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CONSUMPTION AND HOUSE PRICES IN IRELAND

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Consumption and House Prices in Ireland

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Abstract

We examine the link between private consumption and housing wealth in Ireland. We find that the marginal propensity to consume out of housing wealth is essentially zero. This is in marked contrast to the recent evidence for other OECD countries. The evidence is robust to changes in statistical methodology. Thus we can conclude that the recent consumption growth has not been financed by borrowing against housing wealth perhaps because that the private sector does not find recent increases in house prices fully credible.

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1 - Introduction

The well-documented rise in Irish house prices in recent years has led to some public disquiet on two related questions: the sustainability of the property market itself; and the effect of any collapse on the economy in general. Some commentators worry that the property boom represents an unsustainable bubble market, which will inevitably burst with possibly dire consequences for the economy as a whole. Parallels are often drawn with the collapse of the UK property market in the late 1980s and the early 1990s and the resulting negative equity problem.[1]

In fact these two questions are closely related to the overall question of how housing wealth affects private consumption and savings decisions. For years economists have recognised that rational individuals should change the level of their consumption only in response to permanent changes in their wealth. Temporary changes in wealth should have little or no effect on consumption decisions.[2]

If the recent changes in housing wealth were deemed credible by both lenders and house owners then we would expect to see an increase in private consumption. Of course, it may be the case that individuals are cautious about borrowing against housing wealth because of the psychological importance of home ownership, the desire to make housing bequests and the general illiquidity of housing wealth etc. Thus we might expect that the marginal propensity to consume out of housing wealth to be less then the marginal propensity to consume out of financial wealth – but we would not expect it to be zero. This is confirmed by most of the international evidence (see below).

We might think, therefore, that the Irish experience mirrors the international experience: large scale increases in consumption caused by increases in housing wealth. The fact that a boom in house prices and a consumer boom have been coincident does not allow us to infer causation. In the Irish case at least, there is a plausible alternative explanation for both: the large increase in national income since the early 1990s could in principle be responsible for both the boom in house prices and the boom in consumption.

In what follows, we show that the dramatic rise in personal income has explained all of the increase in consumption and the marginal propensity to consume out of housing wealth is essentially zero. This suggests that the population does not really believe that the recent house prices are sustainable and that they feel that there will be an inevitable fall in prices, possibly quite large. However, this result also suggests that the consequences of a large correction in house

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[1] See "House of Cards", a survey of European property markets in the *Economist*, May 29th, 2003
[2] For an overview of consumption theory see Deaton (1992) or Attanasio (1999)

prices may not be as dire as some have feared. If people have not borrowed against housing wealth to boost consumption then a decline in the housing market would have a limited effect on aggregate consumption, limiting the recessionary effects of a large fall in house prices.

The idea of inferring the sustainability of a boom in asset prices from its effect on private consumption is not new. It has been observed, for example, that the boom in stock prices in the US seemed to have little effect on private consumption, suggesting that most private individuals viewed the changes in their wealth as temporary. Furthermore, when the stock market bubble burst in summer 2000, there was little recessionary effect on private consumption – even allowing for the accommodating monetary policy adopted by world central banks.[3]

The paper proceeds as follows. In section two, we review the international evidence on the link between housing market and private consumption and savings. We also look at the Irish and international evidence on the presence of bubbles in asset markets. In section three, we review the recent experience of the Irish economy in general and of the housing market in particular. In section four, we present a formal econometric model of the link between Irish consumption and the housing market. We show that our estimate – of essentially zero effect – is robust to various methodological and data issues. Finally, section five concludes.

2 - Review of theory and evidence

There are two broad strands to the literature that are relevant to our discussion. The first uses aggregate data on house prices and stocks to try to judge whether price movements are transitory or permanent. The second strand to the literature uses data on consumption (either aggregate macro data or micro survey data) to measure the effect of housing wealth on consumption. As discussed above, these two questions are closely related.

