



Banc Ceannais na hÉireann  
Central Bank of Ireland

Eurosystem

## Financial Stability Notes

# Fixed-rate mortgages: building resilience or generating risk?

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Vol. 2019, No. 5

# Fixed-rate mortgages – generating risk or building resilience?

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May 1, 2019

## Abstract

In recent years, there has been a rapid shift away from traditional variable-rate mortgages toward fixed-rate mortgages in Irish and other European mortgage markets. While many of these products are equivalent to short-term ‘teaser-rate’ mortgages, the fixation periods available appear to be slowly lengthening. There is no clear framework to help policymakers and other stakeholders analyse the effects of a shift from variable-rate to fixed-rate mortgage contracts (or vice-versa). We address this gap, focussing on financial stability and with reference to the Irish context. We find that while fixed-rate mortgages can build household resilience, this should increase the cost of a mortgage. Pricing risk is shifted from households to banks, who must then diversify it away through funding markets or through market hedges, and pass the costs of their risk management strategies through to households. We analyse jurisdictions that have large quantities of long-term fixed-rate mortgages, and determine that the ability of banks to diversify away their pricing risk depends on numerous jurisdiction-specific regulatory and institutional factors.

## 1 Introduction

Recent developments in the Irish and some other European mortgage markets indicate a rapid shift away from traditional variable-rate mortgages toward fixed-rate mortgages ([Figure 1](#)). Mortgages still represent the largest component of Irish bank lending so it is important to monitor the market from a financial stability perspective (Mishkin, 2009) and to ensure consumers are protected (Amromin et al., 2018). Therefore, it is necessary to consider carefully the recent shift in market structure and the potential implications for financial system and household resilience to shocks, were it to continue.

Maturity transformation is one of the key elements of retail banking. However, this process comes with numerous risks attached. The more well-known is liquidity risk: the risk that banks will not be able to roll over their funding.<sup>1</sup> Pricing risk is discussed less frequently, in part because it takes a longer time to build.

Pricing risk results when the prices banks can charge on their loans falls below the cost at which they can raise funds (interest rate and counterparty risk) and conduct their business (e.g. operational and regulatory risk). When a mismatch between banks costs and the prices they can charge occurs bank profitability can be eroded, potentially leading to insolvency as occurred in the Savings and Loans crisis in the US during the 1980s.

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<sup>1</sup> Reforms undertaken after the global financial crisis, such as the [Liquidity Coverage Ratio](#), seek to address liquidity risk.

In Ireland, pricing risk has traditionally been moved downstream to households through variable-rate mortgages, which the banks can adjust when their costs change. However, pricing risk cannot be passed through to households on long-term fixed-rate mortgages. While this can potentially increase household resilience, pricing risk remains in the system and banks must therefore find alternative strategies to manage that risk.

Banks have two additional ways to disaggregate pricing risk ([Figure 2](#)). A common method has been to pass the risk upstream to funds issuers, through securitisation or by issuing fixed-rate covered bonds. Alternatively, banks can move the risk 'sideways' to the market, using a hedging strategy.

While the economic literature on mortgage contracts has grown substantially since the financial crisis, there is no clear framework to help policymakers and other stakeholders analyse the effects of a shift from variable to fixed-rate mortgages (or vice-versa). This note aims to address this gap, focussing on financial stability and the Irish context, and drawing on lessons from other countries.

The remainder of this note is structured as follows. Section 2 will outline the types of fixed- and variable-rate mortgage products available in Ireland and internationally. Section 3 will discuss how fixed-rate mortgages can increase household resilience. Section 4 will examine the costs of pooling pricing risk at the bank level and mechanisms for managing that risk. Section 5 will outline international responses to the risks associated with fixed-rate mortgages.

## 2 Types of fixed- and variable-rate products in Ireland and internationally

### 2.1 What is a fixed-rate mortgage?

International publications (both academic and non-academic) are inconsistent in their application of the terms 'fixed-rate' and 'variable-rate'. This variation partly reflects the different products available in different countries. For example, 'variable rate' mortgages in the US are linked to an index, (previously this was often the US Cost of Funds Index, or COFI), and are therefore closer in nature to Irish 'tracker' mortgages (Campbell and Cocco, 2003; Badarinza et al 2014; and others).

Similarly, Irish 'fixed-rate' mortgages are contractually almost identical to British 'introductory discount variable-rate' products, but likely attract a different label due to wording of the Irish Consumer Protection Code 2012.<sup>2</sup> Conclusions about the costs and benefits of different mortgage types should therefore be treated with care, particularly if generated from cross-country analysis.

[Figure 3](#) outlines a taxonomy of interest rate types. This taxonomy reflects only the method of calculating the interest, not the type or rate of amortisation. In theory, any interest-rate type can apply equally to amortising, non-amortising (interest only) or negative-amortising mortgages.

For the remainder of this note, we will use the following terminology:

1. *Variable rate*. Discretionary variable rate - the bank has complete discretion over their choice of interest rate in each time period
2. *Indexed ('tracker') rate*. The rate is a previously-defined function of some index. In the case of Irish 'tracker' mortgages, the index was the value of ECB interest rates. In the US in the 1990s, this was generally the banks' cost-of-fund index.
3. *Fixed rate*. This is a pre-determined nominal value in the mortgage contract (which in practice is usually constant), and cannot be changed by the bank after the contract is signed.

<sup>2</sup> Under the Irish Consumer Credit Code 2012, it is only legal to charge break fees on fixed-rate mortgages, not variable-rate mortgages. In contrast, the discount variable rate mortgages set in the UK are subject to break fees in the event the customer switches during the discount period. The Irish Consumer Credit Code also requires banks to explain why they provide discounts to particular individuals, limiting their ability to negotiate an individual-borrower variable rate.

Within fixed-rate mortgages there is variation in fixation periods. For the purposes of this note, a *short-term fixed-rate mortgage* will refer to a mortgage with a rate fixation period of less than 5 years. *Medium-term* and *long-term fixed-rate mortgages* will refer to mortgages with fixation periods of between 5-10 years and over 10 years respectively.

