



Scenarios for Irish House Prices

Gerard Kennedy and Kieran McQuinn¹

Vol 2011, No. 2

Abstract

In this note, a recently published model of the Irish residential mortgage market is used to generate likely scenarios for Irish house prices out to 2013. The model allows for the interaction between house prices and mortgage credit as well as key macroeconomic variables and housing supply. Future prices based on such models typically tend to assume that, where significant overvaluation has occurred, prices correct back to some long-run equilibrium path. However, analysis of housing booms in a cross-country context reveals that prices often tend to overcorrect following a sustained house price boom. We discuss the results from our model in this context.

1 Introduction

The future path of Irish house prices is of significant interest from a number of perspectives. While many countries experienced a significant house price boom over the past 10-15 years, the increases in Irish prices were the largest across OECD countries. Correspondingly, the decline in Irish house prices since 2007 is now one of the most protracted and sizeable internationally.

In its own right a significant fall in house prices gives rise to a number of key wealth-related issues in terms of household decision-making. However, in Ireland, the implications for future prices has additional, profound financial stability considerations. The Government guarantee of domestic financial institutions in September 2008 has linked the fortunes of the state and the main credit institutions very closely together. Therefore, future prospects

for the Irish economy are heavily conditioned by the successful resolution of the significant structural problems confronting the Irish banking sector.

Arguably, the single greatest issue confronting these institutions is the potential distressed nature of their residential mortgage book. A relatively large portion of the total stock of Irish mortgages was issued when house prices were considerably overvalued and when the general public was well placed to service the resulting high mortgage amounts. Therefore, the future path of house prices has obvious implications for the status of these institutions' balance sheets.

The potential scale of the problem in an Irish context is quite sizable. Since they reached a peak in early 2007, Irish house prices have, as of late 2010, fallen by nearly 40 percent. Over the period 2004 - 2006, when house prices were at their

¹The views expressed in this paper are those of the authors and do not necessarily reflect those of the Central Bank of Ireland or the ESCB. We would like to thank John Flynn, Maurice McGuire, Gerard O'Reilly, Thomas Conefrey and Trevor Fitzpatrick (Central Bank of Ireland) for comments on an earlier draft - any remaining errors are the responsibility of the authors.

peak, almost 340,000 mortgages were approved - estimates would suggest that the total number of outstanding mortgages in the country at this time is approximately 800,000. During this period the Irish economy was experiencing significant improvements in living standards and, hence, the general ability within the economy to sustain such mortgages was quite high.

In this note, we describe the different sources from which Irish house price data can be drawn, before examining the future implications for Irish house prices using a recently developed model of Irish house prices and mortgage credit - Addison-Smyth, McQuinn and O'Reilly (2009). The model examines the interaction between mortgage credit and house prices in the context of macroeconomic variables such as disposable income and interest rates. The stock of housing supply is also considered. Importantly, we consider these future movements in light of recent international episodes of housing booms and busts. Cross-country experiences of this type are important in attempting to calibrate the effect of another important consideration in the housing market - that of market confidence. This latter concept is frequently ignored, when forecasts from empirical models are considered.

It is worth noting that the scenarios derived are entirely conditional on the model used. Given the sustained increases in Irish house prices since the late 1990's there have been many empirical characterisations of the residential market. A non-exhaustive list of approaches includes Murphy (1998), Kenny (1999), Conniffe and Duffy (1999), Roche (1999, 2001 and 2003), McQuinn (2004), Duffy, FitzGerald and Kearney (2005), Fitzpatrick and McQuinn (2007) and McQuinn and O'Reilly (2007 and 2008).

