



## Mortgage Interest Rate Types in Ireland

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### Abstract

This letter profiles interest rate types across the Irish mortgage market. We attempt to answer the following questions: (1) what interest rate types were contracted between borrowers and banks at loan origination and how have these evolved over time? (2) for each distinct interest rate type, are there differences in the loan and borrower characteristics and did these change over the credit cycle? and (3) how do mortgage burdens of households differ across interest rate types?. We find that the choice of fixed rate loans at origination is greater for younger, first time borrowers. The fixed rate is typically less than 5 years with 81 per cent transitioning to variable rates after the expiry of the agreed fixed rate term. In comparison, loans originating on variable contracts exhibit a low propensity to change rate type. A special variable rate with fixed margin over a reference rate ("Tracker") dominates the mortgage market at the height of the boom with the largest loans and greatest proportion of self-employed borrowers. Since Tracker loans have benefited most from the low interest rate environment, we analyse if there are differences across rate type in terms of mortgage servicing costs. We find while Tracker loans are associated with lower median installments, differences vis-a-vis fixed and SVR installments vary by mortgage origination year and current house prices.

## 1 Introduction

The financial crisis in Ireland has presented considerable challenges to many mortgage holders in meeting the terms of their loans. Arrears rates are amongst the highest in Europe and many households are struggling to afford their monthly installments. One key factor determining installments is the interest rate on the mortgage. How this varies over the lifetime of the loan is dependent on the type of interest rate contracted

(adjustable/variable or fixed rate). Understanding how borrowers and banks agree on the interest rate type of mortgage contracts is of high importance as it directly impacts the relationship between monetary policy and housing affordability.

This research provides a profile of which interest rate types (for example fixed or variable) that are contracted to Irish mortgage holders. We consider the following questions: (1) what interest rate types were contracted between borrowers and banks at the time of origination and how have

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these evolved over time? (2) for each distinct interest rate type, are there differences in the loan and borrower characteristics and did these change across the credit boom and bust period in Ireland? and (3) for similar units of housing today, how do mortgage burdens of households differ across interest rate types?

The type of interest rate on mortgage contracts has received considerable attention in the international literature (Brueckner and Follain, 1988; Coulibaly and Li, 2009; Bacon and Moffatt, 2012; Cocco, 2013). This research highlights the role played by both borrower factors and bank factors in determining agreed rates. On the borrower side, influencing factors include relative prices, inflation and interest rate expectations, risk aversion, income levels and volatility, default probability and the probability of moving. Recent research has also highlighted the effect of behavioural characteristics on mortgage rate choice (Mugerman et al., 2013). On the bank side, research has also indicated that, for uninformed borrowers, banks can provide biased financial advice to sway borrowers towards the use of certain interest rates that better suit the banks position (Foay et al., 2014). Banks are also influenced by their cost of funds and operational considerations as to which mortgage interest contracts suit their business.

To date there have been a number of studies in Ireland that profile in detail the types of interest rate held by Irish households on outstanding mortgage loans. As part of an overview of the Central Bank of Ireland loan-level data, Kennedy and McIndoe-Calder (2012) show that in 2010, 54 per cent of loans were Tracker loans<sup>2</sup>, 15 per cent were fixed rates and 30 per cent were standard variable rates. Goggin et al. (2012a,b) present an evaluation of the determinants of mortgage standard variable rates (SVRs) in the period before and after the financial crisis.

Building on the existing research, our work provides a more granular evaluation of the type of interest rate contracted to borrowers. We also explore how other loan conditions such as loan-to-value ratios differed across borrowers holding

standard variable, fixed and Tracker mortgage contracts. Finally, we test whether households face different repayment burdens depending on the type of interest rate mortgage they hold. We find that while Tracker loans generally have lower interest rates and larger balances, the median installment on Tracker loans is €756 per month while the median installment on SVR and fixed rate loans amounted to €775 and €834 respectively. Differences between installments by rate type are greatest for borrowers who originated loans during the height of the credit boom period, 2005-2008. Further, for houses currently valued over 330,000, the installments do not differ between SVR and Tracker rates.

