

Liquidity Crunch: An International Perspective

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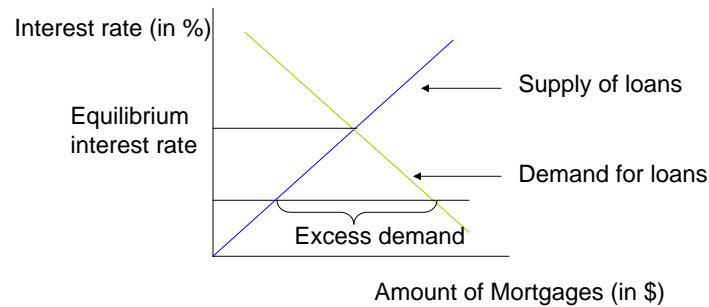
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What is a “liquidity crunch”?

- A situation in which the price system doesn't work any more to make supply of loans equal to demand for loans.

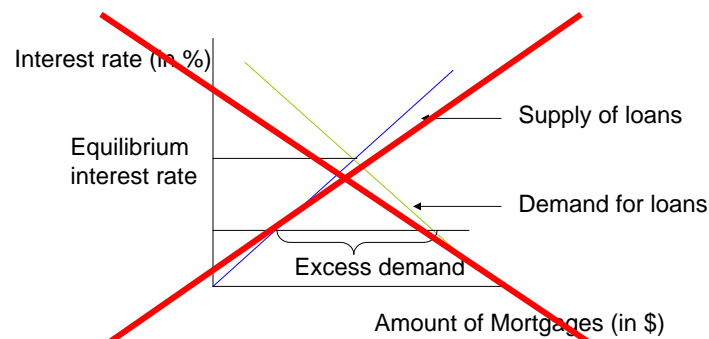
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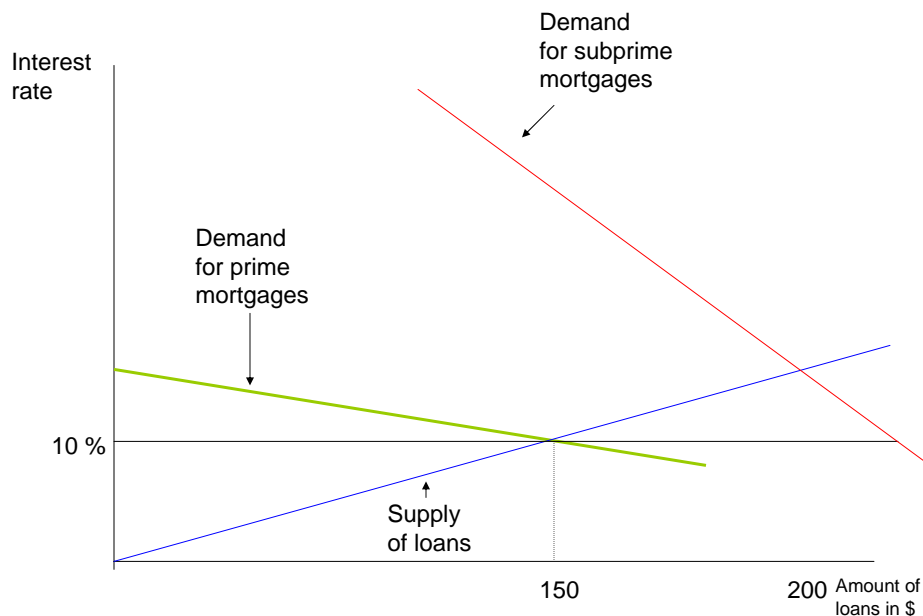
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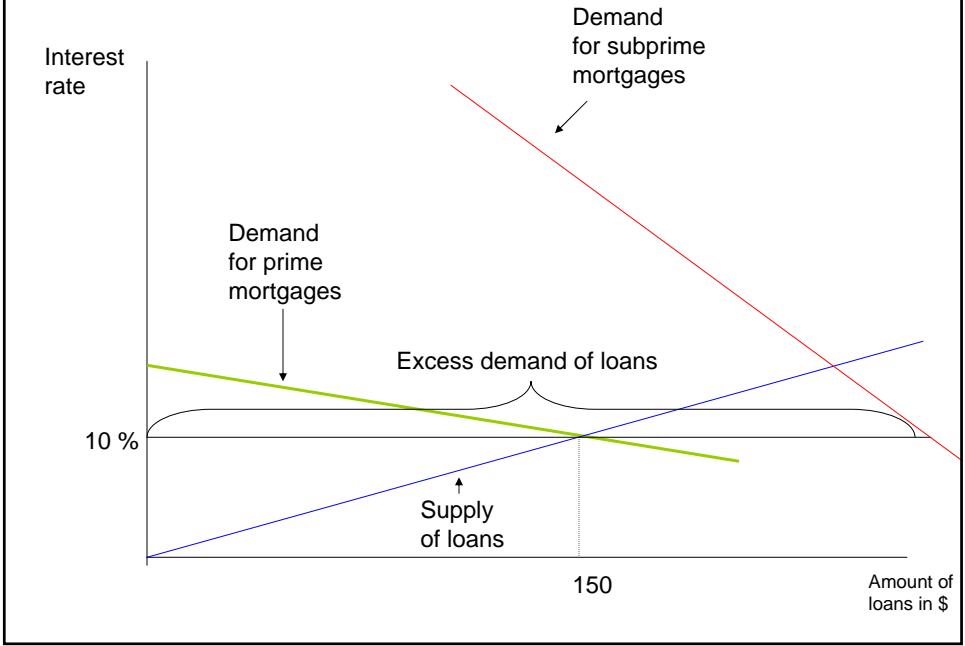
Credit crunch and information

