

Back to the Future? Macroprudential Policy and the Rebirth of Local Authority Mortgages in Ireland

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Abstract: The global financial crisis heralded a new era of macroprudential mortgage regulations such as loan-to-value and loan-to-income restrictions. Such measures safeguard the financial system, but can lead to credit access difficulties, in particular for first time buyers. In this paper, we examine the introduction of a direct public mortgage, the Rebuilding Ireland Home Loan (RIHL), which aims to address these difficulties in Ireland. We use new unique granular microdata for applications to the scheme to explore the relationship between households applying to the scheme and the broader commercial market. We show that RIHL applicants, particularly those in urban areas, are under-served by the commercial market as they cannot borrow sufficient amounts due to the regulatory framework. RIHL enables these lower to middle income applicants to access mortgages and thus directly targets the externality from the regulations. We argue these public loans bridge credit gaps while ensuring the commercial banks are subject to strong macroprudential rules.

I INTRODUCTION

Access to mortgage finance for first time homebuyers (FTBs), long a topic of central policy concern as well as the focus of extensive academic research (Duca and Rosenthal, 1994; Linneman and Wachter, 1989), has increasingly come to the fore since the global financial crisis. Loose credit conditions and new mortgage product features (such as interest only payments) had facilitated a considerable credit expansion in many economies (Scanlon *et al.*, 2008), but proved

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to be unsustainable. A wave of mortgage defaults followed the 2007 crisis (Lydon and McCarthy, 2013; Jiang *et al.*, 2014; Anderson *et al.*, 2011), the banking sector pulled back on lending activity (Scanlon *et al.*, 2011) and, from a financial stability perspective, global policymakers sought to introduce tight new regulatory restrictions on lending conditions. These macroprudential regulations typically target loan-to-value, loan-to-income or debt-service-to-income ratios and are aimed at increasing both bank and borrower resilience to prevent a build-up of systemic risk (Kashyap *et al.*, 2011; Duca *et al.*, 2019).

However, while aiming to prevent systemic risk and break the pro-cyclicality of housing and credit markets (Borgersen, 2016), an externality of these new macroprudential rules is more limited mortgage market access. These rules impose a regulatory downpayment or income constraint by increasing the deposit required and/or tightening the income affordability criteria. A number of studies have posited that this has been linked to a drop in homeownership (Whitehead and Williams, 2017; Duffy *et al.*, 2016), albeit amidst a more challenging environment for young first time purchasers more generally (Jones, 2016; Wijburg, 2019).

In Ireland, the situation was acute given the scale of the boom-bust cycle and the rise in the cost of housing in the recovery. Credit conditions tightened considerably following the financial crisis as mortgage arrears soared (Kelly and O'Malley, 2016; McCarthy and McQuinn, 2017; Waldron and Redmond, 2014). Layered on top of industry-driven changes, the introduction of macroprudential regulations governing maximum loan-to-value and loan-to-income ratios in 2015 by the Central Bank of Ireland have all led to a safer but more restricted mortgage market. While the loan-to-value ratio in Ireland (set at 90 per cent for first time buyers) is close to prior industry standards and international norms, the loan-to-income ratio (set at 3.5* gross income) has been highlighted by industry and politicians as relatively strict,¹ as house prices have risen and rental inflation has lowered the savings capacity of households. Indeed, research by Lydon and McCann (2017) shows that the share of low income households entering the mortgage market has fallen while McQuinn *et al.* (2021) note a high degree of binding credit access conditions amongst potential first time house buyers in Ireland, with Kelly and Mazza (2019) and Gaffney (2019) noting difficulties specifically relating to the income leverage ratio.

To directly address this potential market access issue, the then Irish government introduced the *Rebuilding Ireland Home Loan* (RIHL) Scheme in February 2018.² The Scheme aimed to provide direct public mortgages for low to middle income

¹ Then Taoiseach Leo Varadkar as well as the CEO of AIB, Ireland's largest mortgage bank, are both on record in 2019 requesting a loosening of the rules: <https://www.independent.ie/irish-news/politics/loosen-up-rules-on-mortgages-leo-tells-watchdog-38350557.html>; <https://www.independent.ie/business/personal-finance/property-mortgages/aib-chief-time-to-relax-mortgage-rules-38588921.html>.

² In January 2022 under its Housing for All plan the current Irish government replaced RIHL with the Local Authority Home Loan.

first time buyers through the local authorities³ for those unable to access sufficient credit through commercial lenders. An income cap of €75,000 applied along with a maximum loan size of €288,000 in urban areas.⁴ The value of the original commitment (€200 million over three years) represented a major increase in the mortgage activity by local authorities, whose lending in the previous 20 years had been limited to a small minority of schemes covering tenant purchase, shared ownership and some residual lender of last resort financing to very high credit risk borrowers. This contrasts with the historical local authority lending activity which, during the 1970s and 1980s provided a large share of first time buyer loans (Norris and Winston, 2011). The RIHL scheme was much more popular than envisaged at the outset with €178 million lent out in the first 16 months for over 1,000 loans from 5,400 applications. Two attractive features of the loan product were higher loan-to-income ratios relative to those available through the commercial market, as well as long-term fixed interest rates at below market levels. The use of a direct public mortgage product to address credit access difficulties is relatively unique in recent times internationally; the use of equity style measures such as the UK Help to Buy scheme have been more common.

To understand the relationship between the RIHL loan, the macroprudential framework and first time buyer credit access, the contribution of this paper is twofold. First, we exploit unique administrative application-level data from the scheme to explore the characteristics of households who applied for the RIHL scheme. Analysing how successful applicants compare to those accessing credit through commercial mortgage market channels enables us to understand whether the scheme is well-targeted at those facing credit access difficulties due to the high house prices and macroprudential regulations. If this is the case, the policy instrument can be seen as directly addressing the externality caused by the regulations. Second, we consider the safeguards for the scheme in terms of rejected applications and originating credit terms to consider whether these measures can provide adequate risk management given the lower income nature of the target population. We believe this paper should be of considerable interest to the general policy discussion around instruments which aim to facilitate credit access for first time buyers under macroprudential regulations, in particular as a complement to the discussion regarding equity schemes, such as the UK Help to Buy scheme, which have been used more frequently to date (Jones, 2016; Whitehead and Monk, 2011). Our research is important as it looks at a specific public loan rather than a guarantee (which has been used in other contexts (see Elsinga *et al.*, 2009).

A number of findings emerge from the research. First, we find that demand for the scheme is coming primarily from urban, young, professional households with

³ Local authorities in Ireland are local government bodies and are responsible for providing a range of services related to housing; planning; roads; economic and community development; environment, recreation, and amenity services; libraries and fire services.

⁴ A lower loan cap of €225,000 applied in rural counties where house prices are lower.

permanent employment and considerable savings. Indeed, over half of the applicants in urban areas are in professional or associate professional occupations while over 40 per cent of applications are from the capital, Dublin (considerably more than its 28 per cent population share). The profile of applicants differs in non-urban areas where there are more joint applicants, households with children and greater levels of existing debt. We find that the approved applicants' income distribution lies to the left (lower incomes) of those who received credit from the commercial market which suggests these households are those who have difficulties borrowing sufficient credit and are under-served by the commercial market under the current macroprudential regulations.

The loan-to-income levels on the applications are much greater than those which would be attainable for these households through the commercial banks. To provide more insight into this dynamic, we simulate the maximum borrowing capacity for the applicants given the macroprudential regulations' loan-to-income limit and the applicants' savings, and compare this to the level of mortgage debt they applied for under the RIHL scheme. A clear majority of urban applicants are applying for much higher levels of leverage than they would receive in the commercial market (excluding exemptions). However, there are indications of some crossovers between the scheme and bank lending in non-urban areas.

Given that higher leverage-to-income ratios can pose a risk to households, we review the scheme lending conditions on loan-to-value and debt-service-to-income and suggest these are well calibrated in relation to international norms as indicators to limit risk *ex ante*. We also use the administrative microdata on the application outcome to consider the determinants of being recommended for rejection. We find that rejections are decreasing in income and savings but increasing in loan size (for a given income and savings level). Rejections are also higher for households in more unstable employment (self-employed or contract workers) and for those with a credit history problem. These findings suggest that even given the lower to middle income profile of applicants, the type of household recommended for acceptance would appear to be of lower risk. This should help *ex ante* to limit the scale of *ex post* defaults.

From a policy perspective, our paper demonstrates that the RIHL lending product, which has come into the market to directly address an externality from macroprudential regulations, appears on the whole to correctly target the group of households most affected by the stricter loan-to-income ratio. We find that the households who are applying for these loans are those facing income-based borrowing constraints under the current macroprudential policies. The public credit instrument therefore is a good example of a targeted measure that directly addresses the externality from the broader framework. We argue that using a tailored measure such as this allows for a strong macroprudential framework for the commercial banking sector but ensures that first time buyers can access housing credit, once they are creditworthy. By limiting the overall total level of credit available under

the measure in euro terms, this can ensure that such a product does not compromise overall financial stability, as might happen if the loan-to-income was generally loosened, but can be used to address the credit access externalities that arise from macroprudential regulations.

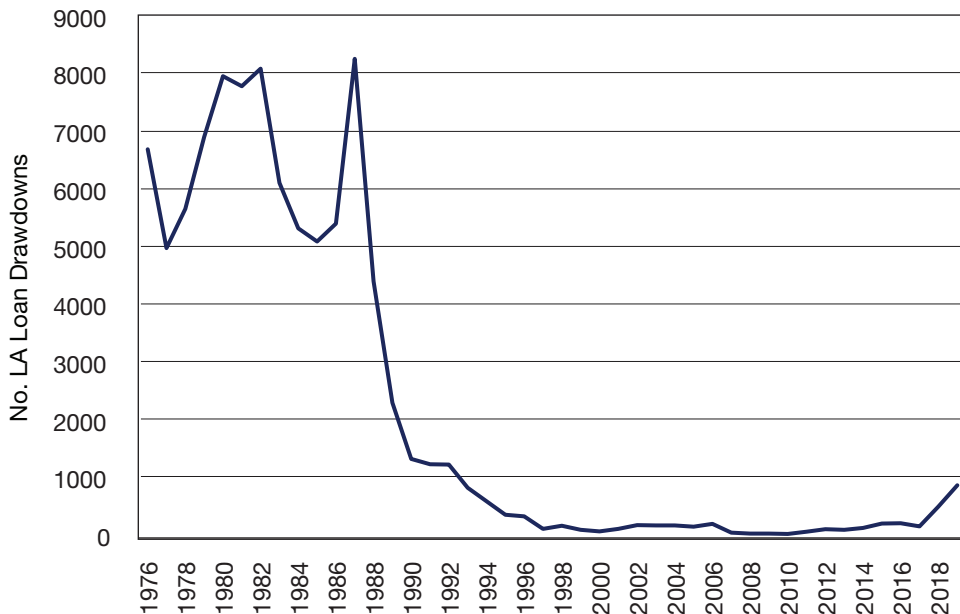
The remainder of the paper is structured as follows. First, we provide an overview of the historical context for local authority loans in Ireland, the changes around the macroprudential regulations and an overview of the RIHL scheme. We then present our main analysis by profiling demand for the scheme and how this interacts with the broader mortgage market. Next, we discuss risk management and finally we conclude.

II BACKGROUND AND POLICY CONTEXT

2.1 Local Authority Lending in Ireland and its Decline

Local authority mortgage lending has had a long history in Ireland. Dating back to the Small Dwellings Acquisitions Act in 1899, loans through local public bodies have provided an opportunity for credit constrained Irish households to access financing for home purchase.

Figure 1: Number of Local Authority Loan Drawdowns 1976-2019



Source: Department of Housing, Local Government and Heritage Local Authority Loan Statistics.