 Using aggregate US data, Elliot (1980) found no effect upon consumption from changes in non-financial wealth. These results were challenged by Peek (1983) and by Bhatia (1987) who raised questions over the methodology used to estimate real non-financial wealth. But in general, for the United States, time series estimates of the marginal propensity to consume out of housing wealth were around 0.04. In other words, for every $1 billion increase in housing wealth, personal consumption increased by $40 million.

Muellbauer and Murphy (1997) argue that the increase in housing wealth was a significant explanatory variable in the context of the UK consumer led economic boom in the late 1980s.

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[3] See lecture delivered by Professor Jaime Ventura, Department of Economics, MIT at a conference held by Bank of Ireland Private Banking, Dublin Castle, June 7, 2001.

Muellbauer and Murphy (1995) estimated the elasticity of consumption with regard to housing wealth to be 0.045. So a ten percent increase in housing wealth would lead to 0.45% increase in consumption.

Kenny (1998) and Miles (1992, 1994) both argue that there are good reasons to remain sceptical of evidence that increases in housing wealth will have an unambiguously positive effect on consumption. This is especially so if a house price boom occurs at the same time as a consumption boom as both phenomena could be explained by other variables such as rising real incomes, expectations thereof or looser credit constraints.

Furthermore, as Miles (1994) argues, an increase in prices may boost the consumption of those who intend to trade down at some time in the future, but those who intend to trade up and first time entrants are hurt by price increases and may be forced to cut back on consumption. Therefore unless households have the ability to exit the housing market en masse then the aggregate wealth effects on consumption could be negligible.

Engelhardt (1996) examined the link between house price appreciation and the savings behaviour of homeowners during the 1980s using micro data. The analysis used selfreported household asset and debt data for a sample of home-owning households under the age of 65 from the 1984 and 1989 waves of the Panel Study of Income Dynamics (PSID) to construct changes in real household wealth as a measure of household saving behaviour. Cross-time and cross-regional variation in housing market conditions were used to identify behavioural savings effects. The estimated marginal propensity to consume out of real housing capital gains was 0.03 for the median household.

Disney et al. (2002) performed a similar analysis for the UK. They found a marginal propensity consume out of housing wealth of between 0.01 and 0.03. They also found that the effect of housing wealth was higher in absolute terms when house prices were rising.

Kenny (1998) focuses on the linkages between the Irish housing market and the economy and one of his main findings is "that the response of consumption depends on the type of shock hitting the housing market. In the case of a purely random increase in house prices (a house price shock), there is some evidence in support of the thesis that this gives rise to a positive deviation in consumption above its equilibrium given the level of income. However, in the case of an income shock, while the model gives rise to a positive response in both consumption and real house prices, there would appear to be no evidence that consumption rises above or overshoots its new equilibrium level". This again highlights the issue of causation and warns against the simplistic link between housing wealth and consumption.

Case et al. (2001) examine the link between increases in housing wealth, financial wealth and consumer spending using a panel of aggregate macroeconomic data. They perform two separate analyses one using a panel of 14 countries (including Ireland) observed annually during the past 25 years and the other using a panel of U.S. states observed quarterly during the 1980s and 1990s. They found that housing wealth has a statistically significant impact on aggregate household consumption. Perhaps surprisingly, they found that housing wealth had a larger effect on consumption than financial wealth. Their results suggest that the marginal propensity to consume out of housing wealth is 0.11 on average for western countries. Their results, however, do not account for possible simultaneous equation bias. Furthermore, they hide a potentially large degree of variation across countries.

Girourard & Blondal (2001) also examined the impact of house prices on consumption and residential investment using a panel of G7 (excluding Germany) countries. Their main conclusion is that house prices have a significant effect on consumption through either direct wealth effects or the easing of households' liquidity constraints. All the countries, with the exception of Italy, exhibited a significant and positive housing wealth effect on consumption. They argue that the role of the financial system is critical in the translation of increased housing wealth into increased consumption. The ability to borrow or withdraw equity is the prime mechanism to access housing wealth.

The international evidence does point to a housing wealth effect on consumption but the regressions and results rely on evidence from various G7 countries. Inferences from this international evidence have been drawn in describing the Irish economic performance since the early 1990s. This paper attempts to analyse the importance of the increased housing wealth in terms of the consumption and economic boom in Ireland.