The rest of this letter is organised as follows: section 2 outlines the data. Section 3 provides some stylised facts about borrower characteristics and interest rate type. Section 4 evaluates whether interest rate types are correlated with financial outcomes for borrowers ex post. Section 5 concludes.

## 2 Data and Market Overview

### 2.1 Data

Our analysis utilizes loan level data collected by the Central Bank of Ireland for the four major domestic banking institutions: Allied Irish Banks (AIB, including Educational Building Society (EBS)), Bank of Ireland (BoI), and Permanent TSB (PTSB). The data was first collected for the 2011 Prudential Capital Assessment Review (PCAR 2011) and has been collected at six-month intervals since this time. The analysis focuses on a snapshot of 310,000 loans at December 2013<sup>3</sup>.

### 2.2 Interest Rate Types in Ireland: An Overview

Mortgage interest rates in the Irish market follow three distinct types: (1) fixed rate mortgages (fixed) (2) standard variable rate (SVR) mortgages or (3) variable rate mortgages with contractual

<sup>2</sup>Tracker loans automatically adjust to changes in policy or other reference rates given an agreed margin.

<sup>3</sup>The sample is defined as loans originated for PDH home purchases. Cleaning applied to arrive at final sample included outlier removal (1% top and tail) and removal of data where key fields are missing. Further details of the cleaning applied to arrive at the final sample is available on request from the authors. The data contains information on the characteristics of: (a) Mortgage Borrowers: such as age, gender, marital status, employment status and income; (b) Mortgage Loans: such as term; loan purpose; originating and current balance; originating and current interest rate type; current interest rate; scheduled monthly repayment; LTI and LTV; and (c) Mortgage Properties: the property type (apartment or house); the property location and originating and current property value.

obligation to a fixed margin above the policy rate (Tracker). In the case of fixed rates, only part of the mortgage term is fixed, typically less than 5 years, ending with the borrower choosing between another fixed rate period or reverting to a variable rate. The SVR mortgage allows the lenders to unilaterally change the interest rate and are currently the only variable product in the marketplace. During the 2003-2008 period of increased competition in the Irish mortgage market, Trackers gained popularity, with an average fixed margin of 110 basis points above the ECB main refinancing rate. While Tracker mortgages are no longer offered to new borrowers, they represent circa 50 per cent outstanding mortgage balances.

Figure 1:A and Figure 1:B depict the originating and current interest rate types on Irish mortgages by year of origination. It is evident that fixed rate mortgages, while popular product types at origination, represent a smaller share of the overall interest rate types currently; Tracker mortgages dominate for loans originated in 2004 to 2008 period; and post-2008, SVRs represent the most popular interest rate type in the Irish mortgage market. Further, Table 1 shows transition rates between between rate types. Rates of movement for variable origination mortgages is low with most remaining on the same product (81 and 96 per cent for SVR and Tracker respectively). In contrast 81 per cent of fixed contracts change rate type, 42 per cent to SVR and 39 per cent to Tracker depending on origination period.

### 3 Interest Rate Types Across Ireland's Credit Boom

There has been considerable research undertaken in Ireland documenting aspects of the financial system across the credit boom and bust such as changes to credit conditions, allocation of mortgage credit by buyer type and aggregate lending growth (Coates et al., 2015; Hallissey et al., 2014; McCarthy and McQuinn, 2013).<sup>4</sup> However, one unexplored dimension has been how different interest rate types have evolved across the credit boom and bust period. Rate type selection by borrowers and banks is important to understanding the impact of changes to policy interest rates on eco-

nomics activity and for stress-testing the sustainability of household finances. It is also important in terms of understanding the drivers of banks' interest rate setting.

This section focuses on the originating interest rates and explores, across the 2000-2013 period in Ireland, how differential interest rates were distributed across borrowers and how interest rate types were associated with credit conditions such as loan-to-value ratios, loan balances and loan-to-income ratios.

#### 3.1 Interest Rate Types and Borrower Characteristics

Table 2 presents the borrower characteristics by interest rate type for current loans originating between 2000 and 2013. There is evidence of younger and first time borrowers signing up to fixed rate contracts<sup>5</sup>. Figure 2 shows the evolution of rate type by borrower characteristics, with fixed rate loans associated with a lower average borrower age and a greater share of first time buyers. This is consistent with Duffy and Roche (2005) who show first time buyers display higher risk aversion and preference for fixed rate mortgages. The increase in the share of first time buyers across both interest rate types following the crisis is documented in Coates et al. (2015) as a shift in the composition of the market away from investment lending, equity releases and second time purchasers.

