



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Credit conditions in a boom and bust property market

Yvonne McCarthy & Kieran McQuinn
Central Bank of Ireland

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Presentation overview

- ▶ Introduction to granular loan level information
 - ▶ Now collected within the central bank (CB) over the past 3 years,
- ▶ Outline both from a research and policy perspective,
 - ▶ What it is currently used for and,
 - ▶ What it can be used for in the future.
- ▶ Tempted to suggest
 - ▶ If you want better bank data,
 - ▶ You need to experience a financial crisis!
- ▶ Previously, in seeking to gauge the “health” of banks’ balance sheets
 - ▶ CB outlined macroeconomic scenarios,
 - ▶ Banks themselves examined the implications
- ▶ Now that we have your data ...



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Specific application

- ▶ Credit and house prices
 - ▶ Notable changes in the funding of financial institutions,
 - ▶ How this has been examined
- ▶ Explicitly model changes in credit conditions
 - ▶ Allowing for household demand side considerations,
 - ▶ Estimate an index of mortgage credit availability (MMCI),
 - ▶ Capture changes in the supply function of credit.
- ▶ Given the role credit conditions can play
 - ▶ Outline some macroprudential possibilities.



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Changing nature of credit institutions funding

- ▶ Arguably the most profound impact on credit provision,
 - ▶ Domestically and internationally.
- ▶ Deeper and more integrated bond markets (within the Eurozone)
 - ▶ Abolition of exchange rate risk,
 - ▶ Substantial increase in market based funding - debt securities.
- ▶ Irish institutions particularly availed of this funding
 - ▶ Celtic tiger growth in the real economy since the mid-1990s,
 - ▶ Voracious demand for credit from Irish financial institutions.



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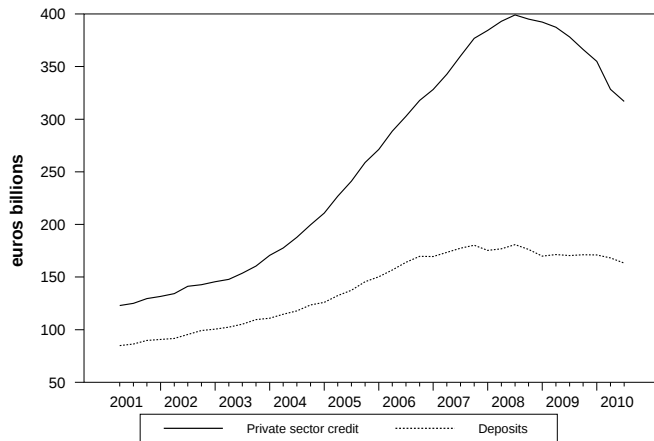


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Figure 1: Private sector credit and deposit levels in the Irish financial system



Summary Irish Residential Mortgage Market Statistics: 1990 - 2012

Variable	Unit	1990	1995	2000	2005	2007	2012
Outstanding Level of Residential Lending	€ million	6,563	11,938	32,546	94,259	123,002	84,973
Total Value of Mortgages Issued	€ million	1,492	2,666	9,004	27,753	24,064	3,412
Average Mortgage Issued	€	42,856	54,094	111,355	231,206	271,154	184,113
Total Number of Mortgages Issued		34,812	49,288	80,856	120,037	88,747	18,532
House Prices	€	65,541	77,994	169,191	276,221	322,634	227,376
Housing Supply		19,539	30,575	49,812	80,957	78,027	8,428



The Loan-Level Data

- ▶ Details of approximately 690,000 loans
- ▶ Can distinguish between loan & property level
- ▶ Data is a **snapshot in time**, 2011, rather than a time series
- ▶ At least 50 separate data fields, which can be organised along certain themes
- ▶ Cleaning was necessary (missing observations etc)
- ▶ See Kennedy and McIndoe Calder (2011) for more detail



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What we do

- ▶ For the four FMP Irish financial institutions
 - ▶ Over the period 2000 - 2011.
- ▶ Identify the main credit channels
 - ▶ For Irish house price movements.
- ▶ Using both the income survey and the loan level data
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Specific channels of credit

- ▶ Everyone knows about loan-to-value ratios
- ▶ Another significant channel - take a mortgage annuity B_t

$$B_t = \kappa Y_t \left(\frac{1 - (1 + R_t)^{-\tau}}{R_t} \right)$$

- ▶ Y_t is disposable income, R_t is mortgage interest rate and τ is the mortgage duration loan level.
- ▶ Solve for “ κ ”

$$\kappa = \frac{B_t}{Y_t \left(\frac{1 - (1 + R_t)^{-\tau}}{R_t} \right)}$$

- ▶ The proportion of income assumed to go on the mortgage repayment
 - ▶ We refer to this as the *income fraction*.

