

Measuring indirect tax losses

November 2002



HM Customs and Excise



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1

INTRODUCTION

1.1 *Protecting indirect tax revenues*, published alongside this technical paper, describes the Government's strategic approach to tackling revenue losses, based on assessing the size and nature of each problem, setting clear objectives and targets for tackling it, identifying the operational responses required to achieve those targets and monitoring the delivery of results.

1.2 Detailed estimates of the full scale of VAT revenue losses are published in this paper for the first time. Updated estimates for VAT Missing Trader Fraud and the main excise regimes are also supplied along with details of the methodologies and data sources used to produce these estimates, and descriptions of improvements made to previously-published methodologies.

1.3 The Government has now published full assessments of the revenue losses arising in relation to all the major indirect tax regimes, something which has not previously been done in the UK or in any other EU Member State on such a comprehensive basis.

1.4 Measuring the scale of and trends in avoidance and evasion is not only inherently difficult, but – as indicated above – is also a relatively untested area of work for governments in the EU and around the world. Nevertheless, Customs has developed estimates for the UK that it believes are the best possible, based on all the information available.

1.5 Two complementary approaches to estimating indirect tax losses have been used and referred to throughout this document:

- **top-down**, which entails comparing levels of total consumption or the theoretical tax liability with UK tax paid purchases and assuming that the difference represents the total revenue loss, commonly referred to as a 'gap analysis'; and
- **bottom-up**, which entails obtaining direct measures of levels of losses by various methods, such as targeted surveys or through the use of Customs' administrative and operational data.

1.6 Further detail on how these two approaches have been employed is given in the respective sections on VAT and excise losses in this paper.

1.7 This paper should be read in conjunction not only with *Protecting indirect tax revenues* but also with the technical paper published alongside the 2001 Pre-Budget Report, entitled *Measuring indirect tax fraud*, which spelt out in more detail the methodologies behind these estimates.

1.8 As with *Measuring indirect tax fraud*, Customs would welcome views on the contents of this paper from businesses, academic experts and other interested parties, with a view to discussing and where possible improving these methodologies further.

1.9 To give comments, or request further copies of these papers, please contact the address or telephone number below:

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2 VAT

ESTIMATING VAT LOSSES

2.1 Two separate approaches have been used in the estimation of revenue losses within the VAT system:

- the first involves estimation of VAT losses as the difference between the theoretical VAT liability (i.e. the total amount of VAT that ought to be collected) and actual VAT receipts. This is a comprehensive and global measure based on independent statistical data. It is described in this paper as the **‘top-down’** approach; and
- the second uses Customs’ operational and intelligence data as well as other sources of information to produce estimates of revenue losses attributable to specific problems (i.e. avoidance, VAT Missing Trader Fraud, the failure of businesses to register when operating above the VAT turnover threshold, and general non-compliance). This is described as the **‘bottom-up’** approach.

2.2 It is important to note that any ‘overall’ estimate of the revenue losses derived from either the top-down or bottom-up approach is of use primarily in generating an assessment of the scale of the revenue loss problems, and in developing and monitoring the impact of a strategy to reduce those overall losses.

Nature of VAT losses

2.3 What an overall estimate does not do is illustrate the very wide and complex variety of individual problems which contribute towards those losses, and the fact that any strategy seeking to reduce the overall losses:

- must be specially-tailored and proportionate to each individual type of revenue loss problem; and
- must accept that the complete elimination of these losses is neither realistic nor desirable.

2.4 This is explained in more detail in Section 3 of the *Protecting indirect tax revenues* document, key extracts from which are included below:

“Despite having the highest registration threshold in the EU, there are 1.7 million businesses registered for VAT within the UK. They submitted around five million VAT returns in 2001-02, declaring more than £280 billion of output VAT and £15 billion of import VAT, and claiming back more than £235 billion in input VAT.

Given the significant number of businesses and the amount of revenue involved, it has long been accepted as fact that there will be some shortfall between the actual VAT receipts collected by the Exchequer and the VAT that would be collected if all businesses paid the right amount of VAT at the right time.

