DEUTSCHE BUNDESBANK EUROSYSTEM

Implementing Monetary Policy in the Eurosystem

– Recent Financial Market Turmoil and Comparison with the Federal Reserve System

Dr Franziska Schobert, Deutsche Bundesbank

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Central Bank Balance Sheet: General Sample

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Assets	**Liabilities & Capital**
1. Foreign assets (incl. gold)	3. Base money 3.1 Currency in circulation 3.2 Reserves of banks 3.2.1 Required reserves 3.2.2 Excess reserves
2. Domestic assets 2.1 Claims on central government 2.1.1 Securities 2.1.1.1 OMO: outright holdings 2.1.1.2 Purchased by other procedures 2.1.2 Others: loans, advances 2.2 Claims on banks 2.2.1 OMO: repos, collateralized lending 2.2.2 Others, i.e. credit, bail-out operations 2.3 Claims on private sector 2.4 Other assets	4. Domestic liabilities 4.1 OMO: Debt securities sold 4.2 Liabilities to banks 4.2.1 OMO: reverse repos, deposit taking auctions 4.2.2 Others 4.3 Government deposits 4.4 Other liabilities
	5. Foreign liabilities
	6. Capital and reserves

Central Bank Balance Sheet: Ideal Format

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Autonomous factors	
Net foreign reserves	Currency in circulation
Domestic assets	Government deposits
	Other liabilities & capital
Monetary policy operations	
Standing facilities	Standing facilities
OMO	OMO
	Reserves of banks (including required reserve holdings)

Based on Bindseil, U. (2004), Monetary Policy Implementation, Oxford University Press, p. 48

Monetary Policy Instruments

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	Liquidity providing	Liquidity absorbing
Standing facility SF	e.g. discount facility, lombard/ credit/ „advance" facility	e.g. deposit facility
Open market operations: OMO I	Reverse transactions	Reverse transactions
Open market operations: OMO II	Outright purchases	Outright sales or redemptions
Minimum Reserves MR		Fully remunerated? Differentiation between reserve base categories? vault cash included? averaging provision?

Monetary Policy Instruments: Eurosystem

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	Liquidity providing	Liquidity absorbtion
SF	Marginal lending facility (ML)	Deposit facility (DF)
OMO I	Reverse transactions: Repos or collateralized lending	(usually) Term deposits
MR		• Fully remunerated • uniform 2 (oder 0) % • averaging provision

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Eurosystem Monetary Policy Operations

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Monetary policy instruments	Type of transactions: Provision of liquidity	Type of transactions: Absorption of liquidity	Maturity	Frequency	Procedure
Open market operations					
Main refinancing operations	Reverse transactions	-	One week	Weekly	Standard tenders
Longer-term refinancing operations	Reverse transactions	-	Three months	Monthly	Standard tenders
Fine-tuning operations	Reverse transactions Foreign exchange swaps	Reverse transactions Collection of fixed-term deposits Foreign exchange swaps	Non-standardised	Non-regular	Quick tenders Bilateral procedures
Structural operations	Reverse transactions	Issuance of debt certificates	Standardised/non-standardised	Regular and non-regular	Standard tenders
	Outright purchases	Outright sales	-	Non-regular	Bilateral procedures
Standing facilities					
Marginal lending facility	Reverse transactions	-	Overnight	Access at the discretion of counterparties	
Deposit facility	-	Deposits	Overnight	Access at the discretion of counterparties	

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Collateral: Eligibility criteria

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Eligibility criteria	Marketable assets	non-marketable assets	
Type of asset	ECB debt certificates. Other marketable debt instruments.	Credit claims.	RMBDs
Credit quality	The asset must meet high credit standards. The high credit standards are assessed using ECAF rules for marketable assets.[3]	The debtor/guarantor must meet high credit standards. The creditworthiness is assessed using ECAF rules for credit claims.	The asset must meet high credit standards. The high credit standards are assessed using ECAF rules for RMBDs.
Place of issue	EEA.[3]	Not applicable.	Not applicable.
Settlement / handling procedures	Place of settlement: euro area. Instruments must be centrally deposited in book-entry form with central banks or an SSS fulfilling the ECB's minimum standards.	Eurosystem procedures.	Eurosystem procedures.
Type of issuer / debtor / guarantor	Central banks. Public sector. Private sector. International and supranational institutions.	Public sector. Non-financial corporations International and supranational institutions.	Credit institutions.
Place of establishment of issuer / debtor / guarantor	Issuer[3]: EEA or non-EEA G10 countries Guarantor[3]: EEA.	Euro area.	Euro area.
Admissible markets	Regulated markets. Non-regulated markets accepted by the ECB	Not applicable.	Not applicable.
Currency	Euro	Euro.	Euro.

Acceptance of non-euro denominated collateral in contingencies

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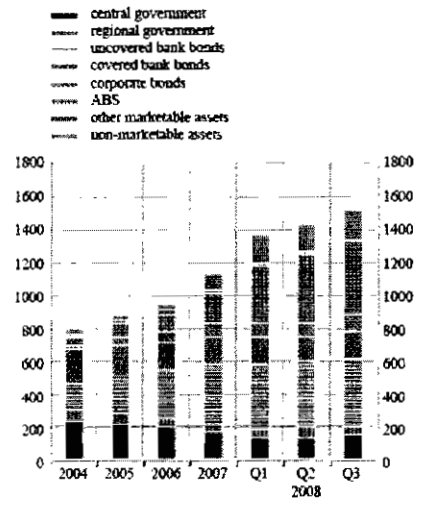
Chart 4 Use of collateral

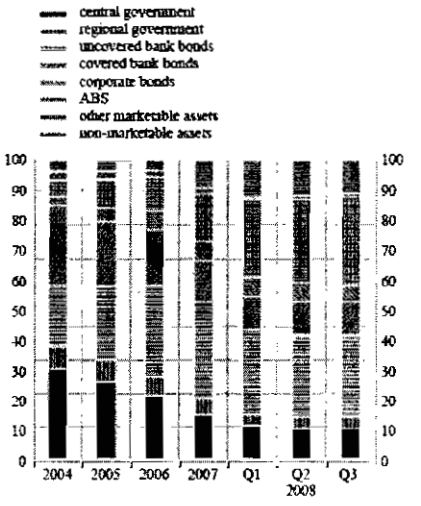
(EUR billion)



Source: ECB.

