

Box 1 The housing component of the CPI

Statistics Iceland's last consumer survey (for 2000-2002) revealed that just under 18% of the sample live in rented accommodation. The rent prices stated by these tenants form the rent expenditure base. Data on rental changes in comparable housing are used to estimate the rent cost. In March 2002, rent cost accounted for 2.1% of total expenses in the CPI base.

For the 82% of the sample who are owner-occupiers, the "user cost" needs to be calculated, i.e. the annual cost entailed by living in owner-occupied housing. Calculations take into account minor maintenance as well as charges for sewerage, refuse collection and water supplies. This cost amounted to 3.6% of total expenditure in the CPI base for March 2002. The largest item, accounting for 10.1% of total expenditure in March 2002, is "owner-equivalent rent", which aims to estimate depreciation and interest costs on the capital deployed in the housing.

The Land Registry valuation, which by law is supposed to reflect the market price of housing, is used as the base for calculating owner-equivalent rent. The base figure is projected using changes in the price of residential housing in recent sale agreements. All payments in housing sale agreements are valued at their present discounted value. T-bill interest rates are used to discount the amount lent by the seller to the buyer (generally the part of the down-payment paid by the buyer over the first 12-14 months after a sale agreement is signed). Other loans are discounted by the market yield on housing bonds plus a premium of 0.35%. Not all changes in housing bond yields are incorporated, but the index tries to follow the broad trend.

In order to estimate annual user cost of housing, assumptions need to be made regarding lifetime of the asset (and thereby annual depreciation) and interest expenses on account of capital deployed in it. Statistics Iceland assumes that housing has a lifetime of 67 years (with depreciation of 1.5% per year) and the value of the plot of land remains unchanged. For the sake of simplification, the combined value of the housing and plot of land are treated like an asset with a lifetime of 80 years (depreciated by 1.25% per year). Interest cost on owner-occupied housing is calculated

in two ways: using real rates of interest on collateral loans, and 3% real interest on the part of the value of the housing which is classified as owner's equity.¹ The latter interest rates do not change, but the former alter in line with the terms of the loans specified in the housing sale agreement. Recently, owners' equity has accounted for just over half the value of housing, and average real interest rates have been just over 5%.

Assuming a cash price of owner-occupied housing (S), its lifetime ($n=80$) and real interest (r), owner-equivalent rent is equal to the payment needed to pay off an annuity loan in the amount S , bearing r real interest, over n years. The following equation produces the annual payment (L) of such a loan:

$$L = \frac{r \cdot S}{1 - 1/(1+r)^n}$$

This formula can be simplified into $L=r \cdot S$ when $n=80$ and r is not a very low figure, e.g. $r > 2.5\%$. A rise in real interest rates on the loans taken for housing purchases thereby leads to a rise in owner-equivalent rent. A rise in real interest (r) from 4% to 4.5% (i.e. a rise in real interest on housing loans from 5% to 6% while interest on the owner's capital is fixed at 3%) will lead to a 14% rise in owner-equivalent rent.

An important consideration is that a large part of housing loans today bear fixed interest, or rates which are not determined directly in the market. This applies, for example, to loans from the Housing Financing Fund and some pension fund lending to homebuyers. Under such conditions, a general rise in real interest rates has relatively little impact on the real interest rates used to calculate owner-equivalent rent (r). On the other hand, a general increase in real interest rates which raises the yield on housing bonds, but does not alter the negotiated price of housing, lowers the cash price of the housing, by reducing the present discount value of loans bearing fixed real interest. In the current

1. Other countries which follow this method for estimating owner-occupancy cost use nominal interest rates instead of the real rates used by Statistics Iceland. These countries are Finland, Sweden, Ireland, the UK and Canada. Long-term lending is generally at nominal rates in these countries, but is indexed on loans in virtually all cases in Iceland.

situation the latter impact is much stronger than the former, so that a general rise in real interest rates reduces the owner-equivalent rent value.

If this arrangement is changed to bring residential housing loan terms into line with ordinary market rates, the impact of a general rise in real interest rates

on the owner-equivalent rent item will change as well. If real interest on all loans changes by the same amount, the cash price will remain the same, but the increase in average real interest rates on housing (r) would force up the owner-equivalent rent.