

Forecast Evaluation Report September 2017

© Crown copyright 2017

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/> or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: psi@nationalarchives.gsi.gov.uk

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at www.fiscalcommission.scot

Any enquiries regarding this publication should be sent to us at: Scottish Fiscal Commission, Governor's House, Regent Road, Edinburgh EH1 3DE

ISBN: 978-1-9998487-0-5

Published by the Scottish Fiscal Commission, September 2017

Laying Number: SG/2017/136



Foreword

The Scottish Fiscal Commission is the independent fiscal institution for Scotland. We are responsible for producing independent and official forecasts of Scottish GDP, devolved tax receipts and devolved demand-led social security expenditure. We will publish our first forecasts to inform the Scottish Budget later in 2017. Previously the Commission was responsible for independently scrutinising the Scottish Government's forecasts and assessing whether they were reasonable.

The future is uncertain. Forecasting is an inexact science and at any point in time there are a range of potentially valid and reasonable forecasts that could be made. A forecast cannot generally be judged to be right or wrong at the time of making. Forecasts will be subject to what is known as forecast error: the economy may not develop as expected, the effect on tax receipts may not be as predicted and input data may be revised.

These uncertainties are an inescapable part of forecasting. Our previous reports accompanying the Draft Budget have highlighted some of these uncertainties and outlined the scale of risk in forecasting. It is worth noting that when our report refers to 'errors', this refers to the difference between what was forecast and the latest data on tax raised. We are not implying that these are mistakes in forecasting, or that the error could have been avoided. Differences may be due to new information not available at the time the forecast was produced or to unforeseen developments.

Against this background, this report compares the latest data on tax raised with the forecasts produced by the Scottish Government for 2016-17 and tries to explain these differences. The Commission's first independent forecasts will be produced alongside the Draft Budget 2018-19, and our subsequent Forecast Evaluation Reports will assess the accuracy of our own forecasts as well as the Government's previous forecasts.

We aim to be transparent about how we produce our forecasts and about our judgements which inform them. Producing formal assessments and evaluations of the forecasts are an important part of this process. Whilst the forecasts evaluated in this report were produced by the Scottish Government, the factors behind differences between forecasts and tax collected have informed the developmental work on our models and influenced our collective judgements for our first forecasts. We have also published today a report setting out our broad approach to forecasting.

We have built on the approach taken in previous Commission reports to identify, explain and decompose the reasons behind the forecast errors. As always, we would be pleased to receive feedback on any aspect of our report and suggestions to improve future reports.



Lady Susan Rice CBE



Professor Alasdair Smith



David Wilson

Contents

Foreword	3
Executive Summary.....	5
Chapter 1 Introduction	9
Chapter 2 Land and Buildings Transaction Tax.....	11
Chapter 3 Non-Domestic Rates	30
Chapter 4 Scottish Landfill Tax	36
Abbreviations.....	41



Executive Summary

1. Budget planning and decision making require the production of well-informed, unbiased forecasts in order to allocate resources. This can be challenging: the future performance of the housing market, future trends in levels of waste and future changes in business properties are all uncertain and affected by a wide and varying range of factors. This report analyses how and why the forecasts produced for 2016-17 were different from the tax revenue raised.¹

Land and Buildings Transaction Tax (LBTT)

2. Land and Buildings Transaction Tax (LBTT) is the tax paid when land and property is purchased. LBTT operates differently for residential and non-residential transactions. Residential LBTT also includes the Additional Dwelling Supplement (ADS) which is payable on additional residential properties such as second homes or buy-to-let properties. LBTT was devolved in 2015.
3. The Scottish Government produced forecasts for 2016-17 in December 2015 and December 2016, alongside Draft Budgets. Both forecasts are evaluated in this report.
4. The residential LBTT forecast is sensitive to changes in house prices and the volume of transactions (purchases). Any difference in either prices or transactions compared to the forecast will result in an overall forecast error. The forecasts produced in December 2015 overestimated residential LBTT revenues in 2016-17 by £68 million because the house price forecast was too high.
5. In contrast, the forecasts produced in December 2016² underestimated the amount of revenue raised by residential LBTT by £33 million in 2016-17. For this forecast, the

¹ The data for Land and Buildings Transaction Tax and Scottish Landfill Tax represent the actual tax liabilities declared. Due to high collections rates, it is anticipated that the tax received will closely match the tax declared (for example, at the end of the financial year 2015-16, 99.8% of all tax returns submitted had been paid either within the financial year or within five days of the year end). Revenue Scotland is expected to publish its Annual Report and Financial Statements for 2016-17 in late September 2017.

² That is, the forecasts produced for Draft Budget 2017-18. The in-year forecasts made in December 2015 (i.e. forecast for the year 2015-16) and in December 2016 (i.e. forecast for the year 2016-17) are not official Government forecasts and were not published in the Draft Budget documents. However, these forecasts were produced at the time of each Draft Budget and provide useful information for this assessment.

methodology for forecasting prices had been revised, which was one contributory factor in the house price forecast being too low.

6. The Scottish Government used a statistical model to estimate how many residential purchases are in each price bracket. Analysis of the tax raised shows this distribution provides a reasonable estimate of the pattern of residential transactions.
7. Revenue from the Additional Dwelling Supplement (ADS) was significantly higher than initially forecast by the Scottish Government in December 2015. This was because the forecast for the number of purchases liable for ADS was too low. Now that there is more information available about the proportion of purchases that are additional properties, this error should reduce in future forecasts.
8. The non-residential LBTT forecast produced in December 2015 overestimated revenues by £44 million. The most significant factor in this error was the forecast for prices being too high. Previous Commission reports have noted that this element of tax revenue can be changed significantly by a very few high priced transactions, which makes it difficult to forecast accurately. In 2016-17, 35% of non-residential LBTT came from the 1% highest priced purchases.

Table 1: LBTT Forecasts³ compared to Tax Raised (£ millions)

		2015-16	2016-17
Residential LBTT (exc ADS)	Tax Raised	208	214
	SG Forecast December 2015	227	282
	SG Forecast December 2016		181
Additional Dwelling Supplement⁴	Tax Raised (net basis) ⁵		90
	SG Forecast December 2015		36
	SG Forecast December 2016		71
Non-residential LBTT	Tax Raised	217	176
	SG Forecast December 2015	210	220
	SG Forecast December 2016		228

Source: Revenue Scotland statistics ([link](#)), Scottish Government Draft Budget 2016-17 ([link](#)), OBR (2015) Economic and Fiscal Outlook November 2015 Devolved Taxes Forecast ([link](#)), Scottish Fiscal Commission (2016) Report on Draft Budget 2017-18 Table 15 ([link](#)).

Non-Domestic Rates (NDR)

9. Non-Domestic Rates (NDR), commonly known as “business rates”, are paid by owners, tenants or occupiers of non-domestic properties. The ‘rateable values’ for all properties in Scotland are recorded publicly on the Valuation Roll. These properties

³ The in-year estimate produced in December 2016 is not an official Scottish Government forecast. See footnote 2 above.

⁴ The ADS tax raised is not the final figure owing to an 18 month window for transferring main residence, selling the previous main residence property (and subsequently reclaiming paid ADS)

⁵ As at 31st May 2017

are normally revalued every five years, although the latest cycle has been seven years long.

10. The Commission’s previous role on NDR considered only how the tax rate changes due to inflation and how the total rateable value of all properties may change over time (known as ‘buoyancy’). Some changes to this total value, which can be thought of as the tax base, are linked to the economy, such as the addition or removal of properties, but other administrative changes and some types of appeals can also have an impact.
11. Because of the number of different drivers of the changes in the size of this tax base, forecasting can be difficult. The Scottish Government have generally forecast NDR revenue by examining how this has changed in the past over the revaluation cycle. However, 2016-17 was unusually the seventh year in a cycle. The average growth during years three to five in previous cycles was used to forecast growth in the value for 2016-17.
12. Using this approach, the forecast for the growth in total rateable value was 1.0% for 2016-17. The data for 2016-17 now available show the figure was 0.33%. This is a relatively small component of NDR receipts and the difference between forecast and outturn is equivalent to a £10 million difference in revenue; in contrast the latest estimate of NDR revenue in 2016-17 was £2.7 billion.
13. Whilst it is challenging to fully explain the lower than forecast level of growth in the tax base, it appears that contributing factors included several significant removals from the Valuation Roll, a large successful appeal and a lower than average number of significant additions to the Valuation Roll.

Scottish Landfill Tax

14. Scottish Landfill Tax (SLfT) is a tax on the disposal of waste to landfill. The forecast produced in December 2015 underestimated revenue raised by Scottish Landfill Tax in 2016-17 by £14 million, an absolute percentage error of 10%. The forecast underestimated the level of standard rated waste, which generates over 90% of revenue. The decline in waste was not as significant as was implied by the Scottish Government model, which assumed landfill targets would be met by 2025.

Table 2: SLfT Forecasts compared to Tax Raised (£ million)

	2016-17
Tax Raised	147
SG Forecast December 2015	133
SG Forecast December 2016 ⁶	150

Source: Scottish Government (2015) Devolved Taxes Methodology 2016-17 ([link](#)); Scottish Government (2016) Devolved Taxes Methodology 2017-18 ([link](#))

⁶ The in-year estimate produced in December 2016 is not an official Scottish Government forecast. See footnote 2 above.

15. This had been noted as a risk in the approach taken in previous Commission reports and the Scottish Government subsequently revised their forecast methodology. Following this revision, the in-year forecast produced as a baseline for the Draft Budget 2017-18 had a relatively small error at just £3 million. This can be explained due to the seasonality of the waste being different to the previous year.

Commission's Role

16. The Commission found that the approaches used in the production of these forecasts were reasonable in December 2015 and December 2016. The forecast methodologies have evolved and improved, due to the availability of new data, the refinement of techniques given previous forecast error, and as part of the process of Commission scrutiny.
17. The Commission will produce its first independent and official forecasts alongside the Draft Budget 2018-19 later in 2017. The models used by the Government have now been transferred to the Commission and are being developed in preparation for the production of these forecasts. An occasional paper outlining the Commission's Current Approach to Forecasting has been published alongside this report.⁷

⁷ Scottish Fiscal Commission Current Approach to Forecasting September 2017 ([link](#))



Chapter 1

Introduction

- 1.1. This report compares the latest statistics on tax revenue raised to the forecasts produced by the Scottish Government for 2016-17. The Commission's first independent forecasts will be produced at the Draft Budget 2018-19, and our subsequent Forecast Evaluation Reports will therefore include assessments of the accuracy of our own forecasts as well as the Government's previous forecasts. The purpose of this report is to assess how existing forecasts and forecasting methods have performed. The conclusions drawn will influence the development of the forecast models and the future judgements made in forecasts.