In terms of the employment status, the share of self-employed borrowers is highest amongst Tracker loans at 14 per cent compared to 12 per cent for SVR and 9 per cent for fixed. Early in the property boom, the share of self-employed borrowers getting Tracker loans was similar to fixed and variable. However, later in the period (2006-2008) more self-employed borrowers contracted to Trackers. Kelly et al. (2015) show self-employed borrowers default more frequently.

#### 3.2 Interest Rate Types and Credit Characteristics

This section assesses at which credit conditions (loan-to-value (OLTV) and loan-to-income (OLTI) rates as well as the size of loan balances) certain interest rate types were contracted. The overall

<sup>4</sup>For a detailed discussion of the Irish financial crisis please see Honohan (2009) and Lane (2011).

<sup>5</sup>Many first time borrowers take fixed rate loans which have a short fixation period and automatically revert to variable status.

median values of each of these credit variables are presented in Table 3 by rate type, including a breakdown for direct house purchase loans and refinancing<sup>6</sup>. Further, Figure 3 presents the evolution of credit conditions and rate types over the period.

Trackers account for the largest loans with an average balance of 205,000 euro compared to 175,000 and 145,000 for fixed and SVR respectively. This differential increases when considering only loans for house purchase with the average Tracker drawdown 70,000 and 42,000 euro greater than SVR and fixed loans respectively. Focusing on the part played by timing of draw-down, we can see a consistent increase in loan balances prior to 2008 across all interest rate types in line with Irish credit boom, with Trackers exhibiting significantly larger balances at the height of the house boom (2004-2006).

Focusing on OLTVs fixed rate loans have the highest OLTV ratios with a median of 75.3 per cent, compared to Trackers and SVRs originated at 62.9 and 59.3 per cent. Higher OLTVs for fixed rate loans is consistent with a greater share of these loans being allocated to first time buyers who traditionally face more binding downpayment constraints (Duca et al., 2010, 2011; Kelly et al., 2015). The lack of available equity from house sale for first time buyers is also evident in OLTIs, with a median 3.4 for fixed rates, 3.3 for Tracker and 2.7 for SVRs. In addition, median OLTVs are also higher for house purchase than refinance loans, not unexpected as many refinancing borrowers do so to achieve a better interest rate given build ups in home equity and potentially improved income. From Figure 3, OLTVs increase as the boom progressed to 2008 but have not declined following the crisis. This is due to the reduction in housing equity and the fact that more mortgages are originating with lower equity components.<sup>7</sup> OLTIs across all rate types increased during the boom and have declined since the crisis (as documented in McCarthy and McQuinn (2013)).

<sup>6</sup>We do not observe switching between credit institutions in our data and where we refer to refinancing loans, these are loans that are described as refinancing at origination.

<sup>7</sup>The evolution of LTV and LTI series over time is discussed in Hallissey et al. (2014).

<sup>8</sup>In these data, mortgage terms are reasonably static across rate types. A detailed evaluation of mortgage terms in Ireland over time is contained in Gaffney (forthcoming.). See this research for an overview.

## 4 Housing, Interest Rate Types and Mortgage Burden

In this section, we explore the link between the current interest rate types and the incidence or burden of borrowers' current mortgage obligations. This is important in the context of Ireland's recovery as well as from a financial stability perspective as changes in policy interest rates feed back differently to household consumption and investment depending on the type of mortgage contract held. Our measurement of mortgage burden focuses on monthly installments faced by borrowers. Our analytical approach is twofold. Firstly, we document the degree to which installments differ across interest rate types and consider whether evident differences are driven by interest rates or loan volumes outstanding.<sup>8</sup> Second, we ask how do interest rate types affect the financial burden or commitments of households who have similar valued housing units currently?

It must be noted that this research does not evaluate the determinants of mortgage interest rate pricing or explore how changes in interest rates can affect affordability. Rather, it presents a point-in-time (December 2013) assessment of evident differences in repayments for borrowers who hold different mortgage interest rate types.

