
Lending rate	0	c	-1.9834	0.2926
Nominal effective exchange rate	0	c	-1.0345	0.7335
Total bank credits	0	c	-0.1485	0.9360
Data in difference of % change				
Real GDP (Georgia)	0	c	-9.1224	0.0000
CPI (Georgia)	0	c	-5.9369	0.0000
Currency in circulation	0	c	-4.2442	0.0017
M1	0	c	-6.0174	0.0000
M2	0	c	-5.6958	0.0000
M3	0	c	-6.3845	0.0000
Lending rate	0	c	-6.9151	0.0000
Nominal effective exchange rate	0	c	-5.8460	0.0000
Total bank credits	0	c	-2.9623	0.0485

Source: Author's calculations

As for the bank loans, it includes both bank credits given in the national currency and the loans supplied to the real economy in the foreign currency.

It should also be noted that two variables real GDP of Georgia and the CPI are seasonally adjusted by the author using Census X11 method.

As I mentioned above stationary issue is relevant in VAR analysis. I applied the Augmented Dickey Fuller (ADF) test to eliminate nonstationarity in the variables. The ADF showed that all the variables involved in the study (except the dummy one) have nonstationarity feature. That is why I take differences of the natural logarithms of the series (except the lending rate). As it is presented in the table 4 series become stationary after the transforming them. As for the lending rate, which also was nonstationary variable, I take its differences without applying any logarithmic techniques. After this I multiply all variables by 100 (excluding the lending rate) in order to be able to interpret the results (responses) as a percentage changes. It also should note that I add the model Russian real GDP as a huge amount of remittances are coming from this country every year. The Turkish CPI is also relevant because Turkey is the biggest trade partner country. As a consequence, the inflation is imported and therefore its price level has some effects on the Georgian economy. The dummy variable is related to the Rose Revolution in Georgia when the government changed and completely different economic policy was implemented in the country. This variable is zero before November, 2003 and it is one after this date.

Chapter 4. Empirical Results

4.1. Interest Rate Channel

In order to investigate whether the IRC is a effective mechanism to affect the real economy and inflation I ran a simple three-variable VAR model involving the real GDP, the CPI, and the lending rate plus three exogenous variables. The VAR lag order selection is three (see table 5). The stability test tells that the VAR model is stable because all roots lie in the unit circle.

Table 5.VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-231.7517	NA	688.8365	15.04698	15.45922	15.18362
1	-217.2627	23.54461	494.6025	14.70392	15.52839	14.97721
2	-214.3940	4.123705	750.1158	15.08713	16.32384	15.49706
3	-177.1983	46.49468	137.9142	13.32489	14.97384	13.87147
4	-149.5277	29.40001*	48.55273*	12.15798	14.21917*	12.84121
5	-138.3402	9.789029	52.01480	12.02126*	14.49469	12.84113*

Source: Author's calculations.

The Granger causality test (table 6) illustrates the causal relationships all possible pairs in the model. It shows that the lending rate does not Granger cause neither real GDP not the CPI. This is a typical example of no causality effects among variables. In fact this result is contradictory with respect to the economic theory. There is no presence of "Philips curve" in this model. Moreover the lending rate itself is not affected by other variables. This evidence can be explained by the fact that the NBG did not use the interest rate a s policy tool in the past (before 2008).

Table 6.Granger Causality Test Results: Interest Rate Channel.

Dependent variable: DLGRGDP100

Excluded	Chi-sq	df	Prob.
DLGCPI100	5.851496	3	0.1191
DIFFLENDR	0.854559	3	0.8364
All	5.994748	6	0.4238

Dependent variable: DLGCPI100

Excluded	Chi-sq	df	Prob.
DLGRGDP100	4.871528	3	0.1814
DIFFLENDR	5.682922	3	0.1281
All	13.23552	6	0.0394