- Why doesn't the price system work any more during a credit crunch?
 - Information problems:
 - Inability to tell apart prudent from imprudent borrowers
 - Who is exposed to subprime mortgages and who isn't?
 - Lenders do not lend to ANYBODY out of fear that only imprudent borrowers request loans.
 - Often related to financial innovation, when new financial products ("subprime" mortgages) and practices (Collateralized Debt Obligations) are introduced in the market.

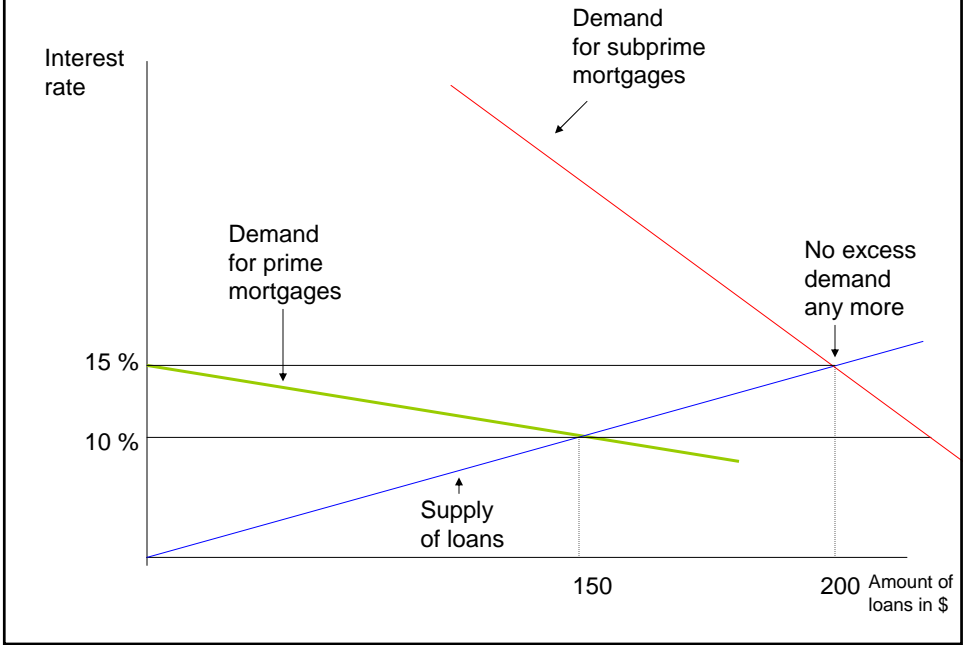
Why the price system (market) doesn't work



