
US Mortgage Market and Ideas for Improvement

Absalon Project

July 27, 2010

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Background: failure of the shadow banking system

- 1. Many problems led to the current situation, including**
 - Systematic poor underwriting of credit risk due to improper incentives (e.g., originators often not “on the hook” for any portion of credit risk)
 - GSE business model based on positive returns accruing to the private sector with downside risk held by the government (*heads we win, tails you lose*)
 - Lax evaluation of risks and excessive demand for poorly designed securities
 - Basle II allowed for doubling of leverage at the peak of the credit bubble
- 2. The old system is GONE, replaced by one of accidental design**
 - Over 95% new mortgages have government guarantee
 - FHA is taking huge risks
 - Fannie and Freddie are de facto nationalized, yet act to maximize profits
 - Competitive shadow banking system replaced by oligopolistic TBTF banks
- 3. Recent reforms face complex obstacles**
 - Worsening economic fundamentals greatly exacerbate foreclosures and HPI
 - Regulators are multiple, overlapping and uncoordinated
 - GSE and TBTF bank behavior has defeated both FPP and HAMP
 - TARP funds have been significantly depleted

Some Specific Issues

1. Huge losses are forecast for FHA and the GSEs

- FHA's MMIF has lost all of its capital with expectations of even larger losses
 - MMIF completely exhausted as of 10/31/09
 - Large 2008/09 vintages have yet to fully season and display their bad underlying credit
- GSE's expected to lose another \$400b
 - Amherst predicts losses of 9.6% of guarantee books
 - Excludes losses from non-guaranteed bonds in portfolio

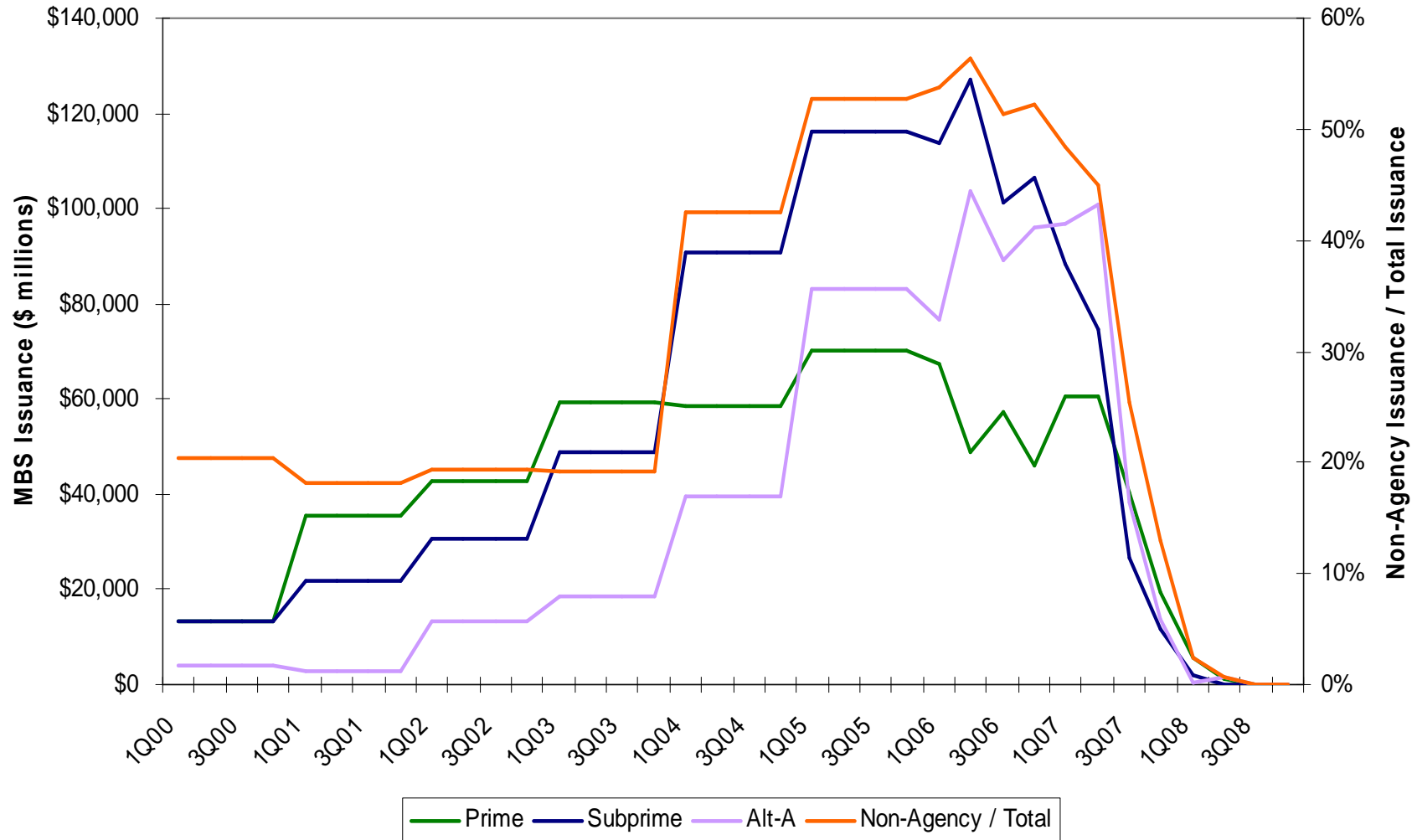
2. Commercial mortgage market is completely shut down

- "Extend and pretend" has become de-facto regulatory policy for banks
- CMBS market is completely broken with first big maturities of outstanding deals coming in 2011

3. Jumbo mortgage market is almost completely shut down

- Agency jumbo market is compromised by
 - Too large geographical regions lead to restrictive loan size limits
 - Too restrictive pooling limitations make pricing unaffordable
- Banks do not have available balance sheet
- Overhang from existing non-agency securitizations
- No support by PPIP and TALF

U.S. non-agency MBS market died in 2007



Note: 2000-2005 assumed straight-line for quarterly comparison

What's In & What's Out in ABS Finance

IN	OUT
Skin-in-the-Game	Full Risk Transfer Securitization
Legislation as regulator	Competition as regulator
Risk Based Pricing	Pricing to sale
Relationship Lending	Loan Brokerage
High Touch Loan Servicer	Low Cost, Third Party Servicing
Conservative	Innovative
Standardized and Transparent	Idiosyncratic and Opaque
Align interests with society	Organized for Arbitrage
Central Bank repo-ability	Wall Street financing
Counter-cyclical	Pro-cyclical
Personal Responsibility	Taxpayer Bailouts
Full Recourse	Non-recourse

Successful Mortgage Market Reform

1. Lowers mortgage interest rates

- Key to preventing overshooting on the downside of housing prices
- Needs to be available to full range of borrowers, not just high FICO, high down-payment borrowers that currently qualify for agency mortgages

2. Limits foreclosures by reducing number of homes with negative equity

- Negative equity must be addressed first as it is the best way to limit foreclosures
- Policies must address issues of fairness and homeowners who have no realistic way to afford current home
- Must be done in a way that encourages labor mobility and minimizes the “lock-in” effect

3. Puts the system moving forward on a sound basis with well-aligned incentives.

- Advisors to homeowners (brokers and mortgage bankers) should evaluate and share credit risk
- Bond-holders should manage interest rate risk over time
- Bond market structure allows for effective and systemic deleveraging when nominal interest rates rise

