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Modelling and forecasting UK mortgage arrears and possessions
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NHPAU commissioned Professor John Muellbauer, assisted by Dr. Janine Aron, to develop a model aimed at improving our understanding of the drivers of mortgage arrears and possessions.[1] This can be used to predict how arrears and possessions (sometimes termed 'repossessions') may move over the next few years in different economic scenarios. As such it is a valuable input to the debate about fiscal and housing policy.

Findings

The modelling suggests that there are six key drivers of mortgage possessions and arrears:

- the debt service ratio – a measure of how easy it is for households to pay their mortgages, defined as mortgage interest payments divided by disposable income

- the proportion of properties in negative equity

- the unemployment rate

- loan quality

- government policy – specifically the support for people who are having difficulties paying their mortgage, for example, Support for Mortgage Interest

- lenders' forbearance policy – the response of lenders to borrowers who get into difficulty in paying their mortgage

The work includes several innovations in the modelling of these factors. The key conclusions are:

- **Possessions and arrears are both highly sensitive to the debt service ratio and interest rates.** In the short term, the debt service ratio moves in line with changes in interest rates. The model suggests that an increase in interest rates from 4.0 per cent to 4.4 per cent would lead to a 19 per cent increase in possessions.

- **Lenders' forbearance policies and more generous income support to those in difficulties with their mortgage appear to have had a notable effect in lowering possessions.**   It follows that changes to these policies would cause a significant increase in possessions.

- **Modelling of a wide range of economic scenarios suggests that it is likely that possession rates will rise in the next three to four years.** Indeed very optimistic assumptions need to be made to avoid this. The combination of higher interest rates and weak growth in house prices in the short term would lead to a sharp rise in possessions.

- **In the long run, an increase in house building to make house prices more affordable relative to household incomes and to dampen the cyclical trend in house prices should reduce the risk of new crises.**

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[1] This research was commissioned by the National Housing and Planning Advice Unit, an independent advisory unit sponsored by Communities and Local Government. The Unit closed on 28th June but in the interests of transparency the research is published by CLG.

Methodology and data

The analysis uses an 'econometric' model to unpick the key drivers of mortgage arrears and possessions. The model uses data covering the period from 1983 to 2009. This includes the two housing market cycles of the late 80s and early 90s and the more recent housing market upturn and downturn. The model determines the contribution of a number of different factors to the overall number of mortgages in arrears and the number of homes taken into possession.

Four key innovations were made in this research:

- a methodology was developed to address variations in loan quality and shifts in the forbearance policy of lenders
- the estimation of the proportion of mortgages in negative equity
- the treatment of the "months-in-arrears" measures to remove the bias that had been previously neglected in empirical work
- the assumption in previous studies on UK aggregate data of a proportional relationship between possessions and arrears was relaxed

In addition a number of data issues were addressed during the course of the analysis, including:

- interpolation of CML bi-annual data to derive quarterly data series
- the measurement of the debt-equity ratio

A **'double trigger'** framework is used to estimate future levels of mortgage arrears and possessions.

The 'double trigger' approach is supported by the notion that a combination of two factors are required for a household to default on their mortgage:

1. a poor debt equity position (negative or little equity)

2. a problem making mortgage payments – possibly due to a loss of income in unemployment, an increase in mortgage costs due to rising interest rates, or being over-stretched in their finances

The 'double trigger' framework used in this research requires that both elements are satisfied for a home to be repossessed, as:

- if the household is in negative (or has little) equity but is managing to make the mortgage payments, then it will not be in their interest to have their home repossessed because they will still be responsible for the balance that is not covered by the sale of the property

- if the household has a problem paying the mortgage but has significant equity, they will have the option to sell up and downsize or change tenure (providing there are other suitable properties available)

Model results

The model determines the sensitivity of mortgage arrears and possessions to a number of economic and policy variables. The contribution of the economic variables (the debt service ratio, the proportion of properties in negative equity and the unemployment rate) to the mortgage possession rate is shown in figure 1 while figure 2 shows the contribution of the policy variables. Both graphs show the long-run relationship and are scaled to reflect the strength of the relationship suggested by the model.

