

The global credit crunch and its consequences

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Athens, September 23, 2008

FINANCIAL TIMES

BANKING ON GREECE CONFERENCE:

“Maximizing opportunities for growth and expansion”

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The global credit crunch and its consequences

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- VI. Conclusion**

Part I

The crisis heats up 14 months later

I. Brief Review: Some key events in 2007

- ✓ 1H-2007: New Century Financial files for bankruptcy
Home sales ↓ 8.4%, Quality of subprime res. mortgages ↓
2 Merrill Lynch hedge funds bankrupt
- ✓ July-2007: Downgrades by Rating Agencies, iTraxx Crossover widens
Strains in leveraged syndicated loan market
- ✓ Aug-2007: BNP Paribas suspends 3 of its funds,
Strains in ABCP → SIVs, Inter-bank market
Euro-system: €200bn liquidity-provision
First Fed FF-drop by 50bp
- ✓ Sept-2007: Run on Northern Rock in UK
- ✓ Dec-2007: Tensions ↑, Joint central bank intervention,
ECB announces unlimited lending of 2-week funds

I. Brief Review:

Some key events in 2008

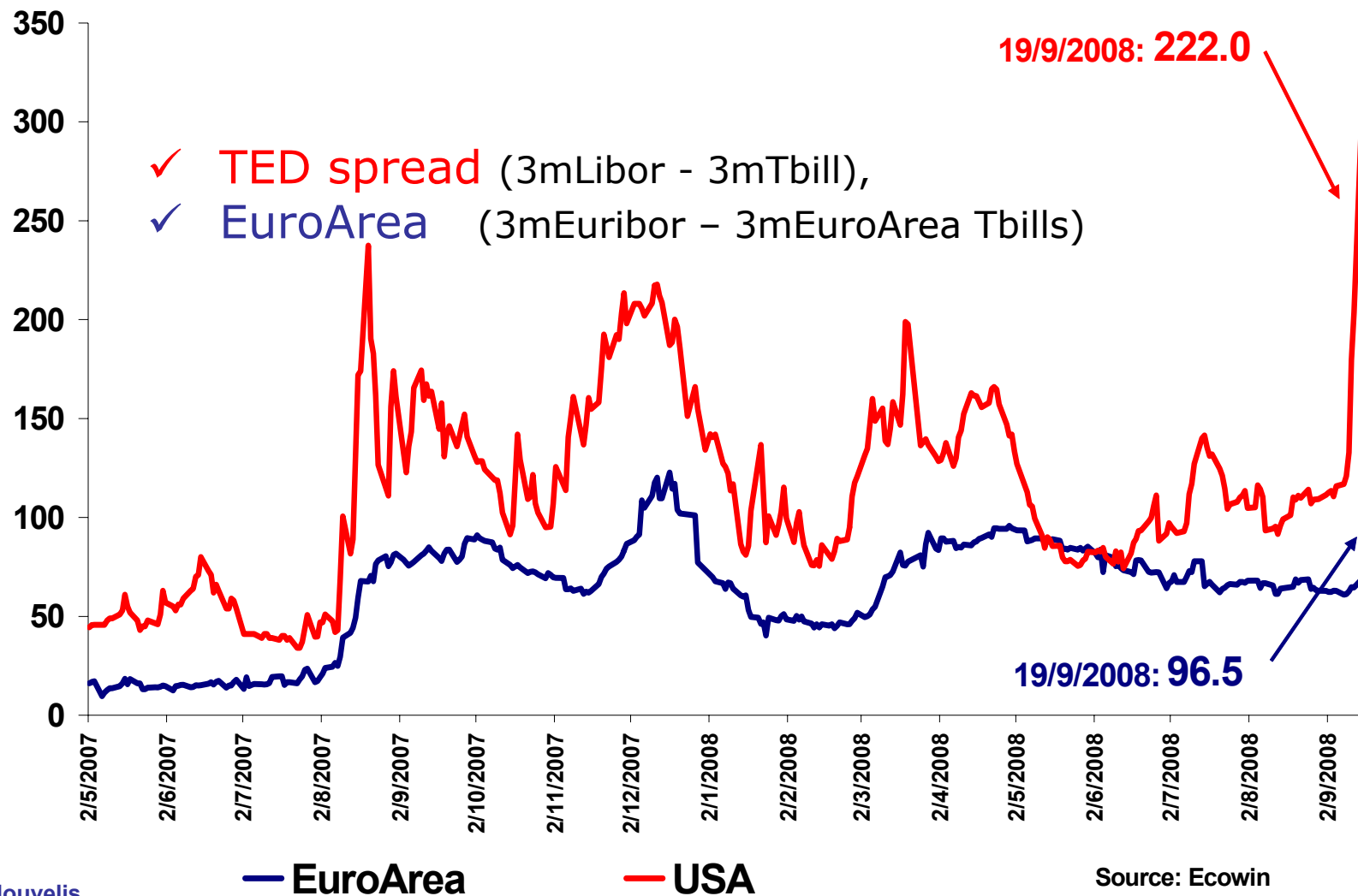
- ✓ Mar-2008: Fed creates TSLF, PDCF
Bear-Stearns sold to JP Morgan with Fed guarantee

- ✓ Aug-2008: ECB imposes stricter collateral rules

- ✓ Sept-2008 Conservator-ship of Fannie Mae & Freddie Mac
Merrill Lynch sold to BoA (14/9)
Lehman Brothers (4th-largest in US) files for bankruptcy (15/9)
Strain in US money market, Fed rescues AIG (16/9)
Coordinated liquidity provision by central banks (\$180 bn, 18/9)
SEC curbs short-selling (19/9), as BoE did a day earlier
Government announces \$700bn rescue (19/9)
Goldman Sachs & Morgan Stanley apply to become Bank Holding Companies and join Fed's umbrella (22/9)

I. Flight to quality multiplies, particularly in the US

✓ On Sept. 15, 3-month T-bills reached 6 basis points!