The “Best” Model for Mortgage Markets

1. Optimized to Basle II risk capital guidelines

- Article 22.4 of UCITS directive
- Lowest risk capital weighting will rule the roost
- Capital is required for credit, operations, technology, counter parties, liquidity and roll risks and interest rate movements
- Central Bank “repo-ability” provides liquidity(see Fed and ECB)

2. What should be avoided

- Extra Balance Sheets are unnecessary and a source of risk
- Deposit based systems are fraught with risks in volatile rate scenarios
- Inflexible Bond based systems do not scale up

3. Other Stakeholders should have a voice

- Consumers and bondholders should choose the winner
- Standardized and transparent loans and bonds are the easiest to regulate
- System should have macro economic stabilizers built in so taxpayers are not at risk

US vs. Danish Mortgage Markets: Opacity vs. Transparency

1. The Plumbing

- Transparency of loans to bonds and information search costs
- Regulatory and Ratings Issues
- Credit, Delinquency and Foreclosure Issues
- Legal form of covered bond vs. true sale securitization

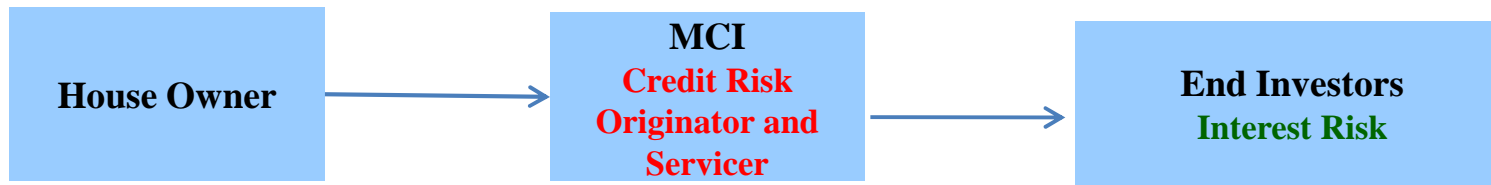
2. Vertical integration or atomization of skills

- Separate origination, financing, securitization, trading, investing, servicing, master servicing and special servicing functions)
- Conflict of interest between bond holders and issuers/insurers
- Mortgage insurance through balance sheet or monoline providers

3. The positive externalities that come from the Principal of Balance

- Externalities through linkage mechanism to Capital Markets
- Premium vs. Discount Origination (Appendix)
- Socialization of Credit Risk or Credit Availability

How the system could be fixed by emulating Denmark



1. **Mortgage Credit Institutions (MCIs)** are required to retain credit risk and service the loans
 - Bond investors only retain interest risk rather than credit and interest risk
 - MCIs can participate on equal terms, subject to rigorous regulatory requirements
 - MCIs act as “liability advisors” to homeowners, seeking to put their customers into the lowest risk adjusted cost loans AND seeking to take advantage of temporary dislocations in the bond market that may allow for an NPV gain for the borrower
2. Mortgage is funded by the issuance of standardized bonds
 - Bond market deals with familiar and hedgeable risks: level of rates, slope and curvature of yield curve, interest rate volatility, financing and counterparty selection
3. Asymmetric nature of American mortgages is replaced by the Danish Principle of Balance

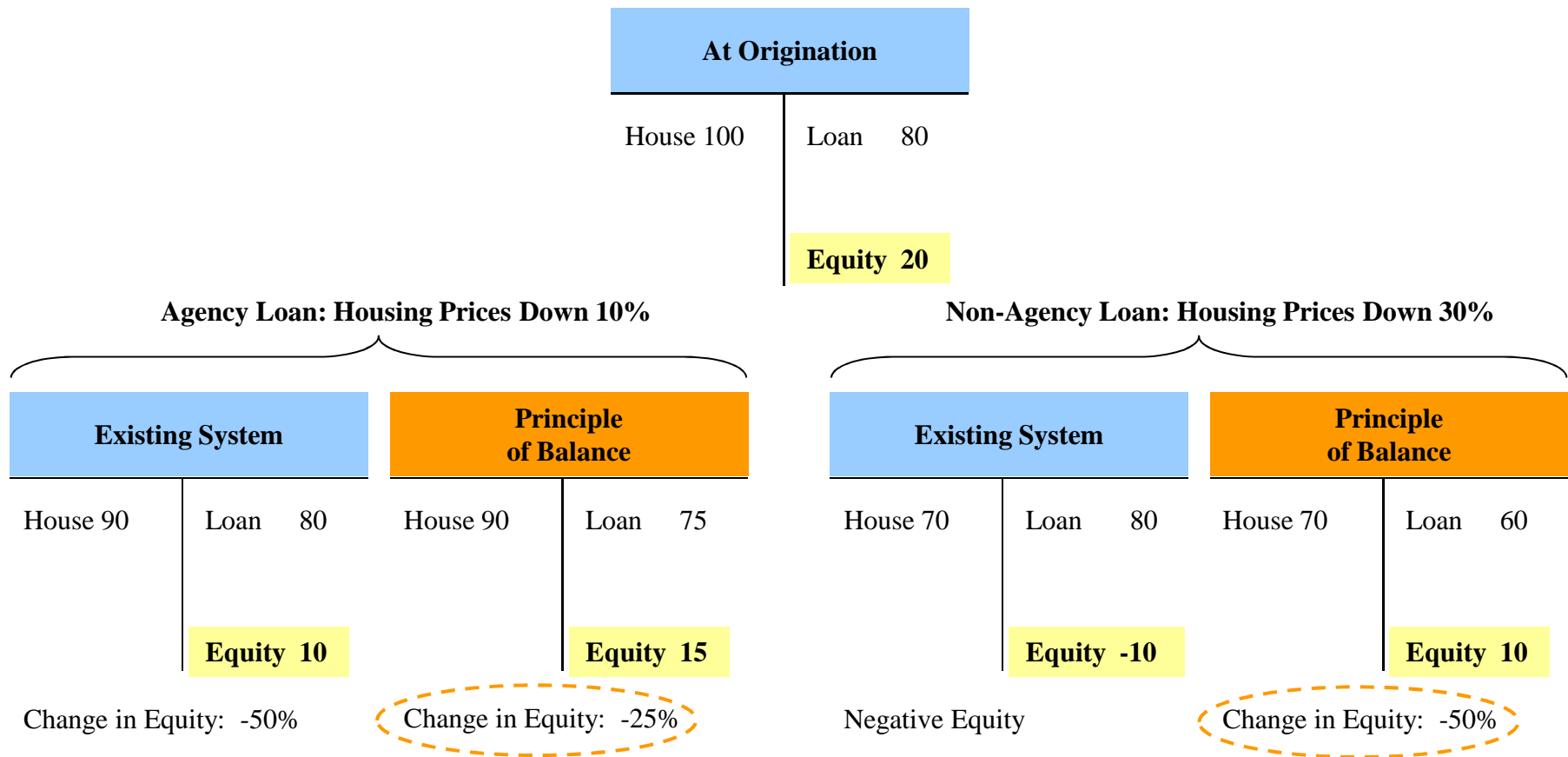
Principle of Balance: Borrowers can retire their mortgages by paying the lower of par or by purchasing the bond at the current market price