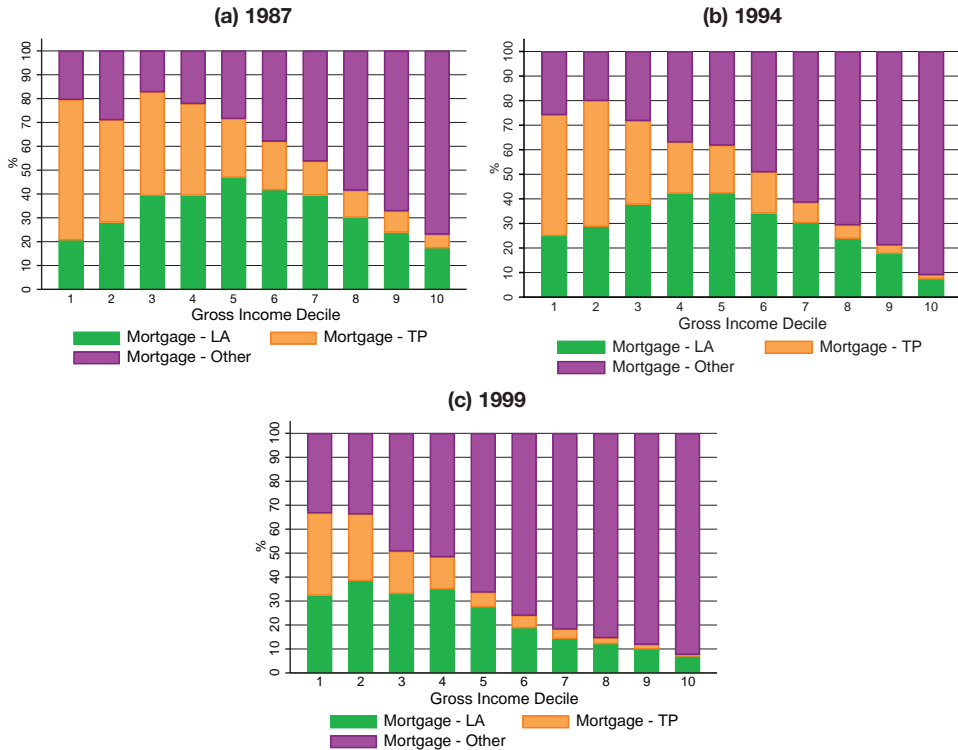
Prior to the late 1980s, local authorities were key players in the first time buyer lending market. In 1987, local authority loans were instead restricted to low income households who had failed to obtain a mortgage from a commercial lender (Fahey *et al.*, 2004). Figure 1 documents this dramatic post-1987 decrease in the number, and consequently the share of total new mortgage lending provided by local authorities. This combination of changes to local authority scheme parameters, as well as the increasing levels of credit available from banks and building societies in the commercial lending sector, led to the share of total new mortgage lending done by local authorities falling from approximately one-third of new loans in 1982 to less than 1 per cent in 1995 (Figure 1), more or less remaining at this level until 2018. Virtually all new mortgage lending between 1995-2017 took place through the commercial market.

Prior to local authority loans being restricted to low income households unable to obtain credit from a commercial lender in 1987, it was in fact commonplace for local authorities to provide mortgage loans to households right across the income distribution (Fahey *et al.*, 2004). Figure 2 presents the proportion of the stock of mortgage loans that are accounted for by issuer type for each income decile. In 1987, at the point where local authority loans were instead restricted to low income households who had failed to obtain a mortgage from a commercial lender, approximately 40-45 per cent of mortgage loans were provided by local authorities for households from the 3rd to the 7th decile of income distribution. Between 1987 and 1999, we observe a fall in the share of Tenant Purchase mortgages and a greater role for commercial lenders for every decile in the income distribution. The share of mortgages issued by local authorities decreased in the 3rd to 10th income deciles. However, the share of local authority mortgages actually rose among borrowers in the lowest two income deciles over this period.

The reduction in mortgage lending to all but the lowest income borrowers by local authorities is also noted by Norris and Winston (2011) who find that with the credit boom and widespread access to commercial mortgage financing, the creditworthiness of local authority mortgage holders decreased. This countercyclical relationship between local authority and commercial lending is further highlighted by Shiels *et al.* (2007). They note that high levels of local authority lending were the norm during the 1970s and 1980s when households faced great difficulties in obtaining credit from banks and building societies, compared to low levels of LA lending coinciding with the relative ease of obtaining credit during the 1990s and early 2000s. As a consequence, local authority loans issued during periods of abundant commercial market credit go to high-risk borrowers who are associated with high levels of mortgage arrears. It is perhaps therefore unsurprising that local authority lending since the late 1980s has been associated with very high levels of mortgage arrears. As of Q4 2017, just prior to the introduction of the RIHL scheme, 24 per cent of local authority mortgages were in arrears of more than 90 days.⁵

⁵ Source: Department of Housing, Local Government and Heritage Local Authority Loan Arrears Statistics.

Figure 2: Percentage of Mortgages by Mortgage Type Across Income Deciles 1987- 1999



Source: Household Budget Surveys 1987, 1994 and 1999.

Note: Mortgage – LA refers to local authority issued mortgages; Mortgage – TP are mortgages issued under the Tenant Purchase Scheme; Mortgage – Other refers to mortgages issued by all other providers, namely those issued by banks, building societies and insurance companies. These charts present the stock of mortgages at a specific point in time.

Norris *et al.* (2007) discuss the challenges associated with subsidising homeownership for these very low income households, concluding that there are “structural limits” to homeownership and that alternative tenures are required.

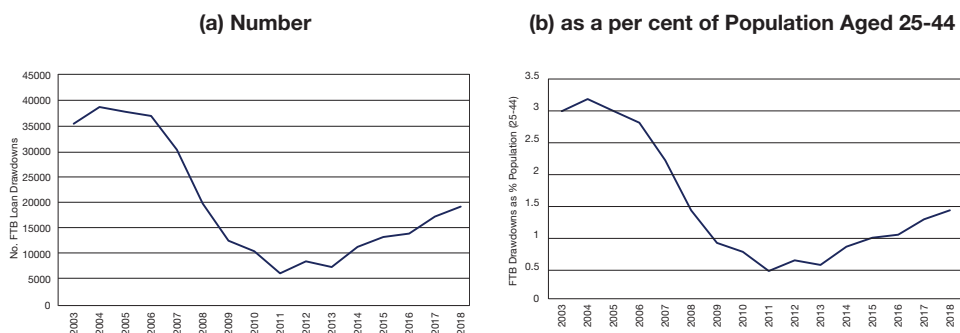
2.2 Back From the Brink: the Financial Crisis and its Aftermath

The scale of commercial lending continued to grow during the credit boom of the early to mid-2000s. Mortgage credit was originated under loose credit conditions (McCarthy and McQuinn, 2017), with households borrowing large mortgages at high loan-to-value and loan-to-income ratios. At the height of the boom nearly 40,000 FTB loans a year were issued (Figure 3a) and Kelly *et al.* (2018) show that loan-to-income ratios went as high as 6.5 for some borrowers with a large number

of mortgages at 100 per cent LTV. As the 2008 banking crisis began to propagate through the real economy, borrowers with loans issued under loose credit conditions found themselves unable to withstand the economic shocks, resulting in wide-scale arrears (Kelly and O'Malley, 2016; Lydon and McCarthy, 2013; Kelly *et al.*, 2012).

There was a significant contraction in the supply of credit during the crisis years which, at its lowest point in 2011, saw only 6,300 FTB loans drawn down. In the wake of the financial crisis banks considerably tightened their lending standards. In 2015 the Central Bank of Ireland introduced macroprudential regulations limiting LTV and LTI ratios, with the dual aims of both increasing the resilience of both banks and borrowers and preventing credit driven house price surges. While there has been a noticeable pickup in credit extended to first time buyers since 2014, both in terms of the number of loans, and as a proportion of the home-buyer age population, the figures for 2018 stood at less than half those of 2004 (Figure 3).

Figure 3: Annual First Time Buyer Mortgage Drawdowns 2003-2018



Source: Banking Payments Federation Ireland (BPMFI) and CSO population statistics by age bands.

In the context of the appropriate tightening in lending standards and required implementation of macroprudential regulations post-global financial crisis, a natural externality has been tighter credit conditions for many first time buyers in Ireland. Lydon and McCann (2017) show that relative to pre-2008 levels, very few Irish households at the lower end of the income distribution now obtain mortgage credit. More recently, Kelly and Mazza (2019) find that the macroprudential rules are increasingly binding for first time buyers in Ireland, in particular in the Dublin area.

Furthermore, recent research by Corrigan *et al.* (2020) explores credit demand amongst Irish renters and finds a notable credit gap whereby households have insufficient incomes or savings to purchase a property given the current house prices due to the macroprudential limits. They argue these households could be reasonably classified as lendable from a credit risk perspective which suggests that extending credit to these households would not represent an excessive risk. The research points

out that a targeted instrument such as a public lending instrument could alleviate a portion of the lending gap for these households.

2.3 The RIHL Scheme

Against this backdrop, the then Irish government introduced a public mortgage loan product, the *Rebuilding Ireland Home Loan* scheme in February 2018 (scheme details below). The objective of the RIHL scheme was to support access to homeownership for creditworthy low to middle income first time buyers unable to secure sufficient funds elsewhere. Indeed, a condition of the scheme was that applicants were required to provide evidence of insufficient finance (or rejection) from two financial institutions. The scheme was administered through all 31 local authorities in Ireland. Applications were submitted to the relevant local authority and then passed to the Housing Agency, a centralised body, for underwriting assessment where trained underwriters carried out an assessment of the applicant's creditworthiness in accordance with the RIHL credit policy. In January 2022, the RIHL was replaced by the very similar Local Authority Home Loan Scheme as part of the current government's Housing for All plan.⁶

In contrast to previous Irish local authority lending schemes, RIHL set a maximum loan-to-value (LTV) ratio of 90 per cent, in line with the LTV limits for FTBs applied by the Central Bank of Ireland (CBI) in the commercial mortgage lending market. Applicants had to provide a minimum of 3 per cent of the value of the property in evidenced savings, while a maximum of 7 per cent could be in the form of a gift. The scheme was essentially targeted at those who face LTI and affordability constraints in the commercial lending sector. The scheme had no LTI limit, but instead had a debt-service-to-income (DSTI) limit ensuring that repayments (all debt) did not exceed 35 per cent of net income; the limit falling for lower income households.

Two loan products were offered: a 2 per cent fixed rate loan for up to 25 years; and a 2.25 per cent fixed rate loan for up to 30 years.⁷ As the scheme was aimed at low and middle income households, gross income caps of €50,000 (€75,000) for single (joint) applicants applied. The maximum market value of properties that could be purchased was set at €320,000 for properties in the three largest urban counties of Dublin, Cork, Galway, as well as the Dublin commuter counties of Kildare, Louth, Meath and Wicklow, and €250,000 elsewhere. See O'Toole and Slaymaker (2020) for a full overview of the Rebuilding Ireland Home Loan Scheme.

⁶ The majority of scheme conditions and parameters remain unchanged from RIHL. Differences include an increase in the maximum income for single applicants in certain counties and the inclusion of divorced/separated applicants who have no interest in the family home under a 'Fresh Start Principle'.

⁷ A 2.3 per cent variable rate loan product for up to 30 years was discontinued in August 2019. These interest rates are correct for the period analysed in this paper; they were subsequently revised.

From Figure 1 we can see that in 2019 this led to the largest number of local authority mortgages being issued since 1992. These RIHL loans represented a major increase in the lending activity by local authorities, whose lending in the previous 20 years had been limited to a small minority of schemes covering tenant purchase, shared ownership and some residual lending of last resort financing.