Background to the Commission

- 1.2. From April 2017 the Scottish Fiscal Commission became responsible for producing independent and official economic and fiscal forecasts for the Scottish Budget.⁸
- 1.3. The Commission will produce the official forecasts of:
- Revenue from fully devolved taxes
 - Non-savings Non-dividend income tax receipts.
 - Onshore Gross Domestic Product (GDP) in Scotland.
 - Devolved demand-led social security expenditure.
- 1.4. The Commission will produce forecasts at least twice a year. We will also produce annual Forecast Evaluation Reports, such as this one, and will from time to time publish working papers on related subjects.
- 1.5. Alongside the Forecast Evaluation Report we have today produced a paper on the Commission's Current Approach to Forecasting.⁹
- 1.6. The Scottish Fiscal Commission is structurally and operationally independent of the Scottish Government. More details about the remit and history of the Commission,

⁸ Scottish Fiscal Commission Act 2016 ([link](#))

⁹ Scottish Fiscal Commission Current Approach to Forecasting September 2017 ([link](#))

including previous publications, can be found on our website:
www.fiscalcommission.scot

Comments & Contact

- 1.7. This is one of the Commission's first reports as a statutory body, and we welcome comments from users about the content and format of our publications.
- 1.8. All charts and tables in this publication have also been made available in spreadsheet form on our website.¹⁰ A full glossary of terms is also available on our website.¹¹ If you have any feedback, or would like to request further information about any of our analysis, please email info@fiscalcommission.scot

¹⁰ [link](#)

¹¹ [link](#)



Chapter 2

Land and Buildings Transaction Tax

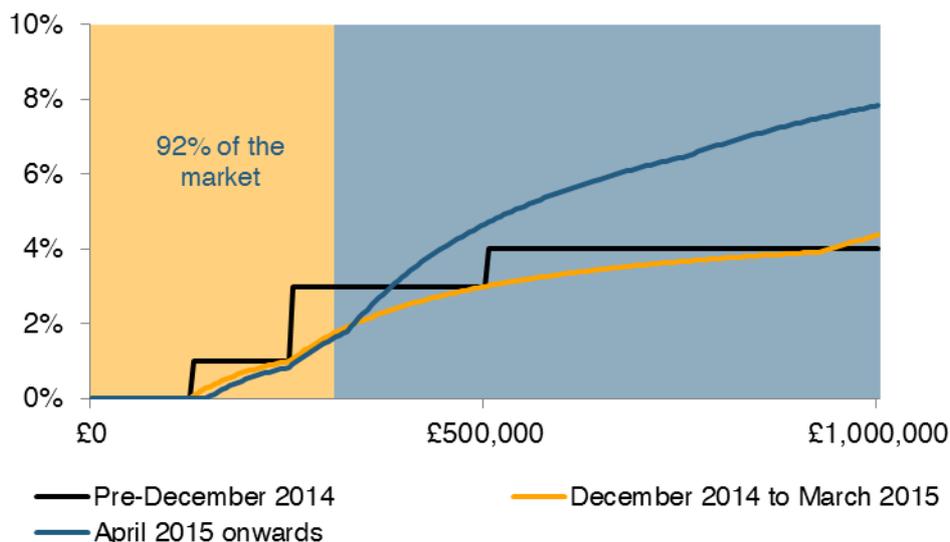
- 2.1. Land and Buildings Transaction Tax (LBTT) replaced Stamp Duty Land Tax (SDLT) in Scotland from April 2015.
- 2.2. LBTT is paid on the purchase of property and land. The two components of LBTT are residential and non-residential (commercial). Residential LBTT also includes the Additional Dwelling Supplement (ADS) which is payable on additional residential properties such as second homes or buy-to-let properties.

Residential Land & Buildings Transactions Tax (LBTT)

- 2.3. There have been several changes to the tax system on residential property transactions over the last three years. Until 2014, residential property transactions in Scotland were subject to the UK wide Stamp Duty Land Tax (SDLT). In October 2014, in advance of the devolution of the tax, the Scottish Government announced that the new tax, LBTT, would be a slice rather than a slab system (i.e. tax rates applied to the entire value of the property), with new rates and bands.
- 2.4. In December 2014 the UK Chancellor also significantly changed UK SDLT from the previous slab system to a slice system similar to the new proposals for Scotland (albeit with different rates). For three and a half months until the devolution of the tax, Scottish property transactions were taxed on that new basis. Figure 2.1 shows the changes to the effective tax rate.
- 2.5. Changes to property taxes can result in taxpayers changing behaviour. One example is, bringing forward or delaying purchases due to an imminent change in the tax rate, known as forestalling. See paragraph 2.28 for further discussion on forestalling.¹²

¹² The OBR published a detailed analysis of different forestalling events in the UK property market – OBR (2016) Working Paper No. 10 Forestalling ahead of property tax changes ([link](#))

Figure 2.1: The changes in the effective tax rate during 2014 & 2015



Sources: HMRC via GOV.UK website ([link](#)), HMRC via National Archives website ([link](#)), Revenue Scotland website ([link](#))
 Scottish Fiscal Commission calculations

2.6. Residential LBTT applies a percentage rate charge to the part of the price over the relevant threshold and up to the next threshold. The rates currently applied are shown in Table 2.1.

Table 2.1: LBTT rates and bands

Purchase price	LBTT rate
Up to £145,000	0%
Above £145,000 to £250,000	2%
Above £250,000 to £325,000	5%
Above £325,000 to £750,000	10%
Over £750,000	12%

Source: Revenue Scotland ([link](#))

2.7. The Additional Dwelling Supplement (ADS) is charged at 3% on the full value of additional residential property purchases worth £40,000 or more. The ADS was announced in Draft Budget 2016-17 (December 2015) following the UK Government’s decision to introduce an additional residence surcharge for the rest of the UK in the November 2015 Autumn Statement. Both supplements are similar with the one exception that, in Scotland, tax may be reclaimed if the main residence is transferred and the previous main residence is sold within 18 months, whereas in the rest of the UK, the period is 36 months. The ADS came into force on 1st April 2016.

Forecasts compared with tax raised for 2015-16 and 2016-17

2.8. This report reviews two sets of forecasts for 2016-17: the forecast produced in December 2015¹³ and the forecast produced in December 2016.¹⁴ The full financial year data on tax raised from residential LBTT in 2015-16 and 2016-17 are now available. We will focus on the new data for 2016-17, as a previous Commission report discussed in detail the forecast made for 2015-16.¹⁵ In order to evaluate how the forecasts performed, it is important to consider statistics produced on the same accounting basis as the forecasts. Box 2.1 sets out the accounting basis for the tax revenue.

The Residential LBTT forecasting model

2.9. The Scottish Government forecasts used a statistical model to estimate how many properties will be sold at any particular price. This log-normal distribution implies that transactions are not equally likely to occur at all prices, and that a greater volume of transactions occurs towards the lower end of the price distribution. See paragraph 2.23 for further discussion. The log-normal distribution allowed the Scottish Government forecasters to estimate how many homes would be bought at different prices using three pieces of information for a given period of time:

- the average (mean) house price: the total value of all homes bought divided by the number of homes bought
- the median house price: calculated by sorting all homes bought in ascending order of price and then finding the middle price
- the total number of homes bought

2.10. These three pieces of information allowed the Scottish Government forecasters to define the size and the shape of the overall pattern of transactions, using a log-normal distribution. Box 2.2 sets out how the Scottish Government developed their forecast methodology between December 2015 and December 2016.

2.11. As the Commission assumes responsibility for forecasting LBTT we are reviewing the approach to forecasting. Further information can be found in the Commission's Approach to Forecasting paper.¹⁶

¹³ For Draft Budget 2016-17

¹⁴ That is, the forecasts produced for Draft Budget 2017-18. The in-year forecasts made in December 2015 (i.e. forecast for the year 2015-16) and in December 2016 (i.e. forecast for the year 2016-17) are not official Government forecasts and were not published in the Draft Budget documents. However, these forecasts were produced at the time of each Draft Budget and provide useful information for this assessment.

¹⁵ Scottish Fiscal Commission (2016) 2015-16 Outturn Report ([link](#))

¹⁶ Scottish Fiscal Commission (2017) Current Approach to Forecasting ([link](#))

Box 2.1: The accounting treatment of tax revenue

Tax revenue can be measured on the basis of when the tax is declared due (cash basis) or on the basis of when the liability arose (accruals basis)

Revenue Scotland publishes statistics on tax declared due every month. These data are based on the date when Revenue Scotland receive the LBTT tax return from the buyer (cash basis).¹⁷ This differs from the date of completion (accruals basis), when the buyer takes legal ownership of the property, as buyers have up to 30 days after the date of completion to submit the tax return. Therefore some tax receipts will be recorded in different financial years depending on which accounting convention is being used. In the case of Registers of Scotland data, which the Scottish Government uses to forecast house prices and transactions, the data are recorded at the point at which Registers of Scotland receive the application for entering the transaction into the Land Register. This is generally within a few weeks of the date of sale.

The Scottish Government has forecast LBTT tax receipts on the accruals basis. This report uses the accruals basis data provided separately by Revenue Scotland.

Table 2.2: Tax receipts for residential LBTT excluding ADS (£ millions)

Financial year	Receipts on a cash basis (date tax return received)	Receipts on an accruals basis (date property transaction completed)
2015-16	202	208
2016-17	214	214

Source: Revenue Scotland LBTT statistics ([link](#))

Forecasts produced in December 2015 for Draft Budget 2016-17

2.12. The Scottish Government produced forecasts of residential LBTT receipts in December 2015 for the Draft Budget 2016-17. The OBR also produces forecasts of revenue from LBTT, as part of their Devolved Taxes Forecast publication. Table 2.3 compares tax raised with both forecasts.

Table 2.3: Residential LBTT Forecasts compared to Tax Raised (£ millions)

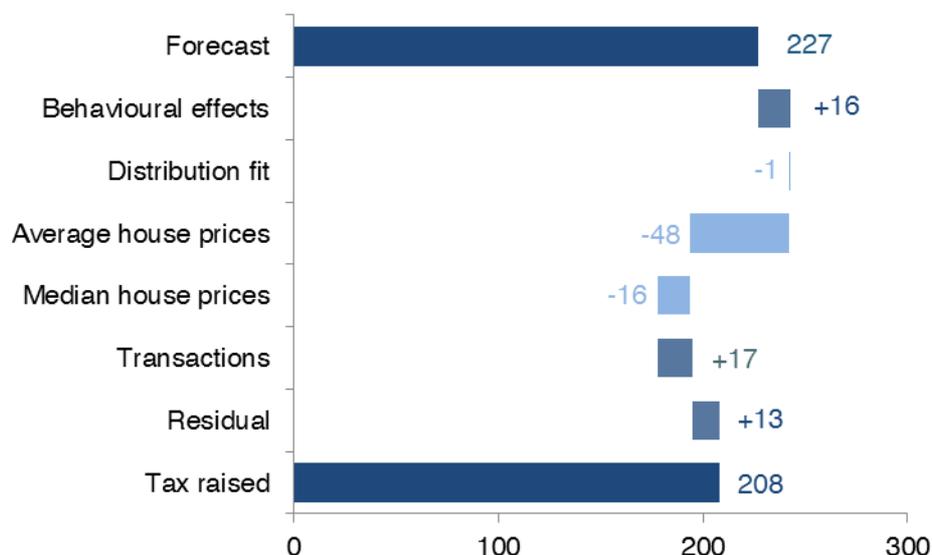
	2015-16	2016-17
Tax Raised	208	214
SG December 2015	227	282
OBR November 2015	178	253

Source: Revenue Scotland statistics ([link](#)); Scottish Government (2015) Draft Budget 2016-17 ([link](#)); OBR (2015) Economic and Fiscal Outlook November 2015 Devolved Taxes Forecast ([link](#)); Scottish Fiscal Commission (2016) Report on Draft Budget 2017-18 Table 15 & 37([link](#))

¹⁷ Revenue Scotland Statistics ([link](#))

- 2.13. The Scottish Government and Office for Budget Responsibility differ in their forecasting approaches. The Scottish Government uses an approximation (to be detailed later) of the number of property transactions falling into each price band as its starting point. This is based on the most up-to-date data on market level prices and transactions. The OBR forecasts LBTT receipts based on growth in house prices and transactions at a UK level. This is to ensure compatibility with its UK macroeconomic forecasts. In addition, the OBR uses as its starting point the most recently available year's-worth of taxpayer specific records of property transactions. Given that HMRC ceased to administer Scottish property transactions taxes as of the introduction of LBTT, the most recently available year not affected by forestalling (where the timing of a transaction is changed to reduce tax payments) is 2013-14. Both the Commission and the OBR are currently reviewing these respective approaches.
- 2.14. The forecasts have been decomposed into their components in order to understand the source of the errors. These are: average house prices, the number of property transactions, median house prices, the fit of the log-normal distribution to the true data and residual error. The residual error captures the aspects of the forecast error which cannot be isolated as occurring due to a single component.
- 2.15. As Figure 2.2 shows, the main source of forecast error for 2015-16 was too high a projection for the rate of growth in house prices. Average house prices fell by 1.1% compared with a forecast growth of 5.9%. Had the forecast rate of average house price growth been equal to what was observed, the revenue forecast would have been lower by £48 million.

