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Credit Growth Volatility*

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Abstract

The Central Bank of the Republic of Turkey has started to implement its new policy mix since late 2010. In this new approach expectations, credit growth and reel exchange rate are monitored closely as key indicators for financial stability on top of price stability. The effect of this new monetary policy framework on the volatility of credit growth is the main theme of this note. To the best of our knowledge, we are the first to analyze the impact of new policy mix on the credit growth volatility. It is shown that there is a significant decrease in the volatility of credit growth after the introduction of new policy framework at late 2010. Therefore, it can be said that this new monetary policy framework contributes to financial stability in Turkey by lessening the credit growth volatility.

Keywords: Volatility, Credit growth, Central banking, CBRT's new policy mix, Financial Stability;

JEL classification: C22, E52, E58

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1 Introduction

Before the 2008 global financial crisis, the inflation targeting (IT) regimes had become the mainstream approach of central banks across the globe. IT exclusively focuses on price stability while financial stability is mostly faded into the background, and sometimes completely ignored. However, the global crisis in 2008-2009 proved the inefficiency of this approach and signified the need to observe financial stability along price stability (Borio, 2011). To that extent, it was well understood that a policy rate that yields price stability may not necessarily provide financial stability. Therefore, IT has been started to be questioned among academicians and policy makers.

Accordingly, the Central Bank of the Republic of Turkey (CBRT) has started to implement its new policy mix since late 2010. This new approach is alternatively named IT++¹ in which credit growth and reel exchange rate are monitored closely as key indicators for financial stability on top of price stability (First plus stands for credit growth and the second one stands for reel exchange rate). Governor Başçı stated the reference point of 120 for real exchange rate and of 15% for annual credit growth for the year 2013. Moreover, Başçı stated that decreasing credit growth volatility and FX volatility is important to maintain price and financial stability (Başçı, 2013). In this economic note, we will study the effects of new policy framework on the volatility of credit growth. To the best of our knowledge, it is the first analytical paper on investigating the impact of new policy mix on the credit growth volatility.

¹ Başçı (2013)

2 Literature about New Policy Mix

After the 2008 global financial crisis, central banks of advanced economies have created abundant liquidity by monetary expansions in order to lift up the economy from their ravaged states. This abundant liquidity has increased the volatility of short-term capital flows that have adverse effects on the credit growth volatility and FX volatility in emerging markets. In order to reduce the adverse consequences of excessive capital flow volatility, CBRT has designed and launched its new monetary policy framework. In this framework, interest rate corridor, liquidity funding strategy and required reserves are jointly used to maintain price stability and to contribute to financial stability². The effects of this new framework have been examined in a few studies. For example, Alper et al. (2012) show that required reserves ratio policy of CBRT is an important determinant of bank lending in Turkey. Akçelik et. al (2012) conclude that additional monetary tightening, a new liquidity policy tool of CBRT, has a significant role in reducing volatility in the exchange rate. It is also shown that during the days of additional monetary tightening Turkish Lira (TL) appreciated against the emerging market currencies. Oduncu et al. (2013) study the effectiveness of Reserve Options Mechanism (ROM)³, which is the option to hold FX or gold reserves in increasing tranches in place of Turkish Lira reserve requirements of Turkish banks, on the volatility of TL. They claim that ROM, the unique tool that is designed and launched by CBRT, is an effective policy tool in decreasing the volatility of Turkish lira. Binici et al. (2013) focus on the interaction of asymmetric interest rate corridor with the credit-deposit spread reflexing banks' appetite for lending. They

² For details of this new framework, see Başçı and Kara (2011), Kara (2012) and Akçelik et al. (2013)

³ For the design of the mechanism, see Alper et al. (2012).

conclude that an asymmetric corridor policy together with an active liquidity management strategy can be used to affect credit and deposit rates via different channels. Last but not the least, Değerli and Fendoğlu (2013) examine the potential effect of ROM on the volatility, skewness and kurtosis of TL. They show that the USD/TL expectations have exhibited lower levels of volatility, skewness and kurtosis after controlling for a set of domestic and common external factors.

3 Data

The weekly stock bank credit data is used in this study. Stock of weekly total credit data includes total banking sector loans and credit cards; excludes non-performing loans and credits to financial sectors. Total credit can be divided into business loans and consumer loans. The data set covers the period between January 06, 2006 and June 28, 2013, with 389 total observations.