Chart 5 Shares of asset types in total used collateral

(percentages)



Source: ECB.

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Liquidity Management in the Eurosystem

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OMO + (ML-DF) – MR
+ Autonomous factors (net liquidity providing)
= Excess Reserves

Excess Reserves to a minimum natural level = GOAL

Open Market Operations, Standing Facilities (Expectation=0), and Reserve Requirements = INSTRUMENTS

Autonomous Factors = ESTIMATE (out of control of central banks)

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Eurosystem: Operational Target and Interest Rate Corridor

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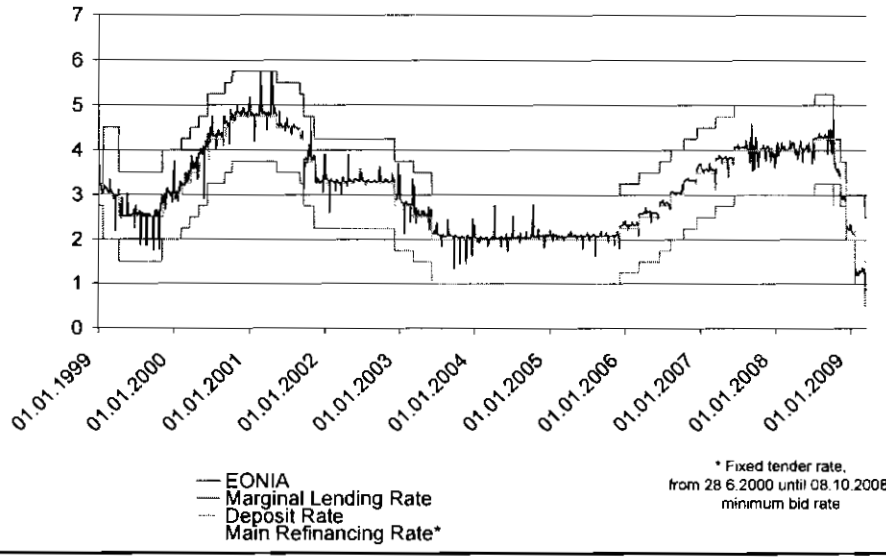

Policy Responses from Central Banks to Financial Turmoil

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Active liquidity management	More flexible response to shifts in the demand for reserves
Enhanced liquidity provision	Increased supply of longer-term funds, expansion of collateral accepted and widening of the range of counterparties
Support to market trading activity	Establishment of securities lending facilities to improve the functioning of interbank repo markets
Increased cooperation	Enhanced communication, collective market monitoring, swap agreements
Emergency liquidity assistance	Liquidity support to institutions under stress

González-Páramo: The financial market crisis, uncertainty and policy responses, Speech, 21.11.2008, BIS Review 147/2008

Responses of the Eurosystem

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Robust institutional framework	(1) Access to wide range of counterparties (2) Wide spectrum of collateral in all clases of lending operations (3) Large scale OMOs
Phase I „before Lehman"	- „Frontloading" - Shift to longer-term refinancing operations - Reciprocal currency arrangement in USD
Phase II „after Lehman"	- Fixed rate tender with full allotment - Temporary reduction of the interest rate corridor - Expanded list of collateral - Unlimited reciprocal currency arrangement in USD - SNB agreement for providing CHF in euro area - Agreement with several other central banks in order to supply EUR in their banking sectors.

González-Páramo: The financial market crisis, uncertainty and policy responses, Speech, 21.11.2008, BIS Review 147/2008

"Frontloading" in the Eurosystem

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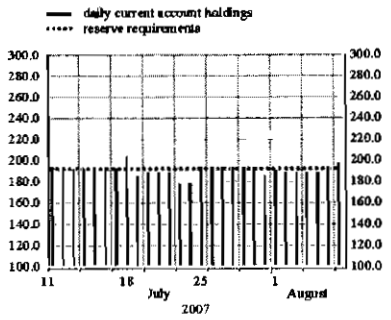
Chart 2 Fulfilment of reserve requirements in "normal" times

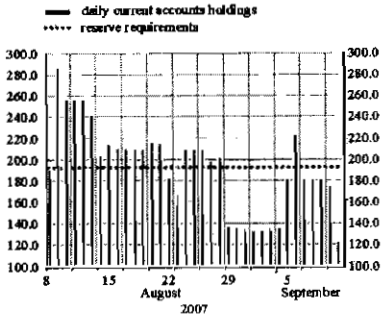
(EUR billions; maintenance period of 11 July-7 August 2007)



Source: ECB.

Chart 3 Fulfilment of reserve requirements during the financial market turmoil

(EUR billions; maintenance period of 8 August-11 September 2007)



Source: ECB.

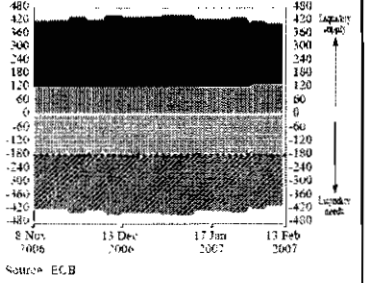
The Eurosystem's OMOs during the recent period of financial market volatility 15
ECB Monthly Bulletin, May 2008

Liquidity Conditions and Monetary Policy Operations

Chart 4 Liquidity needs of the banking system and liquidity supply

(EUR billions; daily averages for the whole period are shown next to each item)

- main refinancing operations: €312.80 billion
- longer-term refinancing operations: €121.35 billion
- current account holdings: €174.88 billion
- reserve requirement level (reserve requirements: €174.07 billion, excess reserves: €0.81 billion)
- autonomous factors: €259.28 billion