To provide context, figure 4 presents the distribution of interest rates across interest rate types, highlighting that Tracker loans carry an interest rate between 0.5 to 2 per cent while SVR rates and fixed rates are clustered around 3.5 to 5 per cent. Given that Tracker loans are larger, while they may benefit from lower interest rates, the installments that households are obligated to cover may not in fact differ significantly.

Table 4 highlights the median installment, median interest rate and median loan size for mortgages with Tracker, SVR and fixed interest rates. It can be observed that Tracker loans have the lowest median installment at €756 per month while the median installment on SVR and fixed rate loans amounted to €775 and €834 respectively. While there are differences between these medians, they

do not appear as divergent as would be expected considering the much lower interest rate applied to Tracker loans. One explanation for this result is also evident in table 4. The median balance is much higher for Tracker loans thus off-setting some of the effects of lower interest rates.

While Tracker loans have the highest outstanding balances, this is related to the fact that such loans were mainly originated during the height of the credit boom period when house prices were highest and credit conditions were at their loosest. In fact these loans are no longer available to new borrowers. Thus the average balance for new loans, which are provided on SVR or fixed rates, is lower given the falls in house prices since 2008. It is informative therefore to consider the differences in financial burden for borrowers with different mortgage interest rate contracts who took out their mortgage in the same year. This is presented in figure 5. Figure 5:A indeed shows that for the borrowers who took out loans during the peak years of the credit boom (2005-2008), the difference in installments between SVR or fixed loans and Tracker loan is much larger than suggested by the overall sample medians. As interest rates are virtually identical within each rate type over time (as seen in 5:B), any variance in installments mainly reflects differences in outstanding balances across mortgage contract types over time.

Finally, to further explore the differences in financial burdens between mortgage holders of different rate types, we undertake the following exercise. We ask: Are borrowers who currently live in an identically-valued house facing a different financial burden due the type of interest rate they face on their mortgage? This assessment abstracts from considerations of when the borrower took out their mortgage and focuses more on the unit of housing that they consume today. To answer this question, in figure 6 we plot the median installment for borrowers with different interest rate type mortgage contracts against the current value of their property. The chart indicates that for properties valued up to circa 330,000 Tracker borrowers have lower installments relative to SVR. However, for houses valued over 330,000 there is no difference between the installments for SVR and Tracker borrowers. The installments for borrowers on fixed rate loans are higher across nearly all points of the current house price distribution than both Tracker and SVR borrowers.

## 5 Conclusions

This letter considers the following questions: (1) what interest rate types were contracted between borrowers and banks at loan origination and how have these evolved over time? (2) for each distinct interest rate type, are there differences in the loan and borrower characteristics and did these change over time? and (3) how do mortgage burdens of households differ across interest rate types?

A number of findings emerge. Firstly, loans that were originated as fixed rate contracts transitioned over time to SVR and Tracker contracts while loans that were originated as either SVR or Trackers contracts typically remained with these contract types. The number of fixed rate loans at origination is higher for younger, first time borrowers and this market feature holds across the credit cycle. Tracker loans were allocated to a greater share of self-employed borrowers during the boom period. Through the period 2002-2008, while credit conditions across all interest rate types loosened, Tracker loans were allocated with the least restrictive credit conditions (highest LTV and balances) to a borrower pool which had a greater share of self-employed borrowers, a group with traditionally higher income volatility. This highlights the lack of risk-based pricing as such loans have low margins and low default buffers but were allocated on more liberal credit conditions and to a greater share of more risky borrowers.

Tracker loans dominated the mortgage market at the height of the property boom. Relative to SVR mortgages, borrowers with Tracker loans have seen reductions in installments following falls in the policy rate. However, many Tracker loans were allocated at high balances at the height of the credit boom. We investigate whether the actual installments are different across rate types given these timing versus interest rate effects. We find that while Tracker loans generally have lower interest rates and larger balances, the median installment on Tracker loans is  $\text{€}756$  per month while the median installment on SVR and fixed rate loans amounted to  $\text{€}775$  and  $\text{€}834$  respectively. Median installments differ considerably by year of mortgage origination with the difference in installment between Tracker and other loans greatest for borrowers who originated loans during the boom period when house prices were highest. Further, for houses currently valued over 330,000, the installments do not differ between SVR and Tracker

rates. As noted, this study is point-in-time and provides an assessment of the differences in repayment burdens across rate types for similar housing

units. The research does not consider the determinants of interest rate pricing or the degree to which mortgage burdens are affordable for borrowers.