Figure 2.2: Decomposition of the December 2015 forecast error in 2015-16 (£ millions)

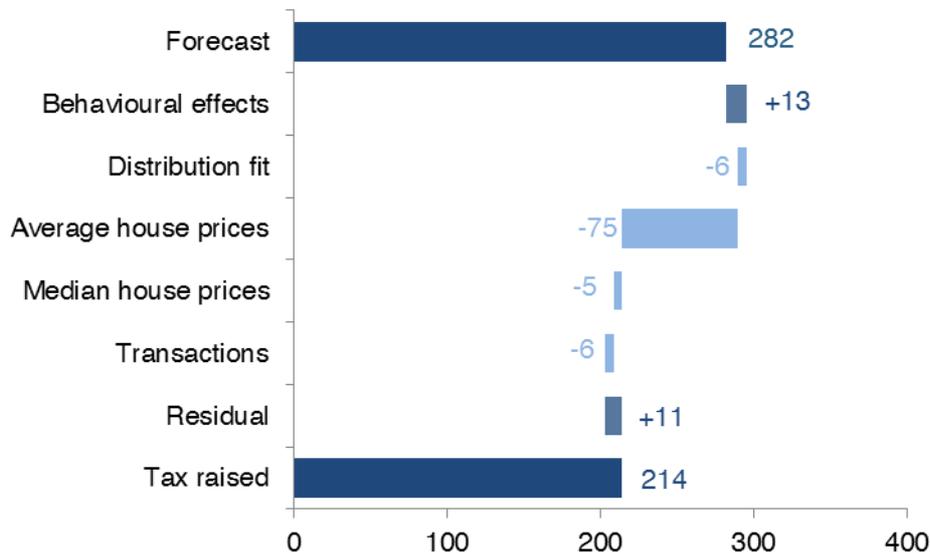


Source: Scottish Fiscal Commission calculations; Scottish Government (2015) Draft Budget 2016-17 ([link](#)); Revenue Scotland statistics ([link](#))

- 2.16. The second year of this forecast, 2016-17, had a larger forecast error than 2015-16. Part of the reason is that each successive forecast year depends on the forecast from the previous year, so that forecast errors accumulate. For example, average house price growth was forecast to be 5.6% in 2015-16 and 5.6% in 2016-17, for a

total growth in the average house price of 11.8% over two years. The statistics show a fall of 1.1% in 2015-16 and a rise of 0.2% in 2016-17 for an overall change of -0.8% over two years.

Figure 2.3: Decomposition of December 2015 forecast error for 2016-17¹⁸ (£ millions)



Source: Scottish Fiscal Commission calculations; Scottish Government (2015) Draft Budget 2016-17 ([link](#)); Revenue Scotland statistics ([link](#)), Scottish Fiscal Commission (2016) Report on Draft Budget 2017-18 Table 37, page 84 ([link](#))

2.17. With this in mind, the over-forecast of revenue produced in December 2015 reflected a compounding of the error attributable to house price estimates from the 2015-16 forecast. Had the forecast level of house prices in 2016-17 equalled what was observed, the revenue forecast would have been lower by £75 million. Excluding behavioural effects, the remaining components used to construct the 2016-17 forecast, combined with the residual, contributed a net decrease of £6 million. If house price growth continues to under-perform relative to what was forecast in December 2015, it is likely that house prices will emerge as the single biggest source of forecast error in the Draft Budget 2016-17 forecasts over the entire five year horizon.

2.18. The Scottish Government LBTT forecast for 2016-17 produced in December 2015 included adjustments to reflect the response of home buyers to the introduction of the Additional Dwelling Supplement in April 2016. First, an adjustment accounted for forestalling, as some purchasers brought forward their transactions from 2016-17 to 2015-16. Second, the tax itself was forecast to have a longer-term impact on overall activity in the market, reducing receipts. Combined, these effects led to a reduction from £295 million in the officially published “pre-measures” forecast, to the Scottish Government’s actual forecast of £282 million. Separate adjustments were made to the forecast of ADS revenues, see paragraphs 2.28 and 2.39.

¹⁸ The £282 million forecast figure includes the behavioural adjustment made by the Scottish Government to account for the impact of the introduction of ADS. As this adjustment was produced off-model, we add back the £13 million effect to revert to the officially published pre-measures forecast of £295 million in order to break down the sources of forecast error.

2.19. It is also important to consider that the house price and transactions statistics themselves can introduce small, but noticeable, errors into the forecasts. Scottish Government forecasters use data from Registers of Scotland as inputs into the log-normal distribution. However, these data differ slightly from the Revenue Scotland statistics, due to timing and coverage differences. For example, average prices in 2016-17 were £167,000 in Registers of Scotland data, but £169,000 in Revenue Scotland data.

Box 2.2: Changes made to the Scottish Government's model for Draft Budget 2017-18 in December 2016

Since the first forecast of LBTT in 2014, the Scottish Government's model has maintained the same basic foundation. That foundation is the log-normal distribution used to assign how many transactions will fall into each tax bracket. This foundation has not changed since its inception and is the same basis for the principal model the Commission will be using.

The main changes between Draft Budget 2016-17 and 2017-18 were to the statistical models which forecast house prices and the number of house purchases. The initial approach used a simple statistical extrapolation, combined with a return to a presumed long-run growth rate. However, these did not account for changes in the long-run average rate of growth owing to the financial crisis. As of Draft Budget 2017-18, the forecasts for average house prices and transactions growth came from models that explicitly dealt with this issue, in response to recommendations from the Commission. The main impact was to lower the predicted rate of growth in prices and transactions and by extension lower the forecast for tax revenues.

Another recommendation from the Commission that has been implemented is the inclusion of an indicator variable to capture changes in prices and transactions that were caused by the forestalling behaviour. The reason for doing this is to isolate the potential influence that a single quarter of data would have on the forecast model's estimation and results.

The Commission also recommended the introduction of adjustments to the revenue forecasts from each tax band, in order to compensate for the inexact fit of the log-normal distribution. This change has also been implemented by the Scottish Government and it is reviewed further in paragraphs 2.23 – 2.27.

Forecasts produced in December 2016 for Draft Budget 2017-18

2.20. In-year forecasts produced in December 2016 for 2016-17 provide useful information to help us assess the performance of the model and the official forecasts.¹⁹ Table 2.4 shows tax raised against the forecast.

¹⁹ The in-year estimate produced in December 2016 is not an official Scottish Government forecast. See footnote 2 above.

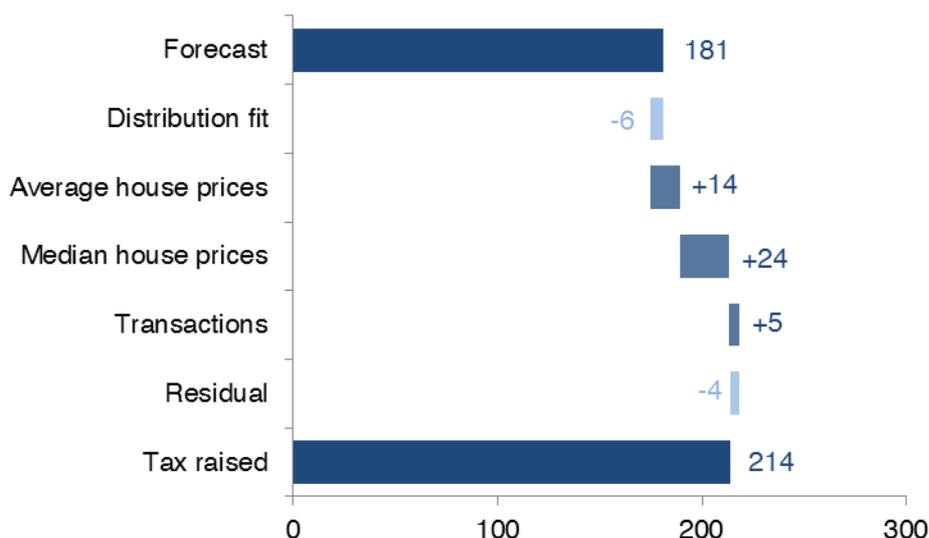
Table 2.4: SG Forecasts compared to Tax Raised (£ millions)

	2016-17
Tax Raised	214
SG December 2016	181
OBR November 2016	206

Source: Revenue Scotland statistics ([link](#)); Scottish Government (2015) Draft Budget 2016-17 ([link](#)); OBR (2016) Economic and Fiscal Outlook November 2016 Devolved Taxes Forecast ([link](#)); Scottish Fiscal Commission (2016) Report on Draft Budget 2017-18 Table 37, page 84 ([link](#))

2.21. In contrast with the December 2015 forecast, the December 2016 forecast underestimated tax raised, but the main source of the forecast error was once again house prices. This time both the average and the median house prices underestimated receipts. Had the average price forecast been equal to what was observed, projected revenues would have been £14 million higher. Had the median price forecast equalled what was observed, the receipts forecast would have been raised by £24 million. The remaining components used to construct the 2016-17 forecast, combined with the residual, contributed a net decrease of £5 million.

Figure 2.4: Decomposition of December 2016 forecast error for 2016-17 (£ millions)



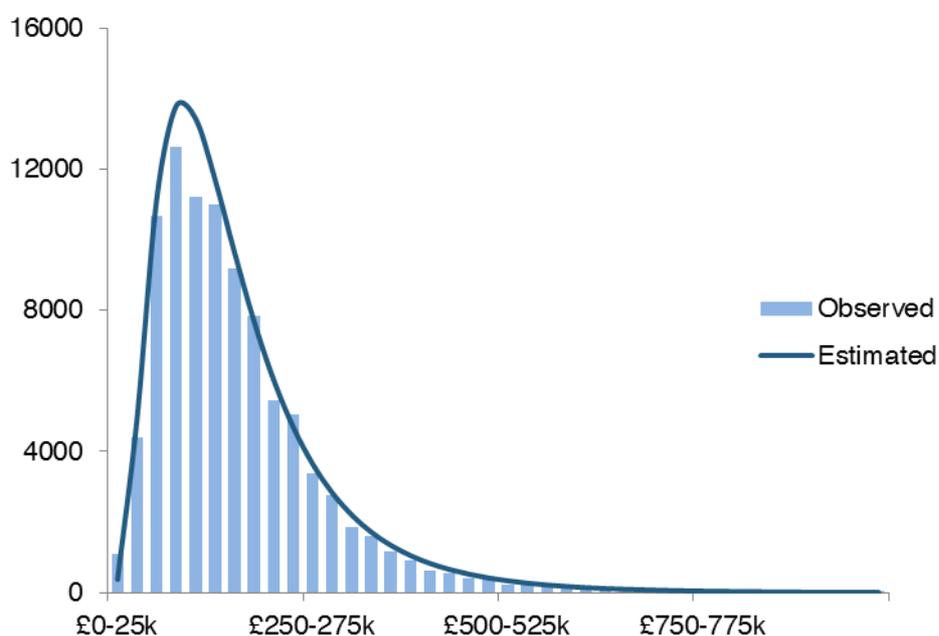
Source: Scottish Fiscal Commission calculations; Scottish Government (2015) Draft Budget 2016-17 ([link](#)); Revenue Scotland statistics ([link](#))

2.22. There has been considerable discussion in the past about how the fit of the log-normal distribution can help explain revenue forecast error. Whilst the Scottish Government does not officially forecast tax receipts by tax band, the model can be used to produce these forecasts. Analysis shows that the overall forecast error manifests itself in a forecast error for the top two tax brackets, for properties valued between £325,000 to £750,000 and over £750,000. This forecast error is only partially due to the fit of the log-normal distribution (see discussion below). It is almost fully explained by the error in the forecast of average and median prices which affects the top two brackets more significantly as the majority of revenues arise from these brackets.

