

# User Cost and Irish House Prices

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*David Duffy\**

*“But when it comes to forecasting house prices, recent events have shown there are only two types of economist; those who don’t know and those who don’t know they don’t know”*

Quoted in Dorling and Cornford, 1995

## 1. INTRODUCTION

A measure commonly used to assess house prices is the house price-to-rent ratio. This ratio captures the costs of alternative forms of accommodation, namely buying or renting. In the long run these two costs should move together. If house prices rise compared to rents, more people may choose to rent rather than buy. This drives rents up and house prices down. In other words, if the alternative costs of accommodation are not moving together then people would switch between buying and renting. This would continue until the alternative costs again begin to move in line with each other.

Between 1995 and their peak, (between quarter 3 2006 and quarter 1, 2008), real house prices had nearly tripled in Ireland. They increased to be about 2.5 times higher in the UK and had approximately doubled in many European countries, as well as in Australia and New Zealand. Real price increases of over 50 per cent were recorded in Canada, Italy and the USA. In contrast prices in Germany ended the period lower than they were in 1995 (see Andre, 2010). Since then the Irish housing market has experienced a sharp contraction in both prices and output. Today, housing market indicators present a mixed picture – affordability measures have improved, reflecting the fact that the fall in house prices has exceeded the

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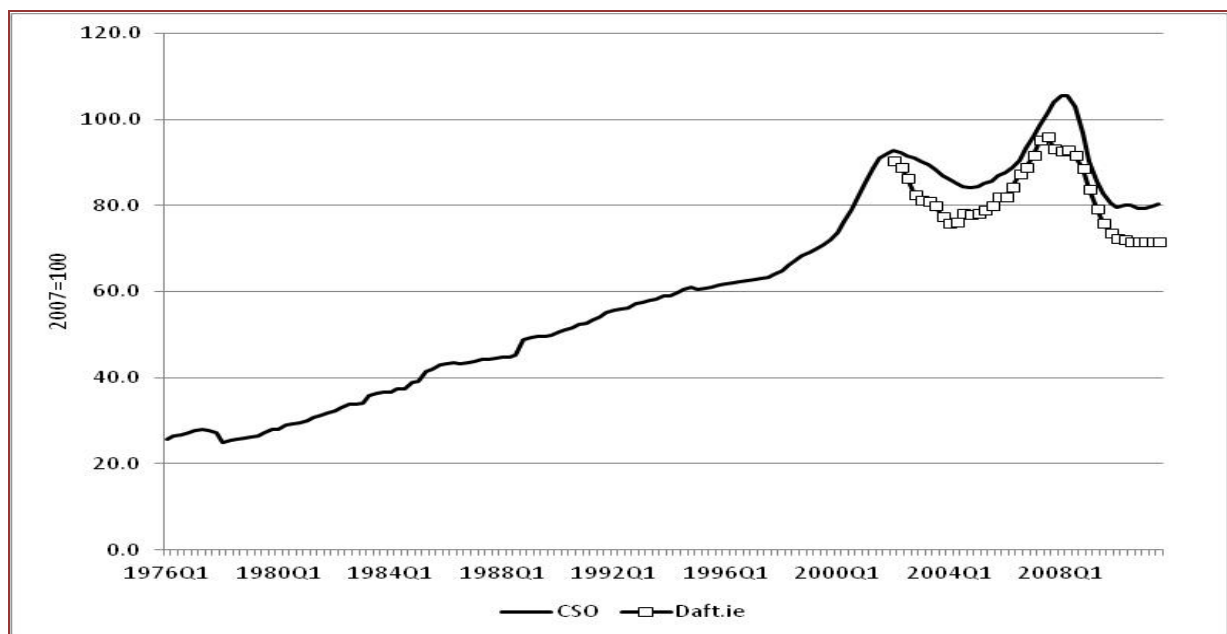
fall in incomes. Other housing market indicators suggest that there may be further falls in house prices.