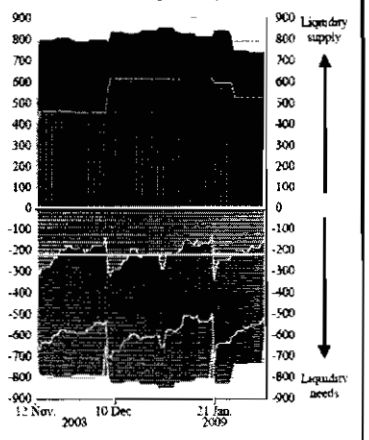


Source: ECB

Chart 4 Liquidity needs of the banking system and liquidity supply

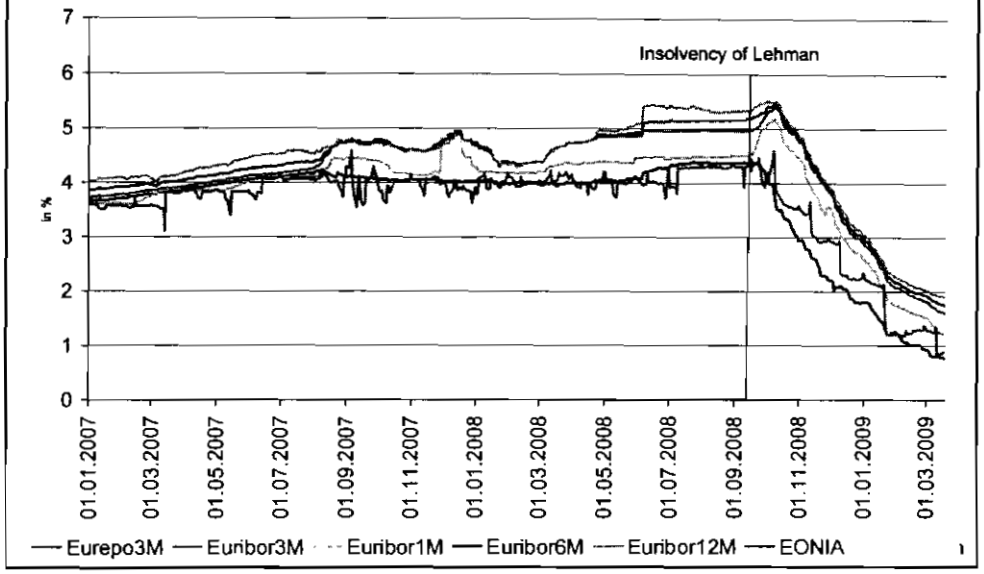
(EUR billions; daily averages for the whole period are shown next to each item)

- main refinancing operations: €256.9 billion
- longer-term refinancing operations: €551.1 billion
- current account holdings: €220.8 billion (excess reserves: €1.3 billion)
- reserve requirements: €219.5 billion
- autonomous factors: €372.7 billion
- fine-tuning operations: €4.5 billion
- net recourse to deposit facility: €209.7 billion

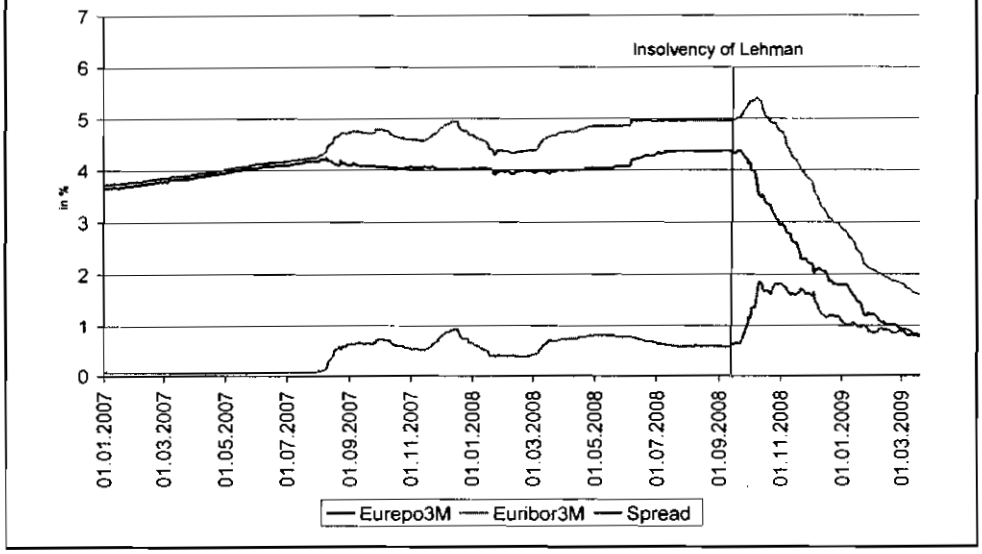


Source: ECB.

Risk Premia in the Money Market of the Euro Area



Risk Premia in the Money Market of the Euro Area



Money Market Tensions

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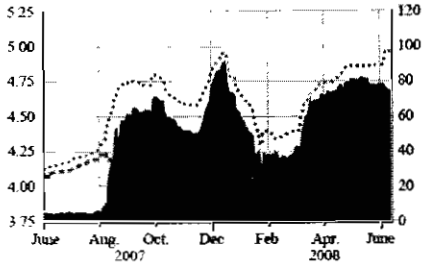
Chart A 3-month Euribor – Eonia swap index spreads

(in basis points)

spread
Euribor
EONIA swap index

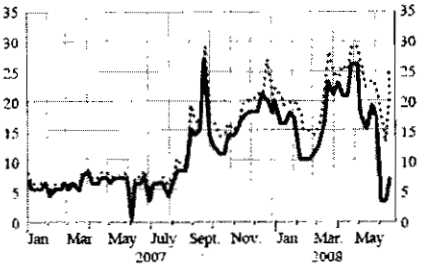


Sources: EBF and Bloomberg.

Chart B Spread between the relevant rates of the Eurosystem main refinancing operations

(in basis points)

marginal rate - minimum bid rate
weighted average rate - minimum bid rate



Sources: EBF and Bloomberg.