Log-normal distribution and adjustments to the forecasts

2.23. The log-normal distribution assumes that transactions are not equally likely to occur at all prices, and that a greater volume of transactions occur towards the lower end of the price distribution. One of the most important questions facing this modelling approach is: how well does the log-normal distribution fit the data? The 2016-17 data provide a good fit to the log-normal distribution. Although revenues in the £325,000 to £750,000 tax bracket are overstated and revenues in the top bracket are understated, these differences are not significant enough to conclude that the distribution does not fit the data overall.²⁰

Figure 2.5: Observed and estimated distribution of housing transactions by price in 2016-17 (£25,000 price bands)



Source: Revenue Scotland statistics ([link](#)); Scottish Fiscal Commission calculations

2.24. To compensate for the fit of the distribution not being as accurate for the higher price brackets, the Scottish Government forecasts include a set of adjustments. These are a percentage increase or decrease applied to the forecast tax revenues in each band.

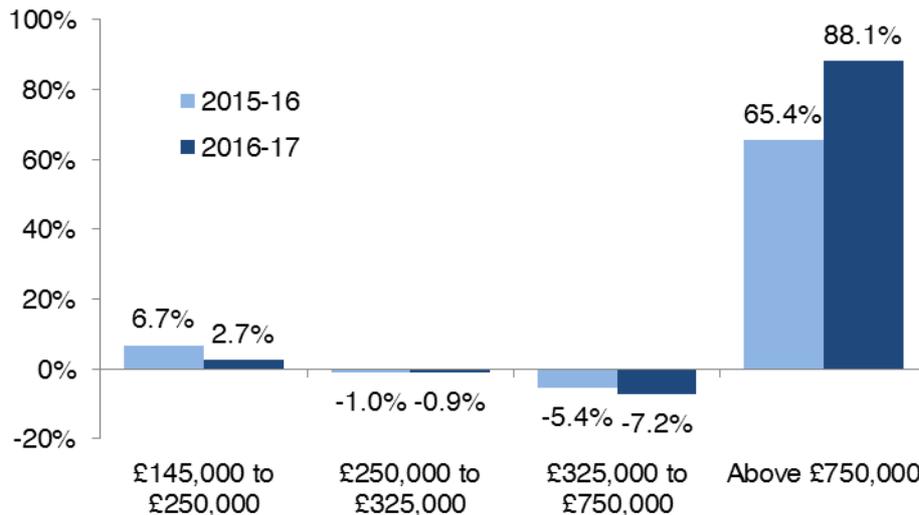
2.25. The adjustments are calculated using the difference between tax raised by tax band, and what the model forecasts given the actual data on average and median house prices and housing transactions. The calculation uses July to December data only, in order to exclude parts of the year immediately before or after the

²⁰ The Kolmogorov-Smirnov test for the fit of the distribution and a t-test for differences in the means were applied to the overall fit of the distribution, resulting in a pass. For transactions above £1,000,000 tested as a separate block, the tests resulted in a fail.

introduction of LBTT and ADS.²¹ Figure 2.6 shows the adjustment factors derived each year.

2.26. The large adjustments made to the forecasts for the top tax bracket reflect the fit of the distribution described earlier. Further, this bracket is heavily influenced by a very small number of high value transactions, with the top 20 most expensive purchases (out of 450) accounting for 12% of revenues in the top band. We will continue to monitor the applicability of these adjustment factors as new data become available.

Figure 2.6: Adjustment factors derived from 2015-16 and 2016-17 data



Source: Revenue Scotland statistics ([link](#)); Scottish Fiscal Commission calculations

2.27. While the adjustments made to forecast revenues from the top tax bracket are proportionately large, they are insufficient to be the source of a large error in the overall projection for revenues (see decomposition charts for an illustration). Once all tax brackets are taken into account, the total forecast revenue adjustments made over the past two years have amounted to between 2% and 4% of overall revenue.

Forestalling

2.28. Forestalling occurs when the timing of a purchase is changed around the time of a tax change in order to either avoid paying a higher rate of tax, or to benefit from a lower rate of tax. For example, the introduction of the 3% Additional Dwelling Supplement in April 2016 gave additional property purchasers a financial incentive to bring transactions that would have taken place in April into March to avoid the supplement.

2.29. Following challenge from the Commission, the Scottish Government incorporated adjustments to its forecasting models for house prices and the ratio of the median price to the mean price to account for the impact of this behaviour on the market as

²¹ Exclusion of these data allows for two factors: first, as the data are non-seasonally adjusted, it allows for a like-for-like comparison across two financial years; second, it helps to control for possible distortions to the distribution of transactions caused by policy changes such as the introduction of LBTT and ADS.

a whole. These adjustments were designed to ensure that the forestalling periods did not distort the estimation of the models and introduce any additional bias into the forecasts.

- 2.30. Previous Commission reports have analysed the likely magnitude of the two most recent forestalling episodes at the time of the introduction of the LBTT and the ADS.²² Estimates of forestalling will be included in future forecasts in the event of any changes to LBTT.

Longer term home buyer reactions to tax changes

- 2.31. Forestalling describes an immediate reaction by buyers to prospective changes in the tax rate. However, there is a body of international evidence that shows a longer term effect of transaction taxes on home buyer decisions on if and when to buy and hence on tax receipts. These decisions are often referred to as behavioural effects.
- 2.32. Previous Commission reports have discussed the Scottish Government's approach to incorporating these longer term behavioural effects. The Commission will be considering this carefully in preparation for future forecasts

The impact of the Aberdeen housing market

- 2.33. The impact of lower oil prices on the oil and gas sector has had a significant effect on the local economy in Aberdeen and Aberdeenshire. As we highlighted in our report on the Draft Budget 2017-18, this slowdown could have had an impact on LBTT revenue.
- 2.34. Figure 2.7 shows house price growth by local authority: Aberdeen and Aberdeenshire have had some of the lowest growth in Scotland. To help illustrate the potential impact of the Aberdeen slowdown on tax raised, we use the Scottish Government model to estimate revenues given observed price and transactions growth in Aberdeen and Aberdeenshire and compare those to revenues assuming prices and transactions grew at the same rate as the Scottish average in 2015-16 and 2016-17.
- 2.35. Figure 2.8 shows the estimated effect on revenues on a cash basis. The difference amounts to 2.5% and 7% of observed total residential LBTT revenues in 2015-16 and 2016-17 respectively.
- 2.36. These estimates can be considered to be conservative; between 2009 and 2013 average house price growth in Aberdeen and Aberdeenshire was 2.4 percentage points above the Scottish average and the region's market share of transactions was 2 percentage points higher than in 2015-16 and 2016-17.

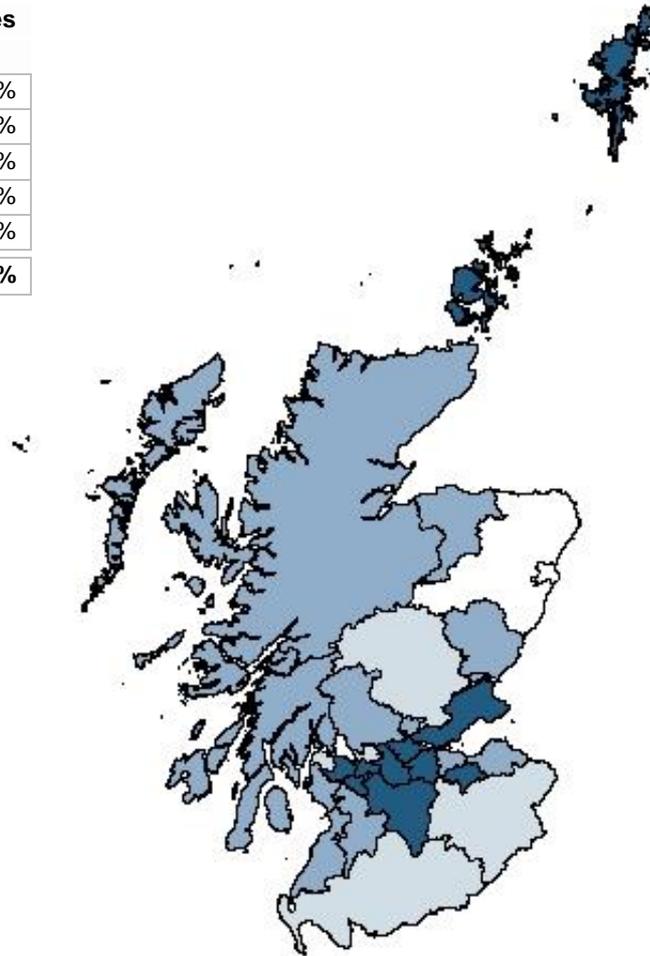
²² Scottish Fiscal Commission (2016) 2015-16 Outturn Report ([link](#)); and, Scottish Fiscal Commission (2016) Additional Dwelling Supplement Preliminary Outturn Report ([link](#))

Figure 2.7: House price changes between 2013-14 & 2016-17 (%)

Lower growth local authorities

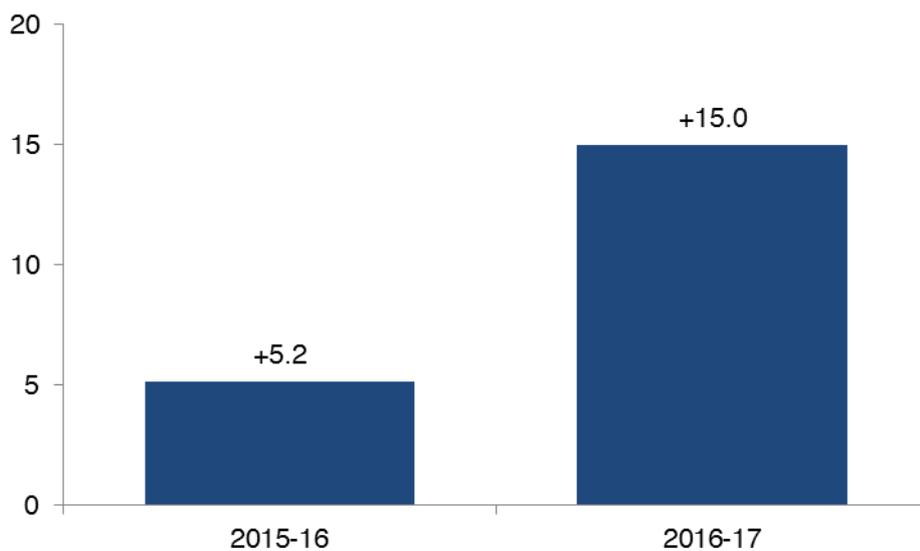
Aberdeenshire	-3.4%
West Dunbartonshire	-2.7%
Aberdeen City	0.1%
Inverclyde	1.9%
East Dunbartonshire	2.6%
Scotland	5.9%

- under 1%
- 1% - 5%
- 5% - 10%
- over 10%



Source: Scottish Fiscal Commission calculations. Registers of Scotland, House price statistics ([link](#))

Figure 2.8: Difference in tax raised assuming Aberdeen and Aberdeenshire prices and transactions grew at the same rate as the Scottish average (£ million)



Source: Scottish Fiscal Commission estimates using Scottish Government model (Scottish Government (2016) Devolved Taxes Methodology 2017-18 ([link](#))) and Registers of Scotland, House price statistics ([link](#))

Additional Dwelling Supplement (ADS)

- 2.37. The Additional Dwelling Supplement (ADS) is paid on additional residential property purchases worth £40,000 or more. The ADS is charged at 3% on the full value of the house purchase, so is a slab system, similar to the system that preceded residential LBTT. For purchases above £145,000, the buyer will be liable to pay both residential LBTT and the ADS.
- 2.38. Should the purchaser transfer their main residence and sell their previous main residence within 18 months of their purchase, they may subsequently reclaim the ADS that they have paid. The Scottish Government forecast was for receipts which would not be refunded. This was effectively on an accruals basis²³ (see Box 2.1 for further discussion).