Danish System: High Credit Quality

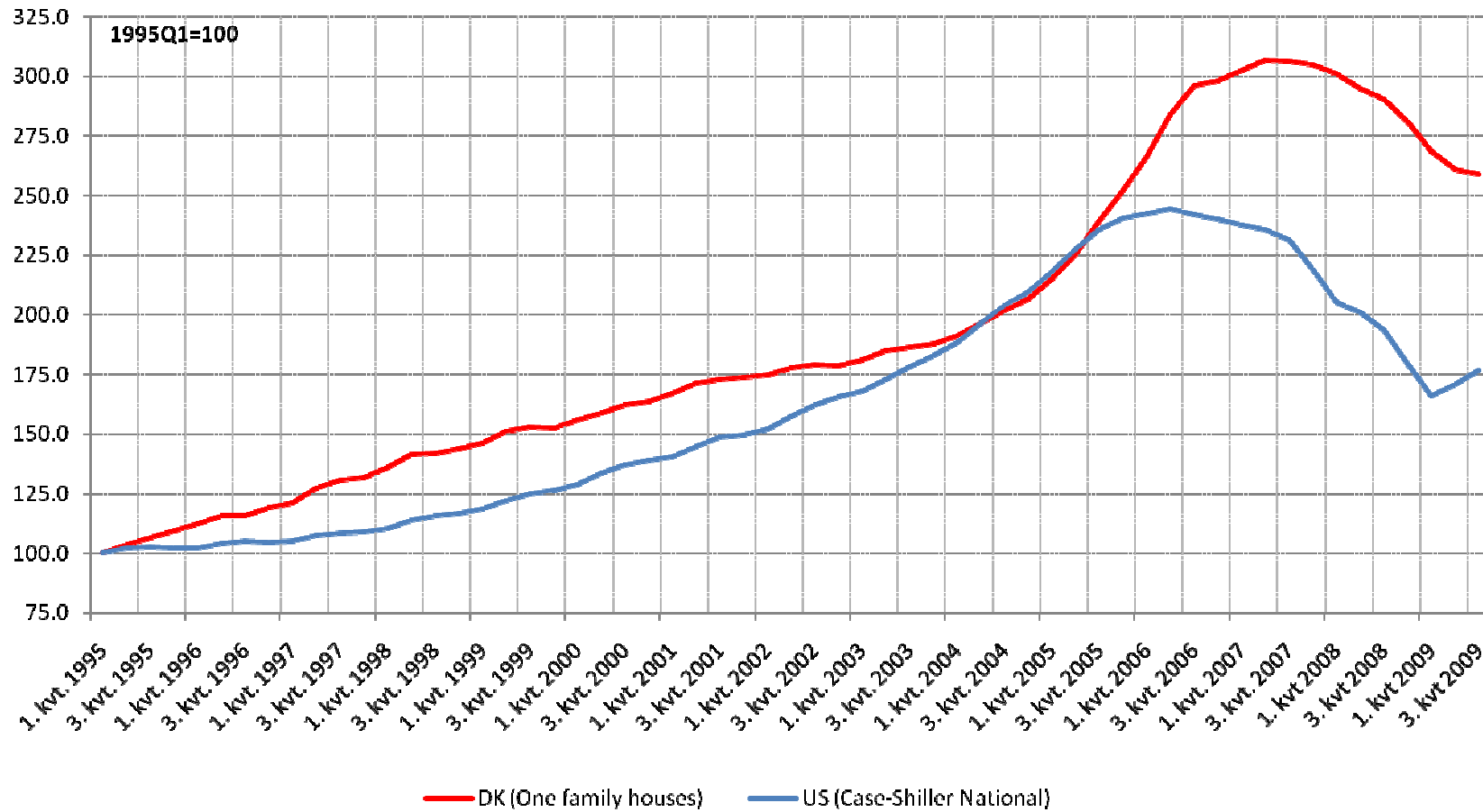
- 1. Danish MCI's have implicit government backing through strong regulation**
 - Mortgage Credit Act
 - Danish Financial Supervisory Authority / Finanstilsynet
 - Danmarks Nationalbank
 - Denmark's commitment to full recourse
- 2. High Credit Quality**
 - AAA ratings from Fitch, Moodys and S&P
 - There has never been a default
 - Principle of balance preserves homeowner equity (see slide 11)
 - Late 80's housing collapse showed system's strengths (see slide 16)
- 3. Growing international acceptance**
 - Highly favorable comparison to other European models
 - See MOW's September 2003 report
 - See BIS March 2004 Quarterly Review
 - See IMF 2006 Financial Stability Report
 - Danish system has been copied by Chile, Mexico, and Norway
 - Countries working on Danish system include Japan, South Africa, Ghana, United Arab Emirates, Azerbaijan and Nicaragua

Choice of securitization model can reduce negative equity

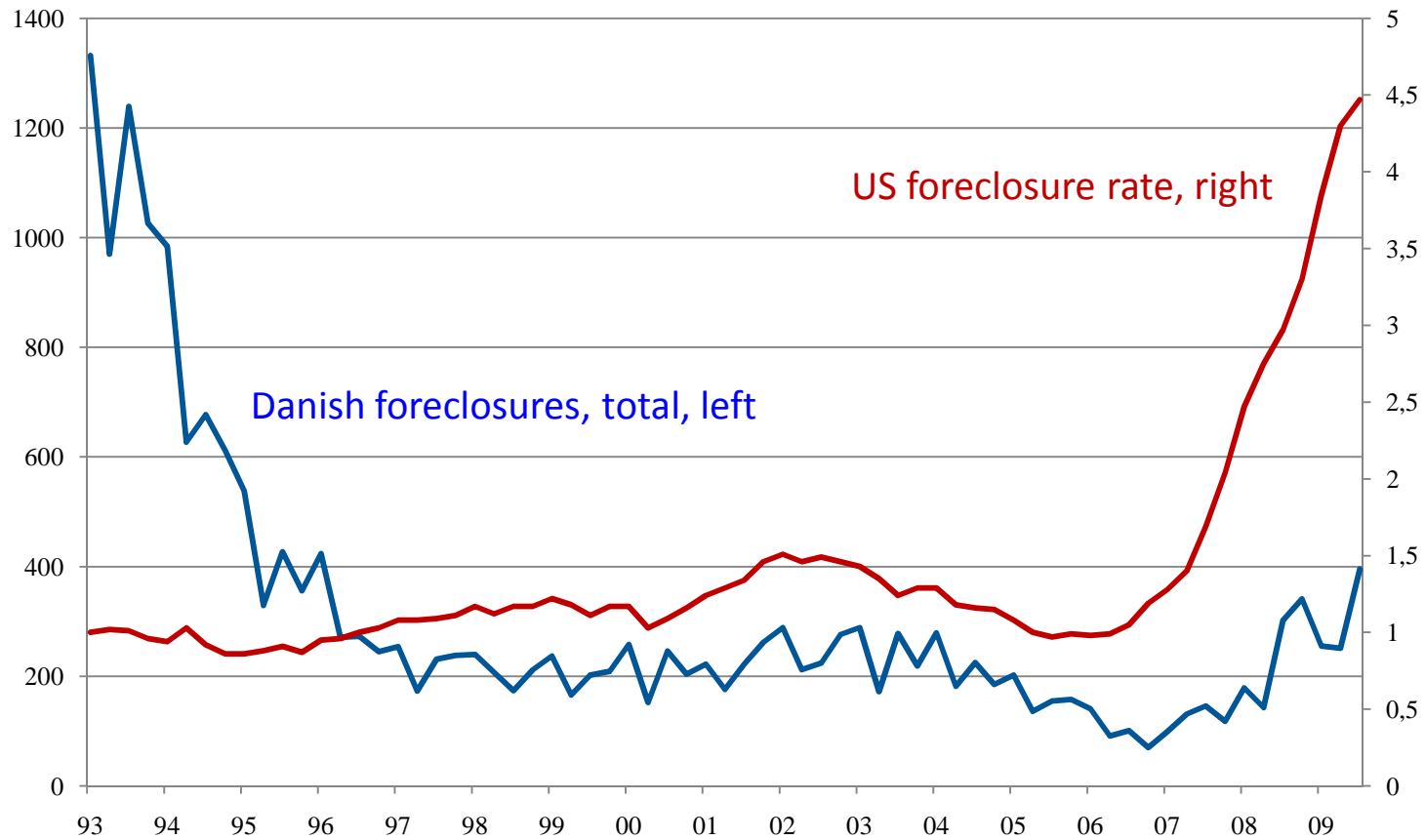
- Typical homeowner scenario:
 - Borrower pays \$100,000 for a house with an 80% LTV, loan originated at par
 - Agency Loan, housing prices have fallen 10% and FN 5% mortgage bond prices have fallen to 94
 - Non-Agency Loan, housing prices have fallen 30% and mortgage bond prices have fallen to 75