Dependent variable: DIFFLENDR

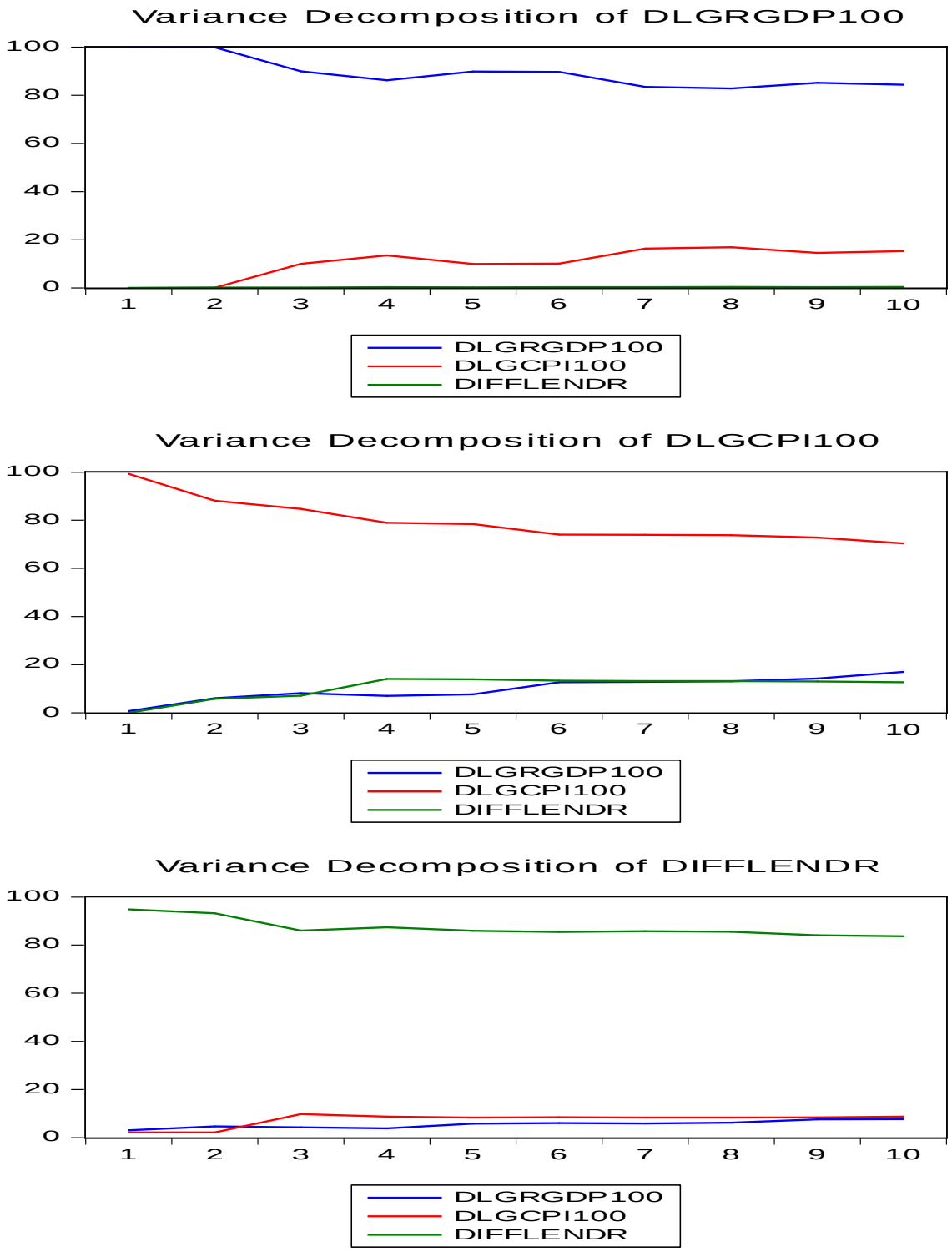
Excluded	Chi-sq	df	Prob.
DLGRGDP100	5.695578	3	0.1274
DLGCPI100	3.245930	3	0.3552
All	9.238012	6	0.1606

Source: Author's calculations

The variance decomposition figure for the lending rate presents the evidence that the shocks coming from the lending rate has very little effects on the fluctuations of the both the real GDP and the prices. It is also shown that all variable are self determined in this model. As a result the real GDP and the inflation also play tiny role in fluctuations of the lending rate.

So, the lending rate channel is seems to be undeveloped in the Georgian economy. The interest rate mechanism can not be consider as a effective tool for policymaking and therefore monetary authorities should not rely on it.

Figure 6.Variance Decomposition for the Interest Rate channel



Source: Author's calculations

4.2. Bank Lending Channel

In order to investigate the banking channel I ran the three-variable VAR model by substituting another policy variable by the total credit one. The lag length criteria suggest different lags to apply. I decided to take five lags during estimations (see table 6). The stability test suggests that the VAR model was stable.

