Unconventional Monetary Policy and Bank Risk Taking in Euro Area

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Abstract

Central banking over the world has changed after the 2008 financial crisis. Monetary policy has expanded the array of instruments it used in order to influence the macro economy. Major central banks started using not only traditional, conventional instruments, but also some non-standard measures in order to avoid economic collapse and sustain the banking system. The aim of this paper is to analyse the impact of European Central Bank unconventional instruments, measured using the change in its balance sheet, on the bank risk-taking of commercial banks from Eurozone, captured by Z-Score. Our findings point to an increase of bank risk-taking, due to the use of unconventional monetary policy measures.

1. Introduction

The unconventional monetary policy is a topic of interest for both academia and policy makers from central banking. However, although there is a growing literature about theoretical an empirical considerations of non-standard measures, one limitation of studying the effects of theses measures is related to the relative short time period that have elapsed since their implementation (IMF, 2013).

In the context of the recent financial crisis, central banks reduced interest rates in order to sustain the economy. However, interest rates reached the so-called zero lower bound and, at this point, monetary policy became inefficient because central banks cannot anymore lower the nominal interest rate (Chung et al., 2011). The solution was the adoption of some unconventional monetary policy measures. At the zero lower bound, banks are encouraged to take more risk, being in „search for yield". The motivation of this study is triggered by the idea of examining whether the unconventional monetary policies have the same negative effect on bank risk-taking and to assess the potential effects on the banking system.

Moreover, the research question that we address in this study has the following foundation: the low interest rates employed by the central banks aim at stimulating the aggregate demand, but they also increase bank risk-taking. At the zero lower bound, interest rates become inefficient. Unconventional measures are an alternative, but do they also increase bank risk-taking?

2. Literature review

All major central banks have adopted unconventional measures of monetary policy, which are non-standard not only in their self, but also in the way they were implemented by each central bank because they were not uniformly applied in all countries (Trichet, 2013).

There is not a consensus in the literature of a certain definition of unconventional monetary policy. Cecioni, Ferrero and Secchi (2012) consider the non-standard instruments as being all the measures applied after the outbreaking of the financial crisis in 2008, which were aimed at

addressing liquidity shortages of different financial institutions. Also, they argue that there is a debate in the literature whether the use of a standard instrument on a large-scale, for unconventional purposes, can be seen as an unconventional instrument.

The unconventional measures applied after the beginning of the 2008 financial crisis are known as balance-sheet policy (Trichet, 2013, Borio and Disyatat, 2009), since they produce alterations to the balance sheets of central banks. By comparison, the conventional monetary policy, namely the interventions in the level of key interest rates, is known as interest rate policy. The two types of policies, balance-sheet policy and interest-rate policy are seen as being independently from each other.

Bowdler and Radia (2012) make a classification of unconventional instruments used by central banks in times of crisis and argue that quantitative easing is a form of conventional unconventional monetary policy, while forward guidance and credit easing are strictly unconventional monetary policy. Also, they describe the transmission channels of unconventional measures, like asset purchases, to the whole economy. The asset purchases made by central banks lead to an increase of the price of assets. This means higher wealth for their ultimate owners, on one hand and lower costs of accessing credit on financial markets for banks and households, on the other hand. These two effects, taken in conjunction, lead to a rise of consumption and investments and to an increase of the aggregate demand. This, in turn, stimulates the gross domestic product and the economic activity.

Cour-Thimann and Winkler (2013) and Trichet (2013) argue that the non-standard measures applied by the European Central Bank have the purpose of complementing the standard ones regarding the level of key interest rates. This is in contrast to what had happened in United States, where the Federal Reserves Bank have initiated the use of unconventional monetary policy after the central bank exhausted all the standard measures. This view is also shared by Gianone, Lenza, Pill and Reichlin (2011).

De Graeve and Linde (2015) analyse the theoretical and empirical evidence on unconventional monetary policy in Euro Zone and Sweeden and conclude that these measures can have a potential beneficial effects if they are accurately designed and implemented. The same view is shared by IMF (2013) which mention that non-standard measures have managed to prevent an accute instability.

Regarding the effects of unconventional monetary policy on the banking system, the evidence is scarce, since the majority of the studies concentrantes on the effects on financial markets. Joyce and Spaltro (2014) analyzed the impact of quantitative easing implemented by the Bank of England on bank's balance-sheets and lending activity and found that these measure stimulated the bank lending. Chodorow - Reich (2014) studied the effects of non-standard measures on life-insurance companies and also found of positive effects.

Fratzcher and Rieth (2015) introduce a new approach on the effects of unconventional monetary policy and study the impact of these measures on the nexus between bank risk and sovereign risk in the Euro Area. They differentiate between announcement effects and implementation effects of non-standard measures and they empirically demonstrate a positive effect of them on the credit risk of both sovereigns and banks.

Regarding the bank risk-taking, there are many studies that demonstrate that very low levels of short-term interest rates (which is the conventional monetary policy) are associated with higher levels of risk assumed by banks (Delis and Kouretas, 2011; Altunbas, Gambacorta and Marques-Ibanez, 2010; Maddaloni and Peydro, 2011; Andries, Cocris and Plescau, 2015). Borio and Zhu (2008) create the theoretical fundamentals for the bank risk-taking channel of monetary policy and argue that the transmission mechanism of monetary policy should also take into account the changes in the banks' attitude towards risk.