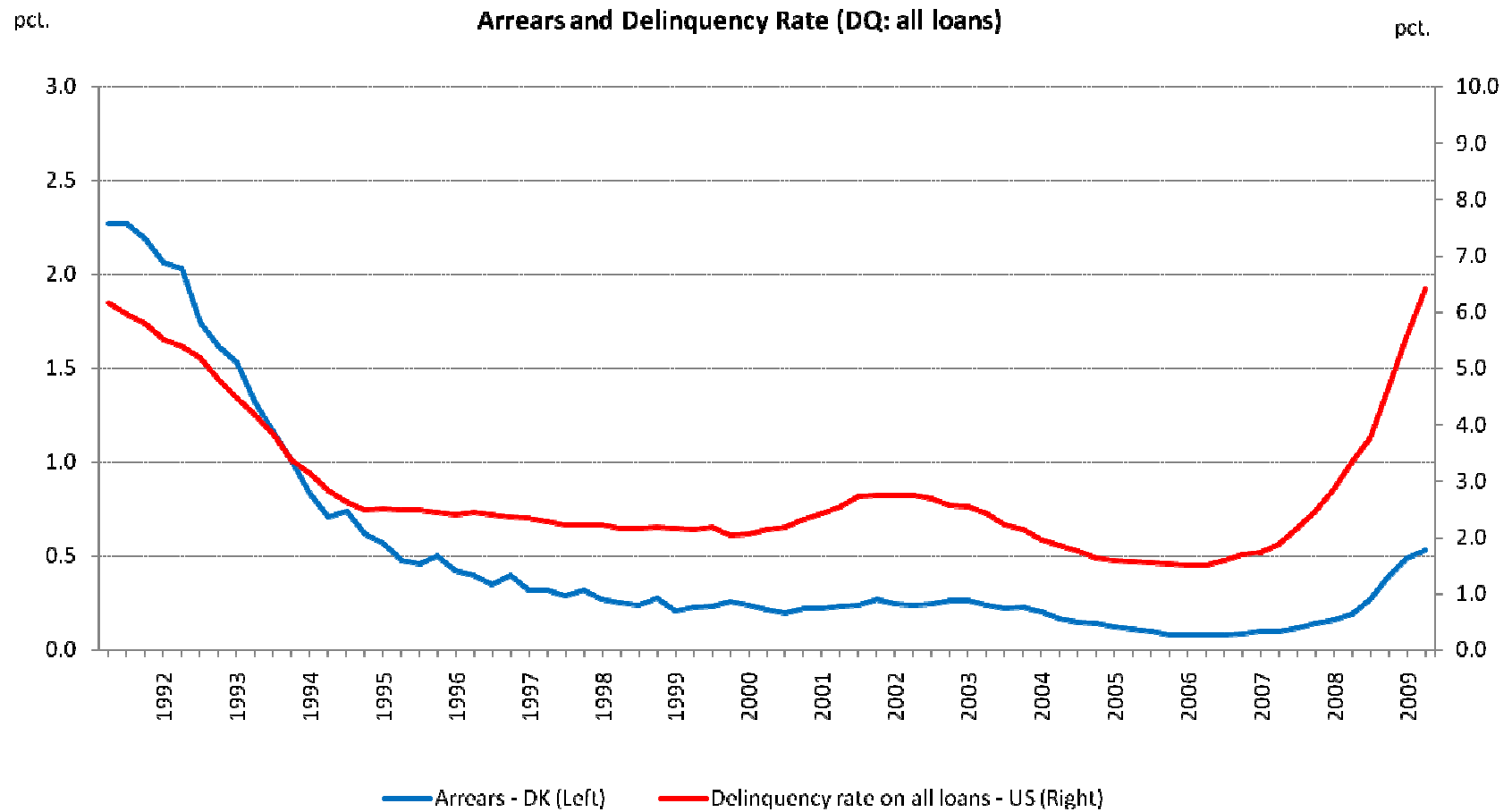
Denmark experienced a larger housing bubble...



US experiences higher total foreclosure rates



Loans in arrears – small in DK relative to US



Fully transparent: real time information on each series

Bonds Denmark

Search Danish bonds
 Search: name/ISIN-code:

Bond type Benchmark bonds Mortgage credit and special institutions Government bonds Structured bonds Corporate and other bonds Forwards

Issuers

Coupon/Expiry

Interest rate type Fixed

Deferred amortisation Yes

Open / Closed Open

Name	ISIN	Coupon	B	Volume	Exp.	CCY
10DLR43.18	DK0006304035	10.00		227	2019-02-01	DKK
6BRF111.26	DK0009334575	6.00		109,041	2026-10-01	DKK
7NYK.03A.32	DK0009750010	7.00		391,516	2032-07-01	DKK
8NYK.3Cs26	DK0009726309	8.00		4,654,792	2026-10-01	DKK
6 D 23ds35	DK0009268765	6.00		100,000	2033-07-01	DKK
4 KBH13.14	DK0007200703	4.00		20,000	2014-01-01	DKK
6nyk03D 35	DK0009753386	6.00		340,000	2033-07-01	DKK
5NYK2C 19	DK0009745796	5.00		173,899	2019-10-01	DKK
5TK111Cs32	DK0004713807	5.00		1,687,692	2032-07-01	DKK

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IPI % OMX Stockholm 30 Index OMXS30 % OMX Helsinki Energy_PI HX10PI % OMX Helsinki 25 OMXH25 % OMX Iceland All-Share PI OMXIPI % OMX Icela

Price information Fundamentals Trades News

Today (2009-03-20) - 5% Hykredit 03D 2038 - DK0009763260

Last	Bid	High	97.080	Exchange Volume	262.583.230	Average price all trades	96.803
97.000	Ask	Low	96.725	Number of exchange trades	37		
↑ 0.23							

Price information for 2009-03-19	
Open price	97.050
Close price	96.775
Average price exchange	96.851
Average price all trades	
High	97.075
Low	96.550
Duration	10.57
Yield	5.41
Yield calculation price	96.798
Exchange volume	38.539.243
Number of exchange trades	40