Use of the house price-to-rent measure has been criticised on the grounds that it does not take account of either interest rates or the role played by price expectations. The user cost of housing aims to take account of these factors and this is the measure calculated here. User cost is the notional price an owner-occupier pays for the housing services provided by their dwelling, the rate of return or the cost of owning a house. A number of alternative scenarios are examined to illustrate the importance of house price expectations.

## 2. THE SIMPLE HOUSE PRICE TO RENT RATIO

Most indicators suggest that nominal Irish house prices are down sharply from their peak, in excess of 40 per cent by most measures. Annual growth in house prices took place over a considerable period of time, commencing in quarter 3 1994, and lasting until quarter 2 2007, an upturn of 52 quarters. Figure 1 shows the private rents between quarter 1, 1977 and quarter 2, 2011. Over this period annual private rent inflation has averaged 3.4 per cent. However, there have been a number of exceptions to this. In the late 1990s, rent inflation was much higher, peaking at nearly 16 per cent in the first quarter of 2001.

Figure 1: Rent Index (nominal)



Source: Based on data from daft.ie asking rent index and CSO consumer price index sub-indices

At the end of 2001 interest relief on investment property was restored and the 9 per cent flat rate of stamp duty and 2 per cent anti-speculative levy were abolished. Investors soon returned to the market and rents began to fall in 2002 and declined fairly steadily until 2005 in nominal terms. Rents then grew until the third quarter of 2008. Factors contributing to the growth in rents include demographic pressures through high inward migration and strong activity in the buy-to-let market, see Kelly and Menton (2007). Since then rents declined for a number of years, although in recent times rents have started to grow on an annual basis. A similar trend is evident in separate data on “asking rents” from DAFT.ie, the property rental website.

In constructing a house price to rent ratio, an important consideration is the choice of house price measure. A number of alternative house price measures exist for Ireland. To construct our house price measure for this analysis we undertake the following steps. Firstly, a national average house price is estimated by weighting the average new and second hand house price by the proportion of loans paid for new and second-hand houses. Secondly, to avoid average price effects, price changes after quarter 1, 2005 are determined by the CSO Residential Property Price Index which is constructed using a hedonic regression methodology and so aims to avoid distortions caused by the changing mix of properties, see O’Hanlon, (2011).

One final adjustment is undertaken. It could be argued that the decision to buy or rent is primarily undertaken by potential first-time buyers who are choosing whether or not to enter the owner occupancy segment of the housing market. Analysis of the price-rent ratio should therefore be based on analysis of the first-time buyer price to rent ratio. The Department of Environment or the CSO does not distinguish between first-time or repeat buyers. However, examination of the micro-data used for the permanent tsb House Price Index from 1996-2010 shows that first time buyer house prices over the period were, on average, approximately 85% of the national price. A first-time buyer price is calculated as 85% of the weighted national house price, shown in Figure 2.<sup>1</sup>

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<sup>1</sup> A similar approach is taken in the construction of the EBS/EBS Affordability Index.

The first-time buyer price to rent ratio is shown in Figure 3. Given the magnitude of house prices changes, the ratio has followed the path of prices in recent years, with house prices increasing much faster than rents. Having reached a peak at the start of 1982, the price-rent ratio declined until 1987. In the succeeding years to 1990 the price-rent ratio grew by 17 per cent. However, this was followed by further declines and it was not until 1994 that the price-rent ratio started another period of sustained growth, with the late 1990s recording annual double digit growth. In that period the fastest growth in the price-rent ratio was at a time when rental growth was slow or falling and house prices were growing by double digits.

