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UK Taxes and Tax Revenues: Composition and Trends

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Abstract

This study looks at the composition and trends of tax revenues in the UK. It provides a brief overview of the rather complicated system of different taxes in the UK. Three main taxes—personal income tax, national insurance contributions (NICs) and value added tax (VAT)—are shown to account for about three quarters of all tax revenues and that this has been stable over a period of time. In comparison to other countries the UK is similar in its tax composition to both the US and France, where the same three types of tax dominate revenues. It is much less similar to both Malaysia and Argentina. The study examines monthly UK tax revenues for these three taxes, using econometrically estimated trends. It finds that, in constant price terms, revenues have grown slowly and steadily over time, broadly keeping pace with growth in real GDP. Tax revenue forecasting in the UK is mainly undertaken by an independent body which publishes forecasts at the level of receipts for individual taxes. This considerably reduces the risk of political bias in these revenue forecasts.

Keywords: UK, tax composition trends revenues forecasting

1. Introduction

The UK tax system includes a wide range of different taxes. The system is complex and interested readers are referred to Pope and Waters [1] for a more complete survey. The main taxes include:

- Personal income tax. Almost all forms of income are subject to tax but the rate of tax applied is determined by a series of income bands and subject to allowances against tax. Every taxpayer is given a personal allowance (£11,000 in 2016–2017) which is deducted from their pre-tax income before income tax is levied. The allowance is reduced for incomes over £100,000. The rate of tax varies according to bands. In 2016–2017 the basic tax rate of 20%

was applied up to an income of £32,000, a higher rate of 40% for incomes between £31,785 and £150,000 and an additional rate band of 45% for income over £150,000. The UK Government estimates there to be about 30.1 million income tax payers in 2016–2017, including some 609,000 basic rate (only) payers and about 4.4 million in the highest band.

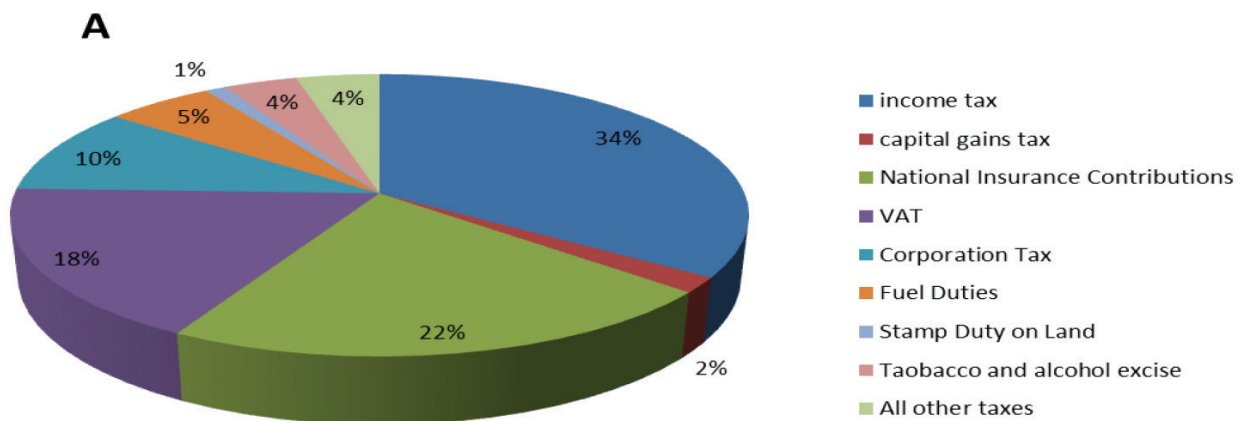
- **National Insurance Contributions (NICs).** The origins of NICs were as compulsory contribution to a National Insurance fund, which was linked to benefits that could be paid to the contributor. Over the years the link between contributions and payments has gradually disappeared and there is now considerable overlap between NICs and the general budget. Employers and employees are subject to NIC's (at different rates) and the self-employed at a different rate again. The NIC rate for income from employment between £155 and £827 per week was 12% in 2016–2017.
- **Corporation tax.** This tax is levied on the profits of UK resident corporations and on the UK profits of non-resident corporations. Losses may be offset against future profits for tax purposes. The rate of corporation for the 2017–2018 tax year is scheduled at 19%.
- **Value added Tax (VAT).** Value added is a tax on the value added at each stage of production. By the stage of final consumption it is, in effect, levied on the value of the good or service. The standard rate of VAT is currently 20%. A small number of goods are taxed at a reduced rate and a range of products are exempt from VAT in the UK.
- **Excise taxes.** Excise duties are levied on alcoholic drinks, fuels and tobacco products. These duties are typically levied at a specific rate (for example, per litre) but there is also an *ad valorem* component.
- **Capital gains tax.** This tax is applied to the gains accruing from the buying and selling of financial and other assets. Like income tax there is a tax free threshold (£11,100 for individuals in 2016–2017). The rate of capital gains tax varies according to the individual's income tax band.
- **Council tax.** The revenues from council tax go to local rather than national government. Council tax is levied on an assessed value of domestic residences, with the rate of tax depending on within which band the assessed value of the property falls.
- **Business rates.** These are another tax which generates local rather than national government revenues. They are levied on the assessed rentable value of business and commercial properties.
- **Inheritance tax.** Inheritance tax applies to transfers of assets in excess of £325,000 after or immediately before death. The standard rate is 40% of the value exceeding £325,000. Some reduced rates and exemptions apply.
- **Other taxes.** These include stamp duty levied on transactions involving assets such as land, property and financial securities. Taxation of North Sea oil and gas is, essentially, a variant of corporation tax. A bank levy is applied to the liabilities and equity of banks. A number of indirect taxes also exist. These include an excise tax on motor vehicles, air passenger duty, a climate change levy, an insurance premium tax, a landfill tax and duties on gambling

The complexity of the UK tax system necessitates a degree of simplification to understand its effects and key underlying trends. In particular it makes sense to consider the composition of tax revenues in the UK—to identify which taxes make the most important contributions to government revenues and how they have evolved over time.