Price graph **12M graph**

Intraday 5d 1M 3M 6M 12M 24M

Historical price information

From

Nordic Market English

Price definition for bonds

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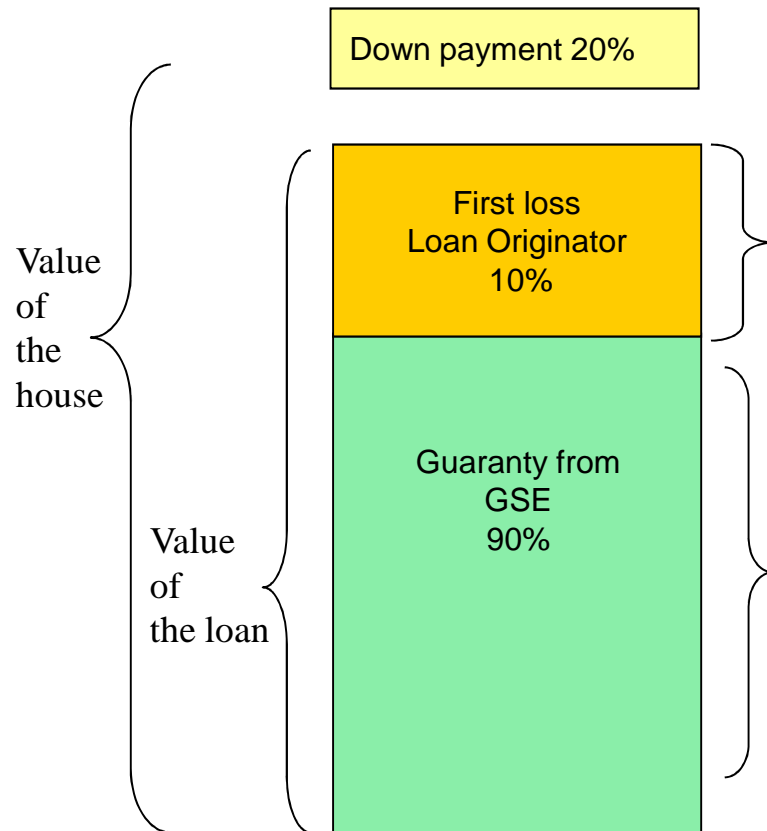
And access to news

The screenshot displays the NASDAQ OMX website interface. At the top, there are navigation tabs for 'Nordic', 'Baltic', and 'First North', along with a search bar and links for 'Exchange info' and 'Give Feedback'. Below this is a main navigation menu with options like 'Home', 'Shares', 'Indexes', 'Bonds', 'Options & futures', 'Warrants', 'Certificates', 'Funds', 'News', and 'Historical prices'. A secondary menu lists various market indices such as 'OMX Helsinki Energy_PI HX10PI', 'OMX Helsinki 25 OMXH25', etc.

The main content area is divided into several sections:

- Price information:** A table showing market data for 'Today (2009-03-20) - 5% Nykredit 03D 2038 - DK0009763260'. The table includes columns for 'Last', 'Bid', 'High', 'Exchange Volume', 'Ask', 'Low', 'Number of exchange trades', and 'Average price all trades'. The 'Last' price is 97.000, and there is a change of +0.23.
- Search news:** A search interface with 'From' and 'To' date pickers, a 'Hits' dropdown set to 25, and a 'Search' button.
- News List:** A table with columns 'Datetime' and 'Subject'. It lists several news items from Nykredit, including company announcements, interest rate adjustments, and prospectus announcements, with dates ranging from 2009-03-02 to 2009-03-16.
- Sponsored Links:** A section on the right side of the page featuring links such as 'Is Your Bank In Trouble?', 'Bond Search Online', 'Buy Muni Bonds Online', 'Fixed Income Investments', and 'Corporate Bonds', each with a brief description and a website URL.

Proposed credit enhancement structure for risk sharing



- Provided by Originator and/or MI industry
- Expected Capital reserves of 20%
- Backup capital and industry skill to be provided by MI Reinsurance Industry
- AAA rating flows from GSE guarantee, which
- The value of the house will serve as collateral
- Bond holder looks to GSE for full faith and credit guaranty
- GSE looks to Originator to remove bad loans from the pool
 - Originator purchases parri passu amount of bonds from pool at lower of market or par
 - If originator fails to perform, GSE can seize servicing rights and margin and reassign to another servicer
- This can be done in the form of either true sale securitization or through the issuance of covered bonds

Tap issuance: Back to the Future

1. How it works

- Reverse the traditional process, first establish bond series then issue mortgages
- After the MCI underwrites and guarantees the creditworthiness of the borrower, the loans are funded by selling into the bond series
- Borrower receives proceeds from bond sale, thus establishing a direct link with the bond market and allowing for optional redemption in the future

2. Reduces Risks

- Warehouse and market risks are eliminated for MCI, allowing them to use their entire equity to guarantee credit risk
- Elimination of all interest rate risks leads to significant reduction in economic and operational capital under Basle II regulations

3. The USA has done this before

- Freddie Mac Cash Series (old 16 and 17 prefix bonds) was quite successful
- Loans entering the cash window were priced at a daily auction
- Pools were open for tap issuance for one month
- Large, standardized, liquid bonds were created
- Main MBS issuance program in the 1980s, eliminated when FHLMC started running an opportunistic portfolio

Fed Purchase Program vs. Danish Alternative Redemption

1. The FPP was a dismal failure for American homeowners

- The market is realizing that the Fed cannot suppress mortgage rates in perpetuity.
- Evidence that most troubled borrowers are unable to qualify for refinancing even at today's record low mortgage rates makes its current program extremely unattractive/untenable from a cost/benefit standpoint. (see Appendix 1)

2. Large financial institutions were able to make the FPP work for them

- Too Big to Fail Banks have exercised oligopolistic power to increase profit margins
- GSEs are attempting to recapitalize themselves with large LLPA (upfront fees)
- Large money managers were able to sell mortgage securities to the government at inflated prices. They have managed to transfer duration risk, default risk, and liquidity risk all at once at a time when interest rates could start rising
- The direct cost of the program, measured by the amount the government is overpaying for the assets, is roughly \$100 billion.

3. There is hope

- The second largest mortgage market (Denmark) in the world suffers from none of these issues
- The Danish system allows for automatic market based de-levering.
- Denmark was only non-sovereign European bond market to remain open in October 2008
- The Danish mortgage system required very little assistance from fiscal and monetary authorities

Extension Risk of Mortgage Market

- 1. The implications of these low levels of refinancing activity at historically low mortgage rates is**
 - The FPP has failed in its primary purpose, to stimulate a refi wave
 - The homeowners who need the most help, those with declining credit and home values, are the least likely to be able to refinance into a lower rate mortgage
 - Primary/Secondary spread will continue to expand
- 2. The shape of the yield curve is the primary determinant of mortgage duration.** Without taking into account slower than expected prepayments, the interest rate risk of the US mortgage market has doubled in the last three years
 - Increasing slope of the yield curve
 - Increased actual and implied volatility in the interest rate options market
 - Dramatic decline in the amount and market share of ARMs
- 3. We are faced with the dark side of the conundrum,** even though we now recognize the huge risks associated with callable/extendable mortgage cash flows, we are powerless to do anything about them.
 - The increase in duration of the mortgage market in the last three years is triple the increase in interest rate risk due to the \$1.5 trillion US budget deficit in fiscal year 2009.
 - A moderate increase in the level and slope of the yield curve in today's bond market can result in an overwhelming duration extension, a much larger threat to rising real interest rates than larger budget deficits and/or Chinese selling of reserves.