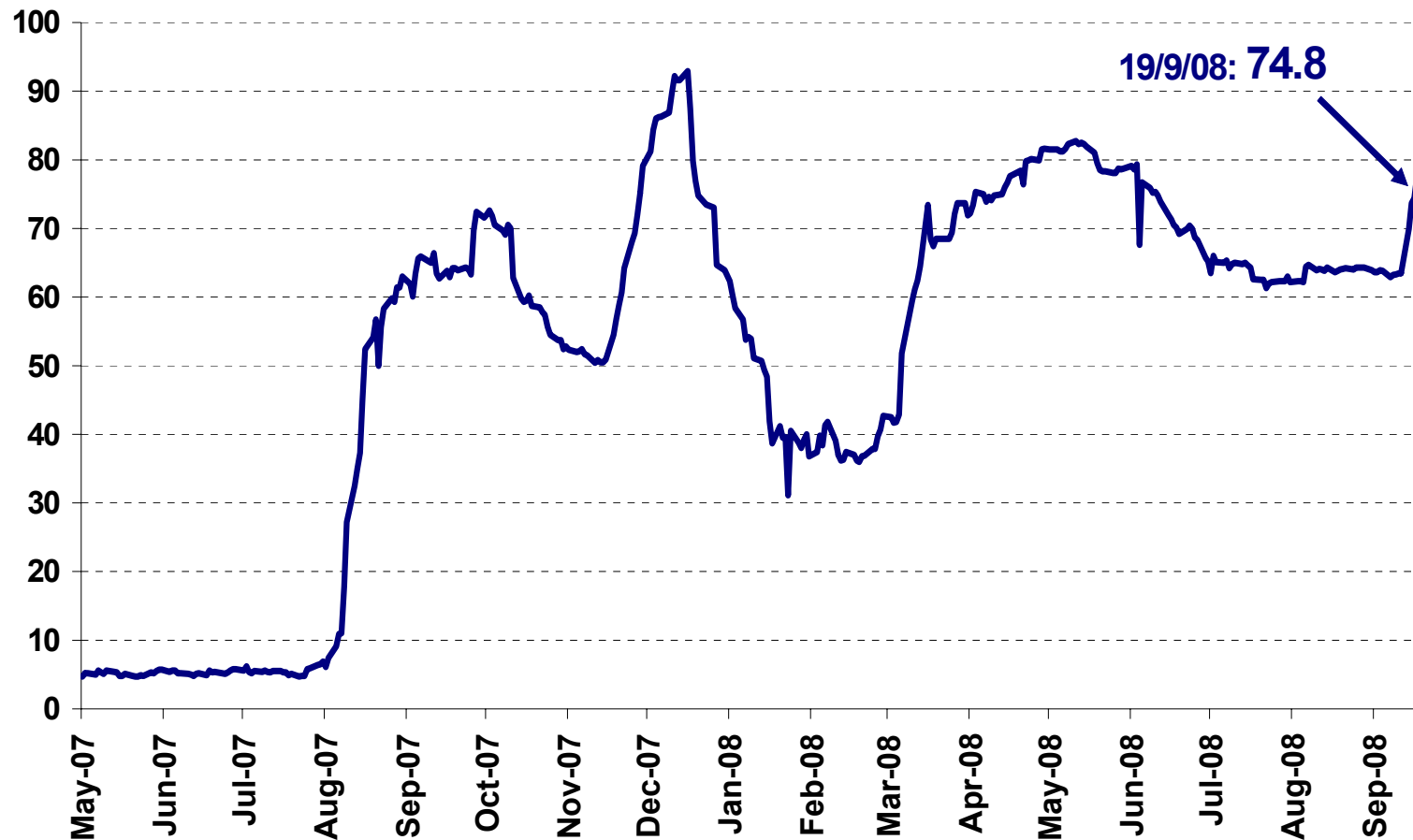


I. Clear evidence of default risk in the € inter-bank market:

*Academics: This is a surprising aspect of the crisis,
liquidity hoarding*

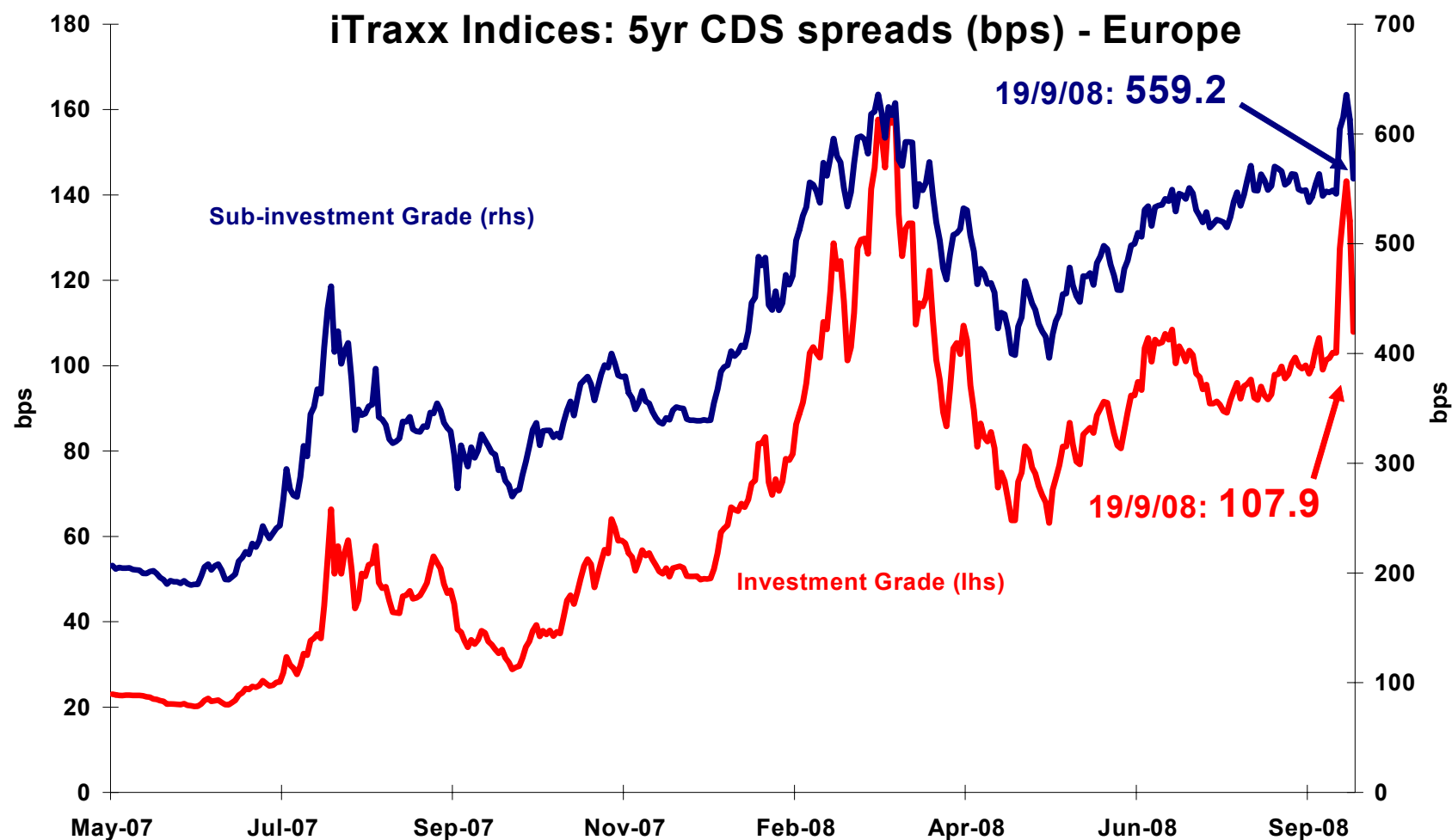
EuroArea: 3m EURIBOR-EONIA, OIS

Uncovered minus covered 3-month inter bank rates



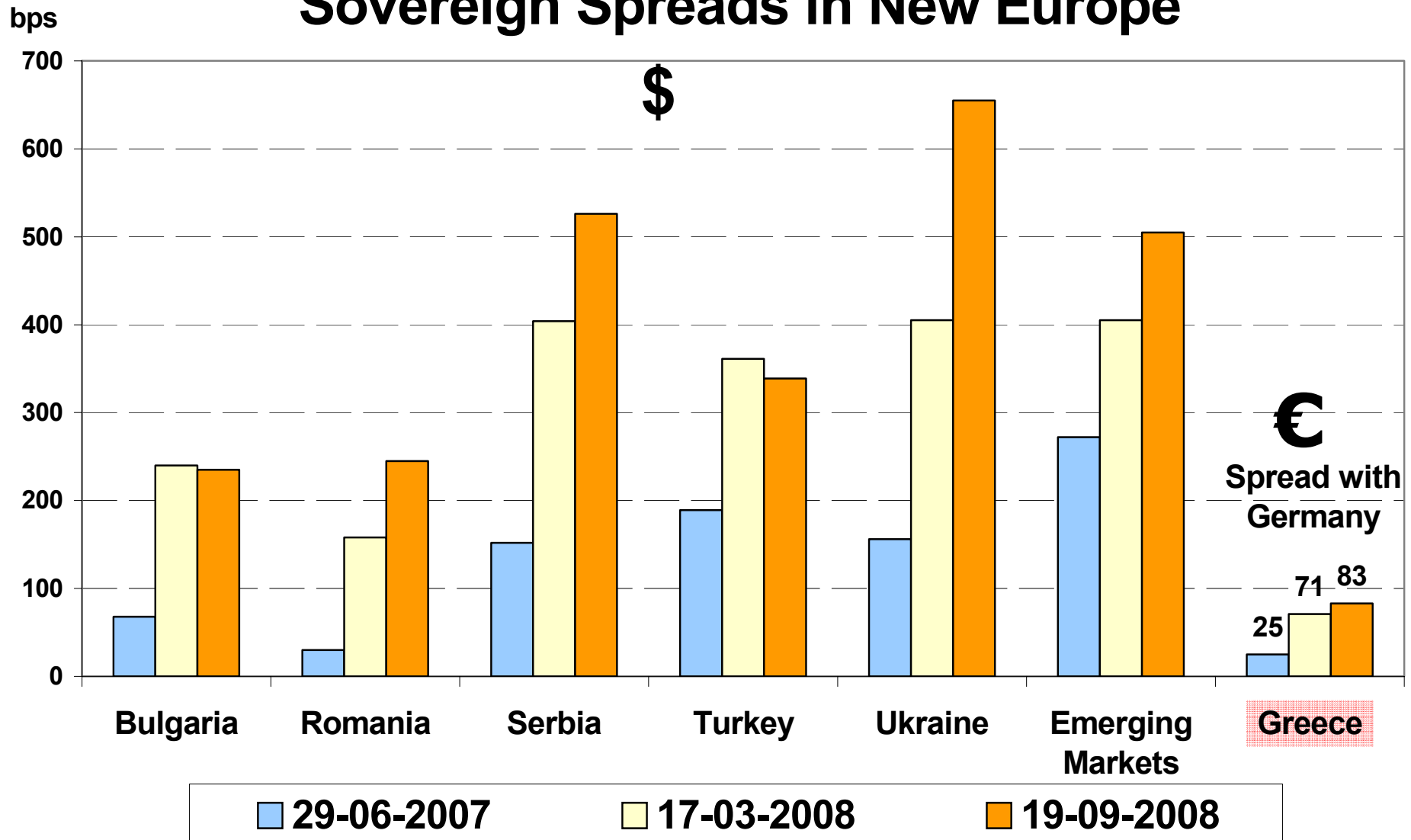
I. CDSs: European worries get bigger

- CDS spreads in **mid-March** multi-year **highs**
- Rebound post Bear Stearns rescue & coordinated central bank activity
- Subsequent widening shows **systemic risk worries** continued
- Extra worries during week 9/15-9/19



I. No decoupling: Country risk premia increase further

Sovereign Spreads in New Europe



Source: Bloomberg, JP Morgan EMBIG Index

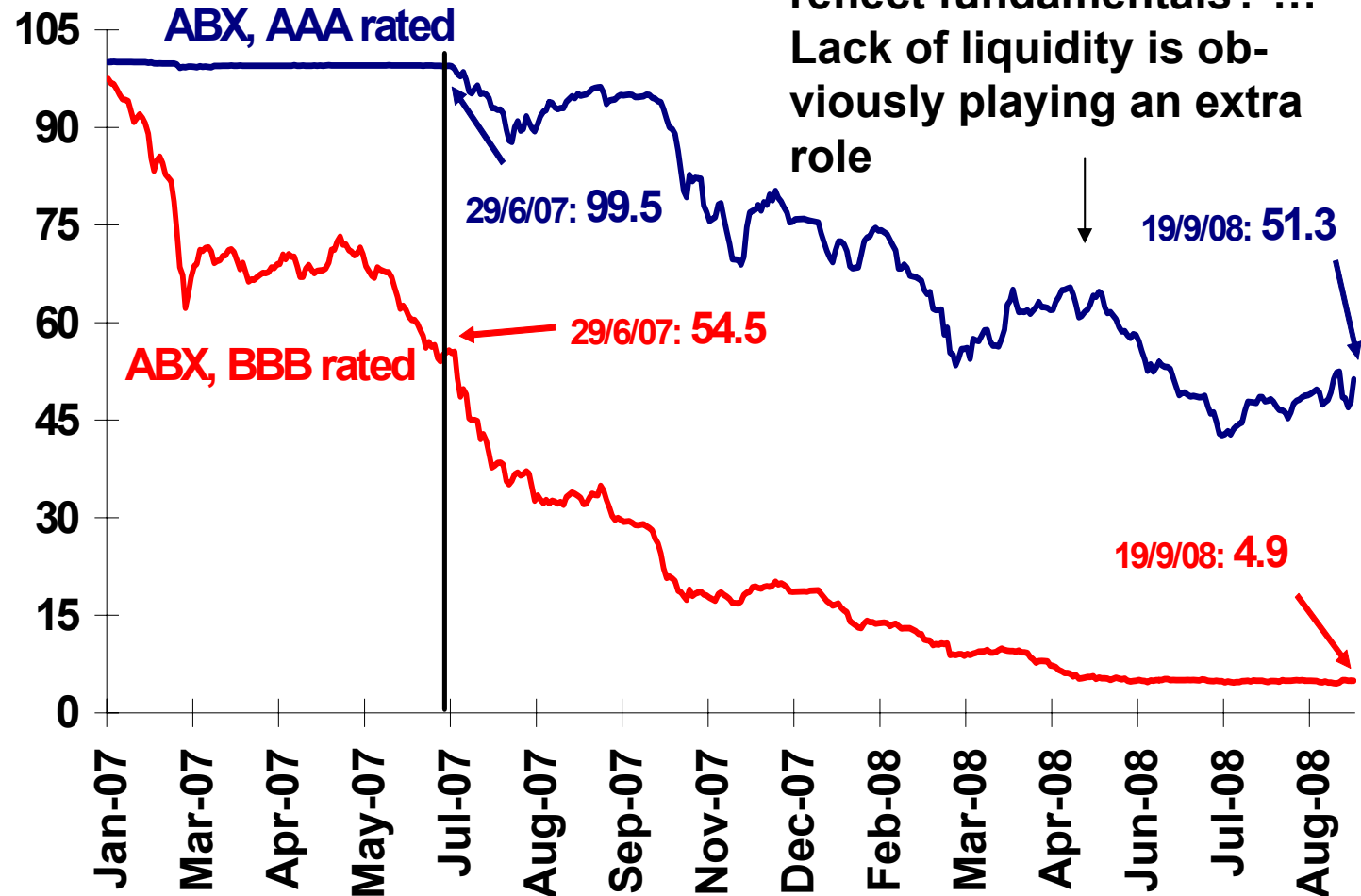
I. The puzzling behavior of AAA securities: Evidence from Mortgage-based Credit Default Swaps

Academics find this pricing behavior surprising: Does the AAA price drop reflect fundamentals? ...