**Figure 2: First-Time Buyer Average House Price (nominal), '000s euro**

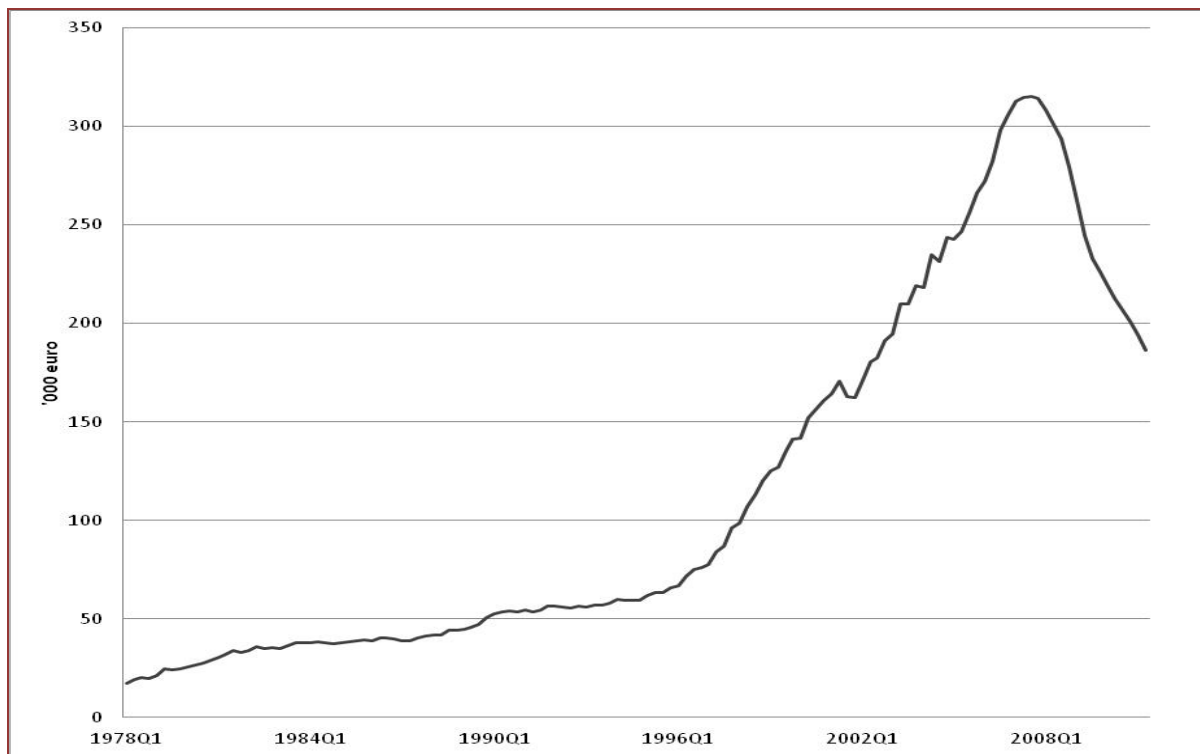


Figure 3 also shows that, since the beginning of 1998, the ratio of house prices to rents in Ireland has been above its long run average. For the period 1978 quarter 1 to 2011 quarter 2, the long run average for the ratio was 0.55. However, much of the period after 2000 is seen to represent the bubble period of the house price cycle and so its inclusion would increase the long run average to an artificially high level, the effect of which would be to underestimate overvaluation. For example, OECD, IMF, and Central Bank estimated that house prices became over valued during that stage, in

the order of 15 to 20 per cent.<sup>2</sup> Excluding the period after 2000 and using quarter 1, 1978 to quarter 4, 2000, the annual average is 0.39. The price-rent ratio peaked in quarter 3, 2006 and has moved back towards the long run average. In many economies the ratio can deviate from its long run average.<sup>3</sup> For example, if people's expectation of their long-run income growth changes this could alter the long run relationship as the decision to buy becomes more attractive. Or in uncertain times people may prefer greater flexibility in their accommodation tenure and this could increase the attractiveness of renting. Indeed, the extent of the current housing market shock may have a long lasting impact on preferences. If changes of this nature were to persist then the long-run average would shift.

