

**Action point update for Scottish Fiscal Commission on residential price  
breakdowns in Registers of Scotland data**

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**Summary**

- Analysis of annual and quarterly Registers of Scotland does not, as yet, show a significant long-term impact of LBTT rates on the level of transactions above £325k.
- Historic data suggests that the underperformance of the £325k-£750k band in 2015-16 relative to its share forecast using the log normal distribution is more likely to be the result of the actual distribution of house prices being slightly more skewed to the right-hand tail than the log normal distribution.

## Introduction

1. This note looks at the shares of residential housing transactions in different price bands for the years 2007 to 2015, and at quarterly data over the period Q1 2014 to Q2 2016, to assess whether the lower share of transactions in the £325k-£750k band in 2015-16 relative to forecast is likely to reflect a longer-term behavioural response or is an artefact of the fit of the log normal to actual distribution of residential prices. Since LBTT only began to operate as from 1 April 2015, Registers of Scotland data has been used for this analysis, since this provides a consistent dataset over time.

## Shares of different price bands over time

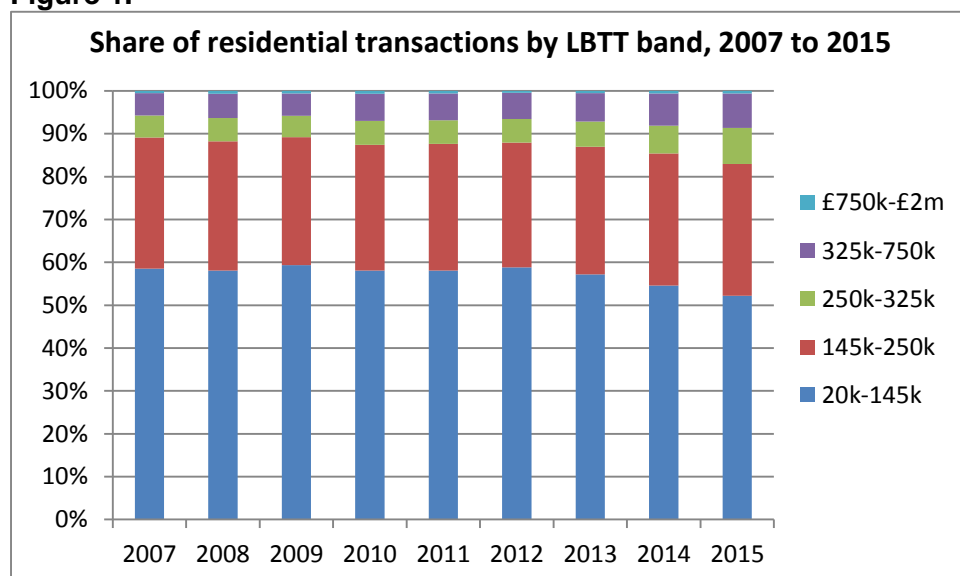
2. Residential prices are broken down by the LBTT bands, since a question of particular interest is whether the introduction of LBTT has affected different price segments of the housing market in different ways. Table 1 provides a breakdown of the share of transactions in price bands which correspond to the current LBTT thresholds for different tax rates, covering the period 2007 to 2015.

**Table 1. Annual shares of residential housing transactions by LBTT band**

|             | <b>20k-145k</b> | <b>145k-250k</b> | <b>250k-325k</b> | <b>325k-750k</b> | <b>£750k-£2m</b> |
|-------------|-----------------|------------------|------------------|------------------|------------------|
| <b>2007</b> | 58.5%           | 30.6%            | 5.1%             | 5.2%             | 0.5%             |
| <b>2008</b> | 58.1%           | 30.1%            | 5.4%             | 5.6%             | 0.7%             |
| <b>2009</b> | 59.3%           | 29.9%            | 5.0%             | 5.2%             | 0.6%             |
| <b>2010</b> | 58.1%           | 29.3%            | 5.6%             | 6.3%             | 0.7%             |
| <b>2011</b> | 58.1%           | 29.6%            | 5.5%             | 6.2%             | 0.6%             |
| <b>2012</b> | 58.8%           | 29.1%            | 5.5%             | 6.1%             | 0.4%             |
| <b>2013</b> | 57.2%           | 29.7%            | 5.9%             | 6.6%             | 0.5%             |
| <b>2014</b> | 54.6%           | 30.8%            | 6.5%             | 7.5%             | 0.6%             |
| <b>2015</b> | 52.2%           | 30.7%            | 8.4%             | 8.1%             | 0.6%             |

