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# **How to Fix the U.S. Mortgage Market**

Presentation to American Enterprise Institute  
March 26, 2009  
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*Absalon*

# Introduction

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- We are in the midst of the bursting of several related bubbles, including the “super bubble” that encompassed the entire international financial system. The epicenter of the crisis is the complex and poorly financed US housing market
- Key and related issues that need to be addressed include:
  - Minimizing delinquencies which lead to foreclosures
  - Maintaining mortgage finance availability
  - Minimizing the likelihood that home prices will “over-correct” and go too low
  - Reducing the negative macroeconomic impacts of the decline of home values
  - Reducing the negative impact of existing mortgage backed securitizations and derivative financial products on the financial system
- Comprehensive mortgage reform is required, with three key elements:
  1. **Reducing interest rates for ALL mortgage borrowers**
  2. **Directly lowering the number of homes with negative equity**
  3. **Introducing a new mortgage system that properly aligns incentives – the Danish Model**

## Background

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- Many problems led to the current situation, including
  - Systematic poor underwriting of credit risk due to improper incentives and poor accounting rules (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*)
  - Excessive demand for poorly designed MBSs and CDOs as part of the financial bubble; lax evaluation of the underlying risks in these securitizations by the ratings agencies
  - A pure real estate bubble, driven by low interest rates
- The old system is GONE, not to come back anytime soon
  - Over 95% new mortgages in past six months government guaranteed
  - Fannie and Freddie are de facto nationalized
- Comprehensive reform faces complex obstacles
  - Worsening economic fundamentals greatly exacerbate foreclosures and home price drops
  - Tranche warfare between different owners of mortgage backed securities and ensuing uncertain legal liabilities impede workouts of troubled loans
  - It is difficult to simultaneously reduce the number of homeowners with negative equity, meet standards of fairness, and provide sound incentives for homeowners
  - Repetitive practical difficulties of timing and scale bedevil all proposals; regulators are multiple, overlapping and uncoordinated

# A successful mortgage reform

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## 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 unnecessary foreclosures by reducing number of homes with negative equity

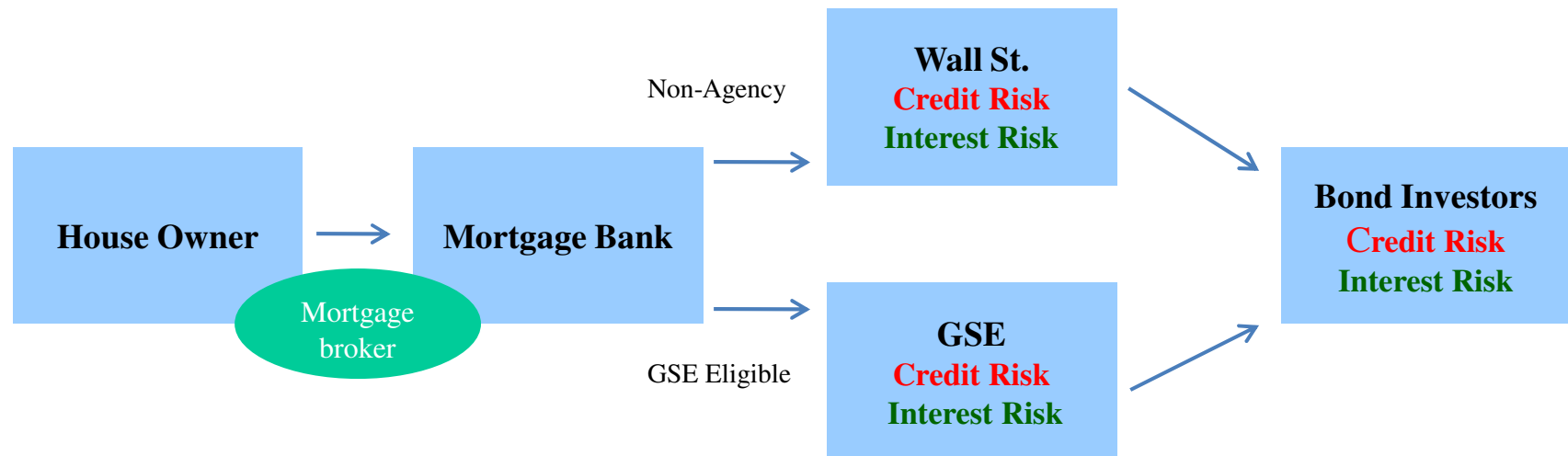
- Negative equity must be addressed – there is no other way to limit foreclosures or to avoid excessively low prices for years to come
- Policies must address issues of fairness and homeowners who have no realistic way to afford current home
- Must be done at scale, promptly

## 3. Puts the system moving forward on a sound basis with well-aligned incentives. Cleanly separates credit risk and interest risk

- Advisors to homeowners (brokers and mortgage bankers) should evaluate and share credit risk – *can this person afford this home?*
- Bond-holders should manage interest rate risk over time – *what happens when interest rates rise or fall, the yield curve changes, or volatility increases or decreases?*

## Rebuilding the system to properly align incentives: The old system needs to be replaced

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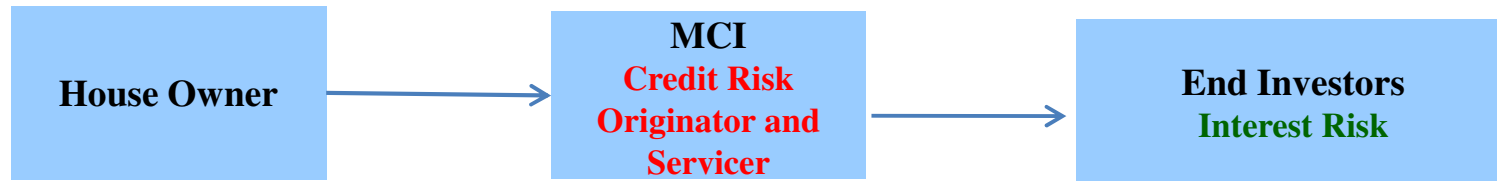


As discussed above, the old system was flawed in many ways and needs to be rebuilt

- to separate credit risk and interest risk in origination and securitization
- to minimize the likelihood of negative equity and ensuing foreclosure
- to stabilize the market (avoid overshooting on price)

# How the System Could Be Fixed By Emulating Danish System

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- How is this system different?
  - **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
  - Mortgage is funded by the issuance of standardized bonds, creating a large and liquid market
  - Bond market deals with familiar and hedge-able risks: level of rates, slope and curvature of yield curve, interest rate volatility, financing and counterparty selection
  - 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**

## Current system is not symmetrical or balanced

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### *If interest rates decline*

- Home prices go up
- Homeowner **can prepay existing mortgage** by refinancing at new lower rate
- Allows for equity withdrawal

### *If interest rates rise*

- Home prices go down
- Value of the mortgage (in a MBS) drops to the holder of the mortgage
- Even though the value of the mortgage has dropped, the homeowner still owes “par” – the face value of the mortgage. **He cannot prepay existing mortgage at the price the mortgage is selling for in the market**
- ~\$5 trillion is currently owed by homeowners of non-agency mortgages. These mortgages are valued by the market at \$3.5 trillion.