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Euro money market study 2008, p. 7,8

Decomposing Euribor Spreads

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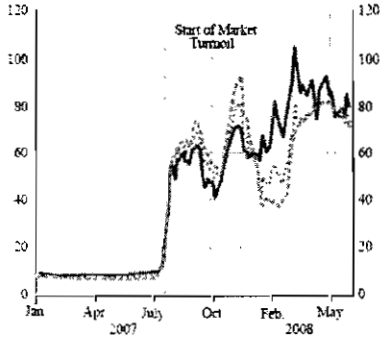
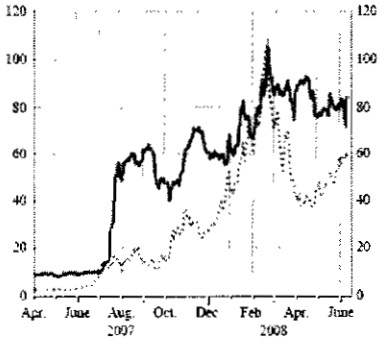
spread 1 year
spread 6 month
spread 3 month



Sources: EBF ACI

Euribor-Eurepo spread
average CDS spread



Sources: Bloomberg and www.eurepo.org

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Euro money market study 2008, p. 30-31

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Key Operational Features

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	Eurosystem	Federal Reserve System
Decision-making body	ECB-Council	Federal Open Market Committee (FOMC)
Operational target	EONIA (implicit)	Federal Funds Rate (explicit)
Counterparties	Wide range	Primary dealer → wide range
Main monetary policy instrument	OMO I	OMO I & II

Monetary Policy Instruments: Federal Reserve System

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	Liquidity provision	Liquidity absorption
SF	• (Term) **Discount Window** • Primary Dealer Credit Facility • Transitional Credit Extensions • ABCP Money Market Fund Liquidity Facility • Commercial Paper Funding Facility (CPFF) • Money Market Investing Funding Facility • Term Asset-Backed Securities Loan Facility*	

Bold: Instruments that have existed before mid-2007
http://www.newyorkfed.org/markets/Forms_of_Fed_Lending.pdf

* Part of Financial Stability Plan of the US Government („Consumer and Business Lending Initiative")

Monetary Policy Instruments: Federal Reserve System cont'd

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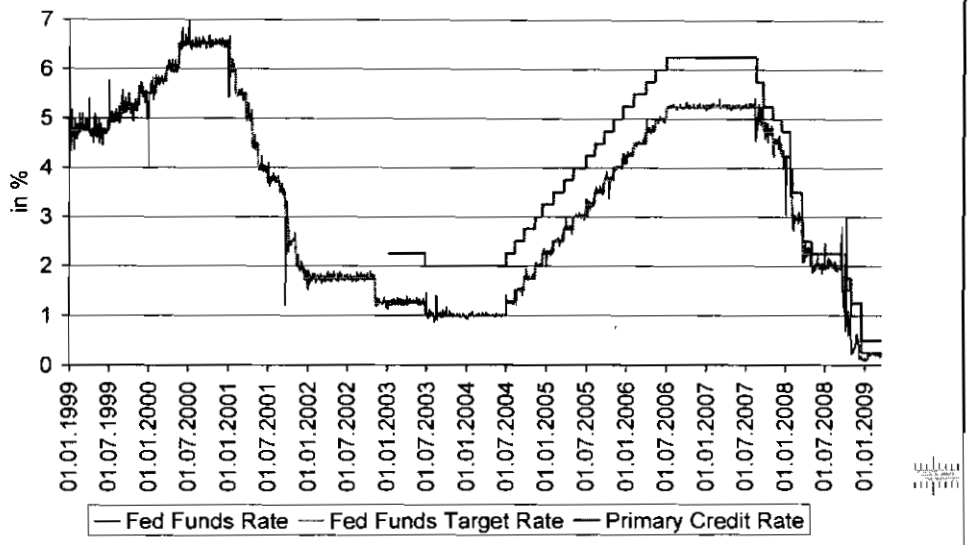
OMO I	• **Regular OMO: Repos** • Single Tranche OMO Program • Term Auction Facility (TAF)	**Reverse Repos**
OMO II	**Outright purchases of securities**	**Outright sales or redemption**
MR		• Remunerated* • **Several categories**** • **Averaging provision**

* Since 6 October 2008 (incl. excess reserves), since 5 November 2008 market-oriented
** Purpose: Lower burden for smaller banks

Fed: Operational Target and Monetary Policy Rates



Balance Sheet of the Eurosystem (EUR bn)

Assets	22.6.07	9.1.09	Liabilities	22.6.07	9.1.09
Foreign Reserves	323,3	377,9	Banknotes	627,9	751,1
Other foreign assets	26,0	218,0	Reserves of banks	189,5	157,5
Other assets	399,2	621,2	Gov. deposits	49,9	90,8
OMO I: MRO	288,0	216,8	Other liabilities & capital	319,2	728,6
OMO I: LTRO	150,0	610,2	OMO I *	0,0	2,3
SF: Marg.lend.fac.	0,1	1,5	SF: Deposit facility	0,1	315,3
Total assets	*1.186,6*	*2.045,6*	*Total liabilities & capital*	*1.186,6*	*2.045,6*

MRO: Main Refinancing Operations, LTRO: Longer Term Refinancing Operations
* Fine Tuning Operations

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Balance Sheet of the Federal Reserve System (USD bn)

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Assets	28.6.07	7.1.09	Liabilities	28.6.07	7.1.09
Gold, SDRs, Coins	14,1	14,9	Banknotes	775,1	848,0
Other assets (incl. foreign assets)	44,1	571,9	Reserves of banks	16,2	846,1
OMO II: Securities	790,5*	475,7**	Government deposits	4,0	287,1
OMO I: Repos & TAF	20,0	483,9	Other liabilities & capital	43,5	70,4
SF: Disount window...	0,2	481,3°	OMO I: Rev.Repos	30,1	88,9
„Bail outs"	0	112,8			
Total assets	*868,9*	*2.140,5*	*Total liabilities & capital*	*868,9*	*2.140,5*

* only US treasuries

° of which: 334,4 CPFF

** of which: 19,3 Federal agency;
161,1 Term securities lending

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Globalization, Financial Innovation and the Monetary Policy Transmission Mechanism

Dr. Franziska Schobert
Technical Central Bank Cooperation
Deutsche Bundesbank

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- General Considerations
- Transmission Channels

