Institute
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Product Innovation:

Home Equity Release Loans for Long Term Care Needs

by Douglas Andrews, University of Waterloo
and Jaideep Oberoi, University of Kent

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1.0 Introduction

In many developed countries, such as England and Canada, the generation that is now retiring has accumulated significant housing wealth. According to The Economist (February 28th, 2015), in Britain "those aged 55 to 64 have more housing wealth than any other generation". Wheatley (2015) reports that "over 70% of households approaching retirement, or in the earlier retirement years, own their home, around 90% of them mortgage-free at the upper end of this age group". This equity in their homes represents a large proportion of their total discretionary wealth, i.e., the available funds outside of state pension, pension plan annuities.

For many such individuals, there is a reasonable expectation that the present value of their wealth, in combination with state provided benefits such as pension, health care, and some long-term care support, will be sufficient to provide adequately for their needs until death. The problem faced by such individuals is how best to access and manage their wealth through the remainder of their life.

For many older individuals, there appears to be a preference to "age in place", i.e., remain in their own homes for as long as possible. The National Housing Federation reports that "more than half [52%] of all homeowners aged 55 and over in Britain think that their current home is unfit for living with care needs or mobility problems: 38% said their home would need to be adapted". At some point, individuals will face the issue of how to access their home equity to support their income requirements. Some will sell the home and use the equity released to provide income; however, such action does not permit the individuals to age in place. Others will explore the use of home-equity-release (HER) products. The interest in such products may increase if the individual or the spouse requires special care or attention and it is necessary to modify the house, e.g., adding a ramp to avoid stairs, adding railings in showers and bathrooms.

We recognize that this is not the situation for all the elderly, some may not own a home, some may have liquid assets, and some may have little or no assets. However, we see the product proposed in this paper as having applicability to a relatively large share of the elderly, but we recognize that it is but one piece in providing adequately for the elderly.

HER products have existed for many years. However, the take-up for these products has been much lower than expected. In a 2011 press release, Andrea Rozario of SHIP, the Equity Release Council's predecessor body, states that it is estimated that there is £250 billion of equity that could be released immediately, yet the market is just under £1 billion a year (SHIP, 2012). A reason for the low take-up rates is that potential borrowers do not consider the initial loan amounts offered to represent good value, which suggests that the product design and its pricing does not appear attractive to the potential borrower.

Many of the HER loans (usually on account of legislation) contain a provision often referred to as the No-Negative-Equity-Guarantee (NNEG). This provision implies that if the value of the home is less than the value of the outstanding loan when the borrower exits and the home is sold, there is no further obligation to repay the loan (beyond the funds received on home sale).

Various authors (Andrews (2009, 2012), Hosty et al. (2008), Li et al. (2010)) have suggested that the typical price charged for the HER loans when the NNEG is present makes the loan unattractive to the borrower and explains, at least in part, why take-up of such products has been low. From the lender's perspective, the longevity risk built into the NNEG makes it necessary to exercise prudence in the size of the loan relative to the house value. In addition, most loans are offered as "roll-up mortgages", whereby a fixed rate of interest is accumulated in the mortgage until the contract is settled. Long term variations in housing prices are sometimes characterized as very slowly reverting to a mean trend, so a fixed rate loan presents a further element of risk relative to house price growth.

In this paper we propose an alternative HER product design and delivery structure, which we shall refer to as an Equity Release Loan Scheme or ERLS. This ERLS product is designed to assist individuals and families with home equity who face long-term care (LTC) requirements to pay for their own care costs so they can age in place. By LTC requirements we mean some inability to manage one or more activities of daily living that would require an adaptation of the home in order to continue to reside there. In other words, we are using a very mild and broad definition of requiring LTC.