## The Danish System: refinancing on the way down

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### *If interest rates decline*

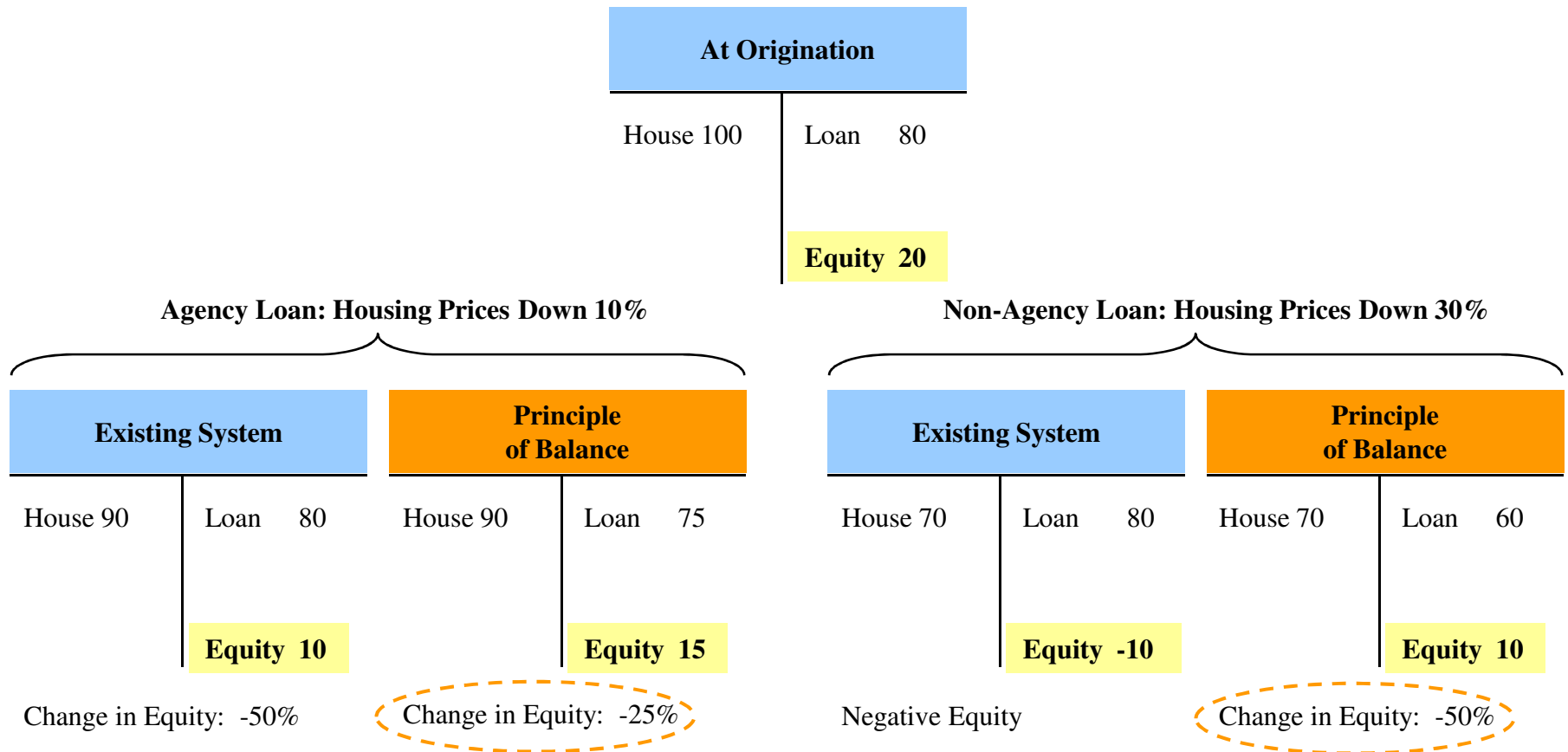
- Home prices go up
- Homeowner **can prepay existing mortgage** by refinancing at new lower rate
- Allows for equity withdrawal

### *If interest rates increase*

- Home prices go down
- Value of the mortgage (in a MBS) drops to the holder of the mortgage
- Assuming credit worthiness, a homeowner **can prepay** by purchasing back his or her mortgage at the current discounted price
- This maintains equity in the home
- The key is new, standardized mortgage pools

# Which Reduces Risk of 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



# Fully transparent: real time information on each series

The screenshot displays the NASDAQ OMX website's 'Bonds Denmark' section. At the top, there is a navigation bar with tabs for 'Nordic', 'Baltic', and 'First North', along with a search bar and links for 'Exchange info', 'Give Feedback', and 'Home'. Below the navigation bar, there are links for 'Shares', 'Indexes', 'Bonds', 'Options & futures', 'Warrants', 'Certificates', 'Funds', 'News', and 'Historical prices'. The main content area is titled 'Bonds Denmark' and features a search bar for Danish bonds. Below the search bar, there are several filter options: 'Bond type' (Benchmark bonds, Mortgage credit and special institutions, Government bonds, Structured bonds, Corporate and other bonds, Forwards), 'Issuers' (Choose issuer), 'Coupon/Expiry' (Nominal interest rate, Year of expiry), 'Interest rate type' (Fixed), 'Deferred amortisation' (Yes), and 'Open / Closed' (Open). A table of bond data is displayed, with columns for Name, ISIN, Coupon, and B. The table lists several bonds, including 10DLR43.18, 6BRF111.26, 7NYK 03A.32, 8NYK 3Cs26, 6 D 23ds35, 4 KBH13.14, 6nyk03D 35, 5NYK2C 19, and 5TK111Cs32. A 'Year of expiry' dropdown menu is open, showing a list of years from 2009 to 2041. To the right of the table, there are 'Sponsored Links' for 'Bond Search Online', 'Buy Muni Bonds Online', 'Is Your Bank In Trouble?', and 'Nationwide Any Bond Type'. The page also includes a 'Nordic Market' and 'English' language selector.

