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## Central bank reserves and interbank market liquidity in the euro area

Renaud Beaupain<sup>a,\*</sup>, Alain Durré<sup>b,a</sup>

<sup>a</sup> IÉSEG School of Management (LEM – CNRS) – Lille Catholic University, 3 Rue de la Digue, 59000 Lille, France

<sup>b</sup> European Central Bank, 29 Kaiserstrasse, 60311 Frankfurt am Main, Germany

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### ABSTRACT

The market-oriented approach promoted by the European Central Bank in the design of its refinancing operations creates incentives to credit institutions to use actively the interbank market to manage their liquidity needs. In this context, we examine the ability of the overnight segment to guarantee the timely provision of unsecured funds to banks to smoothly absorb their liquidity shocks. This paper specifically focuses on the speed of reversion of transaction costs and available depth to their equilibrium levels in this market for overnight unsecured funds. The reported evidence points to time-varying liquidity adjustments and identifies liquidity, market activity and the institutional setting of the ECB's refinancing operations as significant determinants of the observed resiliency regimes. Our analysis also shows how the speed of mean reversion of market liquidity, by affecting the level and the volatility of the overnight market rate, also affects the anchoring of the yield curve in the euro area.

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### 1. Introduction

The crucial role played by the money market as regards the continuation of payment flows (and ultimately lending to the economy) became obvious with the 2007–2012 financial crisis. As the recent experience has demonstrated, financial distress in the money market may lead to a breakdown of interbank transactions while prolonged illiquidity can rapidly damage banks' solvency. Central banks thus carefully monitor the well-functioning of the money market since this appears of the utmost

\* Corresponding author. Fax: +33 (0) 320574855.

E-mail addresses: [r.beaupain@ieseg.fr](mailto:r.beaupain@ieseg.fr) (R. Beaupain), [alain.durre@ecb.europa.eu](mailto:alain.durre@ecb.europa.eu) (A. Durré).

importance to ensure the smooth transmission of monetary policy signals along the yield curve. In this context, this paper analyses the ability of the overnight segment to provide stable liquidity conditions (and hence, to guarantee the ability to trade) to market participants in both normal and stress periods.<sup>1</sup>

In the euro area, monetary policy decisions are implemented according to precise rules<sup>2</sup> which design the so-called operational framework for the monetary policy of the Eurosystem. Following a market-oriented approach, these rules aim notably at creating an active money market between the refinancing operations of the European Central Bank (ECB). The Eurosystem's operational framework therefore creates strong incentives to encourage credit institutions to manage their reserves directly through the interbank market with a view to ending the maintenance period in a balanced position. In this respect, the overnight segment of the euro area money market plays an essential role since it connects cash-poor banks to cash-rich counterparties to meet their short-term liquidity needs between the refinancing operations of the ECB. Against the backdrop of the financial turmoil that started in the summer 2007 over which the volume exchanged in the interbank market decreased markedly, the ability of this market to guarantee the timely provision of unsecured funds under quiet and more stressful conditions therefore takes on particular importance.

The aforementioned considerations explain why central banks stand ready to take the necessary measures to guarantee a well-functioning money market should temporary or permanent market disturbances arise (e.g., in case of financial distress). In the specific case of the ECB, various events support this view over the sample considered in this paper. On the one hand, a new design of the operational framework was introduced in March 2004 to address the persistent volatility of the overnight interest rate. On the other hand, the financial turmoil episode has triggered increased interventions by the ECB through a series of 1-day fine-tuning operations to provide additional central bank reserves to the banking sector. This paper therefore focuses on two particular issues. First, we examine how the operational framework interacts with the speed of mean reversion of money market liquidity. Second, we explore the role played by the resilience of market liquidity in the transmission of the monetary policy stance to money market interest rates.

In a number of recent papers, the speed of convergence to stable liquidity conditions has been inferred from the number of quote updates required for transaction costs or market depth to return to their pre-shock levels (Degryse et al., 2005; Wuyts, 2012) or from the probability that liquidity is restored before the occurrence of a new transaction (Foucault et al., 2005). In the mean reversion framework set up in Kempf et al. (2009), this temporal dimension of market liquidity can be quantified, which opens the way for new investigations of its dynamics over time or across assets. Examinations of the resilience of order book liquidity nevertheless form the most significant part of the literature, which mostly focuses on the stock market.<sup>3</sup> The speed of mean reversion of liquidity parameters under other market configurations, like in the money market where utilitarian motivations dominate other motivations to trade, nevertheless remains an open question.

Against this background, our contribution to the literature is essentially twofold. First, we check whether the central bank can interfere with market liquidity in a way that makes the money market more (or less) attractive to credit institutions to meet their needs for short-term funds. More specifically, we examine how the design of the operational framework for the implementation of monetary policy decisions affects the speed of reversion of transaction costs and market depth to their equilibrium levels. In particular, we assess the stability of resiliency over time and look for evidence of non-linear liquidity adjustments in the overnight segment of this market. We notably report that while resiliency drops markedly as banks face increasing pressures for balancing their reserves in the unsecured overnight market, the introduction of the current design of the operational framework in March 2004 leads to faster mean reversion of spreads and depth. Second, we show how the time-varying speed of mean reversion in market liquidity, by impacting the level and the volatility of the overnight

<sup>1</sup> Market liquidity traditionally has three dimensions: tightness (transaction costs), depth, and resiliency. The latter, on which this paper focuses specifically, captures the temporal dynamics of its first two dimensions (see, e.g., Kyle, 1985).

<sup>2</sup> See ECB (2011).

<sup>3</sup> For further details, see in particular Gomber et al. (2004) or Kempf et al. (2009) on the German Xetra stock market, Degryse et al. (2005) at Paris Bourse, or Large (2007) on SETS at the London Stock Exchange.

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