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US SUBPRIME CRISIS AND ITS EFFECTS ON MEXICO*

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* Draws heavily on *How will the crisis change markets?*, Jan Loeys and Margaret Cannella, JPMorgan, Global Issues, April 14, 2008

JPMorgan

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US sub-prime financial crisis

Characterization of the crisis

- Relaxation of lending standards in the mortgage market
- Highly-leveraged securitized market
- Short-dated funding used by securitized market

Relaxation in lending standards

Cause:

The sub-prime crisis started as a credit problem in the lower section of the market for US housing finance. In an attempt to reach out borrowers that would not qualify for ordinary mortgages, banks relaxed their credit policies and offered negative amortization loans and sometime also boost artificially borrowers' income and assets. In the context of a booming economy, low interest costs and low unemployment rates, this type of lending pose no serious threat.

- Securitized sub-prime mortgages issuance exploded, from about $60bil per year in 1990s to over $200bil in 2003 and over $450bil in both 2005 and 2006.

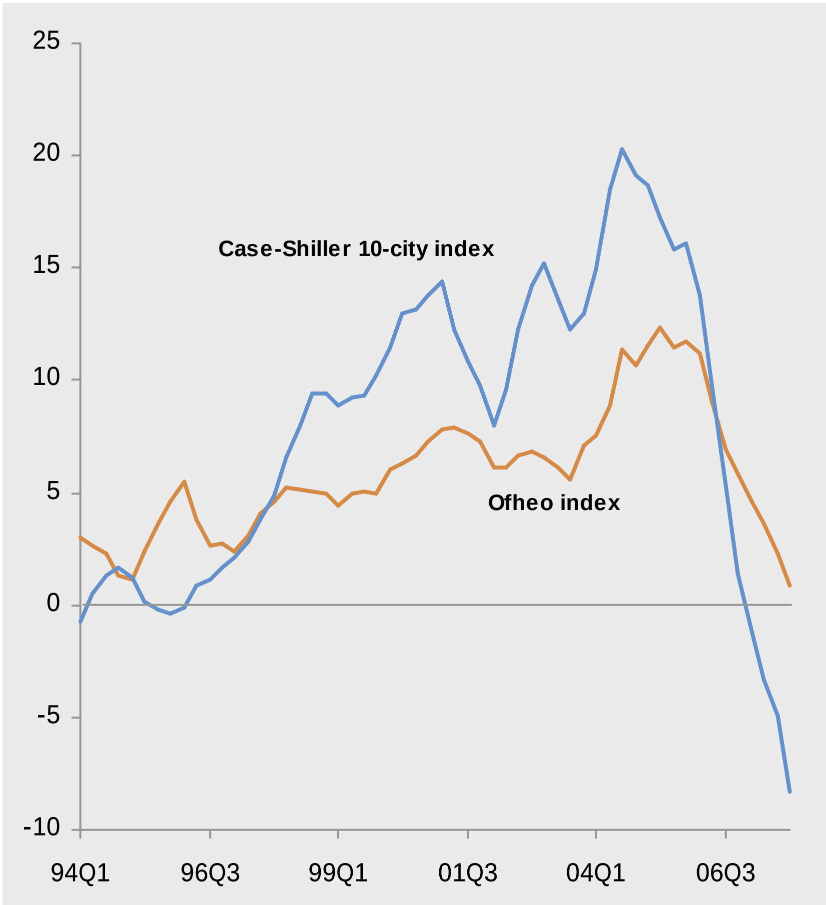
Triggering factors:

It was triggered by a combination of raising borrowing costs and falling housing prices, themselves brought by overbuilding, with raising levels of consumer leverage. Lenders were not alone in creating the household bubble. US households themselves eagerly used the easy credit availability to pile up the debt.

- The share of sub-prime loans financed with a silent second that lent all or part of the down payment exploded from 6.8% in 2003 to 24.6% in 2005 and 33.2% in 2006.

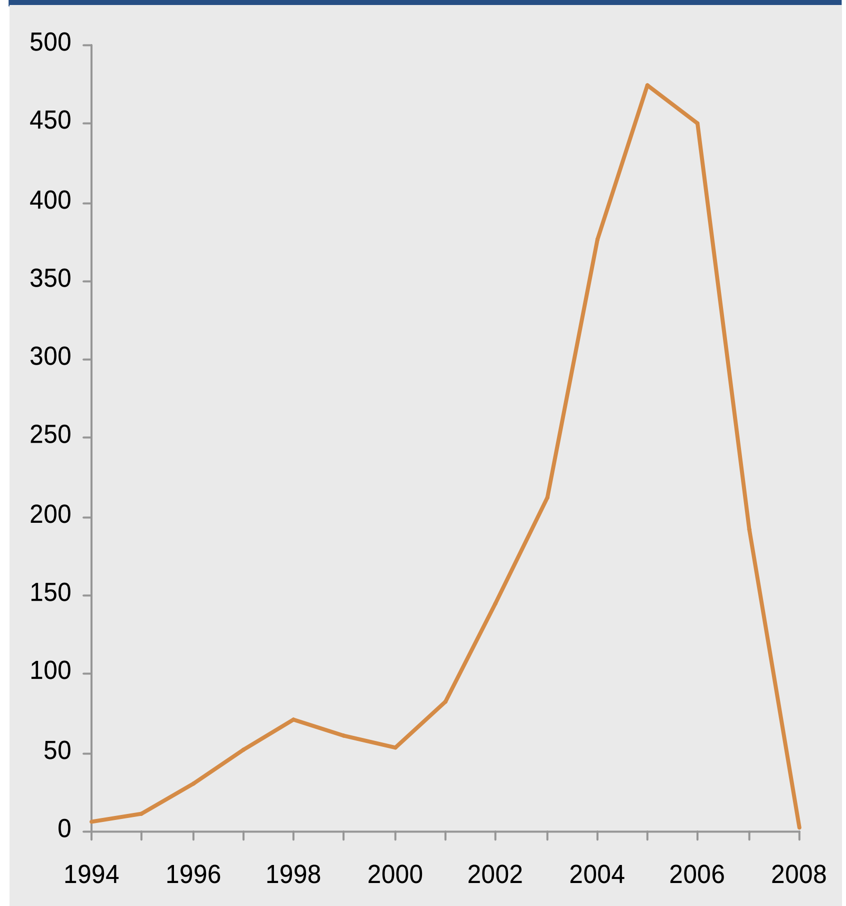
US house markets dropped and sub-prime issuance collapsed

