

Covered Bonds vs. Securitization Transparency vs. Opacity Which is the Right Question*

Alan L. Boyce**

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* Paper prepared to generate discussion regarding whether Covered Bonds represent an improvement over Securitization. In addition, this paper proposes that the most standardized and transparent mortgage system will produce benefits not widely understood in most countries. We thank Morten Baekmand, Achim Duebel, Anil Kashyap, Karin Lissakers and Carsten Valgreen for helpful conversations. Boyce thanks Benderly Economics, Drobny Research Associates and Nykredit Markets for research support. All mistakes are my own.

** The views in this paper are those of Alan Boyce and do not necessarily represent the position of Soros Fund Management.

1. Introduction

In the last year, there has been a growing realization that the world's financial markets are beset with the worst financial crisis in living memory. Since the financial crisis was spawned by the loss of confidence in the US mortgage market and the ratings agencies, a vicious financial accelerator effect has hit the global economy¹. Over two million jobs have been lost despite significant fiscal stimulus. The Federal Reserve has attempted to provide liquidity by reducing the federal funds rate by 325bp and opening its balance sheet to all manner of previously well regarded financial instruments. U.S. insurance companies, banks and investment banks have lost over \$300 billion from their exposure to residential mortgages securities.² The Treasury has nationalized the GSE's, Lehman has gone under, the Fed has lent \$85 billion to AIG and injected the largest amount of cash into the market via repos since 9/11. The problems coming from the mortgage backed securities market seem to be the most troublesome and intractable. There is now a discussion of setting up a public "resolution bank" akin to the RTC set up during the Savings & Loan crisis in the 1980s to purchase mortgages on the open market. What if we, instead of having the tax payer buy the mortgages, had a system in place which allowed the borrowers to repurchase their "distressed" mortgages on the open market and refinance them at much lower principal amounts?

The effects of the bursting of the housing bubble and the pressure from the resultant credit crunch are not evenly felt. House price declines first evident in the United States are now beginning in Europe. Within Europe, the countries which experienced the largest increase in house prices are the ones experiencing the largest declines. These declines have implications for these countries' financial systems as well. However, while some countries have already

¹ See Valgreen (2007) on accelerator of ratings agency actions through financial markets

² See, Greenlaw, Kashyap and Stein (2008) for comprehensive descriptions of the crisis.

experienced home price declines even bigger than the US, the financial fallout has not been uniform. Importantly, Denmark provides an interesting example, posting a home price bubble which has been, if anything, bigger than the U.S. and with comparable declines in prices over the past year. Moreover, Danish household mortgage debt to disposable income ratios are roughly twice the size of the US ratio. Despite having the largest mortgage covered bond market in the world,³ Denmark has largely escaped the negative feedback loop that spawned a downward spiral in the US.⁴ Why has tiny Denmark so far escaped financial Armageddon and does it offer the rest of the world some solutions?

It is often argued that the escape is due to the form of financing, that covered bonds are better than US-style true-sale securitization. This paper will argue that this is the wrong comparison to make. A transparent and standardized mortgage market is the solution. The form of financing is a sideshow. The Danish system only recently allowed for Portfolio Covered Bond type financing, imposed by new common EU rules. However, an important difference between the US and the Danish mortgage system is embodied in the Danish Balance Principle, which requires issuers to exactly match mortgage loans with the issuance of bonds. The use of this principle reduces credit risk, principal/agent issues, systemic hedging errors and even reduces long-term interest rate volatility. The resilience of the Danish mortgage system comes from this principle of balance. Adopting this principle in the US mortgage system would provide for highly needed transparency in the US mortgage market and create a better division of labor between financial intermediaries. Whether the actual mortgage securities are covered bonds or true-sale securitizations is not really important.

³ See Meidinger (2008) “In terms of mortgage covered bonds, the Danish market is by far the largest, ahead of the Spanish and the German market.”

⁴ See Adrian and Shin (2008) for empirical evidence on spirals and spillovers.

2. What are the Issues and Problems?

2.1. Definitions

A covered bond (CB) is a direct obligation of the issuing bank, with additional credit support provided by a pledged pool of assets. In weak form, the pool can be a shifting portfolio of various loans and securities. In strong form, the pool is irrevocably pledged and cash flows match exactly. In a CB system, the credit risk of the underlying loans is retained on the balance sheet of the bank. CBs allow for a substantial cash flow mismatch between the underlying assets and the bond. A True Sale Securitization (TSS), as defined by FAS 140, entails substantially complete sale of risks associated with a pool of assets, ring fenced in a legal trust. If all requirements are satisfied, the originator/distributor will be able to recognize a gain-on-sale and remove the assets from its balance sheet.

