

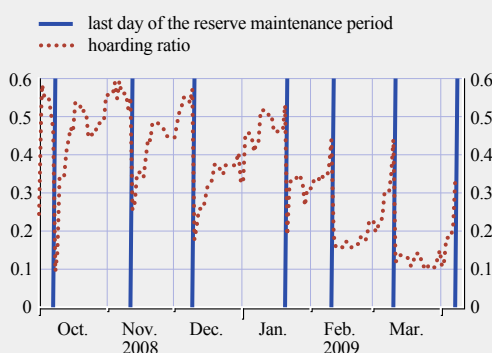
Box 7

MONEY MARKET INTERMEDIATION AND LIQUIDITY INSURANCE

Following the change to a fixed rate tender procedure with full allotment as of the maintenance period beginning on 8 October 2008, aggregate liquidity provision in Eurosystem refinancing operations increased significantly, exceeding the strict needs resulting from autonomous factors and reserve requirements. The aggregate excess liquidity has been reflected in an elevated recourse to the deposit facility of the Eurosystem. This box discusses some factors that may help to explain the demand for excess liquidity by focusing on the financial stability dimension of the operational framework for monetary policy implementation in times of financial market stress. In fact, the empirical evidence suggests that, in addition to partially taking over the intermediation of liquidity shocks from the market, the Eurosystem has offered banks insurance against liquidity uncertainty and has therefore contributed actively to operational and financial stability.

Ratio of recourse to the ECB's deposit facility over outstanding longer-term refinancing operations

(Oct. 2008 – Apr. 2009, six reserve maintenance periods)



Sources: ECB and ECB calculations.

A look at the ratio of recourse to the deposit facility over outstanding longer-term refinancing operations (LTROs) – which is a measure of liquidity hoarding by banks (hereinafter referred to as the hoarding ratio) – reveals a clear intra-maintenance period pattern, as well as a declining trend in recent months (see chart). The former pattern can be attributed to banks' desire to frontload the fulfilment of their reserve requirements. In the presence of aggregate excess liquidity, therefore, recourse to the deposit facility increases towards the end of the reserve maintenance period.¹ Controlling for these structural elements, the remaining variation in the recourse to the deposit facility can be explained by four factors (see the model results in the table):²

- a) overall financial market stress (as measured by the VIX, an index of implied stock market volatility);
- b) the difference between EONIA and the minimum bid rate;
- c) the re-widening of the interest rate corridor as from 21 January 2009;³ and
- d) the lagged hoarding ratio (in the error correction model).

1 The abrupt decline in the recourse to the deposit facility on the last day of the reserve maintenance period results from the fact that an absorbing operation at higher rates usually takes place on the last day of each reserve maintenance period. Without such an operation, the aggregate recourse to the deposit facility on that day would likely be higher than on any other day during the maintenance period.

2 Two asymptotically identical approaches were considered. One involves estimating an error correction model of differences in the daily recourse to the deposit facility, while the second consists in estimating the hoarding ratio directly. The first approach takes the dynamic adjustment to equilibrium into account, while the second stipulates a reduced form and hence amounts to estimating the long-run equilibrium directly. The relationship between the two approaches becomes visible by solving the error correction model for its long-run equilibrium values. These values are within one standard deviation from the estimates obtained using the reduced form model.

3 From October 2008 to January 2009, the interest rate corridor formed by the rates on the standing facilities of the Eurosystem was narrowed to 100 basis points (from 200 basis points).

Estimation results from the error correction model

Δ log deposit facility	Coefficient	t-statistic
Constant	-1.174	-3.13
Δ log LTRO	0.742	1.94
log hoarding ratio _{t-1}	-0.245	-5.34
log VIX _{t-1}	0.221	2.45
Spread of EONIA over minimum bid rate _{t-1}	-0.395	-3.81
Rewidening of the interest rate corridor (dummy variable)	-0.327	-4.87
Daily reserve surplus	-0.001	-1.61
Last day of reserve maintenance period (dummy variable)	-0.588	-9.28

Source: ECB calculations.
Note: Estimation is based on 124 observations over six reserve maintenance periods, $R^2 = 0.55$.

term captures the idea that changes in daily recourse to the deposit facility are one way of achieving an average (targeted) hoarding ratio.

Both demand factors have important financial stability implications. While re-intermediation of liquidity shocks contributes directly to the stability of the banking sector by guaranteeing a smooth fulfilment of arising payments, the provision of insurance in the form of liquidity buffers allows banks to adjust their day-to-day liquidity position in times of greater uncertainty, which promotes operational and financial stability.

The econometric evidence suggests that increasing financial market tensions, gauged by the volatility index, lead to increasing recourse to the deposit facility.⁴ The intuition behind this finding is that stock market volatility is correlated with banks' asset volatility which, in turn, may cause sudden rating downgrades and change the funding position of the bank. Both factors contribute to retrenchment from interbank lending and thereby increase the re-intermediation role of the Eurosystem. The finding can also be interpreted as banks' natural reaction to an increased overall risk aversion in the market: increasing liquidity buffers is an optimal response in such an environment.

The spread between EONIA and the minimum bid rate is a measure of the prevailing opportunity costs of obtaining funds from the Eurosystem (instead of using the overnight market) and a measure of excess liquidity at overnight maturity. Higher opportunity costs and excess liquidity will lower the demand for central bank refinancing and hence lower the recourse to the deposit facility, which is captured by the negative coefficient of the spread.

Finally, the re-widening of the interest rate corridor between the marginal lending facility and the deposit facility from 100 basis points to 200 basis points on 21 January led to a decrease in recourse to the deposit facility. Economically, a re-widening of the interest rate corridor increases the cost of insurance against liquidity shocks, since funds demanded for insurance purposes are obtained at the policy rate with the expectation of parking those funds in the deposit facility.

Theoretically, two different factors of demand for refinancing with the Eurosystem can be distinguished. The first is the partial replacement of private sector intermediation of liquidity shocks by the Eurosystem owing to the fear of adverse selection by money market participants. This leads to a drying-up of money market transactions as a result of the reduction in external credit lines of banks (credit rationing). The second is an increased preference for holding liquidity buffers in the presence of an increased variability and likelihood of liquidity shocks and fear of sudden credit events. Furthermore, in the econometric modelling, an error correction

4 While the main specification referred to in the text is an error correction model with the change in the daily recourse to the deposit facility on the left-hand side and variables a) to d) on the right-hand side, a range of alternative approaches were used to check for robustness in the presence of data limitations. The results are preserved under each approach, while the quantitative dispersion is limited.

The estimates suggest that the marginal effect of financial market volatility is somewhat smaller than that of the re-widening of the interest rate corridor, although the former variable captures more of the variation in recourse to the deposit facility. The largest marginal effect is observed via the opportunity cost measure (the spread). The re-widening of the interest rate corridor is estimated to have contributed to a reduction in recourse to the deposit facility in the range of €40 to €50 billion. The strength of the effect, as well as its robustness, regardless of the chosen econometric approach, reveals the presence of a strong insurance motive behind the elevated demand for Eurosystem refinancing after 8 October 2008.

Overall, in times of unprecedented financial market stress that puts severe strains on the financial system, the flexibility of the operational framework for monetary policy implementation of the Eurosystem can be seen as contributing to safeguarding financial stability.