US house prices (%oya)



Source: JPMorgan

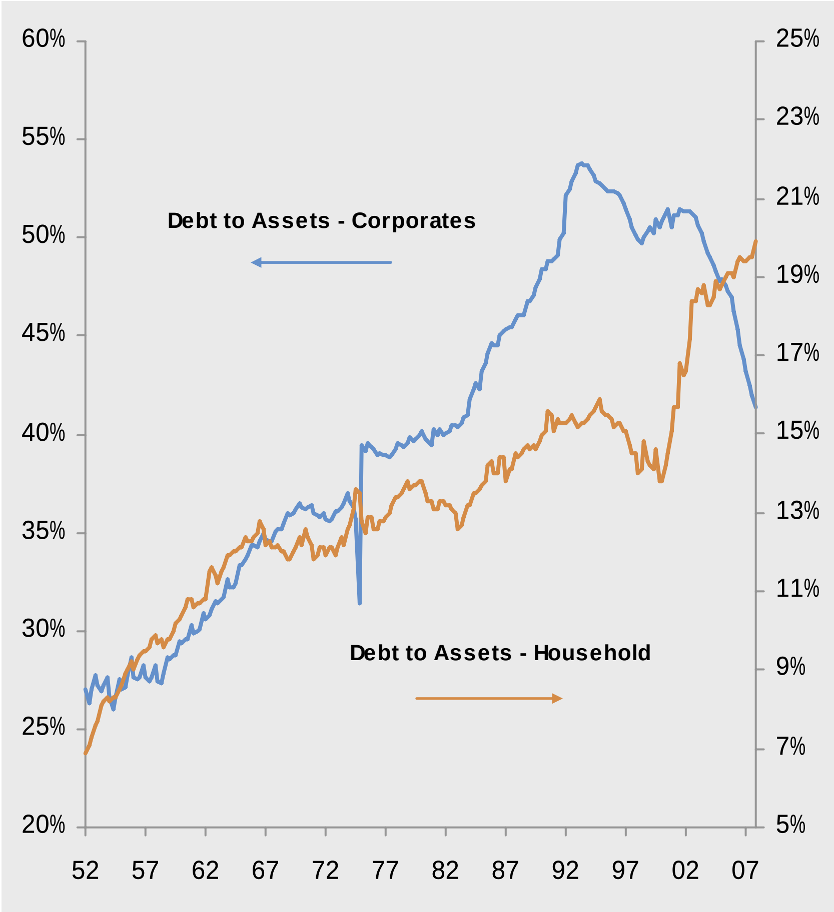
Subprime mortgage issuance ($bn, securitized)



Source: JPMorgan

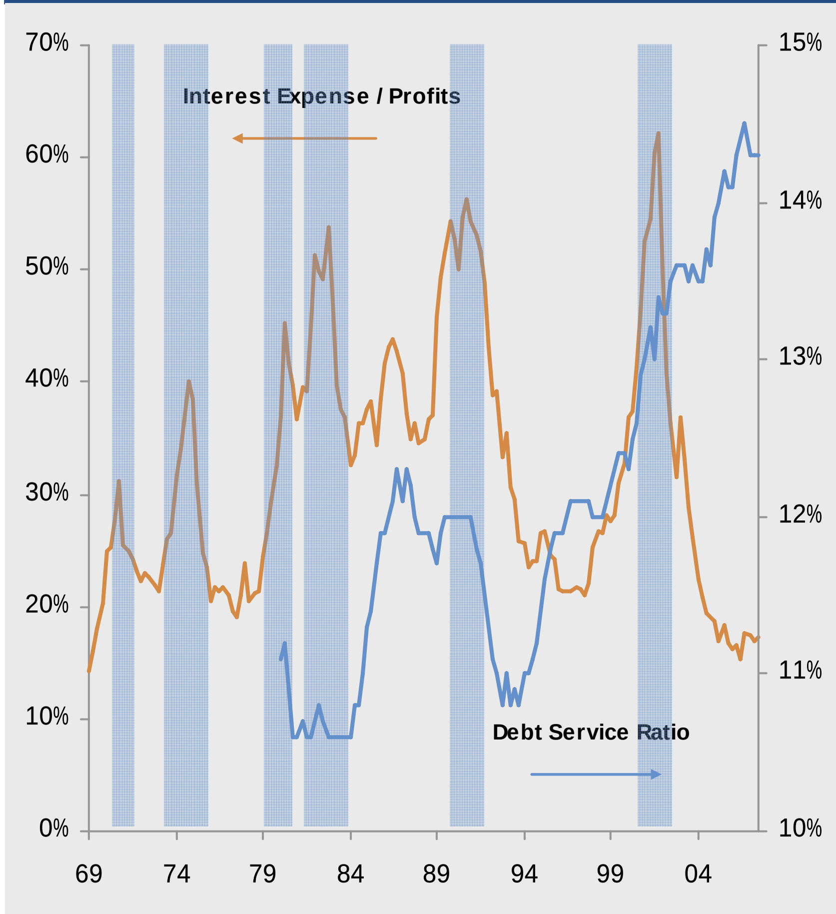
Lenders' and borrowers' risk led to the crisis