3 - A First Look at the Data

Figures 1 & 2 show the trend in nominal and real Irish second hand house prices from 1970-2002 from the Department of Environment's national average second hand house price series.[4] Over the period prices in nominal terms rose quite strongly, averaging close to 12%, however these gains were significantly eroded by inflation and in real terms, house prices (deflated by the GDP deflator) rose by only 3.5% on average per annum. In the period 1971-79 nominal house prices rose by just 19% on average per annum, but again the performance in real terms was significantly lower, rising by a little over 4% on average per annum. In the 10 years

from 1980 to 1989 nominal second house prices rose by over 7% on average per annum but actually fell by 1.5% in real terms on average per annum. From 1990 to 2002 second hand house prices rose by nearly 10% per annum on average in nominal terms and more significantly by 8% in real terms on average per annum. However, it has been from 1994 to 2000 that the intense increase in house prices has occurred with the nominal increase averaging close to 14% and the real increase averaging just under 10% per annum.

As can be seen from Figure 3, this boom in house prices has also coincided with a boom in the Irish economy, with the cumulative rise in real GDP totalling 79% over the period 1994 to 2002. During this period, real personal consumption rose by 55%.

This has raised inevitable questions about the contribution of the increase in housing wealth to the consumer and economic boom. The rise in house prices did not occur in isolation, as real personal disposable income growth was very robust, rising by 54% on a cumulative basis.. Thus, an obvious question is whether the rise in house prices played any meaningful role in explaining personal consumption growth or can real income growth unilaterally explain Irish personal consumption?

4 - A Simple Econometric Model of Housing and Consumption

The standard framework for examining consumption, income and savings is the permanent income-life cycle hypothesis. The central tenant of the model is that consumption decisions are made in order to maximise utility over time. Furthermore, the level of consumption will only be affected by permanent component of changes in income or wealth (financial and non-financial). Case et al. (2001) argue that consumers will distribute anticipated increases in permanent wealth over their life cycle and the marginal propensity to consume (MPC) out of wealth will be the same for all sources of wealth. There are, however, reasons why the MPC could be different for housing wealth than for other forms of wealth. Firstly, if an accumulation of housing wealth were deemed to be temporary, then a rational agent would refrain from consuming it. Secondly, a bequest motive may induce individuals to keep property holdings intact until death in preference to financial assets. More generally, there could be an emotional dimension to the ownership of a family home that is not present for other forms of wealth. Both of these effects would lead to MPC from housing wealth that is lower than the MPC for wealth in general.

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[4] Table 1 gives the precise definitions and sources of the data used in the paper.

The basic strategy is to estimate a model similar in structure to Case et al. (2001). In essence we run a regression of consumption on disposable income and the value of the housing stock. All variables are in real per capita terms and as defined in Table 1.[5]

Table 2 shows the results. The first column presents the results of a simple OLS regression of consumption on income and housing wealth. (Note that numbers in parenthesis are t-statistics of the significance of the variables). As can be seen, housing wealth turns out to be statistically insignificant. The p-value generated by a t-test of the null hypothesis that housing wealth has no effect on consumption is 0.16 indicating that the null hypothesis cannot be rejected at the usual significance levels.

The results in column 1 could be biased because of the presence of stochastic time trends. If all the variables are increasing over time, the OLS will capture this rather than any true causal relationship between them. Figures 1-4 suggest that the main variables are indeed trending up. This is confirmed by formal testing of the three variables for unit roots. We cannot reject the presence of a unit root in any of the three variables at the usual significance levels.[6] One way to take account of integrated regressors is to include lags of the variables in the regression. This we do in the second column of Table 2. It is clear that there is no change in the basic result: most of the change in consumption is explained by changes in income. The coefficient on current housing wealth is insignificant whereas the coefficient on lagged housing wealth is significant but has a negative sign.

A test of hypothesis that the long run MPC out of housing wealth is zero is implemented as a Wald test of the hypothesis that the sum of the coefficients on housing wealth are zero. This produces a p-value of 0.05. Thus in this case we can reject the hypothesis that housing wealth has no effect on consumption. Note however that the sum of the coefficients is negative, implying that increasing housing wealth *reduces* consumption. While one could no doubt construct scenarios in which this might occur, it does not seem a plausible result.