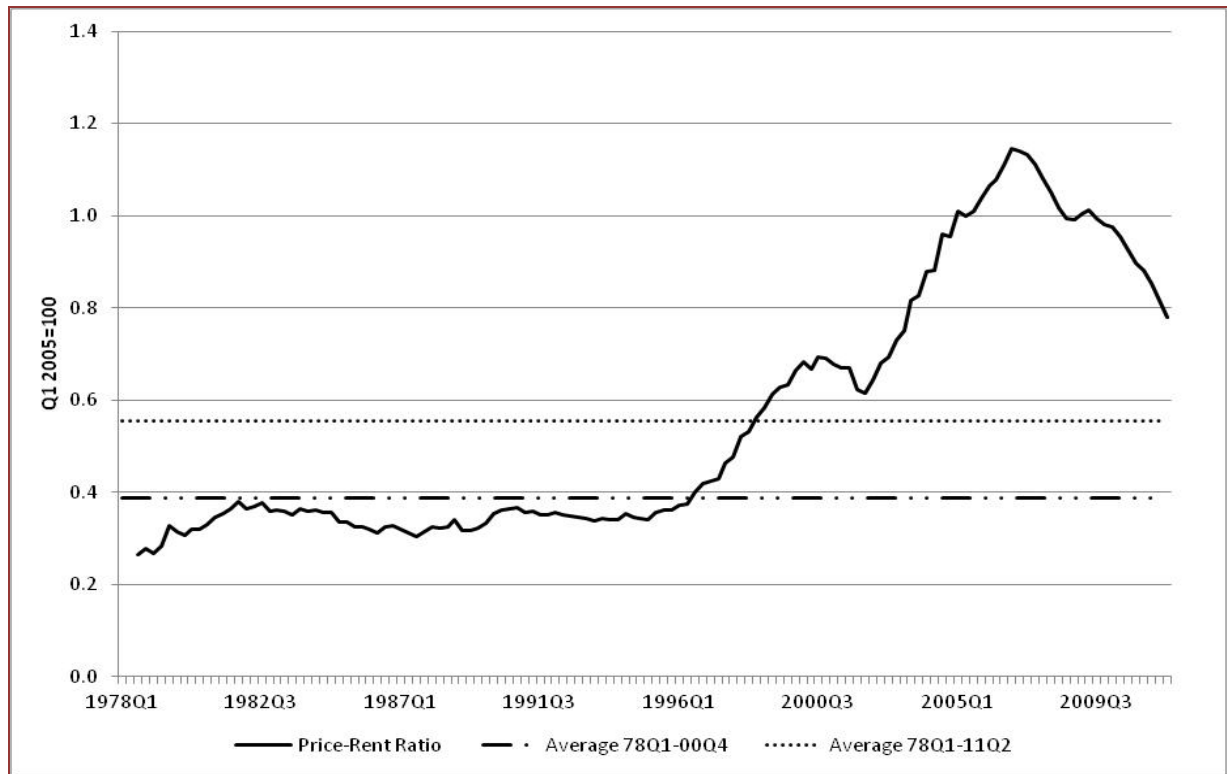
The first-time buyer house price to rent ratio shown in Figure 3 suggests that there is still a significant adjustment to take place in house prices. However, this interpretation must be treated with some caution. The standard house price-to-rent ratio used above has been criticised on the grounds that it does not take account of the role played by interest rates. In addition, while the price is readily identifiable in the rental market as rent, it is not immediately obvious in the owner-occupier market. The everyday house price quoted is generally the asset purchase price and this is not the same as rent.

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<sup>2</sup> OECD, Economic Outlook No.78 estimated that Irish house prices in 2004 were 15.4 per cent overvalued.

<sup>3</sup> See for example the analysis in OECD World Economic Outlook, No.78, Chapter 3 "Recent House Price Developments: The Role of Fundamentals".

**Figure 3: First-Time Buyer House Price Index-to-Rent Index Ratio, Ireland**



Source: First-time buyer house price index constructed using DoE quarterly house price series and CSO national house prices. Rent index based on private rents from CSO detailed sub-indices from the consumer price index.