3. Given the progressive rate structure under LBTT, a question which arises is whether the £325k-£750k band and the £750k-and-over band have shown evidence of a reduced share compared to their historical averages as a result of the introduction of LBTT. The data in Table 1, which is illustrated in Figure 1, shows that in fact the share of transactions between £325k and £750k increased in 2015 relative to 2014, while the share of transactions over £750k has remained broadly the same.

**Figure 1.**



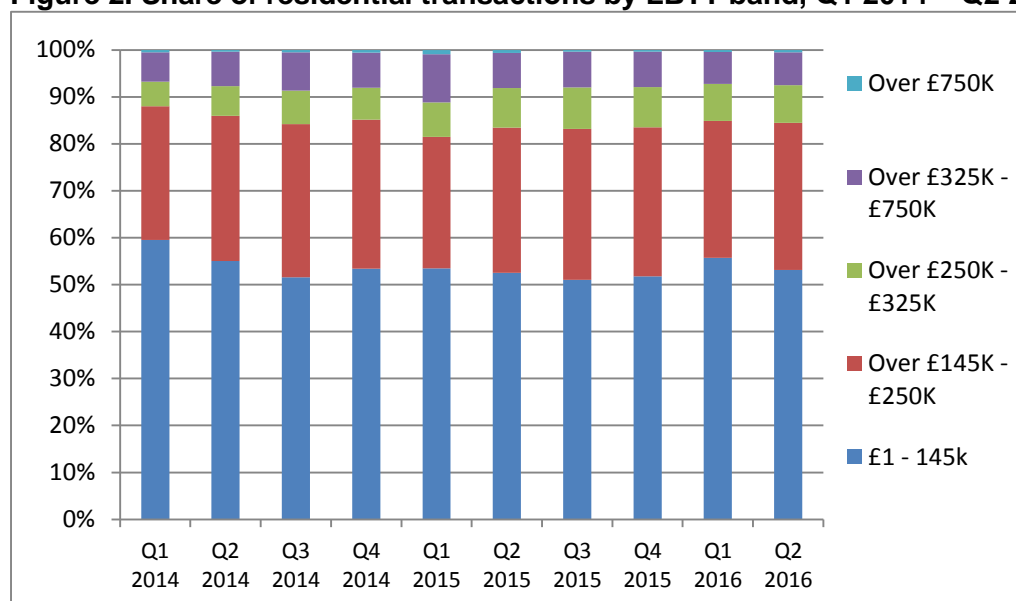
4. An issue which arises when interpreting the data is whether forestalling behaviour around the introduction of LBTT on 1 April 2015, which resulted in incentives to delay lower-valued transactions and bring forward higher-valued transactions, distorted the annual data. Previous analysis of monthly data suggests that the impact of forestalling is unlikely to extend significantly beyond a three-month period on either side of the transition date. Therefore, while forestalling behaviour around the introduction of LBTT will have changed the composition of sales in Q1 2015 and Q2 2015, it is unlikely to affect the proportion of sales over 2015 as a whole.
5. While annual data shows an increase in the share of transactions priced over £325k, quarterly data helps us to assess whether there is evidence of any decline for the period after 1 April 2015. This data, previously supplied to the Scottish Fiscal Commission in the LBTT paper for the meeting on 15th June and now updated to include Q2 2016, is reproduced in Table 2, and illustrated in Figure 2.<sup>1</sup>