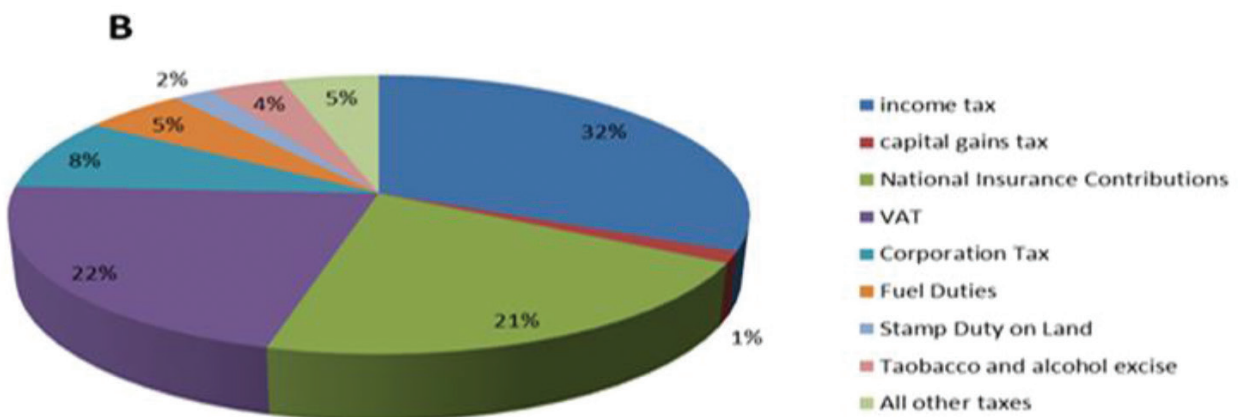
2. The composition of UK tax revenues

2.1. UK tax revenues by type of tax

Figure 1A shows the composition of UK tax revenues for the tax year 2008–2009 and **Figure 1B** the composition in 2015–2016.



Source: HMRC Statistics



Source: HMRC Statistics

Figure 1. (A) Composition of UK tax receipts for tax year 2008–2009. (B) Composition of UK tax receipts 2015–2016.

In terms of trends the composition of UK tax revenues by type of tax has been stable between 2008 and 2009 and 2015–2016. In 2008–2009 income tax accounted for 34% of total tax revenues and in 2015–2016, in both periods representing the largest revenues for any of the taxes. The next largest contributor to overall tax revenues in 2015–2016 was VAT, comprising 22% of revenues (against 18% in 2008–2009). The contribution of NICs declined slightly in relative importance from 22% of revenues in 2008–2009 to 21% in 2015–2016. Very roughly about three quarters of UK tax revenues in both 2008–2009 and 2015–2016 was made up from three taxes—income tax, NICs and VAT. Corporation tax, the next biggest contributor, declined slightly in relative importance from 2008–2009 to 2015–2016.

Table 1 provides details of the revenues of individual taxes and their evolution over time. As has already been seen three taxes jointly provide about 75% of total UK tax revenues—income tax, NICs and VAT. Fuel duties have consistently yielded significant revenues (£27.6 billion in 2015–2016). A range of excise duties on tobacco and alcoholic drinks yielded a combined

| | 1999-00 | 2005-06 | 2009-10 | 2015-16 |
|-----------------------------------|---------|---------|---------|---------|
| Total HMRC receipts | 294,177 | 402,874 | 414,920 | 533,686 |
| Income Tax | 93,910 | 134,916 | 144,881 | 168,451 |
| Capital Gains Tax | 2,122 | 3,042 | 2,491 | 7,060 |
| NICs | 56,354 | 85,522 | 95,517 | 113,701 |
| VAT | 56,779 | 72,856 | 70,160 | 115,415 |
| Corporation Tax (Onshore) | 33,054 | 35,048 | 31,630 | 43,872 |
| Corporation Tax (Offshore) | 1,268 | 7,307 | 4,998 | 538 |
| Bank Levy | - | - | - | 3,392 |
| Petroleum Revenue Tax | 853 | 2,016 | 923 | -562 |
| North Sea Revenues | 2,121 | 9,323 | 5,921 | -24 |
| Fuel duties | 22,515 | 23,438 | 26,197 | 27,623 |
| IHT | 2,047 | 3,259 | 2,384 | 4,650 |
| Shares | 3,711 | 3,465 | 3,017 | 3,320 |
| Stamp Duty Land Tax | 3,184 | 7,454 | 4,886 | 10,682 |
| Tobacco duties | 5,683 | 7,959 | 8,813 | 9,485 |
| Spirits duties | 1,804 | 2,309 | 2,570 | 3,147 |
| Beer duties | 2,813 | 3,076 | 3,182 | 3,271 |
| Wines duties | 1,657 | 2,308 | 2,949 | 3,973 |
| Cider duties | 155 | 168 | 311 | 296 |
| Betting & Gaming | 1,514 | 1,421 | 1,439 | 2,666 |
| Air Passenger Duty | 882 | 905 | 1,856 | 3,077 |
| Insurance Premium Tax | 1,423 | 2,343 | 2,259 | 3,293 |
| Landfill Tax | 430 | 733 | 842 | 919 |
| Climate Change Levy | - | 744 | 695 | 1,763 |
| Aggregates Levy | - | 326 | 275 | 356 |
| Customs Duties | 2,043 | 2,258 | 2,646 | 3,089 |
| Source: HMRC Statistics | | | | |