### 3. THE USER COST OF HOUSING

The need to develop a price for the consumption of housing brought about the concept of user cost. This allows the comparison of the annual cost of owning a house to the annual cost of renting. User cost is the notional price an owner-occupier pays for the housing services provided by their dwelling, the rate of return or the cost of owning a house.<sup>4</sup> In general, the user cost of housing is given by the following formula which aims to capture the costs and any offsetting benefits from homeownership.

$$\text{User cost of housing} = [ (\alpha i_b + (1-\alpha) i_m) (1-\tau) + \delta - \pi^e_H ] * P_H$$

where  $\alpha$  is the downpayment as a fraction of the purchase price,  $i_b$  is the nominal rate of interest on large deposits,  $i_m$  is the nominal rate of interest

<sup>4</sup> As this is not observable it must be imputed. There is extensive literature on this topic and its calculation. See, inter alia, Dougherty and Van Order (1982), Diewert (1983), Roche (1999), McCarthy and Peach, (2004), and Himmelberg et al, (2005).

on mortgages,  $\tau$  is the marginal tax rate,  $\delta$  is a depreciation rate,  $\pi^e_H$  is the expected rate of house price change, and  $P_H$  is the purchase price of the house.<sup>5</sup> The downpayment is calculated as the dwelling price less the amount borrowed divided by the dwelling price. The depreciation rate is based on the annual rate used in the Economic and Social Research Institute (ESRI) macro-model. The nominal interest rates used are the interest rate on large deposits and the representative mortgage interest rate from the CSO. Although house price expectations are one of the most important components of the user cost measure they are one of the more difficult components to calculate. Mayer and Sinai (2007) point out that the standard user cost model does not characterise how price expectations are formed. In our base scenario, we assume that house price expectations continue to be based on a 4 quarter moving average of the annual growth rate in house prices, in other words consumers expectations of future house price changes are based on past experience. For example, the expected house price change in the first quarter of 2000 is the average of the annual change in each quarter of 1999. Murphy and Muellbauer (1997) provide evidence of this in the UK housing market, Case and Schiller (2003) and Piazzesi and Schneider (2009) show its presence in the US housing market, while Lunn (2011) shows evidence for the Irish housing market. Using this measure housing market equilibrium is reached when the expected annual cost of homeownership equals the annual cost of renting,<sup>6</sup> when the value of user cost shown in the above formula is equal to the cost of renting.

Figure 4 shows two factors that have a major impact on user cost and fluctuate most over time. Increasing interest rates raise the user cost, while high expected capital gains reduce user cost, making owner-occupancy attractive and so demand for housing can remain strong even in a period of rapid price growth. For much of the period shown the various house price measures available in Ireland all recorded strong house price growth, contributing to the expectation of future house price increases. Expectations of price increases reduce the user cost of homeownership

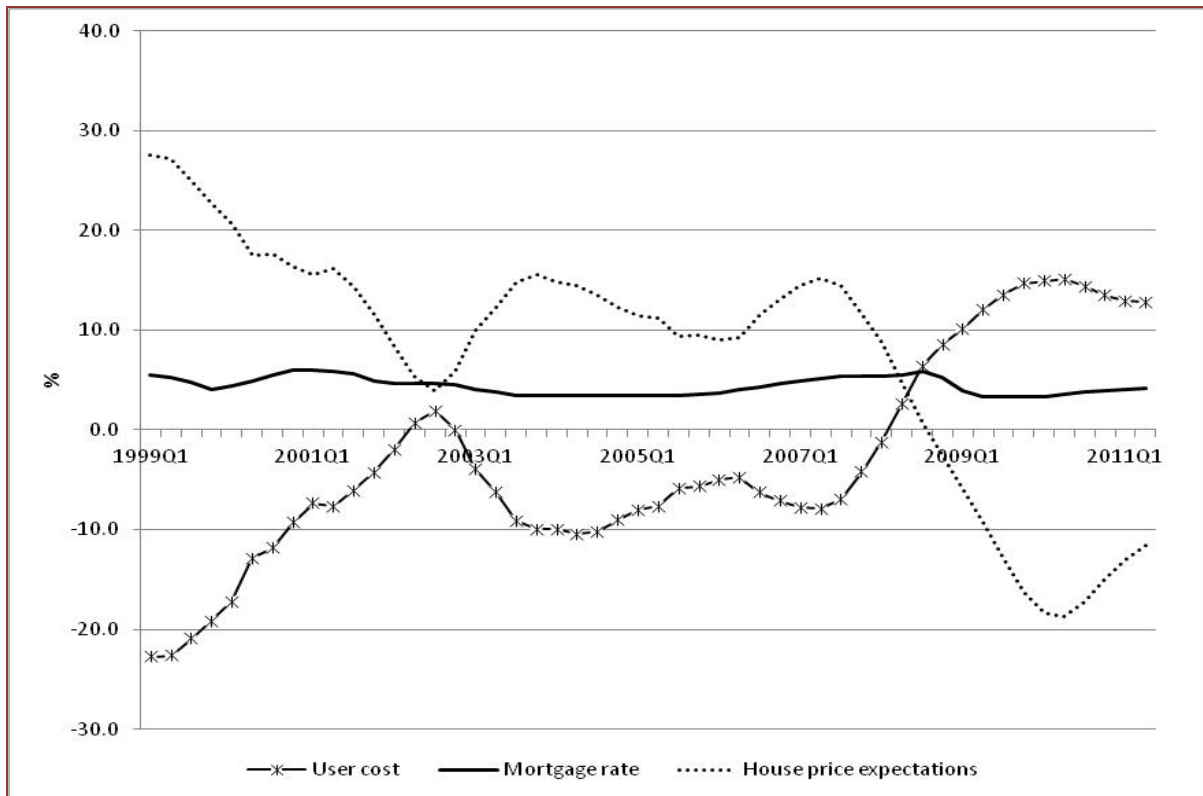
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<sup>5</sup> In an Irish context, Barham (2004) gives a detailed account of the variables involved in the construction of the user costs of housing.