Lack of liquidity is obviously playing an extra role

Losses since the beginning of the crisis (July 2007):

- High credit quality loans
AAA : - 49%
- Low credit quality loans
BBB: - 91%

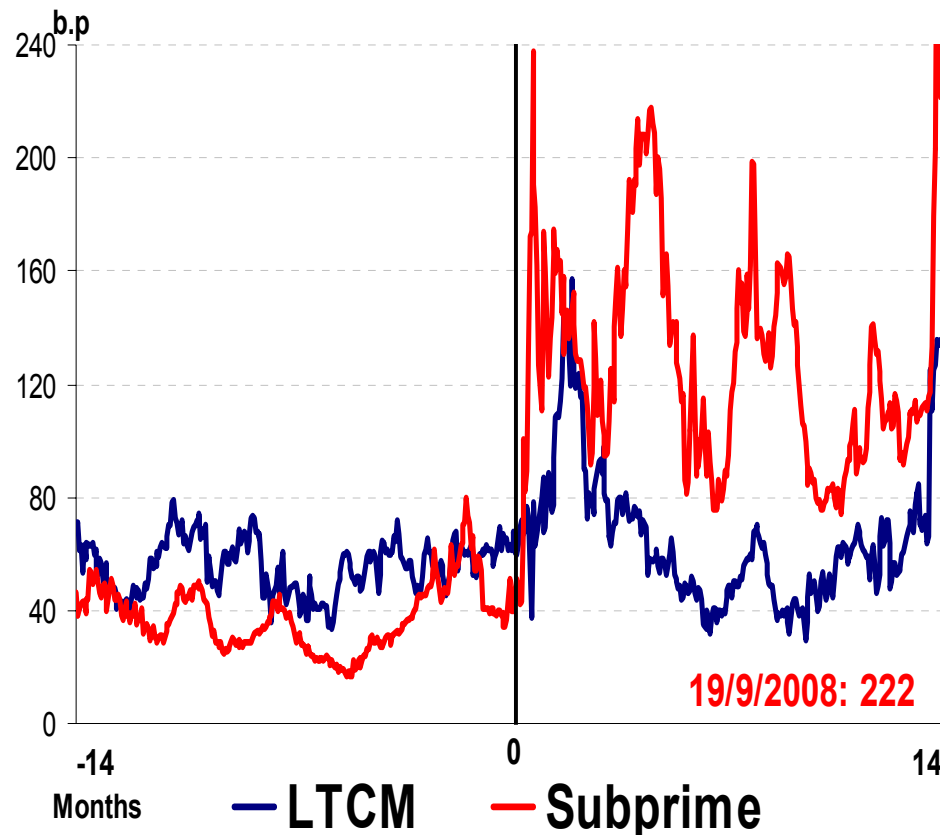


Source: Ecowin

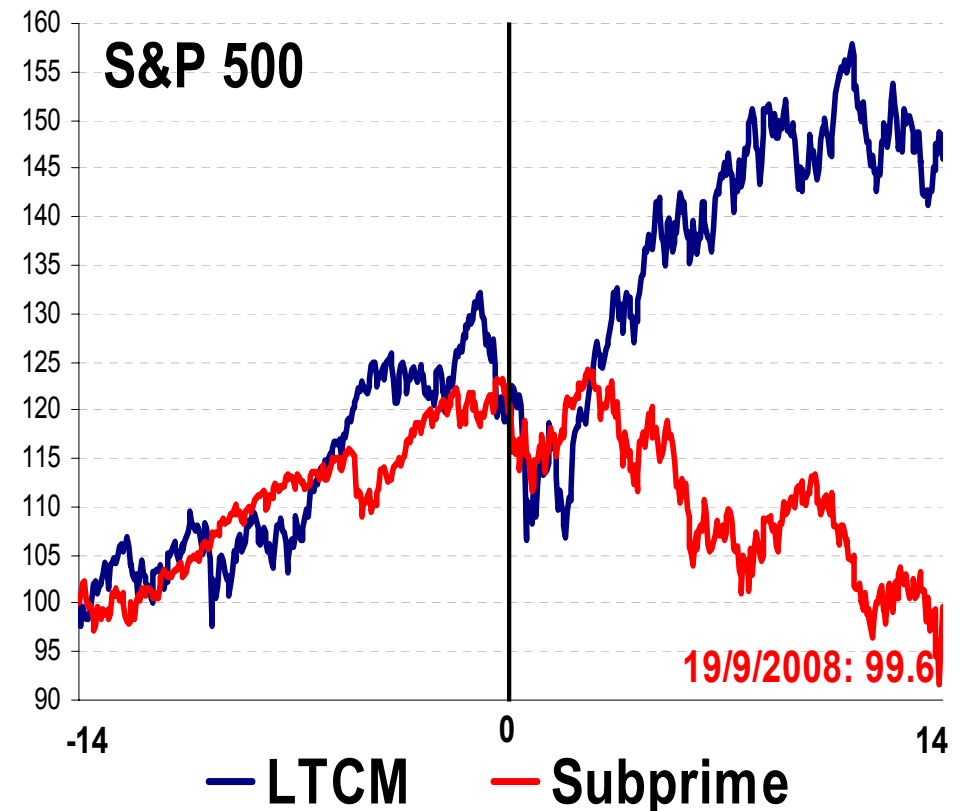
Note: ABX contracts are used by investors to speculate on or hedge against the risk that the underlying mortgage securities are not repaid as expected. A decline in the ABX Index signifies investors' sentiment that subprime mortgage holders will suffer increased financial losses from those investments.

I. This current crisis is worse than the LTCM crisis

TED spread
(3mLibor - 3mTbill)



The stock market



Part II

Why a crisis?

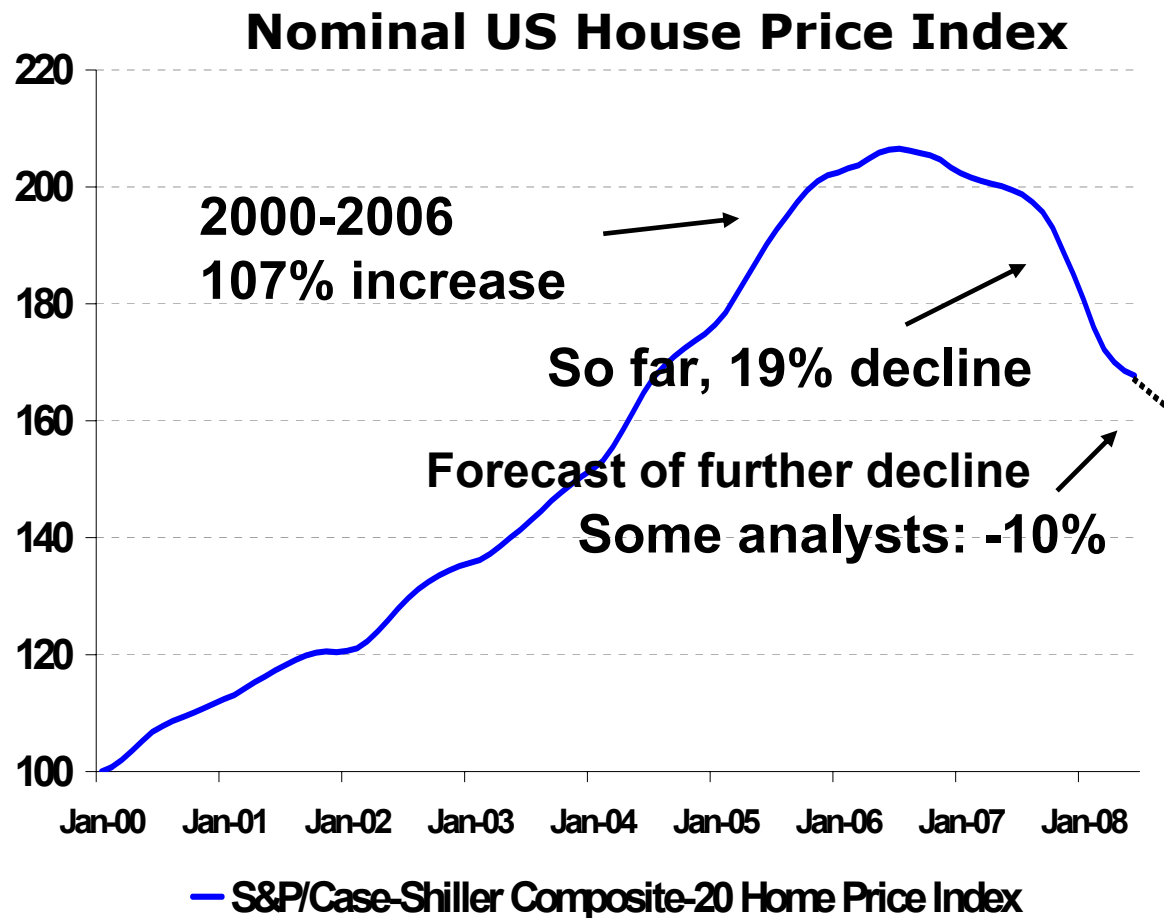
A quick synopsis of
the fundamental factors behind it

- 1) The rise and fall of housing prices**
- 2) Explosion in subprime loans**
- 3) Originate-to-distribute**
- 4) Quest for yield & miscalculation of risk**
- 5) Leverage, financed by short-term borrowing**
- 6) Other factors**

II. The Roots of the Crisis are ...

in the simultaneous development of many factors:

1) A big earlier increase in US house prices



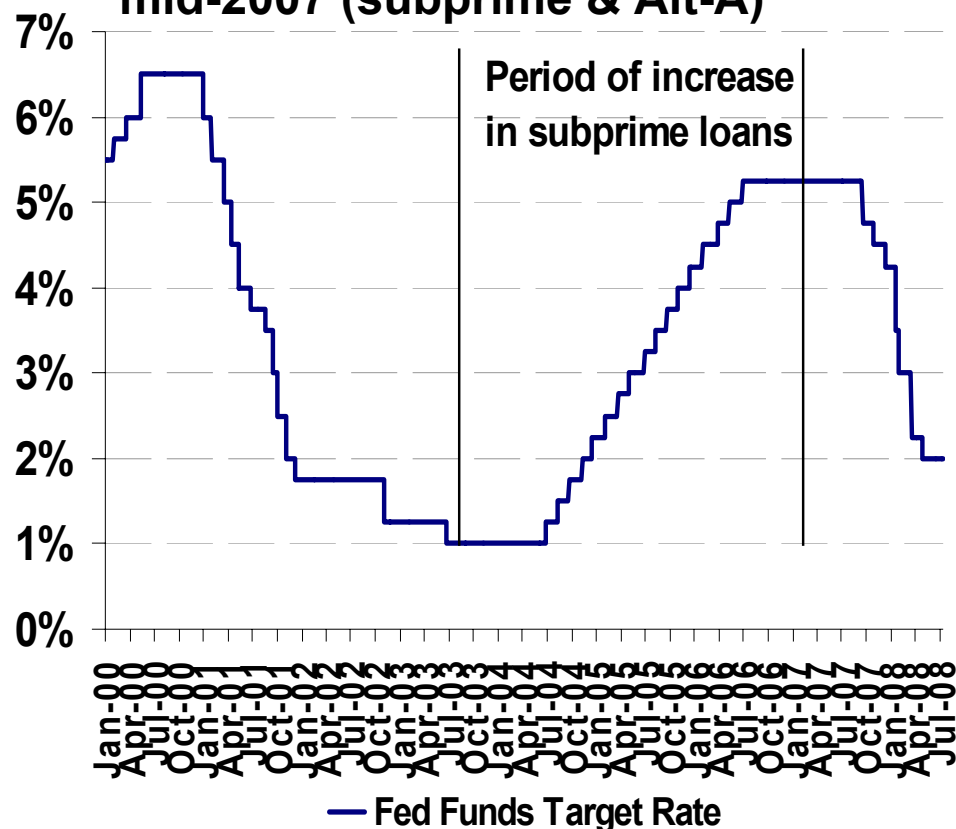
The rise in prices

- ✓ increases the value of banks' collateral and makes them more willing to lend to unworthy borrowers
- ✓ Leads to a consumption boom through MEW that keeps the economy and incomes rising
- ✓ Creates problems the moment prices stabilize and begin to fall