Given this context as well as the historical role of local authorities, pre-1987, in providing mortgage credit for those in the middle of the income distribution during periods of restricted access to credit, it raises the question of what role a local authority public mortgage lending scheme like the RIHL scheme could play in the current climate to increase lending to those currently under-served by the commercial market. The remainder of this paper uses unique applicant level data to provide an overview of who applied for these loans, the extent to which their demand represents a market gap relative to the credit available from the banking sector under the macroprudential rules, and finally, to examine issues around the safe underwriting of these loans and default risk.

III PROFILING CREDIT DEMAND

In this section, we exploit unique, granular application-level microdata⁸ for the Rebuilding Ireland Home Loan Scheme to provide an insight into a) which households applied for the loans across Ireland; b) what levels of credit they were demanding; and c) how approved applicants compare to those who received credit through the commercial market, a clear indicator of scheme additionality. These data were collected by the Irish Housing Agency and were provided by the Irish Department of Housing, Local Government and Heritage (DHLGH) for a review of the scheme by O’Toole and Slaymaker (2020) which we expand upon in this paper.

The dataset contains all applications sent to the Housing Agency by local authorities for underwriting between the start of the scheme in February 2018 and 5 September 2019 for 29/31 local authorities; no data were provided for Longford or Meath. Depending on their resources, some local authorities screened out incomplete applications or applicants ineligible for the scheme prior to forwarding applications to the Housing Agency for underwriting, while others simply sent all applications received. We therefore exclude any applications marked as invalid⁹ to ensure consistency across local authorities. We also exclude applications for the

⁸ Note this dataset provides information on scheme applicants. Where we refer to applicants, we include all applications in our final sample. Where we refer to approved applicants this refers to all applications recommended for approval by the underwriters. The final decision on whether to extend credit was made by local authorities and we therefore do not observe this decision.

⁹ Our understanding is that this typically referred to incomplete applications with insufficient information to process and obvious personal characteristics outside scheme parameters (e.g. not a first time buyer, income well above relevant limits).

Tenant Purchase Scheme, a scheme which allows existing social housing tenants to purchase their local authority property at a heavily discounted price, from our sample. Although these applicants are included within the RIHL Scheme numbers, in practice, this is a separate scheme and these applicants purchasing a currently state-owned property at below market price are not comparable with those purchasing from the market at full market price. Our final sample is composed of all non-Tenant Purchase applications, marked as valid, with full information for the socio-economic and loan application characteristics shown in Table 1.

3.1 Applicant Characteristics – Who and Where?

In order to provide an overview of where the demand for RIHL loans occurred in Ireland and who applied for these loans, this section of the paper provides an overview of the characteristics of households applying as well as their geographic location. Note as our interest in this section is on where the demand for the scheme came from, we include all applicants whether successful or not.

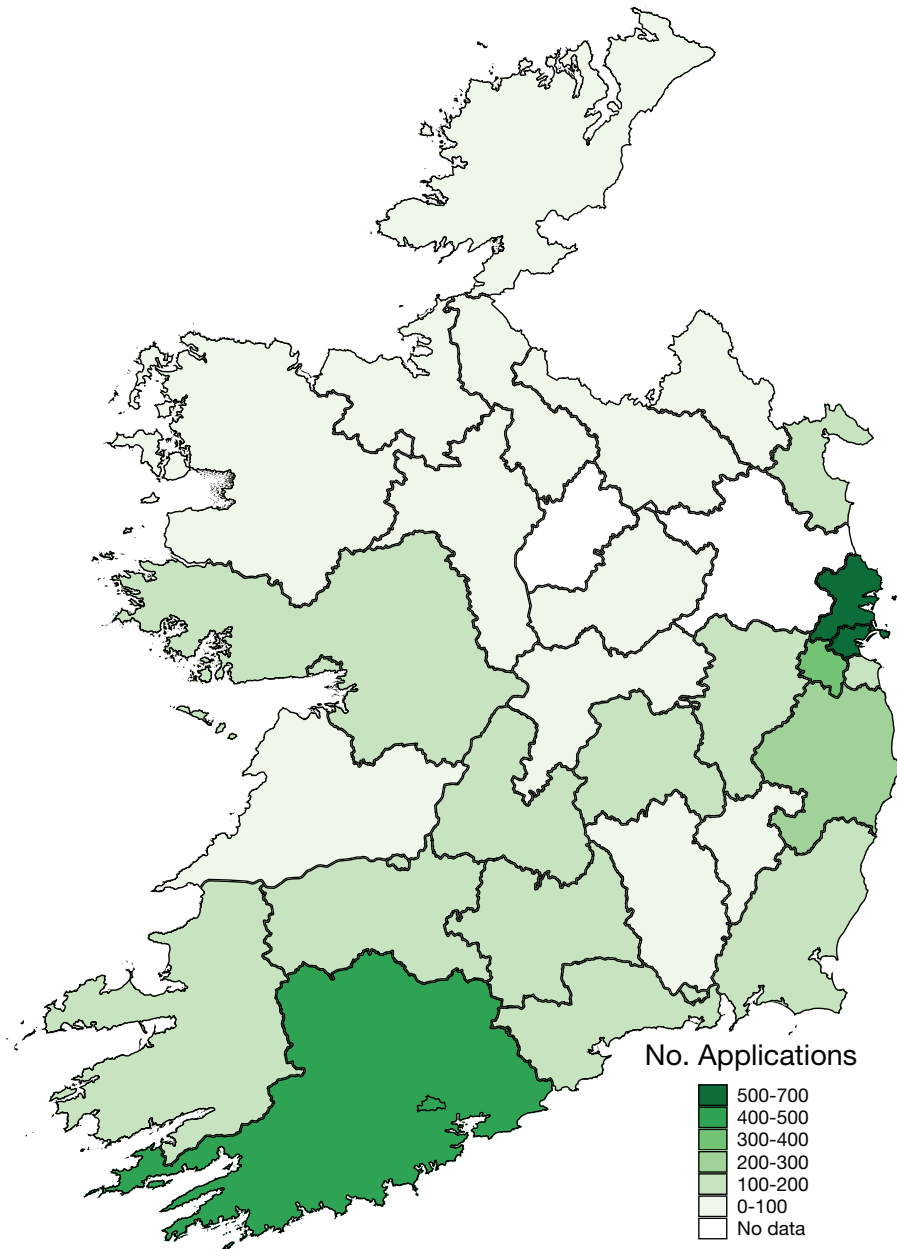
Figure 4 plots the number of applications in our sample by local authority and clearly shows a higher number of applications in the urban areas of Dublin in particular, but also Cork and surrounding areas. Indeed 72 per cent of the applications in our sample were made in local authorities with the higher €320,000 house price threshold, with the four Dublin local authorities accounting for just over 40 per cent of the total applications.¹⁰

This distinction between €320k and €250k house price threshold areas can broadly be thought of as the separation between major urban areas and their surrounds, and the remainder of the country.

Given the different levels of affordability challenges in these respective areas (Allen-Coghlan *et al.*, 2019), with typically much greater pressures in the more urban areas, in Table 1 we present summary statistics on RIHL applicants separately for the €320k and €250k areas. The age structure of applicants is similar across the two areas, with the majority of applicants falling in the 31-40 age band. Less urban areas see a slightly higher proportion of older applicants, with €320k areas seeing a greater share of applicants below 30. Regarding household composition, there are slightly more single applicants in the urban areas, but sizeable differences in terms of children, with more than half having no dependants compared to just over one-third in less urban areas.

One aspect which is common across areas is the significant proportion of applicants, approximately one-quarter, currently recorded as paying zero rent. This suggests that a sizeable number of applicants remain living in the family home while saving for a deposit. Given the high level of house prices in Ireland and the well documented rental affordability challenges (Corrigan *et al.*, 2019b;

¹⁰ For comparison, 2016 Census figures show that 28 per cent of the total population lived in one of the four local authorities in Dublin, and 60 per cent lived in areas covered by the higher €320,000 house price threshold.

Figure 4: No. of Underwritten RIHL Applications in each Local Authority

Source: RIHL applicant level microdata covering period February 2018-start September 2019. Data not provided for Longford and Meath.

Table 1: Characteristics of Applicants by €320k and €250k Areas

	€320k Areas		€250k Areas	
	Mean	Std. Dev.	Mean	Std. Dev.
Mean Age	35.558	6.317	36.326	6.434
<i>% Aged:</i>				
18-30	0.232	0.422	0.183	0.387
31-40	0.560	0.496	0.570	0.495
41-50	0.189	0.391	0.223	0.417
>50	0.019	0.137	0.023	0.151
<i>% in Employment Status:</i>				
Permanent	0.938	0.241	0.917	0.277
Self-Employed	0.049	0.217	0.067	0.250
Contract/Temporary	0.012	0.110	0.016	0.124
Not Employed	0.000	0.019	0.001	0.031
<i>% in Occupation:</i>				
Managers	0.090	0.286	0.094	0.292
Professionals	0.300	0.458	0.190	0.393
Associate Professionals	0.216	0.411	0.160	0.367
Clerical Support	0.083	0.276	0.074	0.261
Services and Sales	0.132	0.339	0.181	0.386
Craft and Trades	0.047	0.211	0.099	0.299
Plant and Machinery	0.050	0.217	0.076	0.265
Elementary	0.073	0.259	0.118	0.323
Other	0.010	0.101	0.008	0.088
Mean Dependents	0.802	1.073	1.164	1.114
<i>% with No. Dependents:</i>				
0	0.550	0.498	0.375	0.484
1	0.197	0.398	0.227	0.419
2	0.173	0.378	0.275	0.447
3+	0.080	0.271	0.122	0.328
<i>% Joint Applicants</i>	0.566	0.496	0.609	0.488
Mean Allowable Income (€)	45,675	12,809	37,390	12,351
Mean Savings (€)	23,731	18,883	18,195	17,220
Mean Loans Outstanding (€)	1,235	4,519	2,413	7,918
<i>% recorded paying 0 rent</i>	0.260	0.439	0.226	0.418
Rent (if not 0) (€)	806	393	588	241
Mean Requested Loan Size (€)	209,941	57,570	145,459	45,148
Mean Requested LTI	4.713	1.237	4.128	1.472
ICB issue	0.023	0.149	0.054	0.227
<i>Observations</i>	2,633		1,031	

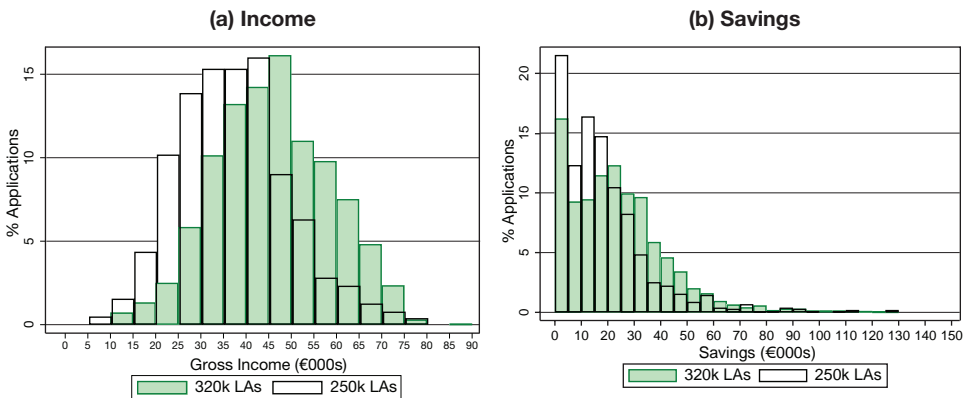
Source: Housing Agency RIHL Microdata.