US consumer and corporate leverage
%, debt-to-asset ratios



Source: JPMorgan

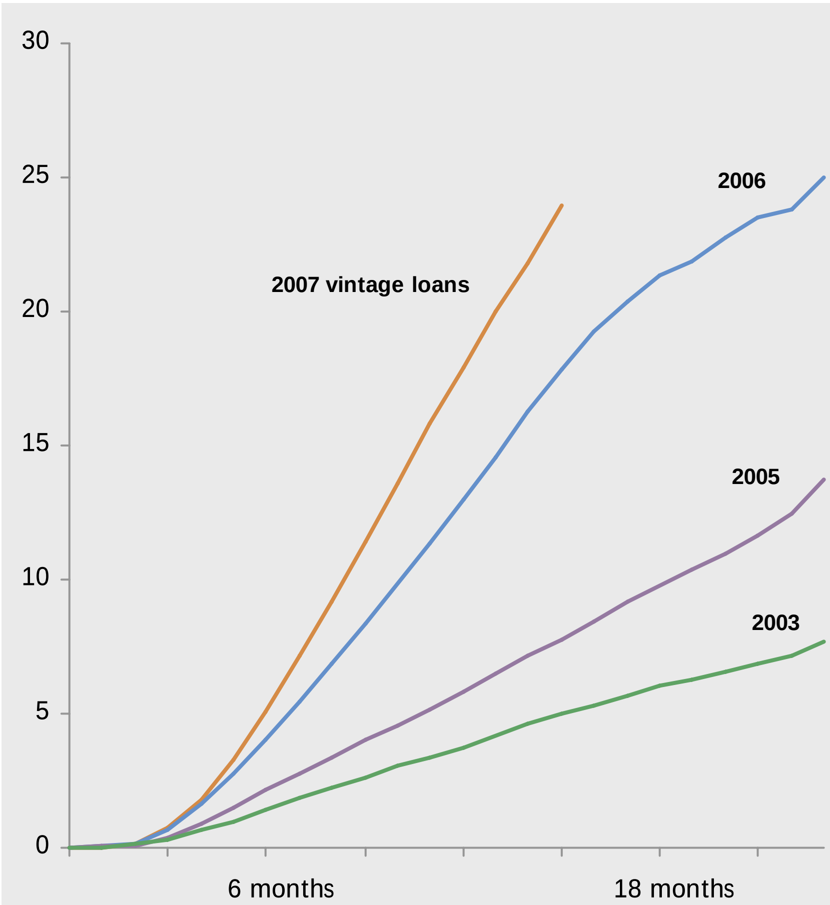
Debt service ratios by US households and corporations
(%, NBER recessions in shaded areas)



Source: JPMorgan

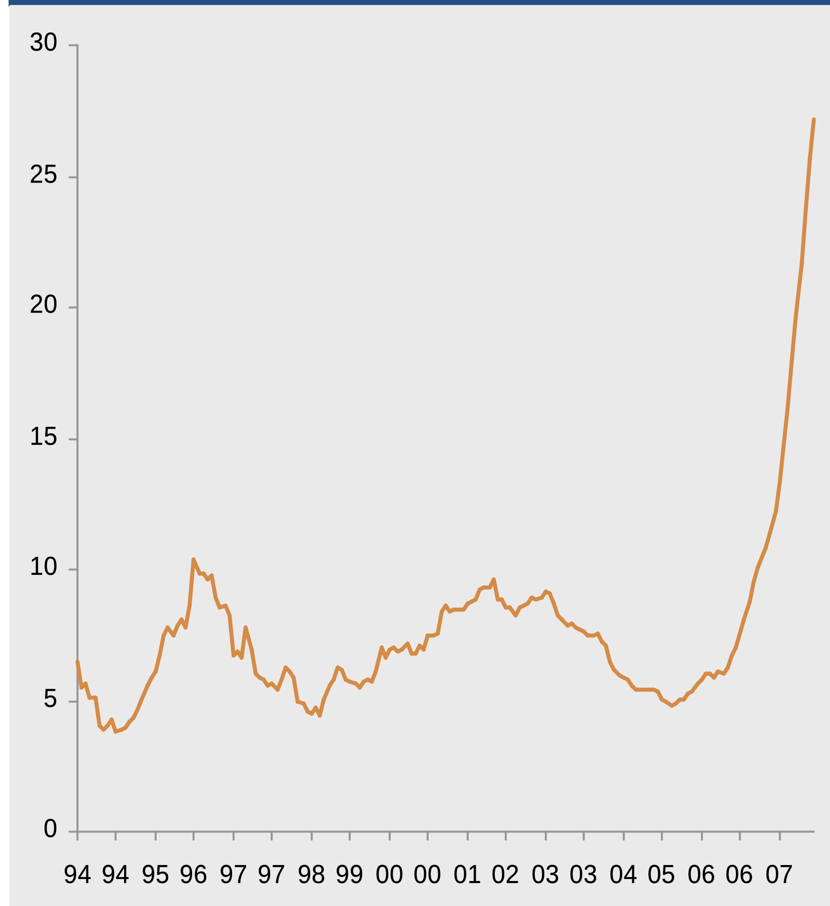
Delinquency rates boomed

Sub-prime mortgages by age of loan and vintage (%, 60 days or more delinquency, securitized mortgages)



Source: JPMorgan

Delinquency rate for securitized subprime mortgages (%, 60 days past due through foreclosure)



Source:JPMorgan

Highly-leveraged securitized market

Cause:

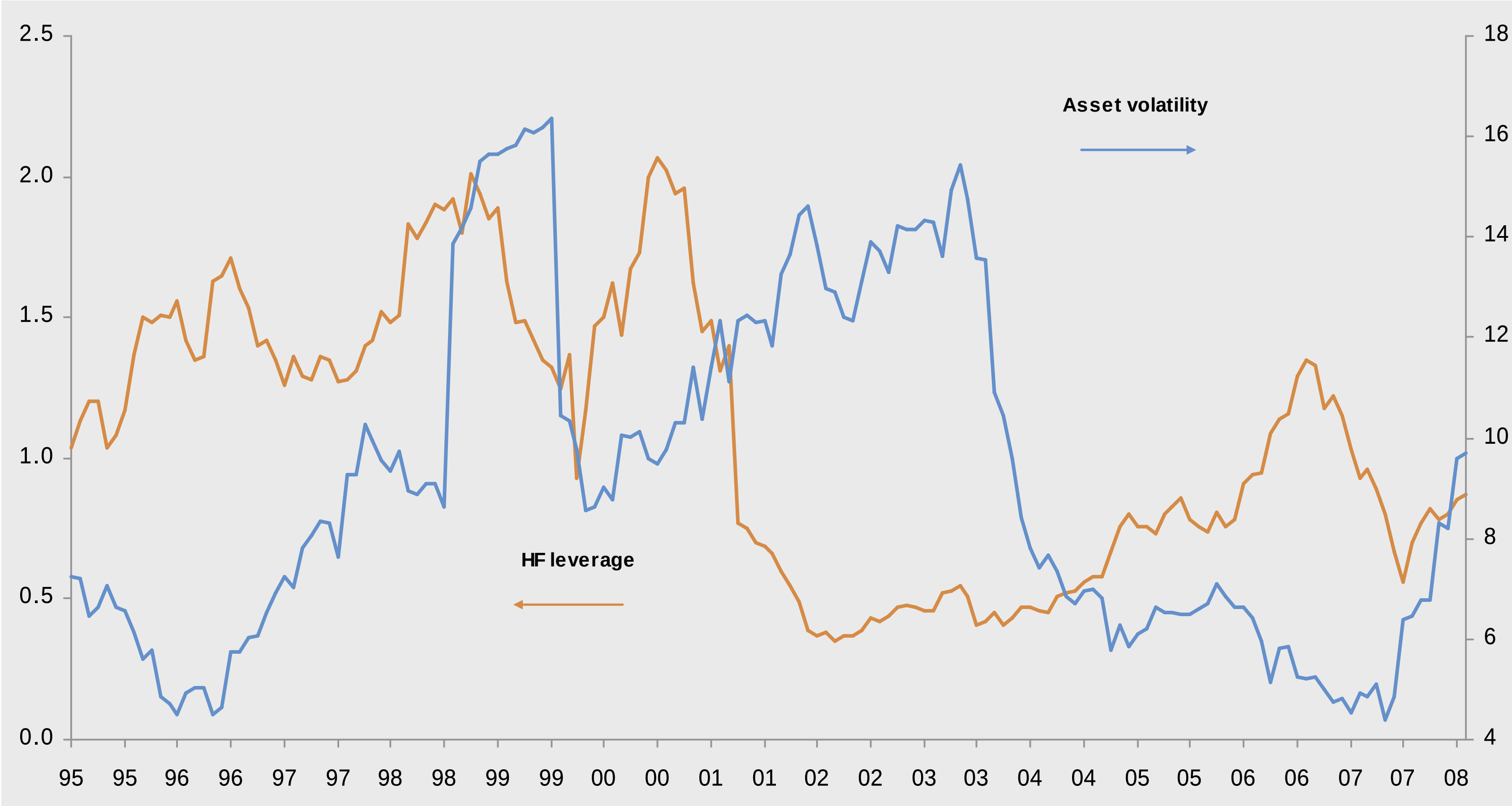
Leverage magnified the impact of the credit shock. This was not so across the broad set of commercial banks and hedge funds, but more so in the functioning and funding of the securitized markets, outside the regulated world of banking. This resulted from three trends: the emergence of highly leveraged hedge funds; banks attempt to transferred leveraged to the securitized world; and banks decision to securitized loans in order to gain operational earning leverage without locking in capital.

Triggering factors:

The first generation of CDOs had an investor based that lined up neatly by the riskiness and thus seniority of the tranches, while hedge funds and prop desks went for the equity tranches. But as yield spreads came down, it became harder to still offer attractive yields on the senior tranches and sponsors had to look for other ways to fund them. A solution was found by wrapping them with cheap guarantees from monoline insurance companies, thus permitting AAA rating, and then selling them to conduits and structured investment vehicles that funded themselves largely with short-dated instruments that bought in turn by money market funds.