The shortfall in VAT revenues has historically arisen from a wide range of business behaviours across what may be described as the ‘non-compliance’ spectrum. This range includes:

- *making mistakes when submitting VAT returns;*
- *failing to submit VAT returns on time;*
- *defaulting on payments;*
- *failing to register for VAT when moving above the registration threshold;*
- *engaging in artificial tax avoidance schemes to delay VAT payments;*
- *engaging in abusive tax avoidance schemes to reduce or avoid liabilities;*
- *deliberately under-reporting liabilities when completing VAT returns;*
- *operating a large-scale business in the shadow economy; and*
- *committing organised fraud against the VAT system.*

While some of the most serious VAT revenue losses result from organised criminal fraud, the bulk of the losses therefore occur either because of abusive tax avoidance or because – at the other end of the spectrum – thousands of ordinary businesses are looking to gain relatively small financial advantages by delaying or reducing their VAT payments, are failing to meet requirements or are simply making mistakes.

In this context, it is neither realistic nor desirable that Customs try to eliminate these losses entirely. To do so would require such close and rigid control on the business population that the administration of the tax would become highly costly, inefficient and poorly-targeted, and UK businesses would face such high compliance and regulatory costs that the economy as a whole would be damaged.”

TOP-DOWN ESTIMATE OF VAT LOSSES

2.5 The advantage of a top-down approach is that an estimate of theoretical VAT liability is constructed largely from Office for National Statistics (ONS) national accounts sources independent of the VAT administrative system.

2.6 An independent estimate of the tax that should theoretically be collected is an important starting point in measuring how much is not, and - in principle - this top-down approach may be able to pick up losses either not included or incorrectly quantified in the ‘bottom-up’ approach.

2.7 The top-down approach for VAT employs a gap analysis, which involves:

- assessing the total amount of expenditure in the economy that is theoretically liable for VAT;
- estimating the tax liability on that expenditure based on commodity breakdowns of the expenditure data;
- deducting any legitimate reductions in the VAT liability occurring through schemes and reliefs to arrive at the VAT theoretical tax liability (VTTL);
- deducting actual VAT receipts; and
- assuming that the residual element - the gap - is the total VAT loss due to any cause, including non-compliance, avoidance and fraud.

2.8 The following sub-sections describe the steps taken in producing an analysis of the VTTL and tax gap over the period 1990-91 to 2001-02.

VAT Theoretical Tax Liability (VTTL)

2.9 The VTTL is the theoretical amount of VAT that would be collected in the absence of any losses at all. It is calculated by multiplying various categories of taxable expenditure in the economy by their appropriate VAT rates.

2.10 There are two key stages in the VTTL calculation:

- the first, calculating the gross VTTL, is based purely on an analysis of expenditure and on the VAT rates applicable to that expenditure;
- the second, calculating the net VTTL, involves adjusting the gross figure for theoretical VAT that is intentionally foregone (as a result, for example, of businesses trading below the VAT registration threshold), or that is refunded to government bodies and local authorities.

2.11 The expenditure series used in the calculation are, in the main, disaggregations of national accounts macroeconomic aggregates. All national accounts data used in this paper are consistent with the ONS 2002 Blue Book¹.

2.12 The methodology takes detailed expenditure data classified by commodity, and disaggregates them down to homogeneous groups subject either to zero, reduced or standard rates of VAT, or exempt from the tax altogether.

2.13 The commodity breakdown is a necessary requirement in allocating expenditure to the appropriate VAT treatment. The VAT administrative system, being based on traders' industrial classification, provides no information about the commodities upon which VAT is being charged.

2.14 Although VAT is collected from businesses, it is effectively levied largely on final consumers. The chief exception is exempt sales, where it is said to 'stick' (i.e. where a business makes a supply which is exempt from VAT, they cannot pass on the VAT incurred when making purchases related to that supply – hence the VAT 'sticks' with them as though they are the final consumer). The expenditure categories that comprehensively cover all VAT liabilities are:

- consumers' expenditure, the final consumption expenditure of households and non-profit institutions serving households, contributing just under three-quarters of VAT collected;
- central government and local authority current and capital expenditure (liabilities and receipts have been excluded from this estimation, where covered by the refunds applicable to local authority expenditure);
- intermediate consumption by the exempt sectors (i.e. purchases on which the VAT sticks) and expenditure in other areas affected by input tax blocks; and
- certain housing expenditures - capital expenditure by households and businesses upon which VAT 'sticks'.