In fact this result suggests that the estimates are inconsistent, however, due to the presence of simultaneous equation bias. Consumption is a function of income. But aggregate consumption is a component part of GDP, which in turn is the major determinant of PDI, so that income is also a function of consumption. Failure to take account of this circular relationship will bias not only the estimate of the income coefficients but also the estimates of the MPC out of housing wealth.

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[5] We also tried adjusting personal disposable income to explicitly exclude income arising from property. However, the results are the same as using the usual NIE definition and we do not present them here.
[6] Specifically we perform Augmented Dickey-Fuller tests with two lags in the testing regression. The resulting t-statistics are 1.27 for CONS; 1.68 for PDI; and -0.102 for HWEALTH. All are greater than the critical value at 10 percent significance level, which is –2.62.

Similarly, housing wealth itself is affected by GDP and it could be an indirect function of consumption also. In order to control for theses potential biases we re-estimate the model using Instrumental Variables in the third column of table 3. For instruments we have the lagged values of all variables and in addition the current real government consumption per capita, potential GDP per capita and lagged real short-term interest rates. Standard tests suggest these are reasonably good instruments. [7]

The results of the IV estimation are a little different from the simple model. This time the housing wealth variables are individually and jointly insignificant. As before the sum of coefficients is negative implying that housing wealth has a negative effect on consumption in the long run? Now, however, we cannot reject the hypothesis that the MPC out of housing wealth (the sum of coefficients on housing wealth) is zero.

Finally, we run the IV regression of column 3 again, but this time on a sample ending in 1994. The idea here is that the Irish economy in general and the housing market in particular grew at unprecedented rates after 1994 (see Figures 1-4). This superior performance is almost certainly a temporary phenomenon and its presence may distort our estimates of the effect of housing wealth on consumption. By restricting the sample to a period of more reasonable growth, we would hope to capture the true underlying relationship between consumption and housing wealth.

In addition we drop the housing wealth variable from the estimation equation. Unsurprisingly, given the previous results, this does not change the R-squared or the other coefficients significantly. As can be seen from column 4, the restricted sample produces essentially the same results as before.

We can use this model to create a forecast of what consumption would be given income in the years 1995-2002 and compare it with the actual outcome. We present a graph of this forecast in figure 4, where the solid line represents the actual consumption that occurred and the dotted lines represent the 95 percent confidence interval for the forecast. As we can see, actual consumption is entirely within, what is a relatively narrow, forecast region. This confirms that housing wealth data is of no use in forecasting or explaining the level of private consumption in Ireland. The level of consumption as it changes through time is explained almost entirely by movements in Personal Disposable Income. Even the consumption boom that occurred in the late 1990s and was coincident with a house price boom appears to have been entirely due to the dramatic rise in real personal incomes. Housing wealth appears to have had no effect.

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[7] The regression of the endogenous variables on the instruments yields and R-squared of 0.98 for PDI and 0.98 for HWEALTH. However, F-test of the exclusion of GC, POTY, INT and their lags from this regression is 13.87 for PDI and 4.28 for HWEALTH. Staiger and Stock (1997) suggest that a value above 5 is desirable.

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5 - Conclusions

The results of the model indicate that the increase in real personal disposable income explains the rise in real personal consumption and the addition of the housing wealth series does not provide any extra explanatory power. The implication is that the recent increase in housing wealth has not been used to fund personal consumption. In essence, the growth in real incomes caused both the increase in consumption and house prices and that the causation ran in one direction. This would imply that households in Ireland did not believe that the boom in house prices was a permanent addition to their wealth. Or, at the very least, Irish households were uncertain about the sustainability of the appreciation in housing wealth. Possibly the memory of the UK property boom and subsequent crash in the late 1980s and early 1990s had a considerable resonance with domestic households. The fear of negative equity in the housing market may have restrained the desire to use the increase in housing wealth to fund current consumption.