Table 1. Decomposition of UK tax revenues (£ million).

total of about £20 billion in the 2015–2016 tax year. Of the smaller taxes Stamp Duty Land Tax has shown a substantial increase in revenues between 1999 and 2016, as has capital gains tax and air passenger duty. Revenues from some taxes such as that on petroleum revenue have tended to exhibit volatility between 1 year and another but revenues from most taxes show a pattern of steady evolution over time.

In terms of tax revenues from the different types of tax levied the composition of UK tax revenues is remarkably stable. The most important contributions to UK tax revenues have remained the same for a number of years and their shares in overall revenues have changed little. Arguably the only noteworthy change between 2008 and 2009 and 2015–2016 is an increase in the relative importance of VAT receipts at the expense (mainly) of income tax and NICs.

2.2. Tax revenues by country within the UK

Figure 2 presents the composition of UK tax revenues by component country for three different time periods—2000–2001, 2007–2008 and 2015–2016.

The results show a stable pattern of UK tax receipts by country. In all three time periods Northern Ireland accounts for about 2% of total tax revenues, Wales for 3–4% and Scotland

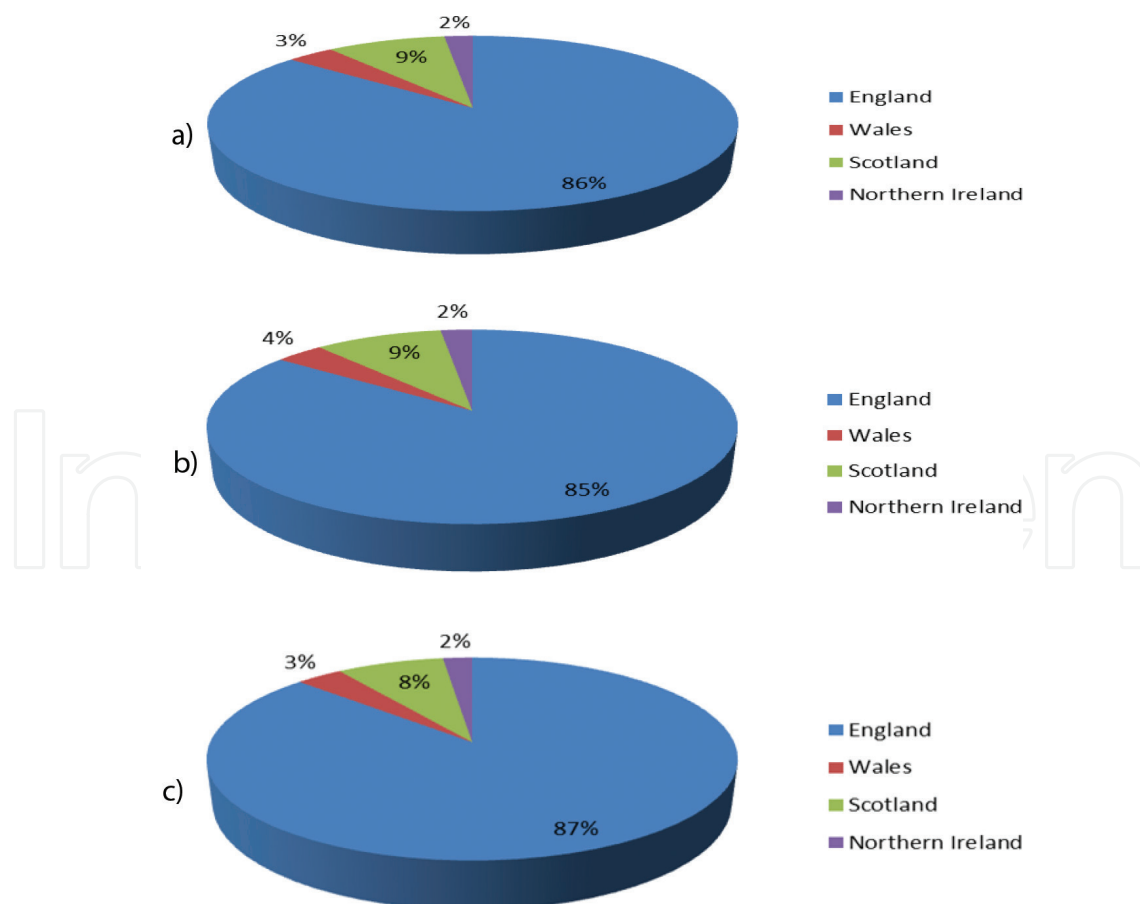


Figure 2. UK tax receipts by country (a) 2000–2001, (b) 2007–2008, and (c) 2015–2016.

for 8–9%. In each time revenues from England dominate the UK total. Receipts from England accounted for 86% of the total in 2000–2001 and 87% of the total in 2015–2016.