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DEUTSCHE BUNDESBANK EUROSYSTEM

- **General Considerations**
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Stylised Transmission Mechanism

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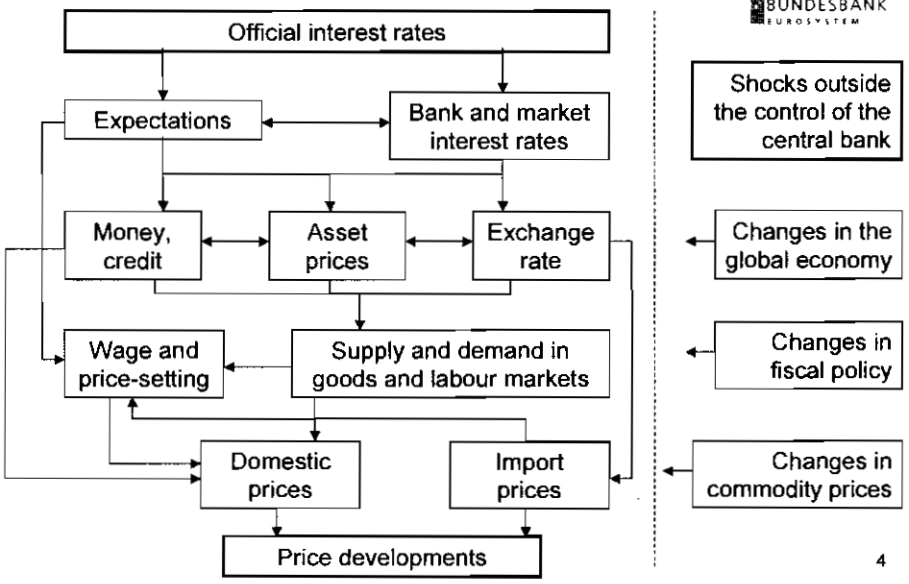

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General Considerations on Empirical Evidence

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Reduced form evidence

- no restriction on the way monetary policy affects economic activity
- possibility of reverse causation

Structural model evidence

- provides an understanding of how the economy works
- uncorrectly specified structure can be seriously misleading

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Some VAR Results for Germany
Impulse responses to restrictive mp shock

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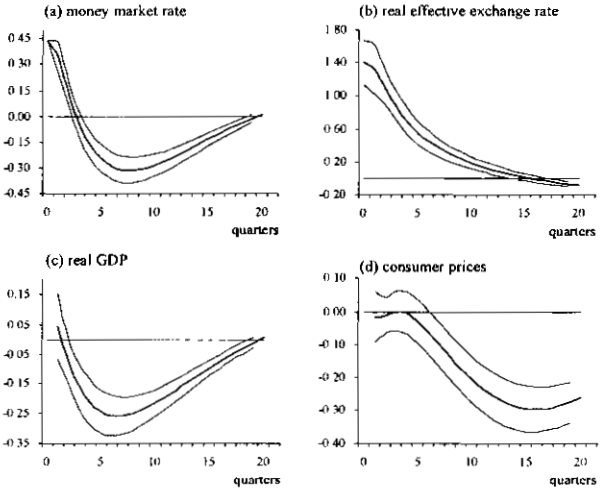

Mojon, B./Peersman, G. (2001): A VAR description of the effects of monetary policy in the individual countries of the euro area, ECB Working Paper No.92.

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Empirical Evidence for the Euro Area

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Two approaches

- Structural econometric models
- Disaggregated data from balance sheets of non-financial firms and banks

ECB Monthly Bulletin October 2002, Publications of the ECB Monetary Transmission Network: ECB Working Paper No. 91-114, NBER Working Paper No. 9984, Angeloni, I., Kashyap, A. and B. Mojon (2003), "Monetary Policy Transmission in the Euro Area. A Study by the Eurosystem Monetary Transmission Network", Cambridge University Press

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Macroeconometric Evidence for the Euro Area

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Main findings of decomposing the **interest rate channels:**

Large role of investment that responds to changes in the user **cost of capital**

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Differences in Monetary Policy Effects

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During the business cycle of the euro area:

Larger effects during a downturn

Across sectors in the euro area:

Depending on the nature of the products, on capital intensity and on the financial structure

Across EMU countries:

No evidence on systematic differences

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- General Considerations
- **Transmission Channels**

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Transmission Channels

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- Interest rate channels
- Exchange rate channel
- Other asset price channels
- Credit channels

Bank of International Settlements (1998) Policy Paper No. 3, The transmission mechanism of monetary policy in emerging market economies

Mishkin, Frederic (1995) Symposium on the monetary transmission mechanism, Journal of Economic Perspectives, 9

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Interest Rate Channels

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Cost-of-capital channel: Changes in real interest rates also change the cost of acquiring new capital and thereby affect the demand for investment or durable consumer goods.

Substitution channel: A temporary increase in real interest rates makes it more rewarding for households to delay consumption and increase saving. As households are willing to postpone consumption, current domestic demand for consumer goods and services is reduced.

Wealth channel: Price adjustments in domestic asset markets – for bonds, equities and real estate – affect the value of households' wealth and therefore, spending.

Income channel: Interest rate changes can also have an impact on disposable income directly by affecting the proceeds from holding or borrowing via short-term and variable-coupon securities.

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Real Interest Rate

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$$(1+i) = (1+r)\cdot(1+\pi^{\exp})$$

$$r = \frac{(i-\pi^{\exp})}{(1+\pi^{\exp})}$$

$$r \approx i - \pi^{\exp}$$

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Real Interest Rates cont'd

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- In presence of price rigidities, increases of *nominal* interest rates lead to increases of *real* interest rates
- Without making an assessment of future inflation, the stance of monetary policy cannot be judged by the level of *nominal* interest rates.

