

## **Background to Jens Thomsen speech on 20/4 in Washington**

### **Denmark's mortgage credit system and macroeconomic policy**

#### **Opening Remarks**

Thank you for your interest in Denmark's mortgage credit system, and for the opportunity to talk about the interplay between that system and the central bank's objectives of macroeconomic and financial efficiency and stability.

What follows will include a historical perspective on how the Danish mortgage credit system and the macroeconomic framework have evolved over time. Given the time available, technical detail will be kept to the minimum necessary to highlight the benefits of the system<sup>1</sup>.

One fundamental challenge for mortgage credit is that borrowers and lenders of long term capital do not have a mutual coincidence of matching risk preferences in supply and demand. Borrowers may want to be able to change the borrowed amount, e.g. when they move house, and want to take advantage of declines in interest rates. Providers of long-term capital want a secure, liquid financial instrument with a transparent risk profile.

Different countries have solved this fundamental problem differently. In some countries, financial intermediaries have taken on significant interest rate risk by lending long and funding short, resulting in lack of transparency and sometimes in financial instability. Other countries have opted for variable-rate mortgage systems to retain flexibility for both borrowers and lenders, but increasing the sensitivity of households to changes in short-term interest rates.

#### **Basic structure of mortgage credit in Denmark**

In Denmark and in the US – but virtually nowhere else – market-based mortgage systems have provided households with access to long-term fixed-rate mortgage loans, with the option to make early repayments without penalty.

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<sup>1</sup> For more technical detail, see Allen Frankel et.al. "The Danish mortgage market", BIS Quarterly Review, March 2005; Lars Jul Hansen and Jesper U Thuesen "Trends in Mortgage-Credit Financing: the Market and its Players" and Lars Risbjerg "Trends in Mortgage-Credit Financing: Household Consumption", both in Danmarks Nationalbank Monetary Review, 1st Quarter 2006.

There is a subtle but important difference between the prepayment optionality in our two countries: Borrowers in both countries can repay their mortgage loans without penalty at face value. But Danish borrowers also have a so-called "delivery option" to repay their loan at market value, by buying the bonds in the market and delivering them to the mortgage credit institute.

Danish borrowers make active use of their penalty-free prepayment and delivery options, as illustrated by the rapid decline in the outstanding amounts of the 6 per cent 30-year mortgage bonds issued in the mid-1990s.

In Denmark, mortgage credit loans are offered by mortgage credit institutes, who extend the loans at wholesale market rates, subject to collateral, but with no price-discrimination between borrowers on credit risk grounds.

The mortgage credit institutes are subject to a strict "balance" or "matching" principle for matching the cash-flow characteristics of their assets and liabilities. For their traditional annuity mortgage loans, the mortgage credit institute matches the interest rate risk and prepayment risk by issuing callable Mortgage Bonds, which pass both these risks on to the bond investors. There have been attempts at issuing non-callable mortgage bonds, but there was little borrower interest in long-term loans which did not under any circumstance allow early repayment<sup>2</sup>. The mortgage credit institutes similarly fund their other types of lending with instruments which perfectly hedge virtually all the market risk. And the mortgage credit institutes are left holding only the credit risk of their borrowers.

Several factors mitigate the credit risk exposure. Mortgage credit institutes stand first in the line of creditors, effectively giving them super-senior creditor status. Loan-to-value (LTV) ratios are capped at 80 per cent for full-time dwellings and 60 per cent for summer houses and commercial property, providing a wide collateral margin. There are swift procedures for repossession and auction of property collateral. And Danish law provides much less scope for debt relief under personal bankruptcy, and gives creditors – and especially senior mortgage creditors, greater rights and longer time to chase delinquent borrowers for residual debt.

The previously mentioned "delivery option" also reduces credit risk, by increasing the financial options available to borrowers (especially if the bond trades below par) and reducing the incentive to default. The impact of the delivery option on the overall the risk and risk premium for bond investors will depend on the market value of the bond relative to par.

In consequence, mortgage credit institutes have experienced very low levels of credit losses, and have been able to accumulate significant excess capital buffers against future adversity. The higher level of write-downs in the early

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<sup>2</sup> Variable rate loans are funded by non-callable floating-rate notes.

1990s (which was still low by international standards) reflected largely two factors: (1) the use of more forward-looking provisions and (2) losses on exposure to international real estate markets, where the risks were perhaps less well understood, e.g. non-recourse mortgage lending to commercial real estate projects in London's Docklands.