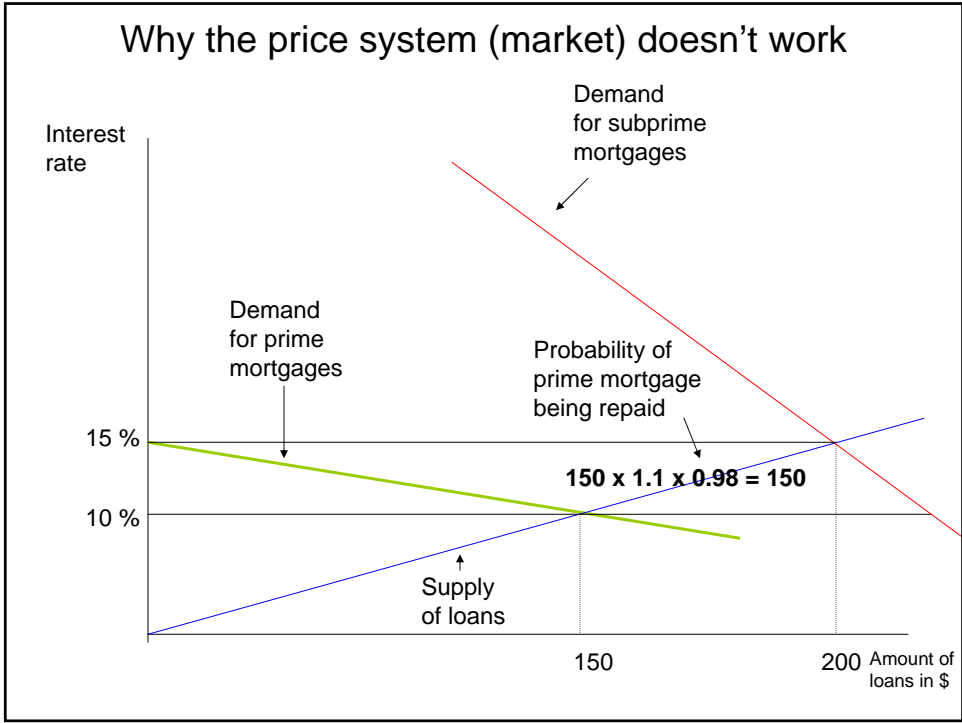
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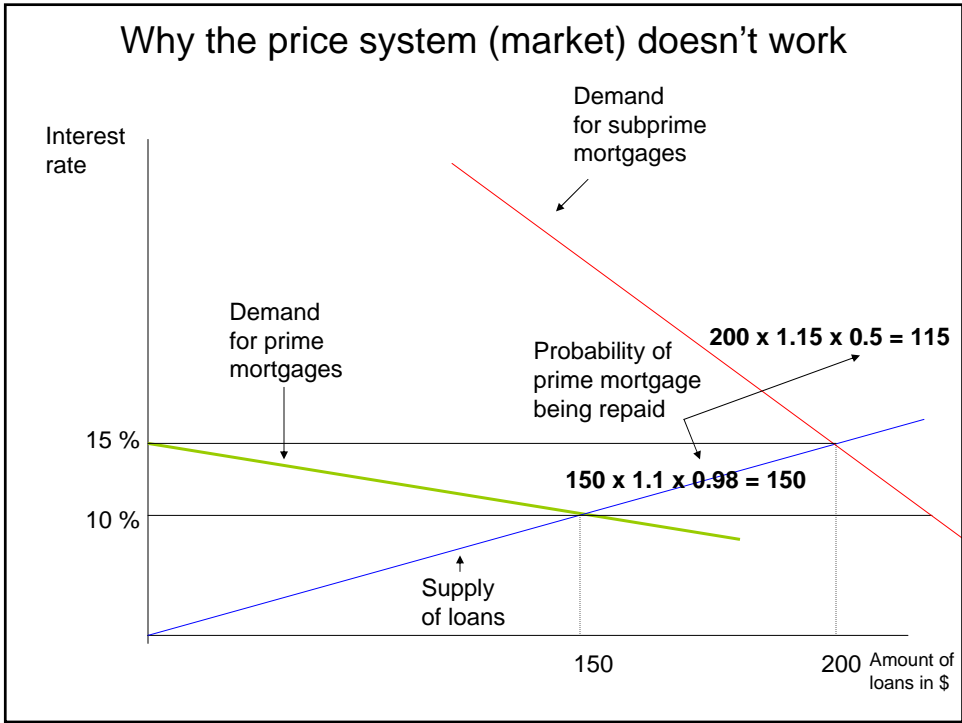
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Why the price system (market) doesn't work