Note that this product targets a very different market from that of the recently announced Universal Deferred Payment Scheme (UDPS). The UDPS is designed to provide HER loans to anyone who: needs residential care and no spouse / dependent lives in their home; is assessed by the local authority as needing residential care; has less than £23,250 in savings (i.e. non-housing assets) (Department of Health, 2013). Whereas ERLS would be available to anyone who owned a home where one or both of the spouses required some modification to the home because of a care requirement. So this product is designed for domiciliary care or to try to postpone residential care, and there is no asset test.

This is work in progress (see for example Andrews and Oberoi, 2015). This paper has been prepared for presentation to a meeting of the Institute and Faculty of Actuaries to gain wider exposure for the product idea and to solicit feedback from attendees that may lead to further research developments.

The paper proceeds as follows. In the next section we outline the proposed product and structure. In section 3 we discuss the results of our analysis. In section 4 we provide some directions for future research and identify issues on which we invite feedback.

2.0 Product Design and Structure

Rather than a "roll-up mortgage", in the ERLS we propose the lender receives a return based on a regional house price index (HPI) and an annual fixed percentage charge. It could be offered as either a large upfront loan or a loan with annual installments. We find that the pricing of this product design is more favourable than current market pricing due to a reallocation of risks resulting from the product design, and an ensuing increase in loan to home value ratios.

We also propose that to assist with use of home equity release in connection with LTC needs that the government would participate through a public-private-partnership (PPP). This structure is illustrated in Figure 1. The PPP would underwrite the ERLS applicants and

provide a "matching service" for applicants and lenders that might be banks, insurers, pension funds, or other lenders. The loan would continue until the home was sold, because both homeowners had died, both were disabled, or they decided to sell the home.

The PPP would bear the NNEG, which translates in this setting to the basis risk between the regional house price index and individual house appreciation combined with the longevity risk arising because the actual time of house sale means that the loan amount was set too high. It would be possible for the PPP to share the NNEG with the market through a securitisation, but we do not develop this idea in this paper.

There are a number of differences from conventional mortgage loans or lines of credit backed by housing collateral that require examination. In this paper, we will comment on the following differences:

- Return based on HPI rather than fixed rate related to a lending yield curve;
- Determination of an appropriate rate of administration, profit and risk charges;
- Longevity risk and variations in disability incidence and recovery rates;
- Variations in the return on HPI and individual-house-price basis risk.

3.0 Discussion and Analysis

For the purpose of illustrating the pricing of the ERLS and analysing the impact of different components on the pricing, we use purchased data from the Land Registry, regarding house sales during the period January 1, 1995 to December 31, 2014 for post codes in the county of Kent, England, CT1 and CT2, which correspond to the Canterbury area, and ME8, which corresponds to the Medway area. The data was matched and filtered, so that only houses that were sold at least twice during the period were included. The first sale was used to determine the market price and subsequent sales could be used to determine individual house returns. This return was compared to the change in the HPI for the same period pertaining to the county of Kent, as calculated and published by the Land Registry. There is considerable variation in the monthly return on HPI, as shown in Figure 2. This approach provided a set of data points comparing actual house price increases to a broader county-wide HPI.

We also price different loan arrangements, when the full loan is made in a lump-sum upfront and when the loan is made in instalments.

3.1 Return Based on HPI Rate Rather Than a Fixed Rate Related to a Lending Curve

An immediate question to address is would any institutional or private investor wish to participate in an investment that provided a return on HPI plus an additional charge. Although we have not surveyed the intentions of institutional investors, our anecdotal evidence is that many investors perceive property as a desirable asset class, for its return levels, diversifying characteristics, and its provision of some inflation protection. Pension funds often have investment objectives for property investment that exceed their actual investments. Albeit, institutional investors typically seek commercial property investments; but they might well add residential investment to their holdings. This would be especially likely if a diversified portfolio of residential property were available on a shared ownership

basis and if the return characteristics of residential property were well analysed and found to be different from those in other asset classes. Evidence supporting a bigger role for residential real estate in investment portfolios has existed for a long time (see, e.g. Goetzmann, 1993).