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

# Time series and transactions data

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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 |
| <b>97.000</b>                             | Ask | Low  | 96.725 | Number of exchange trades | 37          |                          |        |
| <span style="color: green;">↑ 0.23</span> |     |      |        |                           |             |                          |        |

| Price information for 2009-03-19 |            | Price graph  | 12M graph |
|----------------------------------|------------|--|-----------|
| 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         | <a href="#">Intraday</a>   <a href="#">5d</a>   <a href="#">1M</a>   <a href="#">3M</a>   <a href="#">6M</a>   <a href="#">12M</a>   <a href="#">24M</a> |           |

▼ Nordic Market | ▼ English

**Price definition for bonds**

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Price information
Fundamentals
Trades
News

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

|   |     |      |        |                           |             |                          |        |
|---|-----|------|--------|---------------------------|-------------|--------------------------|--------|
| Last                                      | Bid | High | 97.080 | Exchange Volume           | 262.583.230 | Average price all trades | 96.803 |
| <b>97.000</b>                             | Ask | Low  | 96.725 | Number of exchange trades | 37          |                          |        |
| <span style="color: green;">↑ 0.23</span> |     |      |        |                           |             |                          |        |

**Search news**

From  To  Hits

| Datetime               | Subject  |
|------------------------|--|
| 2009-03-16<br>12:46:14 | <a href="#">Nykredit Realkredit A/S Company Announcement Prepayments (CK93)</a>  |
| 2009-03-13<br>13:44:18 | <a href="#">Nykredit Realkredit A/S Company Announcement Interest rate adjustment based on auction prices</a>                                |
| 2009-03-12<br>09:04:01 | <a href="#">Nykredit Realkredit A/S Prospectus/Announcement of Prospectus Prospectus - Capital Centre E, series 31E</a>                      |
| 2009-03-12<br>09:03:11 | <a href="#">Nykredit Realkredit A/S Company Announcement Opening of SEK-denominated bond</a>   |
| 2009-03-10<br>14:06:39 | <a href="#">Nykredit Realkredit A/S Notice to convene annual general meeting Notice of annual general meeting of Nykredit Realkredit A/S</a> |
| 2009-03-09<br>12:07:37 | <a href="#">Nykredit Realkredit A/S Company Announcement Prepayments (CK93)</a>  |
| 2009-03-02<br>14:04:28 | <a href="#">Nykredit Realkredit A/S Company Announcement Nykredit Group refinancing auctions April 2009</a>                                  |
| 2009-03-02             | <a href="#">Nykredit Realkredit A/S Company Announcement Prepayments (CK93)</a>  |

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# Vintage LTV analysis shows benefit of fair value of loan

## The Nykredit Realkredit Group

Property type: Owner-occupied dwellings  
 Calculation date: 31-12-2008  
 Reporting date: 05-02-2009

### Vintage LTV Nykredit Realkredit A/S

DKK million

|                                      | LTV (loan-to-value) |        |        |        |     | Total  |
|--------------------------------------|---------------------|--------|--------|--------|-----|--------|
|                                      | 0-20                | 20-40  | 40-60  | 60-80  | 80+ |        |
| <b>Loans issued in 2005</b>          |                     |        |        |        |     |        |
| - Status at 31/12-2005 <sup>1)</sup> | 24,707              | 23,316 | 19,206 | 11,312 | 88  | 78,629 |
| - Status at 31/12-2008 <sup>2)</sup> | 20,708              | 16,647 | 8,415  | 2,022  | 204 | 47,996 |
| <b>Loans issued in 2005, %</b>       |                     |        |        |        |     |        |
| - Status at 31/12-2005               | 31                  | 30     | 24     | 14     | 0   | 100    |
| - Status at 31/12-2008               | 43                  | 35     | 18     | 4      | 0   | 100    |
| <b>Loans issued in 2006</b>          |                     |        |        |        |     |        |
| - Status at 31/12-2006               | 17,525              | 16,368 | 13,020 | 6,848  | 49  | 53,809 |
| - Status at 31/12-2008               | 15,326              | 13,866 | 9,423  | 3,134  | 360 | 42,109 |
| <b>Loans issued in 2006, %</b>       |                     |        |        |        |     |        |
| - Status at 31/12-2006               | 33                  | 30     | 24     | 13     | 0   | 100    |
| - Status at 31/12-2008               | 36                  | 33     | 22     | 7      | 1   | 100    |
| <b>Loans issued in 2007</b>          |                     |        |        |        |     |        |
| - Status at 31/12-2007               | 13,845              | 12,953 | 10,280 | 5,208  | 59  | 42,344 |
| - Status at 31/12-2008               | 12,807              | 11,902 | 8,961  | 3,731  | 377 | 37,777 |
| <b>Loans issued in 2007, %</b>       |                     |        |        |        |     |        |
| - Status at 31/12-2007               | 33                  | 31     | 24     | 12     | 0   | 100    |
| - Status at 31/12-2008               | 34                  | 32     | 24     | 10     | 1   | 100    |

### Vintage LTV Totalkredit A/S

DKK million

|                                | LTV (loan-to-value) |        |        |        |       | Total   |
|--------------------------------|---------------------|--------|--------|--------|-------|---------|
|                                | 0-20                | 20-40  | 40-60  | 60-80  | 80+   |         |
| <b>Loans issued in 2005</b>    |                     |        |        |        |       |         |
| - Status at 31/12-2005         | 42,297              | 41,094 | 37,443 | 29,945 | 1,105 | 151,884 |
| - Status at 31/12-2008         | 36,080              | 32,209 | 19,490 | 4,931  | 1,948 | 94,658  |
| <b>Loans issued in 2005, %</b> |                     |        |        |        |       |         |

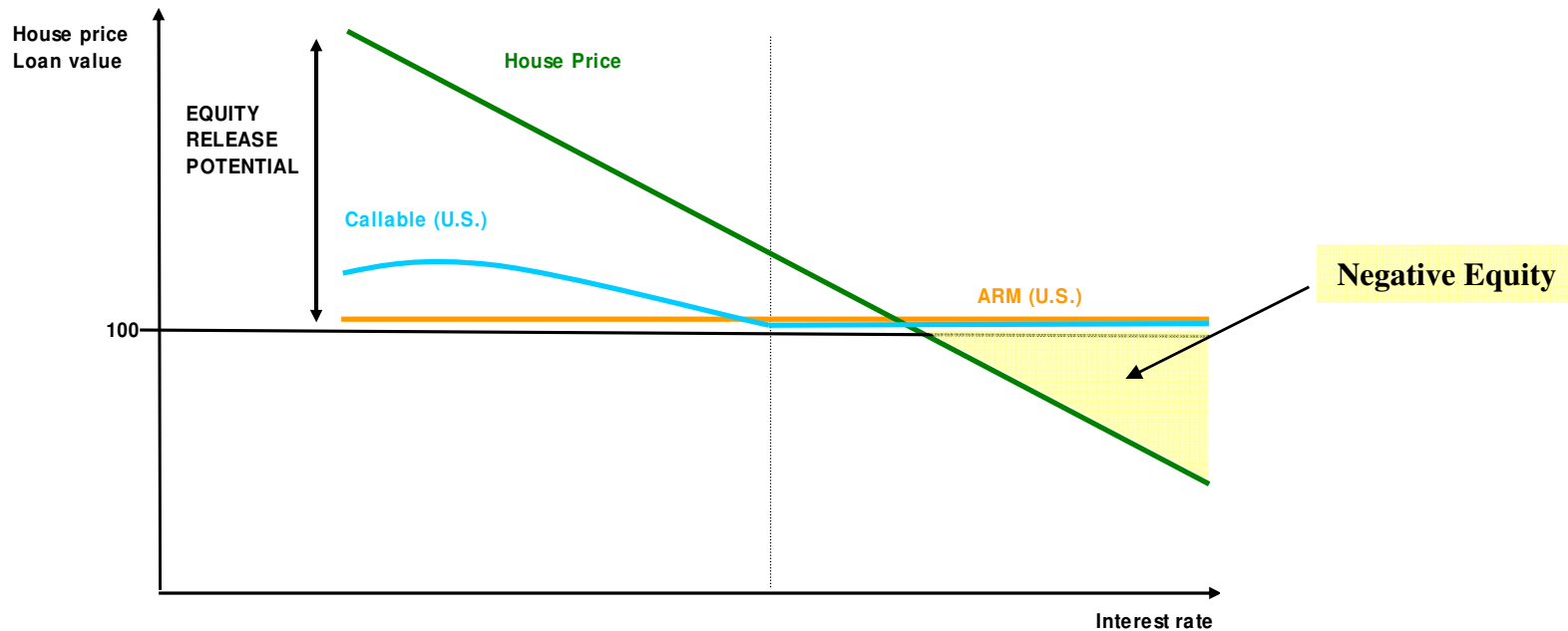
# Detailed information on borrower characteristics

