

# USING THE EAST OF ENGLAND FORECASTING MODEL (EEFM) TO ESTIMATE THE NUMBER OF HOMES NEEDED TO SUPPORT ECONOMIC GROWTH

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## SUMMARY

*This note discusses how the EEFM can be used to estimate the number of homes needed in a local authority area to support the forecast change in jobs in that area. It concludes that:*

- ***The EEFM’s forecast of the change in the population in a local authority area can be used to estimate the homes needed to support the forecast change in jobs. If the demographically-based assessment of the area’s need for housing does not provide at least the working age population suggested by the EEFM, migration from the rest of the UK should be increased until a sufficiently large working age population is projected. Having produced a population projection that is consistent with the EEFM, household formation rate assumptions can then be used to turn that projected population into a number of households, and hence a number of homes.***
- ***The EEFM is an integrated model, which forecasts both jobs (labour demand) and the population needed to fill those jobs. Users should not make alternative estimates of the population needed to fill the EEFM jobs, based on economic activity/participation rates from another source. To do so is logically inconsistent with the EEFM and the results may be highly misleading. The note includes a worked example which shows that using Office for Budget Responsibility employment rates to estimate the working age population required to support an Experian UK jobs forecast over-estimates the increase required by a factor of 3. Had Experian assumed that the OBR activity rates represented the limit of the jobs which the population could support it would have produced a much lower jobs forecast.***

## 1. Introduction

1.1. The Planning Practice Guidance (PPG) advises:

*“Plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area. ....*

*Where the supply of working age population that is economically active (labour force supply) is less than the projected job growth, this could result in unsustainable commuting patterns (depending on public transport accessibility or other sustainable options such as walking or cycling) and could reduce the resilience of local businesses. In such circumstances, plan makers will need to consider how the location of new housing or infrastructure development could help address these problems.”<sup>1</sup>*

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<sup>1</sup> Planning Practice Guidance Paragraph: 018 Reference ID: 2a-018-20140306

- 1.2. This makes it clear that Local Plans should provide enough housing to ensure that the area's economic potential is not stifled by a lack of workers. This, in effect, directs those estimating the 'objectively assessed housing needs' (OAN) of an area to consider whether a demographically-based estimate of housing need would accommodate a sufficiently large resident labour force to support the likely growth in labour demand (the jobs that employers wish to fill).
- 1.3. The PPG is commonly interpreted to mean that, if the labour supply resulting from demographic projections falls short of expected demand, the OAN should be increased, so it provides enough homes to attract more people into the area. To determine if such a shortfall is likely, the analysis should take account of likely changes in unemployment, activity rates and commuting. Any predicted changes to these variables should be realistic, in the light of economic forecasts and historical experience. Wishful thinking or arbitrary assumptions are not acceptable. If significant changes in commuting are predicted, authorities should consider if these would result in unsustainable travel. If that is the case, as a matter of policy they should work co-operatively to resolve the issue.

## **2. Estimating the number of homes needed to support job growth**

- 2.1. As the EEFM output contains an estimate of the 'working age population' (defined to be all those aged 16-64) it is straightforward to produce an estimate of the number of homes needed to support economic growth by comparing the EEFM working age population estimate with that used to produce the demographic projection-based estimate of housing need.
- 2.2. If the EEFM estimate of the working age population is lower than that in the demographically-based estimate there is no need for additional homes as the resident workforce will be more than large enough to support the forecast jobs increase. Note that the PPG does not provide for the demographic projection-based estimate to be reduced in such circumstances.
- 2.3. If the EEFM estimate of the working age population is larger than that in the demographically-based estimate it is necessary to increase the projected population above the level assumed in the demographic projection. This means assuming that net migration into the area is larger than assumed in the demographic projection as there is no other potential source of additional population. As the driver of increased net migration into the area is filling jobs, it is likely that the additional people moving into the area will come from the rest of the UK. Assumptions need to be made about how the demographically-based projected inflow is increased: for example, assuming that the extra migrants are not above or near state pension age as the driver of additional migration is jobs. Once this is done it is possible to produce a revised population projection broken down by age and sex that is consistent with the EEFM.
- 2.4. Aligning the projected population in this way to the level suggested by the EEFM gives an increase in population that is consistent with the projected increase in job numbers, from which the number of households formed and homes needed can be calculated using household formation rate assumptions.