It should be noted that the return on HPI could be negative in any particular period. This is not a risk associated with a conventional loan. Although one might argue that if one were to invest in such a security one would expect a potentially higher overall return from HPI than one would expect from a fixed rate loan. This potential for a higher return is another feature of this product design. In addition, the effective rate of return to the investor includes the profit charge, so that negative HPI returns will not always lead to negative overall returns. Effectively, the profile of the return to an investor is similar to that of investing in residential real estate, but without actually owning, administering and renting out properties

Some institutional investors might create securities from the loans made. This would provide an opportunity for individual investors to invest in a geographically diversified portfolio of residential property loans, while providing another potential profit opportunity for the institution. In addition, the result of securitisation could be an improvement in the term and liquidity relative to the underlying investment.

In summary then we see this product appealing to investors that wish to invest in a residential property security, with an objective of receiving a higher return, and possibly gaining diversification advantages.

3.2 Determination of Appropriate Rate of Administration, Profit and Risk Charges

In discussing the pricing of this product we are often presented with the argument the lender would price the product to include a rental return on the property and that this aspect should be included in the additional fixed percentage charge that we propose. We find this argument theoretical and not directly appropriate to the actual terms of lending. In a consultation paper, the Reserve Bank of New Zealand (2015) considers that residential property investors have a different risk profile than owner-occupiers.

For the rental return argument, the pricing model is based on the assumption that the lender has purchased the property and is leasing the property to the borrowers; hence, the lender expects to receive a rental return plus any appreciation on its investment. The actual situation with the ERLS product is somewhat different. The investor has rented to "preferred tenants". These individuals dwelled in the property prior to the loan, wish to stay in the property, may be seeking improvements to the property to accommodate their care needs, and retain a partial interest in the property. Accordingly, these are motivated tenants who have an interest in maintaining the property. Moreover, the lender can expect to experience lower administrative costs, since there would be little turnover or vacancy costs, no lettings management fees or commissions.

Another difference in the design of this loan from a conventional loan is that regular payments are not paid on this loan, the return continues to accumulate. Whether this feature should require an additional premium and how much is debatable and will depend on the tax situation and income requirements of the lender.

The structure of the product is different from a conventional loan, which has a declining outstanding balance over time. In this structure the loan continues to increase with HPI. To whom would such a product appeal from a liability-matching perspective?

It might appeal to long-term investors such as pension funds that have uncertain requirements for return-generating assets in the future that depend on longevity, survivorship, and inflation rates. It might also appeal to institutions that offered an investment product for individual investors related to HPI. Although this product is uncommon, it might have an appeal if suitable assets were available to back it.

A critical element of the product is the NNEG. This ensures the lender will receive the return on HPI regardless of when the house is sold and making it possible for the lender to reinvest at the current HPI if their investment horizon is different.

All of these factors play a role in determining the appropriate level of fixed charge. This is a subject we are continuing to analyse. Our analysis so far (Andrews and Oberoi, 2015) indicates that the pricing component with the greatest impact is the level of the annual percentage charge. It can make a difference of approximately 45 per cent of the house value depending on whether the fixed percentage charge is 0 or 4 per cent, regardless of the interest rate at which the NNEG is determined.

3.3 Longevity and Variations in Disability Incidence and Recovery Rates

In discussions regarding the prospective value of the NNEG, often arguments are made concerning the uncertainty in pricing as a result of increasing longevity and changes in disability incidence and recovery rates. This is an area that we plan to study more extensively with respect to British experience. However, our work to date has used two vastly different bases for analysis. In Andrews and Oberoi (2015) in order to estimate the impact of mortality and morbidity, we used the approach described in the following two paragraphs.