2.2. Principal/Agent Problems are not just a Securitization Phenomena

It is often argued that securitization embodies asymmetric information and therefore creates principal/agent problems. In the most extreme form some argue that “securitization” has failed in general. This is wrong. Securitization has worked well for centuries for many types of debt. However, the fragmented, opaque and multi-layered nature of the private US mortgage system has clearly created a system where the marginal participant in the system has had an incentive to sell the “lemons” and take moral hazard driven risks in a bull market. And in the current market, all buyers are now assuming that all mortgages offered (or institutions for that matter) are “lemons”. The sub-prime mortgage securitization process is an example of bad loans being originated with nobody taking responsibility for the underlying creditworthiness and ability to pay of the borrower. Loans were originated and securitized, creating large gain

on sale profits, while the evaluation of credit risk was outsourced to rating agencies, which did not themselves put money at risk. These problems are now well understood but not solved⁵.

The US Treasury proposal for reforming mortgage markets presumes that the way to address the information problem is through the issuance of CBs. This is a false diagnosis. Principal/agent issues associated with securitization can be and are addressed in many ways in other well-functioning security markets; increased investor disclosure, prudential regulation, increased risk capital requirements, mortgage insurance, originator putbacks and solid representations and warranties. Moreover, a CB issuer can be subject to the same errors in credit standards, underwriting and surveillance as an originate-to-distribute issuer who relies upon securitization. There is still a “lemon” problem. In fact, the regular process of selling securitizations to the market, servicing the loans and providing investor disclosure can improve an originator’s quality controls. Whether the system is of the covered bond type or securitization type, the important question is how to ensure that the right agent takes responsibility for and manages the credit risk. This agent should do this in a transparent way with a long term business model, equity and rating at stake. The covered bond model, presumes that banks are the right agent for this. But banks have opaque balance sheets and have a lot of other interests and business to attend to. An example of this is the German mortgage bank AHBR, which Portfolio CB allowed for significant duration mismatches, leading to the banks forced sale in 2006⁶.

2.3. House Prices, Interest Rates and Refinancing Patterns

The stock of housing in any country is relatively fixed at any given point in time, while housing affordability is determined by income levels and interest rates. As interest rates fall, a

⁵ See Felton and Reinhart

⁶ AHBR was sold to Lone Star for NEGATIVE 600mm Euros and a significant amount of liabilities were either crammed down or put back to KfW

potential homeowner is able to “afford” more house. This leads to the globally observed phenomenon of housing prices rising as mortgage interest rates fall. In fact, one of the first areas to get traction following a monetary easing is the housing sector.⁷ US homeowners are connected to the capital markets via their callable mortgage. When interest rates fall, US homeowners are quite effective at refinancing their callable mortgage loans, resulting in either lower payments or home equity extraction. Both lead to higher disposable personal income and support consumption expenditures within limits. However, once the loan is made and put into either a TSS or CB, the links are permanently severed. This is a distinct feature of mortgage loans and other consumer finance, not shared by corporate, sovereign, municipal and multi-lateral debt security issuance. In the latter, the borrower can satisfy its contractual obligations by EITHER making scheduled principal and interest payments OR by redeeming his debt by purchasing it back in the open market.⁸ This option of redeeming your debt at market value is not available to most homeowners in the world.

2.4. Principle of Balance

In fact, the ability to redeem your mortgage is available only in Denmark and Mexico. This innocuous detail is the direct result of the strict principle of balance (PoB) and is what makes the Danish mortgage system an interesting comparison. When mortgage rates rise, homeowners can redeem by buying the pari passu amount of bond they originally issued. To fund the transaction, the homeowner issues a new mortgage with a higher coupon and lower balance. This re-strikes the homeowner’s call option and reduces the amount of debt on the homeowners’ balance sheet and in the system. This redemption feature is available to all

⁷ The Economist, November 2001 “The Houses that Saved the World”

⁸ In 1998, the US Treasury began a series of debt buybacks, conducted in the form of reverse auctions.

homeowners who are current with their existing mortgage loan payments. The PoB provides a systemic positive externality.

Exhibit 1 shows the potential outcomes for homeowners in various countries around the world when interest rates change. When mortgage interest rates rise, house prices fall. Under the principle of balance, the homeowner's liability will fall with the price of the bond his loan was issued into. Exhibit 2 describes, in simple T-accounts, the impact of the PoB on a homeowner's equity position when mortgage interest rates rise and housing prices fall. The PoB limits the tendency for house price declines to result in negative equity for the borrower and all the associated pathologies.

This shows why non-standardized loan pooling, rather than legal vehicle, is a primary cause of the negative feedback loop we have created in housing-related financial markets. The PoB will cap spreads to government bonds, and will empower homeowners themselves to become the buyers of last resort.