Short-term fixed-rate products are fundamentally different from longer-term fixed-rate mortgages, in that they pass through a large amount of pricing risk to the household (as the mortgage rate changes every few years). They are therefore unlikely to substantially improve household resilience. Short-term products also tend to offer consumers a lower interest rate than the prevailing variable rate and are often referred to as ‘teaser’ rates. They may therefore offer consumption-smoothing benefits, especially for young households who would prefer to pay a lower rate at the start of the mortgage and higher rates as their wages increase (Miles and Pillonca, 2008).

## 2.2 Use of fixed-rate mortgages in Ireland and internationally

Different jurisdictions have different proportions of mortgages with each type of fixation ([Table 1](#)), and these vary over time ([Figure 1](#)). For example the proportion of new mortgages in Ireland issued on a fixed rate increased from 20 per cent to 75 per cent between December 2014 and 2018, and short-term fixed-rate mortgages now represent almost 20 per cent of the outstanding stock.

While it is difficult to pin down exactly why different jurisdictions have different types of interest rates (Park, 2018), some countries have regulations in place that limit the pass-through of pricing risk to households, thereby making fixed-rate loans relatively more attractive. For example, in France, Denmark, Spain and Switzerland all mortgages must be indexed or fixed-rate (Lea, 2010).

In Ireland the majority of fixation periods remain at or below 5 years (Kelly and Kinghan, 2018). As of 2019 all fixed-rate mortgages roll over onto a (usually higher) variable rate at the end of their fixation period, and are therefore essentially ‘teaser’ rates. 40 per cent of loans originated in 2018 will automatically switch from their current fixed rate to their bank’s standard variable rate in 2021, with an additional 32 per cent moving in 2023. As of March 2019, follow-on rates can be over one and a half times short-term fixed rates,<sup>3</sup> with the possibility of larger increases if ECB rates or bank margins rise. This generates the risk that some households will have difficulty making their repayments once their fixation periods end. This risk is mitigated to some degree by banks’ stress testing of new loans, and through the macroprudential mortgage measures, which indirectly limit debt service burdens through the loan-to-income restriction.<sup>4</sup>

Irish banks’ use of ‘teaser rates’ likely reflect a degree of competition between them for new mortgages. Banks may be willing to compete more heavily for new mortgages, which have not had their balance reduced through amortisation and where interest represents a larger proportion of the repayment relative to principal. Further, any new business is likely to be lower-risk than pre-crisis mortgages due to the aforementioned mortgage measures.

‘Teaser rates’ are also likely to be lower if households display inertia, and either do not refinance or delay refinancing at the end of the fixation period. In Ireland, refinancing (‘switching’) levels have been low, especially following the crisis, with some evidence of a pick-up in the last year (see BPF, 2018).<sup>5</sup> Evidence suggests that more financially literate households are more likely to refinance at the correct time (Andersen et al 2015; Campbell, 2006; Campbell et al., 2011), and will therefore pay less for their mortgages overall. Therefore, short-term fixed-rate mortgages act as a form of price discrimination based on the relative switching propensity of households. To facilitate switching, the Central Bank has amended the Irish Consumer Protection Code 2012 to require

<sup>3</sup> As of 7 March 2019, for example, Bank of Ireland offers a rate of 2.9% for 1 and 2 year fixed periods, and maintains a standard variable rate of 4.5 percent. Figures are for a first time buyer purchasing a 350,000 euro house and taking out a 300,000 euro loan.

<sup>4</sup> Banks in Ireland must stress test new loans fixed for less than 5 years against the standard variable rate plus 2 per cent.

<sup>5</sup> See Devine et al. (2015) for a discussion of the low rate of refinancing in Ireland and borrowers’ potential savings.

banks to increase transparency, including notifying households of upcoming rate increases when they roll off their fixed-rate loans.<sup>6</sup>

Nevertheless, fixation periods in Ireland appear to be slowly lengthening. While fixations longer than 5 years still represented only 5 per cent of all new lending in the first half of 2018, all banks now offer either a 5-year or a 7-year fixation, and some banks offer 10-year fixations. These longer-fixation products have also increased in popularity in other European countries such as Italy, Spain and Portugal. Longer-term fixations have the capacity to help households build resilience to some types of stressors, but also require changes to the ways in which banks manage risk.

### 3 Building household resilience – for a price

In principle, medium and long-term fixed-rate mortgages should help to improve household resilience. By shifting the interest rate risk back to the bank, households gain insurance against bank funding cost increases arising from inflation, real interest rates or regulatory changes.

Fixed-rate mortgages increase household resilience the most when bank funding costs rise relative to incomes. For example, if inflation spikes, variable interest rates may increase before wages, leaving some households unable to pay their nominal mortgage (Campbell and Cocco, 2015). Similarly, a fixed nominal rate may be more beneficial for those employed in sectors where wages do not increase commensurate with economic growth, such as unskilled workers with low wage bargaining power. At a broader level, households in small euro area countries such as Ireland can be protected from increases in ECB interest rates if the euro area economy improves faster than their own. Households have few options for managing these risks themselves, but fixing the nominal rate allows them to continue to meet their repayments without affecting their budgets.

To accrue this benefit, households should expect to pay more on average for their mortgages. Households on variable rates effectively obtain a discount for taking on pricing risk, through lower interest margins. Fixed-rate mortgages insure them against that risk, but they will need to compensate another party for taking it on. This will likely result in higher interest margins. In that sense, long-term fixed-rate mortgages are fundamentally different from the short-term ‘teaser rate’ products currently available in Ireland, which still pass through pricing risk to households at the end of the short fixation period. Currently, both in Ireland and in some other countries, the pricing risk premium is relatively low due to the flat yield curve. However, this insurance is likely to become more expensive if market conditions normalise and yield curves steepen.

While household preferences vary, the insurance provided by fixed-rate mortgages may be more than some households desire, as it can leave them unable to take advantage of interest rate *declines* (Park, 2018; Calza, Monacelli and Stracca, 2013), for example through monetary policy. Since wages and bank funding costs both tend to rise in good times and fall in bad times, some households may prefer to absorb part of the pricing risk and pay a lower margin (Campbell and Cocco, 2003). By doing so, they can smooth their consumption more easily over the cycle, as well as pay less in total for their mortgage.