O’Toole *et al.*, 2020), accumulating a deposit of 10 per cent has been shown to be a significant challenge for renters (McQuinn *et al.*, 2021; Slaymaker *et al.*, 2022).

Regarding employment, more than 90 per cent of applicants in both areas are employed on permanent contracts, with a marginally higher share of self-employed in the less urban areas. In terms of occupation, there are some noticeable differences. Half of applicants in the €320k areas are employed in professional or associate professional occupations, compared to just over one-third of applicants in the €250k areas. In contrast, the less urban areas see higher proportions of services and sales, trades, and elementary occupation workers. The high proportion of applicants from professional occupations in urban areas is likely to be a reflection of the acute affordability challenges in these areas (Corrigan *et al.*, 2019b; Allen-Coghlan *et al.*, 2019). These applicants would typically be expected to be able to access credit through the banking sector given their employment credentials. Their use of the RIHL scheme would therefore suggest high levels of credit access difficulties.

Turning to income, the mean gross income of applicants in urban areas was roughly €8,000 more than in the €250k areas. Figure 5a shows that the income distribution for the urban areas lies clearly to the right of that for the less urban €250k areas. Relatively few applicants in non-urban areas had an income greater than €50,000. Figure 5b plots the distribution of applicant savings.¹¹ More than 20 per cent of applicants in €250k areas, and just over 15 per cent in €320k areas, only had between 0 and €5,000 in documented savings. This might suggest that many of these applicants may be relying on a gift to make up the remainder of the

Figure 5: Applicant Characteristics by €320k and €250k Areas



Source: Housing Agency RIHL Microdata.

¹¹ These savings refer to the documented level of savings in an applicant’s savings account. They do not contain any potential gift an applicant may receive towards a down-payment unless this has already been gifted.

minimum 10 per cent deposit. Along with having lower incomes and savings, more than twice as many applicants in €250k areas had an issue flagged up during their credit check (ICB issue).

3.2 What Levels of Credit were they Demanding?

Having profiled the characteristics of applicants in the previous subsection, the aim of this subsection is to examine the level of credit demanded by RIHL applicants. In order to do so, we will focus on key measures such as the requested loan size, loan-to-income and loan-to-value ratios.

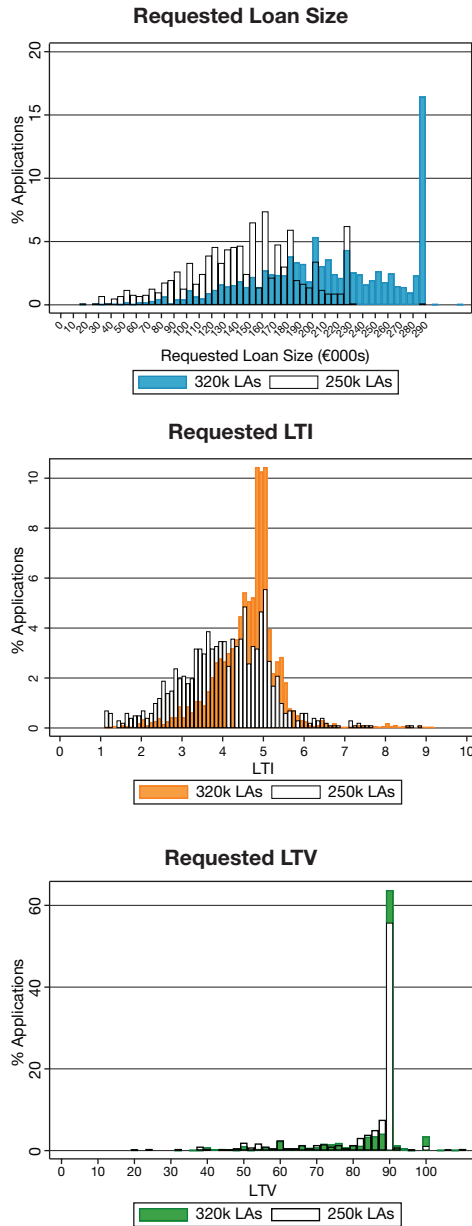
Just over 15 per cent of applicants in urban (€320k) areas applied for the maximum loan size, with just over 5 per cent of applicants doing the same in non-urban (€250k) areas (Figure 6a). This is perhaps unsurprising given previous research showing that first time buyers in urban areas, and particularly those in and around Dublin, face the most acute affordability challenges (Allen-Coghlan *et al.*, 2019). However, interestingly, despite a significant proportion of applications at the maximum loan threshold in urban areas, the numbers below the maximum were not significant. This may reflect the binding nature of other limits such as the LTV or DSTI which leave households' loan sizes below the maximum.

Turning to LTIs, in urban areas, the majority of applicants requested an LTI of between 4.5 and 5, significantly above the 3.5 permitted under the macroprudential regulations. It is also clear from Figure 6b that a significant proportion of applicants applying in non-urban areas requested an LTI of less than the 3.5 limit imposed by the macroprudential regulations. This raises the question whether these applicants are strictly in need of the RIHL scheme in order to enter the homeownership market. We see significantly less variation in terms of LTVs (Figure 6c). Just over 60 per cent of applicants in the €320,000 house price areas requested at or very close to the maximum 90 per cent LTV, with the figure standing at just under 60 per cent in the less urban local authorities. A minority of applicants (6 per cent) requested an LTV above the maximum 90 per cent limit set by the scheme parameters.

When we examine LTIs and LTVs across the income distribution (Figure 7),¹² we observe that while the mean LTI falls with income, the mean LTV generally increases with income. We see that the lower income applicants to the scheme have lower requested LTVs but require higher LTIs. This suggests that these are households with a more than sufficient deposit but who are unable to borrow from the market due to being LTI constrained. Conversely, the higher income households have LTVs much closer to 90. The rise in LTVs for applicants earning more than €50,000 likely represents the areas these applicants come from. Previously we showed only small numbers of applicants in less urban areas earning more than €50,000, so the majority of these applicants will be living in urban areas with high house prices, driving up LTVs.

¹² We are unable to separate this by €320k v €250k areas due to small sample sizes in some groups.

Figure 6: Requested Loan Size, Loan-to-Income (LTI) and Loan-to-Value (LTV) Ratios

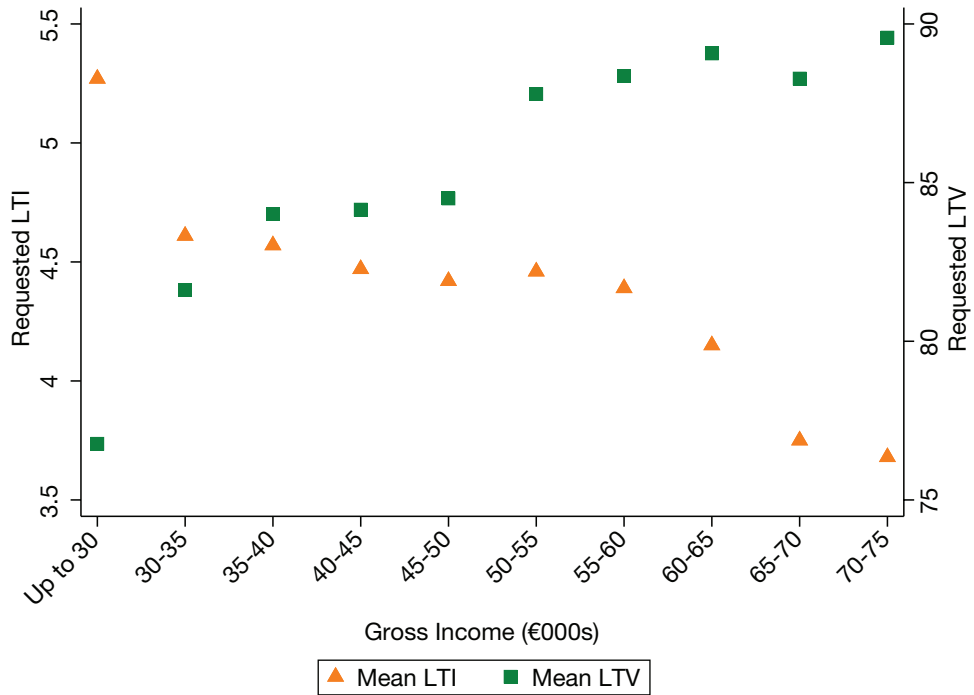


Source: Housing Agency RIHL Microdata.

Notes: LTV is calculated on the sub-sample of 1,530 observations for whom a property price is recorded; the prospective property price is frequently not recorded in this initial application.

The mean LTI is fairly consistent, at or just below 4.5, for those earning €40,000-60,000. For incomes greater than €65,000 the mean LTI tails off considerably, only marginally above the macroprudential policy limit of 3.5. This relationship is mechanical as the €288,000 loan limit and the income limit naturally restrict the leverage rates of higher income households.

Figure 7: Mean Requested LTI and LTV by Income Band



Source: Authors’ calculations using Housing Agency RIHL Microdata

Notes: LTV is calculated on the sub-sample of 1,530 observations for whom a property price is recorded; the prospective property price is frequently not recorded in this initial application.

Finally, in Table 2 we present a series of OLS regressions to determine statistically significant differences in incomes, requested loan sizes and requested LTIs across various applicant characteristics separately for the €320k and €250k areas. In comparison with those in permanent employment, the self-employed earn less regardless of area. Interestingly, while in the less urban areas workers on temporary contracts face lower earnings of a similar magnitude to the self-employed, in urban areas the earnings of workers on temporary contracts are not statistically different from those in permanent employment. With regards to age, in urban areas earnings decrease with age, while in the non-urban areas there are no statistically significant differences across age bands.

Table 2: OLS Regressions of Income, Loan Size & LTI on Applicant Characteristics by €320k v €250k Areas

	Income		Loan Size		LTI	
	€320k	€250k	€320k	€250k	€320k	€250k
<i>Aged: 18-30</i>						
31-40	-1,107*	1,685	-5,501**	-743.9	0.0164	-0.140
	(613.0)	(1,025)	(2,728)	(3,643)	(0.0599)	(0.123)
41-50	-2,770***	1,782	-30,336***	-15,082***	-0.337***	-0.653***
	(793.7)	(1,201)	(3,532)	(4,266)	(0.0775)	(0.144)
>50	-5,313***	2,719	-75,067***	-54,842***	-1.173***	-1.685***
<i>Employment Status:</i>						
Permanent	(1,850)	(2,586)	(8,232)	(9,189)	(0.181)	(0.310)
Contract/Temporary	-857.4	-6,969**	-7,453	-34,812***	-0.159	-0.434
	(2,214)	(3,006)	(9,853)	(10,682)	(0.216)	(0.360)
Self-Employed	-7,895***	-6,383***	-20,490***	2,973	0.655***	1.119***
<i>Occupation:</i>						
Managers	(1,151)	(1,503)	(5,121)	(5,341)	(0.112)	(0.180)
Professionals	1,514	1,355	2,433	9,754*	-0.115	-0.0552
	(921.1)	(1,476)	(4,099)	(5,244)	(0.0899)	(0.177)
Associate Professionals	-1,868*	-4,279***	-8,502***	-15,432***	-0.00336	-0.0786
	(962.6)	(1,512)	(4,283)	(5,373)	(0.0940)	(0.181)
Clerical Support	-2,759**	-7,793***	-9,221*	-26,650***	0.0520	0.101
	(1,167)	(1,810)	(5,192)	(6,434)	(0.114)	(0.217)
Services and Sales	-3,464***	-7,409***	-11,325**	-27,387***	0.0909	0.00380
	(1,049)	(1,478)	(4,668)	(5,251)	(0.102)	(0.177)
Craft and Trades	-1,358	-2,894*	-7,828	-17,188***	-0.0926	-0.187
	(1,391)	(1,696)	(6,190)	(6,029)	(0.136)	(0.203)

Table 2: OLS Regressions of Income, Loan Size & LTI on Applicant Characteristics by €320k v €250k Areas (Contd.)