Another possible explanation is that Irish households faced liquidity and credit constraints and were unable to access the positive equity that had begun to accumulate. Anecdotal evidence would indicate that the availability of mortgage equity withdrawal has only become more widespread in Ireland in recent years, while it has been a common feature of the UK housing market for 10 years or more. Again, anecdotal evidence would suggest that the vast bulk of any equity withdrawal that has occurred in the Irish market has been used for residential investment purposes (e.g. providing house deposits for children, extensions to existing properties etc.) rather than for personal consumption purposes. Unfortunately, data are not published in Ireland that can identify the use of mortgage equity withdrawal and therefore it is difficult to be precise about its influence.

Our belief is that neither of these explanations is mutually exclusive and combinations of these reasons explain why the increase in housing wealth has not influenced personal consumption over the period under review. However, this pattern by households would change if confidence in the recent accumulation of housing wealth becomes more ingrained and the availability of housing equity withdrawal schemes by the Irish banking sector becomes more widespread. This would be on the assumption that house prices at least consolidates at current prices or continues to rise.

In the short-term, households may well alter their consumption and saving patterns if house prices fall but theory suggests that only a permanent fall in house prices will have a long lasting impact on consumption. Another caveat is that negative equity should only become a binding

constraint on consumption if the servicing costs of the mortgage rise significantly and impact on household's personal disposable incomes. Initially, if house prices fell this would hit consumer confidence but over the longer-term, if the servicing costs are not altered significantly, it should have no long lasting impact on consumption.

Furthermore, if households have not used housing wealth for personal consumption purposes to date then personal consumption would remain unaffected by a fall in house prices. However, this might be a bit simplistic as Engelhardt (1996) found that there is an asymmetry in the consumption and saving behaviour of households and that consumption reacted more when house prices were declining than when prices were rising. Interestingly, Disney et al. (2002) found the opposite for the UK. However, we found no evidence of such asymmetries in the Irish case.

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Table 1: Data Sources and Construction

Variable	Definition	Source	Construction
PC	Real Private Consumption	NIE	-
PI	Personal Disposable Income	NIE	-
HSTOCK	Housing Stock	DOE	-
PSECN	Average national price of second hand houses	DOE	-
P	Consumption Deflator	NIE	-
G	Government Consumption	NIE	-
Int[4]	Short term interest rates	OECD EO	-
POP	Population	NIE	
POTY	Potential Output	-	HP Filtered GDPV
PDI	Real per capita personal disposable income	-	PI/(P*POP)
GC	Real per capita government consumption	-	G/(P*POP)
HWEALTH	Real per capita housing wealth	-	HSTOCK*PSECN/(P*POP)
CONS	Real per capita private consumption	-	PC/(P*POP)
Real_i	Real short term interest rate	-	$Int-(lnP_t-lnP_{t-1})$

1. NIE: National Income and Expenditure Accounts, CSO, Dublin via ESRI Databank

2. DOE: Department of Environment, Dublin

3. OECD EO: Economic Outlook, OECD, Paris

4. Short term interest rates are available only since 1975

Table 2: Econometric Results

	(1)	(2)	(3)	(4)
Estimation Method	OLS	OLS	IV	IV
Sample	1971-2002	1972-2002	1976-2002	1976-1994
Intercept	-4400.8	-3472.2	-241.51	-4226
	(2.08)	(1.53)	(0.06)	(-1.02)
$CONS_{t-1}$	-	0.48	0.55	0.38
		(2.30)	(1.92)	(1.32)
PDI_t	0.99	0.77	0.68	0.95
	(20.34)	(5.10)	(2.72)	(4.57)
PDI_{t-1}	-	-0.21	-0.25	-0.33
		(-1.32)	(1.17)	(1.52)
$HWEALTH_t$	-1.15	2.23	4.81	-
	(1.43)	(1.23)	(1.29)	
$HWEALTH_{t-1}$	-	-3.79	-5.76	-
		(2.14)	(1.71)	
R^2	0.99	0.99	0.99	0.98
p-value from Test of MPC of HWEALTH =0	0.16	0.04	0.33	-