2.5. Socialize Credit Availability, Privatize Credit Risk

The Danish mortgage system has a long history, dating back to the Great Fire of Copenhagen in 1795. It has withstood several Sovereign Bankruptcy Events and was on the losing side of several wars with Germany without ever seeing a bond default. Mortgage Credit Institutions (MCIs) set up bond series, or Realkreditobligationer (RO). MCIs tap the bonds to issue the loans. MCIs are chartered to act as an agent between the homeowner and the bond market. Everyone who takes out the same loan gets the same bond market price. The MCI is prevented from taking interest rate risk, but is required to underwrite the borrower and take credit risk. The homeowner gets the proceeds from the sale of his loan into the standardized bond (at the price the bond trades at) and owes the par amortization schedule. The homeowner

then pays a variable margin, on top of the bond payments, to cover the MCI's credit costs, servicing costs and profit margin. Seen from the homeowner's perspective, he has issued liquid bonds himself. He can look up the price of the bonds every day, and he simply buy it back and issue a new bond when refinancing the loan. MCI's compete in a transparent way and are best thought of as mortgage insurance companies which provide their customers with valuable financial advisory services. Every borrower is given the same rate by the bond market, so there is no legal basis for consumer protection disputes. Debtors are personally liable for their loans. It is not sufficient to relinquish the house in event of default. MCIs rely upon no taxpayer guarantees, yet are highly profitable. When a loan goes delinquent, the MCI is required to buy the loan out of the cover pool. Due to the balance principle, the loan can be bought at the LOWER of par or where the bond trades. This discount bond buyback also happens at the lower of par or market, acting as a significant mitigating force for the MCI. This is because credit losses are highly correlated with housing prices, which themselves are correlated with bond prices.

2.6. Legal Basis: Danish Mortgage Credit Act and CRD Compliance

The Danish RO model allows for substantial financial innovation. In fact, every type of loan product that has been introduced in the U.S.A. exists in Denmark. The typical loan in Denmark is a 30 year fixed, callable, fully amortizing loan. The Danish Mortgage Credit Act defines the requirements for a mortgage. This act has been recently amended to be compliant with the European Union's CRD requirements and allows for the issuance of Pfandbrief type

Portfolio Covered Bonds⁹. Since the new legislation went in place, over 95% of the bonds issued follow the strict Balance Principle.

In the Pfandbrief model, as in the case of agency bonds, the issuer retains not only the credit risk but also the market risk (arising from maturity mismatch). Pfandbrief issuers have to hold considerable excess collateral to protect covered bond investors from market risk. Such overcollateralization implicitly subordinates depositors and other debt investors. Despite the regulatory penalties, near-bankruptcies of issuers due to ex-post market risk realizations have been seen in recent years. With the recent rate increases, Portfolio CBs have had a 2 year maturity with a much longer maturity cover pool, as profitability of the portfolio became squeezed and regulations demand cash flow coverage on an NPV basis. This results in significant duration and roll risk. It should also be noted that retail mortgage loans comprise a very small percentage of the cover pool in the Jumbo Pfandbrief. In fact, the industry association (VdP) changed its name in 2005 to reflect the limited “mortgage” nature. The vast majority of cover pool assets are recycled sovereign and municipal debts.

There was a ruinous experience in France in the 1980s, where a predecessor instrument of today’s Obligations Foncières failed when interest rates fell. Borrowers prepaid and lenders could no longer service the bonds. The Pfandbrief-style instrument is also widely regarded as not being an appropriate funding tool for callable loans. At the minimum such a combination would require costly and potentially risky and opaque hedging strategies similar to those of Fannie Mae and Freddie Mac. Given the size of these balance sheets compared to the hedging markets these hedging strategies are difficult to execute - if not impossible.

⁹ See Batcharov for complete discussion of the changes to the Mortgage Credit Act which replace RO with SDRO and allow for the creation of Portfolio Covered Bonds (SDO) issued by banks which do not use the strict balance principle.

In the Danish RO model, which resembles the agency MBS market, credit risk is retained while interest and prepayment risk is completely transferred to the capital markets under the strict Balance Principle. The result is lower issuer bankruptcy risk and the lowest possible overcollateralization requirements. This reduces conflicts with depositors and other investors during events of insolvency. There is a very liquid market in Danish ROs, governed by a self regulated market maker agreement. Market makers do not get paid any fees, yet are quite profitable. Recently, the Danish RO market was the only CB market open for issuance in Europe, in all maturities. Exhibit 3 is a graphical description of where the Danish RO model fits vs. other CBs and TSS structures, with the vertical axis being transparency and standardization.

2.7. Other Considerations: Discount Origination and Prudential Regulation

One of the other valuable aspects of the Danish system is the requirement that bonds can be “tapped” or issued only when they are trading below par. The “tap” issuance is the direct method which connects the homeowner to the bond market. Discount origination of callable loans makes a lot of sense from the perspective of a financial investor, and eliminates some of the more opaque and troubling practices associated with “premium origination” in the USA. The Danish FSA is a unitary regulator, empowered with an excellent database of all the loans (paid off, current, delinquent, past due and in application phase) in the system. They are able to prevent certain loans from being funded, and ex post force loans to be reduced in size. The FSA is efficient and is subject to neither regulatory arbitrage nor capture.