3. International comparisons

Figure 3 compares tax revenues as a percentage of GDP for a sample of countries for both 1995 and 2014. The UK is slightly below the average for all OECD countries (33% in 1995 and 34% in 2014). As a share of GDP the UK’s tax revenues increased slightly from about 30% in 1995 to approximately 32% in 2014. For the majority of other countries in the sample such changes that occurred in the share of tax in GDP tended to be modest. In consequence, countries such as Chile, the United States and Switzerland were low tax in both 1995 and 2014. High tax countries in both 1995 and 2014 included Denmark, France and Italy.

Countries which showed significant increases in the share of tax in GDP between 1995 and 2014 included Turkey and Greece. Countries with a significant reduction in the share of tax in GDP included Slovakia and Poland.

3.1. International comparisons in tax composition

Table 2 presents comparisons between the UK and several other countries in the composition of their tax revenues at several points in the period between 1990 and 2014.

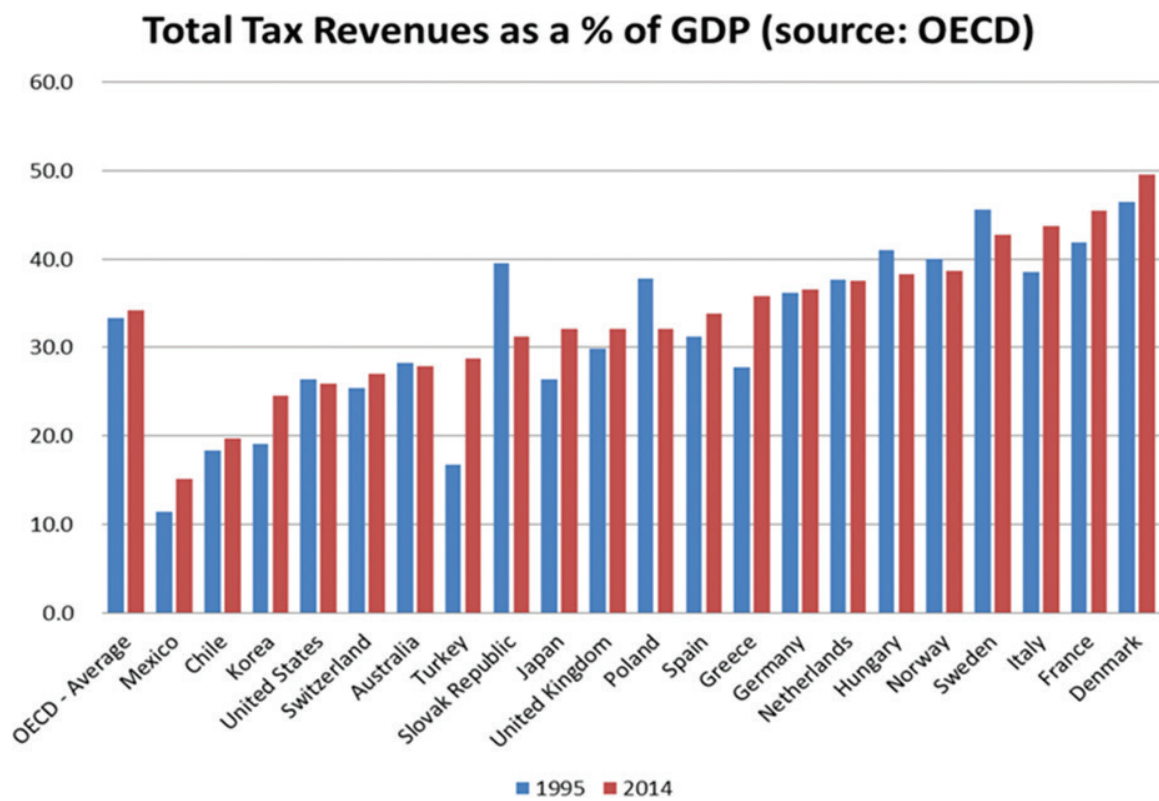


Figure 3. International comparisons of the tax burden.