The ADS forecasting model

- 2.39. The ADS model uses the forecasts for average house prices and transactions generated by the residential LBTT model.²⁴ The Scottish Government's initial forecast produced for Draft Budget 2016-17 made the following assumptions:
- Properties subject to ADS were assumed to have prices 10% lower than the market as a whole.
 - 10,500 transactions were assumed to be ultimately liable for ADS.
 - Two behavioural effects were accounted for: forestalling effects resulting in transactions being brought forward into 2015-16; and a behavioural effect reducing transactions in 2016-17. The combined effect reduced the ADS forecast by £21.5 million.
- 2.40. The number of ADS transactions was based on limited data and it seems likely that it underestimated the share of properties ultimately liable for ADS. Current data for 2016-17 show that, in the first year of the tax, there were 19,000 ADS-liable transactions where repayment was not sought. It is important to note that given the 18-month repayment window this will not be the final figure.
- 2.41. One reason for the underestimate of the share of transactions may be that Scottish Government analysts were unable to account fully for cash buyers, in particular in the buy-to-let market, owing to a lack of data. However, the assumption that average non-refunded ADS prices would be 10% lower has proven more accurate, with the initial data from 2016-17 showing a difference of 7.6%.
- 2.42. The forecast of ADS revenues was £36 million for 2016-17. Statistics on tax raised from ADS to date show gross revenues of £107 million with repayments thus far at

²³ And net of contingent liabilities

²⁴ Further detail is available in the Scottish Fiscal Commission (2016) Additional Dwelling Supplement Preliminary Outturn Report, November 2016 ([link](#)). As these are forecasts on a net basis, a full evaluation must await more complete data on refunds.

£17 million, giving a net revenue figure of £90 million. The latter will diminish as further refunds are paid.

- 2.43. For the Draft Budget 2017-18 the Scottish Government used outturn data from July to September 2017 to estimate that 16% of residential transactions would be permanently subject to ADS. This was based on the share of ADS transactions where the taxpayer had not expressed an intention to reclaim ADS. The assumption that ADS transactions would have a price 10% below average residential transactions was maintained. This was used to calculate a net ADS in-year forecast for 2016-17 of £71 million.
- 2.44. While a full evaluation is not possible at this stage, the first year of data for 2016-17 as a whole shows an improvement in the Scottish Government’s estimate of the share of transactions ultimately liable for ADS.

Table 2.5: ADS Forecasts compared with Tax Raised (£ millions)

	2016-17
Tax Raised (net basis) ²⁵	90
SG December 2015	36
SG December 2016 ²⁶	71

Source: Revenue Scotland statistics ([link](#)); Scottish Government (2015) Draft Budget 2016-17 ([link](#)); Scottish Government (2016) Draft Budget 2017-18 ([link](#))

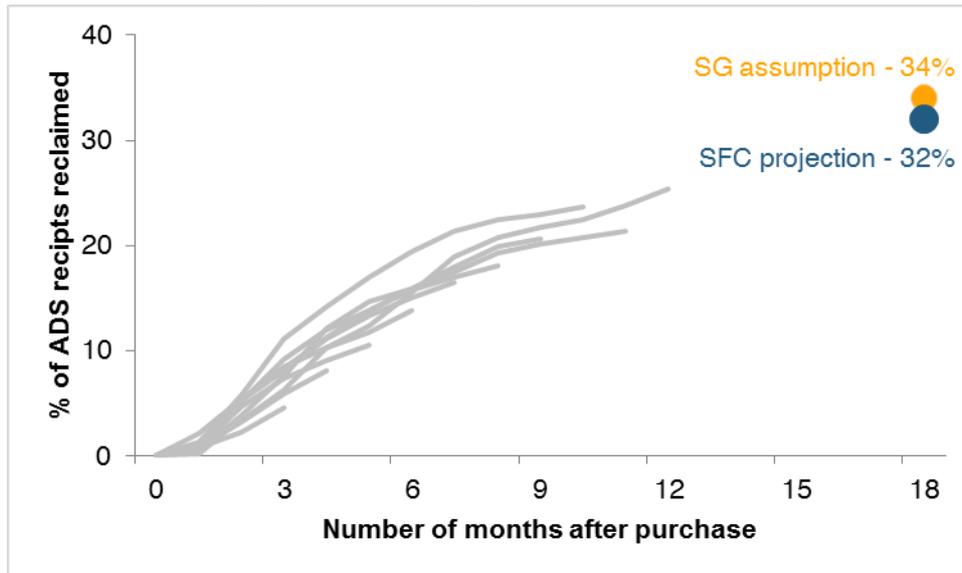
The ADS repayments rate assumption

- 2.45. The Scottish Government December 2016 forecast assumes 34% of ADS paid will be reclaimed. This is based on the value of tax returns including a stated intention to reclaim ADS. Whilst there are not a full 18 months of repayments data, there are sufficient data to assess whether repayments are on track to meet this 34% figure.
- 2.46. The Commission has developed an extrapolation model, using data that was not available to Scottish Government forecasters last December. This model uses available data on refunds grouped by month of purchase. Each group is referred to as a cohort. This model currently suggests that 32% of ADS paid will be reclaimed, implying the Scottish Government’s assumed 34% refund rate was reasonable.

²⁵ Note that this is not the final figure owing to an 18 month window for transferring main residence and selling previous main residence (and subsequently reclaiming paid ADS). Figure as at 31st May 2016.

²⁶ The in-year estimate produced for in December 2016 is not an official Scottish Government forecast.

Figure 2.9: ADS reclaimed by cohort (% of gross ADS received in month)

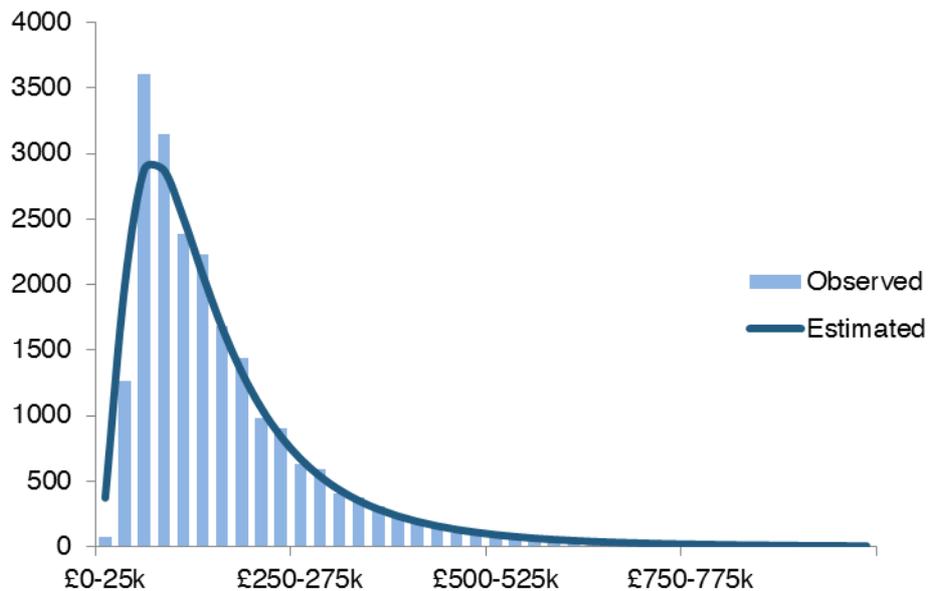


Source: Scottish Fiscal Commission calculations; Scottish Government (2016) Draft Budget 2017-18 ([link](#)); Revenue Scotland statistics ([link](#))

Log-normal distribution for ADS transactions

2.47. Applying the same statistical test to the distribution of ADS transactions as to the residential LBTT distribution, it is clear that the log-normal distribution works as an approximation for ADS transactions.

Figure 2.10: Observed and estimated distribution of ADS transactions in 2016-17 (£25,000 price brackets)



Source: Revenue Scotland statistics ([link](#)); Scottish Fiscal Commission calculations

Conclusion

- 2.48. The forecasts produced in December 2015 for the Draft Budget 2016-17 overestimated residential LBTT revenues (excluding ADS) by £68 million. The most significant factor in this error was too high a forecast for average house prices. This had been noted as a risk in previous Commission reports and the Scottish Government subsequently amended its models in response.
- 2.49. The in-year forecast produced in December 2016 underestimated the amount of revenue that would be raised by residential LBTT by £33 million in 2016-17. This can be explained by too low a forecast for the level of average and median house prices. The log-normal distribution used in the Scottish Government model provides a reasonable estimate of the pattern of residential transactions.
- 2.50. Tax raised from ADS in 2016-17 was significantly higher than the range initially forecast by the Scottish Government. This was primarily driven by the forecast for the number of transactions liable for ADS being too low. The availability of data on the proportion of transactions liable for ADS should remove this source of error in future forecasts.
- 2.51. We will be reviewing the overall methodology used to forecast residential LBTT and ADS as we prepare to produce our first forecasts for the Draft Budget 2018-19.

Non-Residential Land & Buildings Transactions Tax (LBTT)

- 2.52. Non-residential LBTT is similar to residential LBTT. Each tax rate applies to the portion of the purchase price falling into the tax band. There are three tax bands for non-residential LBTT. The top tax band for purchases accounted for 17% of all transactions but 86% of total non-residential LBTT raised in 2016-17.

Table 2.6: Non-Residential LBTT Tax rates and bands

Property purchase price	Tax rate applied to value within the band
£0 to £150,000	0%
£150,000 to £350,000	3%
£350,000 and above	4.5%

Source: Revenue Scotland ([link](#))

- 2.53. An additional element with significant impact on non-residential LBTT is lease transactions. These account for around 10% of total revenues. Leases are taxed based on the present value of future rental payments.

Table 2.7: Non-Residential LBTT Tax Rates and Bands for Lease Transactions

Net present value of rent	Tax rate applied to value within the band
£0 to £150,000	0%
£150,000 and above	1%

Source: Revenue Scotland ([link](#))

2.54. Tax raised from Non-residential LBTT was £217 million in 2015-16 and fell to £176 million in 2016-17. Most of this fall was accounted for by purchases rather than leases.

Table 2.8: Non-Residential LBTT Tax Revenues (£m)

Financial year	Tax raised from non-residential purchases	Tax raised from non-residential leases	Total non-residential LBTT
2015-16	191	26	217
2016-17	155	22	176

Source: Revenue Scotland statistics ([link](#)). Note: components may not sum to total tax revenue due to rounding.

The Non-residential LBTT forecasting model

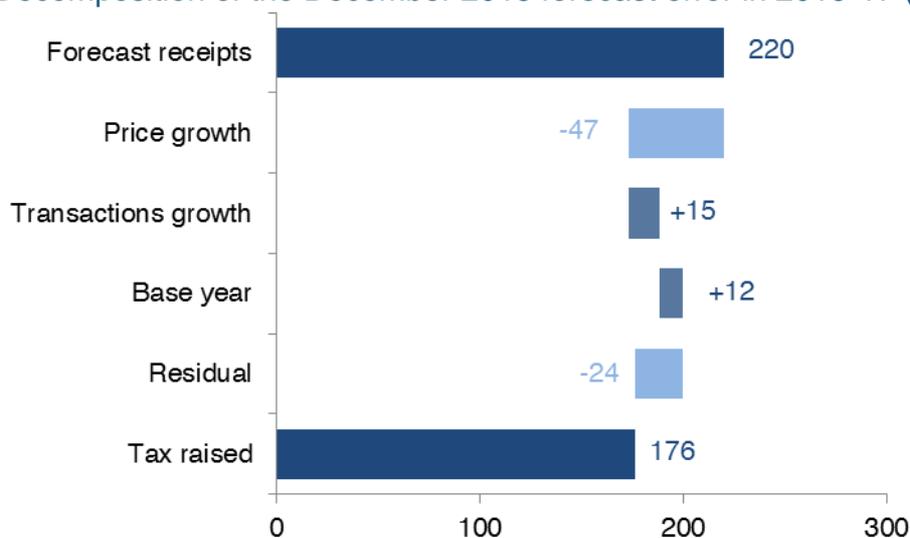
2.55. The non-residential forecast starts with a “base” level of revenue. This is constructed using the revenue statistics for the three most recent years from Revenue Scotland and HMRC, adjusted for growth in commercial property prices. The “base” level of revenue is indexed to forecasts for growth in UK commercial property prices and transactions published by the Office for Budget Responsibility.