So far (touch wood!) there has never been an incidence of default on a Danish mortgage bond. This more than 200 year long historical track record, and the resilient structure of the system that I have just sketched out, underpin the top-notch credit ratings of Danish mortgage bonds, and their reputation among the safest covered bond markets in Europe.

The new Basel II capital adequacy rules will give banks a further incentive to hold covered bonds, although some uncertainties remain around the implementation of the new EU Covered bonds directive, including the precise treatment of Danish mortgage bonds.

### **Historical Perspective**

The origins of the Danish mortgage credit system can be traced back to 1797, when the first Danish mortgage credit institute was established to help finance the reconstruction of Copenhagen after the great fire of 1795.

The credit union law of 1850 (based on the freedom of association enshrined in Denmark's constitution of 1849) allowed the establishment of credit unions with mutual liability by members. The credit unions had quite conservative loan-to-value (LTV) limits – typically 60 per cent – and borrower demand for additional financing led to the establishment of second mortgage institutions, which provided second mortgages up to 75 per cent LTV. In 1959, several third mortgage institutions were set up, lending third mortgages up to 95 per cent LTV. The process up to this point could be seen as a prolonged period of financial liberalisation and innovation.

The mortgage credit reform of 1970 tightened up the rules of the game. Third-tier (and later second-tier) mortgages were eliminated, LTV and maturity limits were reduced, the scope of mortgage collateral was narrowed to effectively disallow mortgage equity withdrawal, and the number of mortgage credit institutes was reduced through forced mergers.

The re-regulation in the 1970 mortgage credit reform should be seen against an international macroeconomic context of Breton Woods fixed exchange rates and balance-of-payments crises. The reform arguably marked the beginning of a period, where the parameters of the mortgage credit system were used as macroeconomic policy instruments.

### **The "Potato diet"**

Perhaps the best example of the use of mortgage credit parameters as a tool for macroeconomic policy was the so-called "Potato diet" October 1986

economic austerity package. [Two reasons for this nickname: (1) the culinary association of potatoes with austerity and (2) the timing of the package in the schools' autumn or potato-harvest holiday.] The maturity of mortgage loans were capped at 20 years for existing properties (30 years for new building), and the amortisation profile was changed to increase the amortisation burden in the early years of the mortgage.

This was achieved with so-called "mix loans", with 40 per cent repayable by linear amortisation and only 60 per cent repayable by standard annuity amortisation. The effects of the potato diet, combined with a cap on tax deductibility on interest payments, were marked: House building activity, consumption and house prices all fell – house prices by 30 per cent – while household savings increased and the balance of payments deficit narrowed.

The restrictive measures of the "potato diet" were relaxed over time, but only finally removed in 1993, when mortgage equity withdrawal was again permitted up to 80 per cent LTV. Since then, mortgage credit parameters have not really been used as macroeconomic policy tools, partly because the internationalisation of the financial sector make any attempts at quantitative controls easy to circumvent through cross-border lending. Any non-circumventable control today would have to be based on the so-called "Tinglysning" mortgage and land registry system, which is not suited for this purpose.

### **Denmark's mortgage credit system today**

Since the liberalisation of mortgage credit in 1993, mortgage lending has expanded and the mortgage credit institutes have launched a number of innovative products. Households today face a wide choice of possible mortgages.

They can choose the traditional annuity-amortisation, which smoothes the profile of monthly payments over the term of the mortgage. Or they can choose deferred-amortisation mortgages, with interest-only payments for the first ten years before amortisation starts (or the mortgage gets refinanced).

They can choose a traditional fixed-rate mortgage, a floating-rate mortgage, or even a floating rate mortgage with an interest rate cap of, say, 5 per cent.

The new product innovations have grown in popularity in recent years. This reflects in part the steep yield curve, the declining level of nominal interest rates and the lower levels of volatility in interest rates. The relative popularity of different interest rate structures have varied somewhat from month to month, depending on relative debt service costs, expectations of future changes to short and long-term interest rates and the degree of uncertainty surrounding those expectations.