## Today's key figures

### Debtor distribution, callable mortgage bonds

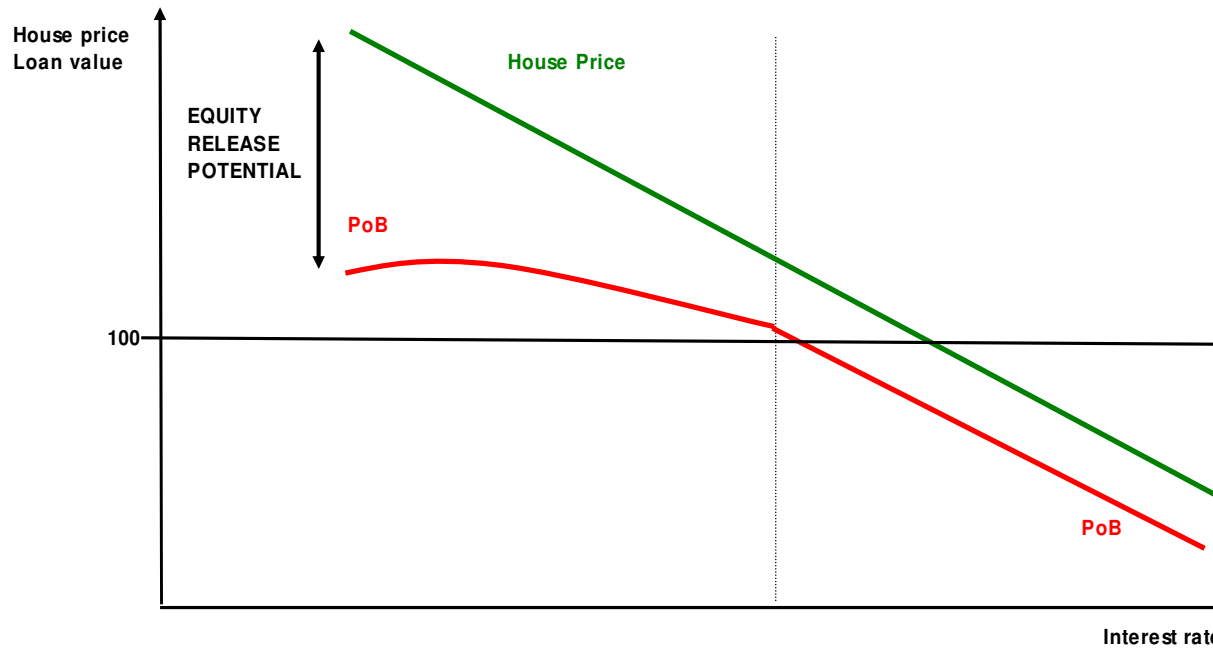
| ID     | Name             | Prepayment, modelbased |      |      | Latest Prepayment | Preliminary prepayments | Debtor  |        | Loan type  |            | Loan size (DKK 1.000) |         |         |             |        |
|--------|------------------|------------------------|------|------|-------------------|-------------------------|---------|--------|------------|------------|-----------------------|---------|---------|-------------|--------|
|        |                  | -0.50                  | 0.00 | 0.50 |                   |                         | Private | Others | Cash loans | Bond loans | 0-199                 | 200-499 | 500-999 | 1.000-2.999 | >3.000 |
| 975702 | 3% NYK 2015      | 0.0                    | 0.0  | 0.0  | 0.02              | 0.00                    | 34.77   | 65.23  | 48.81      | 51.19      | 7.0%                  | 23.0%   | 19.0%   | 19.0%       | 32.0%  |
| 975699 | 4% NYK 2020      | 0.4                    | 0.0  | 0.0  | 0.01              | 0.01                    | 38.22   | 61.78  | 41.10      | 58.90      | 2.0%                  | 16.0%   | 26.0%   | 23.0%       | 34.0%  |
| 975710 | 4% NYK 2025      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 30.35   | 69.65  | 44.37      | 55.63      | 1.0%                  | 6.0%    | 21.0%   | 28.0%       | 44.0%  |
| 976199 | 4% NYK 2028      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 68.56   | 31.44  | 16.96      | 83.04      | 1.0%                  | 13.0%   | 38.0%   | 48.0%       | 0.0%   |
| 975729 | 4% NYK 2035      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 36.26   | 63.74  | 33.31      | 66.69      | 0.0%                  | 4.0%    | 15.0%   | 33.0%       | 48.0%  |
| 976083 | 4% NYK 2035 IO   | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 65.23   | 34.77  | 0.00       | 100.00     | 0.0%                  | 4.0%    | 16.0%   | 46.0%       | 34.0%  |
| 976164 | 4% NYK 2038      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 64.99   | 35.01  | 29.54      | 70.46      | 0.0%                  | 6.0%    | 25.0%   | 40.0%       | 29.0%  |
| 976172 | 4% NYK 2038 IO   | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 88.49   | 11.51  | 0.00       | 100.00     | 0.0%                  | 4.0%    | 20.0%   | 60.0%       | 16.0%  |
| 975362 | 5% NYK 2025      | 3.5                    | 0.0  | 0.0  | 0.44              | 0.09                    | 45.49   | 54.51  | 24.34      | 75.66      | 2.0%                  | 21.0%   | 36.0%   | 29.0%       | 12.0%  |
| 976377 | 5% NYK 2028      | 4.7                    | 0.0  | 0.0  | 0.00              | 0.00                    | 53.19   | 46.81  | 30.34      | 69.66      | 1.0%                  | 10.0%   | 24.0%   | 37.0%       | 28.0%  |
| 976997 | 5% NYK 2031      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 37.92   | 62.08  | 57.44      | 42.56      | 1.0%                  | 9.0%    | 15.0%   | 25.0%       | 51.0%  |
| 974935 | 5% NYK 2032      | 0.0                    | 0.0  | 0.0  | 0.05              | 0.00                    | 18.47   | 81.53  | 68.93      | 31.07      | 0.0%                  | 5.0%    | 13.0%   | 22.0%       | 60.0%  |
| 975346 | 5% NYK 2035      | 0.0                    | 0.0  | 0.0  | 0.03              | 0.01                    | 58.76   | 41.24  | 16.27      | 83.73      | 1.0%                  | 12.0%   | 33.0%   | 35.0%       | 18.0%  |
| 975745 | 5% NYK 2035 IO   | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 67.08   | 32.92  | 0.00       | 100.00     | 1.0%                  | 10.0%   | 28.0%   | 38.0%       | 24.0%  |
| 976326 | 5% NYK 2038      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 91.62   | 8.38   | 4.81       | 95.19      | 1.0%                  | 8.0%    | 25.0%   | 60.0%       | 7.0%   |
| 976016 | 5% NYK 2038 IO   | 0.0                    | 0.0  | 0.0  | 0.01              | 0.00                    | 94.09   | 5.91   | 0.00       | 100.00     | 0.0%                  | 3.0%    | 16.0%   | 67.0%       | 13.0%  |
| 976970 | 5% NYK 2041      | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 84.46   | 15.54  | 14.69      | 85.31      | 1.0%                  | 10.0%   | 24.0%   | 53.0%       | 12.0%  |
| 928046 | 5% RD 2041 IO    | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 91.67   | 8.33   | 0.00       | 100.00     | 1.0%                  | 6.0%    | 18.0%   | 62.0%       | 13.0%  |