2.8. The Economic Logic, Optimizing for Basle II, Regulation

The Danish RO/SDRO model is highly capital efficient. The Capital Center technology employed by Danish MCIs is able to achieve AAA ratings and the lowest BIS risk capital

weightings using only 2.8% capital. In part, this capital efficiency is achieved by the strict use of the PoB which reduces the credit risk of the mortgage loan.¹⁰ Safeguarding the investor is the primary focus of the Danish system.¹¹

2.9. Comparison with Alternatives

The Danish RO model has been copied by several other countries. Iceland and Norway have copied the system in CB form. Mexico has recently copied the Danish system in TSS form, owing to the lack of creditworthiness among the special purpose consumer finance entities and the ready availability of Mortgage Insurance from a variety of well capitalized international companies. Hipotecaria Total is the MCI set up in Mexico.¹² It is partially owned by Sociedad Hipotecaria Federal and enjoys the public support of Banco de Mexico and Hacienda. The U.S.-type portfolio securitization operations have exited the Mexican mortgage market. European-based Portfolio lenders and Portfolio Covered Bond issuers are looking to reduce balance sheet exposure in Mexico, to generate capital and return to the corporate parent.

The Danish system involves no government guarantees, so it most often compared to the Jumbo Non-Agency MBS market in the U.S.A. (Exhibit 6). It has outperformed its peer in the USA by 18 points in the last year and held spread with the US Government guaranteed MBS sector. Due to the PoB, the homeowner's equity position in their house has been preserved (Exhibit 2). This is due to the optional redemption feature which allows the borrower to redeem their loan at the bond market price. Housing prices have fallen 10 to 25% in Denmark, but there has been no surge in delinquencies and foreclosures. This is partly due

¹⁰ Svenstrup says "finding indicate that the introduction of the buyback option reduces the credit spread required by the financial intermediary....the buyback option protects households against the risk of being locked in after an increase in interest rates. This could be of particular benefit to low-to-middle income households."

¹¹ See Ladekarl (1997) "In a system where the cost of mortgage loans is directly linked to the pricing of mortgage bonds in the market, the borrowing cost is reduced if the investor estimates the mortgage bonds to be safe 'gilt-edged' investments."

¹² See Economist January 2007

to legal differences. Danish mortgages are “recourse” while US mortgages are “non-recourse”. When home prices fall, the US system will be a qualitatively different experience for lenders, as a large part of the losses can potentially be shifted to leveraged financial institutions through “jingle mail”. But it is also in large part due to the Principle of Balance. Danish MCIs have a clear role in a system with a simple and transparent division of labor between institutions. They are credit insurers and have a long track record, equity, rating and a reputation to protect. Their sole business is insuring mortgage credit risk efficiently. MCIs keep their balance sheet matched, so that they can issue standardized AAA securities that trade in liquid markets with long history. They are not in the business of taking big interest rate or prepayment risks with a government guarantee in the back. Thus Denmark has avoided the systemic risks that face the US housing/financial markets.

2.10. Positive Externalities: Reduction of Systemic Hedge Errors and Term Rate Structure

The optional redemption feature allows for reduced individual and systemic hedge errors when matching bullet liabilities with callable assets. The optional redemption feature also reduces long term interest rate volatility. These ideas will be developed in another forum.

3. First Rule of Holes: Stop Digging

3.1. The Paradox of Deleveraging

The Global Financial System is being de-capitalized. Banks need to de-lever, but while that is easy for one to do, when they all try to do it they destroy the asset they collectively hold. Current credit spreads are a result of the de-leveraging of the system. The largest part of most financial intermediaries balance sheets are mortgage loans and securities. There is no mechanism for those assets to unwind. The world suffers from an ever increasing amount of

assets that do not fit on the balance sheets of the global banking system. Banks' balance sheets are viewed as opaque and raising capital is increasingly difficult. The Sovereign Wealth Funds were severely burned in their prior capital injections and now are uninvolved. The largest and most risk-laden asset class, residential mortgages, lacks a mechanism for the borrower to reduce the amount of debt outstanding. In fact, there is no price where the homeowner can enter the market and assist in the balance sheet reduction process, other than par! This creates a negative feedback loop (Exhibit 4).

3.2. Current Covered Bond and Non-Agency MBS Markets are Broken

The European Jumbo Covered Bond market is struggling at 70% of last year's issuance, with the most common tenor being 2 years. This is creating significant interest rate mismatches in the system, to be rolled in 2010. The only CB market open in all maturity ranges is the Danish system. The U.S. CB market is stillborn, following the two issues by Wamu and BofA in 2007. These bonds currently trade a LIBOR + 250 despite significant overcollateralization. These "two level" structures reduce any interest rate hedge effectiveness of the CB as the first level mortgage trust is an overnight repo transaction¹³. Even with these changes, swap spreads and bank CDS spreads are so wide as to make it very expensive for U.S. banks to issue Covered Bonds (Exhibit 5). Given the extreme lack of confidence in the system, it could be a decade before private label TSS and/or CBs will be an efficient source of mortgage loan financing.

The European securitization market and the U.S. Non-Agency securitization market are closed. The only securities being created in Europe are not for sale in the capital markets, rather they are tailored to fit into the ECB repo facility.¹⁴ The Non-Agency or Jumbo market

¹³ See Boyce and Marlatt for discussion on alternative Covered Bond Structure using a QFC.

