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ECB's Non-standard Monetary Policy Measures during the Sovereign Debt Crisis and their Impact on Banks in the Eurosystem

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Executive Summary

Contrasting the phenomena of historic systemic crises in which bank runs mainly emanated from the undesirable equilibrium inherent in demand deposit contracts, leading to immediate withdrawal of bank deposits, the recent global financial crisis, and the European sovereign debt crisis centered on dry-ups in bank refinancing in wholesale funding markets. The sovereign debt crisis in particular is characterized by a geographical fragmentation of liquidity in global financial markets, causing banks to experience a significant liquidity squeeze, and leading to inconsistencies between the monetary policy stance and cost of interbank credit. In an environment with strong financial frictions and a binding zero lower bound on the policy rate, the European Central Bank [ECB] reacted to the increasing pressure on bank balance sheets by resorting to a variety of non-standard monetary policy measures, largely revolving around changes in the maturity profile and the liquidity-providing mechanism of its refinancing operations. Specifically, in late 2011 and early 2012, the ECB allotted over one trillion Euros via two fixed rate, full allotment, longer-term refinancing operations [LTRO] with a prolonged duration of three years.

Considering the institutional setup of the ECB as the monopoly supplier of the monetary base and the financial structure of the Eurozone Economic and Monetary Union, this paper initially identifies the monetary policy transmission mechanism and the monetary measures intended to promote medium-term price stability. By referring selected literature and based on the structure of the Eurosystem banking sector, this study establishes a scientific foundation for use of unconventional monetary policy measures as a *complement*. In a second step, the paper provides a thorough investigation and illustration of ECB's intermediation in a turmoil regime and in the market breakdown regime characterized by the collapse of Lehman Brothers. Further, it reviews and explains central bank measures that were implemented during the sovereign debt crisis in light of an adverse feedback loop between bank solvency issues and unsustainable public finances. This study's empirical quantification advances an understanding of the macroeconomic, monetary, and bond market impact of exogenous increases in central bank liquidity, especially the three year LTROs. Results show that the three year LTROs reduced funding risk/volatility, on an average improved bank funding ability, and cut funding costs by mitigating risk aversion and the perception of aggravated interbank credit risk.

The analysis further shows that the prolonged maturity profile allowed banks to moderate the maturity mismatch on their balance sheets and smooth their intertemporal demand for liquidity, thus, alleviating pressure from balance sheet constraints. Consequently, net tightening of credit standards for loans eased, which led to a moderate recovery in banks lending to the private sector. Furthermore, it is determined that the LTRO announcement reduced sovereign solvency risk and significantly affected short-term government bond yields, causing lower term premiums.

An extensive literature has investigated and assessed the impact and pass-through of conventional interest rate policy measures. Many prior studies on unconventional monetary policy shocks primarily focus on the response of macroeconomic variables, portfolio balance effects, and bank lending behavior. This paper focuses on a quantitative impact assessment of the three year LTRO policy on Eurozone bank balance sheets.

In this paper, annual micro level data for 439 banks ranging from 2005 until 2014 are collected from the Bankscope database. To account for distortionary effects inherent in consolidated bank balance sheet data, reporting formats, affiliation status, domicile, or bank specialization, the initial sample is modified by exploiting an exhaustive set of qualifying variables using Boolean operators. The observation interval [2007, S, 2014] is censored at both ends and spans 2007 through 2014. Setting the start date of the event of interest (S) in 2011 allows a comparison of aggregated and disaggregated liability-side variables in equal four-year intervals before and after introduction of the three year LTROs. To mitigate the impact of other spurious events, the behavior of the selected variables is analyzed four quarters before and after the LTRO settlement. The variables development in absolute and relative terms and the distribution over the entire cross-section is assessed using descriptive statistics, which provides information about the average bank in the Euro area. To determine a potential heterogenic impact response, an array of proxies is applied to account for bank-specific characteristics. Cross-country subsamples with bank domicile filters capture inter-country deviations.

Results suggest on average, a moderate decline in the total funding base and a recovery in total long-term funding in 2012, indicating an expansionary funding effect. However, considering the development of leverage and total assets in the post-LTRO period, an expansionary effect cannot be assigned to the three year LTROs. With a 3pp increase in 2012, the recovery of longer-term funding is found to be more pronounced in core and other European countries. Furthermore, a substitution effect from interbank funding toward retail and central bank funding is detected over the post-LTRO period, with median total customer deposits and central bank funding increasing by 4pp and 58pp in 2012. Controlling for bank domicile, however, shows an outflow of deposits from peripheral and other banks, while on average a more pronounced uptake of absolute and relative central bank funding is observed for those same banks. Moreover, results demonstrate that the alleviating capital market effects of the three year LTROs opened a refinancing window on the interbank market in 2012, which led peripheral banks to secure additional longer-term funding. Further, a significant increase in use of debt securities in bank refinancing is established. Driven by the carry trade and arbitrage incentives, banks in Italy, Portugal, and Spain, notably enhanced their holdings of debt securities by 67pp on average in 2012, driving a 17pp increase observed in the full sample. It can be inferred that the three year LTROs exerted a heterogenic impact due to banks' domicile.

Changes in capital structures of Eurozone banks are also observed. The median leverage ratio is found to decrease merely by 2pp in 2012. A stronger deleveraging in 2013 and 2014 outlines the LTRO's effectiveness in decelerating the process. Qualitatively similar results appear throughout the domicile subsamples, with a more pronounced deleveraging observed in other countries. Regarding bank capitalization, a salient (+ 9pp) increase in the median total regulatory capital ratio is found in 2012, following a 1pp increase in 2010 and 3pp in 2011. Results on bank capitalization are partly conditioned to the Basel III capital requirements and the capital exercise of the European Banking Authority [EBA]. Analyzing cross-country behavior in 2012 shows slightly stronger improvements in capitalization among core banks (+ 7pp) compared to peripheral banks (+ 4pp). Accounting for bank-specific characteristics shows that the funding behavior of banks characterized by high credit risk and leverage reacts similar. Deviations are recognized with respect to capital structure. Consequently, undercapitalized banks display a more pronounced recourse to central bank and wholesale funding while the development of the funding base matches the full sample. Banks characterized by size reveal a 6pp expansion of longer-term funding in 2012, the highest observed value. It can be inferred that bank-specific characteristics impact the response to the three-year LTRO with regard to the use of different funding sources and capital structures.

As a final point, implications for future non-standard monetary policy measures are evaluated in light of the intended effects of the three year LTROs. In this design process, an introduction of an incentive scheme is suggested to expand bank lending with a simultaneous stabilization of bank refinancing.