While monetary policy pass-through can occur through the mortgage channel under a fixed-rate regime, it requires refinancing, which may not be available to unemployed households or those in negative equity (DeFusco and Mondragon, 2018; Beraja et al., 2018). If monetary policy cannot be passed through, more households are likely to default simultaneously (Fuster and Willen, 2017; Byrne, Kelly and O’Toole, 2017), which could potentially lead to further declines in house prices. If

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<sup>6</sup> The Addendum to the Consumer Protection Code 2012 published in June 2018 enhanced protections for consumers. For example, as of 1 January 2019, a regulated entity must notify consumers of any change in the interest rate 60 days prior to the end of a mortgage’s fixation period. Among other things, the notification must include a summary of other mortgage rates that could provide savings for the consumer and how they can obtain further information on these rates.

more households then fall into negative equity, they are in turn more likely to default, (Elul et al., 2018; Pikorski and Seru, 2018), potentially resulting in a downward house-price spiral.

Households can also be limited in their ability to refinance – or even to move - by excessively high refinancing penalties ('break fees').<sup>7</sup> Households tend not to factor in these costs when choosing their mortgage (Lee, 2018). Consequently, some jurisdictions – for example Denmark and Japan – have regulation to allow households to refinance without fees. Since households are less resilient to labour market shocks if they cannot relocate (Brueckner and Follain, 1988; Lee, 2018; Stanton and Wallace, 1995), some other jurisdictions have fee exemptions: for example, Germany has one if the property is sold and France has one if the household becomes unemployed or changes jobs.

If break fees are not too high, fixed-rate loans can improve competitive transparency, and thereby encourage higher rates of mortgage switching. Certainty over repayments means that households know they will not undertake a costly switch and then pay more if the new bank increases its variable rate. On the other hand, low break fees are usually offset by higher margins for all customers. This may be relatively disadvantageous for households with low financial literacy, who tend not to refinance optimally (Andersen et al 2015; Campbell, 2006; Campbell et al., 2011).

## 4 Changing banks' risk management strategies

Underlying risks will always exist around inflation, interest rates and funding costs. From a financial stability perspective, it is the pricing and management of these risks that matters most. The trend towards fixed-rates means that banks bear more of this risk. In this section, we discuss some dimensions of this risk transfer and potential approaches to manage the risks.

Fixed-rate products require the bank to carry *all* of the pricing risk. Like liquidity risk, pricing risk occurs at the bank level, and is correlated across the mortgage portfolio. A shock to inflation, interest rates or capital requirements (for example) leads to banks' costs rising relative to their income for all fixed-rate loans simultaneously (Campbell and Cocco, 2003; Miles and Pillonca, 2008). Therefore, unlike with default risk there is no benefit from pooling loans. Even if no household defaults, a shock can lead to insolvency for a bank with a large share of fixed-rate loans.

One example is the US Savings and Loans crisis. Due to high inflation and increases in interest rates in the 1970s, the cost of funding (primarily in the form of deposits) for these institutions increased.<sup>8</sup> However, most of their assets were long-term fixed-rate loans, creating a gap between their income and their costs. Estimates put the total cost of this crisis at up to \$124 billion (Robinson, 2013).

More recently, some Irish banks mis-priced their indexed rate (tracker) loans. Indexed loans provide partial pass-through of pricing risk: households take on risk to the degree that it is correlated with the index, but the remainder is borne by the bank. In the Irish case, the index used was ECB interest rates, so the repricing of risk that occurred during the financial crisis (including widening of interbank spreads) and the subsequent increase in capital requirements were borne by the banks. The small margins that were set on these products led to them becoming unprofitable. Banks with large shares of long-term fixed-rate loans therefore need to ensure that pricing risk is carefully managed. Banks can manage this risk by passing it to the suppliers of their funds, by issuing longer-term fixed-rate securities or long-term fixed-rate deposit products. This approach limits the

<sup>7</sup> The European Mortgage Credit Directive (Directive 2014/17/EU) limits refinancing fees on new mortgages to a "fair and objectively justified compensation for potential costs directly linked to early repayment of the credit".

<sup>8</sup> In addition, the interest rates that these institutions could pay on deposits were set by the federal government and were substantially below what could be earned elsewhere, leading savers to withdraw their funds.

role that retail demand deposits can play on banks' balance sheets.<sup>9</sup> Further, the ability of banks to issue long-term fixed-rate securities or deposits will depend on market demand.<sup>10</sup> There are a number of ways in which other countries support this demand: these are discussed in section 5.

Instead of passing pricing risk to fund suppliers, banks can hedge it on the market. For example, since the 1980s they have been able to offset interest rate risk by purchasing interest rate swaps. Swaps allow banks to convert their fixed-rate mortgage income streams from fixed to variable rates (in line with an index or formula), or to convert their variable-rate funding to fixed rates. Since the financial crisis, regulation of these swap markets has increased, in an effort to reduce the possibility of systemic risks arising from them. For example, certain swaps (including the bulk of interest rate swaps) now have to be centrally cleared (Fiedor, 2018). Central clearing allows banks to purchase interest rate swaps without also taking on the default risk of the counterparty.

Either method of managing pricing risk requires the bank to charge a larger and more carefully calibrated margin than for other types of loans. This reflects the larger risk that the bank is managing, and/or the cost of transferring that risk to a third party. For example, since they reflect the cost of taking on interest rate risk, the relative margins charged by banks for different fixation periods should incorporate the cost of interest rate swaps. As of March 2019, the swap curve is low and flat relative to historical averages (Figure 4) but this may not persist.

Moreover, interest rate risk is not the only risk that banks have to manage. Changes in capital requirements (e.g. through variation in risk weights) will also increase the cost of loans. This cost cannot be passed through to fixed-rate customers. Consequently, some degree of appropriate forecasting and additional margins are required. One should therefore expect the curve of mortgage rates to be *steeper* than the swap curve over the same timeframe.

The ability of banks to charge the necessary premium depends on households' willingness to pay. This willingness depends partly on households' relative levels of risk aversion: they will need to be at least as risk averse as the bank/market. Further, it will likely depend on households' expectations regarding the future path of interest rates: if they expect a future decline, they may be less willing to fix their interest rate at the prevailing level. Consequently, we might expect to see growth in demand for interest rate fixations at the bottom of the interest rate cycle.