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Similar to the loan to income ratio but

- ▶ Concept is akin to the more standard loan-to-income (LTI) ratio
- ▶ However, we think it has an added richness as

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- ▶ Unlike the LTI,
 - ▶ It allows for changes in interest rates and the duration of the mortgage
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Figure 2a: Easing of credit conditions (income fraction): 2000 - 2011

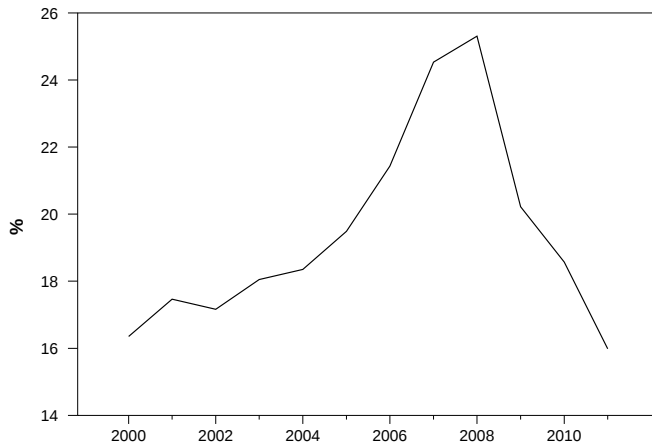




Figure 2b: Easing of credit conditions (loan to value ratio): 2000 - 2011

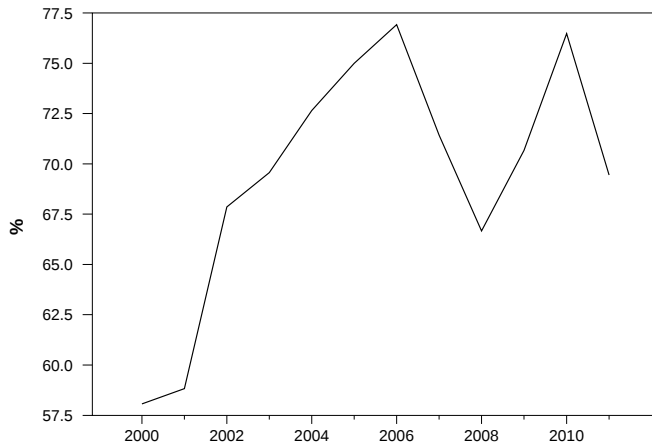




Figure 2c: Easing of credit conditions (mortgage term): 2000 - 2011

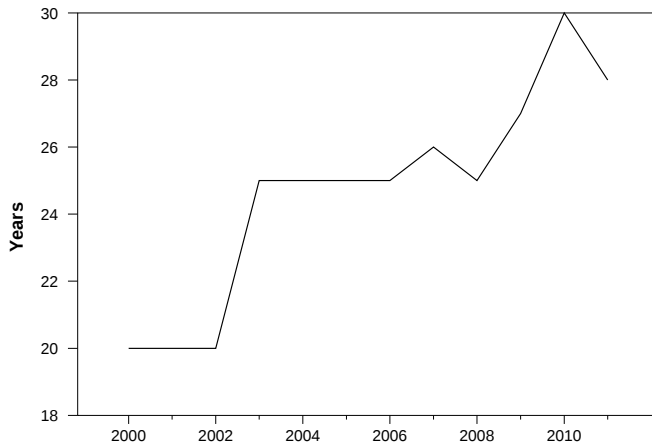




Figure 3: Income fractions by income quintile across the 4 covered institutions

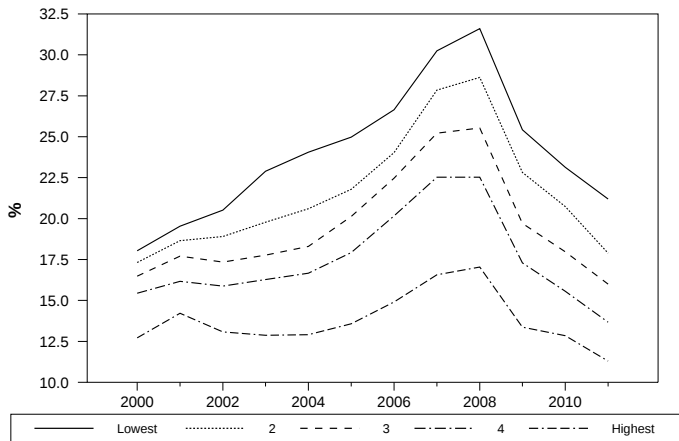




Figure 4: Easing of income fraction by source of loan

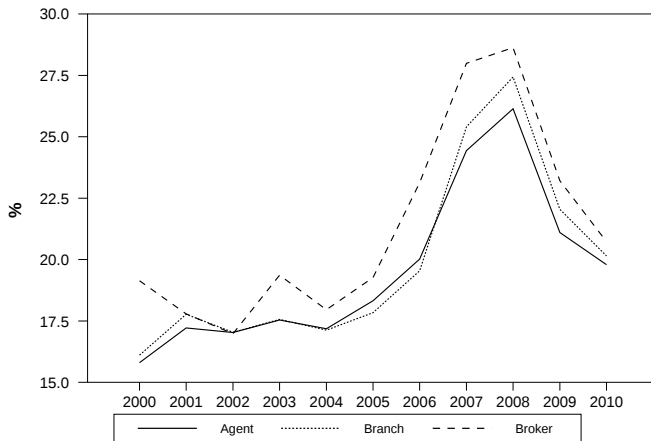
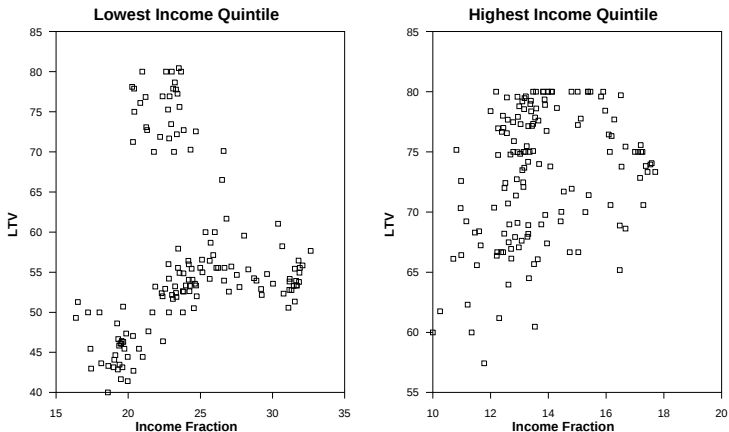




Figure 5: Income fractions and LTV by income quintile





What caused the changes in credit channels?

- ▶ Allowing for demand-side factors
- ▶ Were there changes in credit conditions over the period?
- ▶ Similar to the CCI of Fernandez-Corugedo and Muellbauer
- ▶ We use time-dummies to proxy for changes in standards



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Modeling credit conditions

- ▶ Estimate a regression model
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- ▶ We allow for household level income and mortgage interest rates
- ▶ Along with, information on:
 - ▶ Age and gender of the household,
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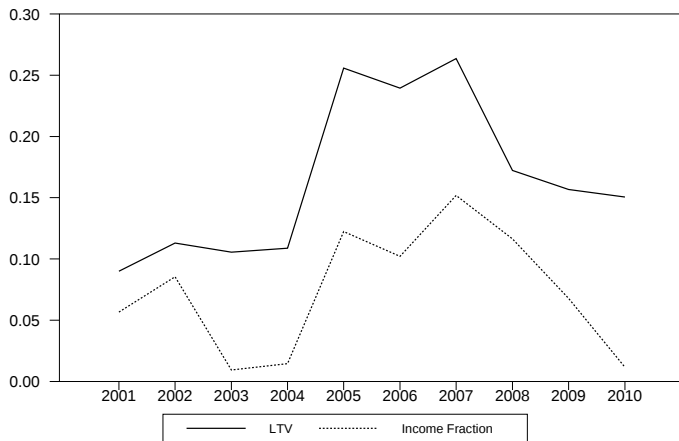