<sup>6</sup> A number of alternative approaches exist to assessing whether or not a housing market is in equilibrium. For example, during the increase in house prices in Ireland after 2000 a number of studies compared house prices to a predicted house price, which is estimated based on factors such as demography, interest rates and income, see for example McQuinn and O'Reilly, (2006) and Barrett et al (2008), amongst others.

increasing the demand for housing. As house prices grew strongly, leading to capital gains for homeowners, the user cost of housing was negative. The expectation that house prices would continue to grow contributed to the expectation of capital gain from homeownership, a factor that underpinned the demand for housing. Using the framework provided by the user cost equation also shows why the demand for housing is currently so low. As house price increases slowed this caused the user cost of housing to rise, causing the demand for housing to slow. As price expectations then became negative this further increased the user cost through the impact of an expected capital loss from homeownership.

**Figure 4: User cost and its main components**



### 3. USER COST OF HOUSING-TO-RENT RATIO

In order to assess what might happen in the housing market we examine what happens to the user cost-rent ratio under a number of scenarios for house price expectations: firstly, in our base scenario, house price expectations over the next two years are based on the moving average of house price change in the four quarters to quarter 2, 2011. In our second scenario, house price expectations improve and so rather than anticipating



a fall in real terms of just over 12 per cent year-on-year from quarter 4, 2011 the expected decline is 6 per cent. These less pessimistic house price expectations lower the user cost to price ratio, suggesting a faster adjustment to a period when homeownership is again attractive. We also examine a scenario where house price expectations improve sharply. Thus, having fallen by 12 per cent in quarter 3, 2011, there is a sudden sharp shift in expectations and house prices are expected to remain flat in real terms. This leads to a sharp reduction in the user cost to price ratio, leading to the cost of homeownership being below the cost of renting. Recent data<sup>7</sup> from the CSO Residential Property Price Index shows a pick up in the rate of house price decline. Therefore, we also include a scenario where prices are expected to fall by an annual average of 18 per cent in 2012 and 2013. Table 1 sets out the house price scenarios used in the analysis. For comparison, those used in *The Financial Measures Programme Report*<sup>8</sup> are shown.