2.15 This process takes account of changes in the mix of commodities taxable at the various rates within aggregates and the relative contributions of each of the aggregates within the overall economy.

¹ *United Kingdom National Accounts: The Blue Book 2002*. June 2002. The Stationery Office, London. ISSN 0267-8691.

2.16 It should be acknowledged that there are limitations associated with the data upon which calculating the VTTL depends. Generally, there is a time lag in the availability of the data, they are subject to revision, and they are most useful in establishing trends over time rather than absolute levels of expenditure. The method also assumes that the national accounts are an exhaustive measure of economic activity. Annex A explains these considerations in more detail.

2.17 The national accounts also contain estimates for the consumption of smuggled and fraudulently obtained alcohol and tobacco products. These have been removed from the data used for the VTTL calculation as they are accounted for in other estimates of revenue loss problems outlined in Section 3 of this paper, and would therefore be double-counted if included in the VAT loss calculations.

Other elements of the gap calculation

2.18 Elements of the gap calculation other than the net VTTL, such as ‘deductions’ and receipts, are mostly based on Customs’ accounting records. The main exception is the ‘deduction’ relating to expenditure on goods and services sold by small businesses operating legitimately below the VAT registration threshold.

2.19 It has been assumed for simplicity that there is a one-quarter time lag between the economic activity incurring VAT and its collection by Customs. The VAT base is therefore calculated on a calendar year basis, while receipts are calculated on a financial year basis, and – in this paper – the calendar year VTTL has been matched to financial year receipts.

2.20 In practice, lags may be more complex than allowed for by this simple rule, and this creates some volatility in the receipts and therefore in the gap. To compensate in part for this, some smoothing of receipts has been carried out where the volatility caused by particular year-end effects could be quantified.

Results

2.21 The table below shows a summary of the VTTL calculation, VAT receipts and the gap for the years 1990-91 to 2001-02.

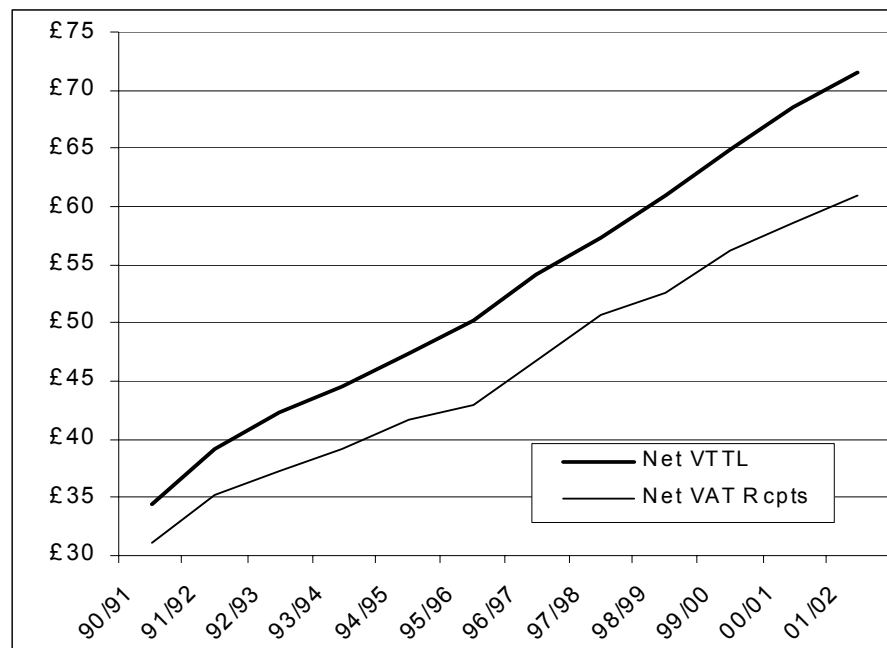
2.22 The calculations in this table and subsequent charts all relate to the overall scale of the revenue losses. As such, it should be recalled that – while they do occasionally reflect substantial changes in the size of individual problems contributing to those losses – they do not effectively illustrate the considerable variety of those individual problems, as discussed in Paragraphs 2.3-2.4 above.