This wide range of consumer choices, which can have potentially significant financial consequences down the line, increases the importance of professional financial advice. Panel data on mortgage borrowers (analysed in Nationalbanken's "Financial stability 2005" report) show that lower-income households predominantly choose fixed-rate mortgages, while higher-income households have a higher appetite for the potential volatility in the payment stream associated with variable-rate mortgages. The seemingly reasonable choice by consumers, both in response to their own economic circumstances and in response to prevailing and expected market interest rates, support the industry's claim that they provide professional advice.

### **Mortgage credit and the present macroeconomic policy regime**

Denmark has since 1983 maintained a fixed-exchange-rate policy, initially shadowing the Deutschmark and later a matrix of other EU currencies under the old ERM exchange rate mechanism, and since 1999 against the euro, under ERM II. Danish borrowers have equal access to mortgage credit loans denominated in euro and in Danish kroner.

The credible fixed exchange rate regime fits well with the traditional fixed-rate mortgage loan and the associated fixed-rate callable mortgage bond, both from the perspective of borrowers, investors and policy makers.

From the borrowers' (and domestic investors') perspective, exchange rate stability removes one potential source of shocks to inflation and real interest rates. This is especially important for a small open economy with a large share of external trade in GDP, such as Denmark.

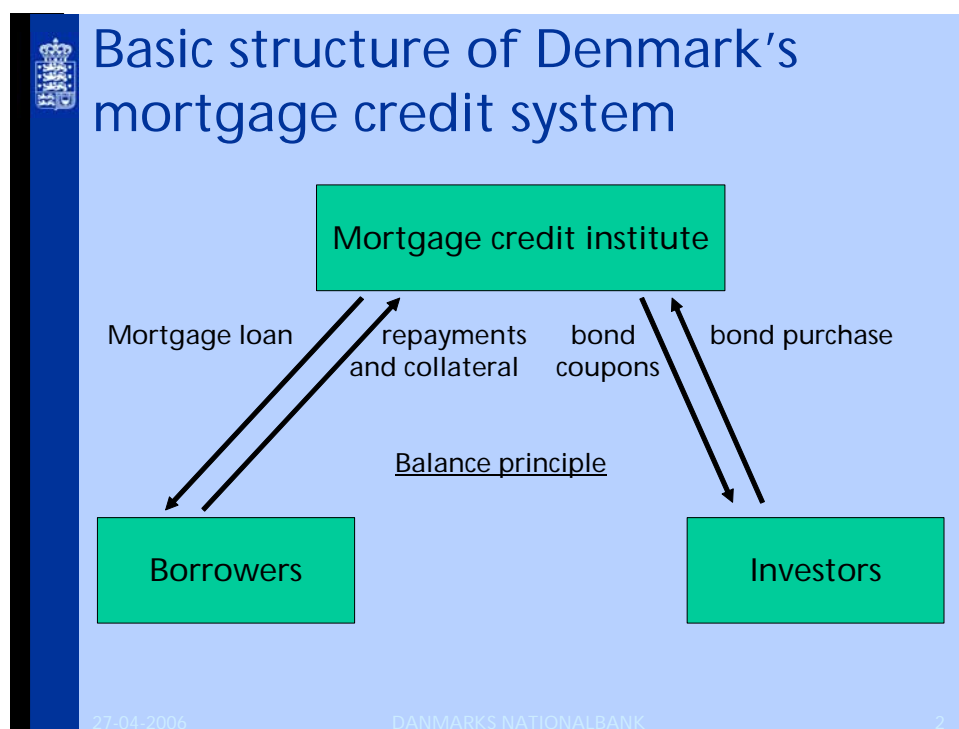
From the international investors' perspective, the credible fixed exchange rate with the euro provides a bigger universe of regular fixed-income instruments with which to delta-hedge their exposure to callable Danish mortgage bonds. This helps provide liquidity and price discovery to the Danish mortgage bond market, allowing less than a million Danish borrowers to become Europe's second largest covered bond market!