**Table 2. Share of residential transactions by LBTT band, Q1 2014 to Q2 2016**

|                | £1 - 145k | Over £145K<br>- £250K | Over £250K<br>- £325K | Over £325K<br>- £750K | Over £750K |
|----------------|-----------|-----------------------|-----------------------|-----------------------|------------|
| <b>Q1 2014</b> | 59.6%     | 28.5%                 | 5.2%                  | 6.3%                  | 0.5%       |
| <b>Q2 2014</b> | 55.0%     | 30.9%                 | 6.3%                  | 7.3%                  | 0.4%       |
| <b>Q3 2014</b> | 51.6%     | 32.6%                 | 7.2%                  | 8.1%                  | 0.5%       |
| <b>Q4 2014</b> | 53.4%     | 31.7%                 | 6.8%                  | 7.5%                  | 0.5%       |
| <b>Q1 2015</b> | 53.5%     | 28.0%                 | 7.3%                  | 10.3%                 | 0.9%       |
| <b>Q2 2015</b> | 52.5%     | 31.0%                 | 8.4%                  | 7.4%                  | 0.7%       |
| <b>Q3 2015</b> | 51.0%     | 32.2%                 | 8.8%                  | 7.6%                  | 0.4%       |
| <b>Q4 2015</b> | 51.8%     | 31.7%                 | 8.6%                  | 7.5%                  | 0.4%       |
| <b>Q1 2016</b> | 55.7%     | 29.2%                 | 7.9%                  | 6.8%                  | 0.5%       |
| <b>Q2 2016</b> | 53.1%     | 31.4%                 | 8.0%                  | 7.0%                  | 0.5%       |

<sup>1</sup> The data underlying the quarterly transactions is slightly different to the data underlying the annual data, since the quarterly data has been subject to some quality assurance processes by Registers of Scotland, as described in the methodological note to their quarterly statistics publication.

**Figure 2. Share of residential transactions by LBTT band, Q1 2014 – Q2 2016**



6. Forestalling impacts are clearly evident in the data, with the share of transactions in the £325k-£750k band increasing from 7.5% in Q4 2014 to 10.3% in Q1 2015, and the share of transactions over £750k similarly rising from 0.5% to 0.9%, before both shares fell back in Q2 2015. However, in Q3 and Q4 2015, the share of transactions in these bands does not seem to be significantly different to experience in 2014.
7. There is a dip in the share of the £325k-£750k price band in Q1 2016 (although at 6.8% it is still above its level of 6.3% for the same quarter two years previously), before it returns to 7.0% in Q2 2016. Sales in Q1 and Q2 2016 are likely to have been affected by forestalling behaviour relating to the introduction of the Additional Dwelling Supplement on 1 April 2016, with purchases of dwellings that otherwise would have been liable for the supplement being brought forward. It is expected that such dwellings (which are rented out or used as second homes) will on average be less expensive than owner-occupied dwellings. Furthermore, the ADS becomes payable at £40k compared to £145k for the main residential LBTT charge. The impact of this can be seen in the increase in the share of transactions below £145k in Q1 2016, from 51.8% to 55.7%, before it falls back to 53.1% in Q2 2016.

### **The log normal distribution compared to historic shares**

8. In analysis previous previously provided by the Scottish Government to the Commission, it has been remarked that, when fitting the log normal distribution to the outturn mean and median prices in 2015-16, the log normal has somewhat overpredicted the share of transactions in the £325k-£750k band, and somewhat underpredicted the share of transactions in the £750k and above band, even in periods where the price distribution is unlikely to have been distorted by forestalling behaviour. It was argued that this may be the result of the actual distribution having a somewhat more skewed right-hand tail than the log normal, rather than being evidence of a behavioural impact.

9. This issue is explored further below. Using the data underpinning Table 1, the mean and median for each year over the period 2007 to 2015 is reported in Table 3.