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## Tables and Figures

Table 1: Interest Rate Type Switching

	Now FIXED	Now SVR	Now TRACKER
Orig FIXED	0.19	0.42	0.39
Orig SVR	0.04	0.81	0.16
Orig TRACKER	0.01	0.03	0.96

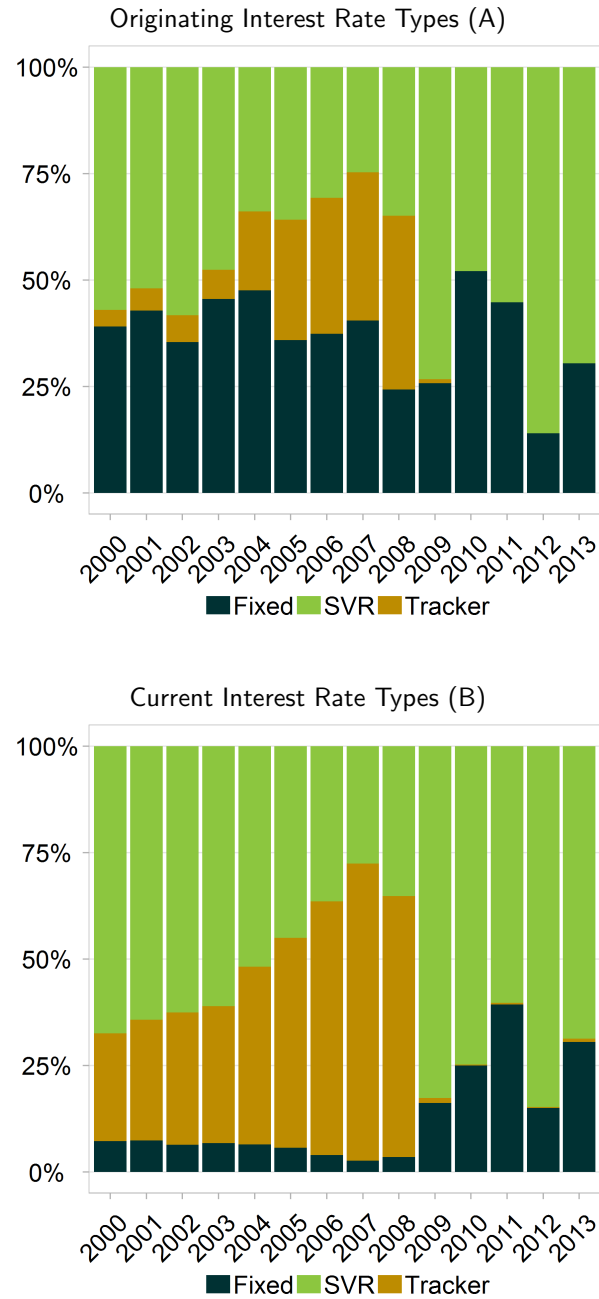
Table 2: Interest Rate Types at Origination: Borrower Characteristics

	FIXED	SVR	Tracker
BorrowerAge	34.54	36.92	36.18
FTB	0.54	0.39	0.40
Married	0.43	0.53	0.54
Non-Married/Single	0.52	0.41	0.41
S/D	0.05	0.05	0.04
Employed	0.86	0.82	0.79
SelfEmployed	0.09	0.12	0.14
OtherEmploy	0.05	0.06	0.06
Jointly Assessed	0.65	0.67	0.68

Table 3: Interest Rate Types at Origination: Financial Characteristics (Mean Values)

	LoanSize (Euro)	OLTV (%)	Term (Months)	OLTI
All Loans				
Fixed	175,000	75.3	360.0	3.4
SVR	145,000	59.3	300.0	2.7
Tracker	205,000	62.9	324.0	3.3
Loans for Home Purchase				
Fixed	178,000	77.0	360.0	3.5
SVR	150,000	63.9	300.0	2.8
Tracker	220,500	70.1	360.0	3.4
Loans for Refinance				
Fixed	150,000	50.4	295.5	2.5
SVR	103,000	35.7	241.0	2.0
Tracker	150,000	39.1	251.0	2.5