Table 7.Lag Length Selection Criteria for the Bank Lending Channel.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-264.7861	NA	31901.16	18.88180	19.30613	19.01470
1	-246.9514	28.28961	17624.73	18.27251	19.12117	18.53830
2	-242.9922	5.460869	26108.46	18.62015	19.89315	19.01884
3	-201.6822	48.43244	3091.966	16.39188	18.08921	16.92346
4	-178.1806	22.69123*	1353.002	15.39176	17.51343*	16.05624
5	-164.7628	10.17898	1347.599*	15.08709*	17.63309	15.88447*

Source: Author's calculations

The Granger causality test shoes that the total credits of the commercial banks does not Granger cause neither the real GDP nor the CPI variables. Moreover, the real GDP and the inflation do not Granger cause the total credits as well (see table 7). In addition, real GDP becomes a causal factor of the overall prices in the model. It should also worth noting that the total credit is not Granger caused by the real GDP and the inflation.

Table 8.Granger Causality Test for the Bank Lending Channel

Dependent variable: DLGRGDP100

Excluded	Chi-sq	df	Prob.
DLGCPI100	3.487234	3	0.3224
DIFFLOGTOTCR100	2.559942	3	0.4646
All	9.056765	6	0.1704

Dependent variable: DLGCPI100

Excluded	Chi-sq	df	Prob.
DLGRGDP100	7.033603	3	0.0708
DIFFLOGTOTCR100	5.455435	3	0.1413
All	12.30875	6	0.0554

Dependent variable: DIFFLOGTOTCR100

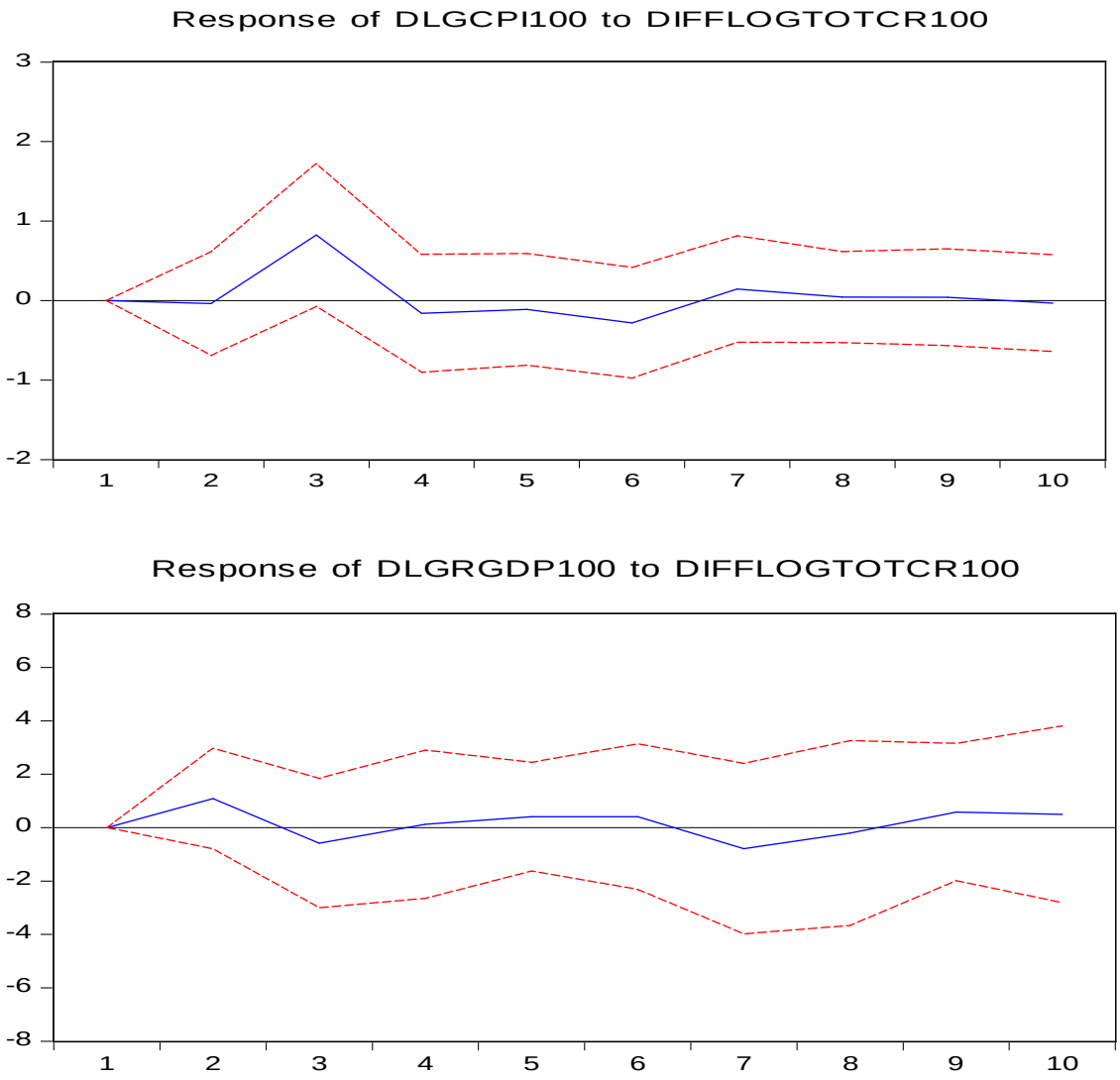
Excluded	Chi-sq	df	Prob.
DLGRGDP100	2.273861	3	0.5175
DLGCPI100	0.088086	3	0.9932
All	4.152668	6	0.6560