**Table 3. Mean and median residential prices, 2007 to 2015**

|      | Mean    | Median  |
|------|---------|---------|
| 2007 | 155,085 | 127,500 |
| 2008 | 158,608 | 128,000 |
| 2009 | 153,704 | 126,732 |
| 2010 | 159,753 | 125,000 |
| 2011 | 157,840 | 126,000 |
| 2012 | 154,779 | 125,000 |
| 2013 | 158,458 | 128,000 |
| 2014 | 165,258 | 135,000 |
| 2015 | 170,956 | 140,000 |

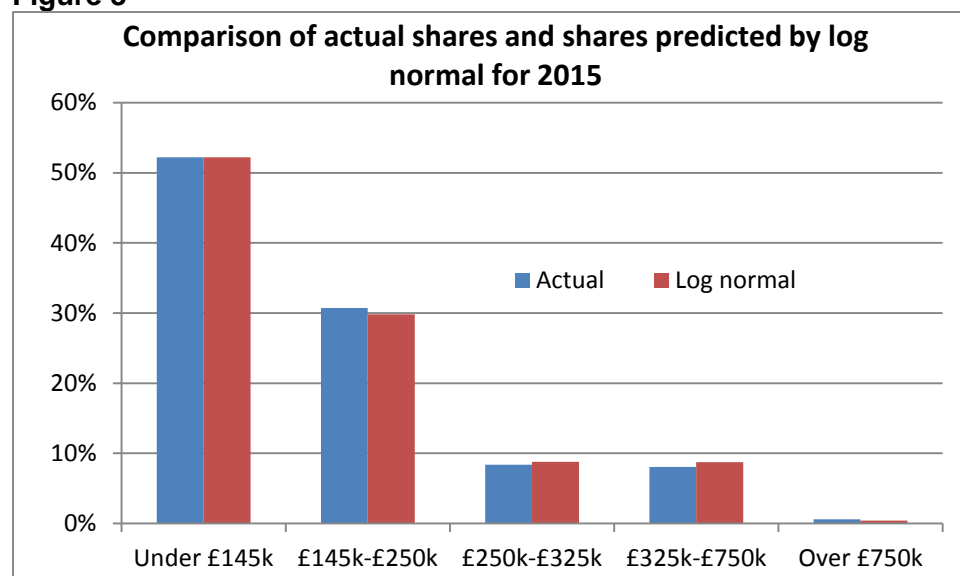
10. The log normal is then fitted to these parameters to produce estimated shares in each of the LBTT bands (Table 4).

**Table 4. Share of transactions in price bands predicted by the log normal distribution.**

|      | Under £145k | £145k-£250k | £250k-£325k | £325k-£750k | Over £750k |
|------|-------------|-------------|-------------|-------------|------------|
| 2007 | 58.1%       | 27.8%       | 7.4%        | 6.5%        | 0.2%       |
| 2008 | 57.6%       | 27.1%       | 7.6%        | 7.4%        | 0.3%       |
| 2009 | 58.6%       | 27.7%       | 7.2%        | 6.3%        | 0.2%       |
| 2010 | 58.4%       | 25.5%       | 7.5%        | 8.1%        | 0.5%       |
| 2011 | 58.3%       | 26.3%       | 7.5%        | 7.5%        | 0.4%       |
| 2012 | 59.0%       | 26.6%       | 7.3%        | 6.9%        | 0.3%       |
| 2013 | 57.6%       | 27.2%       | 7.6%        | 7.4%        | 0.3%       |
| 2014 | 54.5%       | 28.9%       | 8.3%        | 8.0%        | 0.4%       |
| 2015 | 52.2%       | 29.8%       | 8.8%        | 8.7%        | 0.4%       |

11. Figure 3 plots the actual shares and the shares predicted by the log normal for 2015, showing that the overall fit of the log normal is good, but that there are some small differences in the price bands.