Why the price system doesn't work under imperfect information

- Higher interest rates introduces “adverse selection” problem:
 - Prudent borrowers withdraw loan applications.
 - Only applications of imprudent borrowers left.
- Loan composition tilted in favor of imprudent borrowers exposes lenders to heavy losses:
 - Lending is discouraged.
- Proper credit crunch: all credit disappears
- Something like this happened in the real world recently. More precisely in Europe.

A TIMELINE OF THE US SUB-PRIME MORTGAGE CRISIS

- Feb 7, 2007: U.S.: New Century Financial Corporation, one of the two well known publicly traded sub-prime mortgage lenders, announces restatement of results for the year 2006, turning into losses what had been reported earlier as profits. Until then, New Century appeared to be outperforming its competitors, as profit warnings and weak earning reports had been coming out from other big players in that market, such as Delta Financial, Countrywide Financial, American Home Mortgage Investment, Washington Mutual, IndyMac Bancorp Inc., and Marshall Isley.
- Feb 8: London: HSBC, the world's fourth largest bank, issues its first profit warning ever on sub-prime related losses.
- Feb 20: US: Another well known publicly traded subprime lender, NovaStar, reports fourth-quarter losses after market close. Its stock drops 32% in after hours trading.
- May 3: Europe: Switzerland-based UBS closes one of its hedge funds (Dillon Read Capital Management) hit by the subprime crisis.

- Jun 19: US: Bear Stearns announces that two of its hedge funds exposed to delinquent subprime loans will be closed.
- Jun 26: Europe: One of UK's biggest hedge funds, Cheney Capital Management, admits large sub-prime related losses.
- Jun 28: London: A fund managed by Cambridge Place Investment Management LLP is hit by the subprime crisis and closed.
- Jul 3: US: Heavy withdrawals from panicky investors forces United Capital, a Florida-based fund with investments in the sub-prime mortgage market, to halt redemptions.
- Jul 5: US: Braddock Financial, a Denver-based hedge fund, becomes the next casualty of the crisis and is forced to close.
- Jul 6: South Pacific: One of the largest Australian hedge funds, Basis Capital, is hit by the sub-prime crisis and suspends redemptions after missing margin calls.

- Jul 26: South Pacific: A Sydney-based hedge fund, Absolute Capital, with limited exposure to the US subprime market, little leverage, no margin calls, and no immediate payment obligations according to Forbes, is forced to suspend redemptions until October. According to the press, the fund was an innocent victim of an institutional feature of Australia's money markets that makes that country particularly vulnerable to textbook "herd behavior": the managed fund's industry there, unlike in the US, can take money from retail investors.
- Jul 30: Europe: IKB, a relatively small bank based in Düsseldorf, surprises markets with a sub-prime related profit warning. Shortly after one of its shareholders, the German state-owned KfW, is forced to bail it out to prevent its own collapse from exposure to emergency credit lines extended to IKB.
- Aug 3: Europe: Germany's third-largest mutual fund manager, Union Investment, is hit as well and forced to stop withdrawals from one of its funds after investors had pulled out amounts equivalent to about 10 percent of the assets.

Aug 6: Europe: Frankfurt Trust, the mutual fund manager of Germany's BHF Bank, shuts one of its asset-backed securities funds. Despite not having any sub-prime investments, it came under pressure after many worried investors demanded their money back.