	Income		Loan Size		LTI	
	€320k	€250k	€320k	€250k	€320k	€250k
Plant and Machinery	-407.3 (1,367)	-6,729*** (1,830)	-3,658 (6,082)	-19,312*** (6,502)	-0.116 (0.133)	0.223 (0.219)
Elementary	-3,590*** (1,215)	-5,244*** (1,609)	-11,572** (5,406)	-24,422*** (5,719)	0.154 (0.119)	-0.0780 (0.193)
Other	-6,152** (2,537)	-5,660 (4,367)	-34,857*** (11,286)	-10,321 (15,521)	-0.321 (0.248)	0.0948 (0.524)
No. Dependants:						
0 Dependants	-	-	-	-	-	-
1 Dependants	3,534*** (643.3)	1,255 (993.5)	14,556*** (2,862)	-2,389 (3,531)	-0.0150 (0.0628)	-0.185 (0.119)
2 Dependants	4,757*** (691.1)	1,683* (973.4)	13,021*** (3,075)	-691.5 (3,459)	-0.202*** (0.0675)	-0.215* (0.117)
3+ Dependants	3,054*** (950.4)	4,060*** (1,260)	9,320** (4,229)	750.6 (4,477)	-0.0444 (0.0928)	-0.280* (0.151)
Constant	46,598*** (927.8)	39,064*** (1,463)	220,517*** (4,128)	165,186*** (5,198)	4.822*** (0.0906)	4.485*** (0.175)
Observations	2,633	1,031	2,633	1,031	2,633	1,031

Source: Authors' calculations using Housing Agency RIHL Microdata.

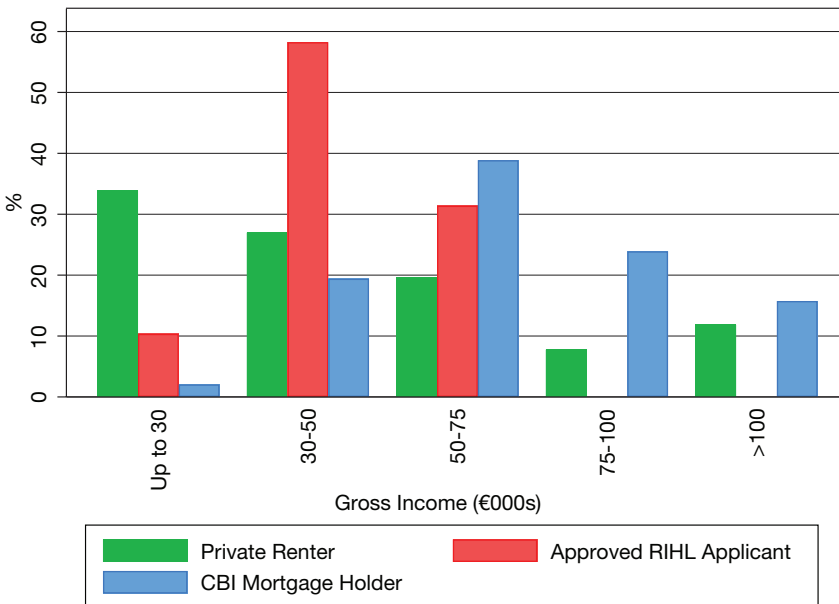
Note: Standard errors reported in parentheses and significance level displayed as * p < 0.1, ** p < 0.05, *** p < 0.01.

Loan size decreases with age in both areas, perhaps reflecting differences in the available loan terms. In urban areas, having children is associated with requesting a larger loan. However, in non-urban areas there are no differences depending on if or how many children the applicants have. In terms of LTIs, regardless of area, applicants aged 40 and over request lower LTIs, while the self-employed request significantly higher LTIs than permanent workers.

3.3 Interaction with Broader Mortgage Market

Having profiled the characteristics of RIHL applicants and the levels of credit demanded, the aim of this subsection is to examine how the scheme fits more broadly within the Irish mortgage market. Up to this point our focus has been purely on examining demand for the RIHL scheme and we have therefore included all applicants in our analysis. However, as we are now specifically comparing with those who have actually accessed mortgage finance through the commercial market, in this subsection we restrict our analysis to approved applicants only. This should give us insight as to whether the households targeted by RIHL are in fact underserved or excluded from the market, or whether there is some overlap between local authority and commercial market mortgage lending.

Figure 8: CBI Mortgage Holder v SILC Private Rental v Approved RIHL Applicant Income Distribution



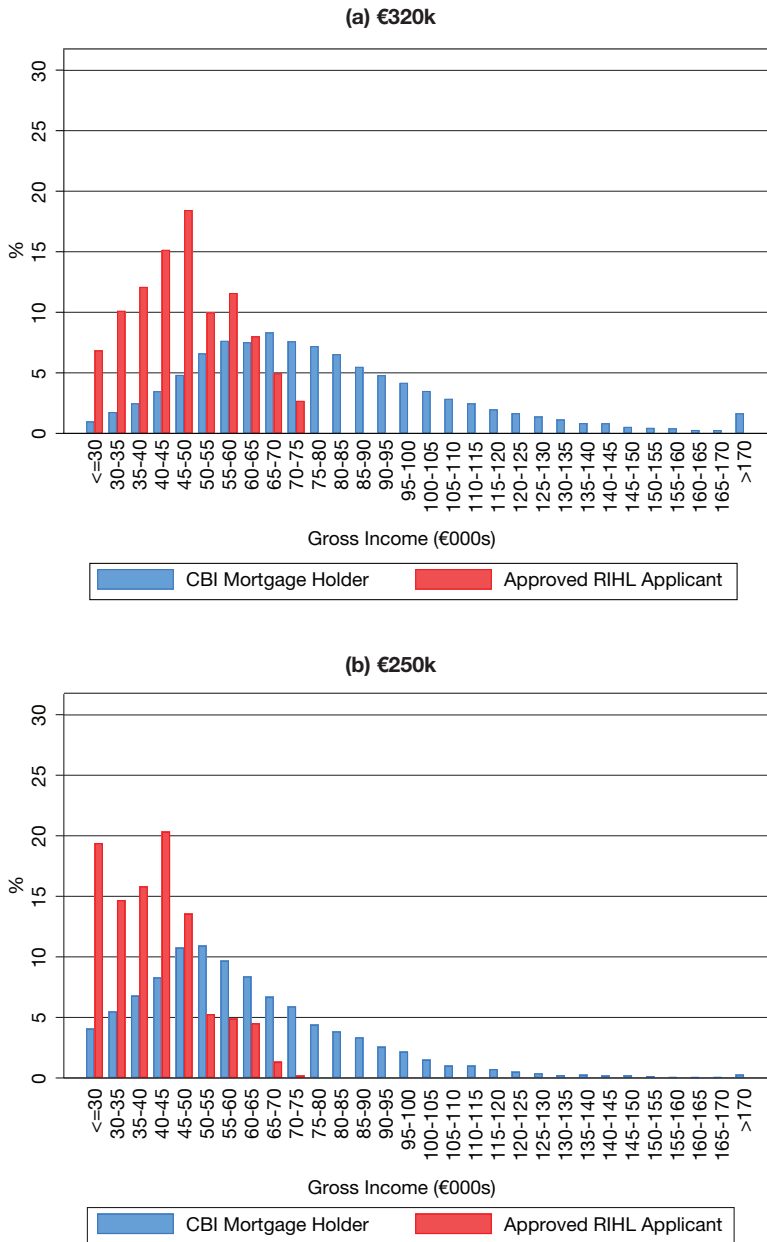
Source: The data provided by the Central Bank of Ireland (CBI) cover 2018 and 2019 H1 to correspond with the period covered by the RIHL data (February 2018 – September 2019). SILC 2018. Approved RIHL applicants only.

As the maximum 90 per cent LTV is the same across the RIHL and commercial mortgage market lending, in this section we will focus on which parts of the income distribution the respective FTBs are coming from, along with the LTI distribution. As a starting point, Figure 8 compares the income distribution for three groups; private renters, approved RIHL applicants and new mortgage holders who have obtained a mortgage from a commercial provider. While not all renters would be suitable candidates for a mortgage, Corrigan *et al.*, (2019a) found that 86 per cent of renters in Ireland expressed a preference for homeownership in their survey. As we would expect the majority of first time buyers to be in the private rental sector prior to purchasing, private renters provide a useful comparison group. Figure 8 clearly shows there is little overlap between the private rental and commercial mortgage market income distributions. Sixty per cent of private renters have an income of below €50,000, while only approximately 20 per cent of new mortgages went to households in this income range. At a first glance, in terms of incomes, the RIHL scheme would appear to provide a bridge between these two groups, with 58 per cent of approved applications coming from households with an income between €30-50,000 and a further 10 per cent with an income up to €30,000.

Figure 9 provides a more detailed comparison of the income distributions of FTBs in the commercial market with approved RIHL applicants for the €320k and €250k areas. The first thing to note is the difference in the distributions of commercial market mortgage holders between the two groups. The €320k area mortgage holder income distribution peaks at €65-70,000 compared to between €45-55,000 in the €250k areas. In part this likely reflects the differences in house prices between the areas. In the more urban areas, the RIHL peak is substantially lower at €45-50,000. In addition, there is a sizeable drop off after €50,000 in these areas which may be due to the higher proportion of single applicants in these areas (see Table 1). In the €250k areas the mortgage holder distribution peaks between €40-45,000, but nearly 20 per cent of approved applicants in these areas had an income at or below €30,000 which highlights the differences in the types of applicants in the two areas. We see that relative to more urban areas, a greater share of non-urban households in the commercial mortgage market are found in the lower portion of the income distribution, with 35 per cent earning up to €50,000 relative to just 14 per cent in urban areas. There is therefore a greater overlap between the two distributions in non-urban areas compared to the urban areas. Nevertheless, it is clear that the RIHL applicant distributions lie markedly to the left of the CBI FTB distributions in both areas.

