Overconfidence in mechanical models and the big banking failures

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"The Credit Market Turmoil of 2007-8"
Chicago, September 25-26, 2008

14th Sep 2007

Northern Rock

24th Sep 2008

Bank of East Asia

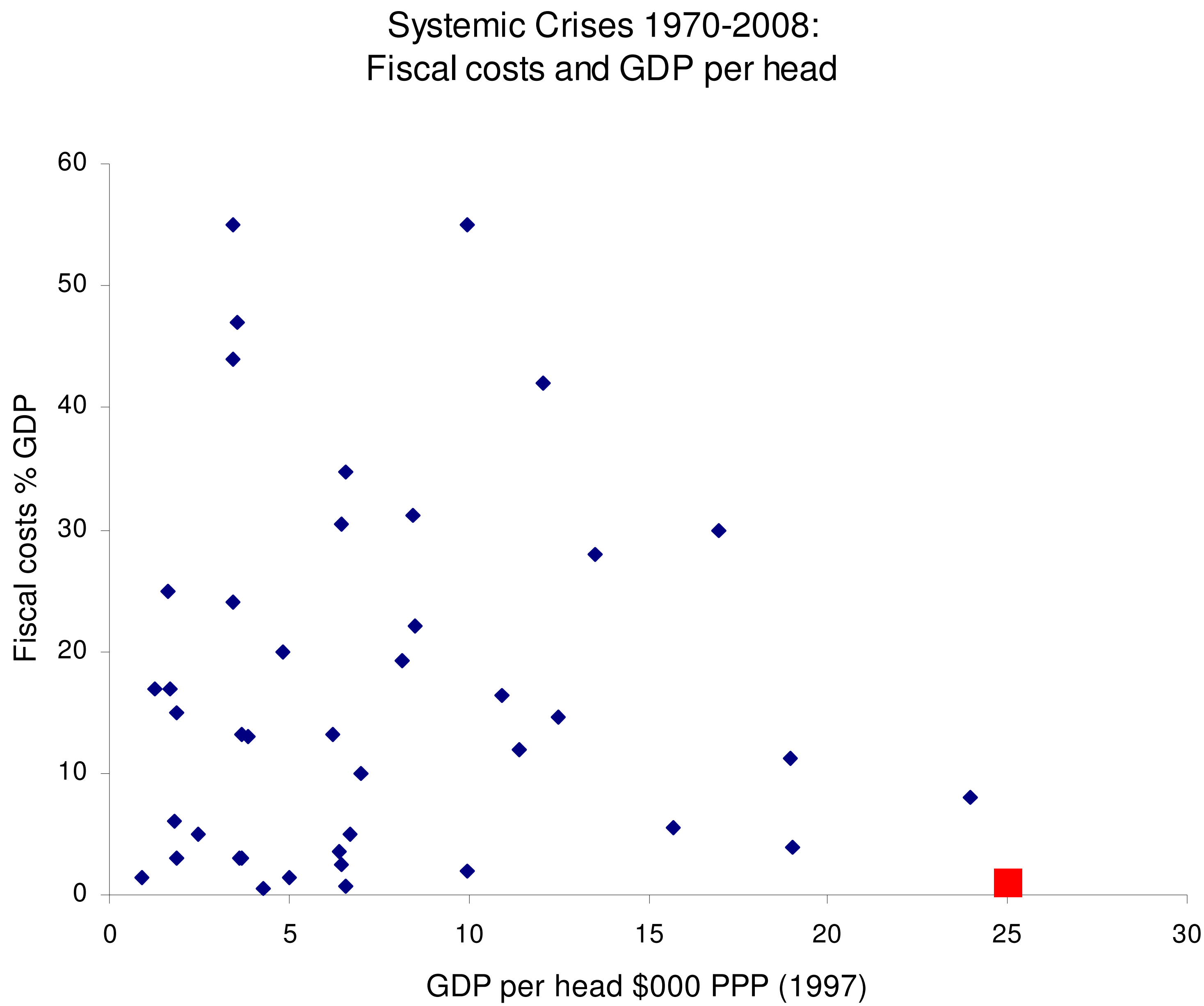
Outline

- The early stages of the crisis saw big banking losses…
  …but relatively little fiscal cost

- The big losses attributable to long-standing issues
  (especially incentive effects, moral hazard)
  but activated by (banker and regulator) overconfidence
  in the new formal risk management techniques

