Inattention and Inertia in the Mortgage Market, Denmark

by

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What makes this paper interesting and worth reading:

Thrilling data: every outstanding home mortgage, plus an astounding array of detail

Household composition, years of education, age, income, financial wealth, financial sophistication, family financial sophistication, immigrants, kids, arrival of babies, days in hospital, region

Novel Approach – measure both

inertia

inattention

inspired by a long tradition in analysis of US prepayments

Complexity of Danish mortgage lending

Bottom line findings

60 percent of FRM households could have gained from refi by 2012

30 percent did refi, rest did not

Sophisticated logit mixed-effects estimation

Most savvy in Denmark:

younger
higher income
higher education, *but NOT* more financially literate or fin lit family

Least savvy

Older, poorer, less educated, immigrants

Added value of the mixed-effects model:

More financial wealth increases inertia
Higher relative housing wealth increases attention

Nearly every variable is "significant" with such voluminous data.

Related to a long history of prepayment analysis in the US

Some borrowers ***never*** refi no matter where rates go -- WOODHEADS

Some pay attention, but attention degrades – LEVELHEADS

Empirical models of prepayment have always used a mix like this

Recent -- Focus on refinancing:

Pope, Keys, Keys – REFI as of Dec, 2010, 20% of eligible borrowers should still refi, survey of those who did not refi

Inattention, did not open mail, opened but forgot, oh, yeah

Distrust!

Agarwal, Rosen, Yao – REFI – Documents imperfect choices, but shows borrowers do better with

higher FICO

higher income

bigger mortgage/income (attention)

Focus on how borrowers do in terms of deals:

Woodward & Hall -- REFI & purchase mix, FHA, conv, jumbo

Higher education saves $1,000 - $1,500 (tract, not individual)
Simpler (no cash) deals save $1,000 - $1,500
Younger matters a little -- age costs $150 per decade

Ambrose & Conklin -- all REFI , all subprime, New Century data

High education saves > $1,000 (tract level)
Simpler (no cash) deals save > $1,500
Younger -- $150 per decade

Findings consistent across time and borrower types

1996-2001 -- mix of FHA, conv, jumbo -- refi and purchase

2001 – all FHA, all purchase

2002-2008 –subprime & Alt-A, mix of purchase and refi

Loan Complexity

United States

Rate

Upfront fees to be paid in cash (different from down payment)

Confusing, misleading disclosures –

big assortment of irrelevant cash fees,

APR -- all-in rate -- wrong for many borrowers

Denmark

Rate

Balance adjustment to coupon

No upfront cash fees

Interpret balance adjustment as “points”

US: Wholesale terms: Recent Rate Sheet for Fannie/Freddie 30-year fixed

rate	Value	"Points" = 100 – value	
3.750	98.125	1.875	
3.875	99.000	1.000	borrower pays points (really!)
4.000	99.750	0.250	
4.125	100.375	-0.375	
4.250	100.750	-0.750	
4.375	101.250	-1.250	
4.500	102.125	-2.125	
4.625	102.750	-2.750	borrower/ agent receives points
4.750	103.375	-3.375	
4.875	103.875	-3.875	
5.000	104.125	-4.125	
5.125	104.500	-4.500	
5.250	104.750	-4.750	

No "par" loan on this rate sheet.

"points" are paid in cash by the borrower , negative points usually go to agent

Other cash fees likely too

How this rate sheet would look in Denmark – **Points with a vengeance!**

"market rate", which we would call a "par" loan in the US, would be about 4.08%

rate	Value	points = 100 - value
3.750		
3.875		
4.000	99.750	0.250
4.125		
4.250		
4.375		
4.500		
4.625		
4.750		
4.875		
5.000	104.125	-4.125
5.125		
5.250		

"points" not paid in cash, but go into the original balance

"points" are always positive, and often big

… before we do the details… a bit about Denmark

Denmark is a really nice place

well educated (top 10 OECD), prosperous
generous social system, < 6 % poverty
high labor force participation
high civil reverence
10% recent immigrants from Middle East
high scores on happiness surveys
Small! 6 million people, < 3 million households
Homeownership about 65 %

Mortgages

Max LTV: 80 %
low sales effort in lending
average LTV outstanding – 55 %
Generous refi policy
    Even if house is underwater
    Even if credit has deteriorated

Why make such fat interest ticks?

Create similar bonds to fund mortgages

Encourage liquidity in secondary market

How it works from the borrower perspective…

Borrower needs $100,000

Market interest rate = 4.25%

Next lower coupon (tick) = 4%

Compute payment on $100,000 @ 4.25 percent

Calculate value of payments @ 4% == $110,000

Loan terms:

Rate = 4%

Principal balance = $110,000

Proceeds to borrower = $100,000, “points” = $10,000

…. now suppose rates fall to 3.25%

Borrower must refinance $110,000

(lower of notional or market)

Market rate = 3.25%

Calculate payment on $110,000 @ 3.25 %

Calculate value of this payment at 3% == $125,000

Terms on new loan:

Rate = 3%

Principal = $125,000

Proceeds = 0, “points” = $15,000, added to balance

Does principal increase scare borrowers?

Bankers and Danish economists say no!

… after all, payments go down.

…well….

What if the borrower needs to move, sell, payoff? If rates fall more, she could owe the entire $125,000.

Results found here are sensible, not a surprise

Explanatory power same as US data (low)

But is there more to the story?

Are borrowers more likely to refi *(less scary)*

1) if market rate is close to a coupon, so "points" are smaller? (ROUNDHEADS)
2) if rates are falling?

Only 2 years of data, but picture suggests when rates are falling, refis roll in, when rates rise, refis halt, even with gains left to many.

The requirement to take out both purchase loans and refi loans at a round tick (3%, 4%, 5%...) creates a problem for borrowers that is substantial and difficult

– how to think about the mandatory "points" added to the principal,

- how points influence enter into a refi or sales decision, and
- whether the borrower should wait for a time when market interest rates are closer to the tick.

The notional principal is not a fictional, irrelevant number.