2 Irish house price data

While the extent of price falls are difficult to gauge in a depressed housing market, the situation is particularly complex in Ireland where there is no definitive source of comprehensive housing market data. As a result, a considerable amount of uncertainty surrounds much of the debate in this area. Quality

statistics detailing issues such as the extent of falls in Irish residential property prices, the number of transactions occurring in the market at any given time and the level to which the housing market is oversupplied are key in the formulation of policies needed to tackle the current problems in the banking and property sectors. The general lack of consistent and timely data of this nature is all the more disappointing given that calls to establish a National House Price Register date back to the publication of the Kenny Report in 1974.²

Concerns over the current suite of house price measures, from "official" bodies such as the Department of Environment, Heritage and Local Government, PTSB/ESRI, and "private" sources like Daft.ie, MyHome.ie, and Sherry FitzGerald arise in the main due to matters of promptness, calculation and coverage. Table 1 gives a summary of the most recent house price releases from each source. Three of the sources have released data for 2011Q1 and of these, Sherry FitzGerald at -51 per cent, reports the most significant price falls from peak levels. It is important to note the key differences in methodology between the series. For example, the Daft.ie and MyHome.ie series are based on asking prices, while the Sherry FitzGerald price level relates to second hand properties on the basis of a very small sample.

Of the two official series (the DoEHLG and PTSB/ESRI), the DoEHLG has a greater coverage of reporting institutions - it draws prices, total loan amounts and total number of loans approved/issued - from all credit institutions. However, this series is released at quite a lag as is evident from Table 1. Also the series is calculated on the basis of a simple average of observations, rather than on a hedonic basis. Thus, it fails to account for increases in the quality of a property over time and does not make any attempt to compare increases or decreases on similar properties - a €10 million sale is treated in exactly the same manner as a €20,000 one.

The PTSB/ESRI series is a hedonic index based on the mortgage transactions of that institution.³ When house prices were at their peak, PermanentTSB accounted for about 20 per cent of the new mortgage market. However, with the

²While provision was made for a house price register in The Property Service (Regulation) Bill, which the previous government had intended to introduce, ultimately the Bill was not enacted before the dissolution of the Dail in February 2011.

³A hedonic property price is one where the price of a property is determined by the characteristics of the house (size, appearance, features, condition) as well as, potentially, the characteristics of the surrounding neighborhood (accessibility to schools and shopping, level of water and air pollution, value of other homes, etc.)

decline in property values, the lenders' share of this business has fallen substantially. These developments have also impacted on the PTSB/ESRI House Price Index, which has gone from a monthly publication to a quarterly release since 2010. Despite these drawbacks, the index has traditionally tended to move in line with its private sector counterparts, especially, Daft.ie and MyHome.ie. Moreover, preliminary analysis carried out on a sample of the mortgage book data provided by Blackrock Consultants⁴ suggests that price levels across the different mortgage books exhibited very similar trends to those of both the PTSB and DoEHLG price series.

2.1 Irish house price movements in an international context

Many OECD countries experienced unprecedented house price increases over the past two decades. Figure 1 compares annual percentage house price changes since the 1980s, in Ireland with the average across a number of other OECD members for which data is available, including countries such as Spain, the USA, UK and Netherlands where substantial house price booms also occurred.⁵ Similar charts are also provided comparing Ireland with Sweden and Finland which experienced large house price declines in the early 1990s. For much of the 1980s growth in the Irish market was much less than the average elsewhere, however the situation had reversed spectacularly by the mid 1990s, with average annual growth in Ireland of almost 14 per cent between 1995 and 2006, compared to the average across the selection of OECD countries of 6 per cent.

Table 2 provides details of some previous housing market falls throughout the OECD, in terms of their duration and depth. Interestingly, to date (as both are still ongoing) only Japan's housing crash, with a fall of over 47 per cent from peak, has exceeded Ireland's on both accounts. It is also noteworthy that other large declines took place in the Nordic countries in tandem with the banking crises which occurred there in the late 1980s and early 1990s. Finland's crash between 1989 and 1993 was particularly severe, with house prices declining almost 37 per cent from peak, while the fall in Norway and Sweden was also over 20 per

cent during their crises. The evolution of residential property prices in Ireland compared with that of Finland and Sweden can also be observed from Figure 1.

We now generate future scenarios of Irish house prices using a model, which incorporates developments in mortgage credit, income, interest rates and housing supply model. Taking realistic paths for the independent variables in the model, we generate house prices out to 2013.

