



Mortgage modifications and mortgage performance

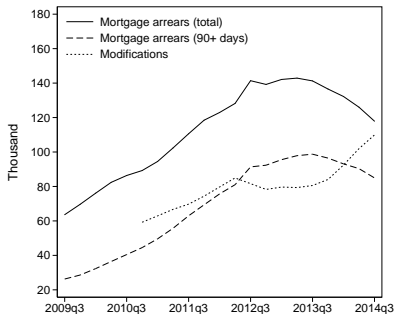
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Motivation and stylised facts

- ▶ Large number of mortgage arrears and defaults as a result of the crisis
- ▶ Pose a risk to the future of the economic recovery
- ▶ Econometric evaluation of the determinants and effects of mortgage restructures 12 months after modification
- ▶ **Modifications here:** Changes to loan terms of 18 months or more.



Source: Central Bank of Ireland Statistics (2014). Note: No data on modifications available prior to 2010q4.



Sample selection and key variables

Data and sample selection

- ▶ Standard financial Statement (SFS) and Loan Level data (LLD) from 2012m1–2013m12
- ▶ Restricted to SFS observations
- ▶ Full sample (34,303 observations)
- ▶ Restricted sample: Loans modified 2012m12 or earlier (9,963 observations)

Independent variables

- ▶ Borrower characteristics: Financial and socio-demographic variables
- ▶ Loan characteristics: LTV, LTI, arrears, maturity
- ▶ Measured at the time of SFS engagement and decision



Estimation strategy

Logit model with county, decision-date, and bank fixed effects

First stage: Likelihood of modification

- ▶ Full sample
- ▶ *Dependent variable:* Loan getting modified or not
- ▶ Variables at SFS engagement level

Second stage: Probability of full payment conditional on being modified

- ▶ Restricted sample
- ▶ *Dependent variable:* Payment status after 12 months
- ▶ Variables at the SFS decision level



Receiving a modification

Table : Likelihood of being modified

<i>Dependent variable: Being modified</i>				
	(1)	(2)	(3)	(4)
Borrower characteristics				
Leverage ratio	-0.0061*** (0.0019)	-0.0062*** (0.0019)	-0.0013 (0.0013)	-0.0066*** (0.0019)
Employed	0.1570*** (0.0343)	0.1614*** (0.0343)	0.1587*** (0.0343)	0.1583*** (0.0343)
Age	-0.0307*** (0.0025)	-0.0308*** (0.0025)	-0.0310*** (0.0025)	-0.0323*** (0.0025)
Change in marital status	-0.2140*** (0.0533)	-0.2162*** (0.0534)	-0.2148*** (0.0533)	-0.2443*** (0.0536)
FTB	-0.1126** (0.0439)	-0.1120** (0.0440)	-0.1318*** (0.0440)	-0.1151*** (0.0441)
Income	0.0294** (0.0138)	0.0298** (0.0138)	0.0421*** (0.0137)	0.0370*** (0.0136)
Expenditures	-0.2168*** (0.0251)	-0.2165*** (0.0251)	-0.2095*** (0.0251)	-0.1898*** (0.0250)
No. of HH	0.0674*** (0.0117)	0.0675*** (0.0117)	0.0651*** (0.0117)	0.0566*** (0.0117)
BTL			-0.3154*** (0.0523)	

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Receiving a modification (cont'd)

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Dependent variable: Being modified

	(1)	(2)	(3)	(4)
Loan characteristics				
LTV	0.0032*** (0.0008)	0.0032*** (0.0008)	0.0032*** (0.0008)	0.0030*** (0.0008)
LTI	-0.0462*** (0.0063)	-0.0466*** (0.0063)	-0.0509*** (0.0059)	-0.0500*** (0.0064)
Negative equity	-0.0013*** (0.0005)	-0.0013*** (0.0005)	-0.0013*** (0.0005)	-0.0013*** (0.0005)
Default at application	-0.1513** (0.0755)	-0.1437* (0.0756)	-0.1522** (0.0755)	-0.3239*** (0.0785)
No. of borrowers	0.2973*** (0.0422)	0.2965*** (0.0422)	0.2851*** (0.0423)	0.3103*** (0.0423)
Term remaining	-0.0535*** (0.0033)	-0.0534*** (0.0033)	-0.0534*** (0.0033)	-0.0543*** (0.0033)
Property purchased 2005-2008	0.1343*** (0.0403)	0.1338*** (0.0403)	0.1279*** (0.0404)	0.1231*** (0.0405)
Months in arrears		0.0009* (0.0005)		
Arrears (<90)				0.3007*** (0.0446)
Arrears (90-180)				0.4757*** (0.0525)
Arrears (181-360)				0.5286*** (0.0477)
Arrears (>360)				0.2069*** (0.0415)