**Table 1: House Price Scenarios, nominal growth, annual average**

	2011	2012	2013
	%	%	%
House price expectations =4Q ma of annual rate [base]	-12.4	-12.8	-12.8
House price expectations improve	-10.3	-4.1	-4.1
House price expected to be unchanged from Q4 2011	-8.0	2.5	2.5
House price expectations worsen	-12.9	-18.0	-18.0
PCAR Base scenario	-13.4	-14.4	0.5
PCAR Adverse scenario	-17.4	-18.8	0.5

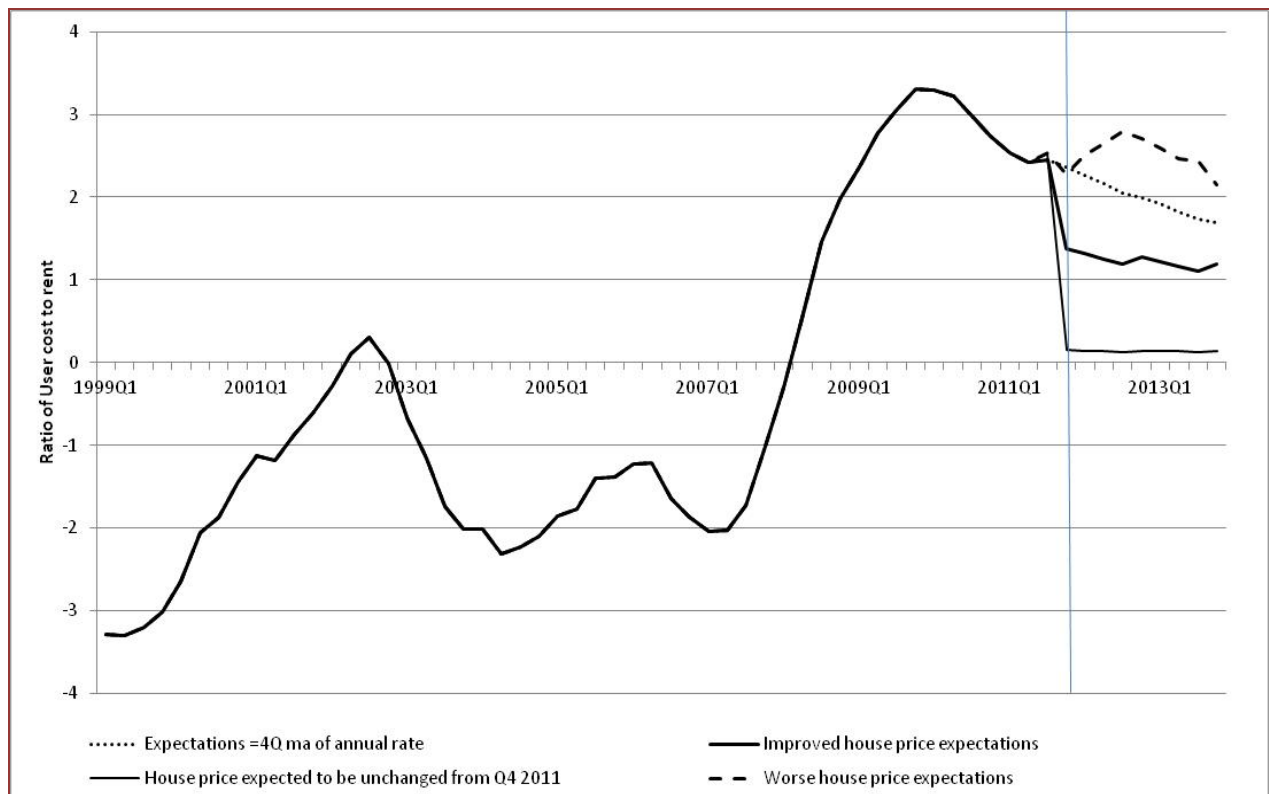
Part of the adjustment can occur through changes in rents and so a key assumption is what will happen to rents. Over the past number of years annual growth in rent inflation has been quite volatile, ranging from 14.6 per cent in 2001 to -4.2 per cent in 2004. Between quarter 2, 1976 and quarter 2, 2011 rent inflation has averaged 0.8 per cent, quarter on quarter. This represents our assumption for rental growth.