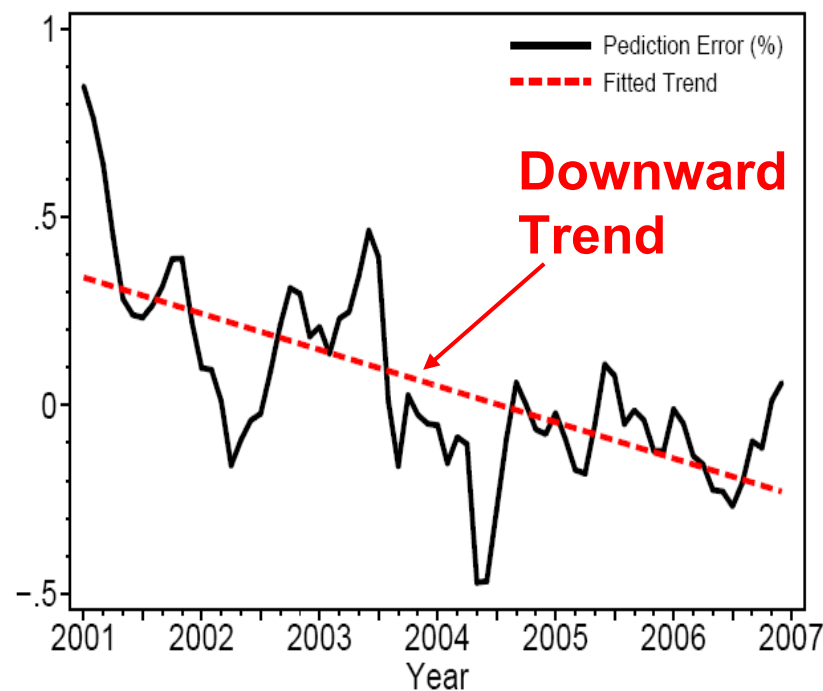
II. 2) Explosion of subprime loans in the US with deteriorating credit standards

- ✓ Initially, there was a conscious governmental effort to expand lending to low income groups and minorities, ... but later ...

Subprime: From 9% of total mortgages in 2003 to 24% by mid-2007 (subprime & Alt-A)



Subprime-Prime spread
after controlling for loan characteristics



Source: Demyanyk & Van Hemert (2008)

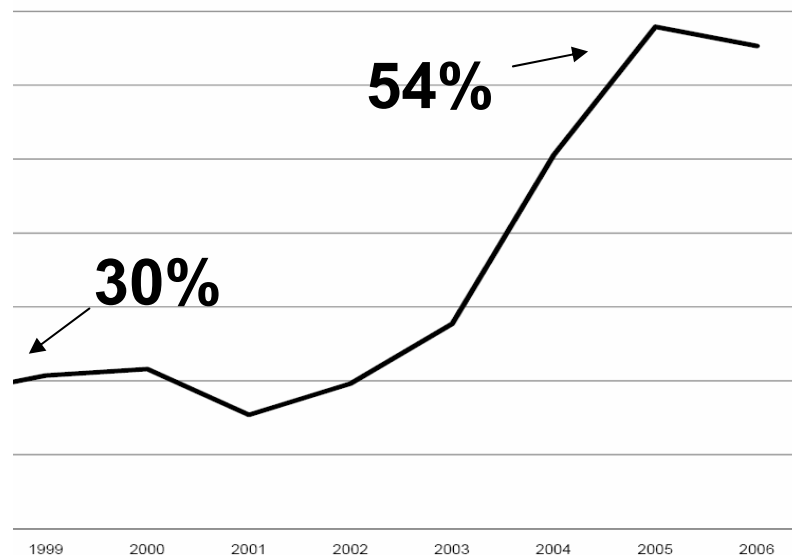
II. 3) Cannibalization of securitization:

The transfer of risk from the banks' balance sheets to third party investors: "Originate-to-distribute"

When giving mortgage loans, banks may

- 1) Keep the loans on balance sheet
- 2) Acquire the necessary liquidity in order to give new loans through securitization:
 - I. Sell the loans to GSEs (FNMA, FHLM, etc.), which in turn securitize them, a practice existing since 1939.
 - II. Sell the loans to private agents, who securitize them, but for **jumbo** loans cannot get GSE insurance.

Share of mortgages securitized by private agents



1999

Source: Mian & Soufi (2008)

2006

✓ **77% of new subprime loans were securitized**

Keys, Mukherjee, Seru, Vig : "**Did securitization lead to lax screening? Evidence from subprime loans**" best paper in Athens EFA meetings, 8/2008

Their answer is **YES**

II. 4) Willingness by FI to hold the risky portion of securitized products

Why did they do it?

- ✓ Arrangers have to keep equity portion, for securitization to be credible. Yet, the other FI, why buy parts of equity portion?
 - Lack of transparency due to multiple layers?
 - Lack of intimate knowledge of risk in subprime loans?
 - Lack of knowledge on the softness of ratings of securitized products?
 - Lack of understanding of the leverage factor and its consequences?

My view: 2 REASONS

- i. QUEST FOR YIELD: Excessive short-term profit seeking, as the risky (equity) portion provided the highest return**
- ii. Plus MISCALCULATION of the true and high probability of a systematic collapse of the market or, ... unfortunate realization of the “bad state,” despite its ex ante low probability, i.e. no miscalculation but simply bad luck, that is, the inverse of the “peso” problem in financial markets**

11. 5) FI high leverage financed by short-term borrowing

- ✓ A leverage factor of 9 means that if an FI buys a risky title worth \$100, it uses \$10 of its own capital and borrows \$90
- ✓ If borrowing is short-term, the FI has to refinance its position frequently at unknown future interest rates and with no guarantee it will find the funds
- ✓ If the price falls by 10% to \$90, the capital is wiped out, implying a loss of 100%
- ✓ If these titles represent a large fraction of the FI's portfolio, the FI can easily lose a lot of its capital and cannot hide it for too long, as IAS accounting would reveal it.
- ✓ Soon it would seek new borrowed funds to refinance its position, as borrowing is short term
- ✓ A refusal by the potential lenders to provide the necessary funds can lead to bankruptcy

II. Other contributing factors ...

- 6. Rating agencies became more strict**
Further write-downs
- 7. Mark-to-Market Accounting (IAS):**
Banks forced to show PV losses
Increased pressure for selling assets → fire sales → lower prices
- 8. Lack of transparency & complexity** → Counterparty risk remains high (Interbank market – liquidity problems)
- 9. Supply of credit insurance by single entities**
Credit Default Swaps (a \$63 trill. market), Monoline Insurers
- 10. Securitization had expanded into non-mortgage loans**
Asset Backed Commercial Paper
- 11. Structured products present everywhere**
in portfolios across the entire financial system, in US, European and Asian banks, funds, insurance companies, etc.

Part III

Implications

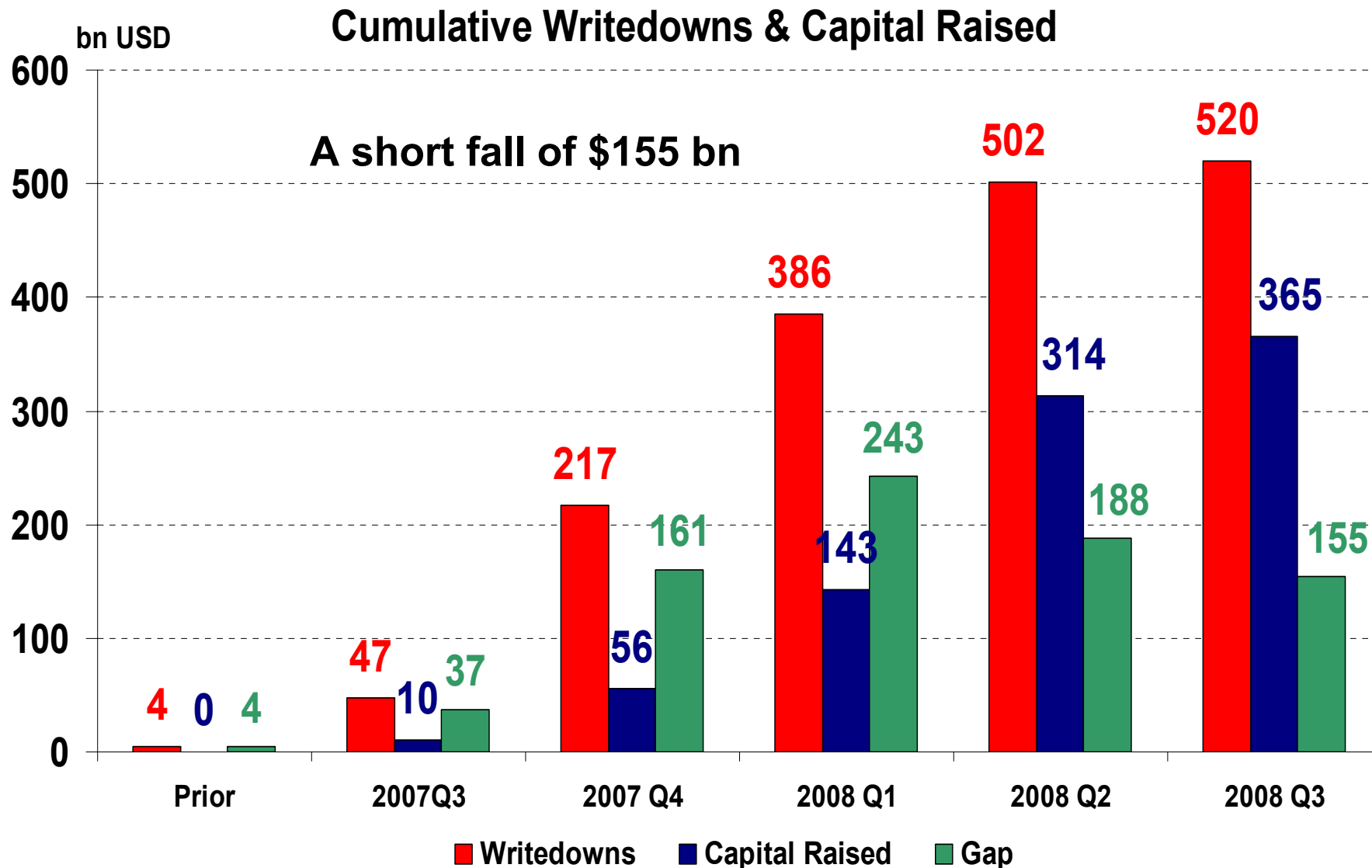
Write-downs
Capital increases
De-leveraging
Economic activity

III. Huge estimated losses, even before Sept 12

- **50 million** households with mortgages, **18%** of whom have negative equity, (mortgages of about **\$1.9 trillion**). This number is likely to ↑ as house prices ↓
- Estimated Balance sheet losses: IMF: \$945 billion
Credit Suisse (9/9/2008)

	\$ Issuance	% Loss	\$ Loss
Subprime	\$ bn 1416	25%	\$ bn 350
Prime	3242	1%	30
Jumbo	1397	1%	10
Alt-A	1055	12%	130
Home Equity Loans	1150	15%	170
Commercial Real Estate	811	5%	35
Leverage Loans	780	12%	95
High Yield Bonds	478	14%	65
Revolving Credit	957	8%	75
Non-revolving	1599	2%	35
C&I Loans	1169	2%	25
Grand Total	13243	8%	1,020