Repayment results

Table : Likelihood of full payment after 12 months

<i>Dependent variable: Full payment after 12 months</i>					
	(1)	(2)	(3)	(4)	(5)
Loan characteristics					
LTV	-0.0083*** (0.0031)	-0.0080*** (0.0031)	-0.0056* (0.0032)	-0.0083*** (0.0031)	-0.0083*** (0.0031)
LTI	-0.0181 (0.0228)	-0.0211 (0.0228)	-0.0180 (0.0230)	-0.0181 (0.0228)	-0.0181 (0.0228)
Negative equity	0.0037* (0.0019)	0.0039** (0.0019)	0.0033* (0.0020)	0.0037* (0.0019)	0.0037* (0.0019)
Property purchased between 2005-2008	-0.5390*** (0.1604)	-0.4968*** (0.1611)	-0.4345*** (0.1669)	-0.5390*** (0.1604)	-0.5371*** (0.1604)
Loan age	-0.0342 (0.0232)	-0.0163 (0.0239)	-0.0054 (0.0240)	-0.0342 (0.0232)	-0.0345 (0.0232)
Default at application	-0.2400 (0.2998)	-0.3135 (0.3008)	-0.1292 (0.3098)	-0.2400 (0.2998)	-0.2242 (0.3003)
No. of borrowers	-0.0975 (0.1803)	-0.0839 (0.1811)	-0.1925 (0.1875)	-0.0975 (0.1803)	-0.0964 (0.1803)
Months in arrears		-0.0174*** (0.0043)			
Arrears (0-90)			-1.0586*** (0.1801)		
Arrears (90-180)			-1.2540*** (0.2014)		
Arrears (181-360)			-1.4801*** (0.2057)		
Arrears (>630)			-1.9509*** (0.2176)		

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Repayment results (cont'd)

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Dependent variable: Full payment after 12 months

	(1)	(2)	(3)	(4)	(5)
Borrower characteristics					
Leverage ratio	-0.0012 (0.0039)	-0.0005 (0.0039)	0.0009 (0.0040)	-0.0012 (0.0039)	-0.0012 (0.0039)
Age	-0.0019 (0.0082)	-0.0005 (0.0083)	0.0014 (0.0085)	-0.0019 (0.0082)	-0.0016 (0.0082)
Income	0.0484 (0.0579)	0.0439 (0.0577)	0.0633 (0.0583)	0.0484 (0.0579)	0.0488 (0.0580)
Expenditure	0.0159 (0.0917)	-0.0147 (0.0912)	-0.0996 (0.0916)	0.0159 (0.0917)	0.0164 (0.0918)
Change in marital status	-0.3454 (0.2503)	-0.2536 (0.2524)	-0.1951 (0.2543)	-0.3454 (0.2503)	-0.3419 (0.2503)
FTB	-0.2238 (0.1510)	-0.2203 (0.1522)	-0.2201 (0.1560)	-0.2238 (0.1510)	-0.2176 (0.1512)
Employed	-0.0727 (0.1466)	-0.0908 (0.1481)	-0.0779 (0.1511)	-0.0727 (0.1466)	-0.0656 (0.1468)
No. of HH	0.0148 (0.0434)	0.0130 (0.0435)	0.0221 (0.0438)	0.0148 (0.0434)	0.0137 (0.0435)



Characteristics of modifications

Re-running the model above adding the general characteristics of modifications

Table : Selected characteristics of modifications

<i>Dependent variable: Full payment after 12 months</i>				
	(1)	(2)	(3)	(4)
Δ installment (absolute)	-0.0006*** (0.0002)			
Δ installment (relative)		-0.1322** (0.0539)		
Change in maturity			0.0002 (0.0002)	
Δ arrears balance				0.0000 (0.0000)
LTV	-0.0084*** (0.0031)	-0.0087*** (0.0031)	-0.0086*** (0.0031)	-0.0078** (0.0031)
LTI	-0.0121 (0.0233)	-0.0197 (0.0229)	-0.0155 (0.0240)	-0.0212 (0.0229)
Negative equity	0.0039** (0.0019)	0.0039** (0.0019)	0.0042** (0.0020)	0.0036* (0.0019)
Leverage ratio	-0.0018 (0.0039)	-0.0015 (0.0039)	-0.0013 (0.0039)	-0.0013 (0.0039)
Property Purchased between 2005-2008	-0.5525*** (0.1610)	-0.5440*** (0.1610)	-0.5220*** (0.1640)	-0.5338*** (0.1607)



Summary

- ▶ Positive impact of mortgage restructures on payment performance
- ▶ Both, loan and borrower characteristics, matter for selection
- ▶ Non-linear positive effect of arrears on selection
- ▶ Only loan characteristics matter for payment performance of modified loans
- ▶ Relative size of the payment change rather than absolute change matters