Correlation between asset volatility and hedge-funds leverage tightened

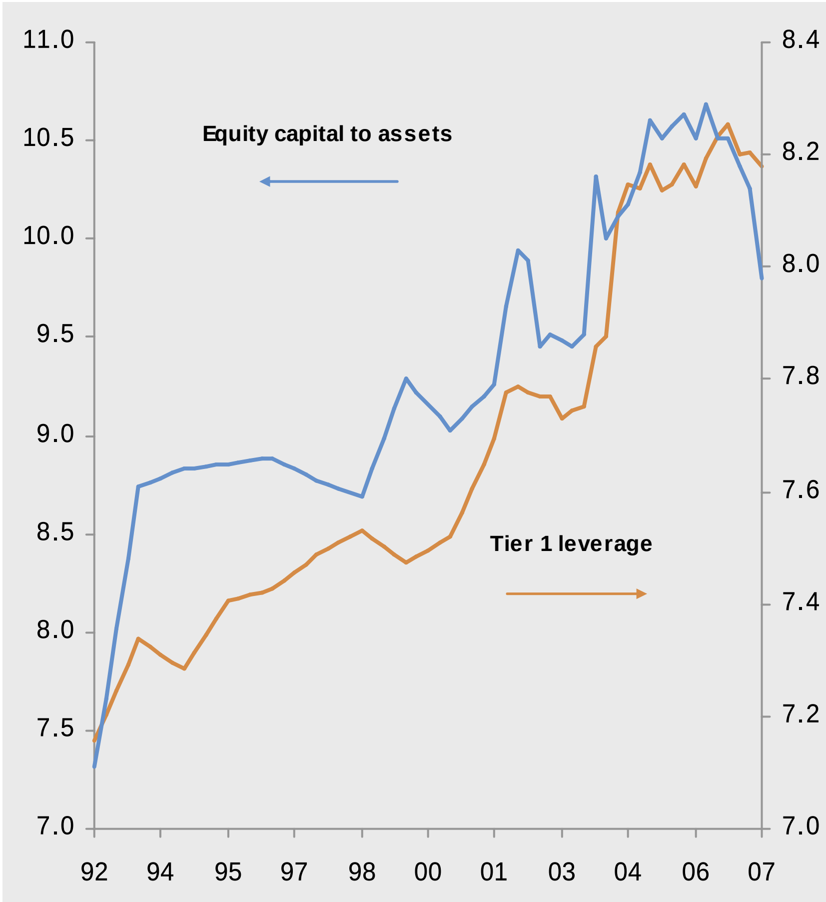
Hedge fund leverage



Source:JPMorgan

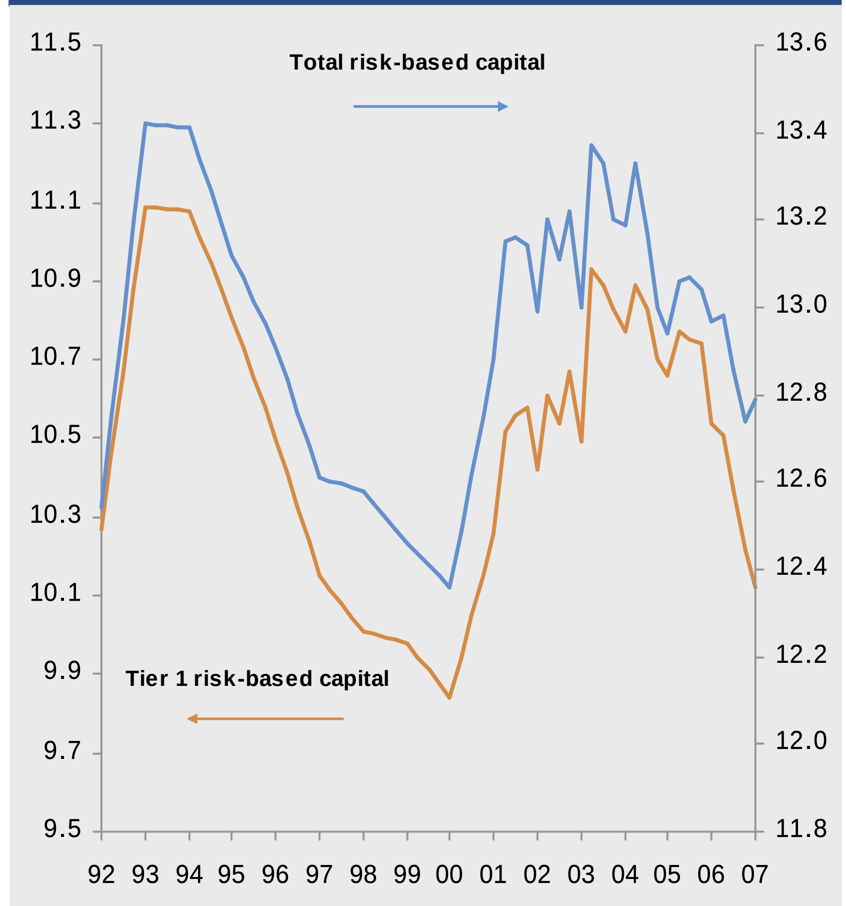
Banks capitalization ratios deteriorated as a result of the sub-prime crisis

US bank capital ratios (%, both scales)



Source: JPMorgan

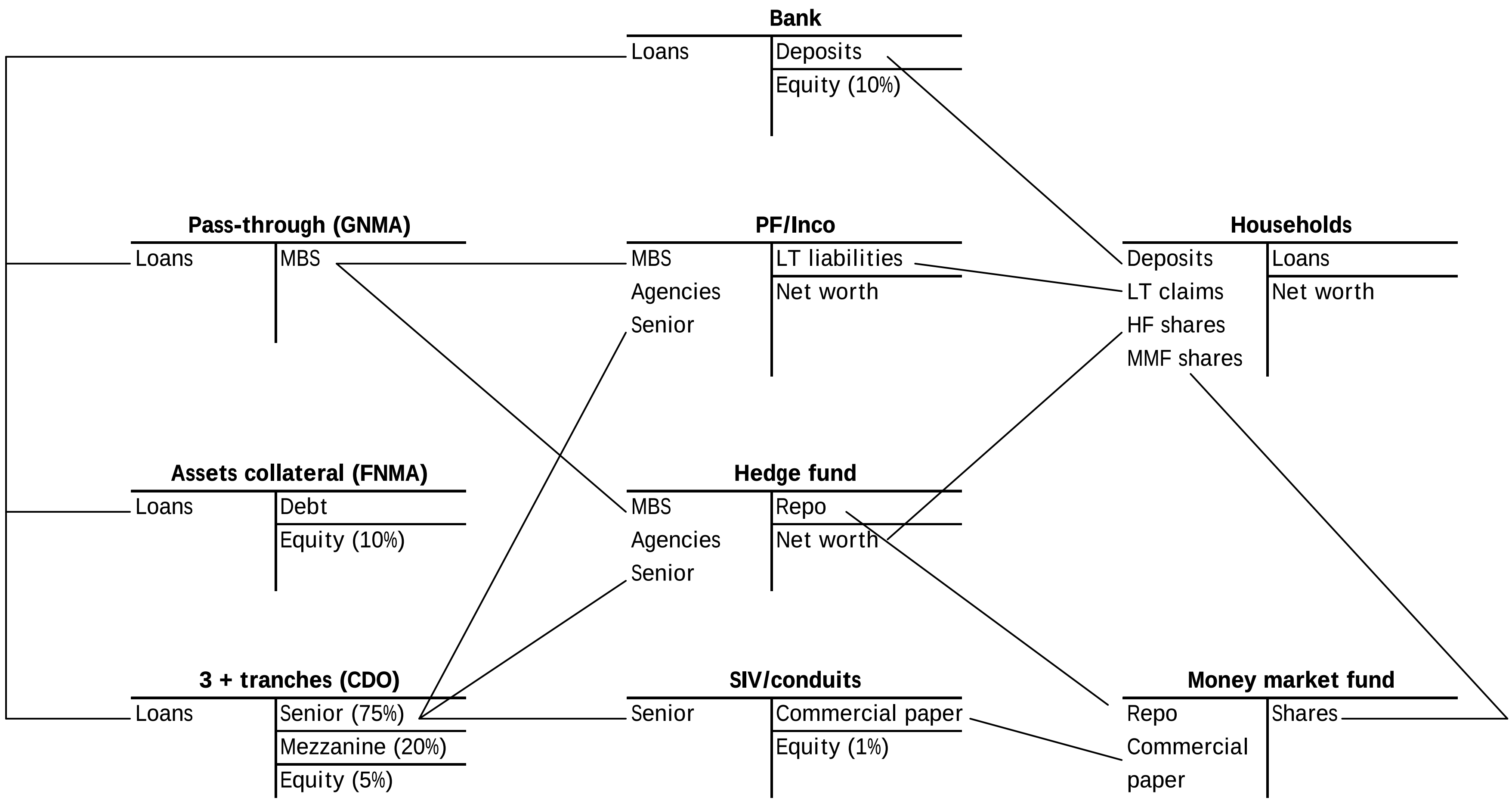
US bank capital ratios (%, both scales)



Source: JPMorgan

The sub-prime maze

Skeleton balance sheets around securitization of US consumer loans



Source: JPMorgan

Short-dated funding used by securitized market

Cause:

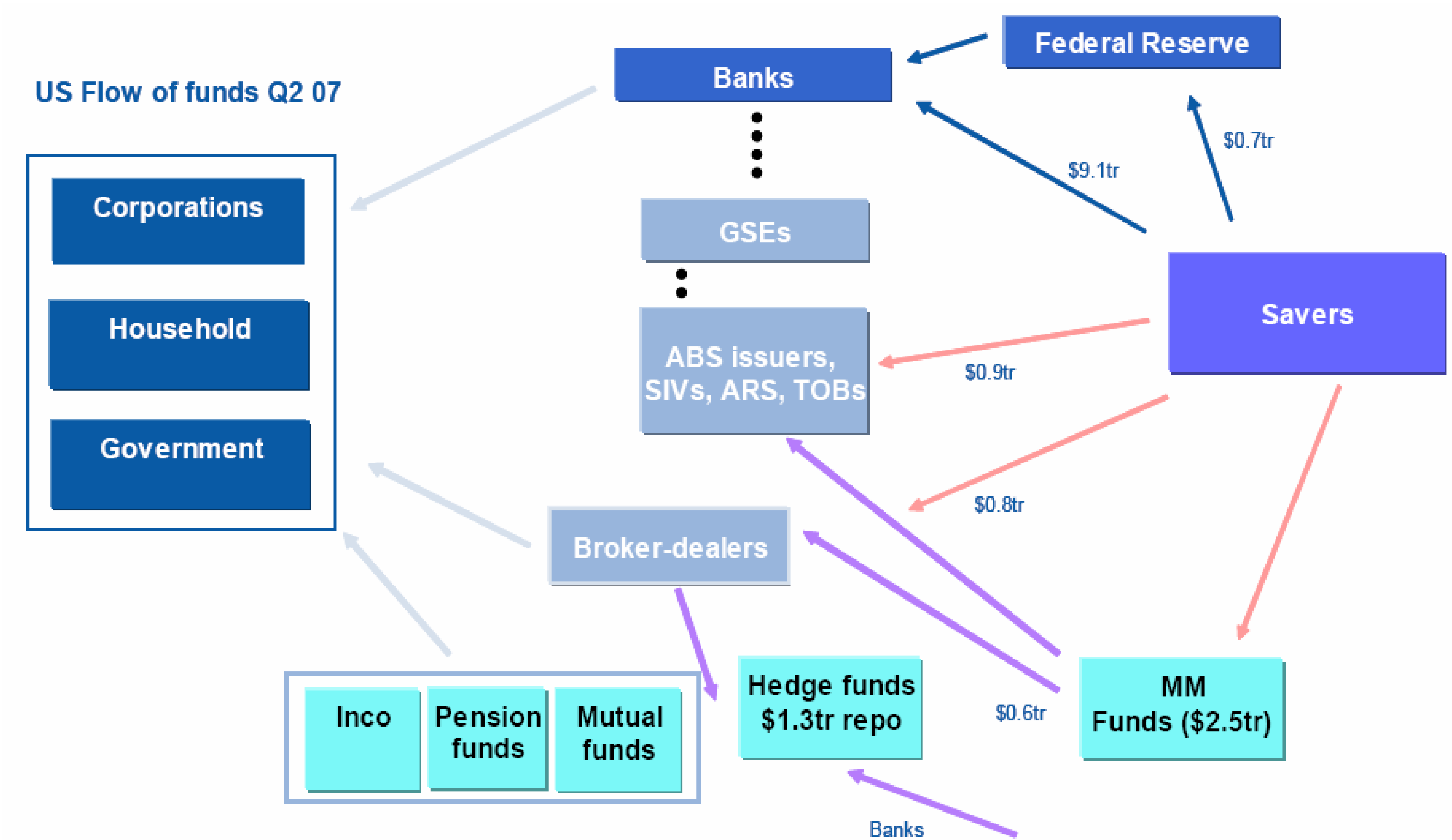
The third is a funding and liquidity crisis. The speed, breadth and magnitude of the original credit shock were also greatly amplified by the large dependence of investors in structured products on short-dated funding. The increased reliance in short-dated funding allowed senior lenders that securitized these vehicles to vote with their feet and forced a rapid fire sale. This in turn drove assets prices down sharply.

Triggering factors:

The typical bank run erupts when an event or mere rumor puts the banks credit quality in doubt. The bank cannot liquidate its illiquid assets in short time and thus defaults on its promise to repay deposits on demand. In the market for securitized mortgages the conditions for a run were: a negative credit shock, illiquid assets, lack of transparency on asset values, maturity transformation and lack of lender of last resort.

The funding maze of the securitized market

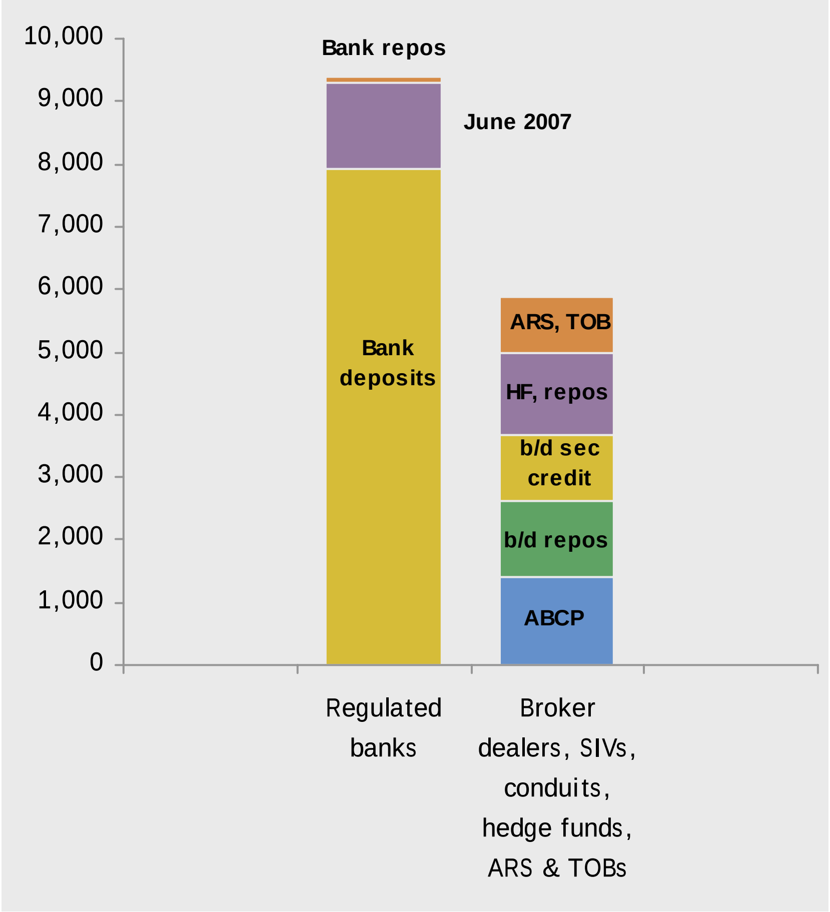
Stylized picture of US flow of funds. Focus on parallel banking system (Q2 07 data)