We should “get it right” before it is too late

1. There are many sources of pressure on long term interest rates

- Historic budget deficits (over \$1t) for many years
- Fear of FRB’s monetization of such debt and easy monetary policy
- Potential sale of foreign ownership of US debt instruments (\$10t)
- Enormous contingent duration embedded in the \$10.4t US mortgage system

2. The perfect opportunity exists to address the GSEs

- Mortgage rates are at all time lows allowing for excellent rate refinancing opportunity
- The US Government is the “single payer” for the mortgage market

3. Principle of Balance system allows for automatic de-levering

- As interest rates rise, the economic value of homeowners’ liability falls
- Homeowner’s are incentivized to redeem their existing loans at discounts, paying for this by issuing into new, smaller balance loans with higher coupons
- Face amount of debt is significantly reduced
- Weight of debt (calculated as Option Adjusted Duration) is significantly reduced

4. Waiting is not an option

- Moderate increases in the level and slope of interest rates can result in overwhelming duration extension, many multiples of the risk from large deficits or foreign selling
- US homeowners are already suffering from “lock-in” effects

Some Near Term Proposals

1. Require FHFA to direct GSEs to use all tools available

- Eliminate LLPAs for the refinance of ALL loans currently guaranteed by the GSEs
- Eliminate the 25bp “Adverse Market Fee”
- Eliminate appraisal requirement and paperwork as part of a new “Super-Streamlined” refinance program
- Requirements: being current on existing mortgage and full recourse on new loan

2. GSEs should implement new securitization program: Principle of Balance

- Enable pooling which allows for optional redemption
- Provide guidance on future information disclosure requirements
- Discourage the ex-post opportunistic practice of culling through loan production to find loans that display preferred prepayment characteristics
- Encourage originator/securitizers to retain some “skin in the game” via significantly reduced G-fees

3. Promote benefits of Mortgage Servicing Rights

- Eliminate regulatory limits on scale of holdings (see Appendix)
- Encourage retention of MSR as way to reduce interest rate risk and hedge credit risk
- Eliminate “gain on sale” accounting treatment, require income to be accrued

Some more proposals

1. Align the GSEs interests with those of society

- Simplify and limit the size of financial businesses, starting with the GSEs
 - Eliminate portfolio, hand management of existing portfolio to professionals
 - Focus on using full faith and credit guarantee to stimulate a standardized, transparent interest aligned mortgage market
- Return to counter-cyclical credit reserving process

2. Reduce risk weighting of GSE MBS and debt

- Relatively painless way to signal support without consolidation on Federal B/S
- Consistent with reduction of risk weight of TLGP paper from 20% to 0% in October

3. Systemic Crisis backstop “MBS buyer of last resort” should be FRB/Treasury

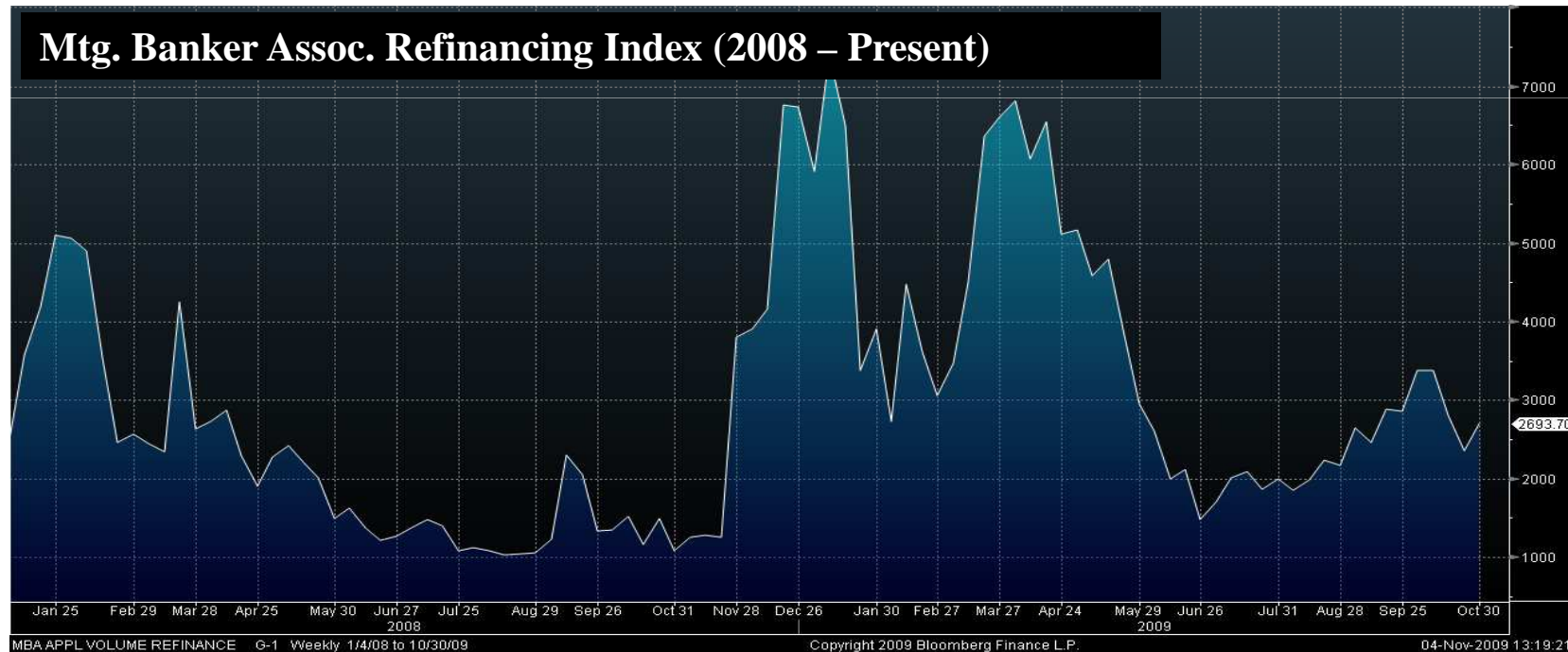
- Require purchase of GSE guaranteed MBS in event of Financial Crisis
- Counter-cyclical and automatic, outside of legislative/regulatory fiat

4. Strong and specific legislation to support the of a covered bond market

- Clear language on how FDIC treats covered bonds in event of issuer insolvency
- Strict limits on types and quality of underlying cover pool collateral: only first lien residential and multifamily mortgages with conservative LTVs
- Strict limits on asset/liability mismatches, in recognition that such mismatches were highly associated with insolvency among European covered bond issuers

Refinancing Wave Has Yet To Materialize

- Federal Purchase Program was designed to make credit more affordable for homebuyers. There was a hope that there would be another refinancing wave.
- A wave of refinancing applications at the end of 2008/early 2009 was unfulfilled, prepayments did not rise
- Despite very low mortgage rates driven by the FPP, refinancing applications have tailed off sharply.
- This is a warning sign for the future and will impact future OAD calculations
 - S-curves must be recalculated, increasing sensitivity to equity position of homeowner
 - Current speeds are running at 25% of modeled speeds



The Dog That Didn't Bark: Too Big To Fail Banks and GSEs defeat the Federal Reserve's Purchase Program