In the event that interest rates decline, households will often look to refinance their mortgage. However, if the bank has a long-term interest rate hedge, or has issued long-term fixed-rate securities, either they or their funds providers will continue to incur costs after the household has refinanced. This is commonly known as refinancing risk. Refinancing risk is essentially an extension of pricing risk: if consumers can refinance without paying the bank's costs it is equivalent to the bank passing through a large chunk of the upside pricing risk (the chance of an unexpected profit) and retaining all of the downside pricing risk (the chance of an unexpected loss).

By reducing the upside risk, banks' costs of managing overall pricing risk will increase. For example, they may end up with an expensive hedge which they don't require. If banks are not allowed to charge customers through break fees, they will need to recover that cost by charging even larger margins on fixed-rate mortgages (Passmore & von Haffen, 2018). Since the likelihood of a household refinancing is larger when interest rates are high relative to historical averages, the bank may need to set a bigger margin when interest rates are already high (Campbell and Cocco, 2015).

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<sup>9</sup> Banks could also offer long-term fixed-rate retail deposits rather than demand deposits. However, fixed term deposits are likely to be more expensive, and it is not clear that sufficient demand exists for them. Deposits with a maturity of over 2 years, regardless of rate fixation, have at most reached 11.6 per cent of total bank deposits (November 2005), and are currently only 1.6 per cent.

<sup>10</sup> Banks will also consider the relative pricing of retail funding versus long-term fixed rate securities, including any incentives to hold retail deposits as a result of liquidity requirements, such as the Liquidity Coverage Ratio and Net Stable Funding Ratio.

Different countries take different positions on the trade-off between margins and break fees ([Table 2](#)): in the US, for example, break fees are often set at zero, and some estimates put the repayment risk premium during the crisis at over 60 basis points (i.e. raising the mortgage rate by over 0.5%) (Chernov et al, 2016). Germany, on the other hand, charges households who refinance their banks' calculated expected net loss.

## 5 Disaggregating fixed-rate mortgage risk: international approaches

Countries with large proportions of fixed-rate mortgages can be roughly clustered into four groups based on the regulations and market institutions they have in place to prevent excessive interest rate risk from aggregating at the bank level ([Table 2](#)). These strategies consist of a mix of institutions (for example government-backed securitisers) and regulatory frameworks (for example default regulation).

### 5.1 MBS (US) model

Countries with the MBS model (primarily the US, but also some Asian countries such as Japan and South Korea) manage pricing risk by encouraging financial institutions to move mortgages off their balance sheets through asset securitisation (Roth, 1988; Fuster and Vickery 2015, Foa et al 2015). Mortgage securities are then purchased as long-term instruments by investors. The process passes interest rate risk upstream to investors, as they provide long-term funding at fixed rates.

However, in order to make these securities attractive to investors post-crisis, the probability of default needs to be limited (otherwise the total level of risk becomes too large, and there will be insufficient demand for them). For most mortgages, the probability of default risk is therefore passed to government-backed institutions (Fannie Mae and Freddie Mac in the US, the Japan Housing Finance Agency in Japan), or government mortgage insurance providers (e.g. FHA, GNMA in the US). It is worth noting that even with these government guarantees in place, US 30-year fixed mortgage rates averaged over 5 per cent during the crisis (end 2008) at time when the federal funds rate target range had reached 0.00-0.25 per cent.<sup>11</sup>

### 5.2 Danish Model

The Danish approach passes pricing risk from banks to market investors, through the issuance of a particular type of mortgage bond. This bond follows a very specific 'matching' principle: the timing and amount of bond payments follows exactly what is remitted by the customer (or customers, depending on the size of the pool) to the bank. Consequently, the pricing risk to the bank is reduced virtually to zero. Banks are also required to meet several criteria that limit the interest rate risk, refinancing risk and liquidity risk on these bonds.

Unlike the MBS model, the bank retains the default risk (which makes the bonds desirable to ultimate investors). This reduces average default risk through pooling, and does not introduce the asymmetric information issues encountered if default risk is passed through to the market (Berg et al., 2018). Further, there is strict regulation in place to support lenders: for example customers who fail to make repayments have their houses automatically repossessed by the bank (often within 6 months). Lenders also have unlimited recourse to borrowers' future income and other assets.

<sup>11</sup> [30-Year Fixed Rate Mortgage Average in the United States; Federal Reserve Bank of New York Federal Funds Data.](#)

Finally, as with the mortgage backed securities market, the market for these bonds is very deep and liquid, making the bonds more appealing to investors. In the Danish case, this is due to its 200 year history, supported by the fact that no covered bond has ever defaulted during that time.

### 5.3 European model

France, Germany, Belgium and the Netherlands have a relatively long history of issuing sizable volumes of fixed-rate loans. Financial institutions in these countries fund themselves using a combination of wholesale funding and deposits. They pass some of the pricing risk to their sources of funds by issuing covered bonds with fixed coupon rates and relatively long maturities (Figure 5). Prior to the financial crisis, some of these jurisdictions also used securitisation markets extensively.

In order to support this issuance, some of these countries have institutions in place to manage the risk of large numbers of simultaneous defaults. In the Netherlands, the government has a mortgage guarantee program in place. In Germany, up to one third of loans are provided through the 'buspar' system, which allows borrowers to pool their savings and issue a junior 'savings loan', which is not collateralised by the dwelling. As a result, the main bank loan will have a much lower LTV.

A second way banks in these countries reduce their interest rate risk is by taking out interest rate swaps. It is difficult to identify the degree to which this occurs, as swap markets are complicated and risks are hedged at a macro level.

It is also notable that France, Germany, Belgium, and the Netherlands also have lower rates of homeownership: an average of 64.8 per cent in 2016 (Eurostat data), compared with the EU cross-country average of 72.5 per cent. It may be that the institutional and regulatory protections for mortgage lenders make home ownership relatively undesirable (Chiuri and Jappelli, 2003) or unattainable (Kelly et al. 2019), or it may be that deep rental markets (due to high levels of stock, tenancy regulations or subsidisation – see O'Sullivan and De Decker, 2007) limit lenders to higher-quality borrowers, thus making fixed-rate mortgages a safer proposition for lenders.<sup>12</sup>

### 5.4 Southern European model

In Spain and Italy fixed-rate mortgages were the dominant product until the 1980s, after which time they moved into a heavier use of tracker-rate products (Dubel and Rothmund, 2011). In the last 5 years, the share of fixed-rate mortgages in these countries (and also in Portugal) have risen again. Unlike Ireland, this does not primarily reflect an increase in the length of introductory-rate offers. These countries have gone from close to zero proportions of fixed-rate lending to, in the case of Italy, well over 50% of new loans being issued with over 10-year maturities as of 2016.