Source: JPMorgan

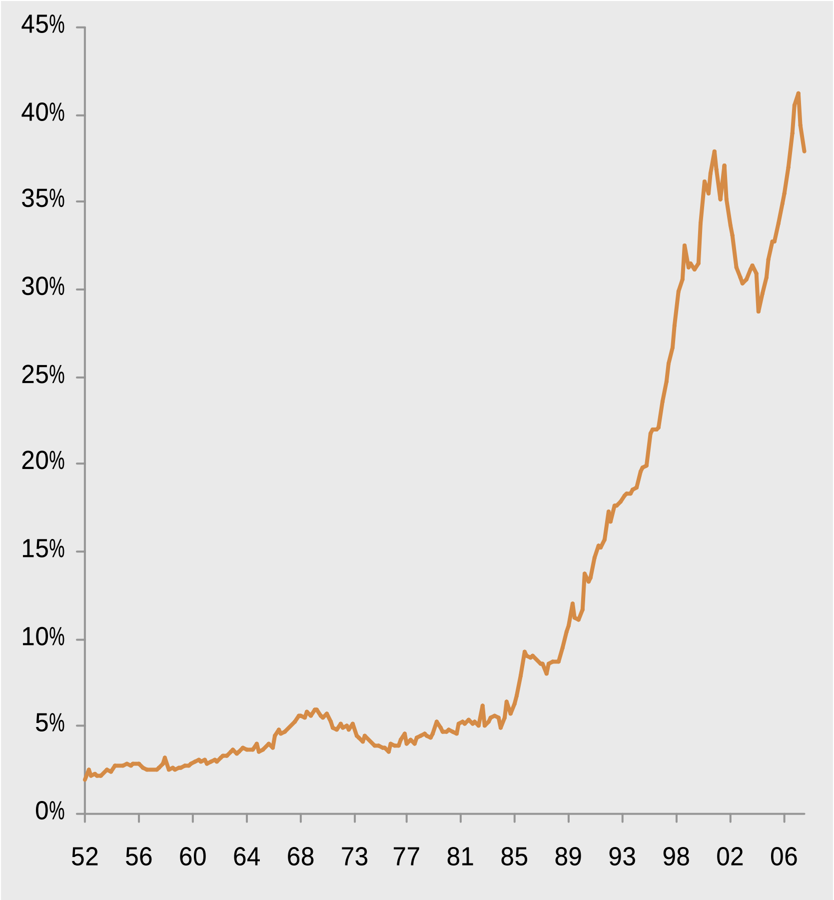
Short-term funding used by the securitized market

Maturity transformation by US banks and non-Fed regulated intermediaries ($bn,%)



Source: JPMorgan and Bond Market Association

Ratio of broker dealer repo and short funds + CP issued by non-bank financials over bank deposits and repos



Source: JPMorgan

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Likely changes in regulation

- Central banks as lenders of last resort
- New bank regulation

Central banks as lenders of last resort

- **Emergency actions:** The rate cuts, which could be reversed

- **Structural changes:** The type of collateral accepted, the maturity of the loans extended, and the type of borrowers to have access to the central banks. Central banks will come to the realization that the core of the bank run on securitized assets was the fact that they have little access to this market

- **Will central banks target asset prices?** This issue will be debated hotly in coming years. But central banks will stay with the Greenspan doctrine that it is impossible to identify asset bubbles while they emerge—asset prices are not part of their legal mandate.

New regulation

- **Lending standards:** Will result in a tightening in bank lending standards in the retail mortgage sector in North America and Europe.

- **Securitized loans:** A number of regulatory, legislative and business practices will be put in place to overcome agency problems in the origination and distribution of retail loans. These will likely involve lenders retain a more significant interest in individual loans.

- **Liquidity creation:** Central banks extending its lender of last resort obligations will overcome problems of liquidity creation. But in addition assurance of liquidity provision will be assessed in greater detail.

- **US Glass Steagall act**: Central banks extending its lender of last resort will result in regulatory differences between US commercial and investment banks disappear.

- **Basel II**: Will fix weaknesses on the risk management practices, in particular, the reliance on credit rating companies.

- **Regulatory coordination**: Will ensure greater coordination on regulation and ensure that regulation turns global and cross-product

- **Marking to market (MTM) and disclosure**. It typically reinforces the amplitude of the credit cycle, but will remain as tool to ensure disclosure and transparency.

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Securitization market: smaller and different, but coming back

- **Economics of securitization not destroyed:** These are the creation of investment products that (1) eliminate the double taxation of investing via a bank's balance sheet, and (2) create a diversity of risk return and cash-flow profiles that is better suited to meet the diverging needs of institutional investors than those offered by combinations of simple bonds, equities and bank deposits.

- **The economics of leveraged, short dated funding of ABS and CDOs are dead.**

- **Larger market share for government sponsored securitization, such as GSEs.**

- **For sometime investors will prefer assets backed by consumer debt—such as car loans, credit cards receivables, and student loans—for no other reason that are not mortgages**.

- **Leveraged securitization are economical without reliance on short-dated funding**. The natural candidates for these are corporate bonds and loans and not ABS.

- **The main buyers of CDO/CLOs will be those with long-dated funding such as endowments, pension funds and insurance companies.**

- **CDOs based on consumer loans, including non-mortgage loans, are unlikely to return.** The economics of tranching requires low correlation in defaults within the loan pool.