### 3. Why it is inappropriate to use economic activity rates from another source to estimate the housing implications of a local jobs forecast

3.1. Some have been tempted to use economic activity rates derived from some other source such as the rates published by the Office for Budget Responsibility (OBR) in November 2015 to estimate the population (and hence homes) needed to support a jobs forecast. This can produce highly misleading results – for the reasons discussed below.

3.2. The relationship between the number of jobs in a given area ('workplace employment') and the number of people living in that area is governed by four factors:

3.2.1. The **economic activity rate**. This is the proportion of the population that is available for work, whether in work or unemployed. In what follows the economic activity rate will be defined to be the number of people of all ages who are available for work divided by the 16-64 population. (This is a measure of overall economic activity: economic activity varies by age and gender and there are significant numbers aged over 64 who are economically active.)

3.2.2. The **unemployment rate**. The proportion of a population who are unemployed. In what follows the unemployment rate will be given as a proportion of the 16-64 population.

3.2.3. **Net commuting**. This is the number of people who come into an area to work less the number who travel out of the area to work. A negative figure implies net out-commuting i.e. more people leave the area to work than come into it.

3.2.4. **Double jobbing**. This is the number of people with two or more jobs.

3.3. These factors link the working age population of an area to the number of jobs in that area as follows:

$$\begin{aligned} \text{Total workplace employment (jobs)} &= \text{16-64 resident population} \times (\text{economic} \\ &\quad \text{activity rate} - \text{unemployment rate}) \\ &\quad + \text{double jobbing} \\ &\quad + \text{net commuting} \end{aligned}$$

3.4. All four of the factors can vary over time and the assumptions made about how they do so can have a large impact on the estimate made of the size of the population needed to support a given number of jobs.

3.5. The economic activity rate minus the unemployment rate (as in the brackets in the above formula) is equal to the employment rate i.e. the number of employed people of all ages living in the area ('residence employment') as a proportion of the 16-64 population. Using the employment rate rather than separate economic activity and unemployment rates, the above formula becomes:

$$\begin{aligned} \text{Total workplace employment (jobs)} &= \text{16-64 resident population} \times \text{employment rate} \\ &\quad + \text{double jobbing} \\ &\quad + \text{net commuting} \end{aligned}$$

- 3.6. Of particular importance is the assumption made about how economic activity rates will change in the future. It is generally accepted that the economic activity rates of older people will increase as more people remain in the workforce for longer as the state pension age increases, pensions become less generous and health and life expectancy improve. There is, however, a range of views about how large the change will be and hence how economic activity rates will change.
- 3.7. The following worked example illustrates how different national forecasts imply different changes in economic activity rates and why using economic activity rate assumptions which are different from those used in a jobs forecast can produce highly misleading estimates of the population needed to support that forecast. It is, of course, the case that local authority forecasts of the numbers who are economically active must sum to the national forecast so it is reasonable to expect national and local rates to move broadly in parallel.
- 3.8. Chart 1 and Table 1 compare the EEFM 2016 UK jobs forecast with UK forecasts of similar data from Experian and Oxford Economics<sup>2</sup>. There are differences in the population projections used in the three forecasts but the differences are small. Experian’s forecast is based on the 2012 National Population Projections (2012 NPP) and envisages an increase of 6,870,000 people over the period 2014-2031; the EEFM forecast (based on the 2014 NPP) has a population increase that is 240,000 (3.5%) larger; and Oxford Economics’ estimate is 32,000 (0.5%) larger than Experian’s figure. However, these small differences do not explain the very different increases in jobs, the Experian forecast for the increase in jobs over the period 2014-2031 being over 60% greater than the EEFM figure:

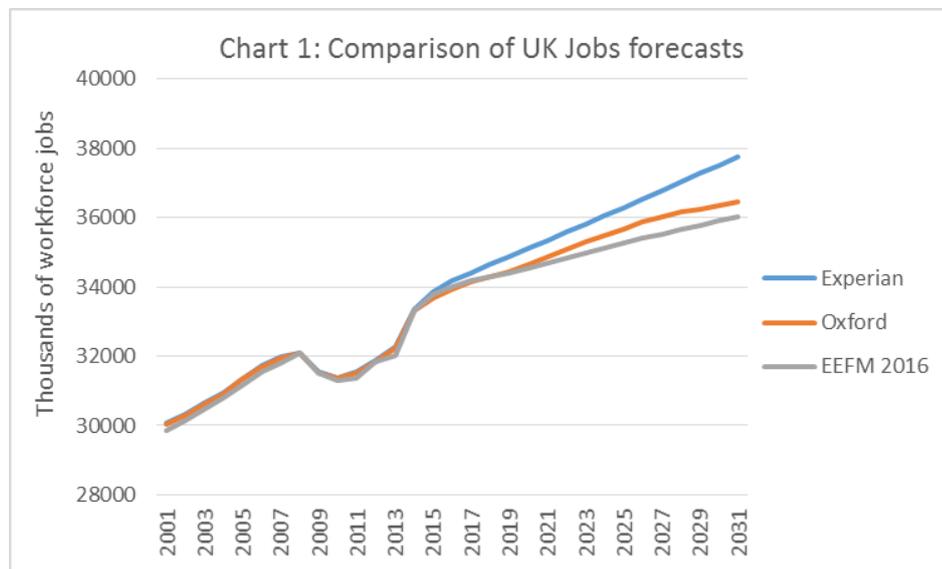


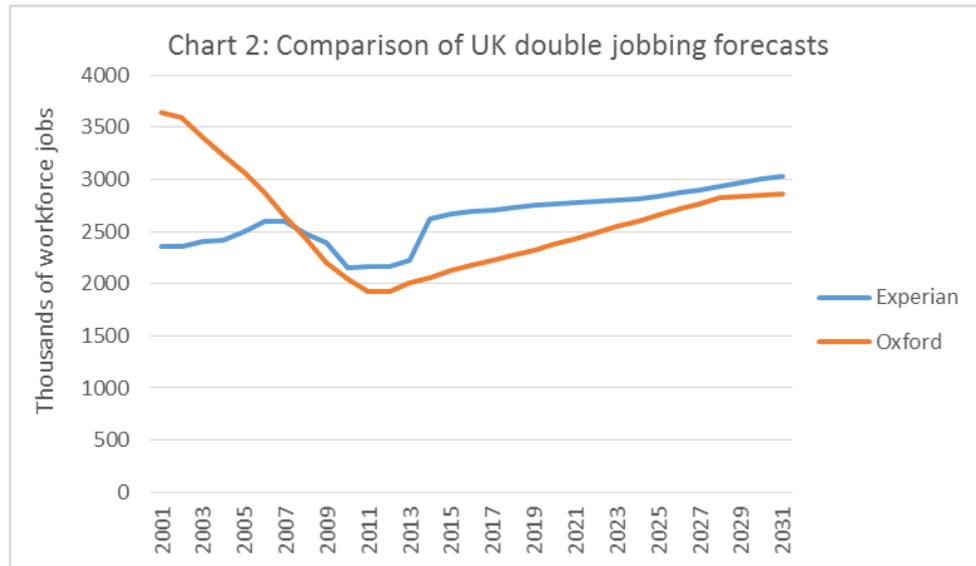
Table 1: UK jobs increase: 2014-2031		
Experian	Oxford Economics	EEFM 2016
4,419,000	3,139,000	2,696,000

<sup>2</sup> Note that these are not the current Oxford Economics and Experian forecasts but forecasts that were approximately contemporaneous with the EEFM forecast. They are used merely to provide a realistic illustration of the differences which can exist between reputable forecasts.