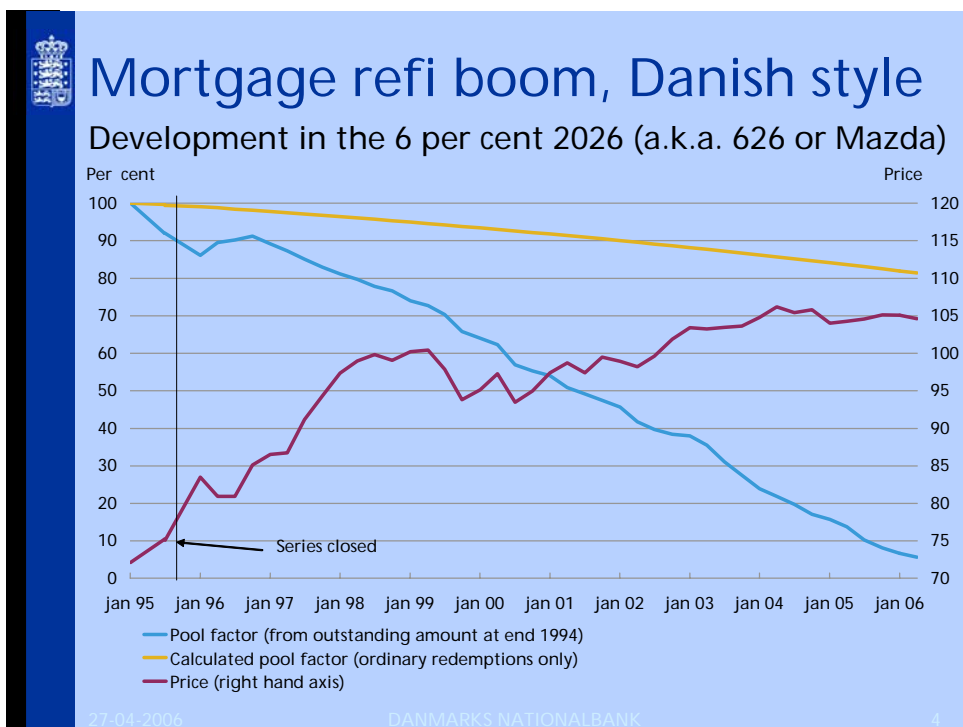
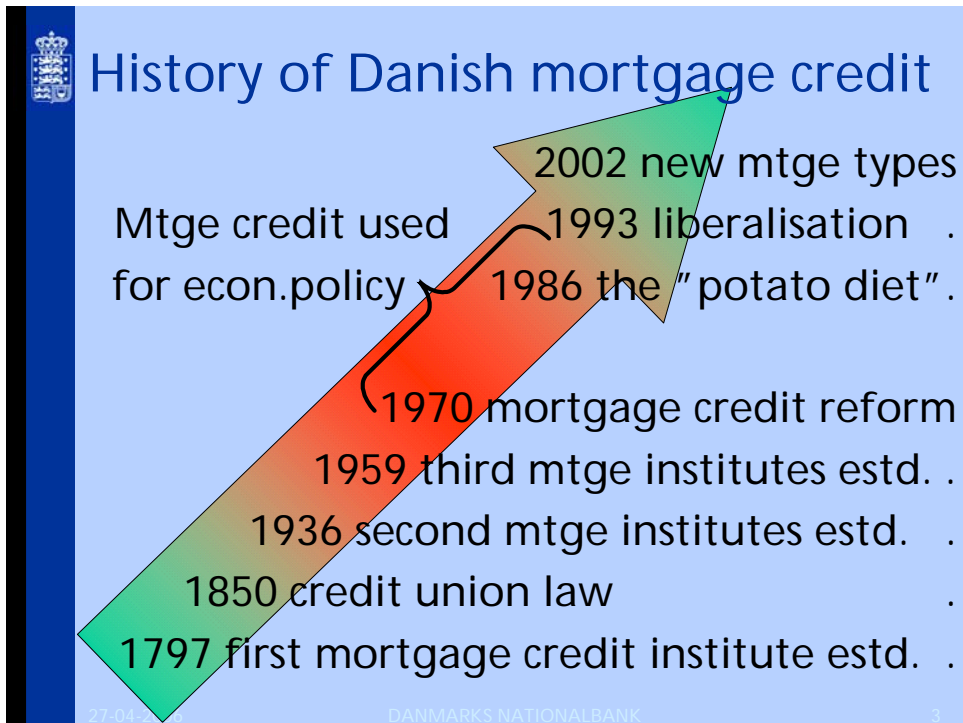
From a policy perspective, the prevalence of long-term fixed-rate mortgages reduce the economic sensitivity of the household sector to changes in short-term interest rates, whether those changes emanate from the ECB in Frankfurt, or whether krone-specific interest rates have to be raised to support the exchange rate. So the traditional long-term fixed-rate mortgage system and the fixed exchange-rate policy are mutually supportive.