Table 2.1: VTTL, actual receipts and VAT gap, £ billion

Year (of liability)	VTTL	Deductions	Net VTTL	Financial Year	Net VAT Receipts	VAT Gap	Gap as percent of net VTTL
1990	£35.7	£1.4	£34.3	90/91	£30.922	£3.4	9.8
1991	£40.8	£1.6	£39.2	91/92	£35.236	£3.9	10.0
1992	£44.2	£1.8	£42.3	92/93	£37.189	£5.1	12.1
1993	£46.4	£2.0	£44.4	93/94	£39.212	£5.2	11.8
1994	£49.6	£2.3	£47.3	94/95	£41.722	£5.6	11.9
1995	£52.8	£2.5	£50.2	95/96	£43.054	£7.2	14.3
1996	£56.9	£2.8	£54.1	96/97	£46.644	£7.5	13.9
1997	£60.4	£3.1	£57.4	97/98	£50.585	£6.8	11.8
1998	£64.3	£3.3	£61.0	98/99	£52.547	£8.4	13.8
1999	£68.4	£3.6	£64.8	99/00	£56.152	£8.7	13.4
2000	£72.4	£3.9	£68.5	00/01	£58.503	£10.0	14.5
2001	£75.7	£4.3	£71.5	01/02	£61.028	£10.4	14.6

2.23 VAT losses in absolute monetary terms have grown rapidly since the early 1990s. However, most of this growth - particularly in recent periods - is in proportion to the size of the growing VTTL (i.e. the underlying VAT base). This can be seen in Chart 2.1, which shows net VTTL and VAT receipts (the difference between these series being the gap). This chart also shows that the volatility in the gap is largely in the VAT receipts and so is not primarily a problem arising from the estimation of the VAT base.

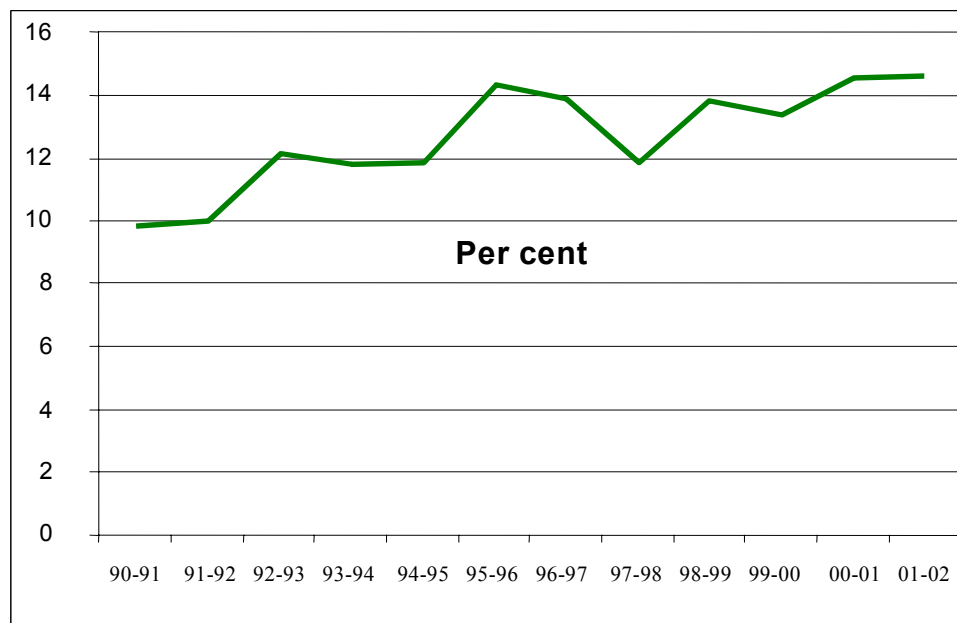
Chart 2.1: Net VTTL v VAT receipts (£ billion)



2.24 It is believed, based on operational evidence, that losses from all problems except Missing Trader Fraud have remained relatively stable in relation to the tax base in years 1996-2002. This accords with the findings of the VAT Shortfall Report². The authors of the report found, following continued shortfalls in VAT receipts in the early 1990s, that successively less VAT for a given amount of spending was being collected (i.e. the VAT gap was growing due to increased losses). The authors also found that the growth of losses had levelled out around 1995-96.