- Four failure categories of loss-making banks – we look at representative cases

- The fourth category looms ever larger, making systemic response inevitable – so fiscal costs likely to soar



Honohan (2008)

Reported credit losses at big banks, 2007-8

(US$ billion)

Bank		US$ bn
Citigroup	USA	55.1
Merrill Lynch	USA	52.2
UBS	CHE	44.2
HSBC	GBR	27.4
Wachovia	USA	22.7
Bank of America	USA	21.2
Washington Mutual	USA	14.8
Morgan Stanley	USA	14.4
IKB Deutsche Industrie	DEU	14.3
JPMorgan Chase	USA	14.3
Royal Bank of Scotland	GBR	14.0
Lehman Brothers	USA	13.8
Deutsche Bank	DEU	10.0
Credit Suisse	CHE	10.0
Wells Fargo	USA	10.0
Credit Agricole	FRA	8.5
Barclays	GBR	7.6
Canadian Imperial (CIBC)	CAN	7.0
Fortis	BEL/NLD	6.9
HBOS	GBR	6.7
Bayerische Landesbank	DEU	6.7
Société Générale	FRA	6.4
Mizuho Financial	JPN	6.0
ING Groep	NLD	6.0
Subtotal		400.2
Worldwide		510.8

Source: Bloomberg and Financial Times (Sep 11, 2008) http://www.ft.com/indepth/creditsqueeze

Banks hit by losses fall into four failure categories

1. Diversified survivors
2. Gambled and lost
3. Too opaque to survive
4. Over-leveraged mortgage lenders

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3. Too opaque to survive
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4. Over-leveraged mortgage lenders
   Fannie and Freddie, HBOS, Northern Rock (?)

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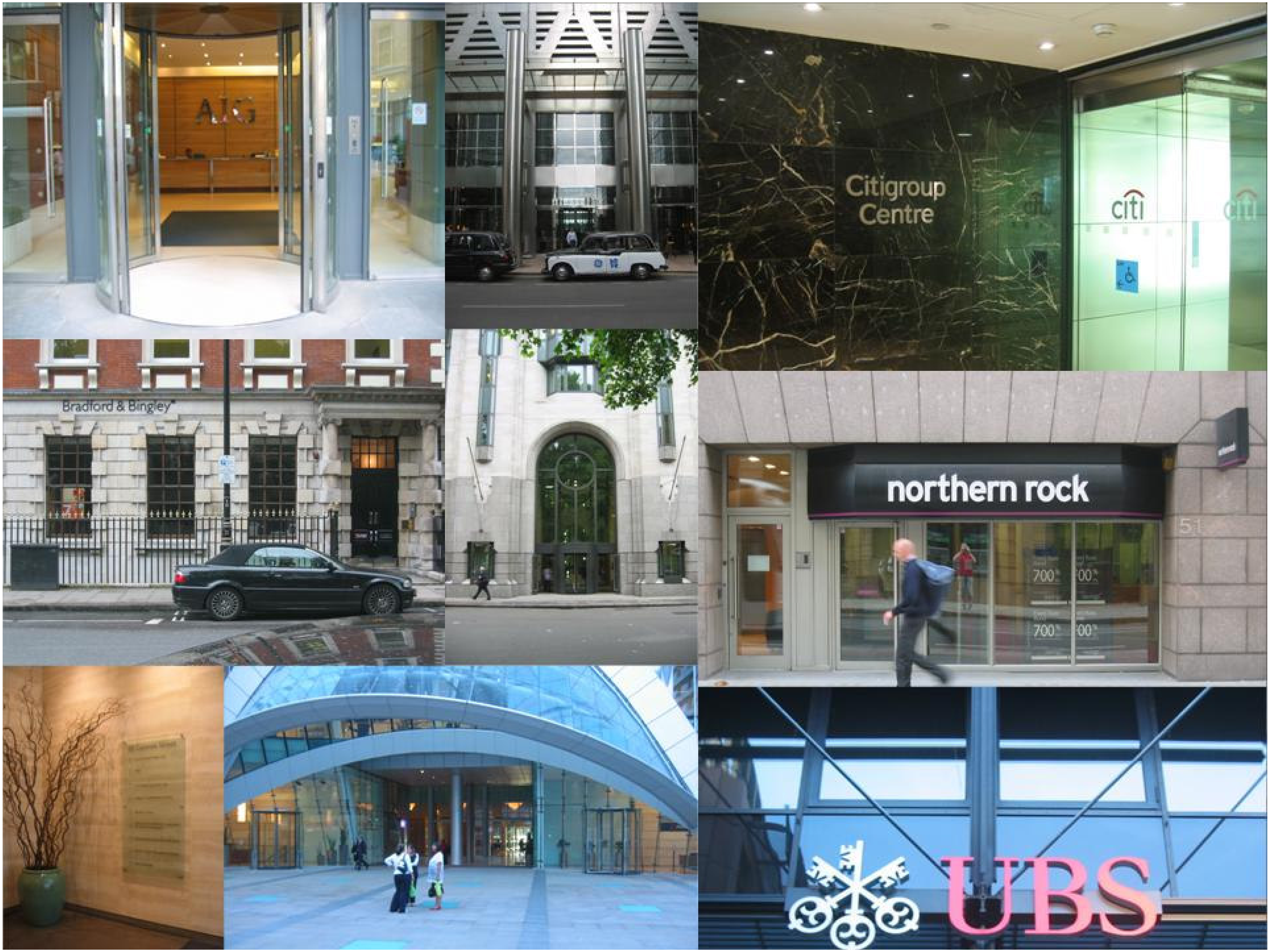
AIG
Citigroup
Centre
citi
Bradford & Bingley
northern rock
UBS