| UK | 1990 | 2000 | 2005 | 2010 | 2014 |
|---|-------------|-------------|-------------|-------------|-------------|
| Taxes on income, profits and capital gains of individuals | 29.4% | 29.3% | 29.1% | 28.7% | 27.4% |
| Taxes on income, profits and capital gains of corporates | 9.9% | 9.7% | 9.3% | 8.7% | 7.5% |
| Social security contributions (SSC) | 17.0% | 17.0% | 18.9% | 19.0% | 18.7% |
| Taxes on payroll and workforce | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Taxes on property | 8.2% | 11.6% | 12.0% | 12.0% | 12.7% |
| Taxes on goods and services | 31.0% | 31.9% | 30.3% | 30.9% | 33.2% |
| United States | | | | | |
| Taxes on income, profits and capital gains of individuals | 37.7% | 42.2% | 35.4% | 34.8% | 39.3% |
| Taxes on income, profits and capital gains of corporates | 7.5% | 7.9% | 11.0% | 7.6% | 8.4% |
| Social security contributions (SSC) | 25.6% | 23.6% | 24.5% | 26.1% | 24.1% |
| Taxes on payroll and workforce | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Taxes on property | 11.6% | 10.2% | 11.4% | 13.1% | 10.8% |
| Taxes on goods and services | 17.6% | 16.1% | 17.7% | 18.3% | 17.4% |
| France | | | | | |
| Taxes on income, profits and capital gains of individuals | 10.7% | 18.0% | 18.0% | 17.1% | 18.7% |
| Taxes on income, profits and capital gains of corporates | 5.3% | 6.9% | 5.5% | 5.6% | 5.1% |
| Social security contributions (SSC) | 44.1% | 36.0% | 37.0% | 38.4% | 37.4% |
| Taxes on payroll and workforce | 1.9% | 2.3% | 2.7% | 3.2% | 3.5% |
| Taxes on property | 6.3% | 6.9% | 7.7% | 8.4% | 8.5% |
| Taxes on goods and services | 28.4% | 25.9% | 25.5% | 24.9% | 24.1% |
| Malaysia | | | | | |
| Taxes on income, profits and capital gains of individuals | 11.0% | 13.5% | 9.9% | 15.1% | 13.9% |
| Taxes on income, profits and capital gains of corporates | 31.4% | 38.4% | 46.8% | 46.6% | 52.6% |
| Social security contributions (SSC) | 0.0% | 1.9% | 1.6% | 1.7% | 1.5% |
| Taxes on payroll and workforce | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Taxes on property | 3.1% | 3.4% | 3.9% | 4.0% | 3.4% |
| Taxes on goods and services | 51.3% | 38.4% | 33.4% | 27.3% | 22.8% |
| Argentina | | | | | |
| Taxes on income, profits and capital gains of individuals | 0.1% | 6.4% | 5.7% | 5.0% | 8.8% |
| Taxes on income, profits and capital gains of corporates | 0.0% | 10.8% | 13.7% | 10.5% | 9.3% |
| Social security contributions (SSC) | 25.3% | 15.8% | 12.2% | 21.2% | 21.6% |
| Taxes on payroll and workforce | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Taxes on property | 12.7% | 6.4% | 11.2% | 9.0% | 9.1% |
| Taxes on goods and services | 55.7% | 56.5% | 54.6% | 52.4% | 49.5% |
| Source: OECD Tax Statistics | | | | | |

Table 2. International comparisons in the composition of tax revenues.

For the US income tax is the single largest contributor to overall tax revenues, accounting for about 39% of total revenues in 2014. For the UK, in contrast, income tax was the second largest source of revenues at about 27% of the total in 2014. For the UK, VAT was the largest contributor at around 33%. In both the UK and the US the contribution of taxes on corporate income and on property are of broadly comparable significance. The US also differs from the UK with a greater contribution of social security payments but a substantially lower relative contribution from taxes on goods and services.

In France the relative contribution of social security to overall tax revenues (37% in 2014) is close to double that of the UK (19% in 2014). The UK earns proportionately more from personal income tax, corporate income tax and from taxes on goods and services than does France.

The composition of Malaysian tax revenues is almost wholly different to that of the UK. In Malaysia in 2014 receipts from taxes on corporate income accounted for about 53% of total tax revenues. The comparable figure for the UK was just 7.5%. Social security contributions and property taxes account only for a minimal share of Malaysian tax revenues but represent a more significant share of overall UK revenues. Personal income tax in the UK is approximately double the share of tax revenues of that in Malaysia (14% compared to 27% in 2014).

Argentina too has a fundamentally different composition of tax revenues than the UK. In the UK revenues from personal income tax represent the second largest share of overall receipts. In Argentina they accounted for less than 9% of the total, even less in earlier years. Taxes on goods and services are the dominant source of tax revenues for Argentina, accounting for almost 50% of total revenues. In the UK they are the single largest contributor but still account for approximately one third of the total.

4. Trends in UK tax revenues

Figure 4 plots monthly revenues from personal income tax between January 2002 and September 2016. These are measured in constant price terms, using the UK retail price index to adjust. To the extent that these tax revenues are dominated by income from employment it might be expected that monthly revenues would be fairly stable over time. In contrast, **Figure 4** shows that revenues from personal income exhibit a high degree of volatility over time To provide a clearer a trend was fitted by using a simple linear regression in Eviews7. The results of this estimated trend are also reported in **Figure 4**. This shows a slight and steady increase in the real value of revenues from personal income tax over the period.