2.25 In Chart 2.2, it can be seen that the trend in VAT losses as a percentage of VTTL grew rapidly up to 1995-96, but was flat between 1995-96 and 1999-2000. This supports the operational evidence and the findings of the VAT Shortfall Report. Furthermore, the rapid rise of Missing Trader Fraud up to the end of 2000 would appear to account for the uplift in the size of the gap in the period up to the end of 2000-01.

Chart 2.2: VAT gap as a percentage of VTTL



Limitations of the top-down approach

2.26 There are some limitations with the top-down approach:

- as a global estimate it provides little diagnostic information about the nature of losses and therefore does not help address how to tackle them;
- the national accounts data have a margin of error, are not completely up to date and are subject to revision; and
- as well as final demand, it is necessary to have detailed data on intermediate sales of businesses for some parts of the calculations. This information is harder to derive and less reliable than the main national accounts aggregates.

² *The VAT Shortfall: Report of the Working Group on VAT Receipts and Forecasts*, Treasury Occasional Paper No: 9, September 1997, HM Treasury.

BOTTOM-UP ESTIMATE OF VAT LOSS

2.27 Notwithstanding the limitations of the top-down approach, it offers the best overall estimate of VAT losses, the best illustration of the trends in their overall growth, and the best baseline for monitoring the future development of the overall losses - and the impact of any strategy to tackle them.

2.28 However, to support the top-down approach, bottom-up estimates of specific types of VAT loss are also made. The bottom-up estimates corroborate the scale of the top-down estimate at the overall aggregate level and can in addition be used to provide some breakdown of the total, which better helps illustrate the variety of problems underlying these losses and explain the importance of designing measures specific to each type of problem.

2.29 Breaking down the components of the VAT losses is therefore done from the 'bottom up', in particular taking into account Customs' operational experience relating to each specific problem.

2.30 Whereas the top-down approach involves a unified set of calculations, the bottom-up estimates involve a number of different approaches, reflecting the nature and current understanding of each specific problem.

2.31 Where possible, Customs have been consistent in their methodologies (e.g. in applying certain assumptions to the different types of loss) but there are, nevertheless, a number of uncertainties and subjective judgements in the bottom-up estimates. To reflect this, they have all been assessed in the form of a range. Some of the assumptions have no time dimension and so, except in the case of Missing Trader Fraud, time series estimates are not yet possible.

MISSING TRADER FRAUD

2.32 The current methodology for assessing revenue loss from VAT Missing Trader Fraud was set out in *Measuring indirect tax fraud*, and will be the subject of further discussions with the National Audit Office – as mentioned in that earlier paper.

2.33 For the year ending March 2002, it is estimated that the fraud resulted in VAT losses in the range of £1.7 billion to £2.75 billion, indicating that the rapid rate of growth of £0.45-£0.75 billion per year prior to the introduction of the Missing Trader Fraud strategy in September 2000 has been stabilised.

Table 2.2: Estimated losses from Missing Trader Fraud £ billion¹

	Lower estimate	Upper estimate
1999-00	1.5	2.40
2000-01	1.6	2.62
2001-02	1.7	2.75

1. Estimates for 1999-00 and 2000-01 have been marginally revised from those previously published.

AVOIDANCE

2.34 Bottom-up estimates of the VAT losses attributable to avoidance are based on Customs' estimates of business' spending on VAT planning, deferral and avoidance.