The difference between long-term fixed-rates and variable rates have historically been large in these countries, but have now declined. By comparison, in many northern and central European countries the historical average difference is small, and in some cases negative.

At this stage, it is unclear whether issuances of these long-term fixations represent structural shifts, as it has not been possible to identify the strategies banks in these markets have been using to offset their pricing risk. While covered bond issuance has increased in these countries, the average term for most of these countries remains below that of the traditional fixed-rate mortgage issuers, and a relatively large proportion of these covered bonds are issued on a floating-rate basis.

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<sup>12</sup> In Germany, for example, households in the top 20 per cent of the income distribution account for around half of mortgages in recent years (Kelly et al, 2019).

## 6 Conclusion

Fixing mortgage interest rates entails risks for banks and households, but can also make them more resilient to certain types of shocks. At present, the majority of Irish mortgages have fixations below 5 years. This is in contrast with countries such as Spain, Italy and Portugal, who have recently experienced rapid growth in longer-term fixed-rate mortgages. If growth in short-term fixations continues in Ireland, the market will slowly look more like the UK market, where most mortgages are issued on 'teaser' rates. This does not represent a large shift in the allocation of risk between households and banks. However, households should be aware that their payments will rise at the end of their fixation period and budget or refinance appropriately.<sup>13</sup>

On the other hand, the current point in the cycle, as well as the flat swap curve, makes longer-term fixations relatively attractive for both banks and households. From a financial stability perspective, the key issue with longer-term fixed-rate mortgages is the ability of financial institutions to manage pricing risk. Pricing risk is correlated across the loan portfolio, and therefore needs to be moved off banks' balance sheets or it can erode profitability potentially to the point of insolvency, even if default rates fall to zero. Variable-rate loans allow banks to disaggregate that pricing risk by passing it through to households, but fixed-rate loans require banks to find alternative risk management strategies.

Banks have two strategies for moving pricing risk off fixed-rate mortgage books, depending on the jurisdiction in which they operate. They can issue long-term fixed-rate funding, through mortgage-backed-securities or covered bonds for example. Alternatively, they can use interest rate swaps or other products to hedge the risk. Their ability to use these strategies depends on the prevailing institutions and regulatory regime.

In the case of Ireland, it is likely to prove difficult to pass the risk to the suppliers of funds. While Irish banks' average wholesale funding maturity has increased to 8.66 years in 2018 (from an average of 7.5 years over the last 3 years), banks are still approximately 80 per cent funded by variable-rate deposits. There are also no government-backed securitisers or insurance providers. Combined with the lack of a liquid market for long-term fixed-rate securities, it may be difficult to obtain sufficient funds to support a large long-term fixed-rate mortgage book.

Therefore, if fixed-rate mortgage books continue to grow, banks will need to engage in risk hedging strategies, (for example through appropriate use of swaps), and set margins and capital buffers high enough to insure them against any residual risk. These additional costs will likely result in households paying higher mortgage rates, reflecting the benefits they obtain from being insured against bank funding cost risk. Margins are likely to increase even more if households are able to refinance at low cost, as banks will need to compensate for the additional refinancing risk.

Ultimately, the structure of the mortgage market will depend on a wide range of factors, including the decisions of households and banks. It will be necessary to monitor any shift toward longer-term fixed-rate mortgages in order to ensure that financial stability risks are managed appropriately.

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<sup>13</sup> 40 per cent (32 per cent) of loans originated in 2018 will automatically move from their current fixed rate to their bank's standard variable rate in 2021 (2023). As of March 2019, follow-on rates can be over 150 per cent of fixed rates.

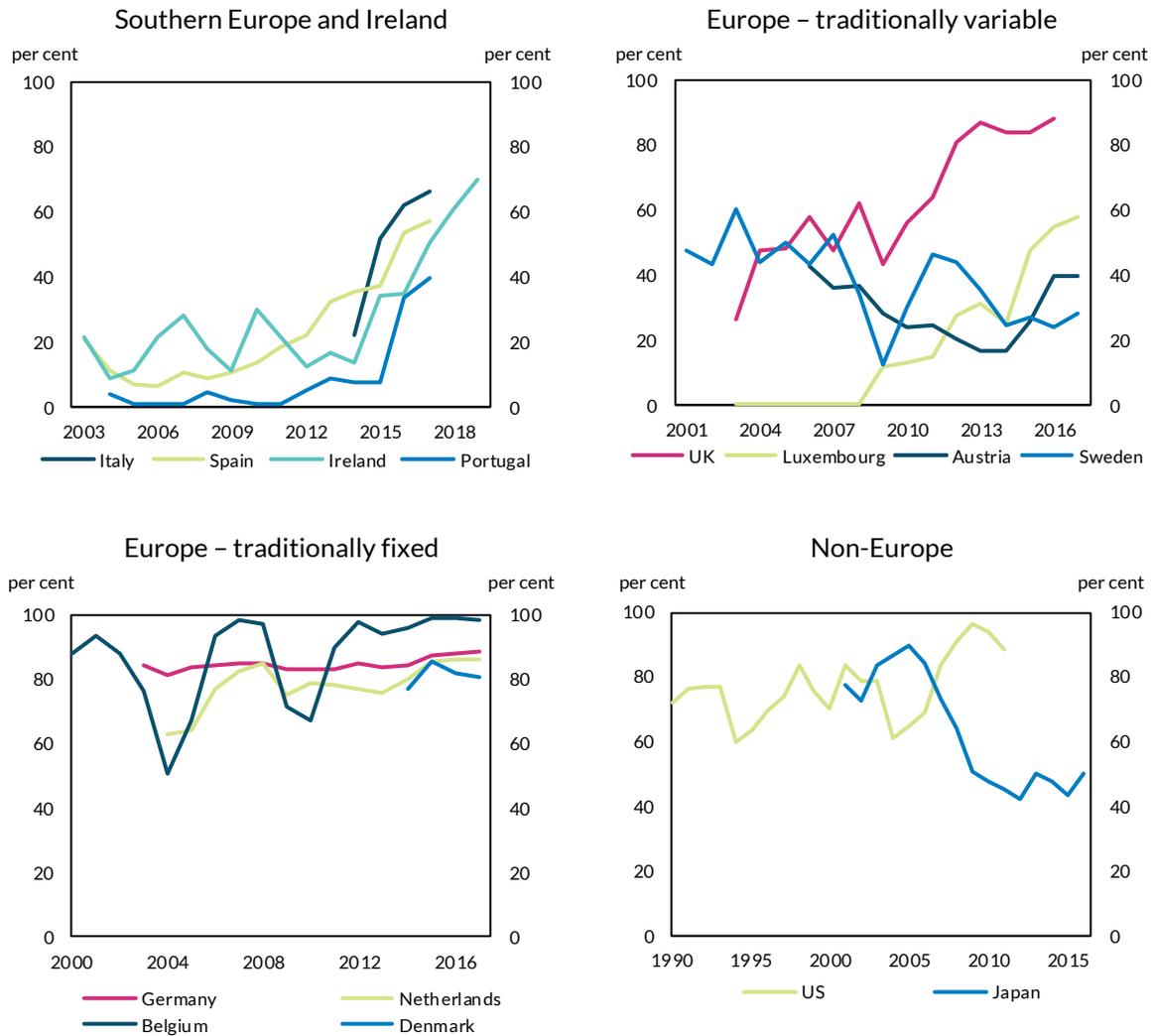
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## Figures