Four cases:

1. UBS
   - 2nd Largest Bank in the World by Total assets, end-2006
   - Winner of *Euromoney* magazine's "Global Best Risk Management House" award for excellence in 2005.
2. Sachsen
   - Newest of the German regional banks
   - With a wholesale operation in Dublin's offshore financial centre
3. Northern Rock
   - Winner of *International Financing Review*'s prestigious "Financial Institution Group Borrower of the Year" award for 2006
4. GSEs
   - (We look just at Fannie Mae and Freddie Mac)
   - Combined liabilities greater than ⅓ of US GDP in 2007.

Four cases:

1. UBS
   – Internal risk models neglected catastrophe tails and were gamed by some operations staff using first-loss insurance
   – Despite huge losses, no government bailout needed (just) and it was able to replenish capital
2. Sachsen
   – Business model unknowingly based on large under-priced guarantee of bought-in AAA tranches of US MBS (rogue sub)
   – Removal in 2005 of explicit government guarantee mattered
3. Northern Rock
   – Had funded (over-rapid) growth with wholesale financing: dependent on continued funding at assumed spreads
   – Lending originated by NR itself – liked by borrowers
4. GSEs
   – Mesmerized by the complexities of trying to hedge prepayment risk, they ignored the basics of credit risk / housing bubble
   – Lenient capital regulation meant they had little cushion

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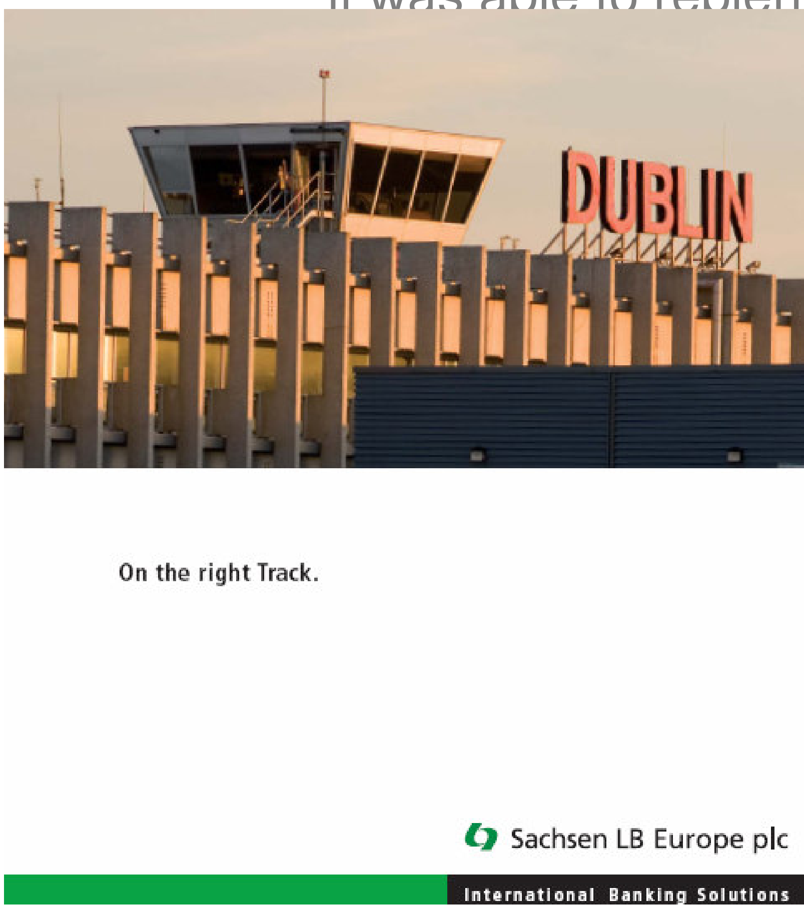