| 977012 | 5% NYK 2041 IO   | 0.0                    | 0.0  | 0.0  | 0.00              | 0.00                    | 93.18   | 6.82   | 0.00       | 100.00     | 1.0%                  | 4.0%    | 17.0%   | 69.0%       | 10.0%  |
| 972363 | 6% NYK 2026      | 7.3                    | 0.0  | 0.0  | 2.00              | 0.42                    | 62.77   | 37.23  | 98.93      | 1.07       | 7.0%                  | 46.0%   | 28.0%   | 11.0%       | 8.0%   |
| 977268 | 6% NYK 2031      | 21.5                   | 12.3 | 0.0  | 0.14              | 0.04                    | 64.64   | 35.36  | 28.42      | 71.58      | 2.0%                  | 16.0%   | 26.0%   | 38.0%       | 19.0%  |
| 976628 | 6% NYK 2038      | 19.0                   | 8.5  | 0.0  | 0.32              | 0.20                    | 91.89   | 8.11   | 3.45       | 96.55      | 0.0%                  | 5.0%    | 23.0%   | 64.0%       | 7.0%   |
| 976636 | 6% NYK 2038 IO   | 20.2                   | 0.0  | 0.0  | 0.09              | 0.05                    | 93.11   | 6.89   | 0.00       | 100.00     | 0.0%                  | 3.0%    | 14.0%   | 68.0%       | 15.0%  |
| 927260 | FF 6% RD 2037 IO | 18.1                   | 8.1  | 0.0  | 0.37              | 0.54                    | 89.96   | 10.04  | 0.00       | 100.00     | 0.0%                  | 6.0%    | 33.0%   | 54.0%       | 8.0%   |
| 927279 | FF 6% RD 2038    | 17.2                   | 7.7  | 0.0  | 0.53              | 0.41                    | 84.17   | 15.83  | 0.00       | 100.00     | 0.0%                  | 8.0%    | 42.0%   | 41.0%       | 8.0%   |
| 976989 | 6% NYK 2041      | 18.4                   | 0.0  | 0.0  | 0.00              | 0.00                    | 93.23   | 6.77   | 3.79       | 96.21      | 1.0%                  | 9.0%    | 24.0%   | 61.0%       | 5.0%   |
| 927961 | 6% RD 2041 IO    | 20.2                   | 0.0  | 0.0  | 0.00              | 0.00                    | 92.53   | 7.47   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 16.0%   | 67.0%       | 13.0%  |
| 977020 | 6% NYK 2041 IO   | 19.9                   | 0.0  | 0.0  | 0.00              | 0.00                    | 93.84   | 6.16   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 18.0%   | 68.0%       | 9.0%   |
| 201685 | 6% NDA 2041 IO   | 20.1                   | 0.0  | 0.0  | 0.00              | 0.04                    | 90.29   | 9.71   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 23.0%   | 59.0%       | 13.0%  |
| 977276 | 7% NYK 2031      | 33.0                   | 29.5 | 22.2 | 5.56              | 1.15                    | 69.91   | 30.09  | 17.41      | 82.59      | 1.0%                  | 10.0%   | 29.0%   | 50.0%       | 10.0%  |
| 977233 | 7% NYK 2041      | 33.1                   | 28.0 | 18.5 | 3.64              | 1.22                    | 94.81   | 5.19   | 2.26       | 97.74      | 0.0%                  | 6.0%    | 23.0%   | 66.0%       | 4.0%   |
| 928062 | 7% RD 2041 IO    | 35.1                   | 29.8 | 19.7 | 6.81              | 2.09                    | 92.99   | 7.01   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 17.0%   | 67.0%       | 12.0%  |
| 977241 | 7% NYK 2041 IO   | 35.0                   | 29.6 | 0.0  | 4.98              | 1.68                    | 92.49   | 7.51   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 17.0%   | 69.0%       | 10.0%  |
| 202193 | 7% NDA 2041 IO   | 34.1                   | 28.9 | 0.0  | 5.13              | 1.41                    | 93.20   | 6.80   | 0.00       | 100.00     | 0.0%                  | 4.0%    | 24.0%   | 61.0%       | 11.0%  |

# U.S. Mortgage Structures Can Create Negative Equity



- **U.S. Mortgage Loans:** Can be called at par. However, due to non-standardized securitization, loans may not be redeemed at the market price when trading at a discount. This allows for equity release in event of lower rates, but subjects the borrower to potential negative equity when rates rise
- All Adjustable Rate Mortgages are worth par in most interest rate scenarios. This implies that the borrower has no hedge against the interest rate sensitivity of home prices exposing him to more significant fluctuations of net home equity

# Principle of Balance Mortgages Prevent It



- **Danish Mortgage Loans (PoB)**: Can always be prepaid at par or redeemed by purchasing the bond at the market price
- MCI acts as a liability advisor, encouraging homeowner to tap issue into the most expensive bond in the market
- MCI is perfectly aligned with homeowner and seeks to minimize risks for the entire life of the borrower