3.9. As the forecasts are for the UK as a whole, net commuting is relatively small<sup>3</sup> so, to a reasonable approximation, the formula in paragraph 3.5 can be simplified to:

$$\text{Total jobs} = 16\text{-}64 \text{ resident population} \times \text{employment rate} + \text{double jobbing}$$

3.10. Chart 2 shows the double jobbing figures from the Experian and Oxford Economics forecasts (calculated by subtracting the people-based employment figures given in both forecasts from the workforce jobs figures):

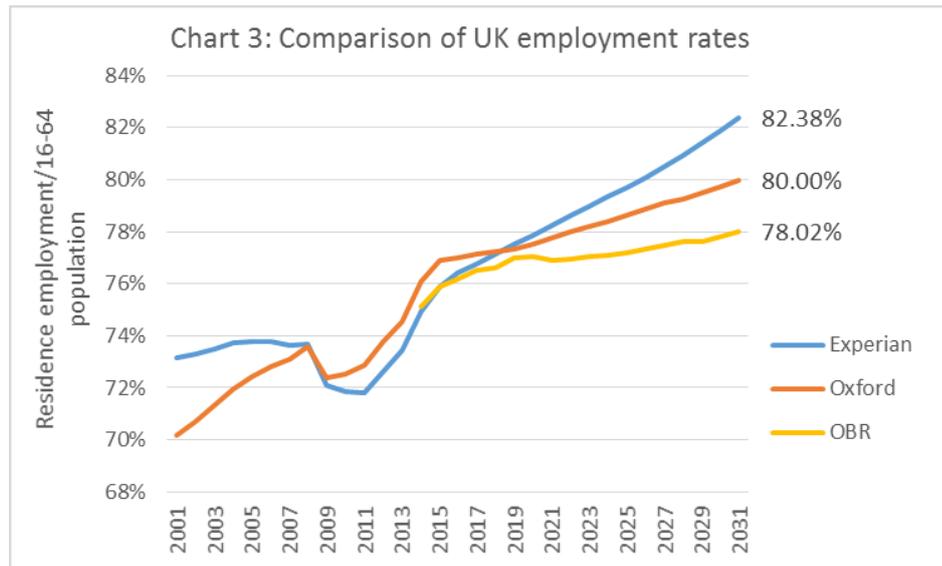


3.11. There seems to be curious disagreement about historical double jobbing rates, but by 2031 the difference between the two forecasts is less than 180,000. This compares with a difference between the two jobs forecasts of 1,300,000 jobs in 2031. This means that the vast majority of the difference between the two forecasts is due to the difference in employment rates<sup>4</sup>.

<sup>3</sup> The Oxford Economics UK forecast used here assumes the net UK commuting is a net outflow of 167,000 after 2015. This suggests that differences between the forecasts in the assumptions made about net international commuting will be negligible compared with the differences in the job increase forecasts.

<sup>4</sup> Employment rates are used in the example rather than separate economic activity and unemployment rates because the Oxford Economics and Experian forecasts use different definitions of unemployment (one using the claimant count and the other the ILO definition which includes those who are unemployed but not claiming benefit). It is not therefore possible to calculate consistent unemployment and economic activity rates for the two forecasts.

- 3.12. Chart 3 compares the employment rates in the Experian and Oxford Economics forecasts and adds in the OBR rates as a further comparator:



- 3.13. Although the difference between the employment rates used by Experian and Oxford Economics in 2031 is only a little over 2%, that is responsible for most of the difference between the two forecasts. It follows that, had Experian assumed that the Oxford Economics employment rate assumptions represented the practical limit of the number of jobs which the population could support, they would have produced a jobs forecast that was lower and relatively close to the Oxford Economics forecast.