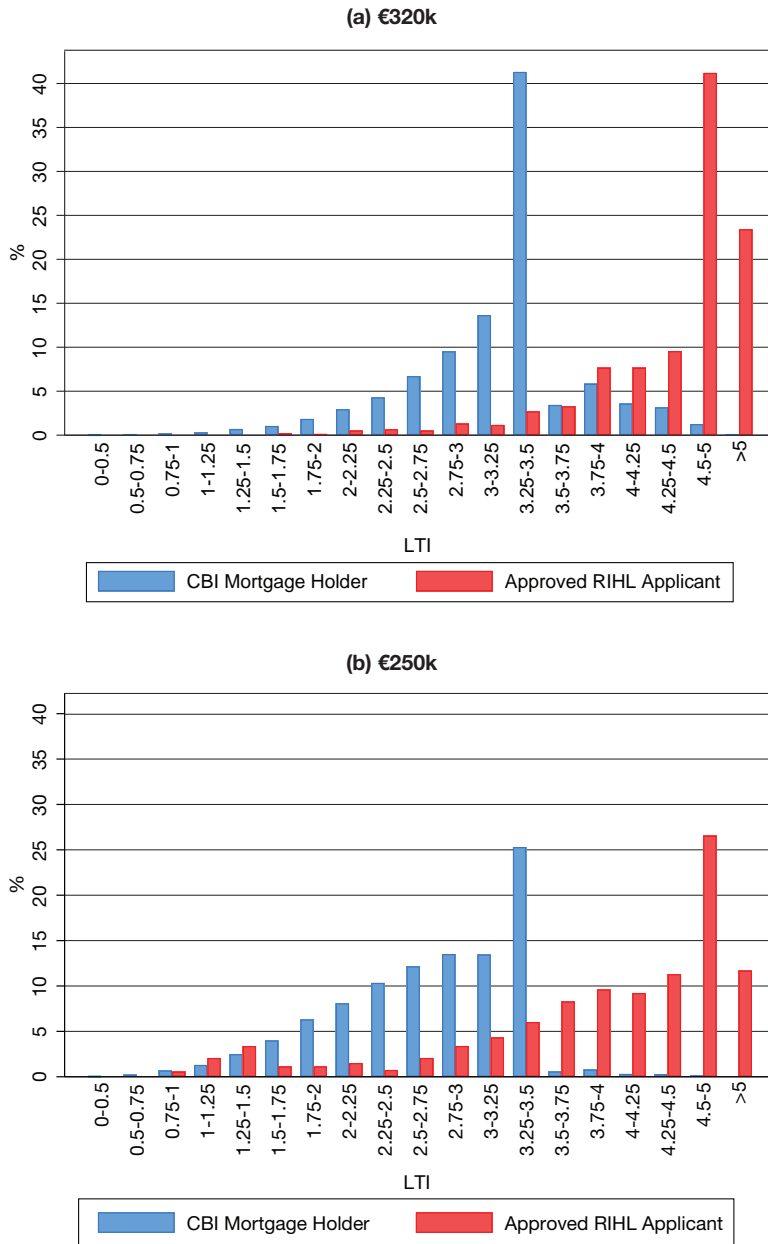
As the RIHL scheme set a maximum LTV of 90 per cent, in line with the macroprudential regulations, the RIHL scheme was therefore targeted at those who are constrained by the maximum 3.5 LTI condition. It is therefore unsurprising that Figure 10 shows such large disparities between the LTIs of existing mortgage holders and the requested LTIs of approved RIHL applicants. In the commercial market, more than 40 per cent of FTB borrowers in urban areas have an LTI in the

Figure 9: CBI Mortgage Holder v Approved RIHL Applicant Income Distributions



Source: The data provided by the Central Bank of Ireland (CBI) cover 2018 and 2019 H1 to correspond with the period covered by the RIHL data (February 2018 – September 2019). Approved RIHL applicants only.

Figure 10: CBI Mortgage Holder v Approved RIHL Applicant LTI Distributions



Source: The data provided by the Central Bank of Ireland (CBI) cover 2018 and 2019 H1 to correspond with the period covered by the RIHL data (February 2018 – September 2019). Approved RIHL applicants only.

highest permissible band, 3.25-3.5, compared to only 25 per cent in the €250k non-urban areas. In contrast, almost two-thirds of approved RIHL applicants in urban areas requested an LTI greater than 4.5. In the non-urban areas almost 40 per cent of approved applications requested an LTI between 3.5-4.5, with just under 40 per cent requesting an LTI greater than 4.5. Perhaps surprisingly, around one-in-four approved applicants requested an LTI of 3.5 or lower. As these applicants would have been expected to be able to obtain the requested level of funds from the banking sector providers, it does raise the question of whether these applicants were strictly in need of the RIHL scheme in order to become homeowners. While some may still have been rejected by commercial lenders, O'Toole and Slaymaker (2020) note that the lower cost of borrowing relative to market lending rates may have incentivised some applications from applicants who were not credit constrained.¹³ Furthermore, they cite difficulties obtaining formal letters of rejection from banks led to online mortgage calculator figures being accepted as an alternative proof of insufficient finance and note the importance of ensuring that the income, house purchase value and implied deposit are cross-checked between the application form for RIHL and the online calculators to ensure only those with genuine need are accepted.

Figures 9 and 10 provide evidence of a clear discord between those receiving credit from the commercial sector and those approved for the RIHL scheme. In order to facilitate lending, 20 per cent of new mortgage lending to FTBs is permitted above the 3.5 LTI limit set out in the macroprudential regulations (Kinghan, 2018). We may therefore expect these exemptions to provide a bridge between the commercial lending sector and approved RIHL applicants. Table 3 provides a comparison between those who received an LTI exemption and RIHL applicants recommended for approval. Focusing on mean values, Table 3 shows that there are substantial differences on average between these two groups. Those granted LTI exemptions have a mean income which is almost €30,000 higher, while their mean loan size is €90,000 more than those requested by approved RIHL applicants. The higher share of joint applicants and those located in Dublin among those granted LTI exemptions may explain some of this difference in incomes. It is also clear from Figure 11 that very few of the exemption cases have an LTI above 4.5, with a mean LTI of 4, compared to a mean of 4.4 for approved RIHL applicants. This highlights that the types of borrowers being approved for the RIHL scheme are under-served by the commercial market and are on average not appearing to benefit from LTI exemptions either.

One important question for scheme additionality is what stage of the lifecycle approved applicants are at; are these applicants under-served by the commercial market or are they younger and simply excluded at this stage in their lifecycle? Table 3 shows the mean age for approved RIHL applicants was 35, the same as for

¹³ Subsequent to the period analysed in this paper, interest rates for the scheme were raised to address this.

commercial market borrowers without exemptions, and older than those gaining exemptions through the commercial lenders (33). This suggests the scheme is not being exploited by younger borrowers not yet able to borrow sufficiently from the commercial market, although this could be a concern as familiarity with this type of product increases.

Table 3: Comparison of Characteristics of FTB Borrowers With and Without LTI Exemptions with Approved RIHL Applications

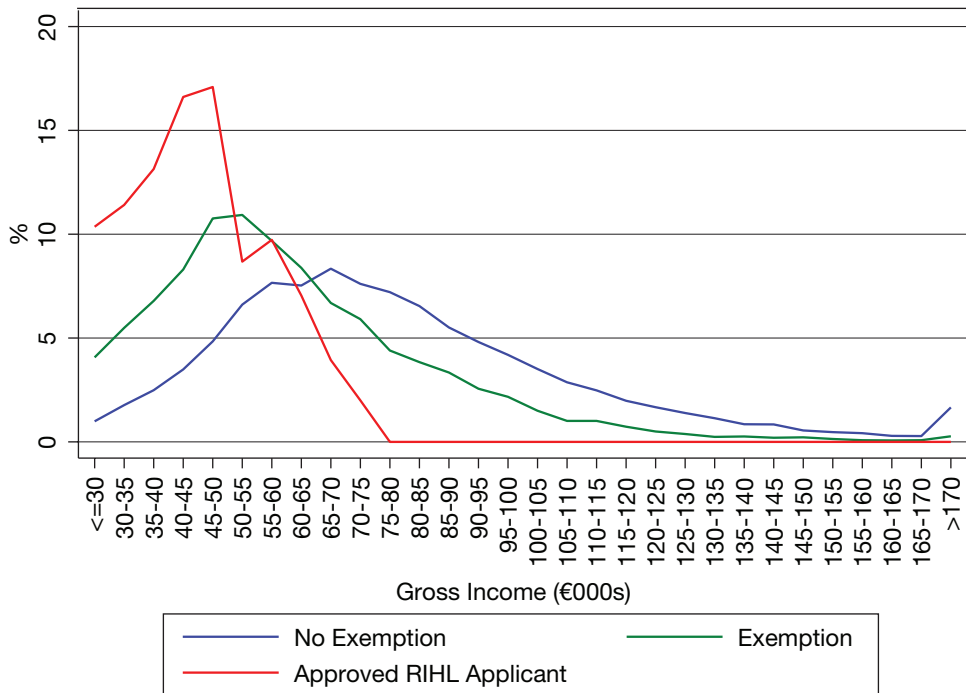
<i>Characteristic</i>	<i>Without</i>	<i>With</i>	<i>RIHL</i>
Mean gross income (€)	72,991	74,590	45,223
Mean loan size (€)	201,433	288,891	198,877
Mean house price (€)	269,094	371,378	–
Mean loan-to-income	2.9	4.0	4.4
Mean interest rate (%)	3.1	3.1	2.2
Mean loan term	29	32	28
Mean age	35	33	35
Joint applicants (%)	72.2	62.6	56.3
Dublin (%)	28.2	66.6	47.5

Source: The data provided by the Central Bank of Ireland (CBI) cover 2018 and 2019 H1 to correspond with the period covered by the RIHL data (February 2018 – September 2019).

While Table 3 is informative, mean characteristics may be skewed by high income and house price values in particular. From Figure 11 we see that the income distribution for households who received an LTI exemption in order to access credit through the commercial market peaks at €50-55,000, substantially lower than the overall commercial mortgage market income distribution which peaks at €65-70,000. However, it does appear that the RIHL income distribution is much more concentrated on households below €50,000 income levels than either those with or without an LTI allowance in the commercial market.

A final piece of evidence we present to explore the exclusion hypothesis is to compare how much applicants could borrow on the scheme relative to what they would be expected to be able to borrow under the commercial macroprudential regulations (excluding exemptions). Figure 12 plots requested RIHL loan size against the counterfactual loan size from the market under current macroprudential regulations (3.5 LTI, 90 per cent LTV) given an applicant's income. Applicants above the red 45-degree line have a larger counterfactual loan relative to the size of the loan they requested under the RIHL scheme, implying that they should be able to obtain a larger loan from the market. A large proportion of observations above the 45-degree line would therefore bring into question these applicants' true need for the scheme. Note that in practice being below the 45-degree line does not definitively mean these applicants are excluded from commercial market lending

Figure 11: Comparison of Income Distributions – CBI Mortgage Holders by LTI Exemption Status v Approved RIHL Applicants

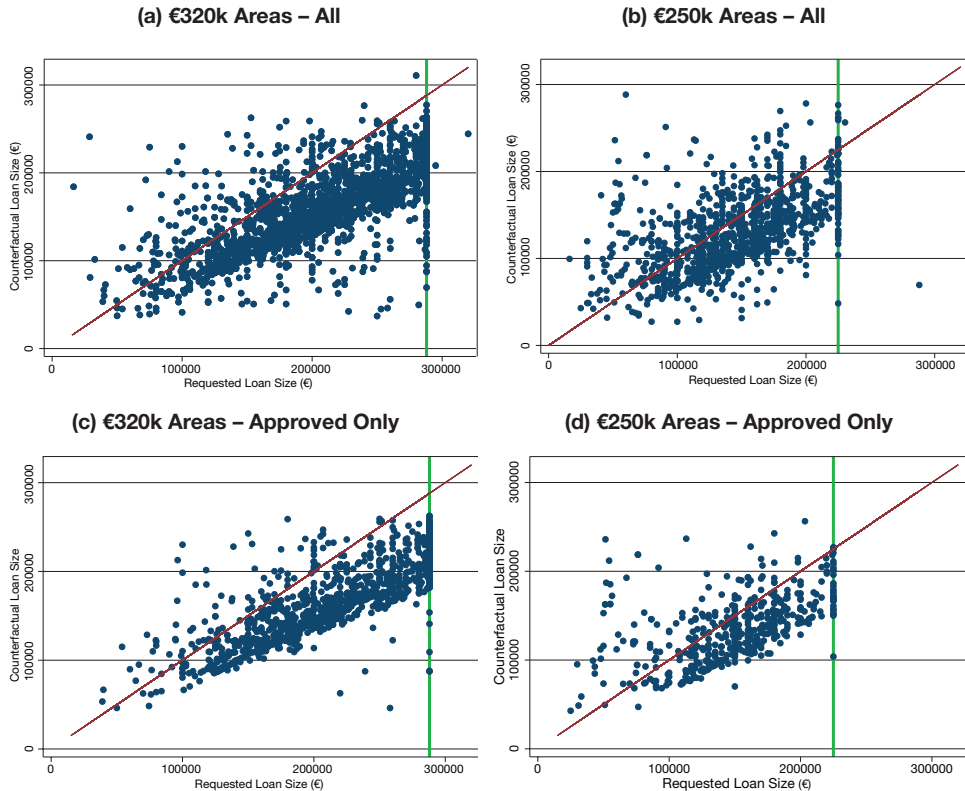


Source: The data provided by the Central Bank of Ireland (CBI) cover 2018 and 2019 H1 to correspond with the period covered by the RIHL data (February 2018 – September 2019). Approved RIHL applicants only.

as it is possible that some may be able to obtain an LTI exemption. Nevertheless, it provides useful suggestive evidence, particularly as Table 3 demonstrates that those receiving exemptions on average look quite different on key characteristics to those gaining approval under the RIHL scheme.