> "Following Ji et al. (2011) we used a Gompertz mortality model ($\mu_x = BC^x$) parameterized according to their Table 3. We followed their adjustments to mortality probabilities to reflect the "bereavement effect" associated with death of a spouse. It should be noted that the data used for the parameterization is based on information from joint and last-survivor annuity contracts in force with a large Canadian insurer over the period December 29, 1988 through December 31, 1993 (Chen, 2010).
>
> The Intercompany Study Report (Gagne et al., 2011) published by the Society of Actuaries is an important source of data on long-term care incidence. Figure 5a of that report shows the ratio of female to male incidence with respect to care requirement to be 149% for ages 65-69. Accordingly we assumed that 60 per cent of the applicants would be a couple with a healthy male and female requiring care expenditures and that 40 per cent of the applicants would be a couple with a healthy female and a male requiring care expenditures. To evaluate the probabilities of a person requiring care at later ages, we used the incidence rates shown in Figure 4 of the same report (for Unlimited Benefit Period), modified by the rates by gender."

In the work we are doing currently we are applying the approach presented by Gourieroux and Lu (2014) to derive LTC hazard and mortality rates from the underlying mortality data without reference to LTC data. We use hazard rates they derived for French male mortality. Since our purpose is to illustrate how our new product structure could be priced without access to other than mortality data, we use the rates derived by Gourieroux and Lu (2014). Effectively we are pricing a product for a couple of French males both age 65 who are taking the loan priced off the HPI for which we have data.

We applied the approach used by Gourieroux and Lu (2014) to derive the hazard rates for the Markov model with deterministic exponential factor described in section 5.3, Appendix A.4.1, and illustrated in Figure 14 of their paper (Op. Cit.). Minor discrepancies were corrected to produce the hazard rates at selected ages for the Cohort 1950.

One might reasonably ask what applicability either of these two approaches to determine mortality and morbidity rates has for pricing the product for the British market. We are not yet in a position to answer that question but we are working on it. However, the interesting observation we have made is that on both of these approaches, the pricing of the NNEG and the resulting amount of the initial loan is virtually unchanged.

We expect this is because the basis risk is lower over longer horizons, and the main channel through which the longevity risk acts is the fixed charge. Variations in the fixed charge have an effect on pricing much more than the longevity risk due to the long-lived nature of the contract. This suggests that there is not likely to be any significant allowance required in the pricing because of the uncertainty associated with variations in longevity, disability incidence and recovery rates.

3.4 Variations in HPI and an Individual House Price Basis Risk

Another concern with this product design is how the return on HPI may vary over time and how individual house prices may vary from the return on the index, adding basis risk. We do not claim to have studied this extensively; although, once again we are working on it with respect to British data. In our work we are using data for the period January 1, 1995 to December 31, 2014. As shown in Figure 2 there has been considerable variation in HPI over that period, i.e., both positive and negative returns on HPI. Despite the variation, the prices that we obtain for the NNEG are relatively small. In the situation of a couple age 65 seeking an ERLS loan when one of the couple requires care, we estimate the NNEG to be approximately 1 per cent if the loan is made in a lump sum, or approximately 0.3 per cent if the loan is made in 10 equal instalments, when allowance is made for administration, profit and risk charges of 3.2 per cent annually.

Our house sales data shows that as the duration for the loan increases the variation in house prices is more likely to approach the mean. See Figure 3.

Moreover, using our model the expected duration of the loan for a couple age 65 where one member requires care, is expected to be 20 years. (Recall that we are using a mild and broad definition of requiring care.) Given the mean reversion shown in Figure 3, this greatly reduces the basis risk associated with individual house prices.

4.0 Future Research

The product we propose would provide a return to the lender based on a regional HPI plus an additional fixed percentage charge. We propose that a PPP be established to administer such loans. It would provide an underwriting service with respect to applicants, determining the house value and the eligible loan amount. It would also provide a matching service for applicants to lenders. The PPP would bear the NNEG risk. The fixed percentage charge would cover the NNEG risk, the profit and risk charges of the lender, and any administrative costs of the PPP and the lender.

We believe that this product would serve an increasingly large market that seems to be underserved today. The product design in this paper is specifically targeted at individuals or couples who have significant home equity, wish to age in place, and where one member of the couple requires care, defined as a condition requiring a modification to the home in order to continue residing there. In other works we explore the pricing of extending this product design to the broader market to include situations where care is not required.

