Excerpt from: Note prepared for the Scottish Fiscal Commission meeting of 30th June 2016

6. Taxpayer behaviour change

Taxpayers will sometimes change their behaviour in response to a change in tax policy, and this can have an impact on revenues.

A review of the available UK and international literature on taxpayer behaviour was conducted. A short summary of this work is attached in Annex A. However, studies conducted in the US and UK may have only limited applicability in Scotland. In addition, taxpayer behaviour responses will differ over time, depend on the distribution of the taxpayer population and the policy landscape at the time the change in policy is made. In aggregate, this means that taxpayer behaviour responses to a change of policy in Scotland are very uncertain. One particular difference for Scotland as compared to these studies is labour mobility, particular with respect to relocating physically or on paper to the rest of the UK.

Following this review, a methodology for estimating the impact on tax revenues of taxpayer behaviour was created, primarily through applying Taxable Income Elasticities (TIEs). To reflect the uncertainty, a broad range of TIEs were selected.

A range of TIEs as set out in Table 10 are used.

Table 10: Scottish Government taxable income elasticities at marginal rate

Applied TIE	Basic Rate	Higher Rate	Additional Rate
Low	0.0	0.1	0.35
High	0.0	0.1	0.75

The TIEs only apply where a taxpayer sees a change in their marginal rate of tax. Basic rate taxpayers are not expected to change their behaviour in response to a change in tax rates. Higher rate taxpayers are expected to exhibit limited behaviour only. For additional rate taxpayers, their response to a change in their marginal rate is highly uncertain, and so a range of 0.35 – 0.75 is used.

The taxable income elasticities are multiplied by the change in marginal retention rates, including NICs, as a result of the policy. This value is then applied to total income within the tax band to produce a change in income being subject to taxation. Multiplying this by the average rate of tax on that income gives a final estimate of reduction in tax liabilities as a result of the behaviour change.

For a change in tax thresholds, only a small number of taxpayers will see a change in their marginal rate of tax, and the impact from a change in tax rates at the margin will be very

limited. However, taxpayers will not only respond to a change in their marginal rate of tax but may also respond to a change in their average rate of tax, for example when tax thresholds are changed. An additional set of assumption are applied to capture this potential behaviour for a change in taxes below an individual's marginal rate, as set out in Table 11.

Table 11: Scottish Government behaviour assumptions below marginal rate			
	Basic Rate	Higher Rate	Additional Rate
Value	0.0	0.1	0.35

These assumed values are applied directly to the additional liabilities of taxpayers in these bands where the change in liabilities is as a result of changes in their average rate of tax below their marginal band. These values are consistent with an approach used by HMRC.

These changes to taxpayer behaviour are applied both to the baseline forecast of income tax liabilities where there is a change in UK tax policy, and also to the proposed change in policy put forward by ministers in March.

7. Forecasts of income tax liabilities

The yield to the Scottish Government of a change in tax policy must be compared to a baseline. In this instance, the baseline is what income tax parameters would have been expected to be in Scotland had power over income tax not been devolved to Scotland. However, to create this baseline, the behavioural impacts of this baseline relative to no change in policy in the UK must also be considered.

It is possible to consider multiple counter-factual baselines which may change the way the results are presented. However, this would not affect the final forecast figures shown below. This section presents 3 forecasts of income tax liabilities:

1. Statutory indexation baseline
2. UK Government policy – post behaviour
3. SG proposed policy – post behaviour

Staturoy indexation is based on tax parameters increasing in line with inflation only from 2017/18. UK Government policy is assumed to be the personal allowance reaching £12,500 and the higher rate threshold reaching £50,000 by 2020/21. The proposed Scottish Government policy is for the higher rate threshold to increase by no more than inflation in each year. The Scottish Government will not have the power to vary the Personal Allowance. These tax parameter projections are shown in Table 12.