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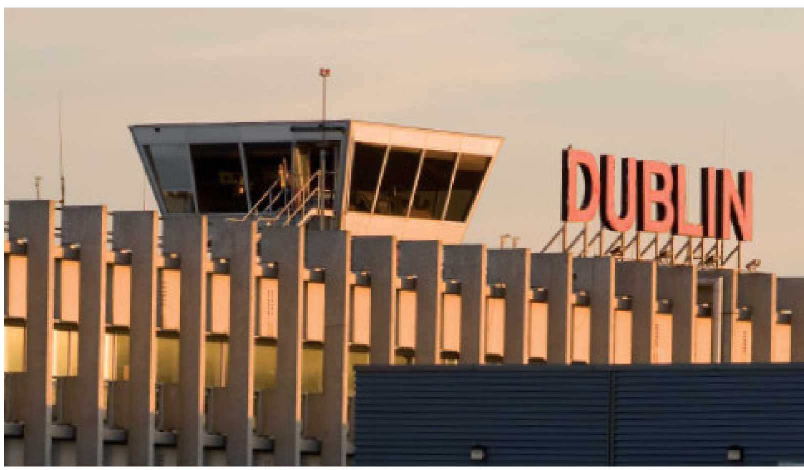

On the right Track.

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Common features of the cases

Causes

- High leverage (even before the crisis)

- Heavy reliance on market liquidity

  and/or

  accuracy and precision of formal internal risk models and external ratings
  - even minor model errors or higher funding spreads could generate solvency issues

Common features of the cases (2)

Resolution

- Rather low government costs
  - in the early phases
- Shareholders liability enforced
  - more or less; so far; (except AIG)
- Deposit insurance not a constructive player to date

Off topic: Asset purchase scheme likely to blow fiscal costs out of water

Key financials for four cases

US$ billion

	Sachsen	N Rock	UBS	GSEs
Gross assets*	110	198	1924	4353
Equity**	2	3	41	71
Leverage	*58*	*59*	*47*	*61*
Reported losses†	2	2	44	16
Liquidity support♦	23	56		0
Solvency support♦	4	7		25