**Since the value of homes and the associated mortgage bonds tend to move in the same direction, Principle of Balance prevents homeowners from having negative equity in their homes**

# **This is a unique opportunity to “get it right”**

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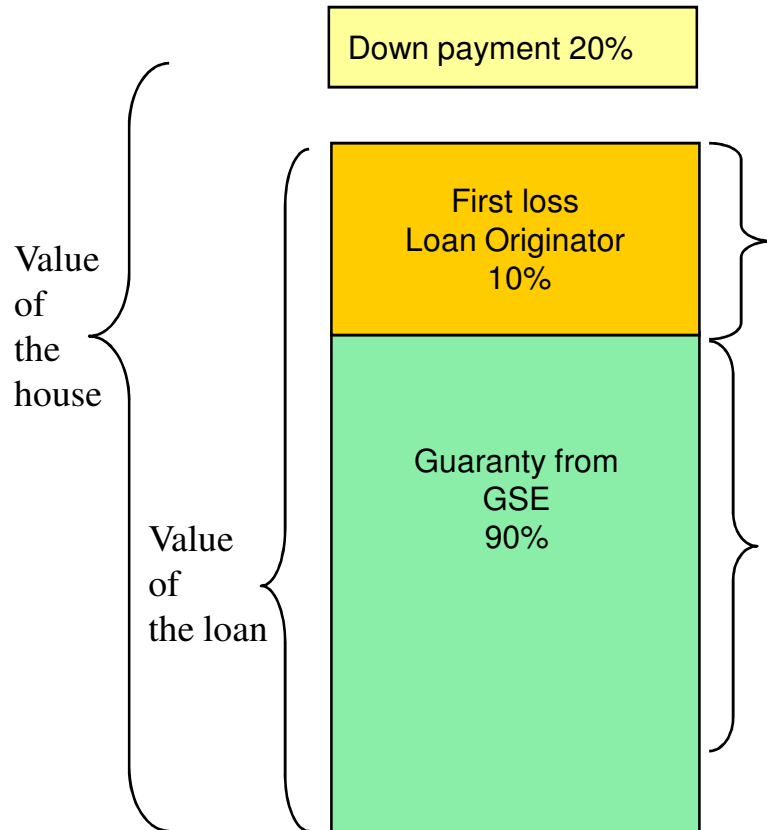
- The GSEs should be transformed into PoB Guarantee Vehicles only
  - Fannie/Freddie should be merged
  - Eventually the portfolios should be run off
- Credit risk allocation to be shared between originator and Federal Guarantor
  - Originator should retain 10% first loss risk position
  - Margin between loan rate and bond should NOT be capitalized, instead earned over time
- Borrower gets a market rate based on transparent bond pricing
  - Bonds are tap issued on a daily basis
  - Loan is cancelable at the lower of the market price or par – the Principle of Balance
- New loans will have full recourse, enforced by an agency of the U.S. Treasury Department
- Federal Reserve should assign lowest possible BIS risk capital requirements on the new PoB bonds and assign lower margin requirements at the TAF, PDCF, TLSF, FHLB and Discount Window for PoB bonds
- The new system can easily preserve a role for credit unions, community banks and other “smaller” players
- A Unitary Financial Regulator should be established to oversee the entire mortgage credit process
  - FDIC, FHFA, FRB, OCC, OTS and NCUA must cede regulatory authority
- The new regulator should be a prudential regulator and be empowered to:
  - Remove bad loans, bad brokers and bad borrowers from the system
  - Raise capital and reporting requirements as deemed necessary
  - Lower LTV ratios and/or raise credit scores as deemed necessary
  - Raise margins for borrowers if ex post credit costs prove to be higher than expected

# Lowering Interest Rates, Reducing Existing Negative Equity

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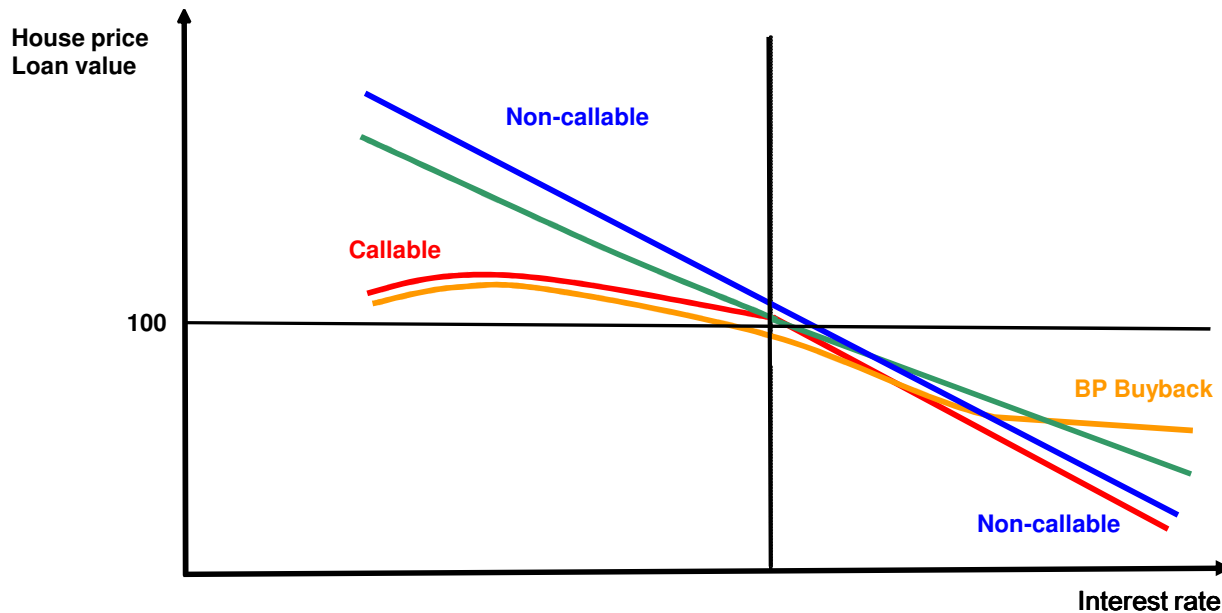
- Lower interest rates through new or expanded government guarantee programs
  - Super streamlined refinance should waive all requirements except one -- the borrower must be current on their existing mortgage
  - The GSEs should not be charging additional fees for loans they already guarantee
  - The GSEs should charge reduced Guarantee and Pooling fees for the refinance of current non-agency loans
  - Loan size limit should be \$729,750 with high cost going up to 130% of this limit
- Consider modifying mortgages so that homeowners have at least 10% positive equity in their homes at current valuations based on an Automated Valuation Model (AVM).
  - The conversion of mortgages could be systemic, enforced on the owners of mortgage securities. Servicing companies would be fully indemnified.
  - The losses from the write-down of principal would, to the extent possible, be borne by the owners of mortgage securities.
  - These losses should be treated as full tax credits, counted as Tier I capital and allowed to be used to offset TARP capital injections. The tax credits are non-transferable
- As a matter of equity, homeowners with written-down mortgages would be subject to a higher tax rates
  - Principal reduction will count against taxpayer's \$500,000 exemption from capital gains
  - Reduction of capital gain exemption will last for 10 years and apply to the gain from the sale of any residential real estate, not just the home associated with the principal reduction
- *One way or another, it is essential to stabilize house prices and the value of mortgage securities.*