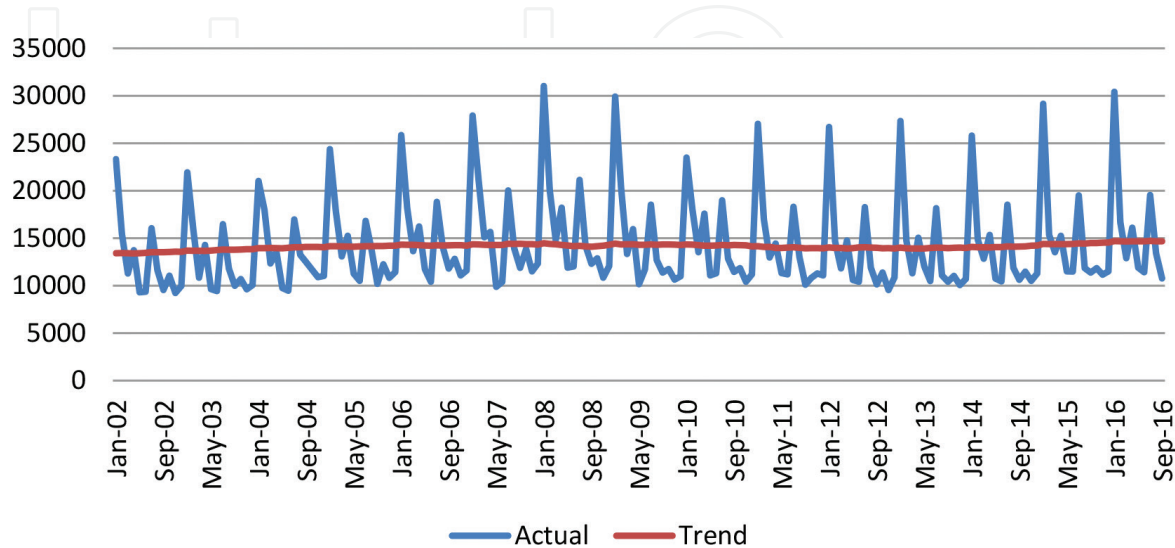


Figure 4. Personal income tax revenues in constant prices (May 2014 = 100).

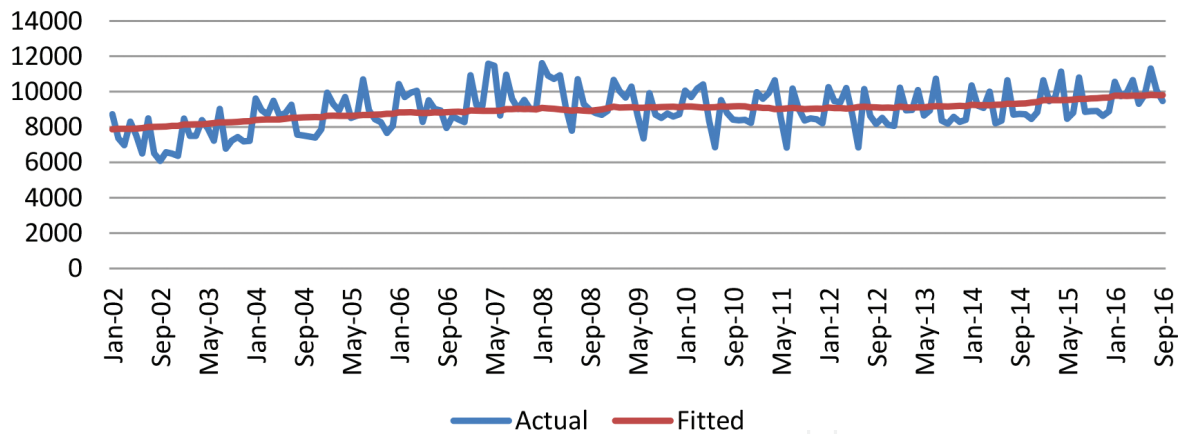


Figure 5. Monthly NIC revenues (constant prices).

Figure 5 presents a similar analysis for National Insurance Contribution (NIC) revenues over the same period (January 2002–September 2016) in constant price terms. As with personal income tax monthly revenues exhibit considerable volatility. Again a trend was fitted using an OLS regression in Eviews7. The trend, as with personal income tax, shows a steady rise in the real value of NICs over the period.

Figure 6 presents monthly data on VAT revenues from April 2008 until August 2016 (earlier data were not available). Yet again receipts show considerable volatility over time. As with both personal income tax and NICs OLS regression was used to construct a trend line. The trend, as with the other two taxes, has been for a steady but gradual increase in revenues from VAT.

Finally, **Figure 7** presents a similar graphical analysis for monthly UK tax revenues (measured in constant price terms) from the period April 2008–September 2016. As with the earlier charts a trend was estimated using OLS regression in Eviews7. Total tax revenues (as shown by the trend line) remain volatile from 1 month to another but the trend is almost constant in real terms, exhibiting a very slight and gradual increase over the period.