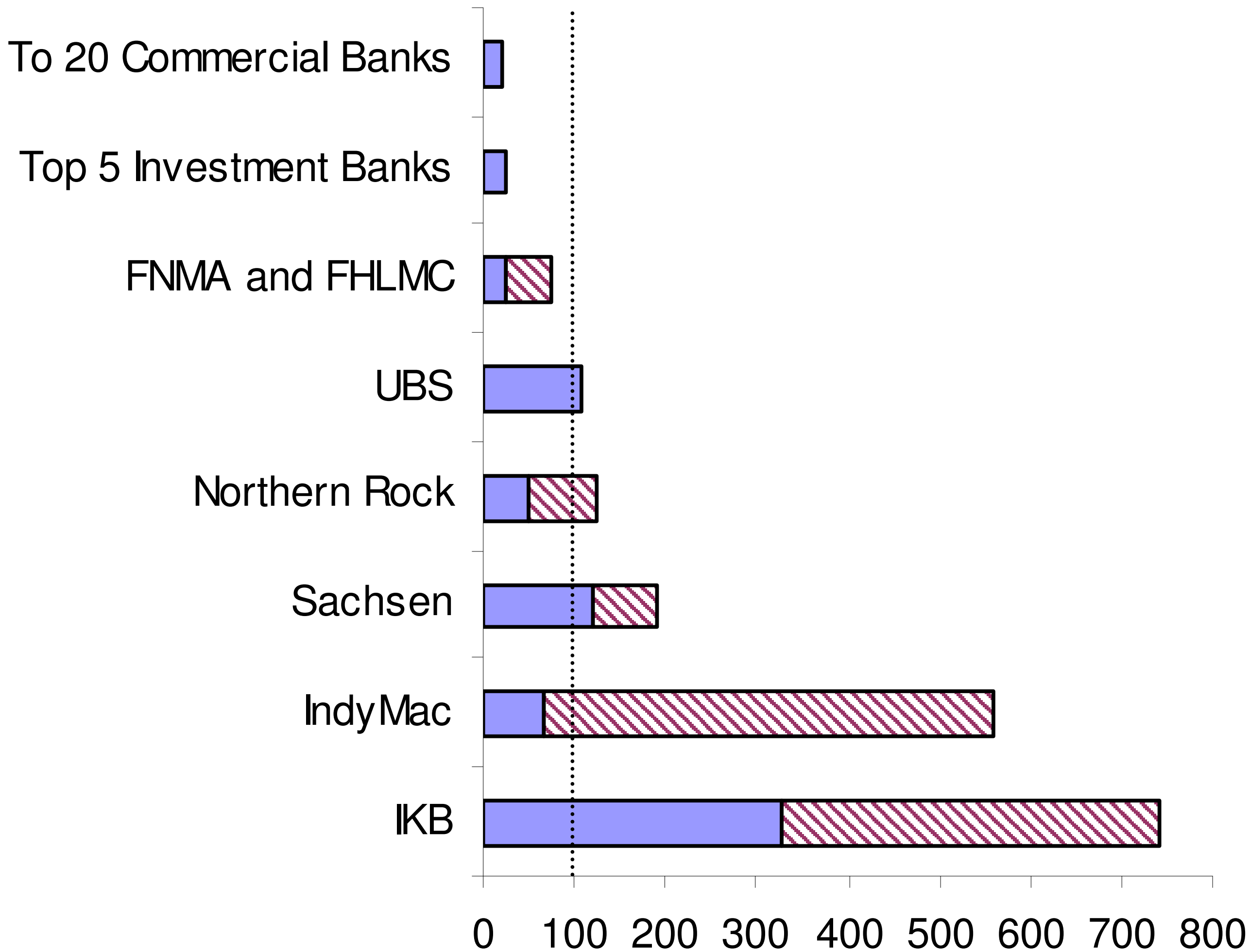
Exchange rate conversion for all figures is at end-2006 exchange rates

*including off-balance sheet mortgage book; end-2006 **end-2006

†Reported credit-related losses 2007 and 2008H1 ♦From official sources

To end-August 2008

Reported & likely? credit losses as % capital



Top 5 and 20 relate to 2007 capital (BIS); others relate to 2006 capital in US$ (text)

Identified fiscal costs: Order of magnitude

		US$ bn		Basis
(a) Identified institutions				
Equity injections	IKB	11		KfW Statement
	Northern Rock	7	↓	Government equity
	Sachsen	4	↓	Total Government shield
	Roskilde	1	↓	Danish National Bank equity
Dep Insur payouts	IndyMac	9		FDIC estimate
	11 other FDIC	1		FDIC
Intended fiscal support	FNM & FRE	25	↑	CBO
Central bank collateral	Bear Stearns	4	↑	? Loss on NY Fed $29 bn facility
	AIG	15	↑	Scale indicated by interest premium
	Others	??	↑	Relaxation of collateral standards
(b) Future failing institutions			↑	
(c) Asset purchases from going concerns			↑	US scheme announced Sep 19, 2008
(d) Distressed borrower assistance			↑	
Overall total		75++		