Source: Author's calculations.

The response function analysis gives some important information about the channel's validity and effectiveness. As we can from the figure 7, the total credits do not have significant power to affect the CPI or the real GDP. A positive shock of credits has almost no effect on the real GDP in the short run (during the first two quarters). The effect gets its peak in the third quarter.

As a whole, the bank lending channel is undeveloped as well. This evidence can also be explained b some condition and characteristics that has Georgian economy. The most important is the financial markets. High level of dollarization also influences negatively this channel.

Figure 7.Impulse Response Functions – Bank Lending Channel



Source: Author's calculation.

4.3. Exchange Rate Channel

For analyzing the exchange rate channel I used four variable VAR model. These macro measures are: real GDP CPI, broad money M2, and the nominal exchange rate (NEEF). In addition I include three exogenous variables in the model. I find a significant role of the exchange rate in determining the overall level of prices in Georgia. The NEEF Granger causes the CPI but does not the real GDP. Moreover, according to the model the GDP Granger causes

the CPI at 10 significant level but not the other way around. It also must be noted that the monetary aggregate M2 is a significant determinant of the prices at 1 percent level. The latter inference is compatible with the theory.

Table 8. Granger Causality Test Results Exchange Rate Channel

Dependent variable: DLGRGDP100

Excluded	Chi-sq	df	Prob.
DLGCPI100	3.178522	5	0.6725
DIFFLOGM2100	5.233999	5	0.3880
DIFFLOGNEER100	4.406454	5	0.4925
All	14.07376	15	0.5199

Dependent variable: DLGCPI100

Excluded	Chi-sq	df	Prob.
DLGRGDP100	9.882865	5	0.0786
DIFFLOGM2100	30.50609	5	0.0000
DIFFLOGNEER100	9.675140	5	0.0850
All	47.68427	15	0.0000

Dependent variable: DIFFLOGM2100

Excluded	Chi-sq	df	Prob.
DLGRGDP100	20.59568	5	0.0010
DLGCPI100	6.386893	5	0.2704
DIFFLOGNEER100	12.42004	5	0.0295
All	30.10988	15	0.0115

Dependent variable: DIFFLOGNEER100

Excluded	Chi-sq	df	Prob.
DLGRGDP100	0.643672	5	0.9859
DLGCPI100	2.076738	5	0.8384
DIFFLOGM2100	1.281780	5	0.9368
All	7.486047	15	0.9427

Source: Author's calculation

So, the exchange rate channel is likely to work the most effectively compared to other transmission channels of monetary policy. Actually, this is not unexpected evidence because Georgia is small and quite open country where imports share in the national account is sizable. Therefore exchange rate has significant impact on the relative prices of the exports and imports.

4.4. Monetary Aggregates

Monetary aggregates play crucial role in the monetary system. In determining their importance in Georgian economy I construct a model where I try to capture the actual power of monetary aggregates in impacting the real economy and the overall prices in the economy. The model include five endogenous and two exogenous variables. They are the real GDP, the CPI, currency in circulation, the money aggregate M1 and the money aggregate M2. As for the exogenous variables, they are: the Turkish CPI and the Russian real GDP. The lag length criteria suggest mixed lags. I take three lag. The stability condition was satisfied. The Granger causality test illustrates that currency in circulation (CIC) Granger cause the real GDP at 5 percent significant level. The CIC also very close to be a significant variable for the prices. The CIC and

the money aggregate M2 do not Granger cause the real GDP. In fact these results are quite unexpected because money aggregates in general determine the price level in any economy.

Table 9.Granger Causality Test Results - Monetary Aggregates.