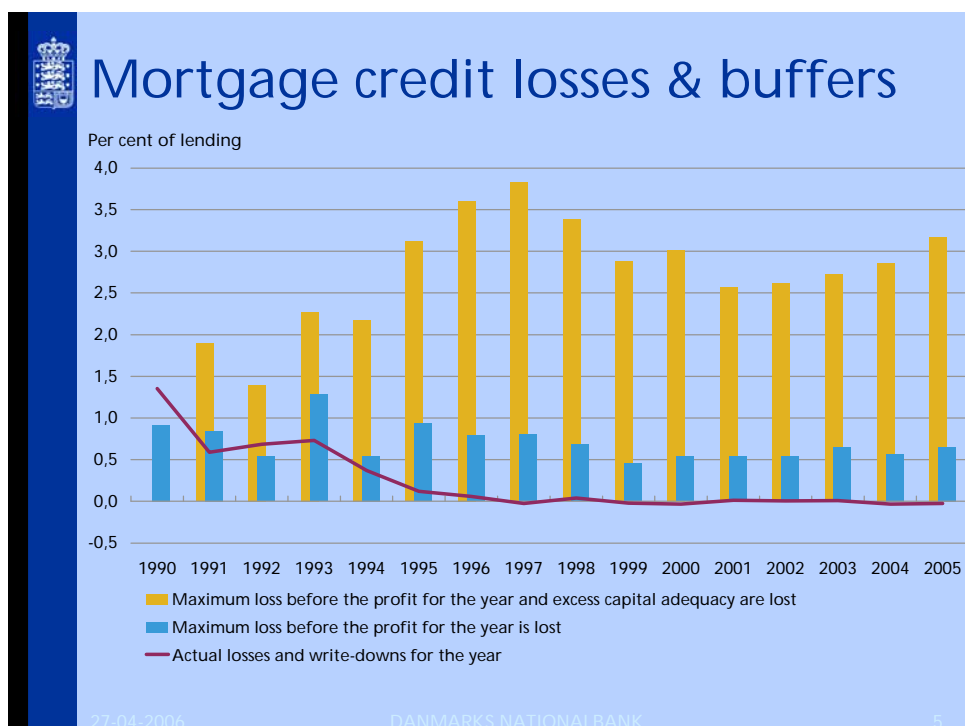
Floating-rate mortgages have been attractive over recent years, especially in periods of upward-sloping yield curves, when floating-rate mortgages have had lower initial interest expenses. And in a stable macro-economic environment with low and stable inflation and with predictable and credible monetary policy, the likely changes to short-term interest rates should be limited.

The availability of long-term fixed-rate mortgages with a penalty-free early repayment option allows households to have their cake and eat it. The fixed long-term interest rate insulates them from the volatility in short-term interest rates and protects them from the risk of sharp increases in debt-service costs resulting from monetary shocks. The penalty-free early repayment and delivery options allow them to refinance in the event of lower nominal interest rates, and protects them from the increases in real interest rates that resulted from declining wage- and price-inflation. This is a valuable option, for which a premium has been demanded by investors and willingly paid by households. Mortgage bonds in both Denmark and the US have historically traded at unadjusted spreads of 100-140 basis points above similar-maturity sovereign bonds, reflecting partly these embedded options.

The market-based mortgage credit systems in both our countries have delivered, and continue to deliver, a tremendously valuable service to ordinary households: housing finance with a flexible choice of financing structures and competitive rates of interest determined in capital markets.







## Mortgage products - overview

- **Annuity loans**
  - Loans are callable at every payment date
  - Funded with callable bonds having
    - Same or longer maturity, (almost) similar coupon and similar cash flow
- **Adjustable rate mortgage loans (ARM loans)**
  - Fixed rate/payment periods between 1 and 10 years
  - Funded with a basket of non-callable bullet bonds
    - Maturity of issued bonds depends on length of fixed rate/payment period
- **Guarantee loans (capped floating rate)**
  - Either as floating-to-fixed (permanent change to fixed rate when cap is hit) or as capped-floating (rate is maximised at the cap rate)
    - Funded with floating rate bonds with embedded caps
- **Interest-only option available as a "multi-ride-ticket" for all types of loans**
  - option on paying interest-only for up to 10 years (deferred amortisation)
- **All mortgage loans can be redeemed by surrendering the issued mortgage bonds – without penalty**

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