The Addison-Smyth, McQuinn and O'Reilly (2009) model of the housing and mortgage market consists of the following two equations,

$$M_t = \gamma_0 B_t^{\gamma_1} F_t^{\gamma_2}. \quad (1)$$

$$P_t = \beta_0 M_t^{\beta_1} H_t^{-\beta_2}. \quad (2)$$

In the first equation, average mortgage levels M are assumed to be a function of the amount of the typical individual's borrowing capacity B , which is based on current disposable income Y and the existing mortgage interest rate R , and a funding gap F_t . In the second, house prices, (P), are a function of the average mortgage level and housing stock (H). γ and β are parameters of the model. The borrowing capacity is based on the present value of an annuity, where the annuity is some fraction of current disposable income discounted at the current mortgage interest rate for an horizon equal to the term of the mortgage. This amount is given by the following formula

$$B_t = Y_t \left(\frac{1 - (1 + R_t)^{-\tau}}{R_t} \right). \quad (3)$$

where τ is the duration of the mortgage. The funding rate (F_t) is defined as the ratio of the outstanding level of mortgage lending to total domestic deposits. Addison-Smyth, McQuinn and O'Reilly (2009) specify this variable to proxy the contribution made to mortgage lending due to the emergence and increase in cross-border funding through interbank borrowing and debt issuance availed of by Irish credit institutions over the past 10 years. The following error correction models for (1) and (2) are estimated by Addison-Smyth, McQuinn and O'Reilly (2009).

$$\Delta m_t = \lambda^M (m_{t-1} - \gamma_0 \gamma_1 b_{t-1} - \gamma_2 f_{t-1})$$

⁴Blackrock consultants were hired to conduct analysis of the mortgage book of the six covered Irish financial institutions for the 2011 prudential capital (PCAR) exercise.

⁵In this note all price changes are in nominal terms.

$$\begin{aligned}
& + \sum_{i=1}^4 \gamma_{i+1} \Delta m_{t-i} + \sum_{j=0}^4 \gamma_{6+j} \Delta b_{t-j} \\
& + \sum_{j=0}^4 \gamma_{10+j} \Delta f_{t-j} + u_t^M \quad (4)
\end{aligned}$$

$$\begin{aligned}
\Delta p_t & = \lambda^P (p_{t-1} - \beta_0 - \beta_1 m_{t-1} + \beta_2 h_{t-1}) \\
& + \sum_{i=1}^4 \beta_{i+2} \Delta p_{t-i} + \sum_{j=0}^4 \beta_{7+j} \Delta m_{t-j} + u_t^P \quad (5)
\end{aligned}$$

We use these two equations to generate forecasts for p_t .

All the data used in the simulations are the same as that in Addison-Smyth, McQuinn and O'Reilly (2009) with one exception. Owing to the greater timeliness of the PTSB/ESRI price series our house price series (p_t) is a hybrid series, comprised of official data from the Department of the Environment Heritage and Local Government, (DoEHLG), and the PTSB/ESRI house Price Index. We use the PTSB/ESRI series over the period for which it is available, (i.e. from its inception in 1996Q1 to its latest release in 2010Q4), and "back-cast" the missing observations, using the changes in the DoEHLG series. All data are quarterly and cover the period 1982Q1 to 2010Q4.

2.2 Assumptions on which forecasts are based

We present price paths under two scenarios, a "base case" and a more severe "stressed case". Before presenting our results, it is necessary to outline the assumptions made regarding movements of the independent variables over the coming years. These are briefly outlined in this section and are graphed in Figure 2. Where possible our assumptions mirror those of the PCAR Stress Test scenarios, which were incorporated in the recently published Financial Measures Programme Report.⁶ Similar to PCAR's "baseline" macro economic scenario, disposable incomes continue to decline into 2011, stabilise somewhat in 2012, before a tentative recovery in 2013. The "stressed" scenario sets out an extra year of decline in 2012 before a stabilisation in 2013. Under our "base case" scenario, interest rates rise 25bps in 2011Q2 to reflect the recent ECB move, with two further interest rate hikes of 50bps, occurring in 2011Q3 and 2013Q1. In the "stressed case" we add an extra 50bps to these latter interest rate increases. Obviously, these changes will dictate the path of affordability in the years ahead, and together with future changes in the funding gap, influence the amount which one may borrow in the mortgage market. Under the EU/IMF plan a commitment