# Credit Enhancement Structure for Shared Platform



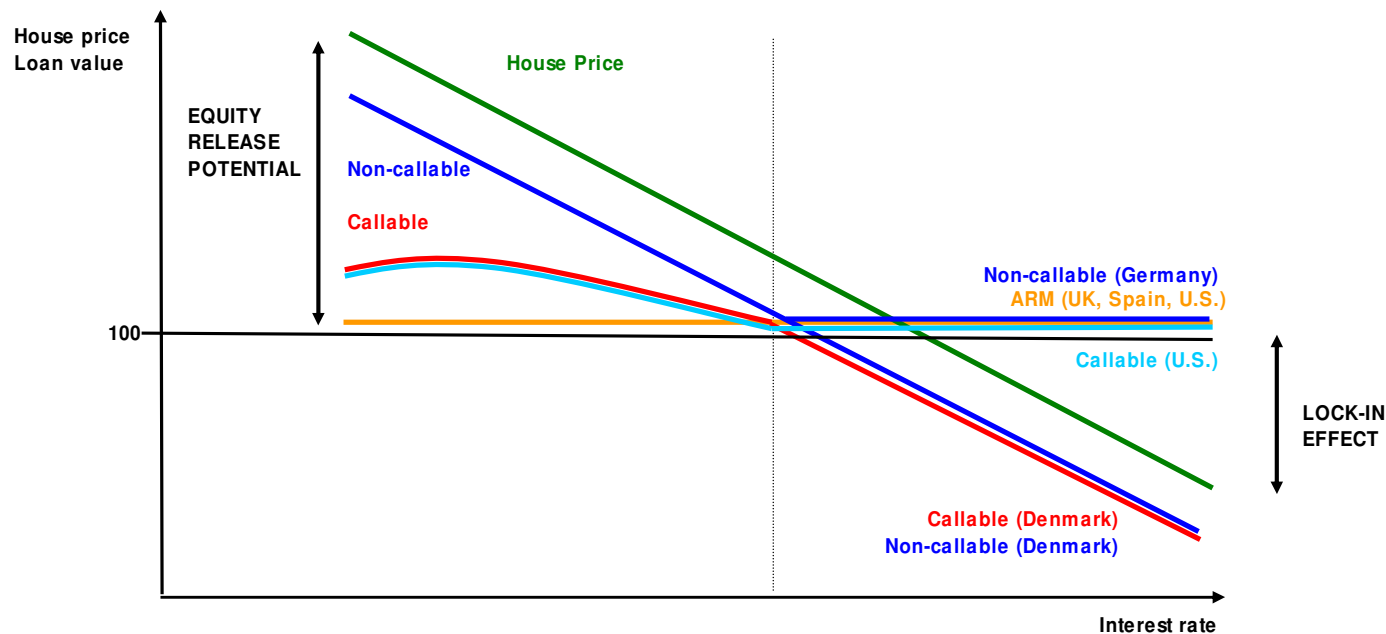
- Provided by Originator and/or MI industry
- Expected Capital reserves of 20%
- Backup capital and industry skill to be provided by MI Reinsurance Industry
- AAA rating flows from GSE guarantee, which
- The value of the house will serve as collateral
- Bond holder looks to GSE for full faith and credit guaranty
- GSE looks to Originator 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

# Convexity Effect of Securitization Choice



- 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

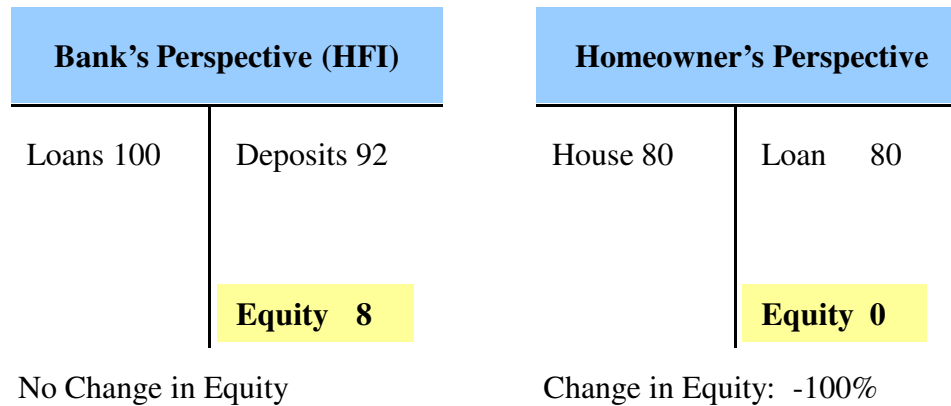
# Price/Yield Graph of Various Mortgage Risk Transfer Structures



- **U.S. Mortgage Loans:** Can be called at par. However, due to non-standardized securitization, loans may not be redeemed at the market price when trading at a discount. This allows for equity release in event of lower rates, but subjects the borrower to the lock-in effect when rates rise
- All Adjustable Rate Mortgages are worth Par in most Interest Rate Scenarios. This implies that the borrower has no hedge against the interest rate sensitivity of home prices exposing him to more significant fluctuations of net home equity
- **Danish Mortgage Loans:** Can always be prepaid at par or redeemed by purchasing the bond at the market price
- **German Mortgage Loans:** Non-Callable at par: homeowners must instead pay a yield maintenance penalty equal to the NPV of the cash flows. When interest rates are higher, the loans are not redeemable at a discount. This is the worst of all possible risk transfer mechanisms

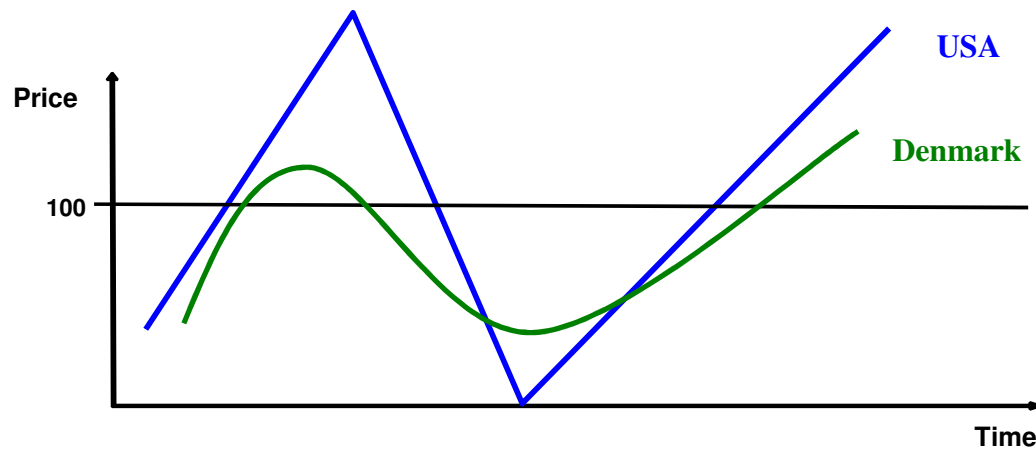
# Market Potentially Has Still More Pain to Come