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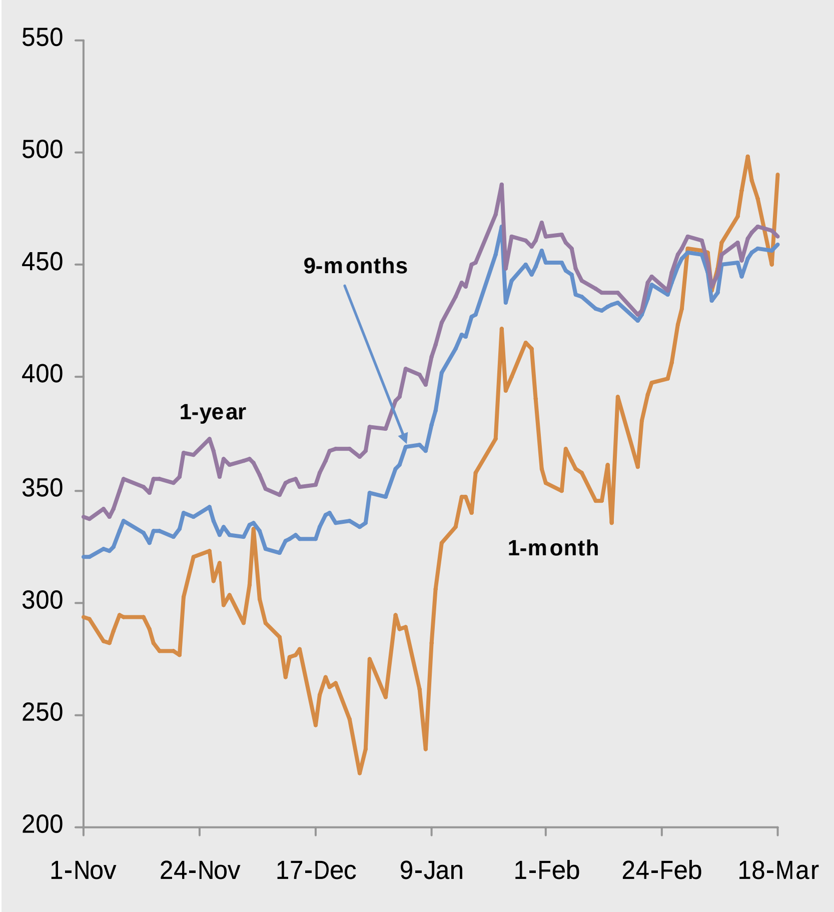
Likely effects on Mexico

- Increase cost of dollar-lending in the domestic market.
- Tighter lending standards in US to curb domestic lending.
- Corporate bonds to turn illiquid.
- Lack of appetitive for securitized lending to hit holders

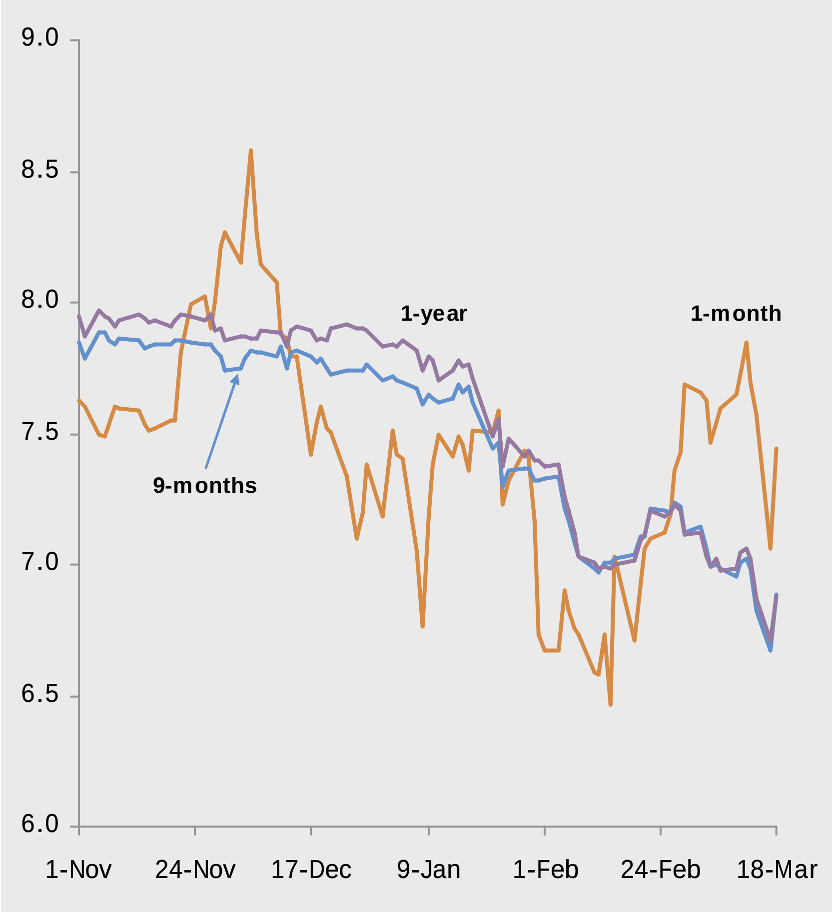
(1) Dollar rates increased, but recently come down

Mexico-LIBOR US dollar interest rate spreads (bp)



Source: JPMorgan

Local US dollar interest rates (% per annum)



Source: JPMorgan

(2) Commercial bank credit to corporates remained growing at rapid rates; and

Commercial banks loans (%oya, both axis, net of bad debts)

Source:Banxico

(3) there is a risk on illiquid paper, but is a small share of pension funds assets

Pension funds' holdings (billion as of March 2008)

	TOP 5 pension funds				TOTAL			
	USD	% of Total[1]	%of NGS[2]	%oya	USD	% of Total[1]	%of NGS[2]	%oya
Corporates	3.42	5.9	24.9	24.29	5.71	6.9	41.7	26.74
Mortgage back securities	0.68	1.2	5.0	>100%	1.47	1.8	10.7	>100%
Non-bank banks	0.31	0.5	2.2	-46.46	0.71	0.9	5.2	-44.77
Insurance	0.04	0.1	0.3	49.99	0.04	0.1	0.3	-2.20
Foreign financial institutions	1.43	2.5	10.5	95.58	2.11	2.6	15.4	66.56

Source: CONSAR
1. As percentage of total assets under management.
2. As percentage of total non-government securities

But these effects are minor compare to the financial system's strengths

- Strong bank capital base to compensate for risks;
- Excess supply of financial savings to ensure funding of investment needs;
- No visible pockets of unregulated or of evidence of institutions by-passing regulatory controls;
- Liquidity provision ensured by Banxico, *Sociedad Hipotecaria Federal* and market-makers;
- Securitization involves government vehicles, such as GSEs and not private CDO/CLOs, as in the US; and
- *Infonavit* mortgage lending to low and middle-income families ensure sufficient collateral and high recovery rates. There is no sub-prime market

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… the next financial crisis will be in…

A cycle of financial crises