For reasons associated with data availability and funding, we have not done a comprehensive pricing of this product design with respect to British data. We are working on this. Important areas for future research include the following.

- Determining a method to calculate an appropriate fixed percentage charge for administration, profit and risk.
- Expanding the analysis of repeat house sales to include all of England, not just a few post codes in the south east.
- Deriving hazard rates from British data using the method of Gourieroux and Lu (2014) taking into account the ongoing work of the Continuous Mortality Investigation.

Our proposed product design does not require the lender to take the NNEG risk. It is borne by the PPP. But the lender receives the benefit of having the NNEG in place. Our research shows that the NNEG premium is relatively small with fairly low volatility due to interest discount rates, and variations in mortality and morbidity rates. When lenders are lending based on a product they understand in a competitive market, borrowers should receive more attractive terms.

Even when new legislation, the Care Act 2014, takes effect and sets a limit on self-funded out-of-pocket expense for LTC, individuals with LTC needs may still incur significant expenses. If their discretionary wealth is mainly in home equity, they may face some difficult choices between having the ability to age in place and taking a HER loan that may not represent good value. We think that this ERLS product has great promise and we will continue to do research in order to describe it more fully and to price it.

4.1 Some Questions for Discussion

We are very interested in getting input from the audience on the viability of the ERLS design. Some questions include:

- Does this design fulfil a need?
- Do you think it is viable?
- How might the design be improved?
- What institutions would find this product attractive?
- What would be an ideal structure from investors' viewpoints for holding the assets in this product?

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Figure 1: Intermediary Role of the PPP