Variable	**Chi-sq**	**df**	**Prob.**
Dependent variable: DLGRGDP100			
DLGCPI100	2.168591	4	0.7048
DIFFLOGCIC100	11.12662	4	0.0252
DIFFLOGM1100	5.335762	4	0.2545
DIFFLOGM2100	3.170289	4	0.5297
All	21.48905	16	0.1605
Dependent variable: DLGCPI100			
DLGRGDP100	4.247091	4	0.3736
DIFFLOGCIC100	7.739609	4	0.1005
DIFFLOGM1100	5.195523	4	0.2678
DIFFLOGM2100	7.748893	4	0.1002
All	64.29167	16	0.0000

4.5. Summery and Policy Recommendations

Hence, the evidence developed above has some very clear and relevant implications. The analysis shows that some essential MTMs are not fully reliable in Georgia. Specifically, the interest rate and the bank lending channels are undeveloped in the state. This weaknesses of the Georgian monetary system can be explained by the fact that the financial sector is still at the its evolution stage. Besides the financial markets related to the stocks, bonds, derivatives etc are weak and feeble. They cannot transmit the monetary shocks to the economy. On the other hand the exchange rate channel remains the dominant transmission mechanism in Georgia especially with respect to overall prices.

In general, the results are partially compatible with the existing literature about the MTM in transition countries. Most of evidences suggest that the exchange rate transmission is an active

channel in open and small open economy (Bakradze and Billmeier, 2007, Samkaradze, 2008, Dabla-Norris and Floerkemeier, 2006). The main difference between the key findings is that in most of empirical investigations the monetary aggregates are strictly significant determinants of the prices and have positive effects that have not occurred in the present research.

The analysis of monetary transmission mechanisms is a pure monetary policy issue. The monetary authorities must be aware to estimate and gauge the future effects of the current actions. Therefore it is essential for them to understand the relevance of the validity and trustworthiness of the MTMs. In case of Georgia, where the asset price (except the exchange rate channel) and the balance sheet channels are absent, and the interest rate and the bank lending channels are weakly developed, the main goal for the monetary authorities should be improvement their effectiveness and reliance, because without properly working monetary transmission channels it is practically impossible to achieve any macroeconomic objective.

As the those monetary channels that require a steady and stable financial sector that is not a feature of a transition country with a small and open economy the priority should be an improvement the conditions that are necessary for the other MTMs. As for the asset price and the balance sheet channels, they should be considered in the long run perspectives.

I think the key problems are in the financial sector in Georgia. It cannot allocate the financial resources effectively. Therefore, first of all, the NBG should;

a. Gain additional confidence and trust from the public, which is the guarantee that the national currency gets more reliance. This on the other hand decreases the dollarization level;

b. Press the shadow economy by intense and qualitative regulation and supervision of cash operations, which the main source of hidden economy and economic crimes;

c. Force the fiscal authorities to make reforms regarding tax-revenue management;

d. Adopt a framework where the liquidity management will be better and foster the excess reserves to fall;

e. Spur the international and reputable foreign commercial banks to enter Georgian financial markets. That will cause the competition to rise which pushes effectiveness of management and industry competition to increase; Most probably the interest spread drops;

f. Foster legislatives to simplify the cost of foreclosure; Also encourage them to strengthen the customers (borrowers, lenders) wrights;

It also must be underlined that the NBG alone is not capable to solve all the problems mentioned above. The integrated and cohesion economic plan is necessary to be plotted among all policy authorities (monetary, fiscal etc) in order to attain certain economic objectives.

Conclusion

Hence, this empirical study tries to answer the most relevant monetary question in Georgia: Do monetary instruments have significant effects on the economy. The answer is no. The issue is that most of the monetary transmission channels are not fully developed in the country. The interest rate channel is still under the black box because the monetary policy rate was implemented in 2008 and there is no sufficient data to investigate this channel accurate. As for the bank lending rate, it is invalid as the financial system of Georgia is weak and feeble. There are not well developed capital markets which are the necessary condition for the bank lending channel. The exchange rate channel is the most reliable mechanism for affecting the economy. This policy measure has significant effects on the prices. As for the monetary aggregates they have an impact at some degree but the issue is that they have not used as policy tools any more in modern economies. So it is not certain that they are still important macro policy variables.

In order to improve the conditions for the MTMs in Georgia there are needed coordinated economic decisions. The key problems are in the financial system where the level of shadow economy is high. Besides there are problems regarding high dollarization (reflecting low trust towards the national currency) and the low monetarization. The interest rate and the interest remain high that identifies low competition in the sector.

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