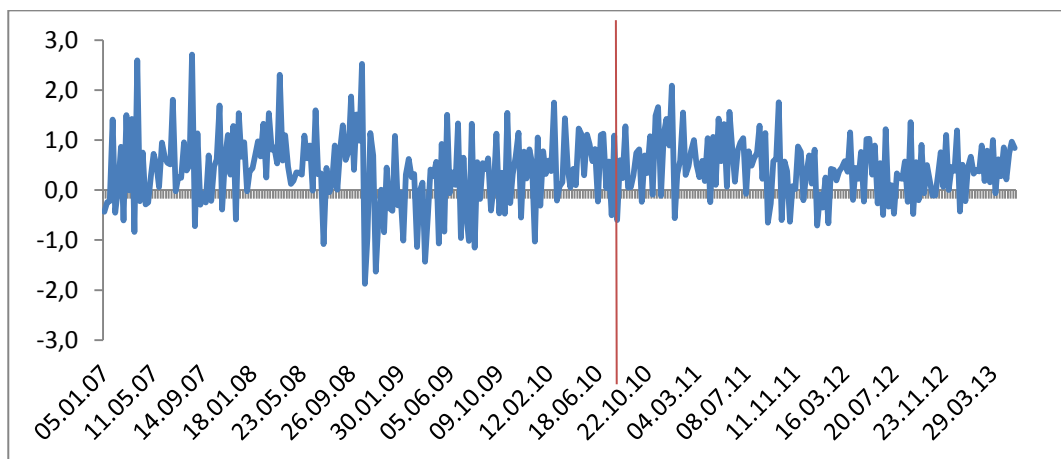
The GARCH framework is used in order to examine the impact of new policy framework on the volatility of credit growth. The GARCH model has been developed by Bollerslev (1986) from the Autoregressive Conditional Heteroskedastic (ARCH) model previously introduced by Engle (1982). In ARCH, the changing variance is included into estimation in order to obtain more efficient results. It is assumed that the error term of the return equation has a normal distribution with zero mean and a time varying conditional variance, so the forecasted variance of return equation varies systemically over time. One of the most appealing features of the GARCH framework, which explains why this model is so widely used in the literature, is that it captures one of the well-known empirical regularities of the returns, the volatility

clustering. The weekly credit growth of total, business and consumer loans are shown below.

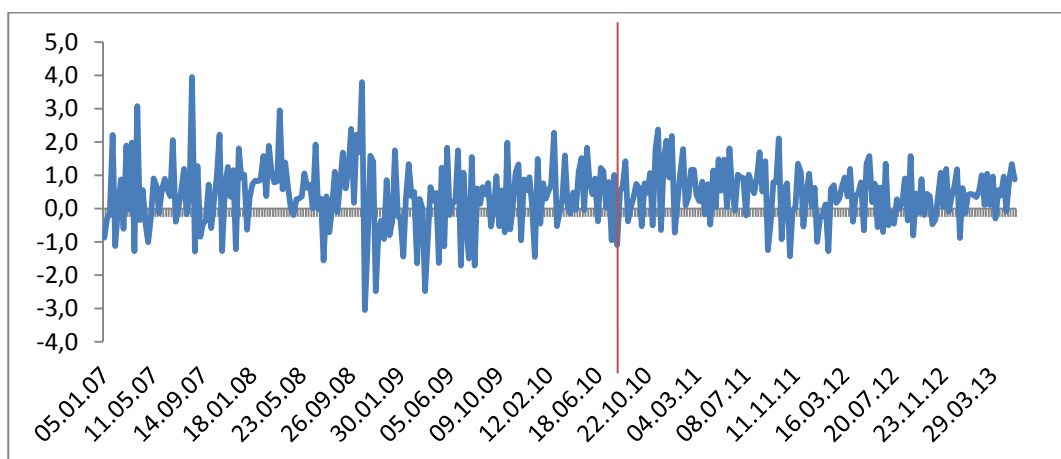
The weekly credit growth is obtained as:

$$R_t = \frac{CS_t}{CS_{t-1}}, CS_t: \text{Credit stock of week } t$$

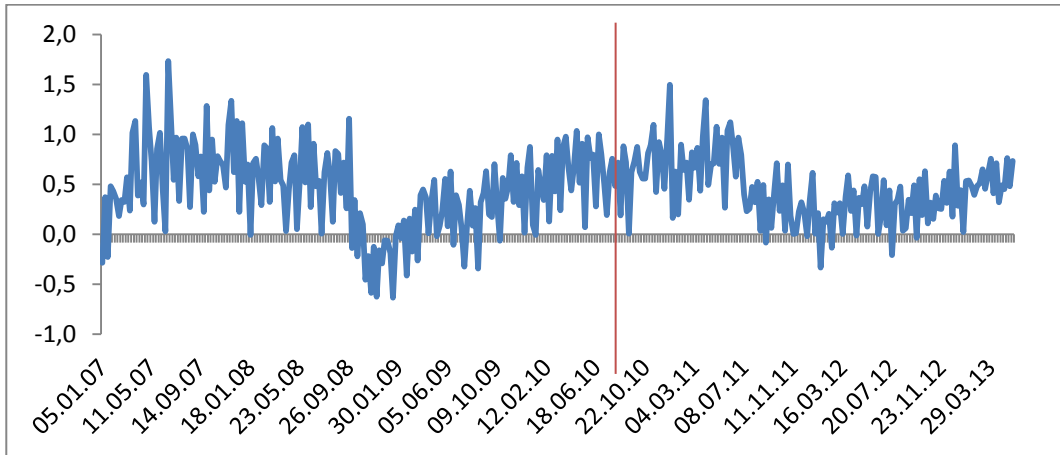
Graph 1: The weekly credit growth of total loans



Graph 2: The weekly credit growth of business loans



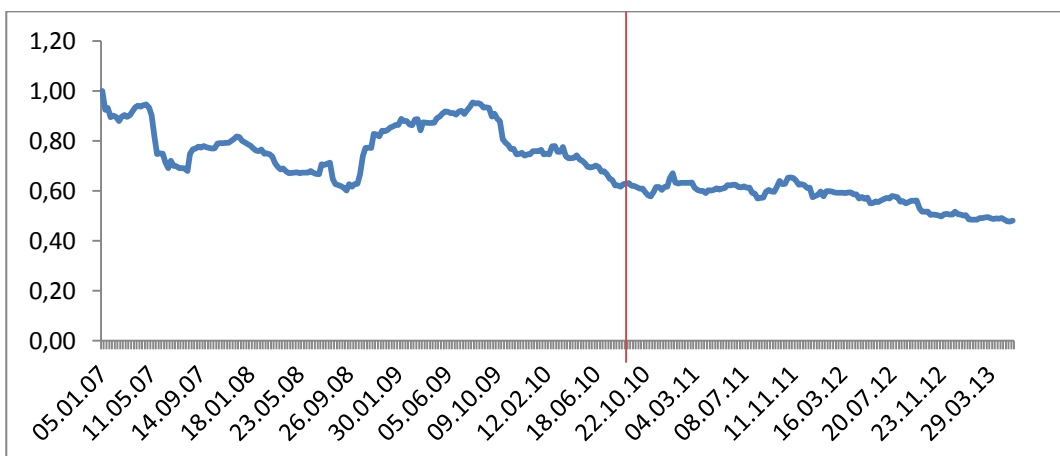
Graph 3: The weekly credit growth of consumer loans



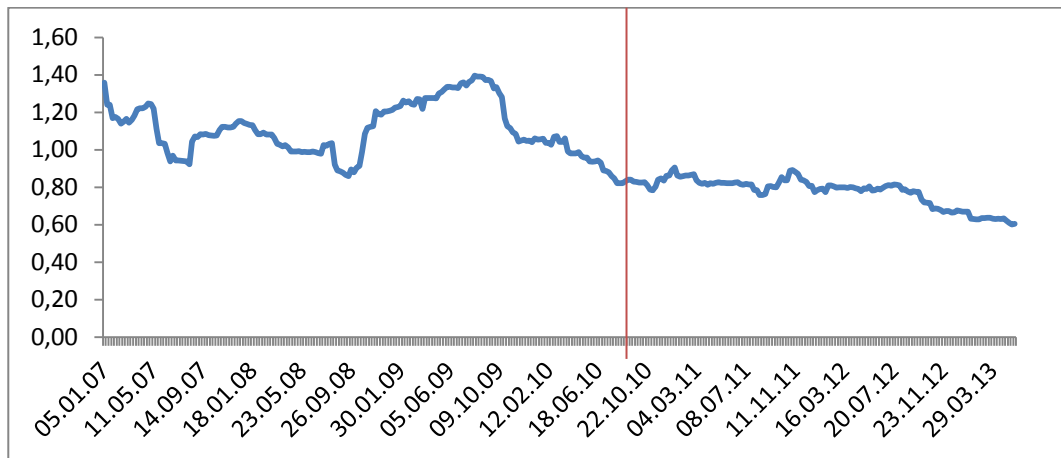
First, the volatility of credit growth is calculated as using annual standard deviation of credit growth to examine visually whether there is an impact of new policy framework on the volatility of credit growth. The annual standard deviation is used since there is a big seasonality in the credit data. Volatility is calculated as shown below:

$$V_t = Std.dev(R_{t-51} - R_t), R_t: \text{Credit growth of week } t$$

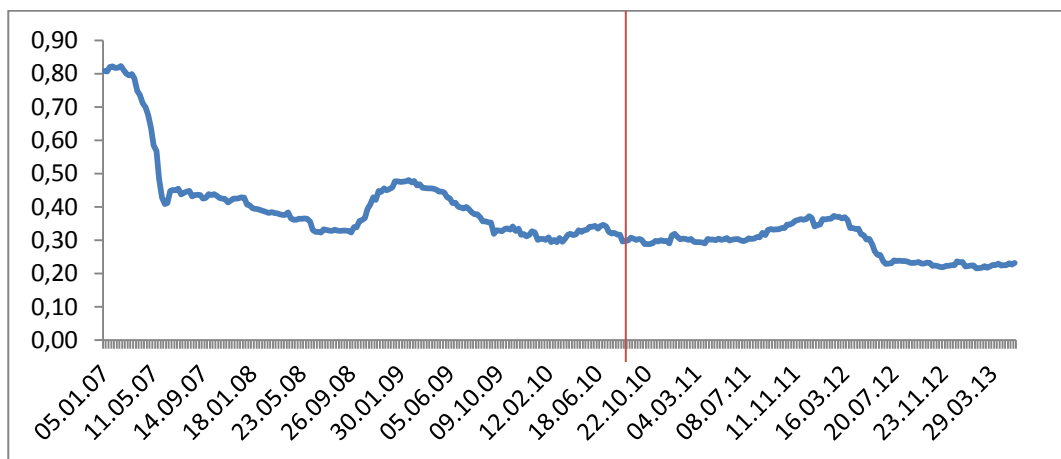
Graph 4: The volatility of total loans growth



Graph 5: The volatility of business loans growth



Graph 6: The volatility of consumer loans growth



These graphs show that there is a significant decrease in the volatility of credit growth after late 2010 when CBRT has started to implement its new monetary policy framework. This volatility decline can be seen in both consumer and business loans also.

Lastly, this finding is examined by the GARCH framework. Therefore, GARCH(1,1)⁴ model shown below is used to estimate the impact of new monetary policy framework on credit growth volatility. In the model, the credit growth is used as the dependent variable, while a dummy variable for the introduction of new monetary policy framework is used as an independent variable⁵. If the coefficient of the dummy variable is negative and significant, it implies that credit growth volatility is lower during when new monetary policy mix is in effect.

Model:

$$R_t = \beta_0 + \sum_{i=1}^{13} \beta_i R_{t-i} + \varepsilon_t \quad (1.a)$$

$$\varepsilon_t \sim N(0, h_t) \quad (1.b)$$

$$h_t = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 h_{t-1} + \alpha_3 D_1 \quad (1.c)$$

Dummy variable is defined as below:

$$D_1 = \begin{cases} 0, & \text{before the introduction of new policy mix (06.01.2006 – 19.09.2010)} \\ 1, & \text{after the introduction of new policy mix (26.09.2010 – 23.06.2012)} \end{cases}$$

4 Empirical Results

In model, the impact of the introduction of new monetary policy framework on the credit growth volatility is studied for total, business and consumer loans respectively. Estimation results are shown in Table 1. Since the sign of the dummy variable is negative and statistically significant at 5%, it indicates that there is a

⁴ GARCH(1,1) is selected over other GARCH specifications according to Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC).

⁵ The AIC and SIC criterion were used to select the lag order.

decrease in the credit growth volatility after the introduction of new monetary policy framework.

Table 1: Estimation Results of Variance Equations

	Total Credit		Consumer Loans		Business Loans	
	Coefficient	Probability	Coefficient	Probability	Coefficient	Probability
C	0.1014	0.0159	0.0588	0.0024	0.2086	0.0308
ε_{t-1}^2	0.1743	0.0028	0.2660	0.0016	0.1812	0.0053
h_{t-1}	0.6242	0.0000	0.1360	0.5029	0.6197	0.0000
D_1	-0.0556	0.0400	-0.0296	0.0203	-0.1153	0.0540

5 Conclusion

The Central Bank of the Republic of Turkey has started to implement its new policy mix since late 2010. In this note, this new monetary policy framework on the volatility of credit growth has been examined. To the best of our knowledge, we are the first to analyze the impact of new policy mix on the credit growth volatility. It is shown that there is a significant decrease in the volatility of credit growth after the introduction of the new monetary policy framework. This is an important finding since lower volatility of credit growth supports the financial stability. Therefore, it can be said that new monetary policy framework of CBRT contributes to financial stability in Turkey by lessening the credit growth volatility.

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