III. Write downs lead to lower capital increases



Source: Bloomberg, WDCI <GO>, as of September 19, 2008

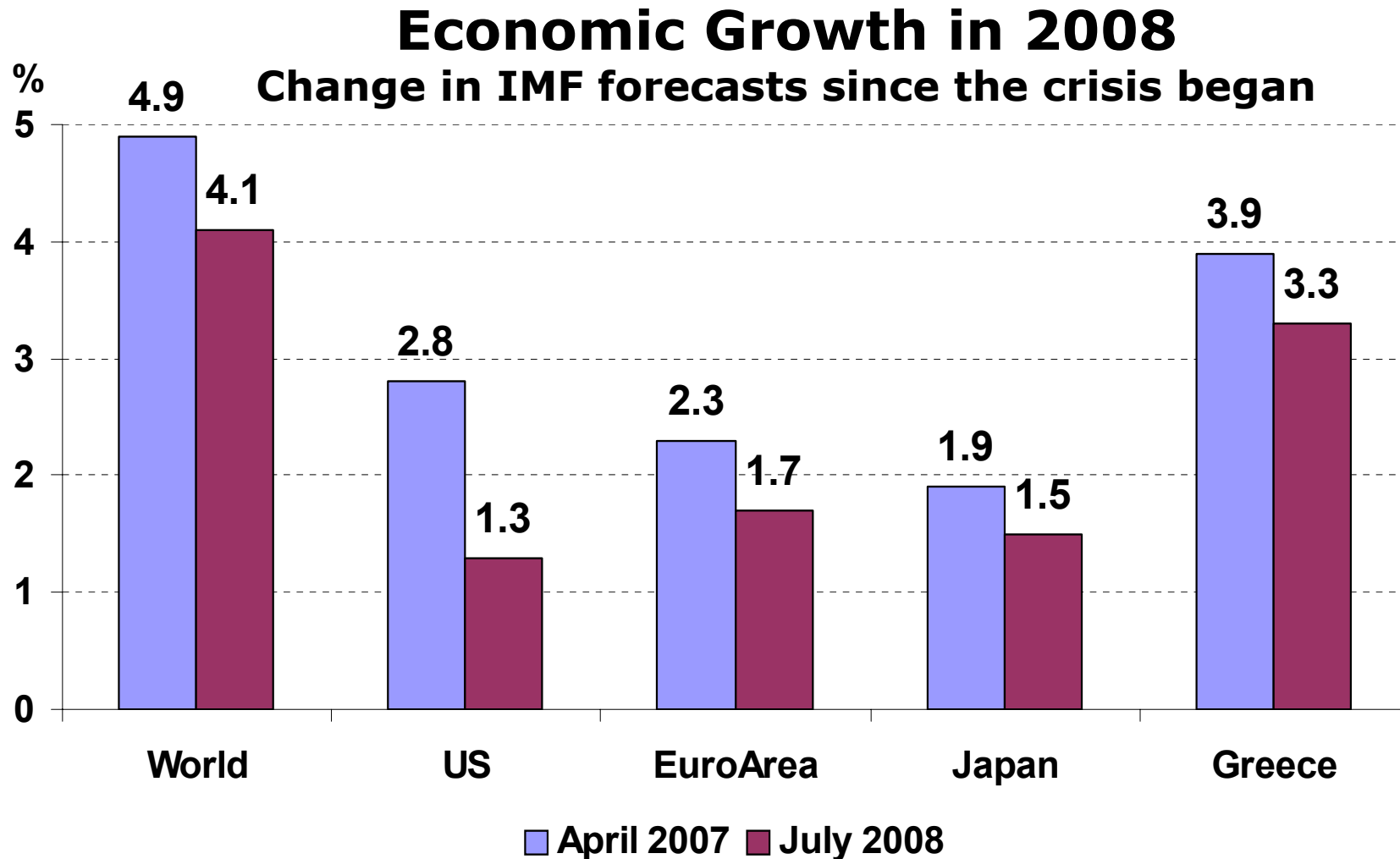
III. The Future: De-leveraging & asset reduction

Older IMF study:

Assets have to shrink (by about \$1-2 trillion) →
credit squeeze → significant economic deterioration

- ✓ As cumulative losses double and surpass the first trillion, the current gap of \$155 may more than double, in view of worsening international economic activity as well. Then, assuming banks hold 2/3 of the losses and have a leverage ratio of 10, the required reduction in balance sheet assets – to conform with capital adequacy regulation -- would have to be **well over \$2 trillion**.
- ✓ Hence,
 - Further contraction in lending growth
 - Significant downward pressure on asset prices
- ✓ **The previous estimates must have risen, following the recent turmoil of the week of Sept. 15-19**
- ✓ US Government willing to absorb some of the losses in order to restore market confidence: President Bush talks of **\$700 billion cost**

III. The credit crunch impacts economic activity



Source: IMF WEO April 07 & WEO Update July 08
For Greece, Eurobank EFG estimates

Part IV

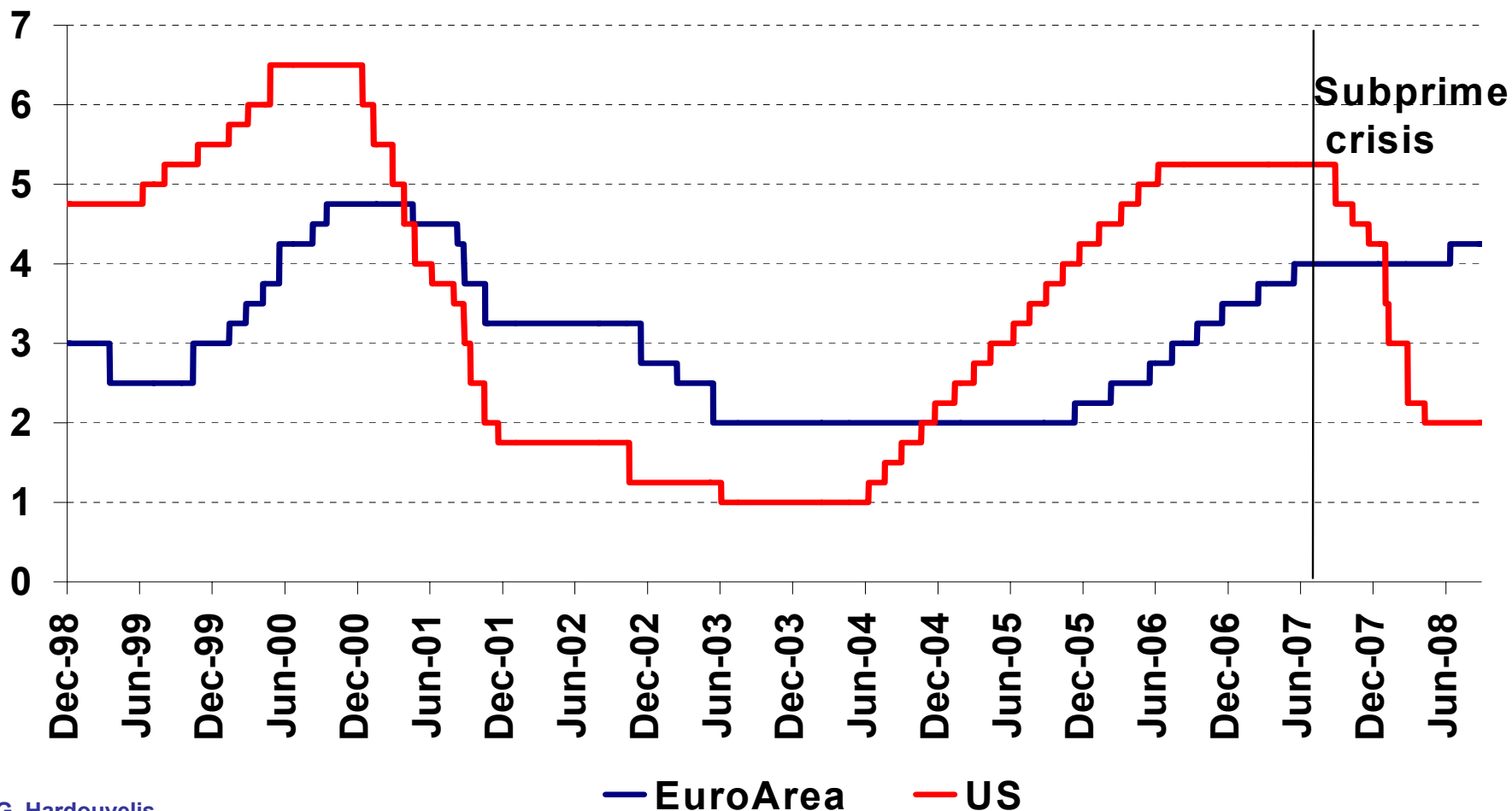
The regulatory response: More to come?

IV. Authorities: Usually drastic reaction with an eye towards moral hazard

- ✓ **Crisis surprised** regulatory authorities in August 2007, who underestimated it:
 - BoE wavered in Northern Rock case
 - Fed was hawkish in August 2007 before switching towards expansionary policy
- ✓ **Policy trade-offs worsened** with the rise in inflation
- ✓ ECB followed a double course:
 - Raised interest rates to 4,25% in July 2008, in view of rising inflation
 - Expanded liquidity and reduced collateral requirements to help distressed banks
 - Joint central bank intervention in Dec-2007 and in Sept 2008 (\$180 bn)
- ✓ Bernanke and the Fed:
 - **Deeply aware of trade-off between the probability of a financial meltdown and moral hazard**
 - Innovative and effective interventions in March 2008: Creates TSLF, PDCF, guarantees sale of Bear-Stearns to JP Morgan,
 - Facilitates sale of Merrill Lynch to BoA, rescues AIG in Sept 2008
 - Lets Lehman Brothers (4th-largest in US) file for bankruptcy in Sept 2008
 - Pumps Liquidity in coordination with other central banks (in Dec 2007, then \$180 bn on 18/9/2008)
- ✓ Fiscal package for the US recession, Conservator-ship of Fannie Mae & Freddie Mac, Announcement of formation of “Resolution Trust-type” corp. President Bush talks of \$700 bn cost.