<sup>7</sup> CSO Residential Property Price Index, September 2011, Release date 25 October 2011

<sup>8</sup> Central Bank of Ireland March 2011

The results are summarised in Figure 5. The results show that for much of the period when house prices were increasing, high expected house price appreciation meant that the user cost of housing was negative, implying large capital gains, making home acquisition attractive. The fall in house prices leading to the expectation of further house price falls reversed this and the user cost to rent ratio rose dramatically, peaking in quarter 4, 2009. The extent to which the ratio rose during the housing market downturn reflects the capital loss experienced. Since then the ratio has fallen sharply. In our base scenario, house prices are expected to continue to fall and so the user cost-to-rent ratio gradually moves towards the point where the annual user cost of home ownership equals the cost of renting. Figure 5 also shows the extent to which changes in house price expectations can lead to sudden shifts in the user cost to rent ratio. For example, if house price expectations were to improve and become less pessimistic so an annual fall of 6 per cent was expected, rather than 12 per cent, this would lead to a sharp sudden change in user cost and a downward shift in the user cost to rent ratio. However, the ratio would remain above the equilibrium of user cost equalling rent, reflecting the expectation of continued house price declines and so renting would remain the attractive option. Alternatively, if house price expectations were to worsen this would raise the user cost, reflecting the higher capital loss. In another scenario the expectation becomes that house prices have stabilised and will remain flat in real terms. Again this reduces the user cost of housing and leads to a sharp downward shift in the ratio of user cost to rent. The size of the change in expectations is such that the ratio moves below equilibrium, making home ownership the attractive option.

Figure 5: User cost to rent ratio, alternative house price expectations



As some of the adjustment in the user cost to rent ratio could occur through rental growth an alternative scenario with stronger rental growth was also examined but this did not show results significantly different from the base case, again underlying the significant role played by house price expectations.

Finally, the introduction of a property tax is scheduled for 2012<sup>9</sup>. At the moment this is expected to be introduced as an annual charge of €100, although over time an annual rate is expected to be implemented. Callan et al (2010) suggest an annual rate of 0.4 per cent. The introduction of a property tax at that rate will result in a small increase in the user cost of housing, thereby putting some downward pressure on housing demand.

<sup>9</sup> The issue of taxation policy and user cost is examined in Irvine (1984) and Barham (2004).

## 5. SUMMARY

At the moment the ratio of user cost to rent remains above the equilibrium value, reached when the annual user cost of owning a house equals the annual cost of renting. The analysis indicates that expectations regarding the direction of future changes in house prices will play a key role in the housing market recovery.<sup>10</sup> A change in price expectations could lead to a situation where the ratio of the user cost of homeownership to rent falls below equilibrium, ultimately leading to an increase in the demand for housing. In the current economic environment, housing market and house price expectations may also be influenced by credit availability. Borrowers observing credit constraints may lower expectations of future house price appreciation, as they assume demand will be curtailed, see Duca et al (2011).

Of course the extent to which the ratio is likely to correct is unknown, as indeed is the timeframe. The question remains about how much longer the remaining correction in the Irish housing market will take. Given both domestic and international uncertainty it is difficult to put a time frame on the adjustment. Rogoff and Reinhart (2008) in an analysis of financial crises internationally find that house price declines last on average for six years. Applying this to the Irish market, which peaked in quarter 2 2007, suggests that it could be the beginning of 2013 before the housing market emerges from the downturn. Bénétix et al (2010) suggests the slump could be longer, the previous housing market slump during the 1980s lasted 33 quarters. Kelly (2007) in an analysis of Irish data suggests that house prices could fall for approximately eight years, resulting in a 50 per cent peak to trough decline.

A word of caution is required. House price change is difficult to forecast and although the ratio may provide us with a guide as to how house prices might perform it is not a precise indicator of when and by how much house prices will change direction. A sudden change in expectations can lead to a sharp shift in the user cost-to-rent ratio and change the relative attractiveness of homeownership. Predicting house prices, as is the case with other asset prices, remains very difficult. The analysis above is based

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<sup>10</sup> The role of uncertainty is also discussed in Kennedy and McQuinn (2011)

on existing data and economic outlook. Any deterioration in these would lead to a more severe housing market outlook.

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