Do first time buyers default less?
Implications for macro-prudential policy

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Abstract

Macro-prudential policy is designed to address risk at a systemwide level, an example of which is mortgage default following excessive residential property lending in Ireland. Policy tools to address this risk, such as caps on loan-to-value and loan-to-income ratios, are used to build balance sheet resilience and by design should reflect the risk profile of borrower groups. This research considers whether default rates are different between first time buyers and second and subsequent buyers and finds that first time buyers have lower default rates having controlled for borrower and loan characteristics. This research is consistent with differential regulatory treatment of first time buyers with default risk remaining comparable to the remainder of mortgage lending.

1 Introduction

Since the global financial crisis, many countries have introduced policies to improve financial regulation and better safeguard the stability of financial systems. Within this context, the focus of regulatory policy has shifted towards the use of macro-prudential tools such as counter cyclical capital buffers and limits on loan-to-income/loan-to-value ratios (Kashyap, Berner, and Goodhart, 2011). One aim of macro-prudential policies is to safeguard the stability of the financial system so that it can withstand adverse movements in credit and property cycles or the impact of other economic shocks. Of particular importance is breaking the pro-cyclical link between the banking sector,

fluctuations in house prices, and excessive credit growth. This can reduce the potential for vulnerabilities that could lead financial stress to accumulate.

Considerable international research has been conducted on the impact and design of macro-prudential regulation in recent years.[2] While research is ongoing across countries, in general, the findings of this literature indicate that such measures do appear effective in achieving the aforementioned policy aims.

Of particular importance to restrain unsustainable lending in mortgage markets are limits on loan-to-value (LTV) and loan-to-income (LTI) ratios for borrowers. These limits protect both banks and borrowers through providing a buffer against

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[2]See the following research: Arregui, Benes, Krznar, Mitra, and Santos (2013); Nabar and Ahuja (2011); Claessens, Ghosh, and Mihet (2013); Gerlach and Peng (2005); Igan and Kang (2011); Vandenbussche, Vogel, and Detragiache (2012); Wong, Tsang, and Kong (2014)

vulnerabilities such as house price and affordability shocks. A loosening of lending standards through an accumulation of higher LTI and LTV loans can create unacceptable financial sector risks. The impact of such loose lending standards on financial stability is evident from the Irish financial crisis where losses through mortgage arrears on residential lending have been considerable. The greater volume and loosening allocation criteria attached to certain mortgage finance left borrowers vulnerable to decreases in house prices and unemployment shocks. Indeed, Hallissey, Kelly, and O'Malley (2014) find that the likelihood of mortgage default by households in Ireland is greater for borrowers who had the highest LTI and LTV loans at origination.

With the objective of increasing the resilience of the banking and household sectors to financial shocks, the Central Bank of Ireland has proposed to introduce ceilings on LTI and LTV ratios for new mortgage lending in Ireland (CBI, 2014). Such measures exist in many countries and their use has been increasing over time.[3] Regulatory measures can reflect the differing risk profile of borrower groups without detracting from the goals of policy, if significant differences exist.

One particularly important borrower group are first time buyers (FTBs). These borrowers are the most likely to face downpayment constraints in building up a sufficient deposit in the absence of wealth transfers and the possibility of equity built up in an existing property. The key question from a macro-prudential perspective is whether these buyers have a different default profile which could warrant differential regulatory treatment in terms of LTV and LTI ratios without compromising financial stability.

In this letter, we highlight the findings of research by Kelly, O'Malley, and O'Toole (forthcoming) who evaluate the credit risk of FTBs and draw out the implications for Irish policy. This research asks whether the default risk of FTBs is less than that of second and subsequent buyers (SSBs) and therefore it may be justified that they receive different treatment from a macro-prudential perspective?

The rest of this letter is structured as follows: Section 2 discusses why FTBs may be different. Section 3 presents the data and some motivating statistics. Section 4 outlines the main findings and Section 5 concludes.

2 Are First Time Buyers Different?

If macro-prudential policies are to take into account the differences between FTBs and SSBs, it is important to ask why might FTBs be different. There are a number of reasons why this group requires special focus.