The aim of our paper is to investigate the effects of unconventional monetary policy on bank risk-taking. We want to examine whether an extensive use of non-standard measures of monetary policy in the period after the outbreaking of the 2008 financial crisis have led to higher or lower levels of bank risk-taking.

3. Methodology

The purpose of this study is to analyse the impact of unconventional monetary policy undertaken by the European Central Bank in the period 2008-2011, in response to the financial crisis, on bank risk-taking.

Our methodology of analysing bank risk-taking is based on a recent paper of us, Andries, Cocris and Plescau (2015), in which we have studied the impact of low interest rates on bank risk-taking in Eurozone.

The equation we have used in our study takes the following form:

$$r_{i,t} = \alpha_{i,t} + \gamma * r_{i,t-1} + \beta_1 * CMP_{i,t} + \beta_2 * UMP_{i,t} + \delta_1 * CMP_{i,t} * CRIS_t + \delta_2 * UMP_{i,t} * CRIS_t + \beta_3 * bc_{i,t} + \beta_4 * rg_t + \beta_5 * ec_t + u_{i,t}$$

We analyze the relationship between monetary policy and bank risk-taking, using Taylor Gap for the conventional monetary policy stance ($CMP_{i,t}$) and the change in the ratio of central bank assets to GDP for the unconventional monetary policy stance ($UMP_{i,t}$). The measure for bank risk ($r_{i,t}$) is Z-score. As controls we include the bank-specific controls ($bc_{i,t}$), the regulatory controls (rg_t) and the macroeconomic controls (ec_t). TGAP is the Taylor gap (computed using the Taylor rule residuals), CRIS is a dummy variable and UMP is the ratio of ECB balance-sheet assets to GDP. The coefficient on the dummy variable "CRIS" captures the effect of the crisis.

We have analysed the model using General Method of Moment because it takes into account the persistency of bank risk and the endogeneity of some control variables.

Our independent variable, the unconventional monetary policy stance, is measured by using the change in the level of ECB balance sheet, divided by gross domestic product of each country included in the sample. We have chosen this measure taking into account the suggestion of Trichet (2013) that this would be the appropriate measure for non-standard monetary policy. Also, we have used this measure because, since the central bank balance sheet is the same in case of each country, we had to add variability to the unconventional monetary policy measure and analyse it from the econometrical perspective. Se, we did this through dividing the balance-sheet size to the GDP of each country.

The dependent variable is the risk-taking of each commercial bank and it is measured using Z-score, defined as below:

$$zscore = \frac{ROA + CAR}{STD\ DEV_{ROA}},$$ where ROA is the return-on-assets, CAR is the capital-to asset ratio and their sum is divided to the standard deviation of returns. Other studies that also use this measure for bank risk-taking are Laeven and Levine (2008) and Andries, Cocris and Plescau (2015).

Besides the variables presented, we have also used some control variables, in order to account for some factors that could influence bank risk-taking. We have considered three categories of control. The first one refers to some bank-based characteristics (capitalization, profitability, size, efficiency and non-traditional activities, captured by the off-balance-sheet items), while the second one refers to the regulation of banking capital and it is captured by three indicators: capital requirements, official supervisory power and market discipline. All this three indicators are copmputed using Barth Database. The last category of controls refers to the macroeconomic control and we have used economic growth, importance of banks and concentration of banks.

The model and the variables included in it are based on Andries, Cocris and Plescau (2015).

Another important feature of our equations refers to the inclusion of the conventional monetary policy variable in the model. We have measured the stance of standard monetary policy using the short-term interest rate, computing using Taylor rule and Hodrick-Prescott filtering technique, as in Andries, Cocris and Plescau (2015).

In order to test the results of our model, we have used the Sargan Test for over-identified restrictions and we have tested for first and second order autocorrelation.

4. Results

The relation is analyzed on the full sample 1999 to 2011, using the Generalized Method of Moments. The results are reported in column (1). We also analyze the relation using as sample the period of the crisis, from 2008 to 2011 and the results are reported in column (2). DEP(-1) is the lagged dependent variable, SIZE is the bank size, EFFIC stands for efficiency, OFFBS for off-balance sheet items, CAPRQ for capital requirements, OFFPR stands for official supervisory power index, MDISC for market discipline, EC_GROWTH is the economic growth, IMP stands for importance and CONC for concentration. In case of Z-score, we do not include profitability and capitalization as control variables, because they are used at computing this measure. The AR(1) and AR(2) tests investigates the existence of autocorrelation of order one and two and the table reports the p-values of these tests. Sargan statistic represent the test for overidentified restrictions, while [*], [** and ***] indicate significance at 1%, 5% and 10% level, correspondingly.