- At current mortgage rates, prepayment speeds should be 60 CPR, instead they are 15%
 - Loan-to-value ratios and bank fees suppressing refinancing activity
- GSE's are trying to recapitalize themselves while in "conservatorship"
 - Higher "G-fees", tighter standards
- Mortgage banking is controlled by "Too Big To Fail" banks
 - Profit margins have dramatically increased (and mtg. servicing values are understated)
 - No market pressure because of lack of competition
 - No political pressure!
- Headline 30 year rate is not the actual mortgage rate that borrowers receive
 - Mortgage servicers pretend it's real and it's the target of the Fed Purchase Program (FPP)
 - Actual mortgage rates to actual borrowers are 70 to 150 basis points higher
- Loan workouts under the Making Homes Affordable Act are thwarted by combination of
 - Predatory mortgage pricing laws prevent loan modifications from being made
 - Rates higher than 150bp over the survey rate are not allowed
 - Homeowners who need a loan adjustment attract lots of LLPAs
 - Fees for low FICO, high LTV, property type, MSA
 - TBTF banks are exhibiting oligopolistic behavior
 - Working for all time record profit margins BEFORE undervaluation of MSRs

Mortgage pricing 101

Credit Metrics (FICO/CLTV) Loan Size	Mythical Zero Point Conventional	<u>750/75</u> <u>\$400k</u>	<u>670/75</u> <u>\$400k</u>	<u>750/75</u> <u>\$700k</u>
Loan Level Pooling Fees	0	(.25)	(2.25)	(.25)
Costs	(1.0)	(1.5)	(1.5)	(1.5)
MSR Multiple /Capitalized Value	6.7/2.0	4.2/1.25	3.5/1.05	3/0.9
Security Exit	Blend of FN4 and FN4.5	FN5	FN5.5	FN 5.5J
Effective Zero Point APR to Homeowner	4.85	5.50	6.0	6.0
Profit Margin(pts)	1.0	2.5	1.925	2.775

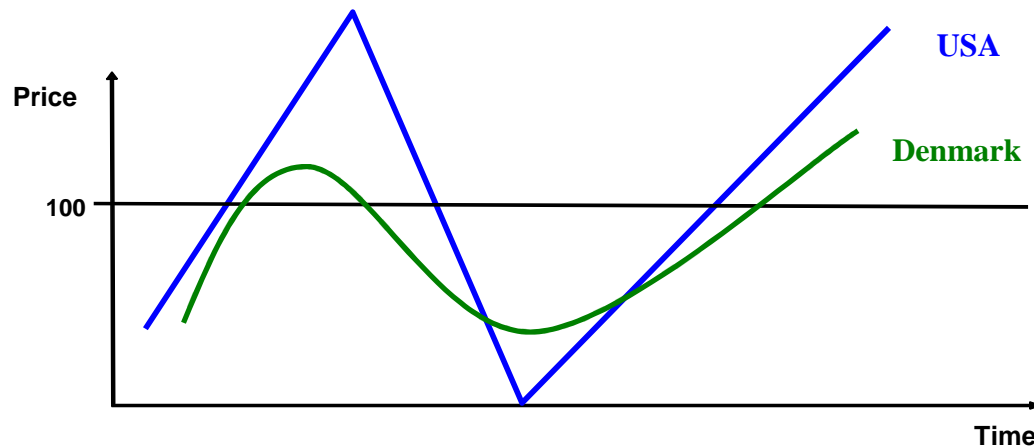
- U.S. mortgage market is a “premium origination” model. This process is used to get the bond market to pay loan origination costs
- Assumes 1.5 points of origination costs
- Adverse market fee of \$0.25
- Current profit margins may be higher given lower level of competition in mortgage banking industry
- Assumes 20bp Guaranty Fee, MSR is capitalized difference between note rate and bond coupon. Note that MSRs are being capitalized significantly below where the IO market values the cash flows, thus hiding another point of profit margin.
- TBA/MSR multiple pricing as of 10/15/09:
 - FN 4.0@ 98.125/6.0
 - FN 4.5 @ 100.625/5.0
 - FN 5.0 @ 103.000/4.2
 - FN 5.5 @ 104.625/3.5/3.0J
- “Current Coupon” mortgage rate is 4.85%
- Note that “predatory” lending limits prohibit making loans over 150bp from survey rate (5%) which precludes MHA loans workouts
- Due to 10% pooling limits, Agency Jumbos must be priced to separate pooling, which trade one point behind TBAs

Mortgage Duration 102: weight is contingent upon inputs

	<u>% ARMs</u>	<u>FNCL OAD</u>	<u>Market Size</u>	<u>Total OAD</u>
September 1997	18%	5.0 est	\$3.72t	15.3t
September 1999	9%	5.0 est	\$4.35t	19.8t
September 2001	10%	4.33y	\$5.22t	20.3t
September 2003	12%	4.53y	\$6.68t	26.6t
September 2005	28%	3.61y	\$8.58t	22.3t
September 2006	30%	3.40y	\$9.67t	23.0t
March 2007	25%	3.86y	\$10.25t	29.7t
March 2008	19%	4.70y	\$10.55t	40.2t
March 2009	14%	5.04y	\$10.43t	45.2t
September 2009	12%	5.34y	\$10.34t	48.6t

- U.S. mortgage market is a “premium origination” model. This process is used to get the bond market to pay loan origination costs.
- Issuing callable bonds struck in the money results in very low OAD at times of loan origination
- The fluctuations in FNCL OAD are driven by the slope of the interest rate swap curve and implied duration
- Combination of migration to ARMs, a flatter curve and lower volatility masked the dramatic increase in the mortgage market after 2003
- Higher volatility and a steeper curve have driven FNCL OAD much higher in the last two years
- A significant switching from ARMs to FRMs has increased the duration of the market as well
- None of the increase in OAD comes from higher rates and/or slower prepayment speeds....YET!