Firstly, as the marginal borrower, first time buyers are the most sensitive to savings and downpayment constraints when entering the housing market (Duca, Muellbauer, and Murphy, 2011). Without an existing property, they do not have equity which may have been built up through amortisation and house price increases. Therefore, in the absence of family support or other financial transfers, they must accumulate the downpayment entirely. This leaves FTBs highly sensitive to credit availability through what LTV and LTI levels banks are willing, or regulated, to lend at. Secondly, first time buyers also do not have a history of mortgage repayment that a bank-financed second time buyer has. If banks take credit history into account, then this may add to financing constraints faced by FTBs.

Thirdly, FTBs are, in a majority of cases, a different demographic profile relative to second and subsequent time buyers. They are usually younger and therefore are earlier in the income lifecycle: their future income growth prospects are potentially higher. If a mortgage is serviceable early in the income lifecycle, then future income growth should give additional scope to meet obligations over time.

However, despite these distinctions, more relevant to the question of macro prudential policy is whether FTBs have a differential default probability which ensures that group-specific, macro-prudential regulatory treatment for FTBs does not unduly compromise financial stability. Drawing on the work of Kelly, O'Malley, and O'Toole (forthcoming), the rest of this letter investigates whether such differences exist.

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[3]Recent research by the IMF indicates that 24 countries have limits on LTVs, 14 have limits on LTIs and a further 14 have limits on both.

3 Data and Summary Statistics

To test the difference in credit default risk between FTBs and SSBs, this research uses loan-level information collated by the Central Bank of Ireland for the four major domestic banking institutions: Allied Irish Banks (AIB, including EBS Building Society), Bank of Ireland (BoI), and Permanent TSB (PTSB). The loan-level data (LLD) contain full information on the originating characteristics of each mortgage at these institutions, e.g. the balance drawn-down, LTV & LTI ratio, mortgage term and interest rate type; a range of borrower-specific information such as borrower age, income at origination, marital status and whether they were joint or single-assessed; and data on the dwelling the loan is used to acquire, such as the county of location, purchase price and whether the property is an apartment or house.

Our analysis takes a snapshot of loans which were on the banks' books in December 2013 and uses these to conduct our evaluation. This cross-sectional analysis provides a point in time evaluation of the drivers of default at this date. The sample is limited to only principal dwellings and primary loans therefore mainly focusing on the borrowers' primary home.[4]

To begin our discussion, it is instructive to consider how important FTBs are in our sample data. Figure 1 outlines what proportion of all loans in our sample are accounted for by FTBs (percent of count) as well as their share of the total volume of credit (percent of balance). We observe that FTBs accounted for less than 50 percent of the borrowers in our sample in the years before the financial crisis. Indeed, during the period 2004-2008 their share declined to less than 40 percent of both count and balance.[5] Since the crisis, FTBs have accounted for a larger share of the sample. Their percent of the number of loans issued is currently higher than their percent of balance indicating that FTBs are taking out more smaller loans than SSBs.

Figure 2 presents the default rate for FTBs and SSBs in our sample.[6] The default rate is clearly lower for FTBs than SSBs and this difference exists for all the loans in our sample across the time period of origination (and were in default in December 2013). Across the sample, on average approximately 15 per cent of second and subsequent buyers are currently in default; this rate is one-third less for first time buyers (Table 1). This includes loans from before the credit boom period in Ireland (pre 2004). The difference is eliminated in more recent years as typically loans do not become delinquent in the first years.[7]

Given that macro-prudential regulations put ceilings on LTI and LTV levels, their impact will be greater for the group of borrowers who account for a higher share of loans above the proposed levels. FTBs are potentially more sensitive to these credit limits due to the various constraints discussed in section 2. To explore this in our data, Figure 3 presents the LTV and LTI levels of loans originated over time for FTBs and SSBs. Panels A and C indicate that FTBs in Ireland have higher LTV and LTI limits than SSBs in all years in our sample. In general LTI and LTV levels increased up to 2006 which is in line with the easing of credit conditions in the banking sector during this period (see McCarthy and McQuinn (2013)).