¹⁴ See Economist August 2008

in the US is trading to a deleveraged price.¹⁵ The only Securitization market open for mortgages involves a U.S. Government guarantee. Over half of mortgage loans originated today carry the “full faith and credit” guarantee from GNMA. Despite the public purpose associated with such taxpayer guarantees, there exists substantial “cherry picking” of the more valuable loans. As a result of this process, low-to-medium income households pay a significantly higher rate than they should. The profit from this opaque process goes to the GSEs (now Treasury) and the large mortgage originators. In the U.S.A., we have successfully socialized mortgage credit risk while creating an unlevel playing field.

4. A Specific Proposal: Balance Principle Issuance with Federal Eagle

4.1. Get it Right Now

This is a once in a lifetime opportunity to “get it right”. The U.S. government should take a combination of best practices to get the best model for mortgages. First, the GSE’s portfolio business should be stripped from them. This added limited value to the homeowner and was a significant contributor to the opacity of the system¹⁶. Second, the GSE’s should merge operations in the name of efficiency. As oligopolists, they do not compete with each other in a meaningful way but carry expensive and duplicate functionality. Third, the GSE’s should offer a new product, called a “balance principle MBS”, which will carry lower pooling fees and guarantee fees than their traditional products. The GSE’s should require disclosure to the borrower of the positive attributes of taking out a balance principle mortgage. The Federal Reserve should assign the lowest possible risk capital requirements on the new BPMBS. The

¹⁵ In a recent transaction, Super Senior AAA Jumbo MBS traded 18 points behind FN 6s. The pool attributes were: 750 FICO, 70% LTV and 20% CE. These are the best Jumbo mortgage loans in the U.S.A., if these are not saleable close to GSE MBS, then the Non-Agency market is hopelessly broken. Banks and Thrifts have over \$2 trillion of these whole loans on the balance sheets, with only 3% risk capital requirements. This is one sixth of the capital the market is requiring.

¹⁶ See Passmore (2003)

new BPMBS should receive a lower haircut at the TAF, PDCF, TSLF and FHLB. There should be no compulsion. This would result in the new combined, Treasury owned, GSE applying the balance principle. It would create the incentive to become a specialized issuer and credit insurer. In the longer term legislation should be put in place for privatizing this function again and creating competition between a group of balance principle issuers of tapable and highly standardized mortgage debt securities.

The first steps required to get there have already been taken. The largest mortgage program in the U.S.A., Ginnie Mae I's, is made up of super standardized mortgage loans. Twenty years ago, Freddie Mac Cash Series Passthroughs were tap issued every day, making very large and liquid pools every month. Mexico has successfully implemented the PoB and optional redemption feature through a software licensing agreement with VP (the Danish central securities depository). All that is missing is the will to put these features together. The important parts of this proposal have been done already.

The long run vision is a U.S. mortgage market, where specialized private MCI's are required by law to live up to the principle of principle and are therefore only allowed to carry credit risk. They will do so in exchange for lower capital requirements. Where homeowners - with their bank as the facilitator - issue highly liquid standardized callable bonds directly in the market through the MCIs at below par tap issues. Where these bonds can be redeemed by the homeowners through purchase in the open market. This is a vision of a system where the credit risk is concentrated in a transparent way in specialized financial institutions with no other interest than managing it efficiently.

5. Conclusions

This analysis suggests that the choice of legal vehicle, be it covered bond or true sale securitization, is irrelevant. The important question is how to ensure that credit risk is born by agents with the proper long term incentives to manage it.

We have offered one specific proposal, the Danish RO/SDRO model offers a near optimal combination of standardization and transparency. It reduces the negative externality of existing “portfolio” securitization and covered bond structures, which create incentives for homeowners to default on their contractual obligations. Through the choice of PoB, financial systems can reduce the adverse consequences of a crisis with only efficient financial supervision required. This will allow for the credit availability to be socialized, while credit risk being privatized.