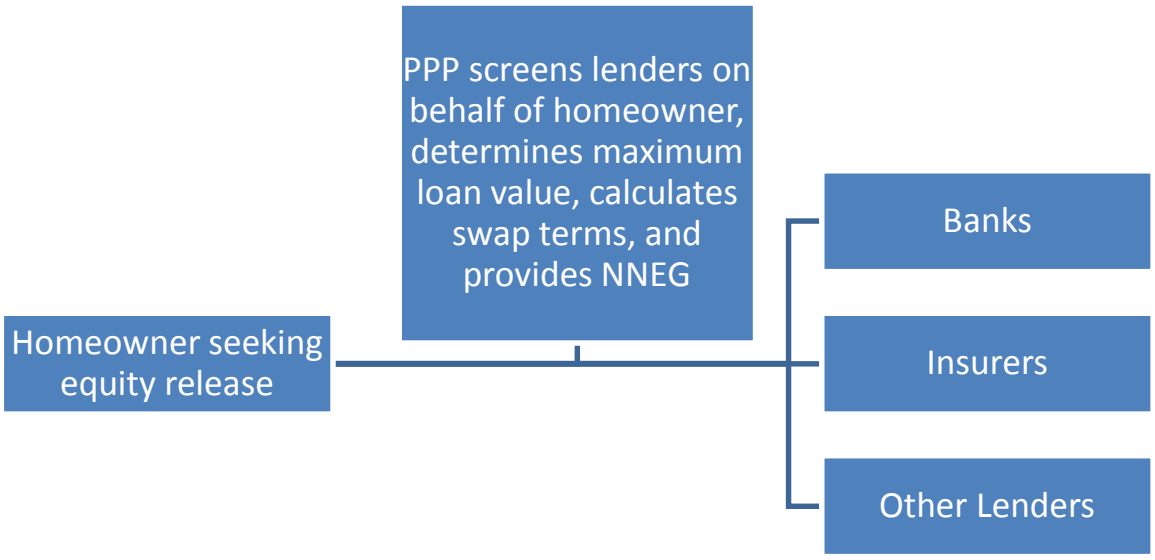


Figure 2: House Price Index Returns: Monthly HPI Returns

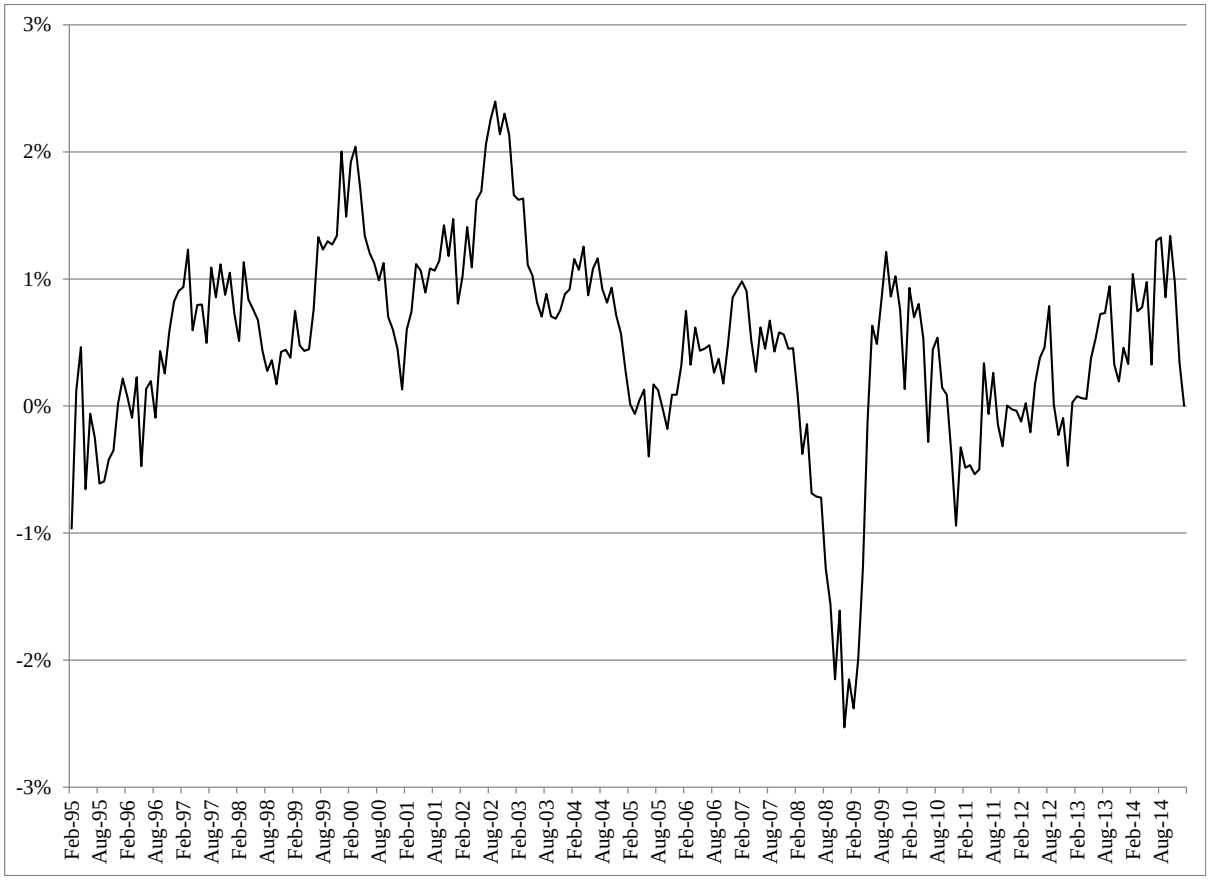
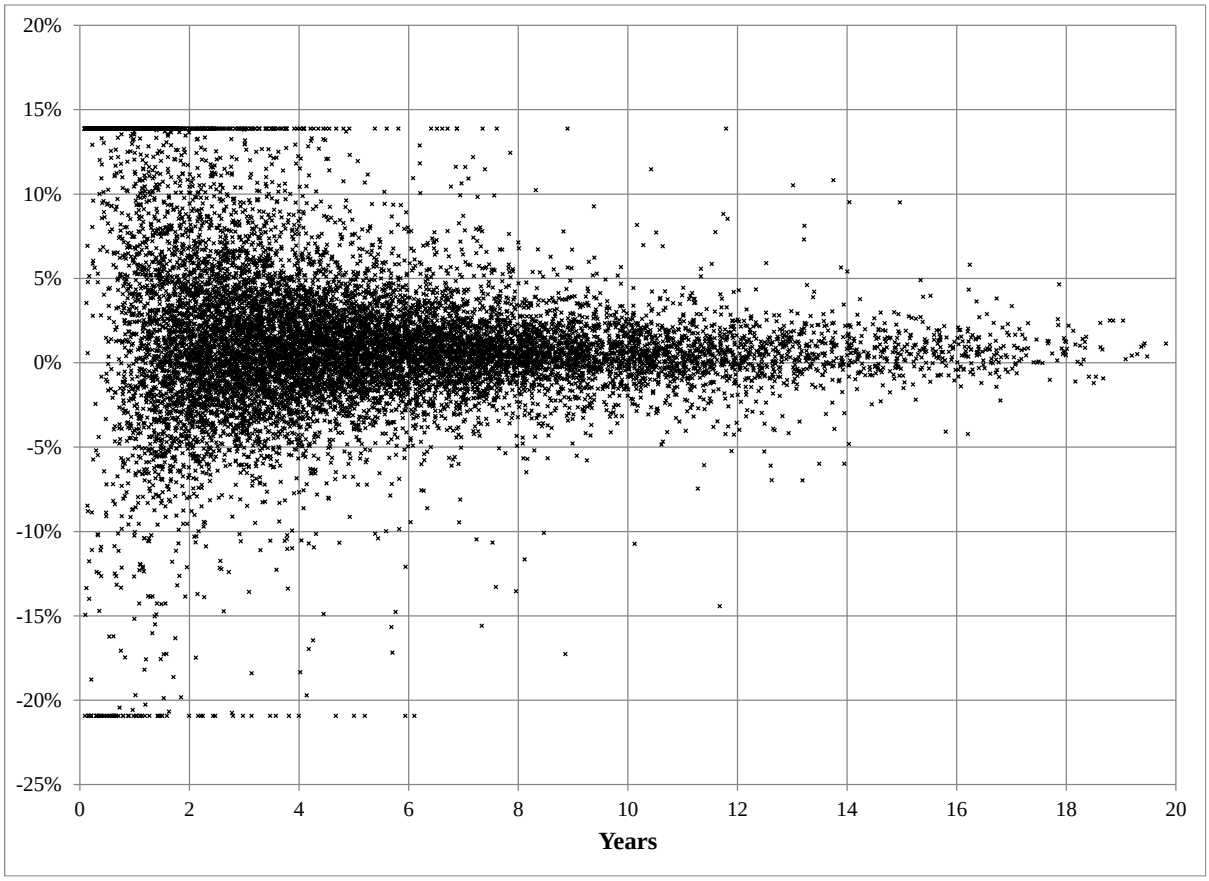


Figure 3: Annualised Return Differences by Time between Transactions



Institute
and Faculty
of Actuaries

London

7th Floor · Holborn Gate · 326-330 High Holborn · London · WC1V 7PP
Tel: +44 (0) 20 7632 2100 · Fax: +44 (0) 20 7632 2111

Edinburgh

Maclaurin House · 18 Dublin Street · Edinburgh · EH1 3PP
Tel: +44 (0) 131 240 1300 · Fax: +44 (0) 131 240 1313

Oxford

1st Floor · Park Central · 40/41 Park End Street · Oxford · OX1 1JD
Tel: +44 (0) 1865 268 200 · Fax: +44 (0) 1865 268 211

Hong Kong

2202 Tower Two · Lippo Centre · 89 Queensway · Hong Kong
Tel: +11 (0) 852 2147 9418 · Fax: +11 (0) 852 2147 2497

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