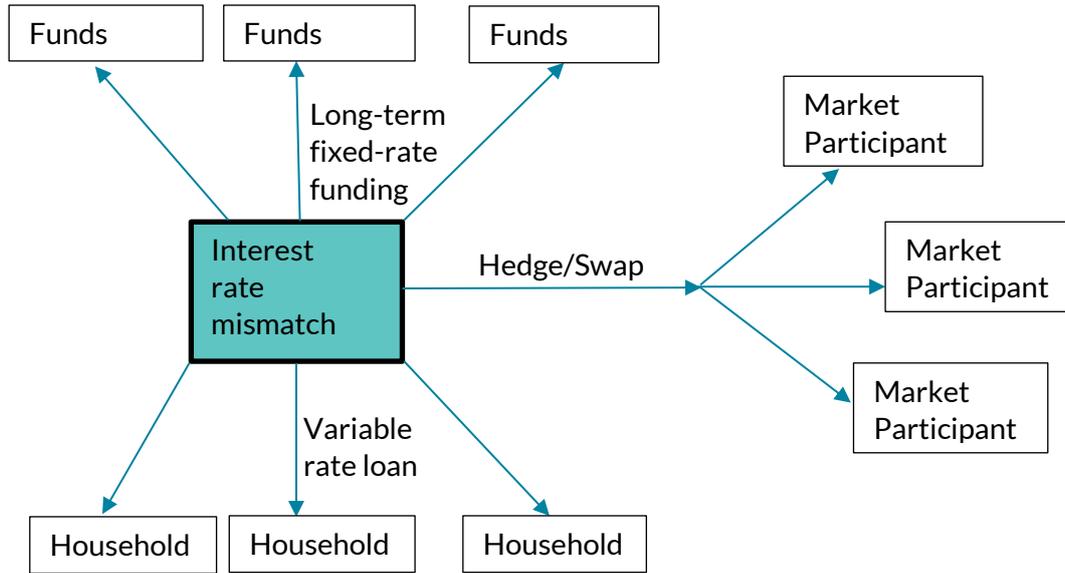
**Figure 1** Percentage of new mortgages issued on a fixed rate (fixation period longer than 12 months)



Source: Central Bank of Ireland (Irish data), FHFA, Hypostat.

Note: Irish data calculated from Central Bank of Ireland Statistics data on new fixed loan issuance by value. These data are provided monthly, but have been aggregated in order to produce a quarterly time series. USA contains proportion of single family mortgages by volume issued as adjustable-rate mortgages (remainder are fixed-rate mortgages). Remaining countries show percentage of mortgages issued with a fixed term of less than 1 year. Data availability varies by country.