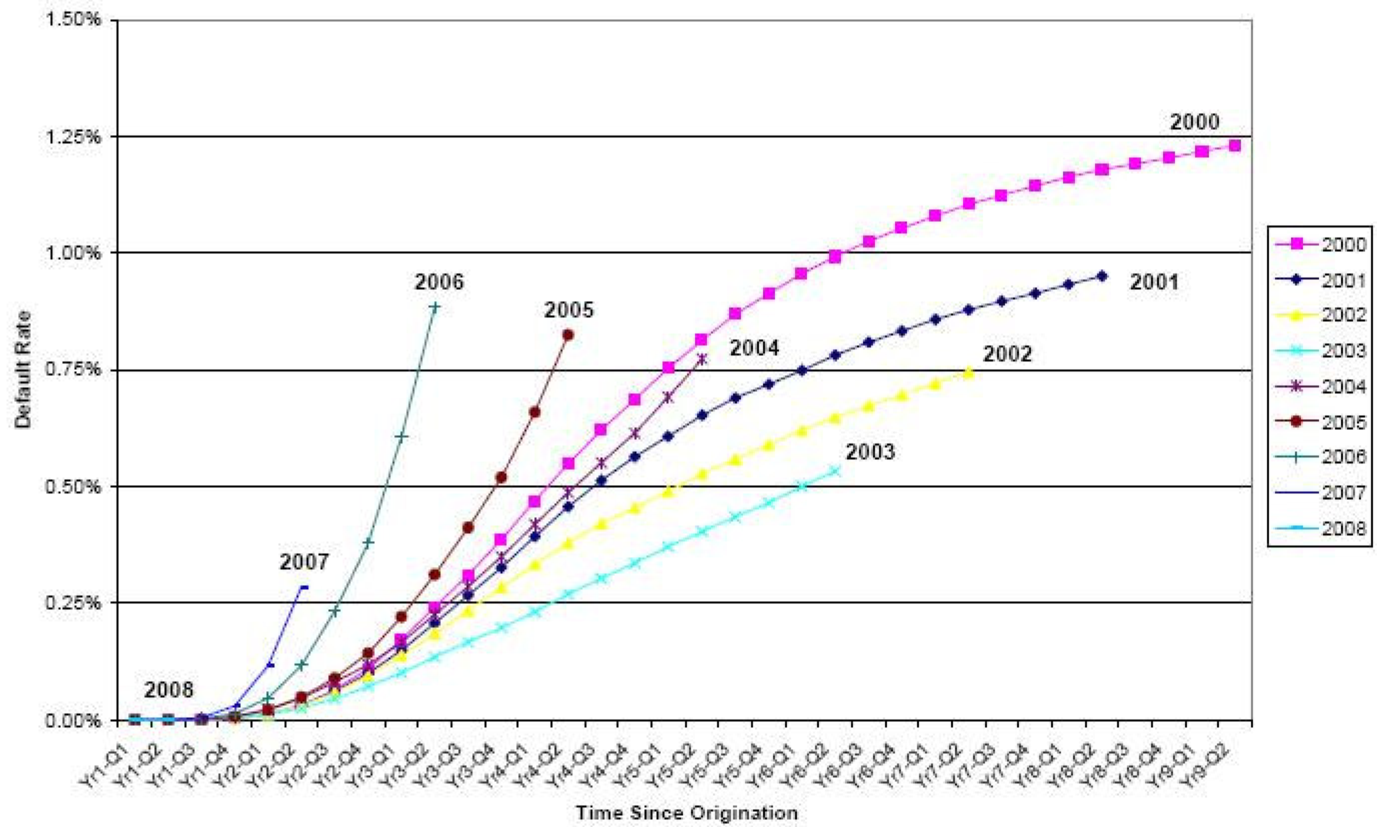
Plausible/indicative total fiscal costs

		US$ bn	Basis
(a) Identified institutions			
Equity injections	IKB	11	Crystallized
	Northern Rock	7	Assume upper limit realized
	Sachsen	4	Assume fully called
	Roskilde	1	Equity lost on sale
Dep Insur payouts	IndyMac	9	Crystallized
	11 other FDIC	1	Crystallized
Intended fiscal support	FNM & FRE	50	CBO expected x 2
Central bank collateral	Bear Stearns	4	
	AIG	15	Scale indicated by interest premium
(b) Future failing institutions		80	1.5 times FDIC fund + 10 for money market fund insurance
(c) Asset purchases from going concerns		210	20% of US scheme x 1.5 for ROW (arbitrary)
(d) Distressed borrower assistance			Incorporated above (lenient workouts)
Overall total		~400	

Why it’s hard to predict ultimate costs of Category 4 failures

FannieMae

Overall Cumulative Default Rates - Overall Originations from 2000 through 2008 Q2



Note: Cumulative default rates include loans that have been liquidated other than through voluntary pay-off or repurchase by lenders and include loan foreclosures, preforeclosure sales, sales to third parties and deeds in lieu of foreclosure.

Consistent with industry trends, 2006 and 2007 vintages performing poorly. Defaults for the 2008 vintage through 2008 Q2 have been negligible


LEHMAN