2.35 It is estimated from this that businesses spend between £250m and £300m per year on VAT avoidance schemes. This is equivalent to potential VAT losses of between £2.5 billion to £3.0 billion, on the assumption that:

- the above expenditure represents fees paid to accountancy firms managing tax avoidance schemes; and
- the fee income paid to the accountancy firms is equivalent to 10 per cent of the tax saved on behalf of their clients.

2.36 This should be regarded as a very rough estimate of the size of the problem, with neither the robustness nor the capacity for year on year monitoring offered by the Missing Trader Fraud estimates or the other bottom-up excise fraud estimates detailed in this paper.

GENERAL NON-COMPLIANCE

2.37 General non-compliance can be described broadly as the failure of businesses to pay the right amount of VAT at the right time, but in reality covers a wide and varied spectrum of business behaviours, including:

- errors and omissions on tax returns, including failure to submit returns;
- late payment, non-payment or incomplete payment of tax due; and
- deliberate mis-declaration of input or output tax on tax returns.

2.38 It is estimated that general non-compliance with the VAT regulations of this kind by VAT registered businesses accounts for losses of between £2.5 billion and £4.0 billion per year. These estimates are obtained from evaluation of operational data from the VAT trader records and from the Customs' Compliance Testing Programme³.

2.39 One specific non-compliance problem concerns the failure of businesses to register for VAT when operating above the turnover threshold. Customs estimate that there may be between 125,000-180,000 businesses in this category, implying annual VAT losses in the region of £400-500 million.

³ The Compliance Testing Programme is a programme of assurance visits by VAT officers to a random sample of traders. It enables Customs to produce representative estimates of compliance for all traders.

2.40 As with the estimates of avoidance – but more so given their very wide range – all estimates in the non-compliance area should be treated with a very large degree of caution, and do not yet provide a robust baseline for monitoring activity to tackle the problems in this area.

CONCLUSION

2.41 Added together, the bottom-up estimates produce a combined range of around £7 billion to £10 billion. Notwithstanding all the uncertainties around these bottom-up estimates, the upper range provides a useful corroboration of the 2001-02 figure for the absolute monetary size of the VAT gap, from which the estimate of the size of the losses as a percentage of the VTTL (and therefore the baseline for the strategy) has been derived.

3

EXCISE

METHODOLOGICAL IMPROVEMENTS

3.1 In *Measuring indirect tax fraud*, published alongside the last Pre-Budget Report and to be read in conjunction with this paper, Customs provided details of the methodologies used to assess the scale of illicit activity across a range of different excise regimes.

3.2 Quantitative assessments of the extent of fraud and avoidance were produced for the following excise products:

- packeted cigarettes;
- spirits, wine and beer; and
- oils (diesel and petrol).

3.3 *Measuring indirect tax fraud* noted that measuring the scale of and trends in illicit activity is inherently difficult but that the Government believed that its estimates are as robust as possible. It also invited comments on these estimates and the underlying methodologies from business groups, academic researchers and other interested parties.

3.4 Since the publication of that paper, and assisted by the comments received and subsequent discussions, Customs have been seeking to refine and improve their estimates, and the first part of this section provides details of the main changes that have been made. It also explains the improved methodology behind Customs' new assessment of the scale of fraud and avoidance in relation to hand-rolled tobacco (HRT).

CROSS-BORDER SHOPPING

3.5 In a standard gap analysis, the illicit market is estimated as total consumption minus UK duty paid minus legitimate cross-border shopped.

3.6 For alcohol and tobacco, Customs' general approach for measuring cross-border shopping is to use data from the International Passenger Survey (IPS) on purchases by travellers which are then grossed-up using weightings calculated by the ONS to represent the total travelling population.

3.7 For diesel in Great Britain, the level of cross-border shopping is estimated by combining traffic data on vehicles entering and leaving Great Britain, estimates of fuel tank sizes and assumptions about how full the tanks will be on the outward and inward journeys. Similar data are not currently available for the level of cross-border shopping over the Northern Ireland land boundary.

Alcohol and Tobacco

3.8 The IPS records expenditure on excise goods, not volumes. To calculate the volumes, it is necessary to make assumptions about the price paid by cross-border shoppers. Previously, the cheapest available price in France was used as a basis for transforming expenditures into volumes. However, it seems clear that using a more representative price will provide a more accurate picture: the latest estimates therefore use this approach.