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Other Asset Price Channels, ie

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Equity prices↑

↓

Tobin's q: **Market value of firms↑**
Replacement cost of capital↑

↑

Interest rates↑

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Exchange Rate Channel

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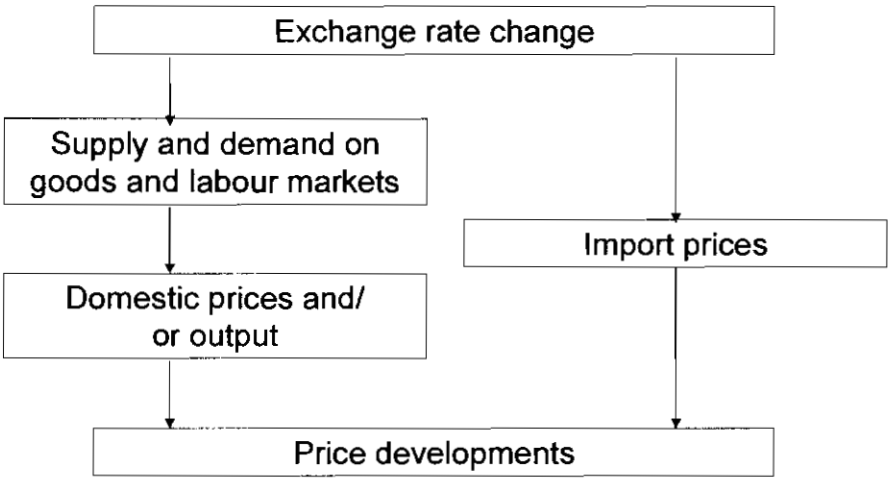

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The Exchange Rate as a Shock Absorber

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Challenges to the "traditional" exchange rate channel:

- Liability dollarization and negative balance sheet effects
- Exchange rate pass-through effects, e.g. the impact of indexation and currency invoicing behaviour of exporters

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Liability Dollarization

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Negative balance sheet effects reduce positive expenditure-switching effects of a depreciation on output

Hedging may merely change currency risk into credit risk.

Evidence on "Fear of Floating"

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Exchange Rate Pass-Through I

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Pass-through to import prices (and possibly wholesale/ producer prices): important for expenditure switching effects and thus, for correcting the trade balance.

Pass-through to consumer prices (and domestic wages): limits changes in international competitiveness.

Full indexation: Extreme case of full pass-through to consumer prices, e.g. after nominal depreciation: any export competitiveness gained would be cancelled out, as the real exchange rate would not change at all.

Ito, T and S. Kiyotaka (2008) Exchange rate changes and inflation in post-crisis Asian economies: Vector autoregression analysis of the exchange rate pass-through, Journal of money, credit and banking, 40, 7, pp. 1407-1438

Exchange Rate Pass-Through II

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Main findings: Decline of import-price- and consumer-price-pass-through for almost all G7 countries

Open issue: Can the fall in consumer-price-pass-through (the "second stage"-pass-through) be explained by the decline in the import-price- or "first-stage"-pass-through.

Ihrig, J., M. Marazzi and A.D. Rothenberg (2006), "Exchange-Rate Pass-Through in the G-7 countries", Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, No. 851, January.

Currency Invoicing Behaviour of Exporters

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When prices are determined in the exporter's currency (producer currency pricing or **PCP**) exchange rate pass-through to import prices tends to be much larger than when prices are set in the importer's currency (local currency pricing or **LCP**).

In the extreme case of a purely exogenous exchange rate shock, **exchange rate pass-through** would be **one under PCP** and **zero under LCP**.

World currency pricing: Intraregional trade is invoiced in a third currency.

Pricing to Market (PTM)

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- Stylized fact: Median pass-through of currency depreciation to manufacturing import prices around 50% over a one-year horizon.
- PTM: Exporters abroad tailor prices they charge to individual market destinations.
- The tougher the competition in the respective sales market, the less the firm's own revenues and costs play a key role in short-term price-setting and the more its competitors' prices play a role.

Krugman (1986): Pricing to market when the exchange rate changes, NBER WP No. 1926
Bundesbank (1997) Exchange rates and trade, Monthly Report January

PTM and Local Currency Pricing (LCP)

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- Local Currency Pricing (LCP):
  Exporters preset prices in the buyer's currency and meet demand at posted local currency prices in the short run.
- Lower pass-through to import prices reduces expenditure-switching effects.

Obstfeld, M. (2002) Exchange Rates and Adjustment: Perspectives from the New Open-Economy Macroeconomics, Monetary and Economic Studies (Special Edition), December

Price Setting Behaviour and Trade in Germany I

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- **Stylized fact:** German importers adjust their euro-denominated prices far more strongly to exchange rate movements than do exporters.
- **Commodities and semi-finished goods are more important for imports**, e.g., commodities are often priced in US dollars in global markets and the demand is largely price inelastic; therefore, a virtually complete pass-through for imported petroleum products can be demonstrated.

Macroeconomic effects of changes in real exchange rates, Bundesbank, Monthly Report March 2008, pp. 33-46

Price Setting Behaviour and Trade in Germany II

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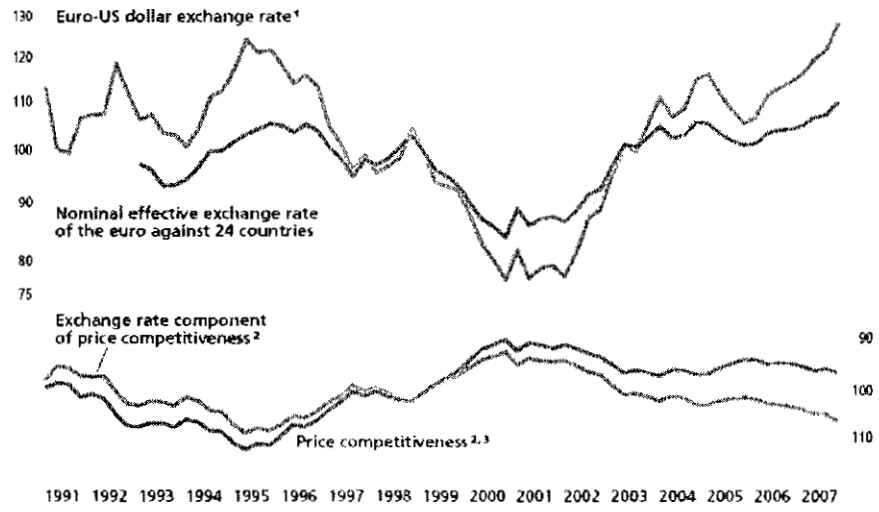
- **PTM is more relevant for exports** (if exchange rate change is regarded as transient): PTM is more important, the tougher the competition in the respective sales market. This can apply to various product types, but significant factors include the degree of concentration, market segmentation or homogeneity of the traded product, e.g. foods, motor vehicles or computers.
- If exchange rate change is regarded is permanent: exporters rethink their strategic behaviour, e.g. restructuring of production chains ore increase in foreign direct investment ("natural hedging")