Aug 7: Europe and US: WestLB Mellon, a joint venture owned by West LB, the German investment bank, and the Bank of New York Mellon, temporarily closes an asset-backed securities fund that had experienced large withdrawals in the previous days.

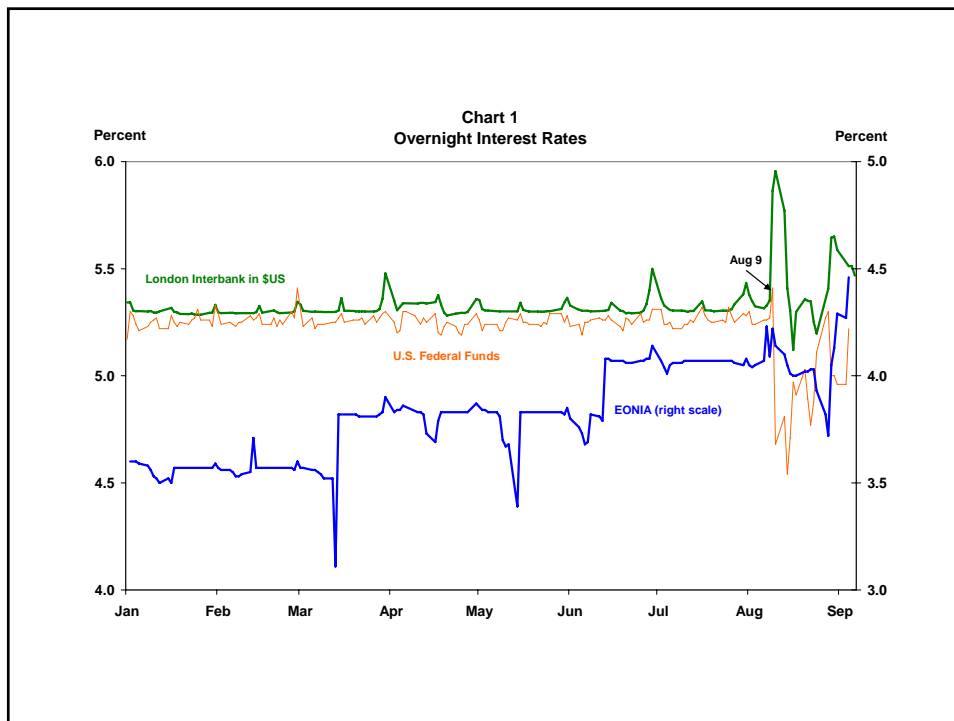
The FOMC meets in Washington.

European money markets show the first signs of distress, with overnight interest rates jumping above the ECB target rate of 4.0%.

Aug 9: Europe: French bank BNP Paribas temporarily halts redemptions from three of its funds.

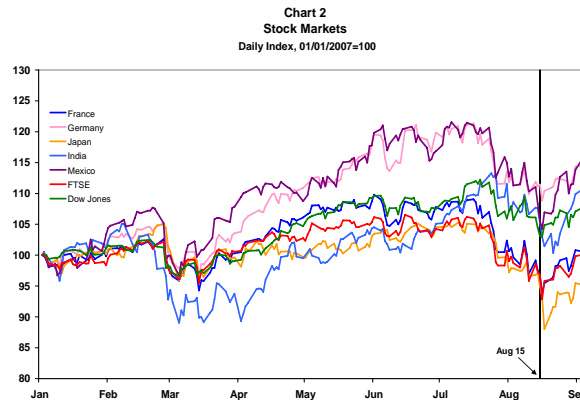
Private bank Sal. Oppenheim in Germany freezes a fund citing liquidity problems allegedly caused again by sheer panic.

Overnight interest rates shoot up in the Euro area and London, and to a lesser extent in the US.