It is also insightful to investigate what proportion of loans for FTB and SSBs have been allocated at high LTV and LTI levels. Panels B and D of Figure 3 further disaggregate the groups by asking what share of loans for FTBs and SSBs are in high LTV, high LTI groups. In Panel B, the solid line plots the percentage of loans that had between 80 and 90 LTV at origination. The dotted line presents the share of loans for FTBs and SSBs that had an LTV over 90 percent at origination. While high LTV loans account for a lower share of the total for SSBs, it is evident that FTBs have a much higher proportion of high LTV loans. In fact, whereas fewer than two-fifths of the surviving FTB loans issued in 1995-2000 had an LTV of more than 80%, between 2003 and 2008 just under three-fifths of surviving FTB loans had an LTV of more than that percentage.

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[4]A full overview of the sample cleaning and selection criteria is presented in Kelly et al. (2014).

[5]If a loan was taken out during the period but then amortized during before December 2013, we do not observe this loan in our data.

[6]We follow the standard Basel definition of loan delinquency in defining defaulted loans as those with arrears in excess of 90 days.

[7]It must also be noted that the FTB figures are potentially an upper bound as all SSBs must have transitioned from performing FTB. This would therefore have the effect of reducing the denominator in the FTB calculation and increase the overall percentage.

Panel D provides an equivalent plot for LTI levels. The solid line charts the percent of loans with an LTI of ≤3.5 and the dotted line outlines loans with greater than 3.5 LTI at origination. It is clear that a greater percentage of FTB loans were originated in the higher LTI grouping.

Combining the findings on LTI and LTV, the data indicate that FTBs are more sensitive to LTV and LTI levels and thus can be expected to be more influenced by the introduction of regulatory ceilings.

Figure 4 provides further insight into the differences in default rate between FTBs and SSBs. Panel A presents the difference in default rates between FTB and SSB at different values of the LTV distribution. The chart indicates that the difference in default increases as LTV increases up to between 80 and 85 percent LTV. Above 85 percent LTV, this difference in default rate is reduced. This suggests that first time buyers are less likely to default even at equivalent values of LTV at origination. Panel B outlines the difference in default rate between FTB and SSB at different levels of LTI. The data indicate that FTBs have much lower levels of default relative to SSBs as levels of LTI increase.

The discussion in section 2 suggests that FTBs are a distinct group for a number of reasons. Table 1 presents summary statistics for key variables for FTBs and SSBs. While there does not appear to be a large difference in the average loan size, FTBs have a lower income and are younger than SSBs. The average levels of LTI and LTV at origination are much higher for FTBs. As discussed, this is in line with the concern that these borrowers are more sensitive to lending standards and are more likely to be affected by macro-prudential limits on LTI and LTV.

4   Estimation and Results

While the summary charts indicate that FTBs have lower default rates, we must ensure that this difference is not explained by borrower, loan or dwelling characteristics. To formally test whether FTBs indeed have a different credit risk profile to SSBs, we preview the results in Kelly, O'Malley, and O'Toole (forthcoming). A credit risk model is estimated which tests how likely a mortgage is to default controlling for loan characteristics, borrower characteristics and details of the dwelling.[8]

Important for our estimation strategy is to control for the LTI and LTV ratios at origination as well as the value of the original balance. Hallissey, Kelly, and O'Malley (2014) find a high correlation between LTI and LTV at origination and default. Including these variables at origination also provides important insight into how the credit allocation criteria set by banks at origination affects future default.

Our assessment based on the value of LTI, LTV and other criteria at origination may not be identical to other papers in the literature. However, this choice is deliberate and, from a macro-prudential policy perspective, our interest lies in what information banks have available when making the credit decision and how this can best be used to support future financial stability. As banks cannot control future affordability or house price shocks, a macro-prudential focus should be on credit risks that can be managed by prudent loan origination criteria. The results of estimations are presented in Table 2.

The main variable of interest is FTB. This is a control for whether or not the loan is to a first time buyer. Controlling for a range of factors, we find that FTBs are less likely to default on loans and the finding is statistically significant. The point estimate indicates that FTBs are nearly 4 percent less likely to default than SSBs. The other key variables are LTV and LTI. We find that both of these have a positive impact on default: higher LTI and LTV at origination are associated with a greater likelihood of mortgage default. By this evidence, limits on LTI and LTV would reduce the likelihood of default. For the average first time borrower, model estimates show a 10 percentage point increase in LTV from 80% to 90% would increase the probability of default by 1.06 percentage points.