Securitization choice can reduce extension risk

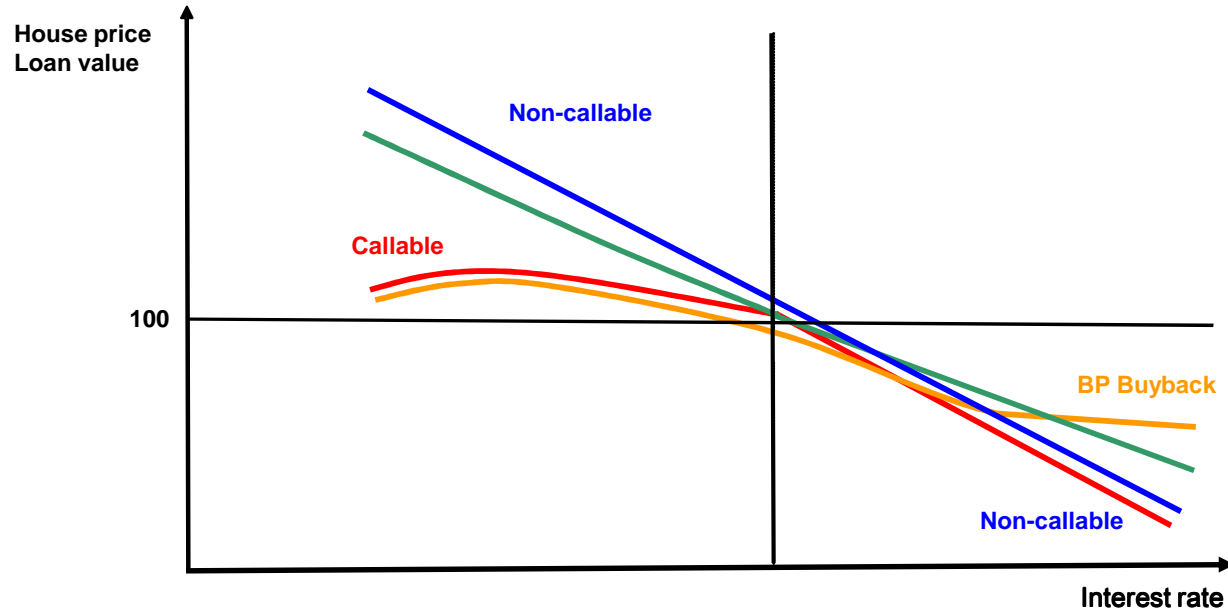


- U.S. mortgage market is a “premium origination” model. This opaque process is used to get the bond market to pay loan origination costs
- Callable loans are made with option struck in the money. This leads to the OAD “illusion” of very low durations of 30 year mortgages
- When interest rates rise, “contingent duration” appears and can be a multiple of original OAD
- No mechanism for the bond market to reduce systemic duration risk
- Danish model is a “discount origination” model
- Loans are priced transparently by bond issuance
- Mortgage banks compete with transparent origination, servicing and insurance charges
- Callable loans are made with option struck out of the money. Thus, 30 year mortgages have significant duration at issue
- When interest rates rise, the duration of the loans increases slightly
- Homeowners can take duration out of the system via optional redemption and refinancing a smaller balance into a higher coupon loan. Call option is re-struck at market rates

Option Adjusted Duration (Years)

	USA (orig. @ 101.6)			DK (orig. @ 98.9)		
	<u>5.5%</u>	<u>4.5%</u>	<u>3.5%</u>	<u>5%</u>	<u>4%</u>	<u>3%</u>
Rates – 100bp	---	(0.8)	3.6	---	.28	8
Spot	---	2.5	---	---	6.9	---
Rates +100bp	n/a	7.4	---	5.5	7.5	---

Securitization choice can improve negative convexity



- Callable mortgage markets suffer from “convexity paradox” where each investor must hedge his own changes in OAD as well as worry about all the other investors trying to hedge changes in OAD. This becomes an exercise in game theory, as investors hedge to the expectation of other investors’ hedge activity
- Individual investors (and system) worry about change in partial durations (dP/dY) and the size of the error term at every point on the expected callable mortgage price/yield path vs. the original hedge duration
- Duration management tools (interest rate futures, swaps and options) are smaller than the mortgage market
- Asymmetric U.S. mortgage market results in significant duration extension when interest rates rise
- Danish mortgages allow for homeowner to exercise optional redemption when bonds trade at discounts. This smoothes the price path when rates rise. The mortgages trade with lower “empirical” duration. This allows for a lower “hedge duration” at loan origination AND smaller error terms at each point on the price/yield path

Mortgage Servicing Rights: What are they?

- Mortgage Servicing Rights (MSRs) can be described as
 - Present Value of Interest Only (IO) cash flow stream that exists between mortgage note rate and bond coupon, net of GSE guarantee fees and costs of servicing the loan
 - IOs are negatively convex, negative duration assets whose value is driven by
 - Positively correlated to moves in actual mortgage rates and the slope of the swap curve
 - Negatively correlated to moves in actual and implied interest rate volatility
 - Negatively correlated to house prices, financial innovation, mortgage banker competition
 - Costs of servicing is driven by costs of handling default, this has become significant
 - FHA servicers must advance the note rate while they are reimbursed at the “FHA debenture rate”
 - MSRs are a “tax deferred asset” and a “non-cash asset”
 - Federal and state tax authorities finance MSRs at 0% interest rate until the cash flows are realized
 - Remaining balance (1-combind tax rate) must be financed on B/S with non-secured funding
- MSRs are the best hedge for a large financial institution
 - Only significant negative duration asset, which can help balance tendency for banks duration risk
 - Negative duration equivalent of \$750b FN5s
 - Only significant asset to perform better when household credit conditions deteriorate
 - Voluntary prepayments are significantly reduced when FICOs fall and LTVs rise
 - Current prepayments are 25% of modeled speeds, indicative of sensitivity to HPI and RU
 - MSRs hedge benefits scale up for the financial system as a whole, unlike CDS in which every winner is matched to an equal and opposite degree by a loser

Mortgage Servicing Rights: Mark to Historical Herd?

- MSR asset is marked to market on a quarterly basis along with the associated hedges
 - TBTF banks (70% of MSRs today) run an “echo system with no biodiversity”
 - Concentration of MSR asset makes it easy for TBTF banks to copy each other in
 - Prepayment modeling
 - Hedging of rate, curve, basis and volatility risk
 - Creates “abnormal demand “ for CMM swaps as CMM is the main model assumption that drives refinancing incentive and prepayments
- Pro-cyclical “regulation” of mark to market process exacerbates tendency to mis-value and mis-hedge
 - OCC does quarterly survey of top 20 mortgage servicers who report on standardized form
 - MSR mults (capitalization multiples) by loan type
 - MSR hedge ratios (in 10yr equivalents) by loan type
 - Price Waterhouse does a mid-quarter survey of the top 10 mortgage servicers who report
 - Intent on where next quarter end MSR mults will be moving, net of hedges
 - Changes in other servicing inputs (costs of advances, labor, unexpected hedging expense)
 - In combination with Analysts, the two surveys provide incentive for servicers to try to guess where everyone else will mark to market their MSR assets at quarter end. Like the mythical Keynesian beauty contest, each participant attempts to pick the number in the middle of the distribution, not the right valuation
- End result is that each TBTF bank is forced to mark to market by adjusting their marks to be at or below the middle of the “herd” as defined by the last OCC quarter-end survey. In a falling rate environment, this leads to significant undervaluation of MSRs and provides accounting cover to understating true profit margins by a point.

Mortgage Servicing Rights: Pro-Cyclical Regulation

- Regulation of MSRs has significant, unintended and poorly understood consequences
 - FRB limits MSRs to no more than 75% of a regulated financial institution's Tier I capital
 - Drives small loan originators to sell their loans “servicing released” to TBTF banks TPO channels
 - Now servicers have zero connection to borrower, making future loan problem resolution hard
 - Small banks lose their only natural interest rate hedge
 - Medium sized mortgage originators are faced with “sell or grow” business choice, with organic growth causing regulatory problems
 - Drives large mortgage originating banks into National bank/thrift charters
 - FRB did NOT create a special financing program for servicing advances, most private sector lenders have tried to minimize financing to mortgage servicers, forcing even more small and medium sized originators to sell loans servicing released
 - All bank regulators view MSRs and MSR growth as a necessary evil, something to be minimized
- Financial analysts do not understand MSRs, MSR hedging and MSR accounting
 - Analysts are afraid of what they do not understand
 - Designation as a Level 3 asset raises investor sensitivity
 - Anecdotes of large blowups in MSR hedging are widely advertised (Homeside/NAB, Long Beach/Wamu, LASER, Capstead) and not easily forgotten
 - 28 year bull market in bonds has reinforced analyst myopia
 - Positive duration has been a source of profits while unhedged negative duration has been a source of loss.....lets extrapolate that forever!
 - Reporting is opaque, making it hard for experienced mortgage traders to discern proper hedging

Alternative Redemption Increased to Stabilize Market