Figure 12 shows the majority of applicants (both those approved and applicants more generally) lie below the 45-degree line, suggesting the scheme is generally targeting those unable to access sufficient credit from market lenders. This is particularly the case in €320k areas. In the €250k areas, a greater proportion of applicants, less so approved ones but still a non-negligible share, fall above the 45-degree line and would be expected to be able to borrow more from commercial lenders than under RIHL, suggesting there is some evidence of crossover between the market and the scheme in these areas. That this is less evident among approvals is reassuring but also highlights the importance of the assessment process to ensure the scheme is best targeted at those most in need.

Figure 12: Requested Loan Size and Counterfactual Loan Size by €320k v €250k Areas



Source: Authors' calculations using Housing Agency RIHL Microdata.

Notes: The red line is a 45-degree line. The green line represents maximum loan size thresholds (€288,000 in €320k areas and €225,000 in €250k areas). Applicants above the red line would be expected to be able to obtain a greater loan size from the market.

IV RISK AND REJECTION: SAFEGUARDING THE SCHEME

To ensure a sustainable mortgage book and safeguard the scheme against excess credit risk, it is critical that good underwriting practices are followed at origination, credit policy parameters are set appropriately, and ex post default risks are assessed. The evidence from the global boom and bust in the mortgage market from the mid-2000s onwards has clearly highlighted the consequences of a loosening of underwriting practices and the extension of large volumes of credit to households at high leverage and loan-to-income multiples (Anderson *et al.*, 2011; Jiang *et al.*, 2014). This was also clearly the case in Ireland as shown by McCarthy and McQuinn (2017).

Given that the scheme directly loosens the macroprudential loan-to-income cap, this is likely to have implications for borrower leverage, which could give rise to heightened risk. We directly discuss the choice of the other credit conditions (loan-to-value and debt-service-to-income) of the scheme which are set to address this consideration. Second, we consider the screening in terms of rejections and acceptances to the scheme which will provide insights into which types of households are gaining access to this public mortgage credit scheme.

4.1 Lending Parameters, Indebtedness and Repayment Capacity

As noted above, the RIHL scheme does not have an explicit loan-to-income cap and our analysis shows that this has enabled a cohort of excluded low to middle income households to access credit. However, allowing higher income leverage ratios is likely to add risk for these borrowers in terms of loan repayment. To address this risk, the RIHL scheme has an explicit LTV limit of 90 per cent and a debt-service-to-income (DSTI) limit which acts to ensure mortgage payments are affordable. In this section, we consider the calibration of these limits and their ability to provide risk protections.

In the RIHL credit policy a maximum debt-service-to-income (DSTI) ratio is set at 35 per cent of disposable income, but this falls to 30 per cent for lower income households. Having a lower limit for the lowest income households is prudent and 30 per cent is an accepted international norm for the benchmark of high housing costs (Corrigan *et al.*, 2019b). Some limited exemptions are available from the 35 per cent rule whereby local authority credit committees can allow up to 40 per cent.

The DSTI limit is in contrast to the loan-to-income ratio used in the Central Bank of Ireland's macroprudential framework. However, given the fact that much of its motivation clearly stems from households facing borrowing constraints under the macroprudential rules, it is not unsurprising that an alternative tool is used. Indeed, there is much debate internationally whether LTI or DSTI tools are more effective, and many countries use DSTI limits. Indeed, recent research by Gerardi *et al.* (2017) and O'Toole and Slaymaker (2021) clearly indicates that the debt-service-to-income ratio is a critical measure in determining default risk i.e. the income affordability channel is the main driver of mortgage arrears. Therefore, specifically limiting the DSTI can help to address this.

To provide some international evidence in relation to the parametrisation of the debt-service-to-income ratio, Table 4 presents the levels of debt-service-to-income restrictions set by other European countries and the RIHL parametrisation. It must be noted that the comparison of these instruments across countries is complicated by the different definitions used. Nevertheless, it is clear that the RIHL limit is at the lower end of the scale relative to international norms. Given that this scheme specifically targets low to middle income households, this would seem appropriate.

Table 4: Overview of Debt-Service-to-Income Ratios Across Europe

<i>Country</i>	<i>Year</i>	<i>Cap</i>	<i>Exemptions</i>	<i>FTB only?</i>
Cyprus	2016	80	No	No
Czech Republic	2018	45	5%	No
Estonia	2014	50	15%	No
Hungary	2018	25-60 ^a	No	No
Lithuania	2015	40	Yes ^b	No
Portugal	2018	50	Yes ^c	No
Romania	2018	45	15%	Yes ^d
Slovakia	2017	80 ^e	No	No
Slovenia	2018	50-67 ^f	No	No
Ireland – RIHL	2018	35	Yes	Yes

Source: European Systemic Risk Board.

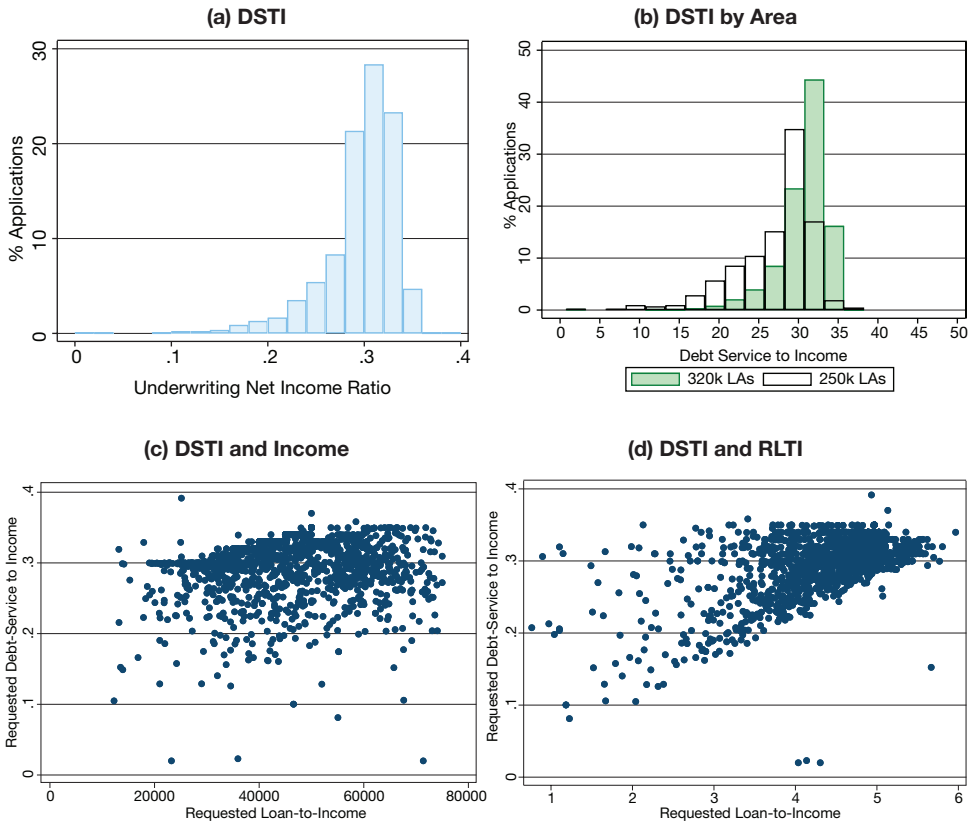
Note: ^a Depending on interest rate, term, fixation period; ^b up to 60 per cent in no more than 5 per cent of cases; ^c up to 20 per cent can go to 60, 5 per cent overall; ^d 40 per cent is general cap; ^e of residual income; ^f depending on income.

From the application-level dataset, for those applicants recommended for approval we have information on the net income ratio that was approved by the underwriters. Distributional statistics for this variable are presented in Figure 13. Panel A presents the overall distribution of the debt-service ratio. It is clear that the majority of the approved DSTIs are close to the 30-35 per cent cut-offs: over half of the approved applications are for loans with an DSTI at or above 30 per cent. This is not surprising given that the applicants to this scheme are likely to be income constrained and therefore looking to maximise the possible drawdown size. This effect is more pronounced when the distribution is split up between the €320k and €250k areas. The DSTI levels are higher in the €320k areas which is likely to reflect the fact that these households are highly credit constrained in the high house price areas and therefore need to max out credit conditions.

Panel C presents a scatter plot of household income and the approved DSTI levels. The scatter plot shows the sliding scale of DSTI limits and shows that many of the high DSTI approvals go to higher income applicants. The final scatter plot presents the relationship between LTI and DSTI. The high correlation between these two metrics does indicate that households are likely to be income constrained and looking to maximise credit drawdowns along the affordability channel. To summarise, the DSTI limit set for the RIHL scheme would appear to be in line with that observed (if not strict) in an international context. The declining rate with income is a prudent feature and in line with evidence on the definition of high housing costs across the income distribution.

RIHL first time buyer loans are subject to a 90 per cent loan-to-value restriction. This is in line with the Central Bank of Ireland's calibration for first time buyers.

Figure 13: Distributional Statistics for Debt-Service-to-Income Ratios



Source: Authors’ calculations using Housing Agency RIHL Microdata.

It is also the point which is suggested by Kelly *et al.* (2015) at which ex post default risk rises in the loan-to-value ratio for FTBs. Table 5 presents the maximum loan-to-value restrictions that are in place in listed European countries. These countries are recorded as having a maximum loan-to-value limit in the ESRB/ECB macroprudential database. It can be seen that a majority are parametrising close to 90 per cent (the median and mean are 90 per cent). Given these considerations, the current setting for the RIHL LTV limit would appear to be line with international norms.

4.2 Rejections and Applicant Screening

A critical part of ensuring credit risks are managed in a responsible manner relates to how applicants are screened, who is rejected and who is approved for credit. The role that underwriting quality has in determining the loan risk ex post has been well documented in the existing literature (Jiang *et al.*, 2014). In this section, we explore

Table 5: Overview of Loan-to-Value Ratio Parameters Across Europe

<i>Country</i>	<i>Year</i>	<i>Cap</i>	<i>Exemptions</i>	<i>FTB only</i>
Czech Republic	2017	90	15% ^a	No
Denmark	2014	95	No	No
Estonia	2014	85/90 ^b	15%	No
Finland	2014	95	N/a	Yes ^c
Ireland	2017	90	5%	Yes
Iceland	2017	90	No	Yes ^d
Latvia	2014	95	No	No
Liechtenstein	2015	85	Yes	No
Lithuania	2011	85	No	No
Netherlands	2018	100	No	No
Norway	2018	85	10%	No
Poland	2013	80-90 ^e	No	No
Portugal	2018	90	No	No
Romania	2011	85-95 ^f	No	No
Slovakia	2018	90	No	No
Slovenia	1016	80	No	No
Sweden	2010	85	No	No
<i>Local Authority Loans in Ireland</i>				
RIHL	2018	90	No	Yes
Home Choice Loan	2009	92	No	Yes

Source: ESRB/ECB Macprudential Database.

