

The 2007/09 turmoil: a challenge for the integration of the euro area money market?

**By Nuno Cassola, Cornelia Holthausen
and Marco Io Duca (ECB)**

Frankfurt, 12 April 2010

The views expressed in this paper are our own and do not necessarily coincide with those of the ECB

- **This paper studies the impact of the financial market crisis on the **euro money market (s)****
- **Main thesis: asymmetric information has played a large role**
- **Focus of this paper: effects on **cross-border integration** (within the euro area) of the money market**
- **Preliminary analysis!**

Outline

- 1. Motivation of the paper**
- 2. Cross-border integration of the money market: theory**
- 3. The integration of the euro area money market since 2007**
- 4. Conclusions**



1. Motivation of the paper

2. Cross-border integration of the money market: theory
3. The integration of the euro area money market since 2007
4. Conclusions

I. Motivation: Euro money market integration

Since 1999: single monetary policy

- **Monetary policy decisions should affect all countries in same way**
- **First step in transmission from monetary policy rate decisions to real economy**
- **Same interest rate in all countries → integration of money market is important → liquidity should flow freely from country to country**

I. Motivation: Euro money market integration

Early 1999

- **Very fast convergence of interest rates**
 - Ciampolini and Rhode (2000), Hartmann et al (2000), Euro Money Market Study (2004)
- **No comprehensive euro area wide dataset (OTC)**
- **Reference rates:**
 - **EONIA** (unsecured, overnight)
 - **EURIBOR** (unsecured, other maturities)
 - **EONIA: Stable, low dispersion**

I. Motivation

- **Data source used in this paper: e-MID**
 - **electronic trading system for money market transactions**
 - **Located in Italy**
 - **Participants both domestic (Italian) and foreign**
 - **Unsecured transactions (different maturities)**
 - **Transaction level data**
- **Literature on euro money market**
 - **Market structure: Gaspar et al (2008), Perez-Quiros and Mendizabal (2006)**
 - **Analysis of recent trends in e-MID: Angelini, Nobili, Picillo (2009)**

I. Motivation

- **We study effect of financial turmoil on integration of euro money market (New issue)**
- **Important in turmoil: asymmetric information about counterparty exposures (Heider et al 2009)**
- **Effects of asymmetric information may have been especially relevant in cross-border context**
 - **see Freixas and Holthausen 2005**

- 
1. Motivation of the paper
 - 2. Cross-border integration of the money market: theory**
 3. The integration of the euro area money market since 2007
 4. Conclusions

2. Cross-border integration

Freixas and Holthausen (RFS, 2005)

- **Two country model**
- **Each country faces liquidity shock**
- **There is asymmetric information about banks' solvency across borders**
- **An integrated interbank market can help to smooth domestic liquidity shocks (stabilize money market interest rates)**

2. Cross-border integration

Freixas and Holthausen (RFS, 2005)

Asymmetric information across borders may hamper integration of money markets:

- Foreign banks would pay a premium reflecting **higher uncertainty** about their solvency
- Because of the information premium, a **segmented equilibrium** exists
- An integrated equilibrium may **coexist** with an equilibrium with segmentation, if the information premium is not too high

2. Cross-border integration

Freixas and Holthausen (RFS, 2005)

As of 2007 (before August) the euro money markets appeared to have been fully **integrated (same interest rates). Three cases can be distinguished:**

- **No problems of asymmetric information. Single money market**
- **Banks with good rating borrow cross-border. Cross-border interest rates slightly above those prevailing in the liquidity rich country**
- **Rate convergence due to activity of large money-centre banks (TBTF). Small banks borrow in domestic market. Large banks borrow cross border.**

2. Cross-border integration

Freixas and Holthausen (RFS, 2005)

As of 2007 (before August) the euro money markets appeared to have been fully integrated (same interest rates). Three cases can be distinguished:

- **No problems of asymmetric information. Single money market**
- **Banks with good rating borrow cross-border. Cross-border interest rates slightly above those prevailing in the liquidity rich country**
- **Rate convergence due to activity of large money-centre banks (TBTF). Small banks borrow in domestic market. Large banks borrow cross border.**

2. Cross-border integration

Freixas and Holthausen (RFS, 2005)

As of 2007 (before August) the euro money markets appeared to have been fully integrated (same interest rates). Three cases can be distinguished:

- **No problems of asymmetric information. Single money market**
- **Banks with good rating borrow cross-border. Cross-border interest rates slightly above those prevailing in the liquidity rich country**
- **Rate convergence due to activity of large money-centre banks (TBTF). Small banks borrow in domestic market. Large banks borrow cross border.**

- 
1. Motivation of the paper
 2. Cross-border integration of the money market: theory
 - 3. The integration of the euro area money market since 2007**
 4. Conclusions

3. Integration of the money market since 2007

After August 2007 / September 2008 we have the following testable hypotheses:

H1. Turmoil had no impact

H2. Switch to segmented market

a. Market breakdown

b. Two-tier system

3. Integration of the money market since 2007

Data source: e-MID

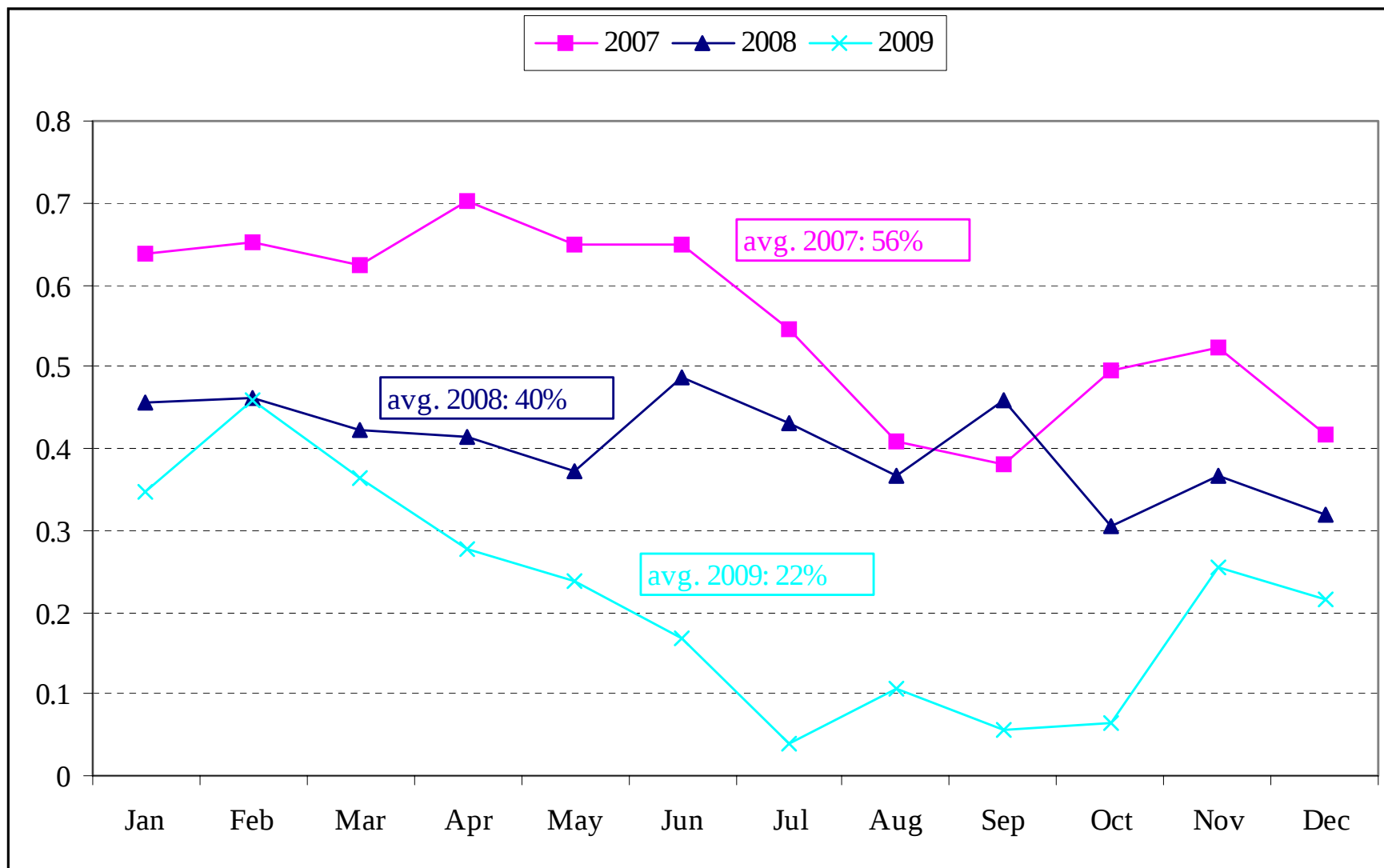
- **Electronic trading platform for unsecured money market transactions operating in Italy**
- **Some facts:**
 - **Ca 17% of total turnover in EUR unsecured money market (ECB, 2004)**
 - **Turnover in O/N segment: ~ EUR 20 billion (2007)**
 - **Share had declined since start of turmoil**