has been made by the Irish Authorities to restructure the Irish banking sector. An element of this process will be to achieve a reduction in many institutions' loan to deposit ratio, which should see it fall from its current aggregate position of circa 170 per cent, to a more sustainable level, in the order of 120 per cent. The implication of this is that the funding gap, (F_t), is likely to be reduced somewhat going forward resulting in a downward pressure, *ceteris paribus*, on future average mortgage levels (as per equation (1)). As a result, in both scenarios, we apply a similar reduction to the funding gap variable, which will occur gradually between 2010Q1 to 2013 Q4.

Because our model does not determine the value of future house prices based on the level of available mortgage credit alone, it is necessary to make a final assumption relating to the stock of housing over the period. The housing stock figure is rolled out on the basis of a perpetual inventory equation which comprises housing completions and a fixed obsolescence factor.⁷ The latest ESRI QEC (Winter 2010) forecasts house completion activity to remain weak over the coming two years. Based on this, for our two scenarios, we set quarterly completions at 2,500 units over 2011 and 2012, rising to 3,500 units a quarter by 2013Q4.

2.3 Results for house prices

Using the error correction models, we generate our house price forecasts over the next 3 years, under the "base case" and "stressed case" assumptions. The results of this exercise are presented in Table 2, as well as a reminder of developments to date, that is, the 38.3 per cent drop in house prices from peak levels. It is clear from the third column that should events unfold as assumed over the coming years, it is likely that house prices will continue along their downward path. Unsurprisingly, the decline is greater under the stressed scenario which predicts a fall of over 18 per cent, subject to the more pessimistic scenario outlined above. Our exercise suggests that nominal house prices would fall to just under €171,000, or approximately €156,500 allowing for adverse mortgage rate movements, a cumulative fall from peak of 45.1 per cent and 49.6 per cent respectively, bringing prices back to the levels of late 2000/early 2001 and, as a result, a seventh year of residential property price declines.

It is likely that such a substantial decline in house prices in terms of duration and scale, following a period of persistent price increases, would deepen the sense of uncertainty in the housing market. In such circumstances, a severe lack of confidence could take hold, giving rise to the potential for price to "overcorrect" in the market in the years ahead. This confidence

⁶The report may be downloaded from the Central Bank web-site: www.centralbank.ie

⁷This factor is the same as that used by the Department of the Environment.

effect is the corollary of the “irrational exuberance” often alluded to in housing markets where prices are increasing over a persistently long period of time. Previous episodes from other countries suggest that this confidence effect may not be such a rare occurrence in the fallout of significant house price declines. In the next section we explore the evidence from a selection of countries who experienced substantial house price falls.

3 Housing busts and confidence: Evidence from the OECD

In this section we observe the fallout from some previous housing busts highlighted in section 1.1, i.e. the UK, Finland and Sweden, in order to gauge the effect that uncertainty and lack of investor confidence in the aftermath of a housing boom, can have on property market dynamics. Using a cross-country model of house prices (McQuinn and O'Reilly (2007)) with similar variables to those outlined earlier, we estimate a “fundamental” house price for each country and compare it to that which materialised - see Figure 3. The pattern in all three charts is remarkably similar and it is relatively easy to identify two distinct periods of price misalignment. It is notable that these 2 phases, the “boom” - when actual prices were well in excess of the fundamental, and the “bust” when fundamental prices outstripped those observed in the market, appear to have coincided across the countries.

We have already seen how the 1980's was a period of strong house price growth in these countries, and how this came to an abrupt end as prices reversed

substantially in the early 1990's. The evidence suggests that it was only in the latter years of the boom that housing was over-valued to a significant extent, a situation which corrected itself in a reasonably short timeframe as actual prices returned to their fundamental level early on in the decade. What is relevant from an Irish point of view is that the price correction did not end there and continued for a number of years. The extent of the undervaluation for much of the 1990's is also clear from Figure 3. This gap was of a similar magnitude and was particularly pronounced at approximately 35 per cent in 1996. Indeed, between the beginning of 1992 and the end of 2000, actual house prices across the three countries were, on average, 20 per cent below the fundamental levels suggested in the respective markets.