- 3.14. The following calculation illustrates how a misleading result can be obtained by applying a different set of economic activity rate assumptions to estimate the population increase needed to support a jobs forecast.

- 3.15. Assume that an attempt is made to estimate the increase in the 16-64 population needed to support the Experian jobs increase forecast for 2014-2031 using the OBR economic activity rates:

3.15.1. The Experian forecast envisages that the 16-64 population of the UK will increase from 41.00 million in 2014 to 42.16 million in 2031, an increase of 1.16 million people.

3.15.2. The Experian forecast also envisages that there will be 37.76 million jobs in 2031 and that these will be filled by 34.73 million people (the difference being double jobbing). Using the OBR employment rate for 2031 of 78.02%, the number of working age people needed to produce 34.73 million people in employment is:

$$\begin{aligned}
 \text{16-64 population} &= 34.73 \text{ million} \div 78.02\% \\
 &= 44.51 \text{ million}
 \end{aligned}$$

3.15.3. The 16-64 population in 2014 is 41.00 million so this calculation implies that the 16-64 population needs to increase by 3.51 million by 2031. This compares with the actual assumption made by Experian of 1.16 million, a third of the figure obtained if the OBR rates are assumed.

3.16. This example shows:

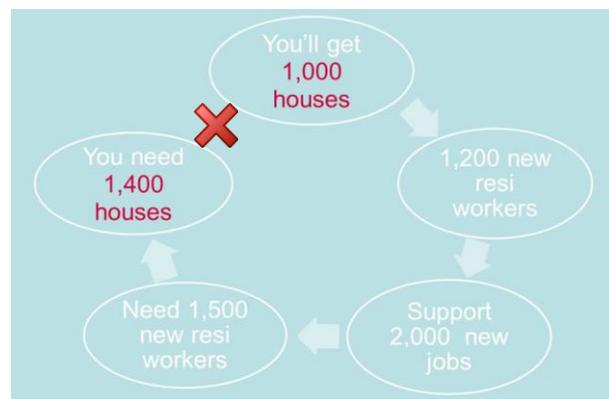
3.16.1. **The number of jobs a population will be able to support in future (i.e. the future economic activity/employment rate) is a key assumption in a jobs forecast: had a different assumption been made, a different number of jobs would have been forecast.**

3.16.2. **Using economic activity or employment rate assumptions different from those used in a forecast is likely to produce highly misleading conclusions as to the number of people and homes needed to support a jobs forecast.**

#### 4. Conclusion

4.1. Some have been tempted to use economic activity rates derived from some other source such as the rates published by the Office for Budget Responsibility to derive alternative population projections, and then household projections, using the EEFM's employment forecasts, but, because the employment and population forecasts are inter-linked in the EEFM forecasts, it is not consistent to use the EEFM employment forecasts with alternative population assumptions. The employment and population forecasts are calculated simultaneously within the EEFM. Alternative population assumptions would lead to different employment forecasts and vice versa. Using economic activity/employment rates from another source to estimate the population (and hence homes) needed to support an EEFM jobs forecast can produce highly misleading results.

4.2. Such misleading housing calculations are warned against in the 2015 Planning Advisory Service technical advice note<sup>5</sup>: *“translating future numbers of workplace jobs into future resident population, based on assumptions about the factors that link workplace jobs to resident population – comprising commuting, double-jobbing, economic activity rates and*



*unemployment, will often produce invalid results, because most economic forecasts already include a view of future population. The economic forecast and housing calculation taken together amount to an inconsistent statement, or self-defeating prophecy. Whether the calculation is merely circular, or logically inconsistent as shown in the graphic, it cannot produce a valid result, because its logic is faulty.”*

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<sup>5</sup> Planning Advisory Service Objectively Assessed Need and Housing Targets Technical Advice Note Second Edition July 2015 (Peter Brett Associates)