1. Dependendent variable is consumption
2. All variables in real per-capita terms
3. Absolute values of t-Statistics in parentheses
4. Instruments are: GC_t, GC_{t-1}, $POTY_t$, $POTY_{t-1}$
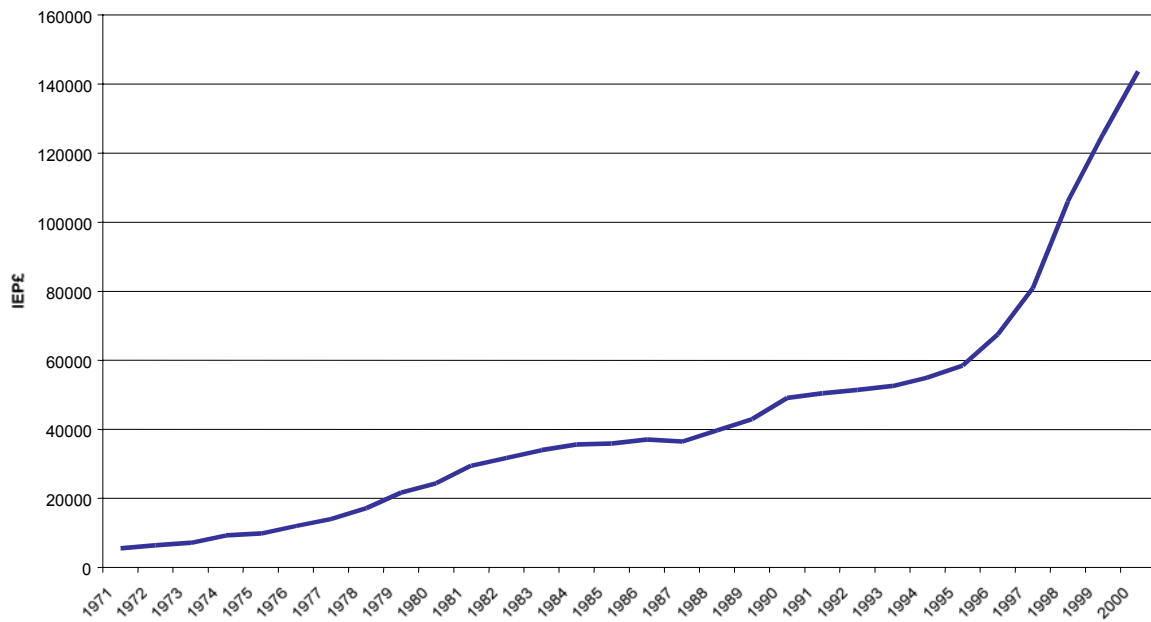
Chart 1 Irish Second Hand House Prices
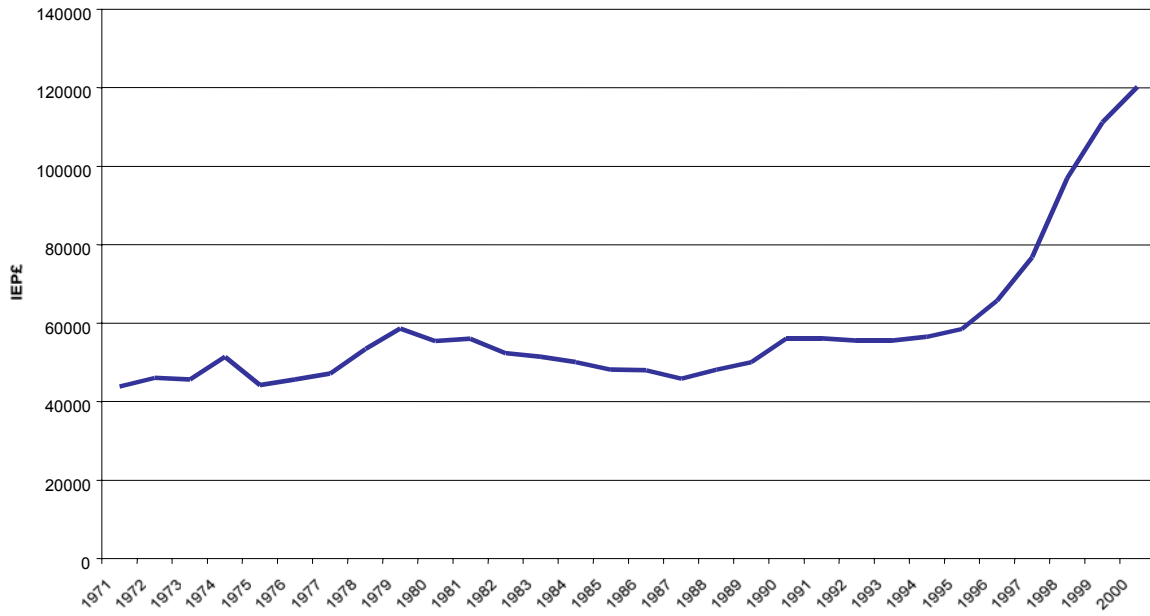