These findings are supported by a range of robustness checks conducted in Kelly, O'Malley, and O'Toole (forthcoming). The authors control for current LTV and negative equity, a broader measure of default to include pre-modifications, em-

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[8]The model used is a logit probability model which is standard in the literature. See Kelly, O'Malley, and O'Toole (forthcoming) for details and an overview of credit default models. More specifically, the model controls for the borrowers age, marital status, region (Dublin, Non-Dublin), whether the loan is jointly or singly assessed, the loan age, and interest rate type and term at origination.

ployment status at origination, equity release and whether or not the borrower has additional property loans at the same bank. In all of these cases, the main findings hold. They also find that the effects are evident for all four banks individually and thus not driven by the lending practices of one institution. Additionally, they test the model on a sample pre and post 2004 to see whether it is driven by the financial crisis period. The results hold in both periods. Our evidence is in line with Jiang, Nelson, and Vytlacil (2014) who find that FTBs in the US are also a lower default risk.

Figure 4 indicates that the difference in default rate between FTBs and SSBs changes as LTI and LTV increase. Kelly, O'Malley, and O'Toole (forthcoming) include interaction terms to test whether these patterns hold controlling for the variables indicated in the main credit risk model. They find these differences are in fact statistically significant.

5 Conclusions and Policy Implications

This research tests whether FTBs default less than SSBs and therefore whether there is scope for differential macro-prudential regulatory treatment for these groups. The findings in this letter and the more detailed work in Kelly, O'Malley, and O'Toole (forthcoming) indicates that FTBs do default less. The finding holds controlling for a range of borrower, loan and dwelling region factors. While these results relate to a cross section of loans for Ireland dated December 2013, the findings are comparable to Jiang, Nelson, and Vytlacil (2014).

A key question is why FTBs might in fact be a lower credit risk. As our research is based on an indicator variable for FTBs, it is not possible to exactly identify what is driving this differential. However, Kelly, O'Malley, and O'Toole (forthcoming) cite a number of reasons why this might be the case. Firstly, it may be that, due to a lack of credit history, banks apply more thorough lending evaluations and stricter appraisal criteria to FTBs. This may lead to better credit allocation outcomes. Second, if FTBs wish to move in the future and are concerned about the impact of default on their future credit access, they may be more active in trying to keep up with mortgage payments. Thirdly, becoming an SSB may infact reveal a higher tolerance for risk relative to borrowers who remain as FTBs. This increased risk appetite may lead to higher probability of default for SSBs.

While this research is the first to explicitly highlight the fact that FTBs are a lower default risk in a macro-prudential context, a differentiation in regulatory treatment for first time buyers and non first time buyers has been applied internationally. In a number of countries, macro-prudential policies have differential treatment across borrower groups. IMF (2013) research indicates that in Hong Kong and Canada mortgage insurance has been used to ensure access to housing for first time buyers with more restrictive caps for other borrowers. In Singapore, the LTV ceiling was lower for borrowers with more than one mortgage to target speculators not FTBs and in Korea the limits were geographically differentiated to ensure first time buyers were less affected.

In summary, our research finds differences in default risk between FTBs and SSBs even at LTV rates above 80%. Risk considerations could accordingly rationalize differentiation of policy measures between these different borrower groups.

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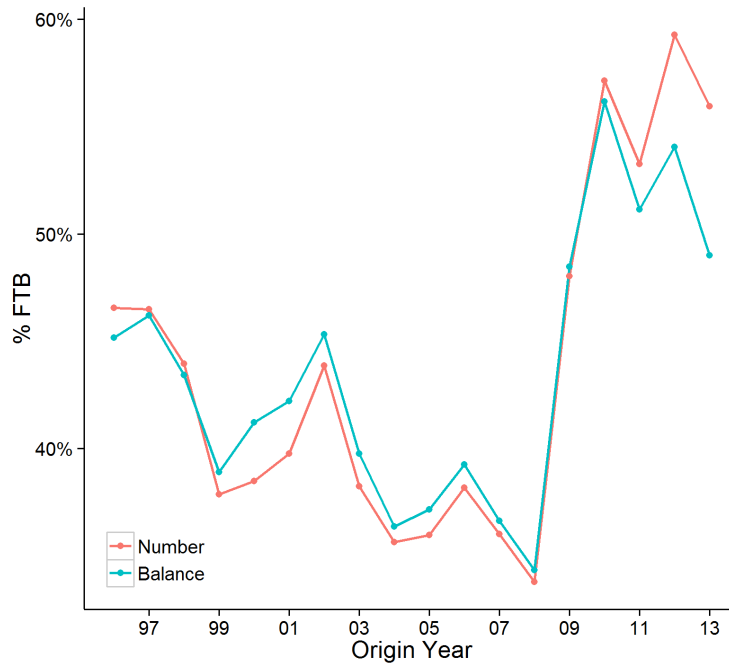Figure 1: First Time Buyer Segment of Estimation Sample by Yr