Macroeconomic effects of changes in real exchange rates, Bundesbank, Monthly Report March 2008, pp. 33-46

Exchange rates and the German economy's price competitiveness

1999 Q1 = 100, quarterly, log scale



1 Before 1999: D-Mark-US dollar exchange rate. — 2 Against 19 industrial countries, inverted scale: rise in the curve (decline in values) indicates increase in competitiveness. — 3 Based on the deflators of total sales.

Deutsche Bundesbank

Bundesbank, Monthly Report March 2008, p. 35

Regional and product structure of German foreign trade *

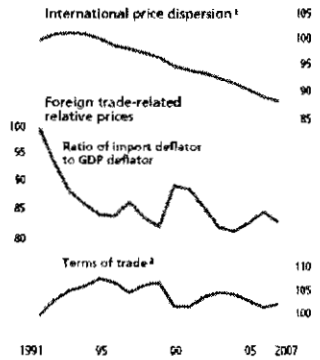
Data for 2006

Product category	Euro area	European countries in transition	Other European countries	North America	Japan	Other Asian countries	OPEC	All seven regions
	Percentage share in total exports of each product category							
Food	60.2	13.1	17.4	3.2	0.6	0.9	1.5	96.9
Textiles	48.9	23.5	15.5	3.3	0.7	2.4	0.6	94.9
Paper products	48.2	16.2	18.2	5.0	0.5	3.4	1.6	93.1
Petroleum products	53.0	11.5	20.2	8.8	0.1	0.6	0.2	94.4
Chemicals	46.2	12.6	13.8	9.7	2.2	6.0	1.5	92.0
Plastic products	44.8	17.8	16.3	7.1	0.9	3.8	1.5	92.2
Metals	43.6	16.9	16.4	7.2	0.9	5.7	3.1	93.8
Machinery	30.0	17.1	13.0	10.7	1.5	12.2	3.6	88.1
Computers	45.8	15.6	23.4	4.0	0.6	2.9	2.8	95.1
Electrical equipment	33.1	16.6	14.1	11.3	2.0	10.6	2.7	90.4
Motor vehicles	39.0	12.7	17.3	15.0	2.3	4.2	2.0	92.5
All products	41.8	14.6	15.7	9.5	1.6	6.6	2.2	92.0

Bundesbank, Monthly Report March 2008, p. 36

International relative prices

1991 = 100, log scale



1 Ratio of domestic deflator of total sales to the trade-weighted deflators of total sales of 19 industrial countries in local currency. — 2 Based on the national accounts deflators.

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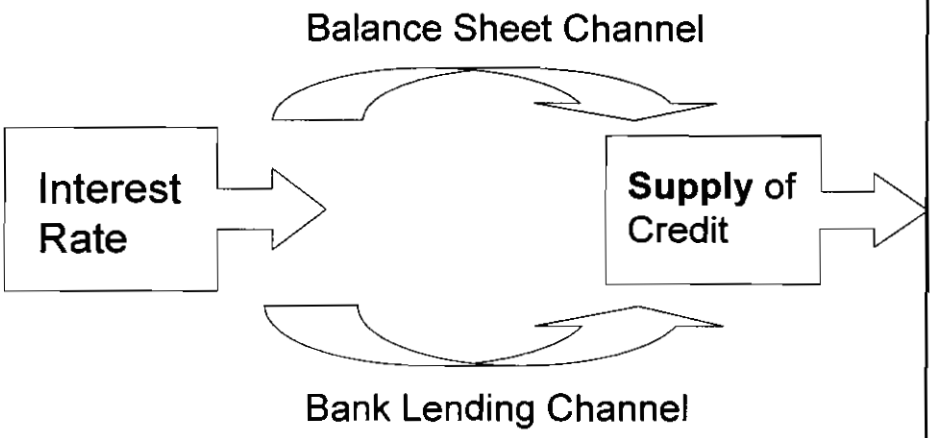
Bundesbank, Monthly Report March 2008, p. 39

Credit Channel



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Credit Channel

- **Precondition**: Financial market imperfections
- **Balance Sheet Channel:**

  Restrictive monetary policy reduces value of collateral and thereby the supply of finance.

- **Bank Lending Channel:**

  Restrictive monetary policy reduces deposits and the supply of bank loans.

Deutsche Bundesbank (2001), Monthly Bulletin, Bank balance sheets, bank competition and monetary policy transmission, September

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Identification Problem

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- What causes a reduction of loans: Credit demand or credit supply?
- Possible solution: Evidence on the credit channel more likely for small firms/ banks
- Practical approach: Can we find heterogeneity in microdata?

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Microeconometric Evidence and the Credit Channel

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No central role of loan supply effects in the Euro Area

Contrary to the US, small or less capitalised banks do not seem to react differently to other banks in most countries.