Chart 2 Irish Real Second House Prices

Chart 3 Irish Real Personal Consumption
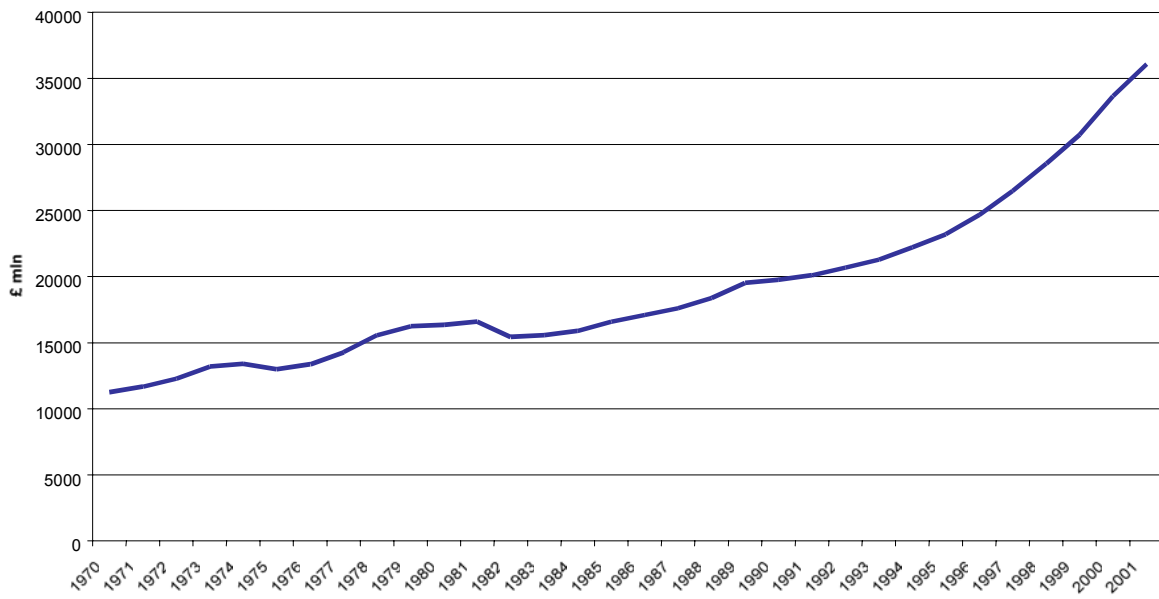Deflator: Personal Consumption Deflator, 1995=100