Credit channel model estimates

Dependent Variable	κ		l_{tv}	
	Coefficient	T-Stat	Coefficient	T-Stat
Constant	-2.08	-11.20	1.22	5.78
$(p/y)_i$	0.45	17.41	-0.54	-18.71
r_i	1.00	0.39	-6.99	-2.44
Controls:				
<i>num</i>	-0.05	-1.92	-0.04	-1.59
<i>female</i>	0.01	0.60	0.04	1.37
<i>public</i>	-0.02	-0.84	-0.04	-1.30
<i>pdh</i>	0.04	0.97	0.04	0.88
<i>self</i>	-0.01	-0.39	-0.03	-0.74
<i>saving</i>	-0.02	-1.02	-0.02	-0.82
<i>ed – medium</i>	-0.03	-0.87	-0.02	-0.37
<i>ed – high</i>	0.05	1.27	0.10	2.14
<i>addition</i>	-0.09	-2.37	-0.08	-1.82
<i>age</i>	-0.01	-6.05	-0.02	-12.76
Year dummies:				
2001	0.09	1.22	0.09	0.99
2002	0.08	1.01	0.12	1.35
2003	0.03	0.39	0.11	1.23
2004	-0.02	-0.19	0.06	0.60
2005	0.10	1.19	0.23	2.45
2006	0.08	1.04	0.23	2.67
2007	0.18	3.12	0.31	4.71
2008	0.12	2.05	0.17	2.68
2009	0.02	0.27	0.13	1.37
2010	-0.19	-2.13	-0.05	-0.50

N = 953



Figure 6: Irish mortgage market credit indicator (MMCI)





Macroprudential (MP) application?

- ▶ Prevent future credit-fuelled housing booms?
- ▶ Future research to look at the application of certain MP rules:

$$\kappa^* = \bar{\kappa}^{2000-2004} + \lambda_{\kappa}(p_t^f - p_t)$$

$$LTV^* = \bar{LTV}^{2000-2004} + \lambda_{LTV}(p_t^f - p_t)$$

- ▶ where:
 - ▶ λ is an adjustment rate specified by the authority and
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- ▶ Rules are **counter-cyclical** in nature



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Concluding comments

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- ▶ Increasingly central to both the
 - ▶ Regulatory and research functions of the CB.
- ▶ Can be used to address a variety of key issues
 - ▶ Provision of credit in different markets,
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