Table 12: Income tax parameters projections (£)						
	Statutory indexation		**UKG policy**		**SG proposed policy**	
	Personal Allowance	**Higher Rate Threshold**	**Personal Allowance**	**Higher Rate Threshold**	**Personal Allowance**	**Higher Rate Threshold**
2016/17	11,000	43,000	11,000	43,000	11,000	43,000
2017/18	11,099	43,387	11,500	45,000	11,500	43,387
2018/19	11,288	44,125	11,833	46,667	11,833	44,125
2019/20	11,536	45,095	12,167	48,333	12,167	45,095
2020/21	11,767	45,997	12,500	50,000	12,500	45,997
2021/22	12,002	46,917	12,750	51,000	12,750	46,917

Table 13 presents income tax liabilities forecasts under these different baselines and policies. Changes in income tax liabilities as a result of changes in policy from statutory indexation include the impact of behaviour.

Table 13: Income tax liabilities forecasts (£m)			
	Statutory indexation	**UK policy costing**	**Scottish policy costing**
2016/17	12,276	12,276	12,276
2017/18	13,249	12,945	13,050
2018/19	14,186	13,738	13,911
2019/20	15,116	14,567	14,795
2020/21	16,121	15,452	15,744
2021/22	17,112	16,413	16,725

Annex A –Summary and literature review of taxpayer behaviour

The structure of the income tax system is made up of rates, thresholds, exemptions, reliefs and allowances. Changes to any of these can lead to a large number of potential behaviours. With Smith Income Tax powers, the Scottish Parliament will be able to vary tax rates and the thresholds that determine on what income these rates are paid, but not the personal allowance.

In the first instance, behaviour responses may change the revenues costs or gains of a policy. Behaviour change would tend to erode revenues raised from an increase taxes, but would tend to lessen the cost of a tax cut. In addition, behaviour change may affect a number of other areas such as economic growth, employment or the distributional effects of the policy. This note provides a short summary of the types and scale of behaviour effects with respect to changes to income tax in Scotland. The note also provides an assessment of the available literature on taxpayer behaviour change.

Key points – Overview of income tax and behaviour change in Scotland

Behaviour covers a wide range of responses of taxpayers to a change in tax rates. This may include.

- Avoidance, artificially reducing one's tax liability, often through complex and convoluted but legal schemes. For example, tax motivated incorporation where individuals form companies and take taxable actions as companies subject to a different tax regime.
- Evasion, which illegally reduces tax liabilities. For example, failing to declare income to HMRC.
- Economic responses, such as individuals choosing to seek a job or increase their hours worked.
- Taxes may also affected migration, both into and out of Scotland.

In addition to existing and expected behaviour change from income tax in the UK such as the above, a divergent Scottish income tax will create new opportunities or motivations for behaviour change.

- A divergent UK and Scottish income tax system will create new opportunities for behaviour such as artificially shifting income to or from the UK or migrating into or from Scotland.

It is expected that, apart from for significant changes in taxes, the majority of taxpayers would change their behaviour little in response to a change in taxes.

- A basic rate or even a higher rate taxpayer who primarily has earnings from employment and pays tax through PAYE would have limited scope to avoid or evade tax.

- There may however be some impact on their incentives to work, in terms of the number of hours worked, as compared to studying, travelling, caring for the family and home etc.

However, it is the response of the highest earners that is of particular interest.

- These individuals have the greatest incentives to change their behaviour as they pay a lot of tax.
- They will also have greater means to change their behaviour, for example the money and connections to access sophisticated and expensive avoidance schemes.

Whilst significant changes in behaviour may be limited to a small number of high income individuals, these individuals pay large amounts of tax revenue, and so present disproportionate risks or opportunities for tax revenues.

- The highest earning 1% of income taxpayers in Scotland account for nearly 20% of all income tax revenues, the top 5% for 40%, and the top 10% for over 50% of income tax revenues.
- The top percentile (1%) of tax payers have average NSND tax liabilities of around £85,000, though tax liabilities for the very top taxpayers can be over £500,000 per year.
- This means that the behaviour of a small number of individuals may have a significant impact, positive or negative, on tax revenues.

Changes in tax rates will tend to provoke a greater behaviour response than changes in tax thresholds.

- Changes in tax thresholds will provide limited incentive to change behaviour. An increase in the Higher Rate Threshold of £1,000 would reduce the tax liabilities of all higher and additional rate taxpayers by exactly £200, and a reduction in the threshold would increase liabilities by the same amount. However, these taxpayers would still be paying the same tax rate on an additional pound earned. Therefore, it would not change their incentive to increase or decrease their income.
- A change in tax rates will tend to lead to greater changes in behaviour. For example, a reduction in the basic rate of income tax would provide an incentive for all basic rate taxpayers to increase their hours worked, as they would get to keep more of the additional pay. An increase in the basic rate would have the opposite effect.