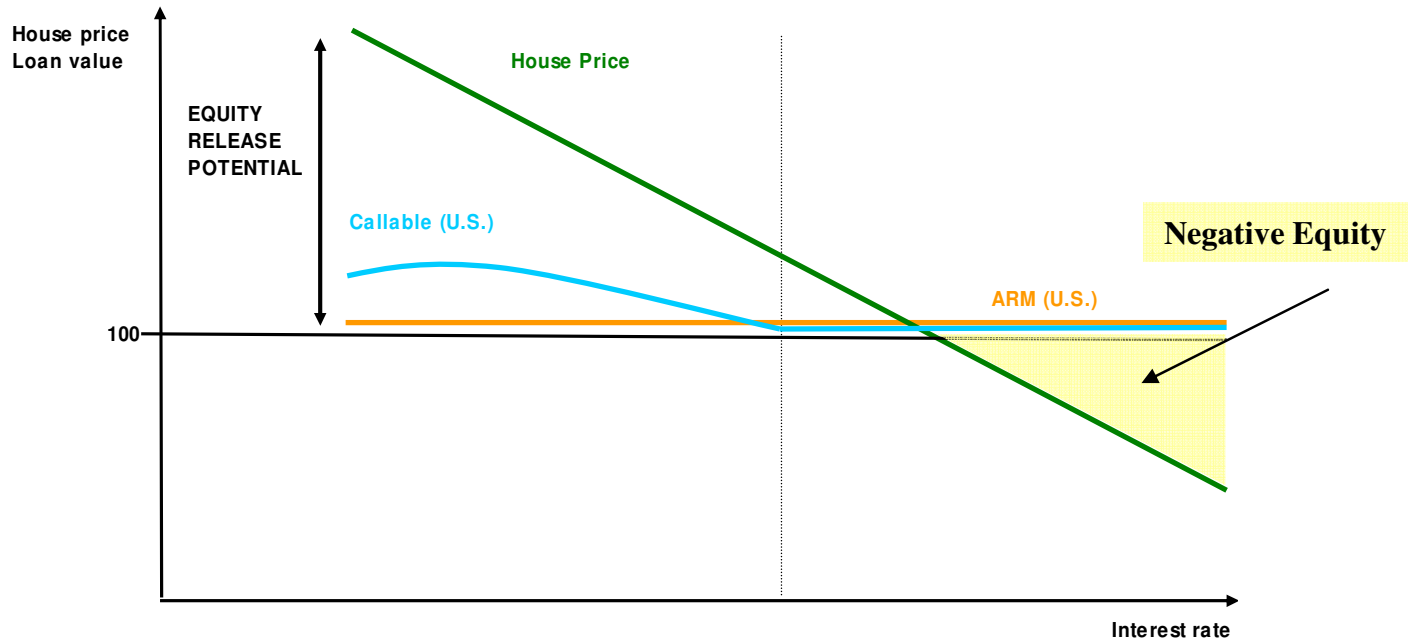
With the GSEs now in conservatorship there is a once in a life time opportunity for the U.S. to lay the foundation for a transparent system with a better division of labor between institutions. I hope that academics, policymakers and practitioners will take up this challenge.

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Exhibit 1: Price/Yield Graph of Various Mortgage Risk Transfer Structures

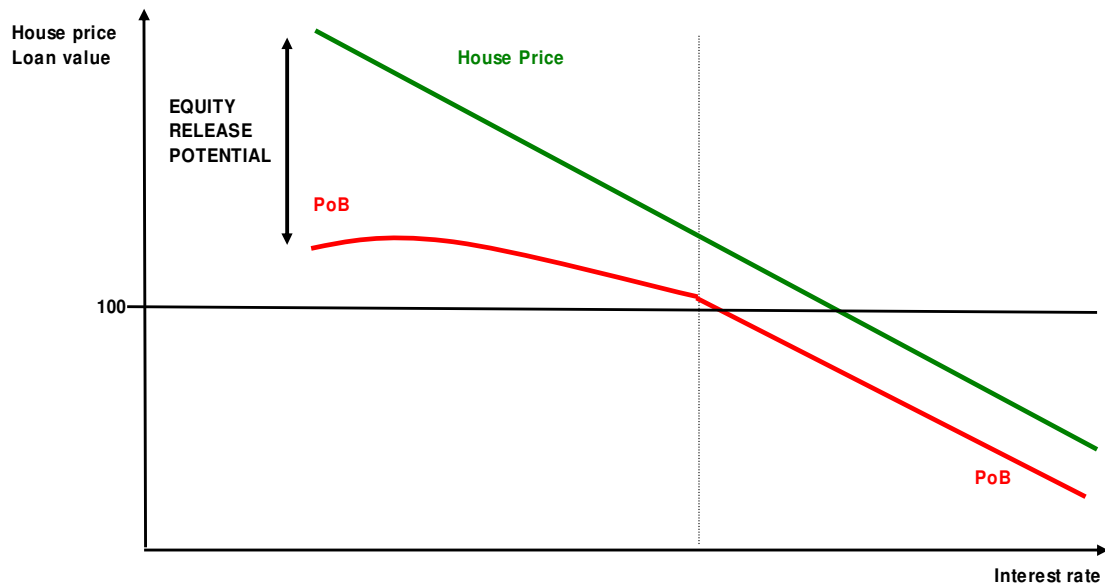
U.S. Mortgage Structures Can Create Negative Equity



- **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

Exhibit 1 continued on next page

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

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

Exhibit 2: Hypothetical Market Value of Equity Analysis

The Danish System Reduces Risk of Negative Equity

- Typical homeowner scenario:
 - Borrower pays \$100,000 for a house with an 80% LTV
 - In Case A, housing prices have fallen 10% and mortgage rates have risen
 - In Case B, housing prices have fallen 30% and mortgage rates have risen