**Figure 2:** Channels through which funding cost risk can be disaggregated and the ultimate bearers of that risk.



**Figure 3 - Mortgage interest rate types**

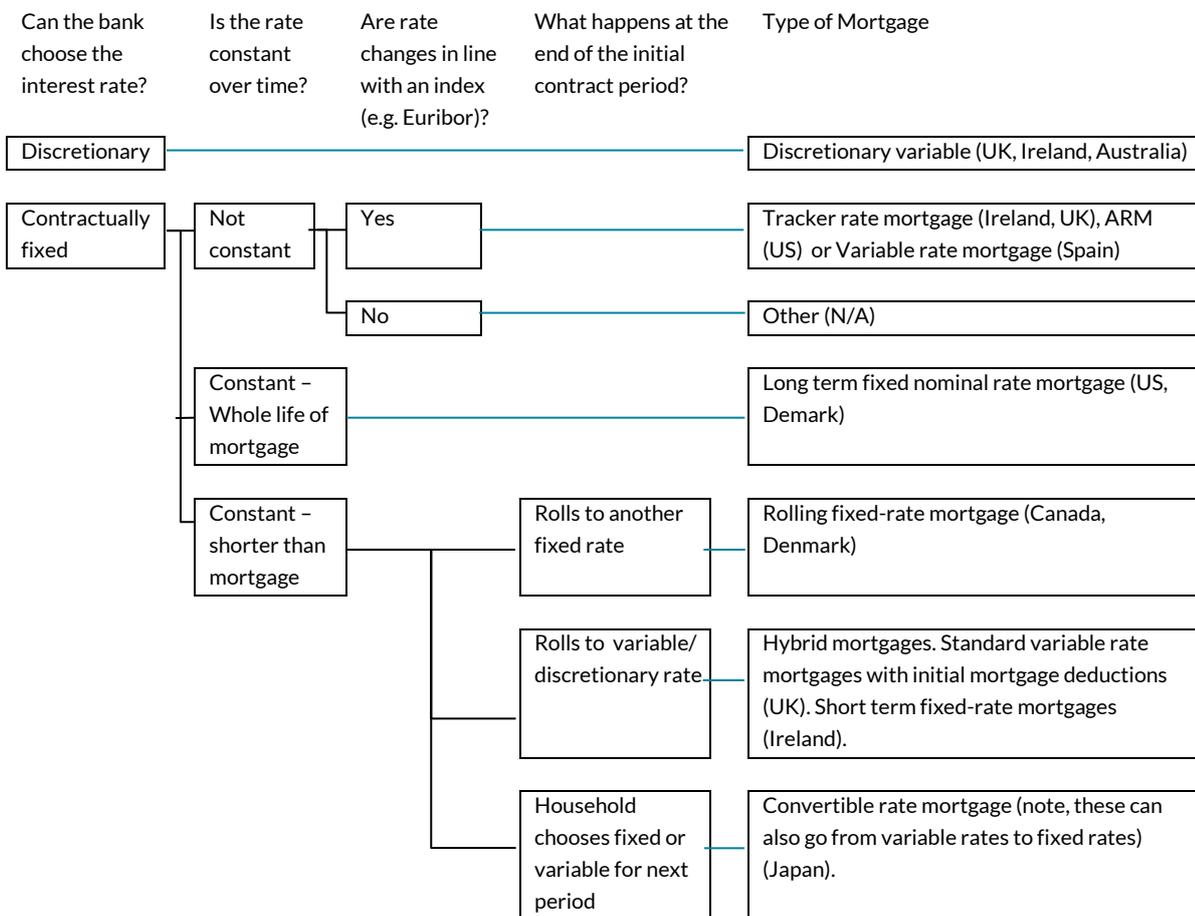
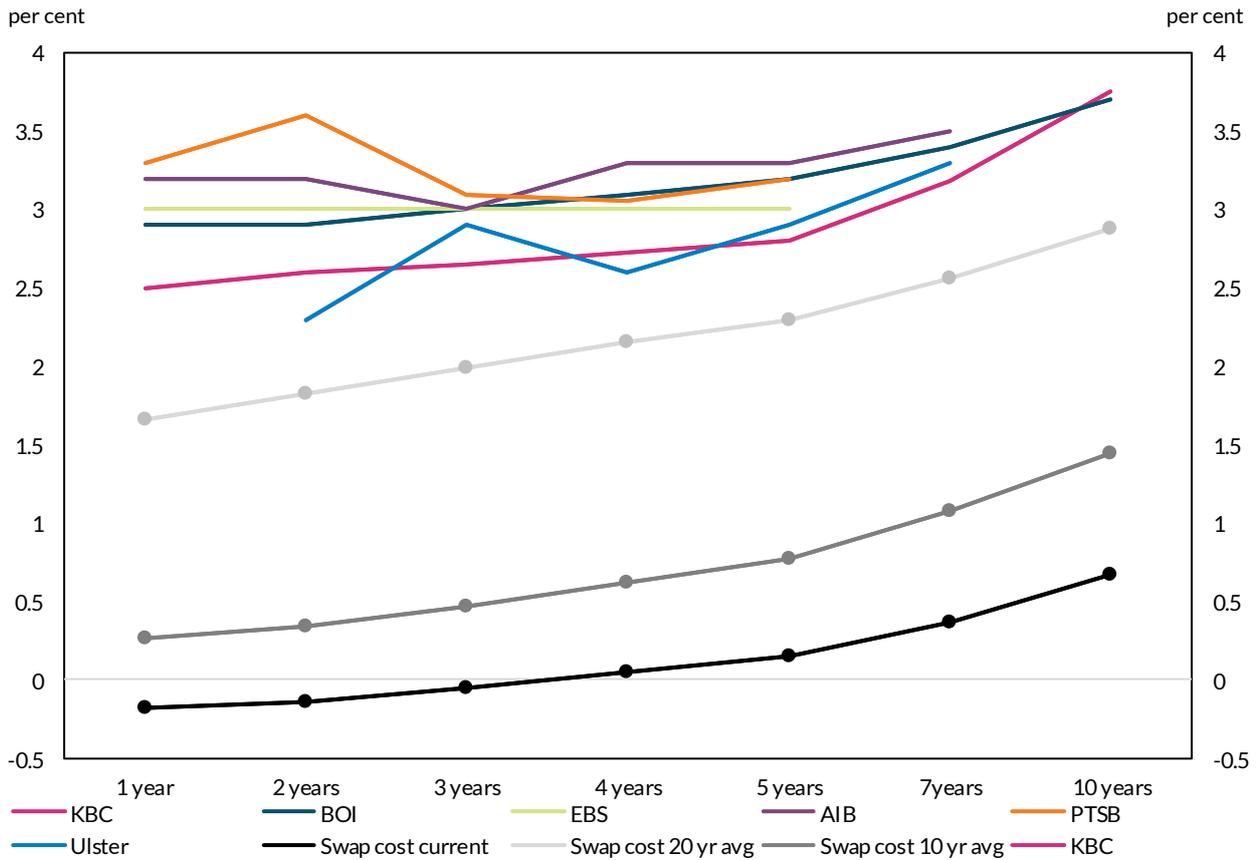
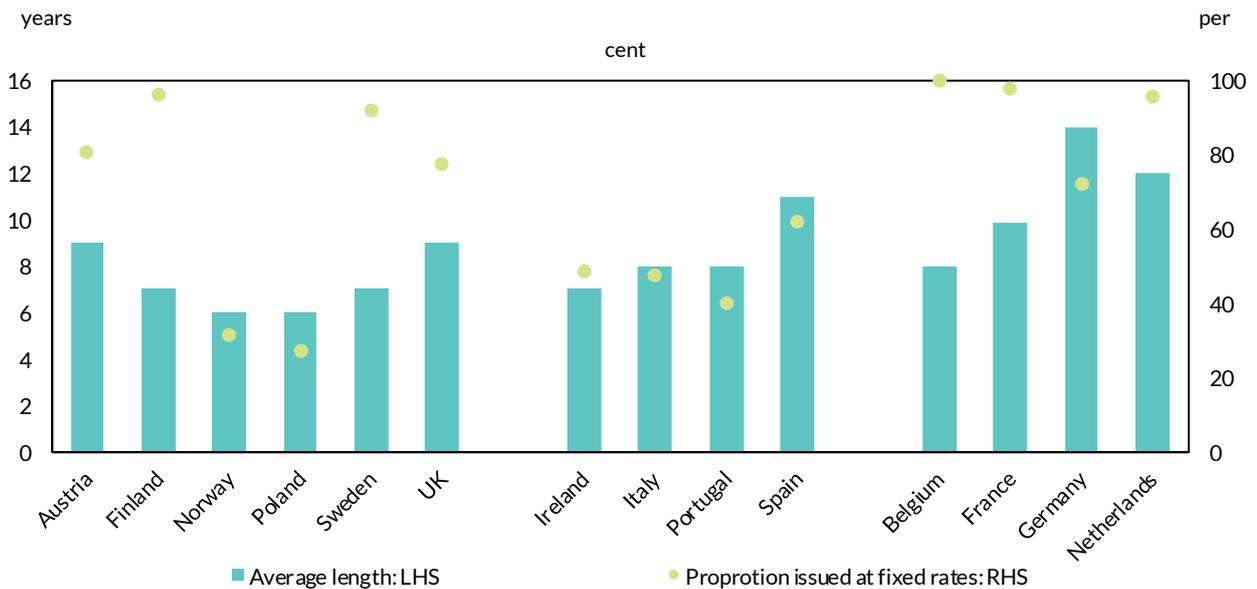