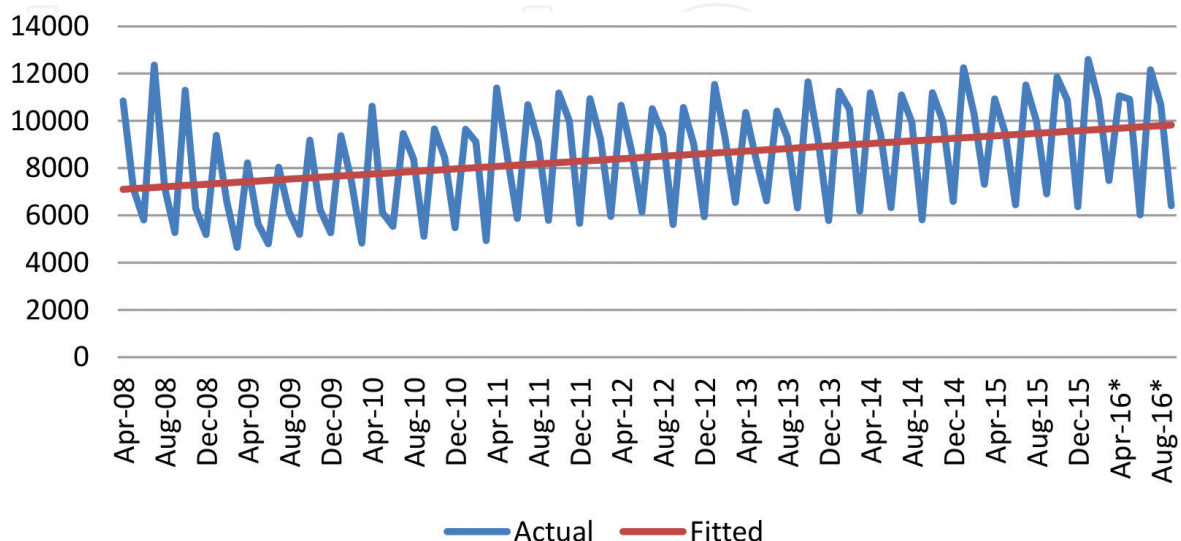


Figure 6. Monthly VAT revenues (constant prices).

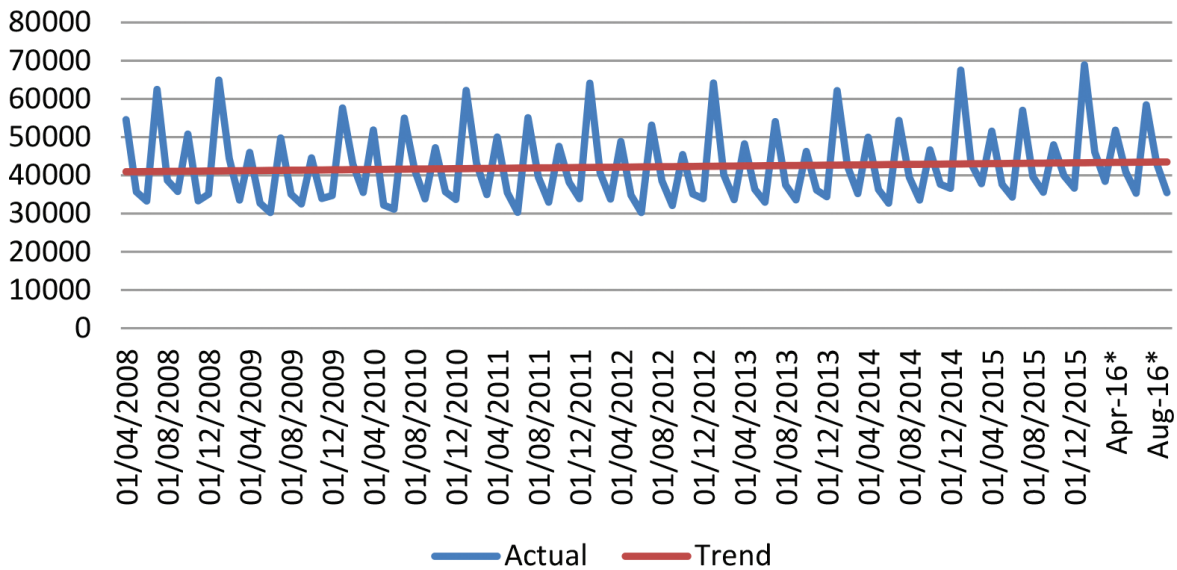


Figure 7. Total monthly tax revenues (in constant prices).

Taken overall, the figures for individual taxes and for overall tax revenues all share more or less common trends. That is, tax revenues in constant prices terms have tended to be stable over longer periods of time (the trend) but volatile between 1 month and another. The trend is for the real value of tax revenues to grow slowly and slightly i.

5. Forecasting UK tax revenues

An extensive literature exists concerning political bias in budgetary and tax revenue forecasting. Bischoff and Gohout [2] found some evidence of upward bias in tax projections in West German states. Buettner and Kauder [3], also working with data from Germany, found that Federal tax revenue forecasts were typically unbiased but still influenced by government. Jochimsen and Lehmann [4] examined national tax revenue forecasts for a sample of 18 OECD countries. They find strong support for a politically partisan effect on national forecasts of tax revenues. Brogan [5] in a study of US states found evidence of systematic under forecasting of tax revenues. Brück and Stephan [6] studied budget deficit forecasts for a sample of Eurozone countries. They found evidence of an association between politics and systematic over or under forecasting with, of course, some countries performing worse than others in this respect. Perhaps one of the most extensive and systematic studies of political influence on budget (and tax revenue) forecasting was provided by Frankel [7]. This found evidence of systematic bias in official forecasts.

Another closely related strand of the literature addresses how political influence on tax revenue forecasting might be reduced. Concern with politically influenced government revenue forecasting has led some authors such as Auerbach [8] to advocate budget rules, combined with better forecasting techniques. Frankel [7] finds budget rules not to be particularly effective but instead found the use of independent expert panels to reduce forecast bias. Frankel and

2015-16 VAT forecast errors

| | £ billion | | | | | |
|---------------------|-----------|---------|-------|------------------|---------------------------|----------------|
| | Forecast | Outturn | Error | of which: | | |
| | | | | Economic factors | Fiscal forecasting errors | Policy changes |
| March 2014 forecast | 115 | 116.4 | 1.4 | -1.9 | 3.8 | -0.4 |
| March 2015 forecast | 114.3 | 116.4 | 2.1 | -0.7 | 2.8 | 0 |

Source: Office for Budget Responsibility, October 2016 report

Table 3. Specimen OBR revenue forecast evaluation.