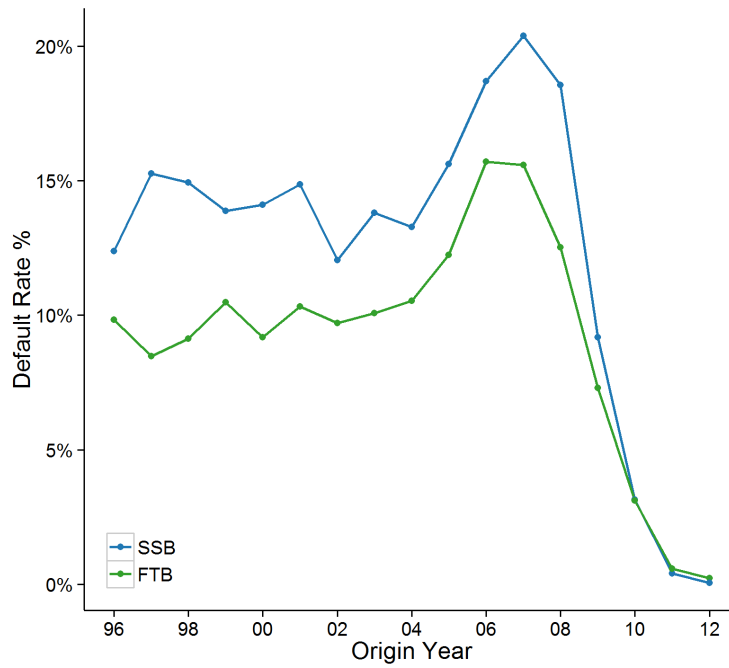Figure 2: Sample Default Rate by FTB Status and Year