Figure 1: Estimated long-run contribution of key economic variables to the log possessions rate
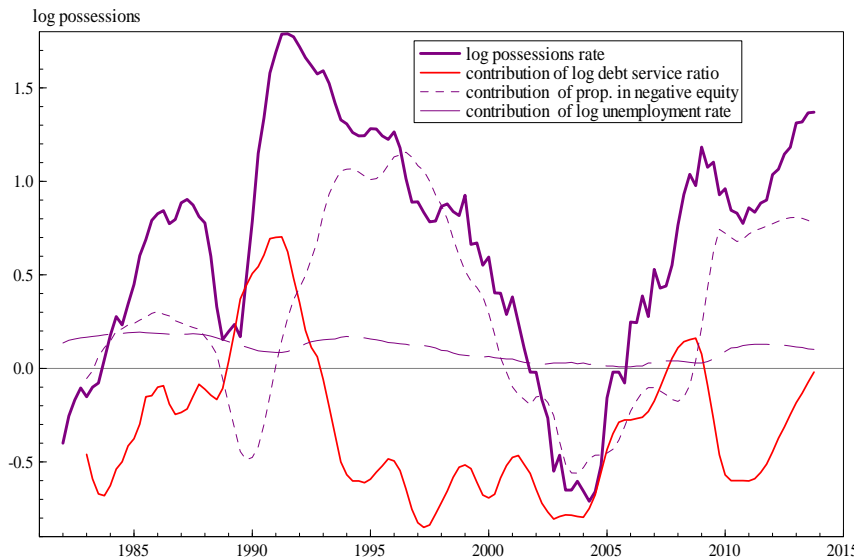

Figure 1 shows that from 2004 the increasing debt service ratio and increasing proportion of properties in negative equity were key drivers of the increase in mortgage possessions.

Figure 2: Estimated long-run contribution of key policy variables to the log possessions rate
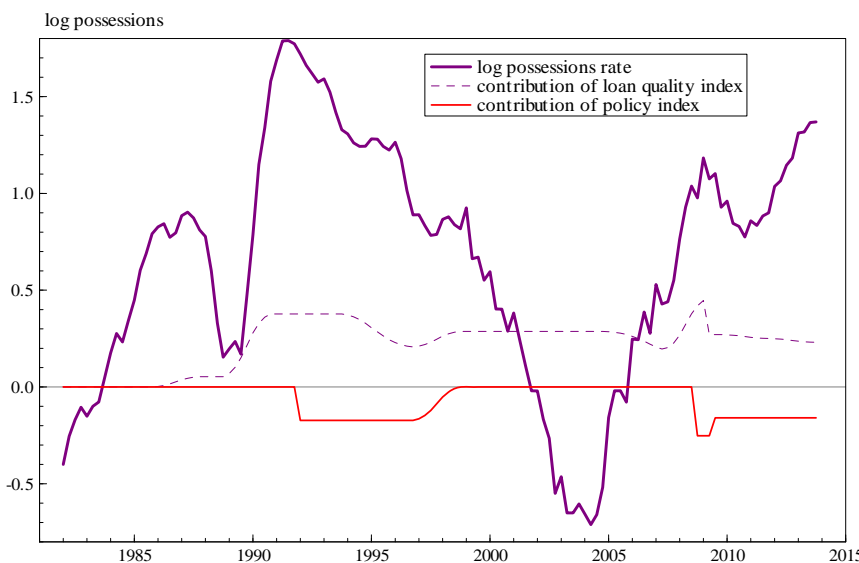

Figure 2 shows the contribution of the loan quality and the policy index to the possessions rate.