3. Integration of the money market since 2007

Methodology

- **Compare volumes of Italian (domestic trades) and non-Italian banks (cross-border trades)**
- **Study spreads between**
 - Interest rates charged for domestic trades
 - Interest rates charged for cross-border trades
- **The combination of both will allow us to draw inferences on the structure of the money market**

Share of cross-border volumes



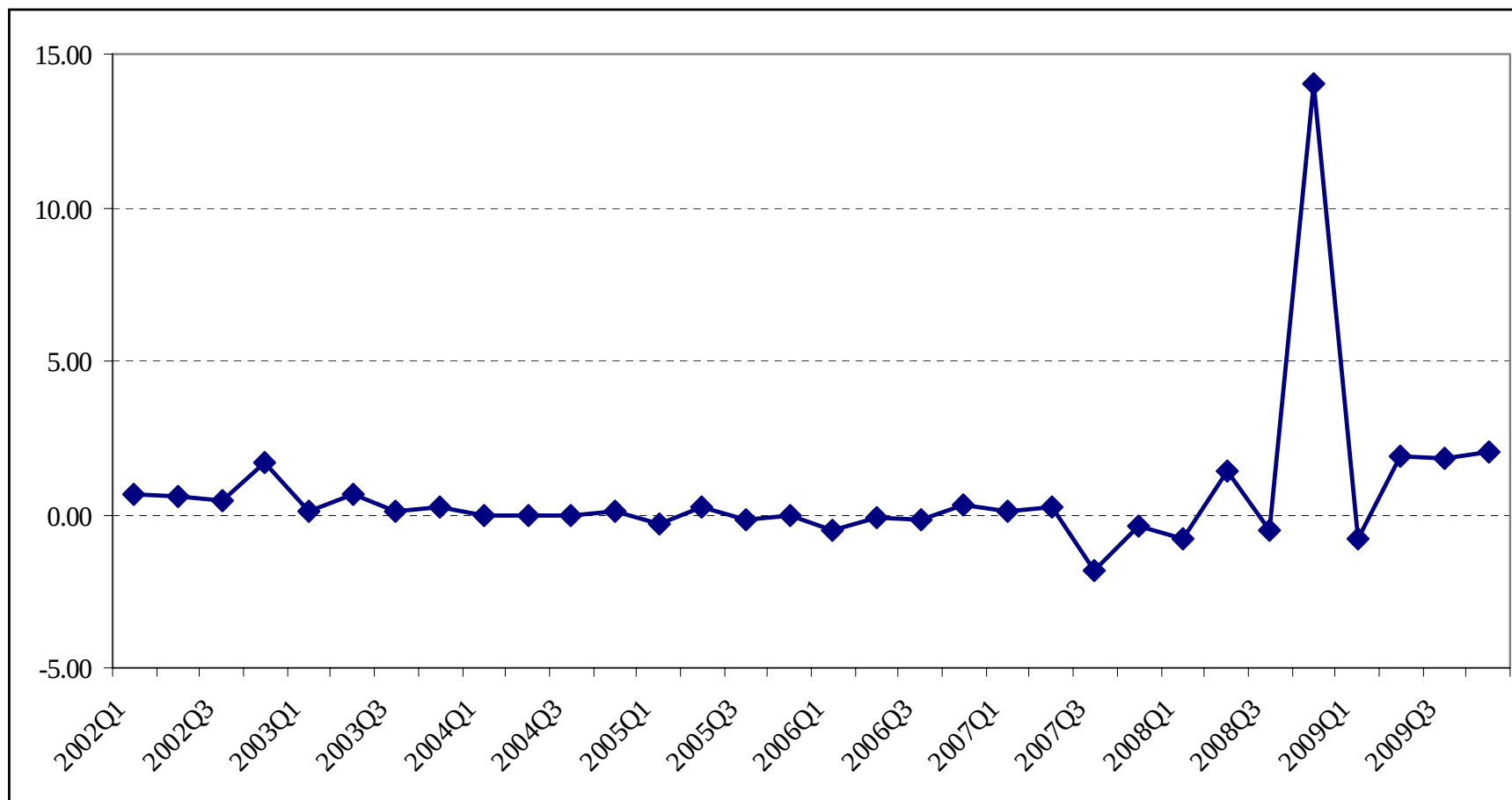
In e-MID, unsecured segment

EUROPEAN CENTRAL BANK

Share of cross-border volumes

- **Turmoil had different impact on money market volumes for domestic and cross-border trades**
- **‘Full integration equilibrium’ (many banks trade cross-border) broke down**
- **Did a segmented market emerge?**
 - **Study interest rates!**

Spread paid on cross-border transactions



Average spread (bp) paid by foreign banks when borrowing in the e-MID market

Spread paid on cross-border transactions

- **Evolution of spreads:**
 - **2002-2003: foreign banks paid a small premium (~1 bp)**
 - **2004-2006: premium disappeared (~ 0 bp)**
 - **2007 (first phase of turmoil): foreign banks get a discount (- 1 bp)**
 - **2008 (post-Lehman): foreign banks pay large premium (+ 14 bp)**
 - **2009 : foreign banks continue paying premium (2-3 bp)**

Three stages of money market integration

2003-early 2007

- Full money market integration

Late 2007 (early turmoil phase):

- Sharp decline in cross-border volumes; lower than average interest rates
- Fewer, better known (less risky) banks trade
- Two tier system (can achieve integration)

Post-Lehman

- Further decline in cross-border volumes, and
- Strong rise in foreign premia.
- Two-tier system breaks down; segmented markets

Presentation

1. Motivation of the paper
2. Cross-border integration of the money market: Theory
3. The integration of the euro area money market since 2007
- 4. Conclusions**

4. Conclusions

Financial turmoil impacted on integration of euro money market through increase in (cross-border) asymmetric information

- **After August 2007:**
 - **Lower volume in cross-country borrowing**
 - **Trading activity of many banks is replaced by two-tier structure**
- **After September 2008:**
 - **Further decline in cross-border volumes**
 - **Two-tier structure breaks down**

4. Conclusions

Caveats:

- **Are e-MID data representative for euro area?**
 - **Possibly: integration achieved in other parts of money market**
- **Missing information: cross-country panel of interest rates**
 - **Do interest rates diverge across countries?**