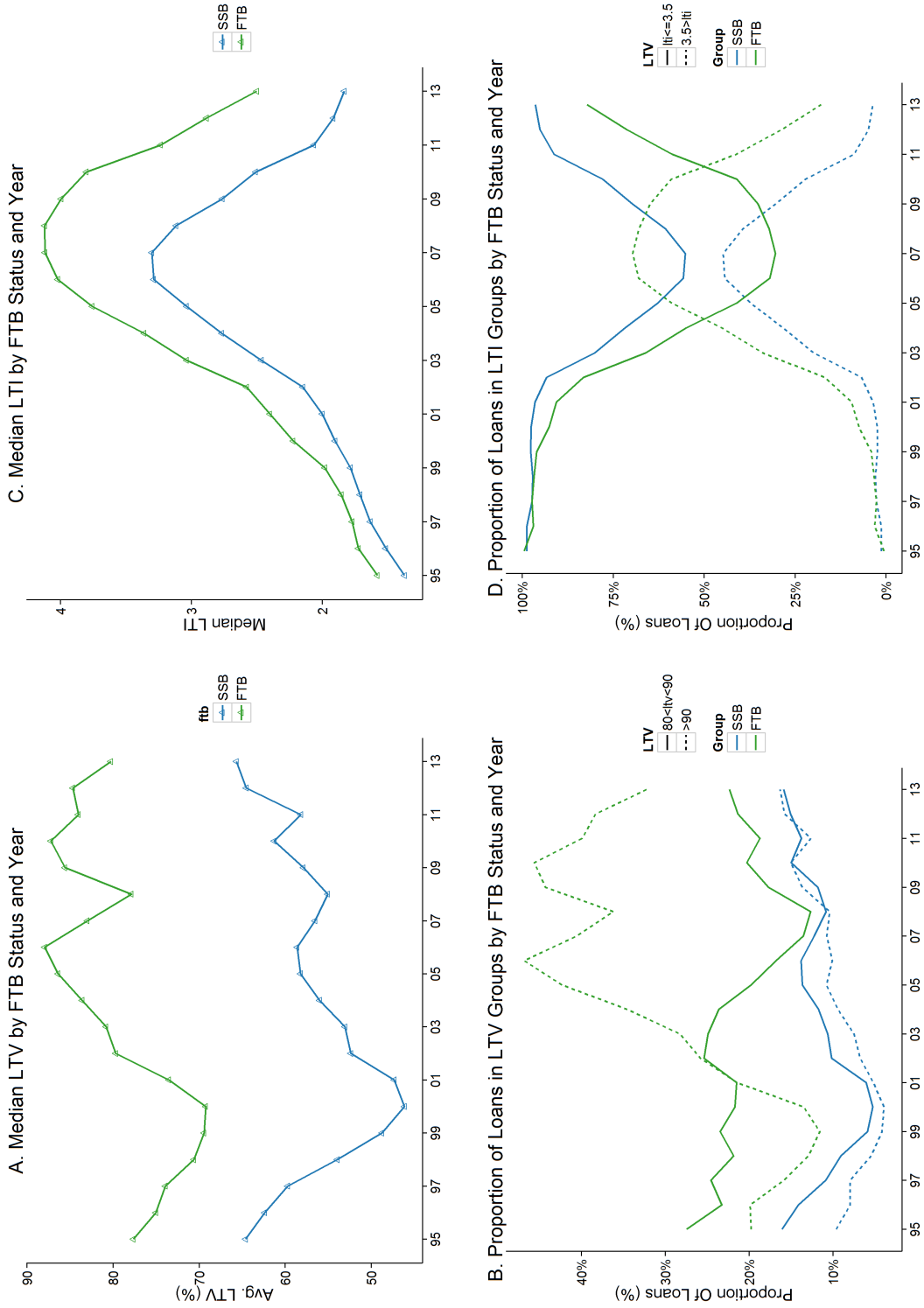Figure 3: Credit Conditions by FTB Status and Year

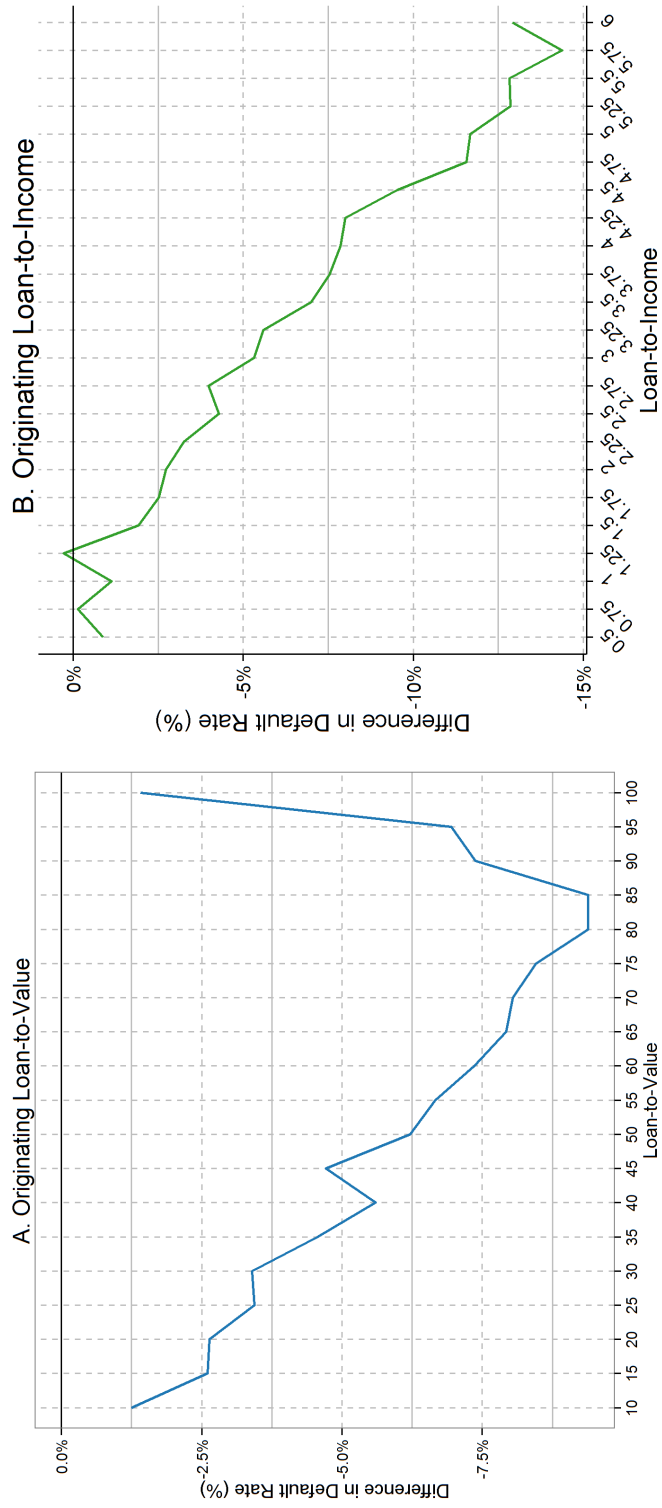Figure 4: Difference in Default Rate by LTI and LTV