**Figure 3**

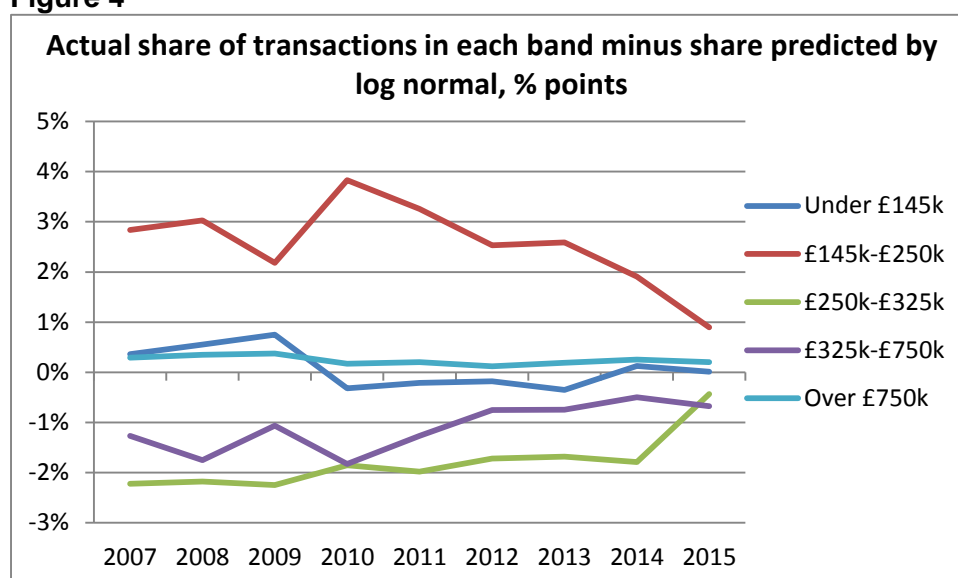


12. The difference between the actual and predicted shares of transactions in each price band is shown in Table 5 and then illustrated in Figure 4.

**Table 5. Actual share of transactions in each price band less share predicted by log normal distribution, % points**

|             | Under £145k | £145k-£250k | £250k-£325k | £325k-£750k | Over £750k |
|-------------|-------------|-------------|-------------|-------------|------------|
| <b>2007</b> | 0.4%        | 2.8%        | -2.2%       | -1.3%       | 0.3%       |
| <b>2008</b> | 0.6%        | 3.0%        | -2.2%       | -1.8%       | 0.3%       |
| <b>2009</b> | 0.7%        | 2.2%        | -2.2%       | -1.1%       | 0.4%       |
| <b>2010</b> | -0.3%       | 3.8%        | -1.9%       | -1.8%       | 0.2%       |
| <b>2011</b> | -0.2%       | 3.3%        | -2.0%       | -1.3%       | 0.2%       |
| <b>2012</b> | -0.2%       | 2.5%        | -1.7%       | -0.8%       | 0.1%       |
| <b>2013</b> | -0.3%       | 2.6%        | -1.7%       | -0.7%       | 0.2%       |
| <b>2014</b> | 0.1%        | 1.9%        | -1.8%       | -0.5%       | 0.3%       |
| <b>2015</b> | 0.0%        | 0.9%        | -0.4%       | -0.7%       | 0.2%       |

**Figure 4**



13. The analysis therefore indicates that over a number of years the log normal somewhat overpredicts the share of transactions in the £325k-£750k band, and slightly underpredicts transactions in the £750k and above band. Since these effects largely offset each other, the aggregate forecast based on the log normal, outside periods of forestalling, is within a few percentage points of actual tax revenue.

## Conclusion

14. Analysis of annual and quarterly Registers of Scotland does not, as yet, show an obvious long-term impact of the LBTT rates on the level of transactions above £325k. Furthermore, historic data suggests that the underperformance of the £325k-£750k band in 2015-16 relative to its share forecast using the log normal distribution is more likely to be due to the actual distribution of house prices being slightly more skewed to the right-hand tail than the log normal distribution.