The quality of loans taken out in earlier years also made a contribution to the increasing possessions rate between 2007 and 2009.

The contribution of the policy index (taking into account lenders forbearance policy and government support) helped to reduce the possession rate below the level it may have otherwise reached from late 2008 onwards.

This research has also looked at the drivers of mortgage arrears. The proportional relationship between mortgage arrears and possessions is relaxed in this model so arrears and possessions are modelled separately. The model shows that arrears are more sensitive than possessions to changes in the unemployment rate. Borrowers who become unemployed are

likely to get into arrears, but they might be helped by government support schemes or lenders' forbearance policies. Alternatively, they might find a new job and relieve their repayment problems before having their home repossessed.

The forbearance policy index is shown to increase the level of mortgages more than six months in arrears. This is due to both the direct effect of greater leniency by lenders allowing cases to stay in arrears rather than proceed to possession, and the long term perverse incentive effect in that, if mortgage lenders are more lenient, borrowers are more likely to allow arrears to grow as they know that they are less likely to have their home repossessed as a consequence.

Forecasting results

The model has also been used to forecast future numbers of mortgage arrears and possessions. To do this, assumptions are made about the future paths of the main drivers. Different scenarios have been tested to explore the impact of different assumptions on arrears and possessions.

Each scenario tests the impact on the future number of mortgage arrears and possessions of different assumptions about: future unemployment; interest rates; house prices; real income growth per capita; the mortgage stock; the loan quality index and the policy index.

Figure 3 shows that forecast mortgage possessions are very sensitive to the assumptions made about the future paths of economic variables, especially interest rates and house prices. A similar story is also true for mortgage arrears.

Figure 3: Forecast of the quarterly number of mortgage arrears possessions under four scenarios
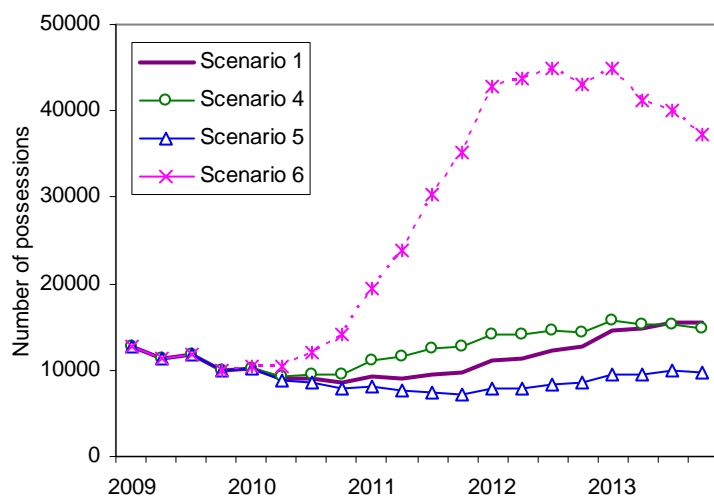
Scenario 1 is the baseline scenario and is based on forecasts by Oxford Economics made in November 2009.

Scenario 4 assumes a higher peak but a more rapid fall in unemployment, an earlier house price recovery and earlier rises in interest rates than scenario 1.

Scenario 5 is more optimistic about each variable. Scenario 6 is the most pessimistic case tested, modelling extremely pessimistic assumptions for each variable. This combination of assumptions for the underlying variables is highly unlikely to happen in practice.

Full details of each scenario can be found in section 4 of the full report.

It is likely that the number of homes repossessed will increase during the next three to four years as and when interest rates return to more normal levels. There is an extreme but not impossible scenario showing possessions increasing significantly above the level of the early 90s. However it is more likely that the number will lie between 40,000 and 60,000 per year, well below the 1991 peak of 75,500.

Further information is contained in the full report, *Modelling and Forecasting UK Mortgage Arrears and Possessions*. This report is available at Communities and Local Government website: www.communities.gov.uk