Schreger [9] studied government revenue and budget forecasts in Eurozone countries, finding lower bias in those countries that have adopted budget rules. Leal et al. [10] argue in favour of transparent methods in revenue forecasting combined with clear procedures. Jonung and Larch [11] analysed the link between policy and forecasts and considered how the policy framework might be reformed to reduce influence on revenue forecasts. They argue strongly that revenue forecasts should be conducted by an independent authority to reduce potential political bias.

In the UK precisely such an independent authority exists. The *Office for Budget Responsibility* (OBR) was established by government in 2010. Its function is to provide independent analysis of public finance. Specifically it has five main roles:

- To produce detailed 5 year forecasts twice per year
- Evaluation of government performance in relation to its fiscal targets
- Assessment of the sustainability of public finances
- Fiscal risk evaluation
- Scrutiny of the costing of government tax and welfare measures

The OBR produces forecasts for overall revenues and also on a tax by tax basis. They use a variety of different modelling and forecasting techniques. A crude generalization would be that those taxes most closely related to economic behaviour such as personal income tax, NICs and VAT tend to be forecasted using a detailed structural of the economy. Other, smaller taxes, less obviously related to the business cycle are sometimes forecast by time series methods.

OBR reports do not just provide forecasts but also an evaluation of errors in past forecasts. A specimen of such an evaluation from the OBR's October 2016 report [12] is reproduced below (**Table 3**).

6. Local taxes

Table 4 reports collections of the two main local taxes—council tax and non-domestic rates. The information is for England rather than the UK as a whole. Collections of both taxes are

| Tax Year | Council tax | | Non-domestic rates | |
|---------------------------------------|------------------------|---|------------------------|---|
| | Collected £ million | Relative to national tax receipts | Collected £ million | Relative to national tax receipts |
| 2011–12 | 22,083 | 5.4% | 20,824 | 5.1% |
| 2012–13 | 22,378 | 5.5% | 21,873 | 5.3% |
| 2013–14 | 23,386 | 5.5% | 22,661 | 5.3% |
| 2014–15 | 24,052 | 5.4% | 23,066 | 5.2% |
| 2015–16 | 24,782 | 5.3% | 23,621 | 5.1% |
| Source: Office of National Statistics | | | | |

Table 4. Local tax collections for England.

reported both in terms of value and in relation to national tax receipts. Collections of local taxes are not included in the national tax receipts figure so the percentages are not shares, just a guide to the relative significance of local taxes.

The results show that receipts from local taxes have broadly kept pace with national tax receipts from 2011 to 2012 until the most recent tax year. The two local taxes combined have consistently raised revenues roughly equivalent to 10% of national tax receipts.

7. Conclusions

This review of the composition and trend in UK tax revenues has provided an insight into a complex system of different taxes. In the UK there are a multitude of different taxes at national level. Given such a number of different taxes looking at the revenues derived from each is important for prioritization, both from the perspective of budget planning and for analysis of the likely macro-economic impact.

In terms of overall taxation relative to GDP the UK is neither a particularly heavily taxed economy nor is it particularly lightly taxed. For the sample of countries used in **Figure 3** the UK was about mid-range in terms of tax revenues as a percentage of GDP both in 1995 and 2014. The share of tax in GDP in the UK has remained relatively stable at approximately 30%.

UK tax revenues in 2015–2016 were dominated by three taxes—personal income tax (32% of total receipts), VAT (22% of the total) and NICs (21%). These three taxes jointly accounted for $\frac{3}{4}$ of all tax revenues in that year. The composition of UK tax revenues has also tended to be stable over time. For example, the share of the three most important taxes in 2008–2009 was also a little over three quarters of the total.

In comparison to other countries UK tax revenues have a degree of similarity to the US and to France, where personal income tax, social security contributions and taxes on goods and services also dominate revenues. The source of revenues for Malaysia, where revenues are dominated by taxes on corporate income, are very different to those for the UK. Argentina is different again in that revenues from personal income tax only account for a small share of the total, with taxes on goods and services accounting for about 50% of revenues.

To further examine trends in the UK tax revenues this study examined monthly tax receipts for these three most important taxes. Monthly receipts show significant fluctuations over time so we fitted an econometric trend to these data, having first converted them to constant price terms. For all of the three main taxes the trend (in constant price terms) has been for the real value of tax revenues to increase in a slow but steady way. That is, the increase in the real value of tax revenues has more or less kept pace with growth in real GDP.

The literature on budgetary forecasting (including tax revenues) provides evidence of potential political bias in the forecasts of many countries. In the UK tax revenue forecasts are provided by the independent Office for Budget Responsibility (OBR). The OBR publish not only revenue forecasts at the level of individual taxes but also retrospective information on the sources of error in past forecasts.

Finally, the study included an examination of revenues collected in England by local government from the two main local taxes—council tax and non-domestic rates. Revenues from each of these taxes have remained stable in relation to national tax revenues. Each tax has yielded receipts roughly equivalent to 5% of national tax revenues for a period of years.

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