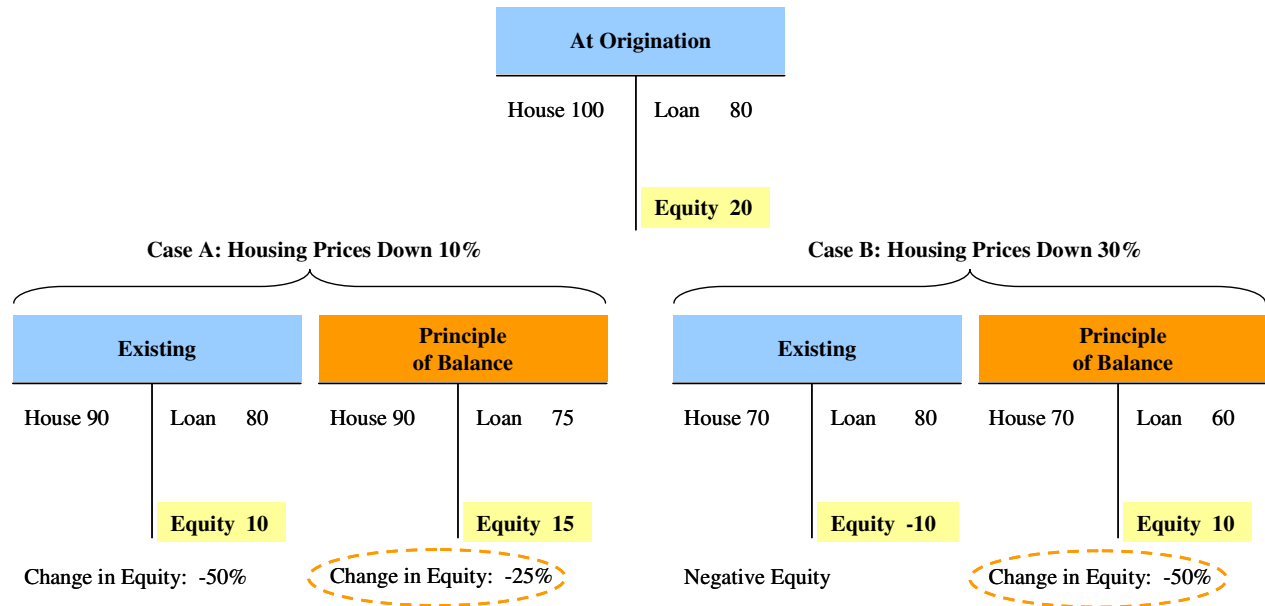


Exhibit 3: Choice of Legal Structure or Choice of Transparency

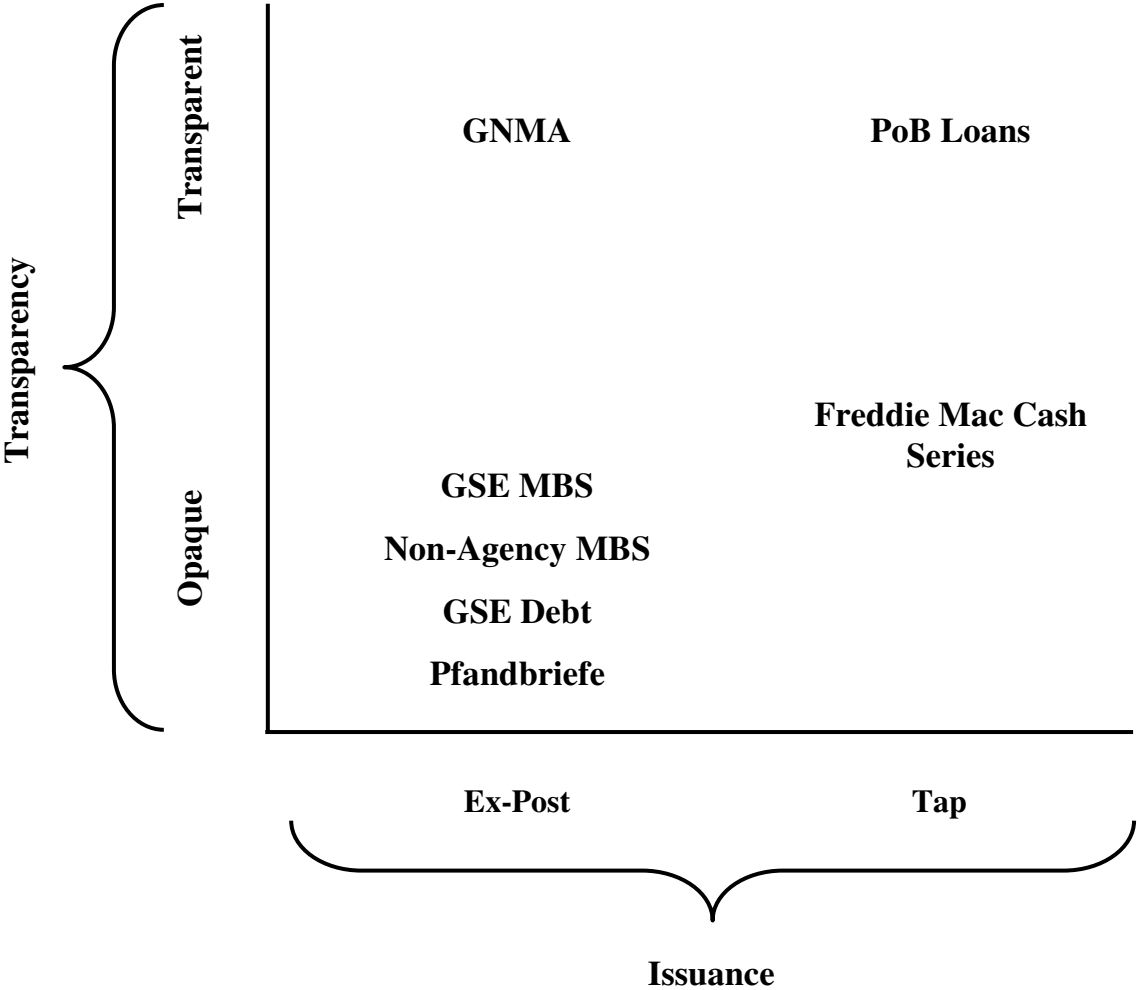


Exhibit 4: We have crossed the Event Horizon: Non-Agency Mortgages

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

Bank’s Perspective (HFI)		Homeowner’s Perspective	