2.56. The non-residential LBTT tax take can be heavily influenced by a small number of large transactions during the year. A three-year average is used to ensure that an unusually high or low level of revenue in a single year does not impact on the “base” level of revenue. Non-residential LBTT revenues can be volatile between years, and do not display any regular seasonal pattern.

Forecasts produced in December 2015 for Draft Budget 2016-17

2.57. The Scottish Government forecast non-residential LBTT receipts of £220 million in 2016-17. This was based on a forecast growth rate for property prices of 3.1% and for transactions of 2.4% and a base year estimate of £208 million for 2015-16. This resulted in an over-prediction of revenues of £44 million.

Figure 2.11: Decomposition of the December 2015 forecast error in 2016-17 (£ millions)



Source: Scottish Fiscal Commission calculations; Scottish Government (2016) Draft Budget 2017-18 ([link](#)); Revenue Scotland statistics ([link](#))

- 2.58. The main source of the over-prediction was the forecast for the growth in property prices. Had the price forecast been as was observed, the overall receipts forecast would have been lower by £47 million. It is important to note that the decomposition contains a large residual. This reflects a number of factors, which include that the prices and transactions growth forecasts do not include lease transactions and that the Draft Budget forecasts are rounded to the nearest £5 million.
- 2.59. Previous Commission reports have highlighted that the major source of tax revenue volatility stems from the effect of a very few high-priced transactions. In 2016-17, 35% of non-residential LBTT came from the 1% highest-priced transactions. This source of forecast error highlights the difficulty of forecasting receipts reliably.
- 2.60. Previous Commission reports have noted that changes in non-residential property tax receipts in Scotland usually track those at the UK level. Non-residential Stamp Duty Land Tax receipts fell 6% and non-residential LBTT fell 19% in 2016/17; difference in growth rates between Scotland and UK are not historically uncommon due to the volatility of the tax.

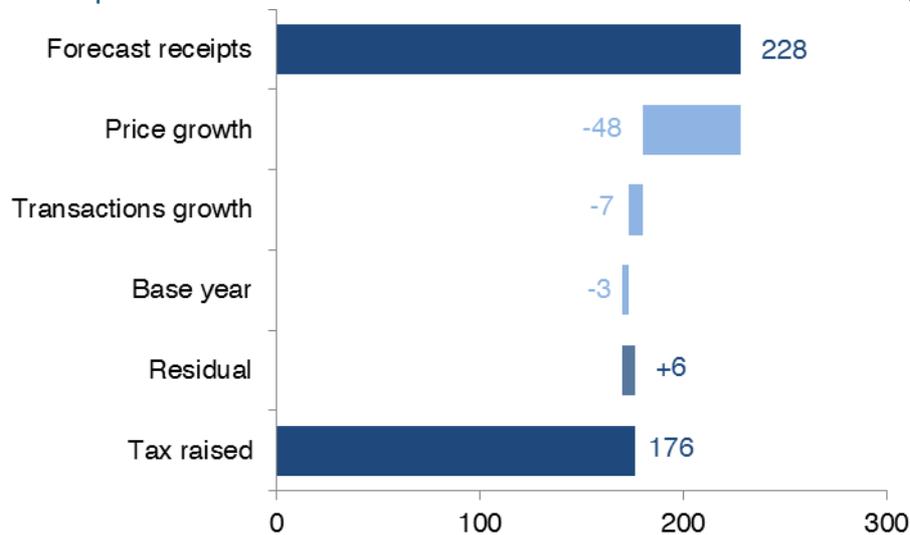
Forecast produced in December 2016 for Draft Budget 2017-18

- 2.61. In order to produce the Scottish Government's forecast for Draft Budget 2017-18, a projection for receipts in 2016-17 was produced although not officially published.²⁷
- 2.62. The Scottish Government projected non-residential LBTT receipts of £228 million in 2016-17. This was based on a forecast growth rate for property prices of -5.1% and

²⁷ The in-year estimate produced in December 2016 is not an official Scottish Government forecast. See footnote 2 above.

for transactions of 6.7% and a base year estimate of £226 million for 2015-16. This resulted in an over-prediction of revenues of £52 million.

Figure 2.12: Decomposition of the December 2016 forecast error in 2016-17 (£ millions)



Source: Scottish Fiscal Commission calculations; Scottish Government (2016) Draft Budget 2017-18 ([link](#)); Revenue Scotland statistics ([link](#))

2.63. The main source of the over-prediction of receipts was the forecast for the growth in property prices. This was due to average prices falling by 24% in 2016-17 according to Revenue Scotland data. Had prices been forecast completely accurately, the overall receipts forecast would have been lower by £48 million. The remaining components used to construct the 2016-17 projection contributed a net gap of £4 million.

Conclusion

2.64. The forecast for the Draft Budget 2016-17 overestimated the amount of revenue that would be raised by non-residential LBTT by £44 million. The most significant factor in this error was too high a forecast for average prices. Previous Commission reports have highlighted that the major source of tax revenue volatility stems from the effect of a very few high-priced transactions. In 2016-17, almost 40% of non-residential LBTT came from the 1% highest-priced transactions.

2.65. We will be reviewing the overall methodology used to forecast non-residential LBTT as we prepare to produce our first forecasts for the Draft Budget 2018-19. In particular, we will be investigating further the possibility of combining data from HMRC and Revenue Scotland to create Scotland-specific average price and transactions data series for non-residential properties.



Chapter 3

Non-Domestic Rates

- 3.1. Non-Domestic Rates (NDR) are paid by owners, tenants or occupiers of non-domestic properties. Every non-domestic property in Scotland (with some exceptions²⁸) is valued by the independent Scottish Assessors based on a legally defined valuation, broadly based on analysis of annual rental values. The amount of tax paid is then dependent on this rateable value of the property, the tax rate (also known as poundage rate) and any reliefs, exemptions or supplements applied to the property.

Forecasting Approach

- 3.2. Since April 2017 the Commission has become responsible for producing independent forecasts of income from Non-Domestic Rates. Our first forecasts will be produced for Draft Budget 2018-19.
- 3.3. Receipts from NDR are highly sensitive to the valuations given to properties by the Assessors and any changes affecting the Valuation Roll. The Valuation Roll records publicly the 'rateable values' for all properties in Scotland and is continually updated. Changes to the Roll can also be backdated to the time at which they occurred. Changes are made due to both physical and administrative changes. For example, the Roll will be updated if an appeal is successful or an error is discovered in an entry.
- 3.4. All properties on the Roll have a rateable value based on a single date known as common 'tone date' for valuation, and are typically re-valued every five years. The previous revaluation cycle ran from 2010 to 2017, meaning that 2016-17 was the seventh year of the revaluation cycle. Although a revaluation was initially planned for 2015, the Scottish Government announced in 2012 it would delay the revaluation to 1 April 2017. This mirrored the UK Government's decision to delay the revaluation in England until 2017.

²⁸ For example, agricultural land and buildings are statutorily excluded from the Valuation Roll.

- 3.5. The outcome of appeals by ratepayers against valuations also affects NDR receipts. There are several types of appeals which can be made against the rateable value assigned to properties. The Roll is updated following any successful appeals. Revaluation appeals are made against the value given by the assessors at revaluation. These must be lodged within six months of the revaluation and any alteration following successful appeals will be backdated to be effective from the start of the revaluation cycle. Running roll appeals – i.e. any appeal against rateable value which is not a revaluation appeal – can be raised by new owners, tenants or occupiers against the valuation of their property within six months of assuming new interest in the property. Running roll appeals can also be lodged at any time on the grounds of an error or in the event of a material change of circumstances (MCC).²⁹
- 3.6. With our new remit, the Commission will be responsible for all elements of the NDR forecast. This requires us to recognise and assess the impact that administrative and policy changes have on tax receipts; given the nature of the tax these are likely to have a more significant impact on receipts than economic variables.

Buoyancy and the Commission's previous remit

- 3.7. The Commission's previous remit in respect of NDR was to assess the reasonableness of the "economic determinants" underpinning the wider forecast of NDR income. These economic determinants were defined as buoyancy and inflation.
- 3.8. Buoyancy is the change in the total rateable value of properties in Scotland net of revaluation appeal reductions. This includes new additions and removals from the Roll, administrative changes resulting in a change in rateable value and successful 'running roll appeals'. Inflation is normally used to uprate the poundage rate.³⁰ In December 2015, the forecasts for the Draft Budget 2016-17 used the published September 2015 inflation figure to uprate poundage, so no forecast was required. The following section explores what buoyancy is, how it is calculated and evaluates the Scottish Government's forecast of buoyancy produced in December 2015.
- 3.9. Buoyancy is a relatively small component of NDR receipts. In 2016-17 the total rateable value of all properties on the Valuation Roll was around £6.8 billion. In comparison, the long-run average of buoyancy is 1.2% which equates to an annual increase in total rateable value of around £80 million.
- 3.10. Whilst our previous remit referred to buoyancy as an 'economic determinant of NDR', work by the Scottish Government has found no clear links between buoyancy and economic variables (such as GDP, effective interest rates or employment). As a result buoyancy should be considered more as a residual variable linked to both the administration of the tax and changes to the tax base rather than as an economic

²⁹ Appeals on the grounds of error must be lodged whilst the roll is in force. Appeals for MCC must be lodged no later than six months after the roll ceases to be in force.

³⁰ This is a working assumption used in previous forecasts. Previously poundage (or the tax rate) has been set by Scottish Ministers at each Draft Budget and is subject to parliamentary approval.

determinant. Box 3 below explains how buoyancy is measured and how changes to the Valuation Roll affect buoyancy.

Box 3: How is buoyancy measured?

Buoyancy is the change in the total rateable value of properties in Scotland net of revaluation appeal reductions.

New properties being built or extensions to existing properties increase the size of the tax base and positively affect buoyancy. Similarly, properties being removed from the Valuation Roll negatively affect buoyancy. Running roll appeals can be made against the valuation of a property following a change in ratepayer or can be lodged at any time on the grounds of an error or in the event of a material change of circumstances. Successful running roll appeals negatively affect buoyancy.

Buoyancy is measured using two sources of information, the Valuation Roll and data on appeals. Firstly, the total rateable value on the Valuation Roll is compared at the 1st April at the start of the financial year in question and the 1st April at the start of the next financial year³¹ to assess the overall growth in rateable value. This takes a snapshot of the Roll as it was at each of those dates, therefore any administrative changes to rateable values will impact on buoyancy.

Secondly the amount of rateable value lost at appeal in the same financial year is calculated.³² Buoyancy is then calculated as the total change in rateable value corrected for losses due to revaluation appeals. For example, if there is no change in the total rateable value seen on the Valuation Roll over a financial year, but £50 million of rateable value was lost to revaluation appeals, then there will have been £50 million of growth in the tax base to counteract the appeals loss. This means therefore that buoyancy for the year would be £50 million.

What does buoyancy not cover?

Buoyancy does not cover any changes resulting from reliefs, supplements or back-dated payments such as bad debts. These are taken into account after the total rateable value is calculated and thus do not affect the buoyancy calculations. Buoyancy also does not take account of annual changes in property values as the rateable value of all properties on the Roll is based on a single date, known as the 'tone date'.