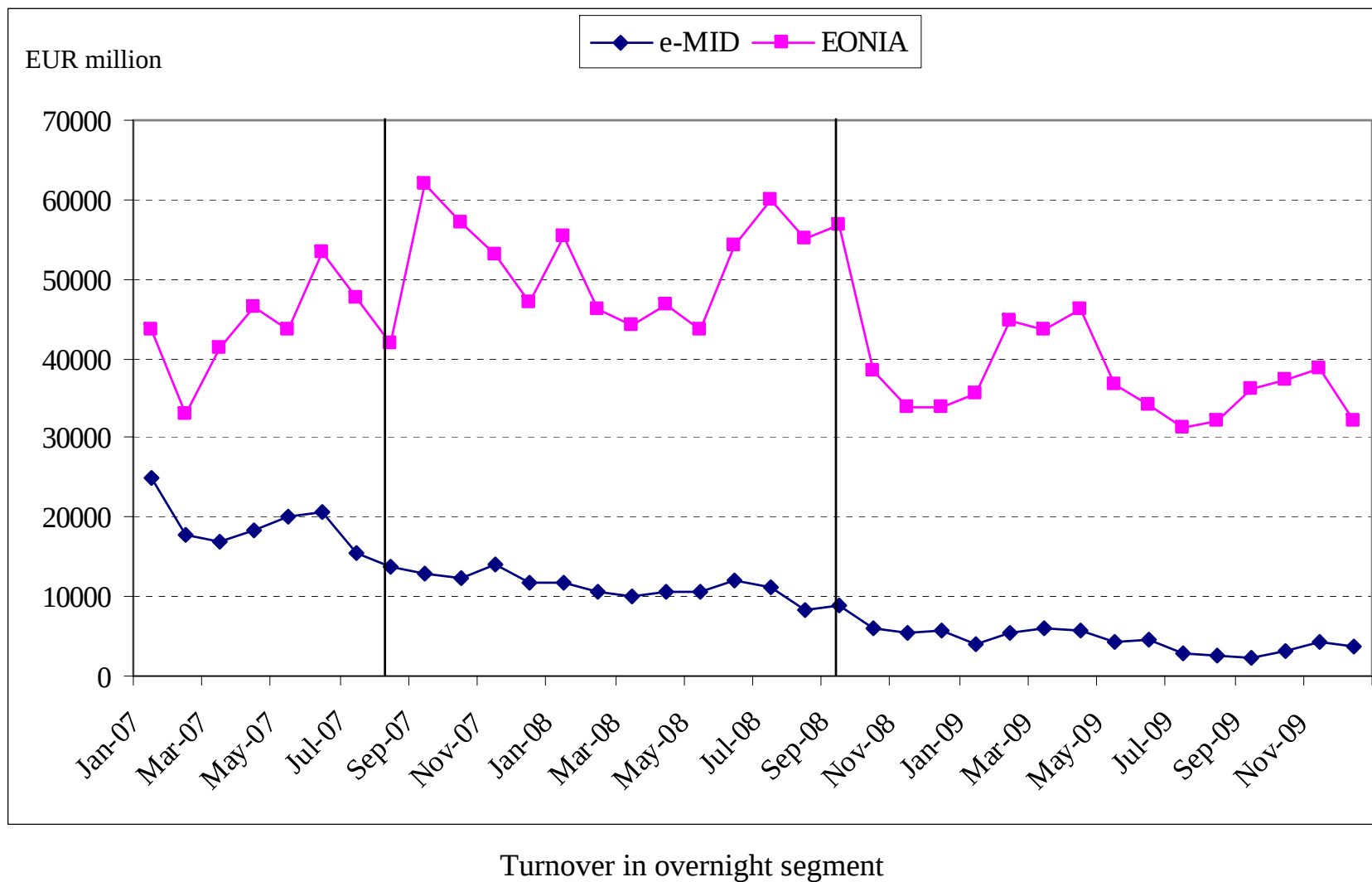
THANK YOU!

Annex: Spreads

Period	Coefficient	Spread
2002Q1	-1.38 ***	0.67
2002Q2	-1.48 ***	0.57
2002Q3	-1.59 ***	0.47
2002Q4	-0.39	1.67
2003Q1	-1.96 ***	0.09
2003Q2	-1.39 ***	0.67
2003Q3	-1.97 ***	0.08
2003Q4	-1.80 ***	0.26
2004Q1	-2.06 ***	-0.01
2004Q2	-2.08 ***	-0.02
2004Q3	-2.09 ***	-0.03
2004Q4	-1.94 ***	0.11
2005Q1	-2.36 ***	-0.31
2005Q2	-1.81 ***	0.24
2005Q3	-2.25 ***	-0.19
2005Q4	-2.09 ***	-0.04

Period	Coefficient	Spread
2006Q1	-2.59 ***	-0.53
2006Q2	-2.14 ***	-0.09
2006Q3	-2.25 ***	-0.20
2006Q4	-1.73 ***	0.33
2007Q1	-1.92 ***	0.13
2007Q2	-1.82 ***	0.24
2007Q3	-3.90 ***	-1.85
2007Q4	-2.45 ***	-0.40
2008Q1	-2.82 ***	-0.77
2008Q2	-0.64	1.41
2008Q3	-2.54 ***	-0.48
2008Q4	11.96 ***	14.01
2009Q1	-2.83 ***	-0.78
2009Q2	-0.15	1.91
2009Q3	-0.26	1.80
2009Q4	2.05 *** (consta	2.05

Annex: EONIA vs. e-MID



Annex: EONIA vs. e-MID

- **Empirical evidence:**
 - **Volumes in the EONIA panel increased**
 - **Volumes in the e-MID declined**
- **Provide evidence of:**
 - **Borrowers switching from an electronic dealership market (**transparent**) to an over-the-counter bilateral market which is more **opaque****
 - **Evidence of the emergence of asymmetric information in the money market**