Behaviour can be expected to be asymmetric and non-linear.

- Individuals tend to regard the impact of anticipated losses as having a higher cost than the value of anticipated gains. This suggests that taxpayers will respond more strongly to an increase in taxes than a tax cut.
- Larger changes in taxes may lead to disproportionately greater changes in behaviour.

The messaging around the tax change can be important

- Announcing a tax change well in advance of the change may encourage greater forestalling effects, either positively or negatively.

- Wider perceptions of the tax change can influence behaviour. Do taxpayers see the tax change as permanent or temporary? Might a tax cut necessarily lead to a tax increase elsewhere? Is the change indicative of a broader policy that may lead to Scotland becoming a high tax or low tax country?

Finally, the cumulative impact of multiple tax changes affecting broadly the same cohort of the population may be greater than the sum of individual impacts.

- Increasing or reducing only slightly the income tax liability of those on higher incomes may not have a significant impact on behaviour.
- However, if this is coupled with multiple policies affecting the after-tax income of high earners in the same direction, the compound effect could lead to greater behaviour change.

Quantifying the impact of behaviour change

The impact of behaviour change is highly uncertain and depends on the size and details of the policy change, the messaging around that change, the legislation defining how the tax is paid, how the policy change relates to other policies, and associated anti-avoidance and anti-evasion measures.

In addition, evidence from historical tax policy changes in the UK or abroad may have only limited transferability to future changes in Scottish income tax. Each policy change happens in a unique setting and context. What is generally agreed on is that the behavioural response of higher income taxpayers in particular can pose a risk to revenues when changing policy.

HMRC have a standard set of assumptions for modelling behaviour change, known as Taxable Income Elasticities (TIE's). The available literature provides a much broader range of possible TIEs.

Table A1 provides a summary of the available literature on taxpayer behaviour followed by a short assessment of each source.

Table A1: Summary of TIE estimates from available academic literature		
Author	**TIE estimates**	**Comments**
Gruber and Saez1 (2002)	For all incomes = 0.4; $10,000 to $50,000 = 0.18; $50,000 to $100,000 = 0.11; $100,000 and above = 0.57; For federal tax rate = 0.41 For state tax rate = 0.63	Looked at official US tax returns over 1980s Compared individual income differences over 3 years ~ 100,000 observations Estimates exclude income effect
Kopczuk (2005)2	Full sample = 0.21 High earners = 0.57	Looket at University of Michigan US tax returns data for the 1979 – 1990 period. Compared individual income differences over 3 years. Around 100,000 observations. Estimates sensitive to the model specification and sample
Brewer, Saez and Shephard (2008)3	Short-run = 0.08-0.41 Long-run = 0.64-0.86 Over full time series = 0.46	UK study – looked at incomes of richest 1% and 5% over the 1962 - 2003 period
Giertz (2010)4	Up to $10,000 = 0.3 – 0.36 Up to $50,000 = 0.33 – 0.54	Looked at official US 1989 – 1995 tax returns Over 150,000 observations. Compared individual income differences over 3 years
Saez, Slemrod and Giertz (2012)5	With time trends: Top 1% = 0.58 – 0.82 Next 9% = 0.47 Next 49% = 0.5	Looked at official US tax returns data over the 1960 – 2006 period. Showed importance of including time trend in estimations. Estimates for next 9% and 49% are calculated for the 1991 -1997 period. Compared individual income differences over 3 years

Gruber and Saez (2002)

Gruber and Saez (2002) looked at multiple tax changes that happened in the US over the 1980s and analysed tax returns data. They estimated how different individual incomes had changed in 3 year time intervals, e.g. comparing 1979 with 1982, 1980 with 1983 and so on. Since some budget announcements tend to concentrate on tax changes in a particular income class, looking over a longer period allowed them to capture a multitude of tax changes. Their final dataset consisted of around 100,000 observations. Such a large sample