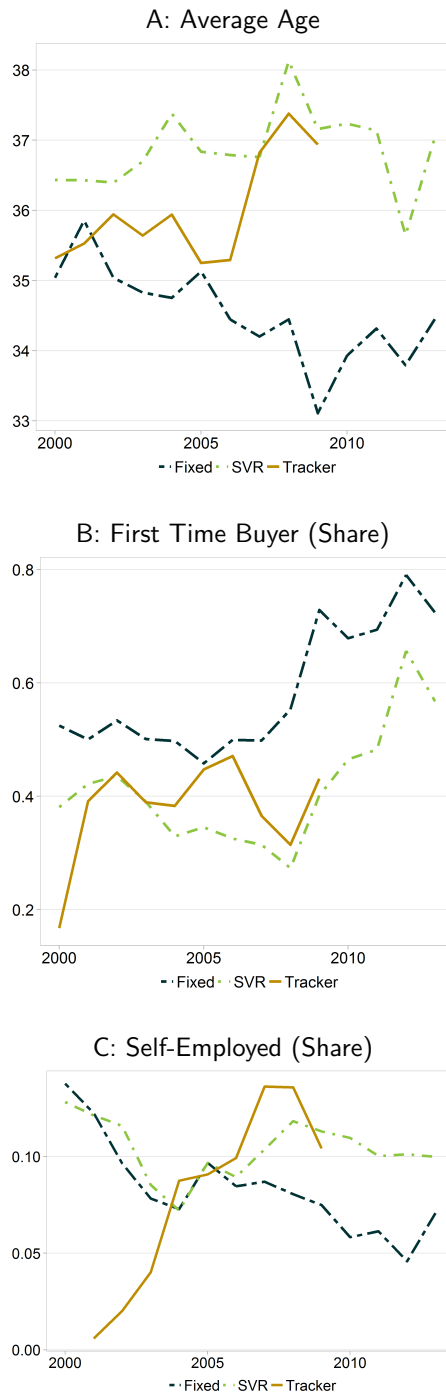
Figure 1: Interest Rate Types: Originating and Current



Source: Author's calculations using Central Bank of Ireland data.