Loans 100	Deposits 92	House 80	Loan 80
	Equity 8		Equity 0
No Change in Equity		Change in Equity: -100%	

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

Exhibit 5: Credit Default Spreads on Large US Banks

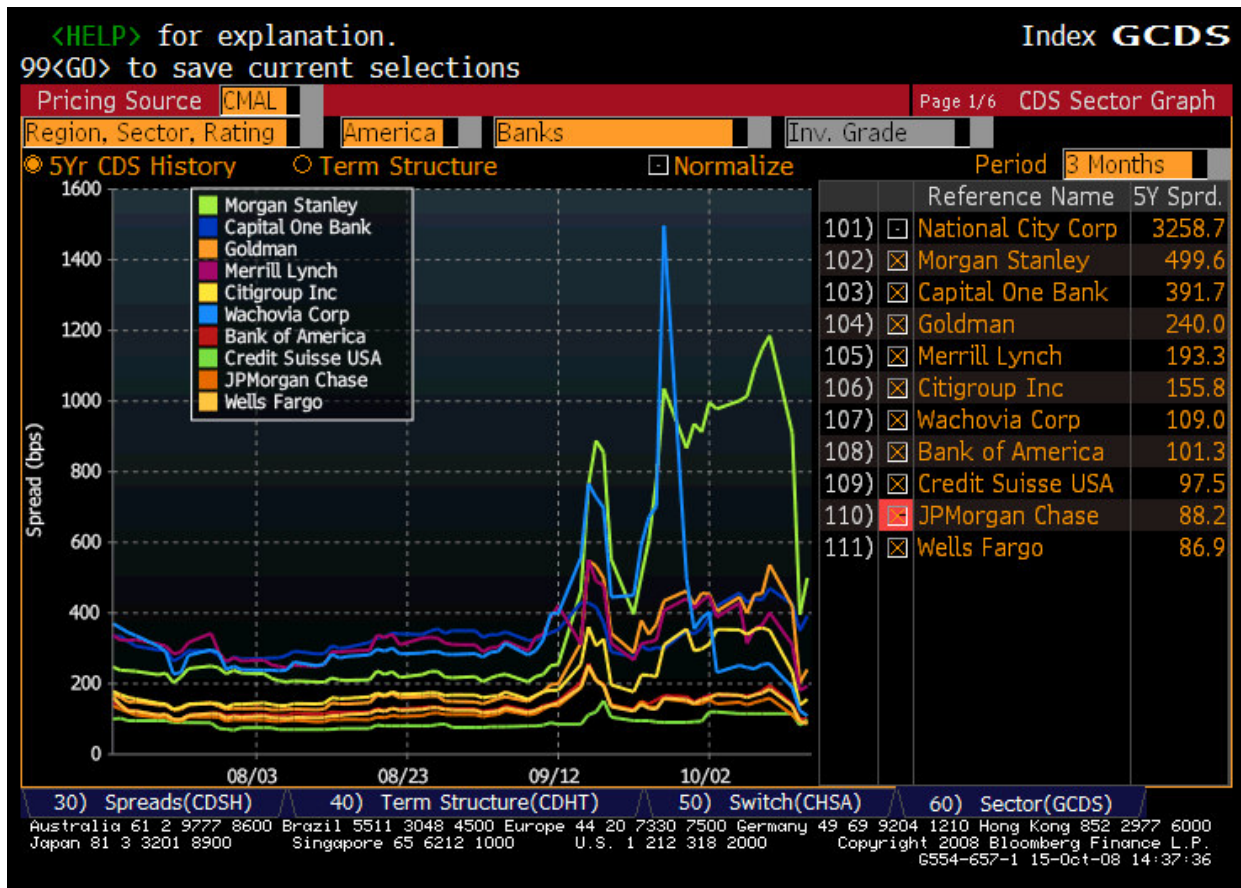


Exhibit 6: Housing Bubbles and Foreclosure Rates: Denmark vs. USA