Forecasts produced in December 2015 for Draft Budget 2016-17

3.11. Following scrutiny and challenge from the Scottish Fiscal Commission, the Scottish Government adopted an approach to forecasting buoyancy which took account of a pattern observed in annual buoyancy data. Buoyancy has typically been higher in

³¹ Or 31 March at the end of the financial year, if the year is the last in the revaluation cycle (as for 2016-17)

³² Scottish Government Non-Domestic Rates Revaluation Appeals Statistics ([link](#))

earlier years of a revaluation cycle and lower in later years. Table 3.1 shows the average historical buoyancy for each year of the revaluation cycle. The Scottish Government has provided evidence indicating that it is the administration of the tax system – and in particular the timing of the resolution of running roll appeals – which causes this pattern. Running roll appeals can only be resolved once revaluation appeals are settled, so successful running roll appeals are more likely to influence the buoyancy data later in the revaluation cycle. As we have highlighted in our previous reports, the cyclical pattern of buoyancy is based on a limited number of data points; the middle years of the cycle have four observations whilst the first and fifth year have one and two observations.

Table 3.1: Average Historical Buoyancy

Year of Revaluation Cycle	1	2	3	4	5
Average Historical Buoyancy	1.7%	1.8%	1.1%	0.9%	1.0%

Source: Scottish Government analysis of the valuation roll.

3.12. 2016-17 was a unique year as it was the seventh year of a revaluation cycle, which has not occurred within the last thirty years. The Scottish Government therefore used the average of “late” year buoyancy, so years three to five of previous revaluation cycles, to predict buoyancy for 2016-17. This resulted in a forecast of 1.0%.

Forecast Evaluation

3.13. Assessment of the Valuation Roll and data on rateable value lost at appeal during 2016-17 shows that outturn buoyancy for 2016-17 was 0.33%. This represents the lowest level of buoyancy on record and a value significantly less than the 1% forecast made in December 2015.³³ However because buoyancy accounts for a relatively small part of total NDR revenues, this reduction of 0.67 percentage points in buoyancy is estimated to reduce total rateable value only by £45 million and NDR revenue only by around £10 million in 2016-17.³⁴ In contrast the latest estimate of NDR revenue in 2016-17 was £2.7 billion.³⁵

3.14. As highlighted above, the Valuation Roll is an administrative source of data updated by the Scottish Assessors. Whilst the Roll is a valuable data source with information on all relevant properties in Scotland, it is an administrative dataset which is subject to considerable change. For example, a court case decision in 2015 has led to certain properties each previously shown in single entries in the roll to be split into multiple entries at the 2017 revaluation.³⁶ It has resulted in nearly 7,000 new

³³ Note the data series is limited to just 16 points.

³⁴ Buoyancy relates to properties added to the Roll during a financial year, properties will be added over the whole year and therefore the tax liability is assumed on average to relate to only six months of the year not the whole year.

³⁵ Scottish Government (2017) Government Expenditure and Revenue Scotland 2016-17 ([link](#)).

³⁶ Woolway (Appellant) v Mazars (Respondent) UKSC 53 ([link](#))

entries on the Roll and over 3,000 changes to existing entries. Buoyancy outturn data are produced based on the administrative data contained in the Valuation Roll, such changes create challenges for an assessment of changes to the Roll, and identification of the drivers of outturn buoyancy.

- 3.15. A number of possible explanations have been explored for the difference between forecast and outturn data. Whilst several contributing factors can be identified, it is not possible to explain fully why buoyancy was lower than forecast.
- 3.16. Our previous reports identified how large-scale, high-value development projects can have an impact on buoyancy. In our report published last September³⁷ we noted that the addition of two large properties had pushed the buoyancy figure for 2015-16 above the original forecast. Changes relating to both these properties have now contributed downward revisions to buoyancy in 2016-17.
- 3.17. The gas terminal in the Shetlands had a running roll appeal which resulted in its rateable value falling by £1.1 million in 2016-17. Similarly whilst the new Queen Elizabeth University Hospital in Glasgow was added to the roll in 2015-16, boosting buoyancy, the subsequent closure of the Western Infirmary in Glasgow has reduced rateable value by £1.2 million. There were several large removals from the Roll in 2016-17. The most significant was Longannet power station – this was represented by several entries on the Valuation Roll, but the overall effect was a reduction in rateable value of £10.5 million. The construction work on the St James Centre in Edinburgh has led to around £5 - £6 million of rateable value being removed from the Roll. These four changes combined can explain a reduction of around £18 million in rateable value.
- 3.18. Other smaller closures such as the Tullis Russell paper mill in Fife with a rateable value of £1.9 million have also reduced buoyancy. The Commission will continue to review the likely additions and removals from the Valuation Roll, even though identifying likely properties and determining the timing of changes to the Roll carry uncertainty.
- 3.19. Another contributing factor to the lower than forecast buoyancy appears to be the relatively smaller number of large projects added to the Valuation Roll in 2016-17 compared to previous years. For example, in 2016-17 between £14 and £18 million of rateable value due to properties valued over £1 million has been added to the Roll.³⁸ In comparison over the previous five years on average around £30 million has been added to the Roll for properties valued over £1 million.³⁹
- 3.20. We have explored other possible explanations such as the effect of low oil prices affecting buoyancy Aberdeen and the surrounding area. However, when comparing

³⁷ Scottish Fiscal Commission (2016) 2015-16 Outturn Report ([link](#))

³⁸ A range estimate is produced due to challenges interpreting cumulo entries on the roll; these are single entries covering certain utilities at a national level.

³⁹ This analysis has focused on properties with a valuation greater than £1 million due to the large number of administrative changes to the Roll, and the need to confirm whether changes are administrative by looking at planning applications, media reports and other changes to the Valuation Roll.

buoyancy by local authority, Aberdeen City and Aberdeenshire have above average buoyancy for 2016-17.⁴⁰ A possible explanation is that the lead time for completion of new projects means projects started before the oil price shock are still completing whilst future buoyancy levels in Aberdeen and the North East may be affected if fewer new projects are started. Buoyancy varies widely by local authority; in 2016-17 the local authority with the highest buoyancy level was Moray at 2.9% whilst Shetland had a buoyancy of -2.6%.

- 3.21. The Scottish Government announced a reduction in empty property relief in the Draft Budget 2016-17 in December 2016.⁴¹ This increased the rates burden for long-term empty properties, particularly industrial properties, and may have led to an increase in demolitions. We have explored this possibility with the Scottish Government and Scottish Assessors and compared data on properties eligible for relief in 2015-16 to properties on the Valuation Roll in 2016-17.
- 3.22. The results of this analysis are not conclusive. Whilst some changes on the Roll appear to involve deletions of eligible properties, discussions with assessors have suggested that the majority of these changes on the Roll are administrative rather than physical. The Commission will continue to monitor this as a possible influence on buoyancy estimates.

Conclusion

- 3.23. The 2016-17 forecast of buoyancy presented challenges as it was the seventh year of a revaluation cycle, which was unusual. The outturn buoyancy was the lowest ever observed, however the impact on overall receipts was relatively small, roughly £10 million. Whilst the outturn data cannot fully explain the low level of buoyancy, it appears that contributing factors included several significant removals from the Roll, a large successful appeal and a lower than average number of significant additions to the Roll.
- 3.24. We will be reviewing the overall methodology used to forecast NDR as we prepare to produce our first forecasts of NDR for the Draft Budget 2018-19. As new data become available we will continue to review the approach taken to forecasting all components affecting NDR receipts.

⁴⁰ In 2016-17 buoyancy in Aberdeen City was 1.1% whilst Aberdeenshire had buoyancy of 1.6%.

⁴¹ Vacant industrial property which had previously been eligible for 100% relief had this relief limited to the first six months since becoming unoccupied and thereafter a 10% relief applies indefinitely. Other non-industrial vacant property was previously eligible for 100% relief for three months and 10% relief thereafter, this was then limited to 50% relief for the first three months and 10% relief thereafter.

Source: Local Government Finance Circular No 5/2016 Non-Domestic Rates Relief: Information For Scottish Local Authorities ([link](#))



Chapter 4

Scottish Landfill Tax

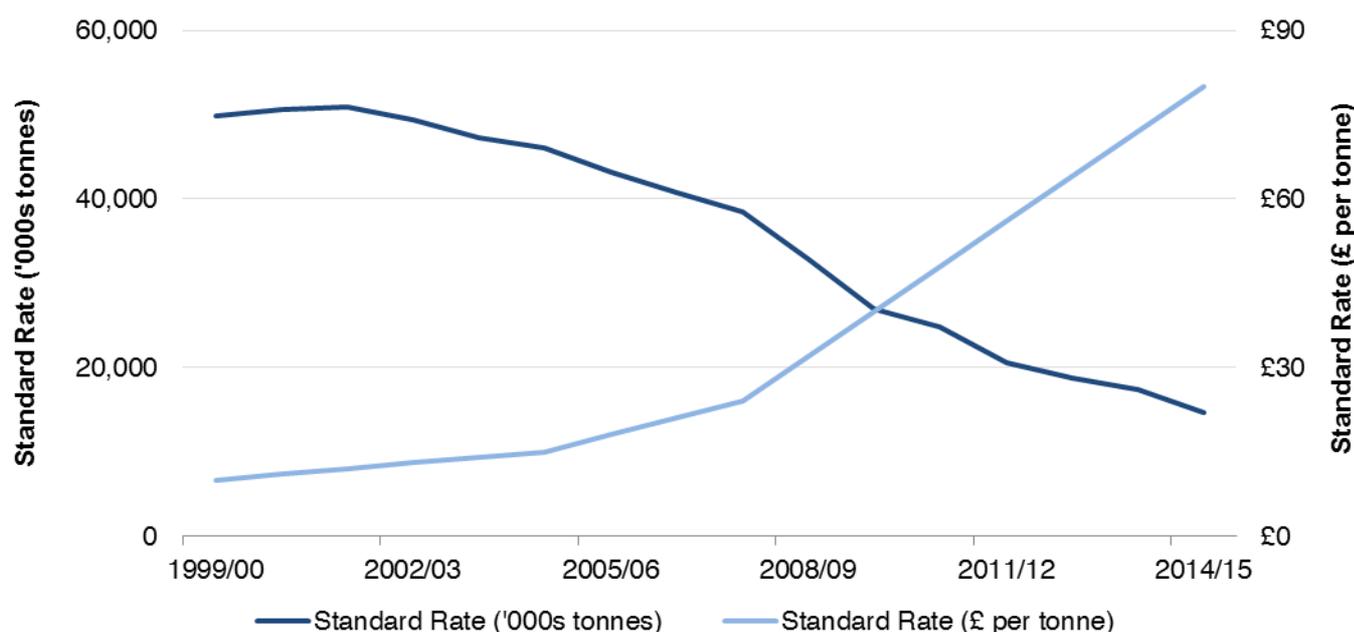
Background

- 4.1. Scottish Landfill Tax (SLfT) is a tax on the disposal of waste to landfill. The power to set a tax on landfill deposits was devolved to the Scottish Government through the Scotland Act (2012). From 1st April 2015 Revenue Scotland became responsible for collecting revenue for the newly created SLfT, which replaced the previous UK-wide tax in Scotland.
- 4.2. The amount of tax payable is determined by the weight of waste being disposed of on the basis of two rates. The current standard rate of SLfT for 2017-18 is £86.10 per tonne and the lower rate is £2.70 per tonne for certain inert materials such as naturally occurring soil and rocks.⁴² Since devolution the Scottish Government has chosen to match the stated policy of the UK government, which since the 2014 Budget has been to uprate the tax rates annually in line with RPI.⁴³
- 4.3. SLfT is an environmental tax, designed to encourage efforts to minimise the amount of waste produced and incentivise the use of non-landfill waste management options. The chart below shows the standard rate of tax alongside the tonnage of standard rate waste being landfilled at the UK level prior to devolution of the tax to Scotland.
- 4.4. For the time period in question, there was a clear association between the increasing rate of taxation and reduction in the amount of waste to landfill, helping demonstrate the effectiveness the tax has had as a policy lever in reducing landfill deposits.