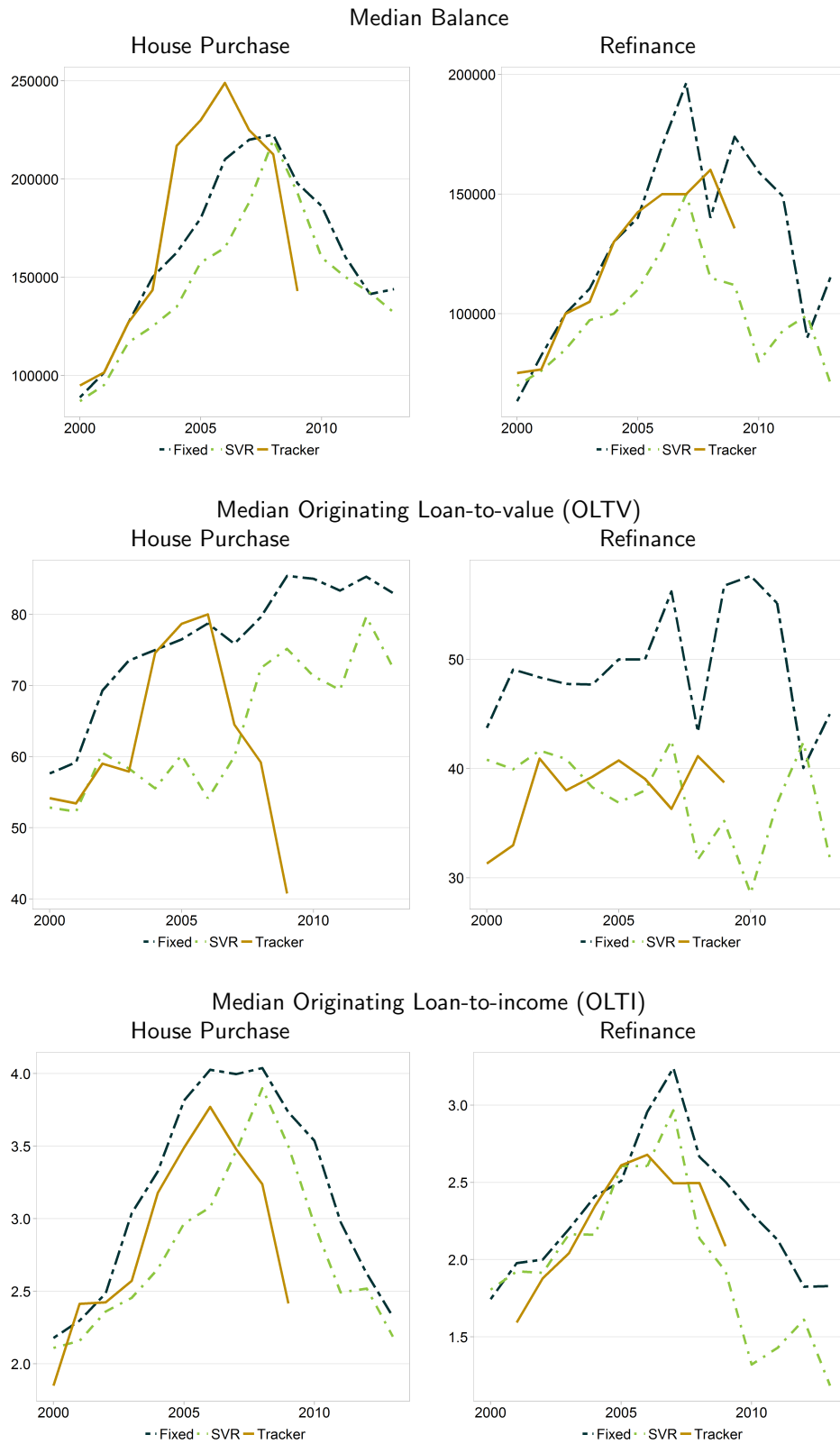


Figure 2: Interest Rate Types and Borrower Characteristics by Origination Year



Source: Author's calculations using Central Bank of Ireland data.

Figure 3: Interest Rate Types and Loan Characteristics by Origination Year

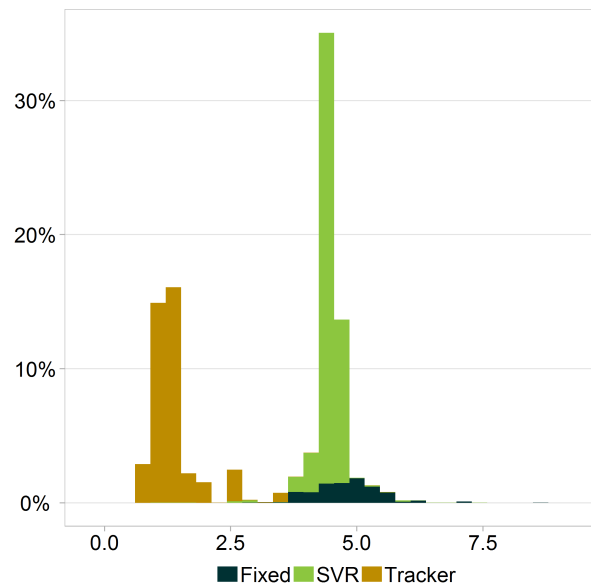


Source: Author's calculations using Central Bank of Ireland data.