- In the U.S. Non-Agency market, the homeowner’s liability is now \$1.5 trillion higher than the market value of that liability and the gap continues to grow
- GAAP accounting allows banks to pretend that their assets are worth the amortized cost basis, subject to quarterly credit review and reserving requirements
  - At current delinquency roll rates, banks have more reserves to come
- If a bank chooses “available for sale”, the change in the free market price of the asset flows through the equity line but is not reported in the income statement
  - Such changes in equity are NOT counted for regulatory capital purpose
- If a security fails an “other than temporarily impaired” (“OTTI”) test, it must be marked-to-market
  - Banks have several quarters before OTTI catches up



**The Systematic Solution is to create a bridge between the depressed market price for non-agency mortgages and the homeowner**

# Long Term Interest Rate Volatility Reduced



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       | ---       |

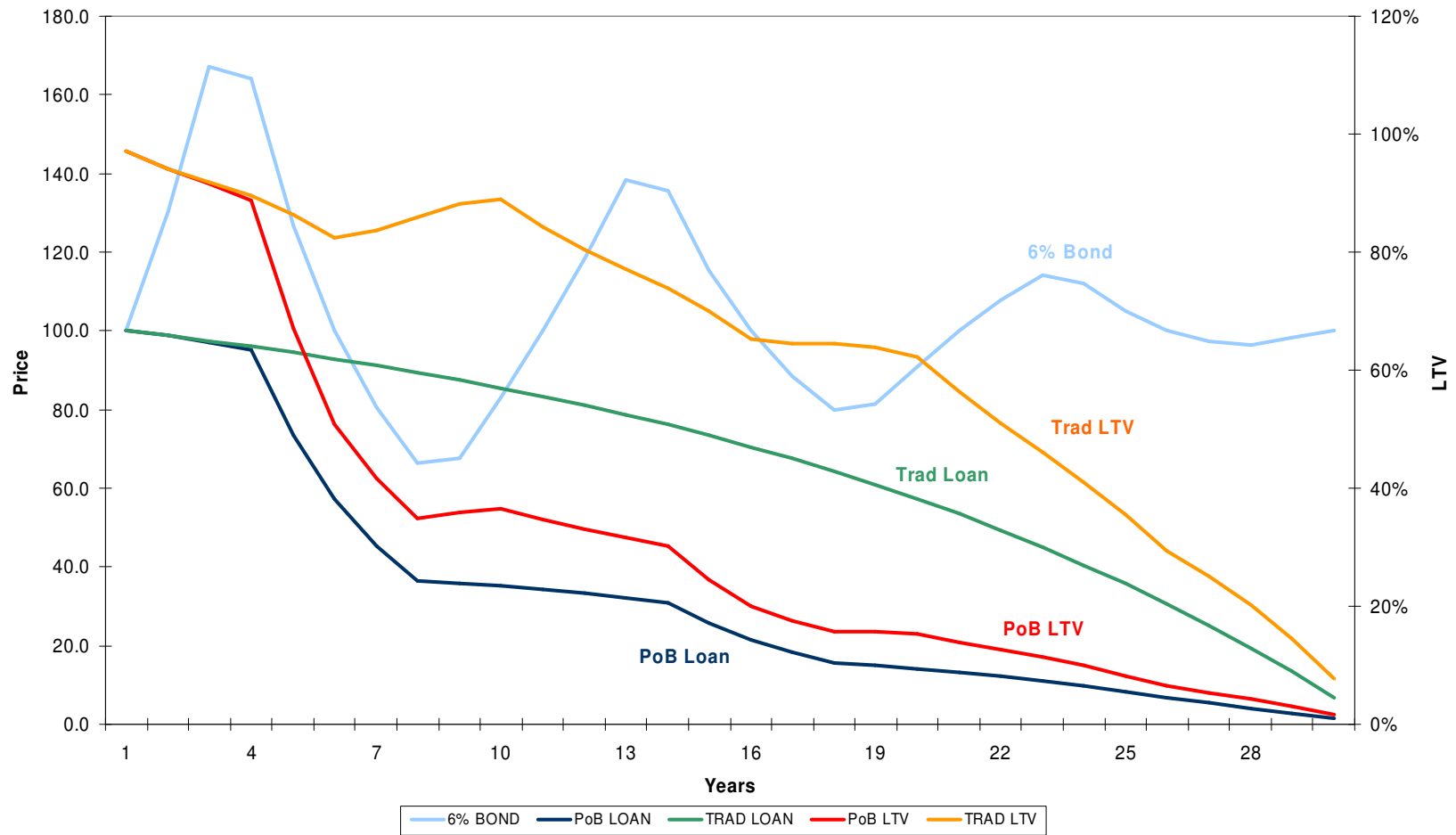
- U.S. mortgage market is a “premium origination” model. This opaque process is used to get the bond market to pay loan origination costs
- Callable loans are made with option struck in the money. This leads to the OAD “illusion” of very low durations of 30 year mortgages
- When interest rates rise, “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

# Mortgage Pricing 101

| Credit Metrics<br>(FICO/Current LTV)  | <u>750/75</u> | <u>710/75</u> | <u>670/75</u> |
|---------------------------------------|---------------|---------------|---------------|
| Loan Level Pooling Fees               | (.25)         | (0.75)        | (2.0)         |
| Costs                                 | (1.5)         | (1.5)         | (1.5)         |
| MSR Multiple/Value                    | 3.6/2         | 3/0.9         | 2.5/.75       |
| Security Exit                         | FN4           | FN 4.5        | FN 5.5        |
| Effective Zero Point APR to Homeowner | 4.75          | 5.0           | 6.0           |
| Profit Margin                         | 1.0           | 1.15          | 1.0           |

- 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, the “Streamlined Refi” program may have lower costs
- 1 point of profit margin, 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
- Assumes May Delivery into
  - FN 4 .0@ 100.75
  - FN 4.5 @ 102.5
  - FN 5.0 @ 103.25
  - FN 5.5 @ 103.75

# Credit Quality of Borrower Improves



- Simulated changes in LTV based upon typical interest rate cycle
- PoB loan refinances when rates fall 100 bp
- PoB loan balance principle buyback when rates rise 100 bp