- Aug 9: Globally: Central banks around the world inject substantial amounts of liquidity to keep overnight rates at their targeted levels. One of the most notable was the ECB's intervention: \$130 billion, an amount that exceeded the funds it had poured into the market during the two days that followed the September 11th 2001 terrorist attack (an undeniably exceptional and rare event) by almost \$20 billion
- Aug 10: Europe: German bank Sachsen LB, owned by the state of Saxony, asserts that it does not face liquidity problems, in response to rumors that its special investment fund ("conduit") Ormond Quay was at the verge of collapse. A week later it would follow IKB's fate and be bailed out by the German saving banks association.
- Aug 13: US: Goldman Sachs admits that its computer driven (quantitative) funds have experienced heavy losses and is forced to put down \$2 billion of its own money to bail them out.

- Aug 14: Europe: In its regular weekly auction, the ECB allotted 310 billion euros, 74 billion euros more than its benchmark estimate of liquidity needs.
 - Aug 15-16: US: Shares of Countrywide Financial fall 13% after a Merrill Lynch analyst changed his buy rating on the stock to a sell.
- Globally: Stock markets around the world, already under selling pressure since mid-July, experience another round of declines.



Aug 17: US: Federal Reserve emergency meeting over the phone:
♦ Discount rate cut by one percentage point.

Aug 21: Europe: UK's fourth largest bank, HBOS, takes direct responsibility for financing a "conduit" it had kept off the balance sheet until then. The conduit (Grampian Funding) was one of the largest in Europe. It becomes public that the previous day another large UK bank, Barclays, had borrowed \$0.6 billion from the Bank of England's standing lending facility. Barclays would use the facility again about a week later, that time for a larger loan of \$3.2 billion.

Aug 22: Europe: Invoking unsettled financial markets in the Euro area, the ECB announces an unscheduled auction of funds with the unusually long maturity of three months.

Sep 6: Europe: The ECB does not go along with its previous plan to increase another notch its benchmark interest rate. The Bank of England also keeps its benchmark rate unchanged, accompanying for the first time since 1999 a no-change decision with a statement indicating lower inflation expectations in the short term and the need to monitor the situation closely.

Sep 19: The FOMC reduced the Federal funds rate (overnight interbank rate) from 5.25% to 4.75%

Credit crunch in Europe

- Mostly manifested in the commercial paper market
- Commercial paper: IOU's issued by firms and financial corporations:
 - Two types:
 - Plain commercial paper: only guarantee is reputation of the issuer.
 - Asset Backed Commercial Paper (CDO): guaranteed by mortgages and consumer loans payments.
 - Here is where the domino effect started.

Credit crunch in Europe

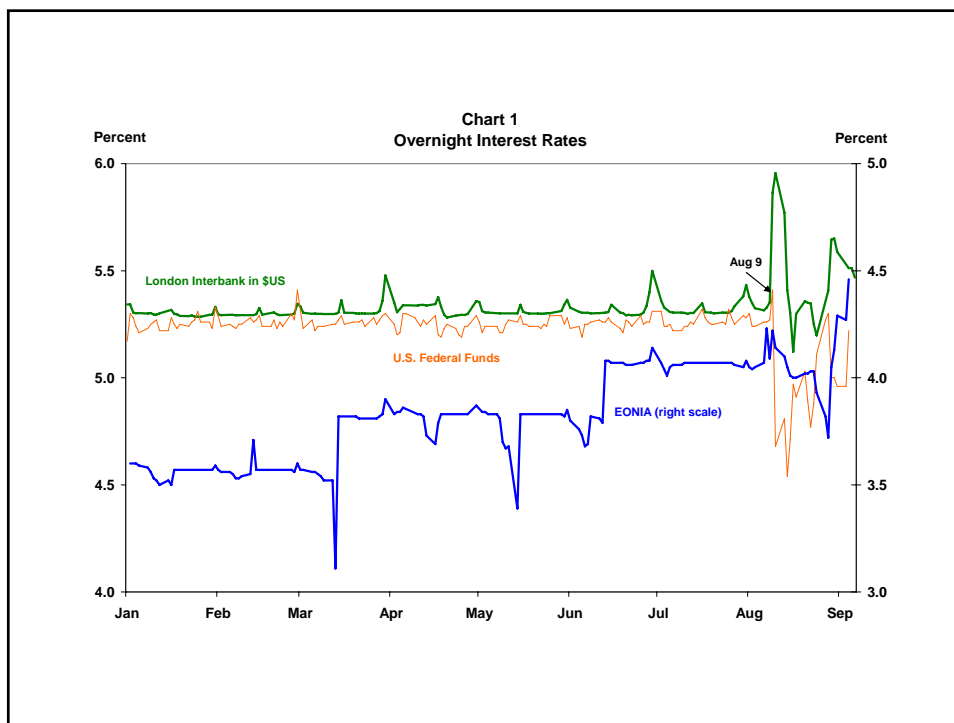
- Financial institutions and hedge funds in Europe had bought packages of US originated mortgages loans.
- European financial institutions (hedge funds, financial subsidiaries of banks known as SIVs--Special Investment Vehicles) now receive the payments from those loans.
- Revenues from US originated loans used as guarantee to issue Collateralized Debt Obligations (CDO), a fancy name for IOUs sold to investors in the commercial paper market.
- CDOs have short maturities: three months or less.
- These CDOs replace old-fashioned bank deposits as a source of funds to banks.
- Banks used the funds from selling CDOs to lend them in turn to their clients.