Note: ^a of loans between 80-90 per cent per quarter; ^b 90 per cent allowed with a KredEx guarantee; ^c overall cap 90 per cent; ^d overall cap 85 per cent; ^e depending on insurance; ^f depending on government guarantee.

the share of rejected households¹⁴ and then undertake a simple econometric exercise to test which households are more likely to be rejected. Second, we look at the reasons provided by the underwriters for rejection. This provides insights into the ex ante risks in the scheme.

4.3 What is the rejection rate and who is rejected?

Table 6 presents the average rejection rate amongst the sample of applicants that we analyse. The data provided cover the full sample as well as subgroups for the €320k and €250k areas. Overall just under 50 per cent of applicants are rejected from the scheme. The rate is lower in counties with the €320k cap (45 per cent) relative to 54 per cent in the more rural areas.

¹⁴ Rejected here refers to applications recommended for rejection by the underwriters. The final decision on whether to extend credit is taken by each Local Authority's Credit Committee. See O'Toole and Slaymaker (2020) for more discussion of this.

Table 6: Rejection Rates (Percentages)

	<i>Overall</i>	<i>€320k Area</i>	<i>€250k Area</i>
Accepted	51.9	54.5	45.2
Rejected	48.1	45.5	54.8
Obs.	3,664	2,633	1,031

Source: Authors' calculations using Housing Agency RIHL Microdata.

To provide more insight into which applicants are rejected, we undertake a simple multivariate probability analysis to test which household characteristics are associated with rejection:

$$\Pr(\text{Rej}_i = 1) = f(Y_i\beta_1 + S_i\beta_2 + L_i\beta_3 + \text{ICB}_i\beta_4 + \mathbf{X}_i\beta)$$

We link the probability of rejection to the log of income (Y_i), the log of savings (S_i), log of loan size (L_i), an *ICB* dummy for the household having a credit score issue (ICB_i), and other household characteristics including age, occupation, number of dependants, employment status and region. The results of the probit model estimates are presented in Table 7 as marginal effects. The reference groups for the dummy variables are presented below the table.

A number of findings emerge. Households aged 30-40, which would be the main household formation age bracket in Ireland, are least likely to be rejected. Rejections are decreasing in income and savings but increasing in the demanded loan size (for a given income and savings level). Self-employed and contract/temporary workers are more likely to be rejected relative to permanent employees. In terms of household occupation, professional and associated professionals are less likely to be rejected relative to managers. Households with dependants are also more likely to be rejected for a given income which likely reflects the higher levels of expenditure these households are faced with. Joint applications are also more likely to be rejected. The largest effect relates to households who have a negative credit record as measured by their *ICB* report. This increases the likelihood of rejection by 56 per cent relative to those without an *ICB* event. This is a very important result and shows the underwriters are clearly using the past history of credit management to determine default risk.

Table 7: Determinants of Rejection: Probit Model Marginal Effects

	<i>All</i>	<i>€320k</i>	<i>€250k</i>
Age 31-40	-0.0899*** (0.0221)	-0.0900*** (0.0255)	-0.0897** (0.0441)
Age 41-50	-0.0427 (0.0280)	-0.0584* (0.0332)	-0.0193 (0.0532)

Table 7: Determinants of Rejection: Probit Model Marginal Effects (Contd.)

	<i>All</i>	<i>€320k</i>	<i>€250k</i>
Age >50	-0.0236 (0.0678)	-0.0696 (0.0818)	0.0301 (0.130)
Log Income	-0.322*** (0.0329)	-0.348*** (0.0412)	-0.299*** (0.0559)
Log Savings	-0.0149*** (0.00303)	-0.0128*** (0.00356)	-0.0215*** (0.00590)
Log Loan	0.0155*** (0.00254)	0.0148*** (0.00311)	0.0177*** (0.00438)
Contract/Temporary	0.186** (0.0767)	0.147 (0.0928)	0.268** (0.136)
Self-employed	0.112*** (0.0407)	0.158*** (0.0504)	0.0281 (0.0673)
Professionals	-0.0576* (0.0328)	-0.0312 (0.0382)	-0.114* (0.0648)
Associate Professionals	-0.0789** (0.0342)	-0.0248 (0.0398)	-0.235*** (0.0668)
Clerical Support	-0.0657 (0.0414)	-0.00985 (0.0482)	-0.219*** (0.0804)
Services and Sales	-0.0368 (0.0364)	-0.0167 (0.0438)	-0.106 (0.0665)
Craft and Trades	-0.0295 (0.0459)	0.0372 (0.0587)	-0.162** (0.0746)
Plant and Machinery	-0.0803* (0.0463)	-0.0809 (0.0568)	-0.116 (0.0818)
Elementary	-0.00723 (0.0411)	0.0496 (0.0513)	-0.144** (0.0694)
Other	-0.219** (0.0926)	-0.227** (0.110)	-0.191 (0.188)
1 Dependant	0.0967*** (0.0238)	0.113*** (0.0279)	0.0483 (0.0453)
2 Dependants	0.0826*** (0.0256)	0.115*** (0.0310)	0.0158 (0.0456)
3+ Dependants	0.136*** (0.0335)	0.135*** (0.0417)	0.124** (0.0582)
Joint Application	0.0500** (0.0231)	0.0641** (0.0279)	0.0225 (0.0426)
ICB Issue	0.556*** (0.0698)	0.476*** (0.0858)	0.704*** (0.128)
€320k area	0.0221 (0.0207)		
Observations	3,664	2,632	1,030

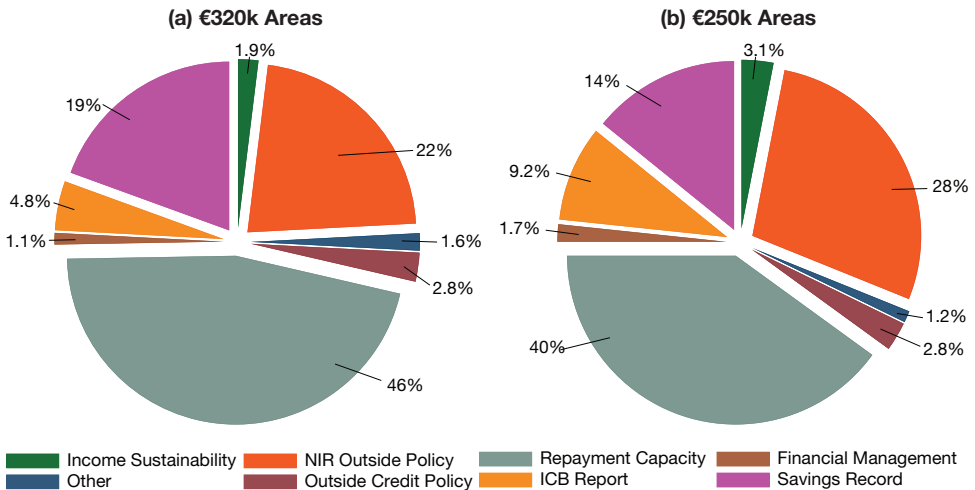
Source: Authors' calculations using Housing Agency RIHL Microdata.

Note: Standard errors reported in parentheses and significance level displayed as * p < 0.1, ** p < 0.05, *** p < 0.01.

4.4 Reason for Underwriter Rejection

A final element that is useful for consideration, and available in our microdata, is the specific reason given by the underwriters for rejection. These reasons are grouped into: income sustainability (security of future income cash flows), repayment capacity insufficient, credit history issues (ICB report), net income ratio outside the policy (NIR¹⁵ outside policy), the application breached other conditions of the credit policy (such as the income limit or LTV ratio), poor financial management, and poor savings record.

Figure 14: Reasons Provided by Underwriters for Rejection



Source: Authors’ calculations using Housing Agency RIHL Microdata.

In the €320k areas, it is clear that the majority of rejections are due to poor repayment capacity or an NIR (DSTI) outside the policy. However, nearly one-in-five was also due to an insufficient savings record. These reasons for rejection suggest that the households which have received a decline on their application are likely to be those with a higher credit risk. This screening should provide for good ex ante credit allocation. In the €250k areas the main reasons for rejection are similar. However, a higher share of households are rejected due to a poor credit history on other non-mortgage loans.

V CONCLUSION

The aim of this paper was to examine a new public mortgage loan, the Rebuilding Ireland Home Loan,¹⁶ which was introduced in Ireland following concerns around

¹⁵ NIR is what the scheme calls the debt-service-to-net-income ratio (DSTI).

¹⁶ Subsequently replaced by the similar Local Authority Home Loan product under the Housing for All plan in January 2022.

credit market access for lower to middle income households. We have highlighted the profile of demand for RIHL loans which has been mainly associated with middle income urban households who cannot access the mortgage market due to the macroprudential regulations in the commercial mortgage market. We show that the profile of demand appears to correspond to the portion of the income distribution that is under-served by the existing banking sector, particularly in more urban areas.

We have given consideration as to how this scheme fits in with the broader management of systemic risk in the mortgage market. As the scheme provides higher leverage credit to lower income households, it inevitably extends more credit at a higher risk than would be the case under the current macroprudential rules. However, by combining strong underwriting practices including the use of DSTI and house price limits, with limiting the value of the scheme in total euro terms, we argue that a specific instrument like this can sit alongside a strong macroprudential framework and specifically target the externality of reduced first time buyer credit access for lower income households that is a consequence of the regulatory regime. The fact that this scheme can address credit demand issues for a portion of households, but should not create risk to the overall system, as would be the case if the overall loan-to-income calibration were loosened in Ireland, is, we argue, a benefit of the scheme. We have also shown that the scheme appears to be calibrated in line with international norms in terms of the loan-to-value ratio. Rejections have been approximately one-in-two and accepted applicants are more likely to be higher income (relative to scheme applicants overall), permanent employees which should bode well in terms of ex post default risk.

Despite its benefits, the scheme does have a number of drawbacks both from an operational perspective and in a mortgage lending context. Many of these are discussed in O'Toole and Slaymaker (2020) but some are worthy of a mention here. From a credit risk perspective, while the underwriting is done centrally by experts in the Irish Housing Agency, the final lending decision is made by the individual local authority and their own Credit Committee. If this is to lead to divergence from the underwriting assessment, then the credit risk in the mortgage pool will rise. As the loans are going to lower income households relative to commercial lending, managing this risk is critical to ensuring considerable defaults do not occur. Furthermore, how local authorities deal with arrears cases, and indeed any moral hazard from any lower perceived repossession risk is also important.

While O'Toole and Slaymaker (2020) note the overall level of lending at €200 million in total for the first tranche is insufficiently large to impact general market house prices (representing less than 4 per cent of total first time buyer lending in Ireland in 2019), if this lending were to be concentrated into a particular area, it may have localised impact on house prices. Given the well documented supply issues in the Irish market (Allen-Coghlan *et al.*, 2020), understanding how best to ensure the scheme does not cause inflationary pressures should be the focus of future research. It must be kept in mind that while this demand-side scheme has

merits in terms of addressing access to credit consequences of the regulatory regime, it is intended to be small-scale and not intended to address wider affordability issues that require supply-side policy interventions over the medium to longer term.

Finally, while the scheme appears to be generally well targeted towards those under-served by existing commercial lenders, there is some evidence that some approved applicants were likely not in need of the scheme in order to become homeowners, particularly outside urban areas. O'Toole and Slaymaker (2020) note that the lower cost of borrowing relative to market lending rates may have incentivised some applications from applicants who were not credit constrained. This highlights the importance of how any such loans are priced relative to market rates, in addition to the importance of ensuring that the income, house purchase value and implied deposit are cross-checked between the application forms and documents providing evidence of insufficient finance for ensuring any such scheme is targeted at those with genuine need.

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