[1] Gruber, Jon, and Saez, Emmanuel, 2002. The Elasticity of Taxable Income: Evidence and Implications, Journal of Public Economics, 84, 1-32.
[2] Kopczuk, Wojciech. 2005. “Tax Bases, Tax Rates and the Elasticity of Reported Income.” Journal of Public Economics 89 (11–12): 2093–2119..
[3] M. Brewer, E. Saez and A. Shephard, ‘Means-testing and tax rates on earnings’, 2008, IFS working paper: http://www.ifs.org.uk/mirrleesreview/press_docs/rates.pdf.
[4] Giertz, Seth H. 2010. “The Elasticity of Taxable Income during the 1990s: New Estimates and Sensitivity Analyses.” Southern Economic Journal 77 (2): 406–33.
[5] Saez, Emmanuel, Joel Slemrod, and Seth Giertz. 2012. \The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review," Journal of Economic Literature 50(1), 3-50.

allowed them to estimate average TIE for all incomes, as well as comparable TIEs for different income groups.

More interestingly in the context of Scottish income tax, Gruber and Saez studied how TIEs depend on whether the tax is changed at the federal or state level. According to them, taxpayer's respond more to a change in a regional tax rate.

Brewer, Saez and Shephard (2008)

Brewer, Saez and Shephard (2008) studied UK taxpayers behavioural responses to tax changes. They concentrated on the top 1% of income earners and observed how their incomes changed over short and long time intervals in the period of 1962 to 2003.

They argued that the behavioural response in the long-term can be higher than in the short-term as evidenced by their TIE estimates. TIE for the richest 1% between 1978 and 1981 is 0.08, and between 1986 and 1989 it is 0.41. However, when comparing incomes of the top 1% over longer periods of time, e.g. 1962 and 1978, the TIE estimate is much larger, 0.86.

However, the authors point out that there is a great deal of uncertainty around these estimates due to small sample size. Secondly, the period chosen saw the top rate of income tax falling only.

Giertz (2010)

Looking at 1989 – 1995 US tax return data, Giertz (2010) was able to show that TIE estimates that compare taxable incomes over one-year periods and six-year periods were unreliable. He showed that 3-year comparisons were most reliable for TIE estimation.

Saez, Slemrod and Giertz (2012)6

This study developed further the research on the relationship between US tax changes and taxable incomes.

US tax returns data for the period of 1960 to 2006 was used by Saez, Slemrod and Giertz. They concluded, that a time trend plays a big part in TIE estimation. They showed that adding time trend reduces TIE estimates and the more complicated the time trend that is taken into account (linear, square and cube time trends), the smaller the TIE becomes.

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[6] Saez, Emmanuel, Joel Slemrod, and Seth Giertz. 2012. \The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review," Journal of Economic Literature 50(1), 3-50.

Moreover, the most reliable estimates available in the literature are the short-term response to tax rate changes. In that case, because of forestalling, one must be careful to distinguish the response to anticipated versus unanticipated tax changes.

Application to Scotland

One option for modelling behaviour in Scotland would be to apply HMRC TIEs. A change in income tax in Scotland would share many similarities with a change in income tax in the UK. The legislative and operational workings of income tax in Scotland and the UK will be the same, and the Scottish and UK economies are similar. However, there are a few key differences:

- Income tax in Scotland will apply to non-saving non-dividend (NSND) income only. Whilst NSND income accounts for over 95% of all income in Scotland, there may be greater avoidance opportunities for income from savings and dividends. This may reduce the scale of potential behaviour for changes made by the Scottish Government.
- Whilst HMRC TIEs will take account of the potential for international migration behaviour, they would not take account of potential intra-UK migration. This could either be real migration or on paper only for tax avoidance, which will depend on enforcement. This may increase the scale of potential behaviour.
- The population of very high earners in Scotland is different to that in the UK. Scotland has relatively fewer very high earners, and their circumstances and responses may be different to the very high earners in London who will drive UK income tax receipts. This will have an uncertain effect on the scale of potential behaviour.

Given the uncertainties OCEA have created a set of low – high TIEs that can be applied to changes in income tax as shown in Table A2:

Table A2: Scottish Government taxable income elasticities at marginal rate

Applied TIE	Basic Rate	Higher Rate	Additional Rate
Low	0.0	0.1	0.35
High	0.0	0.1	0.75