Table 1
Estimated exposure of major European banks to the sub-prime mortgage crisis

	Total Assets (\$ bn.)	Shareholders' Equity (\$ bn.)	Exposure to affiliated "conduit" (\$ bn.)	Conduit Exposure /Total (in %)	Conduit Exposure /Equity (in %)
GERMANY					
Deutsche Bank	1,486.6	43.3	2.90	0.2%	6.7%
Dresdner Bank	642.3	10.6	1.72	0.3%	16.3%
DZ Bank	592.7		4.00	0.7%	
LBBW	577.8		11.00	1.9%	
Bayern LB	476.6		8.40	1.8%	
West LB	376.6	9.0	8.40	2.2%	93.3%
Commerzbank	360.6	13.6	1.58	0.4%	11.7%
HSH Nordbank	255.1		7.00	2.7%	
Helaba	226.8		2.00	0.9%	
Berlin LB	190.3		2.30	1.2%	
Sachsen LB (Landesbank)	89.4	2.0	23.40	26.2%	1170.0%
IKB Deutsche Industriebank	54.2	1.6	10.90	20.1%	681.3%
UNITED KINGDOM					
Barclays	1,953.7	53.7	10.00	0.5%	18.6%
HSBC	1,712.6	108.5	23.20	1.4%	21.4%
Royal Bank of Scotland	1,708.0	89.2	13.90	0.8%	15.6%
HBOS	1,158.4	41.5	37.00	3.2%	89.2%
Lloyds TSB	673.4	21.9	22.80	3.4%	104.1%
FRANCE					
BNP Paribas	1,901.3	65.4	2.20	0.1%	3.4%
SWITZERLAND					
UBS	1,964.4		6.00	0.3%	

Credit crunch in Europe

- Problem with all this fancy financial engineering:
 - Packages of loans bought from the US contained subprime mortgage loans in unknown proportions.
 - Problems in collecting payments from US subprime mortgages reduces the value of guarantees behind the asset-backed commercial paper (CDOs.)
 - House of cards starts to collapse:
 - Buyers of commercial paper refuse to roll them over and ask their money back.
- Banks can't recall overnight loans made to clients for longer terms than just three months:
 - Forced to get the money to payback commercial paper buyers by borrowing at the expensive overnight interbank markets.
 - Interbank lending rates shot up



Credit crunch in Europe

- Investors fear higher interest rates will leave only borrowers at verge of insolvency asking for loans
- Demand their money back from *all* financial institutions, even those eventually (no one knows) not exposed to the subprime mortgage problem.
- Without enough own funds, financial institutions try to borrow them in the overnight interbank market by offering ever higher interest rates...
- Prompting yet more investors fears manifested in:
 - First bank run in England in a long time (Northern Rock)
 - Complete paralysis of Euro area commercial paper market

Symptom of severe credit crunch: absence of loans

TABLE 3
Short-Term European Paper (STEP) Primary Market
Highest Weekly Yields⁽¹⁾ (percentages per annum)