Figure 4: Advertised rates less cost of interest rate swaps for banks at maturities up to 10 years.



Note: Figures are for a first time buyer purchasing a 350,000 euro house and taking out a 300,000 euro loan.  
 Source: Bonkers.ie, Bloomberg.

Figure 5: Outstanding covered bonds by country - maturity (years) and percentage issued at fixed coupon rates.



Source: EMF Hypostat

## Tables

**Table 1:** Proportion of loans with fixed terms of various lengths H1 2018

Country	% Total new lending w/ rate fixed for >1 years	of which:	
		% Total new lending w/ >5 and <10 year rate fixation	% Total new lending w/ >10 year rate fixation
<i>Ireland</i>	57	2.0 <sup>1</sup>	0
<i>Austria</i>	39.5 <sup>2</sup>	-	-
<i>Belgium</i>	93.9	17.6	72.3
<i>Denmark</i>	59.6	1.1	20.7
<i>Finland</i>	3.7		1.9
<i>France</i>	-	-	-
<i>Germany</i>	88.1	34.1	45.2
<i>Greece</i>	18	-	-
<i>Hungary</i>	76.8	26.5	5.7
<i>Italy</i>	64.6	-	58.7 <sup>3</sup>
<i>Luxembourg</i>	57.9	-	-
<i>Netherlands</i>	84.6	53.4	21.8
<i>Poland</i>	0	0	0
<i>Portugal</i>	40.9	30.7 <sup>2,5</sup>	10.1 <sup>2,5</sup>
<i>Spain</i>	62.4	4.1	28.5
<i>Sweden</i>	28.4		7.9
<i>United Kingdom</i>	92.7	1.5	0
<i>Norway</i>	6.0	-	-
<i>Japan</i>	49.8 <sup>3</sup>	-	33.1 <sup>3</sup>
<i>South Korea</i>	28.9	-	-
<i>USA</i>	88.8 <sup>4</sup>	-	>50

Notes: % Fixed-rate loans refers to the proportion of loans issued in that year with a fixation period of over 1 year.

<sup>1</sup>Refers to outstanding balances, as new loan percentage not available.

<sup>2</sup>As at 2017 (latest available).

<sup>3</sup>As at 2016 (latest available).

<sup>4</sup>As at 2011 (latest available).

<sup>5</sup>Calculated using a combination of Hypostat and Banco di Portugal data.

- Data is unavailable.

Source: Hypostat, Australian Bureau of Statistics, Japan Housing Finance Authority, Federal Housing Finance Authority, Banco di Portugal, Central Bank of Ireland.

**Table 2:** Contractual features of mortgages and market infrastructure in countries with high rates of long-term fixed-rate loans (>20%)

Country	% new loans with long-term fixed-rates (Q2 2018)	Contractual features of mortgages, and market infrastructure
<b>MBS model</b>		
USA	>50	Fixed-rate mortgages are insured, guaranteed and/or securitised by government bodies (eg Fannie Mae, Freddie Mac, FHA, GNMA). Deep MBS market. Refinancing fees allowed, often set at zero.
Japan	33.1 <sup>1</sup>	Fixed-term loans guaranteed and securitised by government body. Zero repayment fees.
<b>Danish model</b>		
Denmark	39.1	Issue one covered bond per mortgage. Simple, speedy foreclosure regime. Lenders have full recourse to borrowers' other assets and income. No repayment fee – purchase own bond at nominal value.
<b>European model</b>		
France	>50	Discretionary products banned. Tight caps on indexed rates. Unlimited duration of debtor liability. 6 months interest or 3% of outstanding balance.
Germany	44.9	Borrowers can purchase interest rate insurance. Longer covered-bond maturities. Buspar loans. Repayment fee equal to the difference between the contractual interest rate and the reinvestment interest rate, less the costs of risk saved, adjusted for amortisation and discounted to the repayment date.
Belgium	71.6	Tight caps on variable rates (rate can at most double). Revisions to variable rates not allowed more than once per year. Repayment fee of 3 months interest on remaining balance outstanding.
Netherlands	21.8	Government Mortgage Insurer (NHG). Unlimited duration of debtor liability. Repayment fee of up to 3 years of outstanding interest.
<b>Southern Europe</b>		
Spain	30.1	Discretionary products banned. New growth in fixed-rate mortgages. Repayment penalty of up to 3.5% of outstanding balance in the first 5 years, or up to 3.25% thereafter.
Italy	58.7	New growth in fixed-rate mortgages. Zero repayment fees.
Portugal	10.1 <sup>2</sup>	New growth in fixed-rate mortgages.

Notes: Repayment refers to fixed-rate mortgage repayments.

<sup>1</sup>Figure is for 2016 (latest available).

<sup>2</sup>Additional 30.7% of new loans are on a fixed rate of between 5 and 10 years, and like Ireland there has been rapid growth over the past 5 years. 2017 data, most recent available.

Source: Hypostat, Japan Housing Finance Authority, Federal Housing Finance Authority, Banco Di Portugal, Lea (2010), BaFin



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