4 Concluding remarks

It is useful to examine the parallels between these episodes and events in an Irish case, so as to enhance understanding of how future domestic house prices could unfold. In quantifying the impact of this negative confidence factor, it is possible that Irish house prices could fall by another 20 per cent relative to what the model presented suggests i.e. a potential total peak to trough fall under the base case of 56 per cent. This result can be considered in the context of the assumptions about future Irish house price movements in the recent PCAR exercise, where house prices were assumed to fall by 55 per cent from peak to trough in a base case. Furthermore, based on experience elsewhere, actual prices could remain somewhat below what market fundamentals suggest they should be for quite some time.

References

- [1] Addisson-Smyth, D., McQuinn K. and G. O'Reilly (2009), “Modelling credit in the Irish mortgage market, *Economic and Social Review*, Vol 40(4), pp.371-392, 2009.
- [2] Barret, A., Kearney I., Conefrey, T. and C. O'Sullivan (2010), Economic and Social Research Institute (ESRI) Quarterly Economic Commentary, Winter.
- [3] Conniffe, D. and D. Duffy (1999), “Irish house price indices - Methodological issues” *The Economic and Social Review*, 30, No. 4, 403-423.
- [4] Duffy, D., Fitzgerald, J. and Kearney I. (2005). “Rising house prices in an open labour market” *The Economic and Social Review*, 36, No. 3, 251-272.
- [5] Fitzpatrick, T. and McQuinn, K. (2007). “House prices and mortgage credit: Empirical evidence for Ireland,” *The Manchester School*, Vol. 75, Number 1, pp.82-103.

- [6] Kenny (1974), "Committee on the price of building land, report to the minister for local government Robert Molloy," Dublin.
- [7] Kenny, G. (1999). "The housing market and the macroeconomy: Evidence from Ireland," *Economic Modelling*, 16, 389-409.
- [8] McQuinn, K. (2004). A model of the Irish housing sector, Research Technical Paper 1/RT/04, Central Bank and Financial Services Authority of Ireland.
- [9] McQuinn, K. and O'Reilly G. (2007). A model of cross-country house prices, Research Technical Paper 5/RT/07, Central Bank and Financial Services Authority of Ireland.
- [10] McQuinn, K. and O'Reilly G. (2008). Assessing the role of income and interest rates in determining house prices, *Empirical Modelling*, Vol. 25 pp.377-390.
- [11] Murphy, A. (1998), Econometric modelling of the Irish housing market, in P. Bacon, F. McCabe and A. Murphy (eds), *An economic assessment of recent house price developments*, Stationary Office, Dublin.
- [12] Roche, M. (1999), "Irish House Prices: Will the Roof Fall In?" *The Economic and Social Review*, 30, No. 4, 343-362.
- [13] Roche, M. (2001), "The rise in Dublin city house prices: Bubble, fad or just fundamentals" *Economic Modelling*, 18, No. 2, 281-295.
- [14] Roche, M. (2003). Will there be a crash in Irish house prices?, ESRI quarterly economic commentary, Autumn, 57-72.

Table 1: Summary of Different Sources of Irish (Nominal) House Price Changes

Source	Latest Observation	Fall From Peak %	Annual Change %	Quarterly Change %
DoEHLG	2010Q3	-28.9	4.8	0.9
PTSB/ESRI	2010Q4	-38.3	10.8	-3.5
MyHome.ie	2011Q1	-37.3	-13.8	-4.1
Daft.ie	2011Q1	-43.3	-14.6	-3.1
Sherry FitzGerald	2011Q1	-51.1	13.2	-4.0

Source: Department of the Environment, Heritage and Local Government, Permanent TSB/ESRI, MyHome.ie, Daft.ie, Sherry Fitzgerald, Central Bank of Ireland calculations

Note: Peak observation and most recent reporting date vary across series. DoEHLG figures are calculated on the basis of changes in the average of new and second hand property prices, Sherry FitzGerald figures are based on the second hand residential market, MyHome.ie and Daft.ie figures are based on national asking prices and PTSB/ESRI on agreed sales price figures.