Chart 4 Irish Real Personal Disposable Incomes
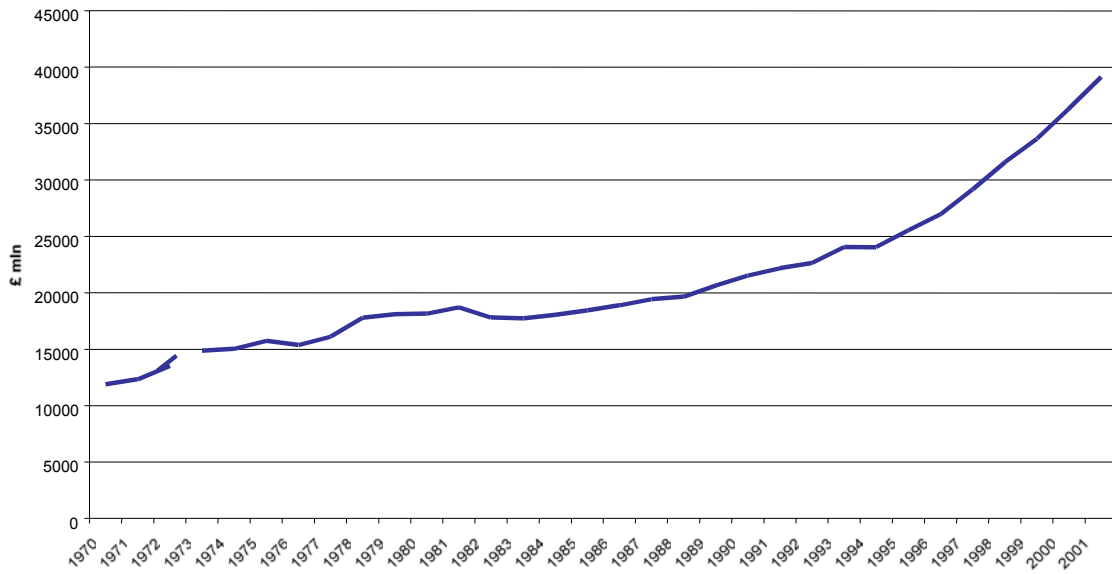Deflator: Personal Consumption Deflator, 1995=100
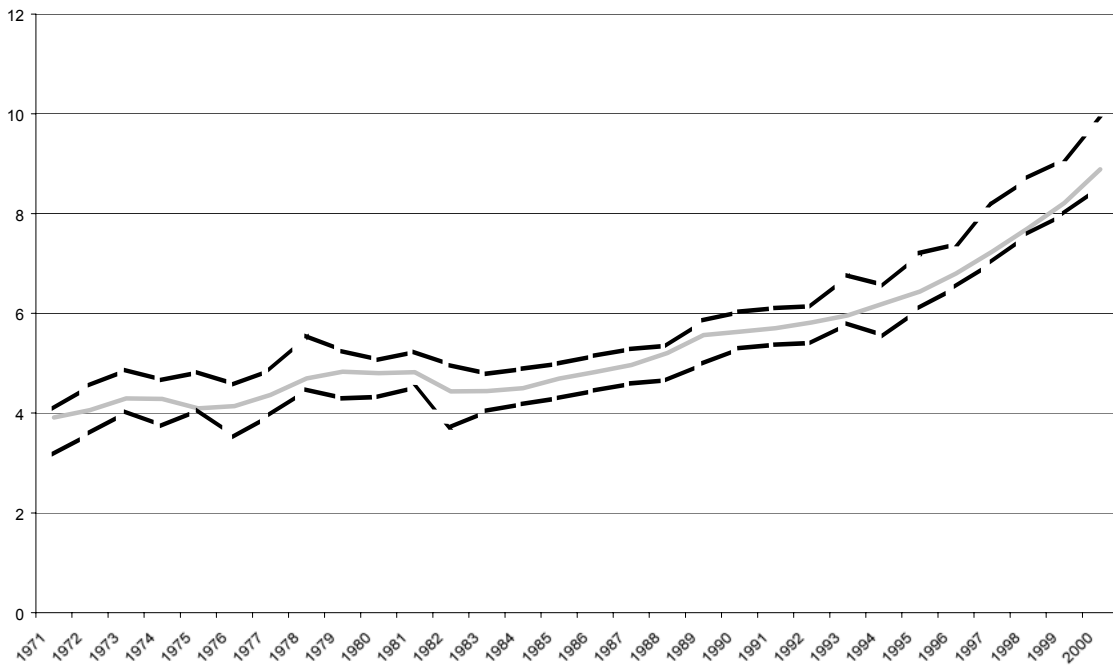

Chart 5 Actual & Forecast Consumption

Actual Consumption

Consumption Forecast 95%, Confidence Interval