⁴² See Revenue Scotland (2017) for detail on what qualifies as lower rate waste ([link](#))

⁴³ See HMRC (2016) Landfill Tax Policy Paper: Increase in Rates ([link](#))

Figure 4.1: Standard Rate of Tax and Standard Rate Waste Landfilled in the UK



Source: HMRC Landfill Tax bulletin April 2017 ([link](#))

Forecasting Approach

- 4.5. As part of its non-statutory role prior to 1st April 2017, the Commission was responsible for scrutinising the Scottish Government’s forecast of revenue from SLfT. This report evaluates the forecast produced by the Scottish Government for the Draft Budget 2016-17 in December 2015, as well as the in-year forecast produced for the Draft Budget 2017-18 in December 2016.
- 4.6. The forecasting methodology used in December 2015 started from the assumption that the Scottish Government would achieve its targets for the reduction of landfill waste by 2025, following a linear path from the 2011 level to the target value of 5% of total waste ending up in landfill. The split between standard and lower rate waste going to landfill was assumed to remain constant over the forecast horizon.
- 4.7. HMRC data on Landfill Tax receipts prior to devolution of the tax could not be disaggregated to give Scottish-specific receipts. The forecast of tax receipts was initially estimated based on available SEPA data on landfill deposits, with all mixed waste assumed to be subject to the standard rate of tax.
- 4.8. By December 2015, outturn data for the first two quarters of 2015-16 available from Revenue Scotland were used to create an in-year forecast for total receipts in 2015-16. This annual estimate was incorporated into the forecast for 2016-17, and used to determine the share of total waste landfilled that was standard rate.
- 4.9. While the Commission judged the forecasts produced in December 2015 to be reasonable given the data constraints faced at the time, we highlighted concerns that a long-term target for compliance was driving the forecast methodology. The

Commission recommended close monitoring of the assumptions underpinning the model as more Scotland-specific landfill and tax revenue data became available.

- 4.10. For the Draft Budget 2017-18 in December 2016⁴⁴, following challenge from the Scottish Fiscal Commission, the Scottish Government reviewed its forecasting approach, moving away from a target-based methodology. The current approach is driven by two assumptions: that standard and lower rate waste stay at a constant level throughout the forecast horizon; and that there are increases to incineration capacity that will divert waste away from landfill. Revenue Scotland data for April - June 2016-17 were used to generate an in-year forecast for use as a baseline for landfilled waste in subsequent years.
- 4.11. While the Commission again noted several risks associated with this methodology, the forecasts were judged to be reasonable and an improvement on the previous approach, as it allowed on-going monitoring of factors affecting the forecast, namely incineration capacity, as opposed to an assumed constant linear decline in landfill waste towards a Government target.
- 4.12. The OBR also produces forecasts of revenue from SLfT, as part of their Devolved Taxes Forecast publication. The approach taken by the OBR uses outturn data available from Revenue Scotland, and assumes the forecasted growth in receipts follows the UK.

Forecast Evaluation

- 4.13. Published data from Revenue Scotland show £147 million was raised from SLfT in 2016-17.⁴⁵ This compares to a forecast of £133 million made by the Scottish Government for the Draft Budget 2016-17, an underestimate of £14 million for the year, and an absolute percentage error of 10%. A summary of how this error compares to forecasts made at different points in time is given in the table below.⁴⁶

Table 4.1: SG and OBR 2016-17 forecasts of SLfT and Tax Raised (£ million)

	Forecast	Tax Raised	Difference	% Difference
SG Dec 2015	133	147	14	10%
OBR Nov 2015	131	147	16	11%
SG Dec 2016	150	147	3	2%
OBR Nov 2016	154	147	7	5%

Source: Scottish Government (2015) Devolved Taxes Methodology 2016-17 ([link](#)); Scottish Government (2016) Devolved Taxes Methodology 2017-18 ([link](#)); OBR Devolved Taxes Forecast November 2015 ([link](#)); OBR Devolved Taxes Forecast November 2016 ([link](#))

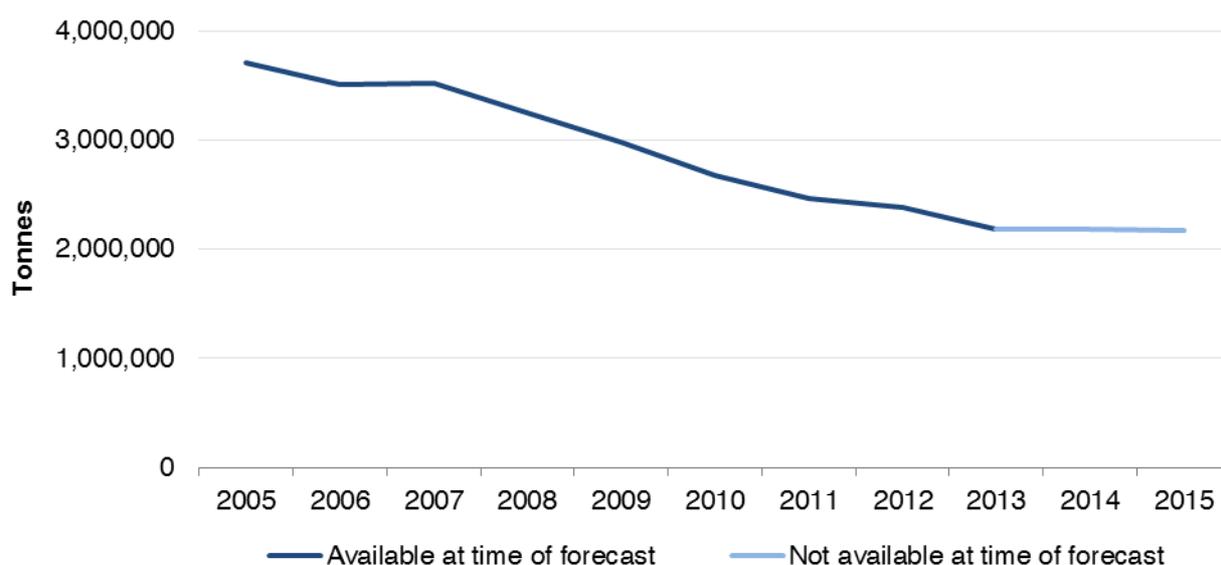
⁴⁴ The in-year estimate produced in December 2016 is not an official Scottish Government forecast. See footnote 2 above.

⁴⁵ See Revenue Scotland SLfT Statistics – January to March 2017 ([link](#))

⁴⁶ The SG forecast for the Draft Budget 2017-18 calculated an estimate of expected revenue for 2016-17 on the basis of in-year data.

- 4.14. The forecast produced in December 2015 performed similarly to the OBR forecast produced around the same time in relation to the size of error, but worse than the in-year forecast produced in December 2016, which made use of Q1 data from Revenue Scotland.
- 4.15. Compared to the forecast produced in December 2015, standard rate waste was £14.5 million higher than expected, contributing by far the largest source of error. While lower rate waste was 20% lower than forecast, this had a minimal impact on total revenue, and is equal to only a £0.5 million downward revision to the forecast.
- 4.16. The forecast model had assumed a constant linear reduction in the amount of waste landfilled, which has not been realised. Data from SEPA on mixed waste landfilled (a proxy for standard rated waste), which was not available at the time of forecast indicate the trend apparent in the data between 2007 and 2013 slowed considerably in subsequent years. While this refers to years prior to the forecast, Revenue Scotland data between 2015-16 and 2016-17 also show only a small decline in standard rate waste, at a far slower rate than implied by the forecast.⁴⁷

Figure 4.2: Mixed Waste Landfilled in Scotland



Source: SEPA Waste from all sources 2015 ([link](#))

- 4.17. The potential for slippage in the forecasted rate of decline in landfill volumes had been noted as an on-going risk to the forecast by the Commission in its previous reports. The findings from the statistics for 2016-17 suggest that the assumption of a constant decline in landfill towards a government target may not be an appropriate approach to forecasting revenue from landfill tax.
- 4.18. The forecast produced in December 2016 had the advantage of using Q1 statistics to generate an in-year estimate for 2016-17. This used the seasonal share of Q1 from the 2015-16 Revenue Scotland data and assumed the pattern observed in

⁴⁷ Between 2015-16 and 2016-17 the Revenue Scotland data show a 2.4% drop in the amount of standard rate waste landfilled. This compares to an expected reduction of 8.5% implied by the forecast.

2016-17 would be the same. This approach resulted in a much lower error than the forecast produced in December 2015, with the forecast just £3 million higher than the tax raised.

- 4.19. The difference between forecast and tax raised is again driven mainly by the forecast for standard rate waste. While there was no evidence of significant seasonality in the 2015-16 data, outturn for 2016-17 shows a slight peak in the amount of standard rate waste going to landfill in Q1 and Q2, similar to patterns observed in HMRC data at a UK level. The table below summarises the quarterly shares from several data sources.

Table 4.2: Share of Standard Rate Tonnages by Quarter

Quarter	Revenue Scotland 2015-16	Revenue Scotland 2016-17	HMRC 5-year average (2010-11 to 2014-15)
Apr-Jun	25.1%	26.3%	26.5%
Jul-Sep	25.1%	26.5%	26.4%
Oct-Dec	24.5%	24.0%	24.1%
Jan-Mar	25.2%	23.2%	22.9%

Source: Revenue Scotland SLfT Statistics January to March 2017 ([link](#)); HMRC Landfill Tax bulletin April 2017 ([link](#))

- 4.20. While the difference in quarterly share of standard rate waste for Q1 is relatively small, at just over 1%, this can represent several million pounds. For future forecasts the Commission will look to refine the seasonal share used to generate the in-year estimate, given its importance in setting the baseline for subsequent years.

Conclusion

- 4.21. The forecast methodology used for the Draft Budget 2016-17 underestimated the revenue raised by Scottish Landfill Tax in 2016-17 by £14 million. The most significant factor in this error was a too low forecast for the level of standard rate waste, which was due to the anticipated decline in landfill tonnes occurring at a slower rate than forecast. This had been noted as a potential risk in the approach taken in previous Commission reports, and the statistics published to date continue to suggest this approach may not be appropriate in the future.
- 4.22. The in-year forecast produced as a baseline for the Draft Budget 2017-18 had a relatively small error at just £3 million. This is because Q1 accounted for a larger share of annual waste in 2016-17 than the previous year. As explained in paragraph 4.18, this Q1 figure was used to generate the 2016-17 estimate. This will be reviewed when the Commission makes its first forecast of Scottish Landfill Tax for the Draft Budget 2018-19.
- 4.23. The Commission will be responsible for producing forecasts of revenue from SLfT, starting with the Draft Budget 2018-19. The Commission is currently developing the model used by the Scottish Government in December 2016.



Abbreviations

ADS	Additional Dwelling Supplement
GDP	Gross Domestic Product
GERS	Government Expenditure & Revenue Scotland
HMRC	Her Majesty's Revenue and Customs
LBTT	Land and Buildings Transaction Tax
MCC	Material Change of Circumstances
NDR	Non-Domestic Rates
OBR	Office for Budget Responsibility
RPI	Retail Price Index
SDLT	Stamp Duty Land Tax
SEPA	Scottish Environmental Protection Agency
SG	The Scottish Government
SLfT	Scottish Landfill Tax

A full glossary of terms is available on our website.⁴⁸

⁴⁸ [link](#)

© Crown copyright 2017

This publication is available at www.fiscalcommission.scot

ISBN: 978-1-9998487-0-5

Published by the Scottish Fiscal Commission, September 2017