IV. Fed naturally worries more than the ECB

- ✓ Fed: An aggressive reduction in rates, from 5.25% to 2.00%
Substituted good for bad collateral
Intervened beyond its jurisdiction to save the system
- ✓ ECB: Puts emphasis on inflation, yet aggressive liquidity provision



IV. Future regulation

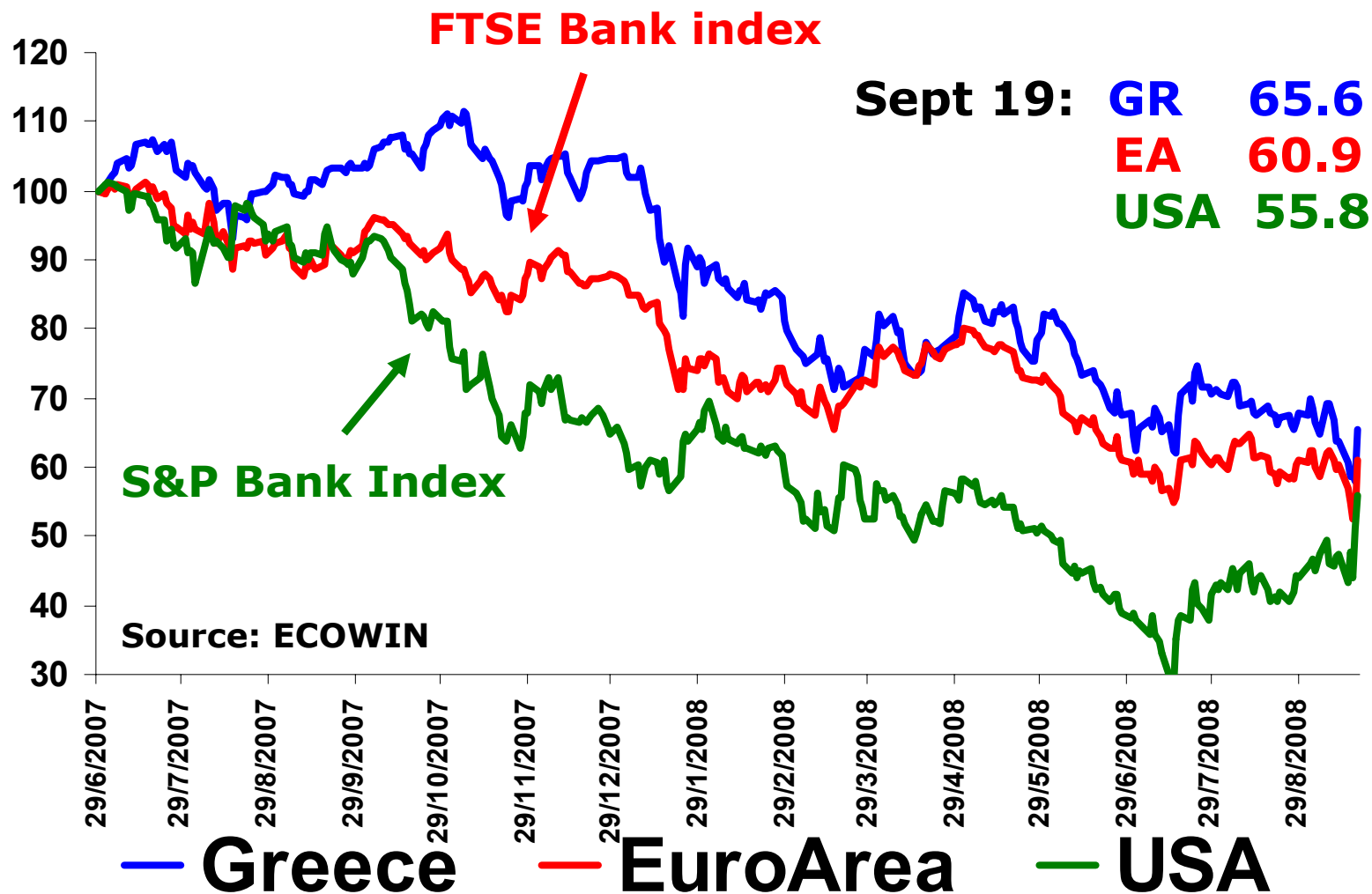
- ✓ Basel II – type to be effective in the US on 1/1/2009 for the largest banks; Basel II in Greece on 1/1/2008
- ✓ Analogous Solvency II for insurance companies up to 2010
- ✓ Basel II is bound to get stricter:
 - Event risk to be more properly calculated
 - securitizations to be more restricted when included in Banks' Trading Books
 - Pillar II on corporate governance to be strengthened
 - All FIs in the Basel II umbrella
- ✓ Pro-cyclicality of regulatory rules discussed but not tackled yet
 - Proposal by Kashyap, Rajan & Stein: State-contingent capital insurance
- ✓ Rules to respond to externalities imposed by one FI on the others
- ✓ Is Free-Market ideology on the defensive? Will active government intervention in the private sector become more acceptable by the public? **Not clear.**

Part V

Greek Banks

Posed to outperform

V. The market has excessively punished Greek banks, almost as if they are in the same shape as European or US banks



V. But is the large drop in Greek Bank capitalized values rational?

PROS:

- ✓ Not invested in risky securities
- ✓ Operate in countries that grow fast & under-banked
- ✓ Have shown resistance to the crisis
 - Capital
 - Profits
 - Liquidity
- ✓ Downward trend in NPLs

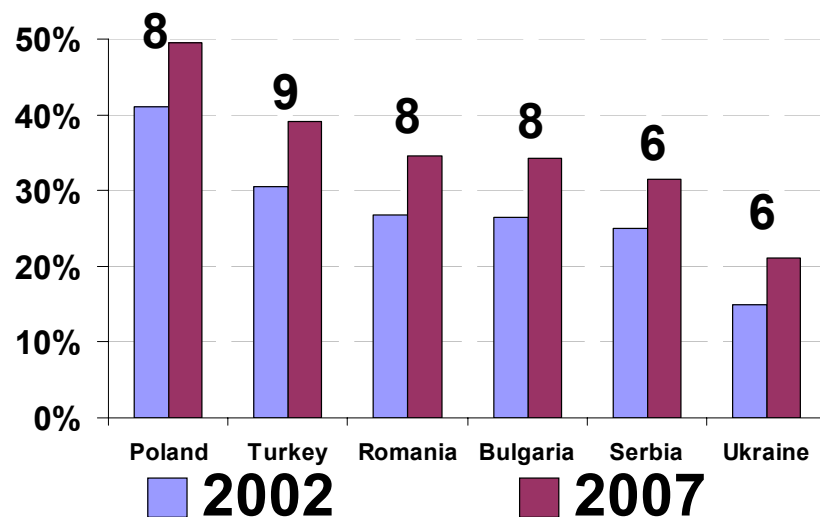
CONS:

- ✓ Countries of New Europe are overheating
- ✓ Greece is a maturing banking market
- ✓ The behavior in the first 14 months is not indicative of the future
 - Profitability will slow as Loan/Deposit ratio > 1 and need for liquidity \uparrow
- ✓ Perceived pockets of risk and lack of stress testing over the past 15 years

V. Greek banks operate in a fast-growing region, which has a long way up

GDP per capita (PPP, % Euro Area)

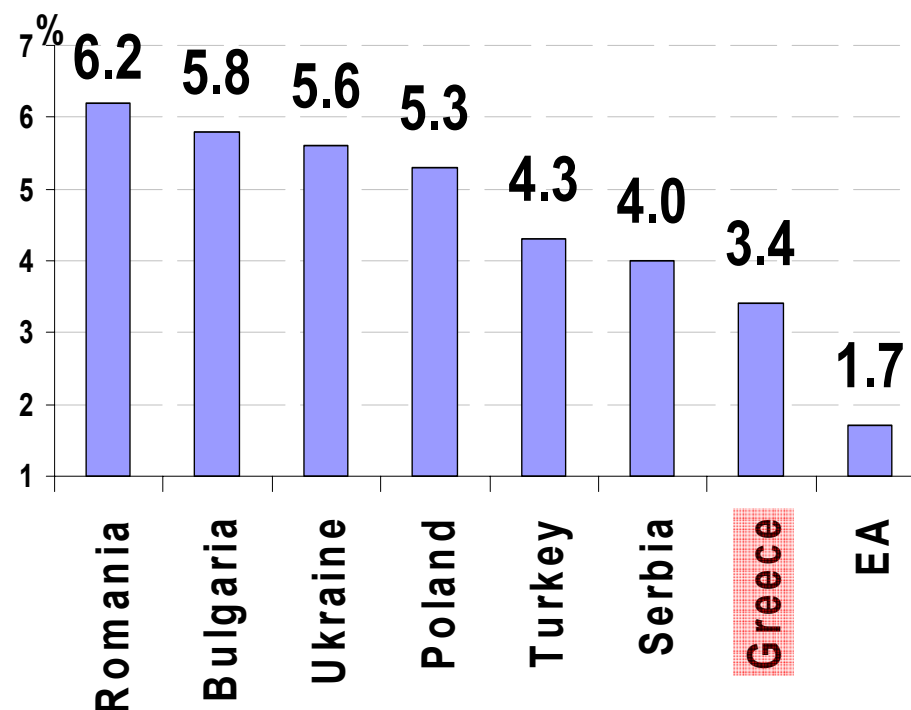
Considerable convergence over the last 5 years



Greece at 90% of Euro Area

Source: IMF, Eurobank Research

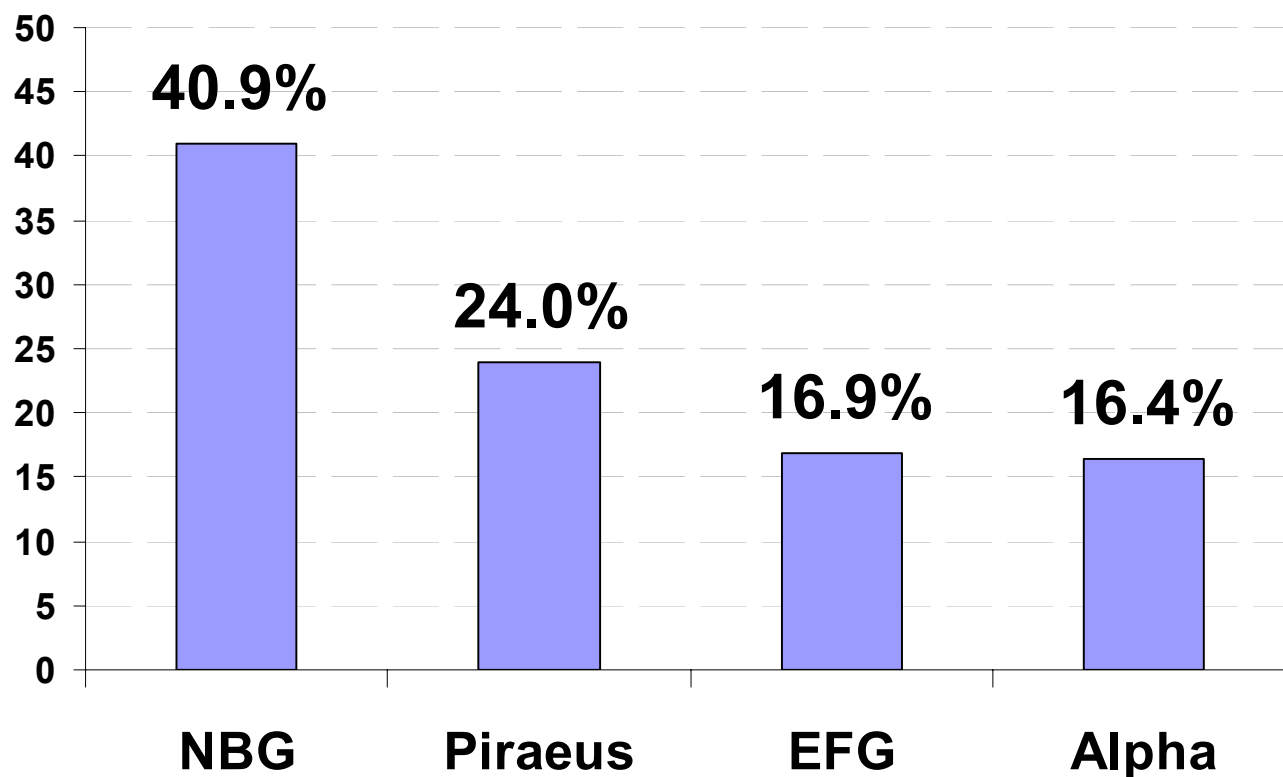
Real GDP growth (2008)