Table 4: Interest Rate Types: Financial Burden

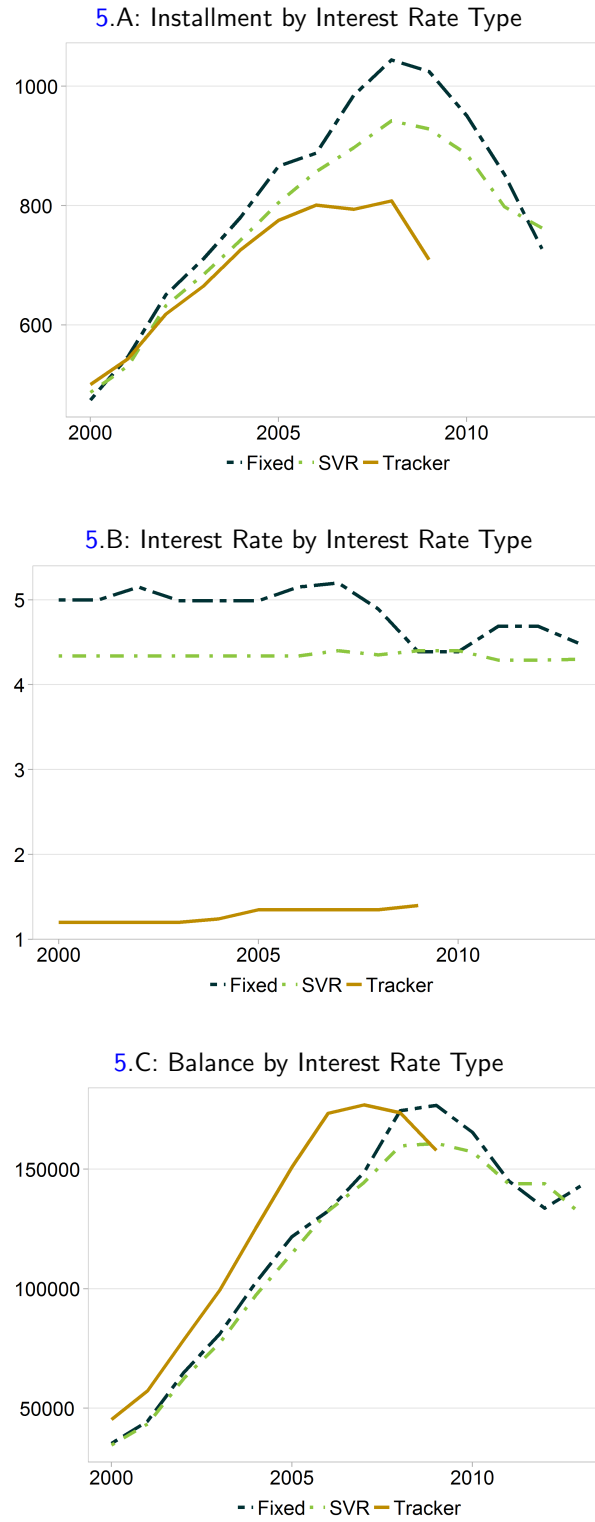
	Installment ( $e$ per month)	Interest Rate (%)	Balance Outstanding ( $e$ )
Fixed	834.7	4.7	136,550
SVR	774.5	4.3	116,341
Tracker	756.7	1.4	150,146

Figure 4: Interest Rate Distribution by Interest Rate Type



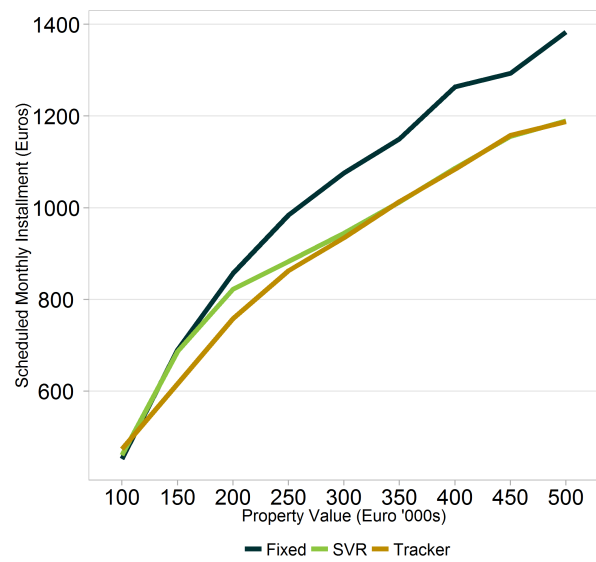
Source: Author's calculations using Central Bank of Ireland data.

Figure 5: Financial Burden Across Interest Rates Types



Source: Author's calculations using Central Bank of Ireland data.

Figure 6: Installment by Property Value December 2013



Source: Author's calculations using Central Bank of Ireland data.