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Possible Reasons

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- Existence of relationship banking
- Foreign ownership
- Membership of bank networks
- Explicit or implicit deposit insurance schemes or other forms of guarantee

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Example: Network Structure among German Banks

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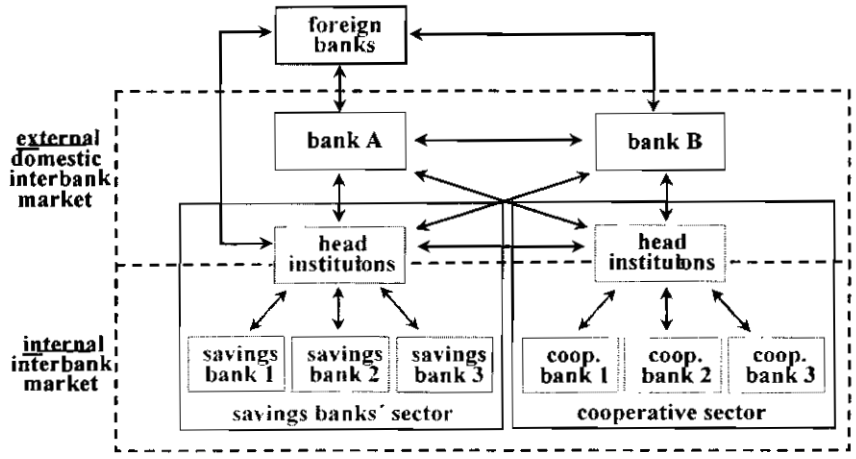

Based on: Upper, C. /Worms, A. (2004):Estimating Bilateral Exposures in the German Interbank Market: Is there A Danger of Contagion? in: *European Economic Review* 48(4), pp. 827-849.

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Monetary Policy and Interbank Flows

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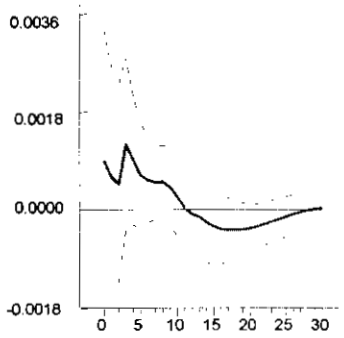
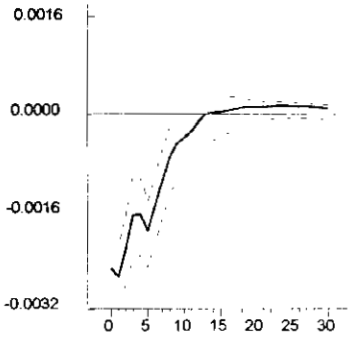
- Impulse responses to restrictive mp shock

Loans to non-banks by small banks



Loans to non-banks by large banks



For details see Ehrmann, M./Worms, A. (2004): Bank networks and monetary policy transmission, in: *Journal of the European Economic Association*. 2 (6), December 2004 , 1-24.

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Monetary Policy and Interbank Flows

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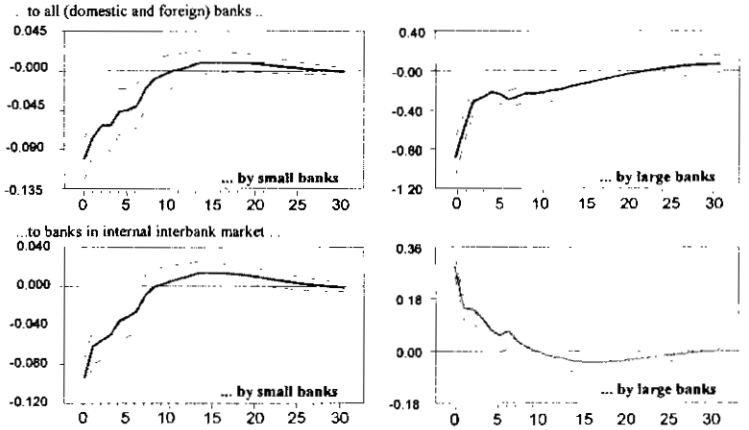
- Impulse responses to restrictive *mp* shock: net lending...



For details see Ehrmann, M./Worms, A. (2004): Bank networks and monetary policy transmission; in: *Journal of the European Economic Association* 2 (6), December 2004 , 1-24

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„Risk-Taking" Channel

Background: Inverse relationship between financial asset prices and interest rates (including risk premia).

Several dimensions, i.e. monetary policy may

- affect the risk perception and risk tolerance of banks (and non-banks) by affecting collateral values, e.g. banks tend to lend to riskier borrowers when the monetary policy stance is accommodative.
- drive a wedge between actual returns and some institutional investors' nominal return targets, e.g. "search for yield", excessive risk-taking if market participants expect "insurance" from the central bank against downside risks.

ECB Monthly Bulletin 08/2008 „The Role of Banks in the Monetary Policy Transmission Mechanism, 85-98

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Globalisation and Structural Changes to the Financial Sector

Globalisation – e.g. in international trade and financial markets – may have changed the relationships between key domestic macroeconomic variables worldwide.

Structural changes to the financial sector in recent years, e.g.

- multitude of credit market innovations including credit risk transfer instruments,
- more risk-sensitive accounting and regulatory frameworks,
- emergence of non-bank credit market investors.

→ Banking has become more flexible but also more risk-sensitive.

ECB Monthly Bulletin 08/2008 „The Role of Banks in the Monetary Policy Transmission Mechanism", 85-98
Weber/ Gerke/ Worms (2008): Has the monetary transmission process in the euro area changed? Evidence based on VAR estimates, paper presented at the 7th BIS Annual Conference

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Tentative Implications for Transmission Channels:

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- **Interest rate channel**
  - Strengthening effects: faster pass-through from short-term interest rates to bank rates due to increased competition and consolidation in the banking system and deepening of financial markets.
  - Weakening effects: Financial openness of many countries has increased very strongly, even more than their trade openness. Increased financial integration could have eroded monetary policy's influence on national long-term interest rates (Example: "conundrum" of US long term interest rates 2004-06)

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Tentative Implications for Transmission Channels:

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- **Exchange rate channel:**

  Globalisation in international trade and financial markets supports stronger effects, however, empirical evidence is inconclusive (e.g. *liability dollarization*, *pricing to market*, *natural hedging* etc.)

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Tentative Implications for Transmission Channels:

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- **Bank lending channel:**

  Advances in credit risk transfer instruments are likely to have reduced the effectiveness of the bank lending channel in normal circumstances, while potentially making it more pronounced if the securitisation markets grind to a halt.

- **Balance sheet channel:**

  Ambiguous effects: Consolidation in the banking system can have increased or decreased the importance of collateral (e.g. superior knowledge to assess borrower risk versus lower institutional knowledge on local borrowers).

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