Source: IMF, European Commission

V. Greek banks begin to see a return on their investments abroad

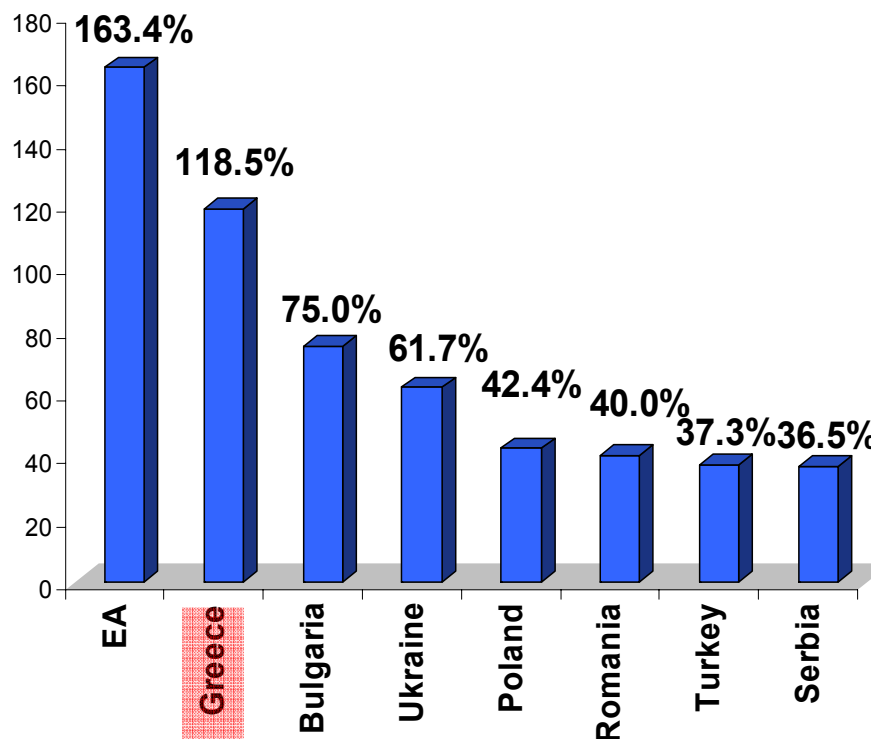
New Europe Contribution to Greek Bank profits % composition of pre - tax Group profits, after minorities (1H 2008)



Source: Results announcements

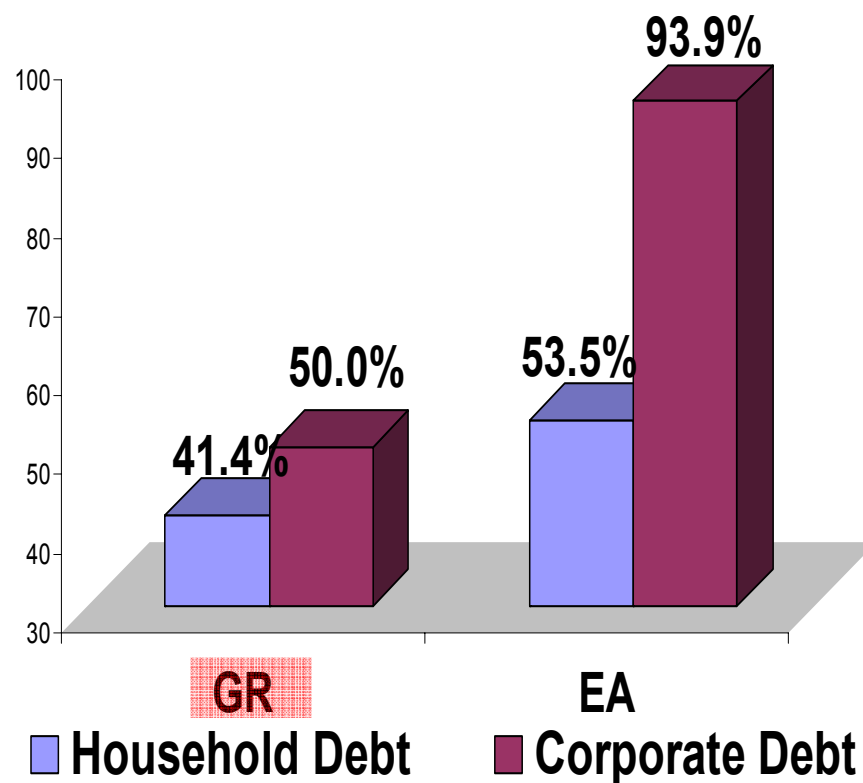
V. The region is still under-banked, compared to EA

Total credit (% GDP, 1H 2008)



Source: BoG, Central Banks, Eurobank Research

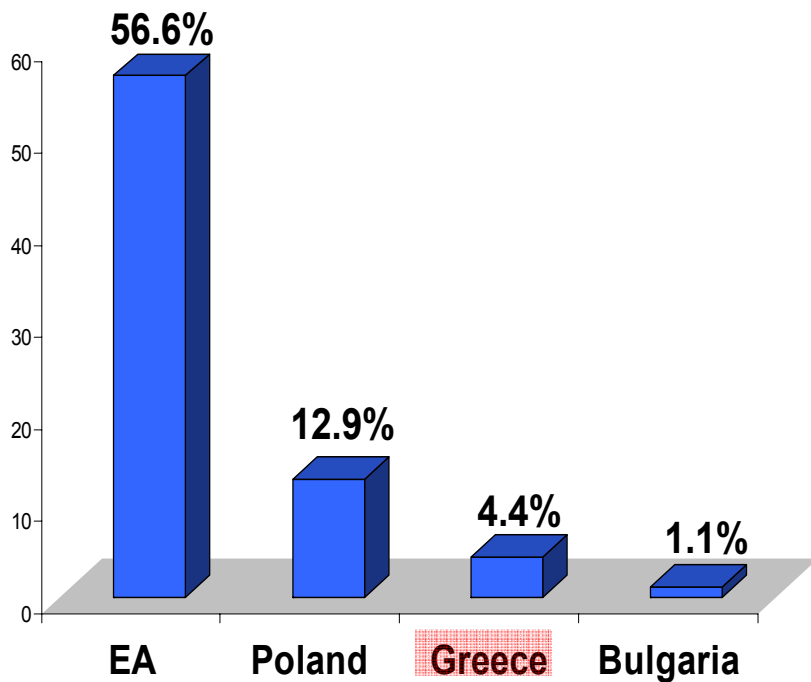
Composition of Credit (% GDP, 1H 2008)



Source: BoG, ECB

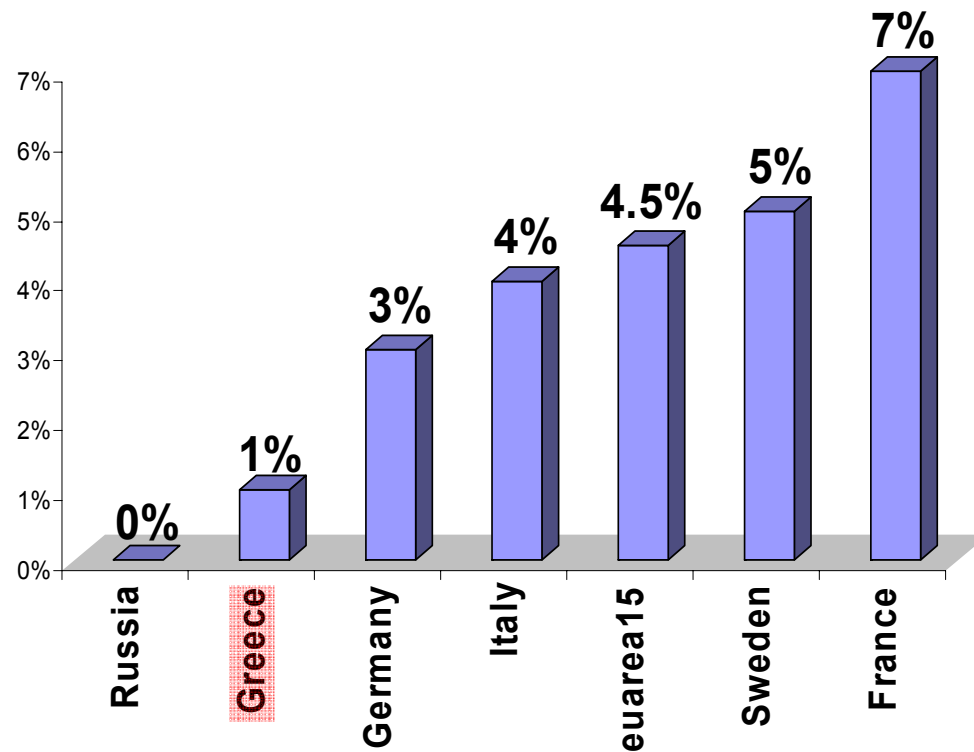
V. Opportunities abundant in segments of retail banking

Investment Funds Assets (1Q 2008, % of GDP)



Source: ECB, Eurostat

Life Premia (2007, % of GDP)