Table 2: Significant Cross-Country (Nominal) House Price Declines(%)

Country	Peak-to-Trough Fall	Duration
USA	-11.1	2007:2 - 2010:1
UK (1)	-11.2	1989:3 - 1992:4
Spain	-12.9	2008:1 -
UK (2)	-13.4	2008:1 - 2009:2
Denmark	-19.4	1986:2 - 1993:2
Sweden	-20.9	1991:1 - 1993:3
Norway	-25.8	1988:1 - 1993:1
Netherlands	-32.8	1978:2 - 1982:2
Finland	-36.9	1989:3 - 1993:2
Ireland	-38.3	2006:3 -
Japan	-47.5	1991:1 -

Source: OECD **Note:** Latest data 2010Q3

Table 3: Cumulative Current and Forecasted House Price Falls (%)

Cumulative house price fall	2006:q4 - 2010:q4	2010:q4 - 2013:q4	2006:q4 - 2013:q4
PTSB/ESRI (Hybrid)	-38.3		
Base Case		-11.0	-45.1
Stressed Case		-18.4	-49.6

Figure 1

Comparison of Irish and Select OECD Countries House Price Growth (Nominal): 1981-2009

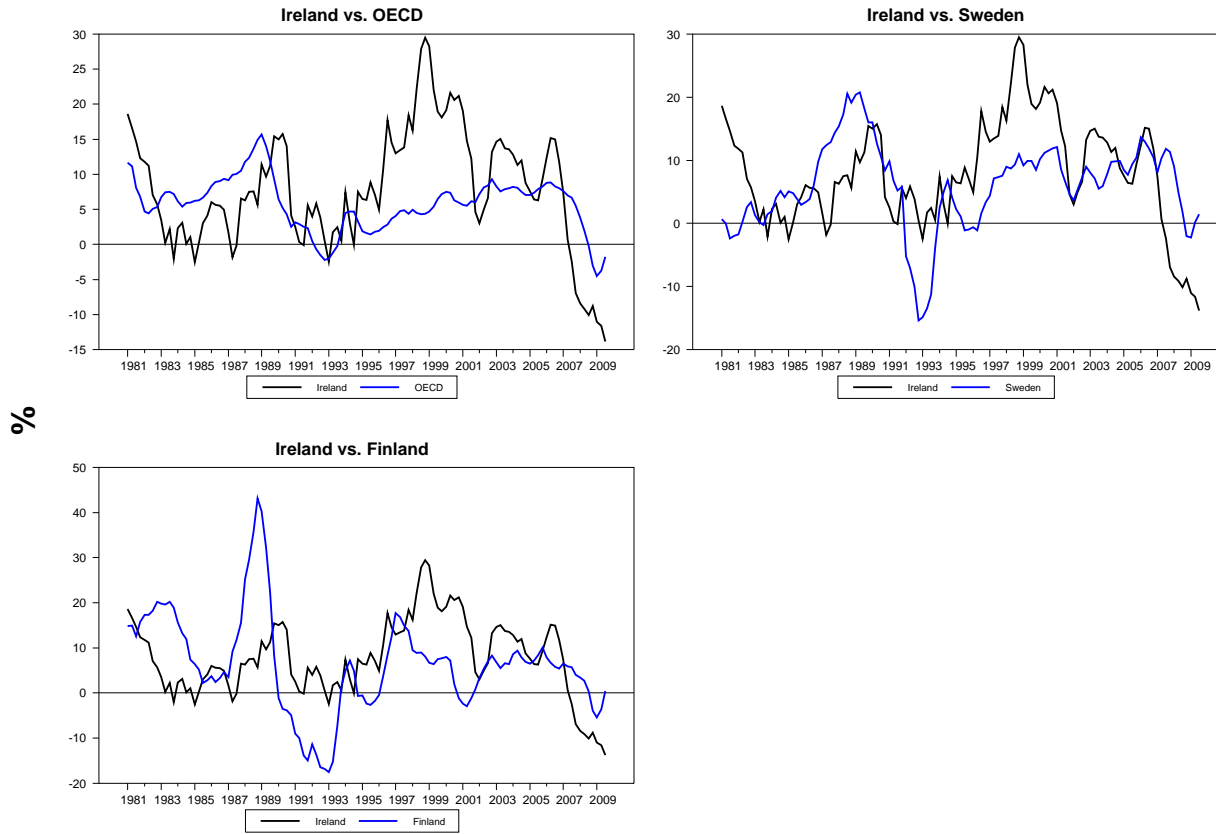


Figure 2: Housing and Mortgage Market

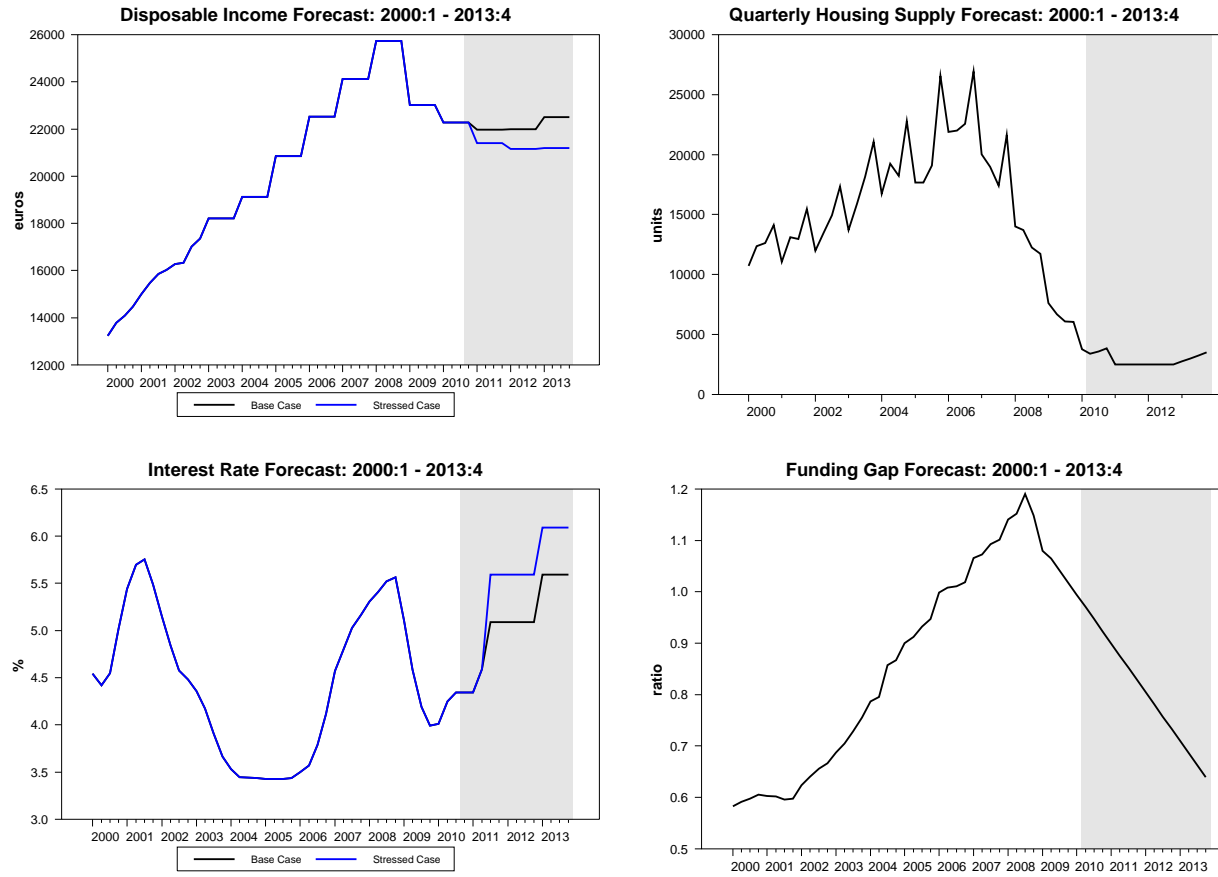


Figure 3

Actual and Fundamental Values for Select Countries: 1980 - 2009