Table 1: The influence of conventional and unconventional monetary policy on bank risk-taking: GMM estimation

	Dependent variable: Z-SCORE 1999-2011	Dependent variable: Z-SCORE 2008-2011
	(2)	(1)
TGAP	.0226[*]	-.0020
TGAP*CRIS	-.0298[*]	
UMP	-.0009[*]	.0001[**]
UMP*CRIS	.0010[*]	
DEP(-1)	.9376[*]	1.2153[*]
PROF		
CAP		
SIZE	.0522[*]	.0614[*]
EFFIC	-.0257	.5398[*]
OFFBS	-.0800[*]	-.3869[*]
CAPRQ	.0560[*]	.0377[*]
OFFPR	.0193[*]	.0096[*]
MDISC	-.0875[*]	.0735[*]
EC_GROWTH	.0127[*]	.0010
IMP	-.0003[*]	.0007[***]
CONC	-.0072[*]	.0036[*]
AR(1) p-value	.0000	0.0404
AR(2) p-value	.7176	0.4556
Sargan Test	.2576	0.4859
Sample	2001-2011	2008-2011
Observations	3267	931
Estimation	GMM	GMM

([*]) Significant at 1% level
([**]) Significant at 5% level
([***]) Significant at 10% level

In column (1) we report the results for the relation analyzed over the period 2008 – 2011. The coefficient of TGAP (-0.0020) is negative, but it turns to be statistically insignificant. The short-term interest rates reached the zero-lower bound after the beginning of the financial crisis, so they are incapable of further stimulate the economy. We argue that the results are in line with the theory

that, at the zero-lower bound, the conventional monetary policy (short-term interest rates) becomes inefficient, so the central bank employs unconventional monetary policy. The coefficient of UMP (0.0001) is positive and statistically significant. This means that the unconventional monetary policy (balance-sheet policy – mostly, credit easing) employed by the ECB after the beginning of the financial crisis, in the analyzed period 2008-2011 had a positive effect on the zscore of banks. Hence, an increased use of unconventional monetary policy leads to higher zscore and, so, to lower risk aversion and higher bank risk-taking.

The results in column (2) summarize the results of the relation analyzed over the period 2001 to 2011. The coefficient for TGAP (0.0226) is positive and statistically significant, while the coefficient for TGAP*CRIS (-0.0298) is negative and statistically significant and the cumulative effect of the conventional monetary policy stance (captured by TGAP) is negative. We can argue that, in times of crisis, the very low level of interest rates is associated to high levels of bank risk-taking.

The coefficient for UMP (-0.0009) is negative and statistically significant, while the coefficient for UMP*CRIS (0.0010) is positive and statistically significant. Hence, in times of crisis, an increase in the ratio of central bank's assets to GDP, due to the use of unconventional monetary instruments, leads to an increase of bank risk-taking. This is because in the period 2008-2011, the cumulative effect of unconventional monetary policy stance (measured through the share of central bank's assets to GDP) on bank risk-taking, is positive.

In conclusion, the use of unconventional monetary policy (balance sheet policy) leads to a better bank stability, to less risk aversion and, hence, to higher bank risk-taking. We believe that this could be a starting point towards the evidence of the existence of a risk-taking channel of unconventional monetary policy.

5. Conclusion

We examine the effects of both conventional and unconventional monetary policy on the bank risk-taking. The quantitative easing policy is considered to be a conventional unconventional one (Bowdler and Radia, 2012) because it is, basically, an open-market operation, in which central bank buys short-term assets of the government, in order to increase the monetary base. In the context of the recent financial crisis, the central banks that used QE policy, have purchased long-term assets and, also, corporate bonds and other type of private-sector assets.

The results point to a risk-taking channel of unconventional monetary policy. We find evidence that the extensive use of non-standard measures after the outbreak of the 2008 financial crisis lead to higher bank stability for commercial banks in Euro Zone, hence to a higher propensity to involve in risky activities and higher bank risk-taking. As the majority of the studies have shown, the non-standard measures taken by European Central Bank have had a beneficial effect on the banking system and a core role in sustaining it, through different measures of providing liquidities to banks.

The novelty of this paper consists in the analysis of unconventional monetary policy of ECB on the risk-taking of banks from the Eurozone countries, but also the use of the model proposed in Delis and Kouretas (2010) and Andries, Cocris and Plescau (2015) for analysing the existence of a risk-taking channel of monetary policy. Here we use it in order to assess the risk-taking channel of unconventional monetary policy.

The effects of unconventional monetary policy on the stability of the banking system are important to identify in the light of the exit-strategies and of the recent idea of still using unconventional monetary policy after the economy restores to a "conventional" state.

One of the main changes that the crisis has brought to the central banking is the view that the objective of price stability should take into account the financial stability. Furthermore, the transmission mechanism of monetary policy, which incorporates interest-rate policy, as well as balance-sheet policy (or non-standard policy) should account for macroprudential policy when assessing the potential effects on the banking system, as well as on the whole economy.

Regarding the exit strategies, we share the view of Trichet (2013) that they should follow a logic order, which means that central banks should, first, gradually and slowly abandon the use of non-standard, unconventional measures and, only after, restore to the traditional measures, which would imply an increase of key interest rates. However, there are many voices that said that some

unconventional measures used in the present may be seen as conventional ones in the future.

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6. References

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