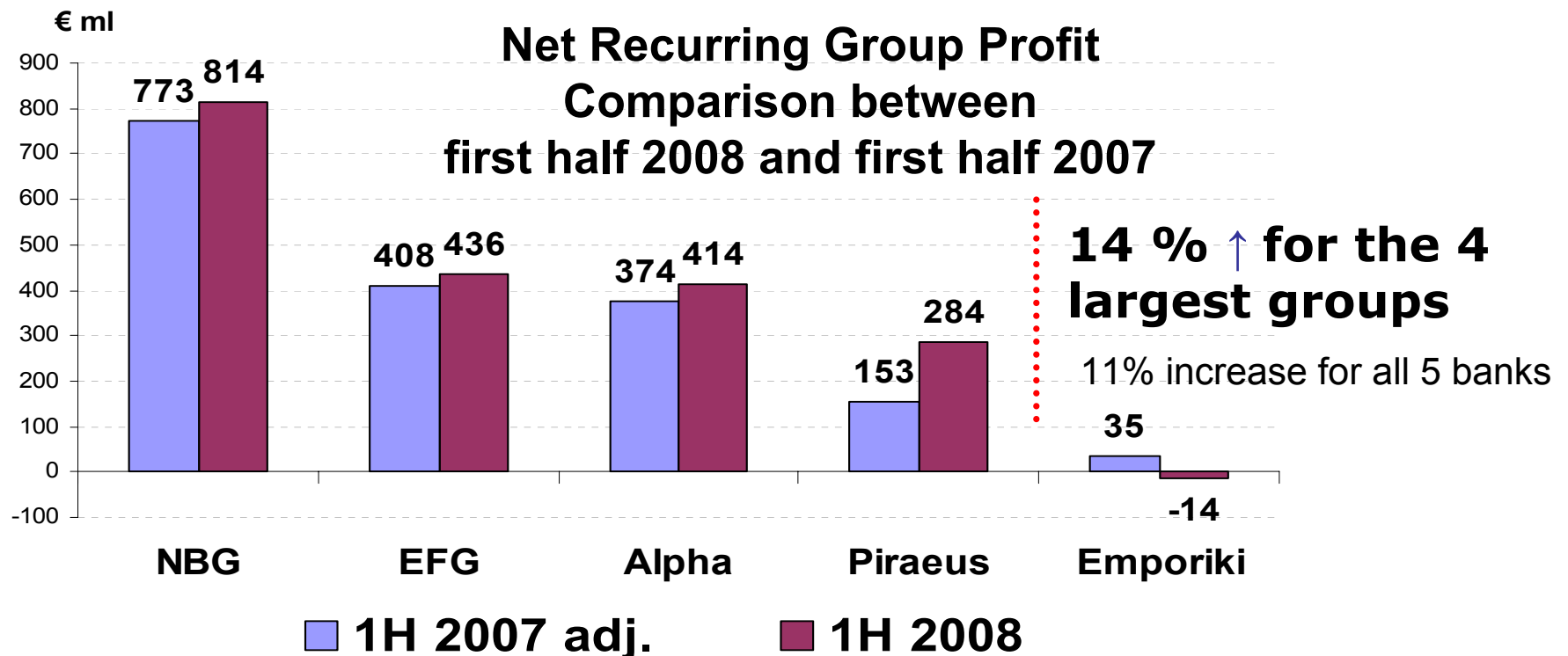


Source: Credit Suisse, CEA

V. Crisis has not yet affected Capital & Profitability as much as in Europe

Capital increases in 2007 of Eurobank & Piraeus not included in Δ

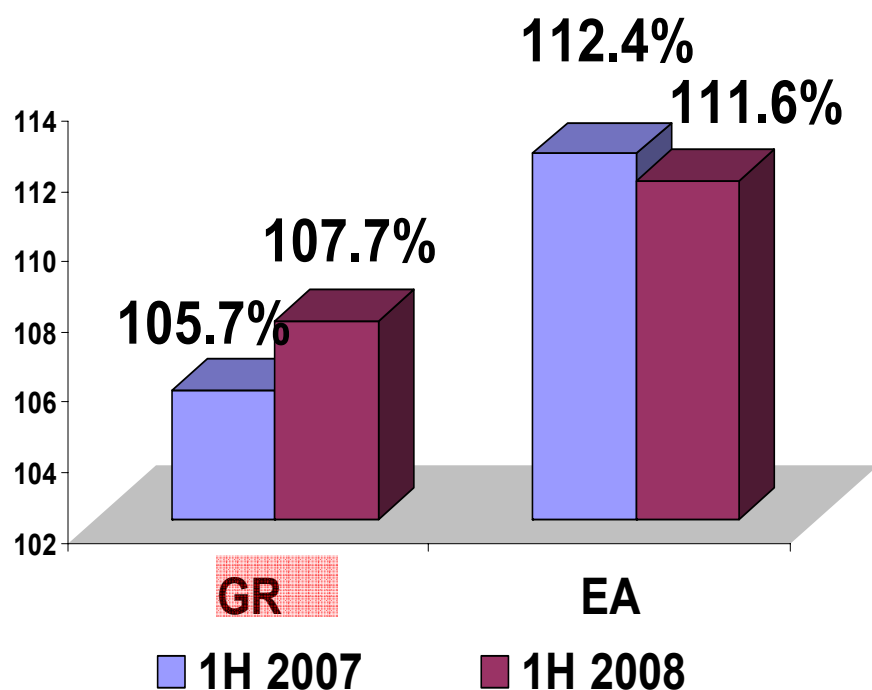
Equity position of 4 larger banking groups			
End-2007	1H 2008	Δ (€mn)	Δ (%)
21.502	21.242	-260	-1.21%



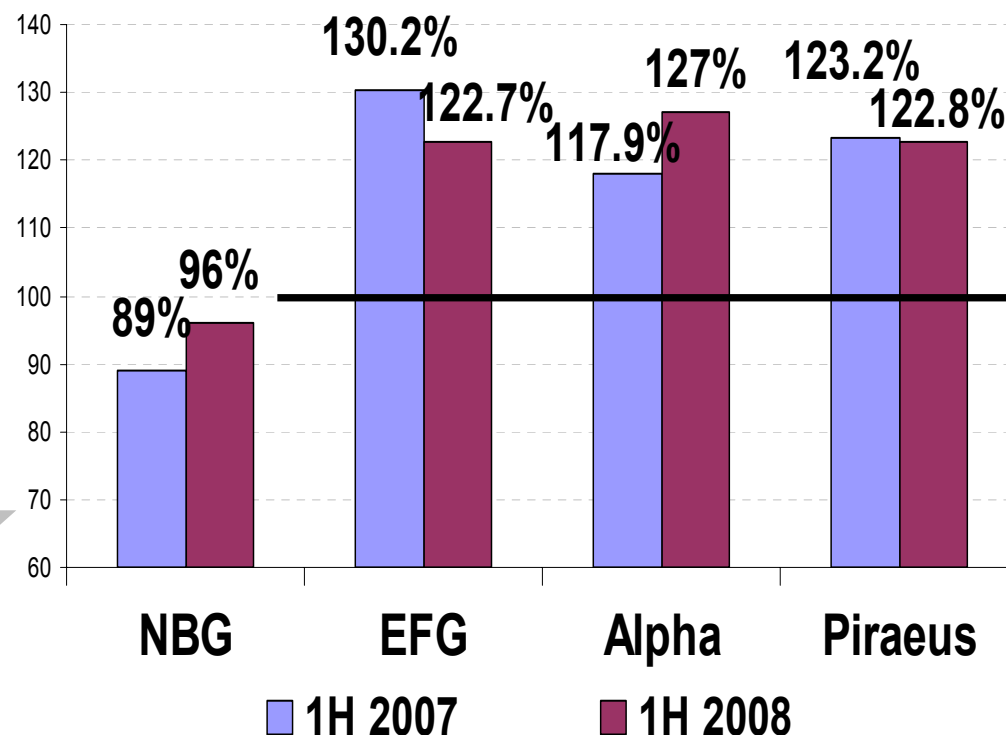
V. Liquidity improves, despite the crisis

- ✓ *Funding did not dry up, although more expensive*
- ✓ Banking Group L/D ratios larger than national ones as liquidity is transferred to New Europe
- ✓ National Bank still below 100%

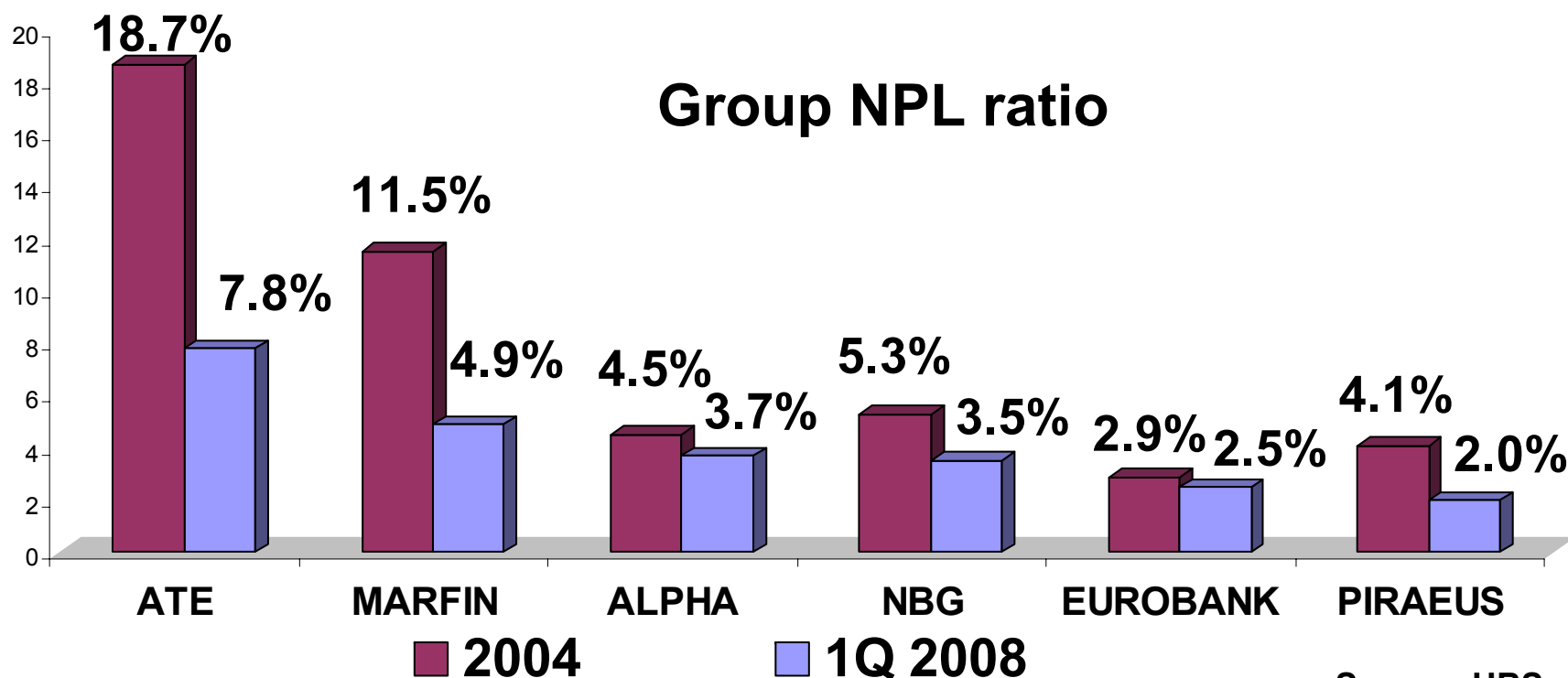
National Data Loans / Deposits



Banking Group Data Loans / Deposits



V. Greek Bank NPLs keep improving



Source: UBS

- ✓ Improvement is due to write-downs, not a recent expansion of new loans
- ✓ A pro-cyclical regulatory policy should be avoided during an international crisis
- ✓ Pockets of perceived risk should be tackled directly and with discretion

V. Greek banks: After the first 14 months, what?

- ✓ Summing up: The PROS outweigh the CONS
- ✓ Yet,
 - Rapid expansion is more risky than 5 years ago as the economic environment has worsened
 - Rapid expansion is also more costly while the international inter-bank counterparty risk stays at post-Aug. 2007 levels
- ✓ Funding costs will come down in 2009 as the ECB brings intervention rates down and as counterparty risk drops
- ✓ For Greek banks, de-leveraging is not a major factor and capital does not shrink as much compared to other international FIs, implying a comparative strength
- ✓ A more careful strategy is required and each bank will follow its own

VI. Summary & Conclusions

- ✓ This is the largest post-Depression financial crisis, as the events of Sept. 15-19 made clear to everyone
- ✓ There are no easy scapegoats for the crisis, which is due to the emergence of a number of causal factors -- while some on going market phenomena appear puzzling still
- ✓ The crisis will not end soon, since de-leveraging takes time and risk aversion may hold on for a while, especially in a slowing global economy
- ✓ Central banks & US fiscal authorities have responded aggressively to the crisis and have saved us from a financial melt-down without – in my view -- necessarily raising moral hazard
- ✓ Let us expect stricter preventive future regulation, which would be less pro-cyclical, but hold your breath on more interventionist policies
- ✓ Greek banks were isolated from the excesses of international banks, yet face a larger cost of funds and a more risky economic environment while the crisis lasts
- ✓ The Pros outweigh the Cons for Greek Banking and, once the worst conditions of the crisis are over, a careful strategy of cautious expansion may lead them to become comparatively stronger

THANK YOU FOR YOUR ATTENTION!!

My thanks to Investors Relations & the Research department of Eurobank EFG for able research assistance and support

For more info, please consult the Eurobank website:

<http://www.eurobank.gr/research>



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