Table 1: Summary Statistics by FTB Status

var.names	FTB	2nd +	Diff	% Diff from SSB
Default Rate (%)	10.3	14.9	4.6	30.8
Loan Size (euro)	182514	182199	316	0.17
Income (euro)	56280	68995	-12714	18.4
Purchase Price (euro)	254814	339163	-84349	24.8
Age (yrs)	31.8	39.3	-7.6	19.3
LTV	74.23	55.86	18.37	32.9
LTI	3.44	2.83	0.61	21.6

Table 2: Logit Estimates on Determinants of Mortgage Default

	Coefficients	Marginal Effects
FTB	-0.3941^{***}	-0.0401^{***}
	(0.0155)	(0.0016)
LTV	0.0058^{***}	0.0006^{***}
	(0.0004)	(0.00003)
LTI	0.0603^{***}	0.0063^{***}
	(0.0057)	(0.0006)
Loan Characteristics		
ln(DBO)	0.2100^{***}	0.0219^{***}
	(0.0168)	(0.0018)
Term	0.0049^{***}	0.0005^{***}
	(0.0001)	(0.00001)
Int Type, SVR	0.9523^{***}	0.084^{***}
	(0.0317)	(0.0021)
Int Type, Tracker	0.5922^{***}	0.0443^{***}
	(0.0325)	(0.0020)
Loan Age$^{\#}$	0.0311^{***}	0.0010^{***}
	(0.0007)	(0.0002)
Loan Age^2	-0.0001^{***}	
	(0.0000)	
Borrower Characteristics		
Single Assessment	-0.0792^{***}	-0.0082^{***}
	(0.0161)	(0.0017)
Dublin, Yes	-0.3504^{***}	-0.0344^{***}
	(0.0142)	(0.0013)
Marital Status, Single	-0.0355^{*}	-0.0036^{*}
	(0.0164)	(0.0017)
Marital Status, Sep/Divorce	0.3447^{***}	0.0409^{***}
	(0.0258)	(0.0034)
Marital Status, Other	0.2114^{***}	0.0239^{***}
	(0.0584)	(0.0075)
Borrower Age$^{\#}$	-0.0252^{***}	-0.0037^{***}
	(0.0058)	(0.0001)
Borrower Age^2	0.0008^{***}	
	(0.0001)	
Intercept	-9.3682^{***}	
	(0.2173)	
AIC	207119.2042	207119.2042
BIC	207330.8495	207330.8495
Log Likelihood	-103539.6021	-103539.6021
Deviance	207079.2042	207079.2042
Num. obs.	291345	291345

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$. Bank controls included in the estimation but omitted from the table. $\#$ denotes controls entered non-linearly in the model. Marginal effects are calculated for the mean of the linear variable accounting for the specification.