Week ending on ⁽¹⁾	ALL CORPORATIONS				NON-FINANCIAL CORPORATIONS
	Days to maturity				Days to maturity
	0-9	10-100	101-200	201-366	10-100 ⁽²⁾
4-May	3.98	4.13	4.19	4.51	NT
11-May	3.93	4.18	4.22	4.41	NT
18-May	3.95	4.17	4.35	4.52	4.15
25-May	3.95	4.19	4.3	4.57	4.13
1-Jun	3.95	4.23	4.41	4.61	4.23
8-Jun	4.03	4.25	4.24	4.69	4.26
15-Jun	4.19	4.27	4.31	4.42	4.35
22-Jun	4.19	4.30	4.38	4.49	4.30
29-Jun	4.25	4.32	4.35	4.76	NT
6-Jul	4.19	4.32	4.41	4.78	4.38
13-Jul	4.23	4.34	4.43	4.8	4.36
20-Jul	4.25	4.35	4.41	4.81	4.31
27-Jul	4.23	4.33	4.56	4.83	4.38
3-Aug	4.24	4.38	4.48	4.82	4.37
10-Aug	4.30	4.46	4.63	NT	NT
13-Aug	4.17	4.47	4.32	NT	NT
14-Aug	4.18	4.57	4.41	NT	NT
15-Aug	NT	NT	NT	NT	NT
16-Aug	4.10	4.45	4.48	NT	NT
17-Aug	4.16	4.55	4.28	NT	NT
24-Aug	4.39	4.75	4.67	NT	NT
31-Aug	4.35	4.74	4.88	4.84	NT
7-Sep	4.69	4.73	4.76	4.89	NT

Source: ECB

(1) Except third week of August

(2) Only maturity available for this category

NT: No transactions or fewer than three

Credit crunch in Europe

- Slowly subsiding...
- But only thanks to heavy central banks interventions in short-term money markets:
 - European Central Bank and Bank of England had to take the unusual step of injecting funds in the three-months commercial paper market.
- Intention: to prevent the unknown just from paying for the unknown sinners.
- Collateral damage of the rescue is moral hazard:
 - *“the ultimate result of shielding man from the effects of folly is to people the world with fools.”* (British philosopher Herbert Spencer)
 - Are interest rate cuts feeding the next bubble?

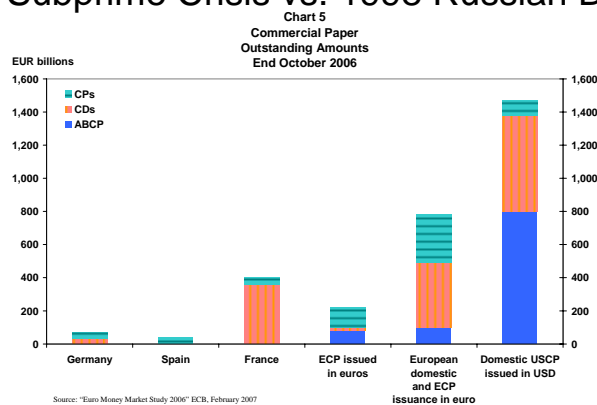
Effects of credit crunch in Europe

- Credit paralysis will have negative effects in Euro area economic growth. How much remains to be seen.
- Fears of economic growth slowdown in the US and abroad prompted the Fed to act on Sept 18 and this week.
- Will the Fed and other central banks succeed?
 - Yes, based on experience with Russian default.

1998 Russian default

- Similar “imperfect information” problem as with the subprime mortgage crisis.
- In the US, the Russian default precipitated the collapse of Long Term Capital Management
- No one was sure who else was exposed to Russian bonds.
- Financial markets turmoil and incipient credit crunch prompted central banks around the world to act.

2007 Subprime Crisis vs. 1998 Russian Default



- Russian government bonds in default:
 - \$20 billion, 0.4% of Euro area M3 in 1998
- To match that same proportion today, US-asset backed commercial paper with a non-performing status held by European financial institutions needs to represent just 0.5% of all such paper.