3.9 Comparisons of figures from the IPS with those from Customs' own cross-Channel smuggling survey suggest differences in the extent to which the two surveys report purchases of excise goods. However, Customs survey is thought to provide a more accurate and representative sample. The levels of shopping implied by the IPS figures have therefore been adjusted in proportion with the difference between the two surveys⁴.

3.10 The adjustments resulting from these two changes have resulted in increased estimates of cross-border shopping for some goods and reductions for others.

Diesel – Great Britain

3.11 *Measuring indirect tax fraud* noted the assumption underpinning Customs' estimate of cross-border diesel shopping that hauliers would enter the country with a full tank of fuel but would leave with tanks only 10 per cent full.

3.12 These assumptions have been revisited using, among other evidence, the results of a number of small surveys of coach drivers and hauliers. It is now believed that these assumptions over-estimated the extent of foreign hauliers' fuel use within Great Britain, and that as a result the size of the cross-border purchased diesel market has previously been overestimated.

3.13 The latest estimates are based on assumptions about the average distance covered by foreign hauliers, assuming they do not purchase any fuel within the UK, based on the Survey of Foreign Registered Vehicles, a sample survey conducted for the then Department of Environment, Transport and the Regions. This estimate is supported by a comparison of data on traffic through British ports, together with assumptions about the potential onward destinations of foreign hauliers.

3.14 It is hoped for the future to have more complete data on the level of cross-border diesel shopping by UK-based hauliers rather than having to make these assumptions, but this is not yet available.

3.15 The approach to the measurement of fraud and avoidance in relation to petrol duty remains unchanged.

⁴ The approach differs slightly between products and years as a result of differences in the coverage and quality of the data.

DOMESTIC ALCOHOL PRICES

3.16 Estimates of revenue lost and revenue evaded as a result of the illicit alcohol market include both excise duty and VAT⁵. To calculate the VAT component, it is necessary to assume a price at which the displaced legitimate goods would have been sold.

3.17 In the past, this assessment has primarily been made using off-licence alcohol prices. However, it would be more accurate to use an overall average price from the alcohol trade, including both on-sales and off-sales. For consistency, these average prices have also been used in calculating the results from the cross-Channel smuggling survey.

HAND ROLLED TOBACCO (HRT)

3.18 Previously, estimates of the size of the illicit market in HRT were based on the Customs cross-Channel smuggling survey, as the vast majority of illicit HRT was believed to be smuggled by cross-Channel passengers. However, operational evidence (such as higher freight seizures) suggests that a greater proportion of illicit HRT now enters the country through other routes, and consequently the cross-Channel smuggling survey no longer provides an accurate picture of the overall size of the illicit HRT market.

3.19 Like the estimate of the illicit cigarette market, the new HRT assessment is based on a gap analysis. The non-UK duty paid share is calculated as the gap between an indexed overall consumption series and smoothed legitimate UK duty paid consumption. As with cigarettes, total consumption for HRT is estimated using smoothed General Household Survey (GHS) and Omnibus Survey data on prevalence.

3.20 *Measuring indirect tax fraud* noted that the main problem with the use of these consumer surveys is the substantial degree of under-recording. To allow for this, the trend in prevalence reported by the surveys is used, relative to a previous point in time at which it is assumed there was negligible smuggling.

3.21 The year 1984-85 has been chosen as the base year for a number of reasons. It was at this point that the trend of UK duty paid consumption and prevalence started to diverge. Starting from any more recent point in time would be unrealistic as it would produce an estimate of overall consumption below that of UK duty paid consumption. Operational opinion within Customs also suggests that an illicit market developed in HRT before it did in cigarettes.

3.22 As with cigarettes, this method of estimating total consumption assumes that under-reporting of both prevalence and average HRT consumption per HRT smoker (defined as anyone who responds to the General Household Survey saying they “*smoke mainly hand rolled cigarettes*”) has remained constant over the period between the chosen base year and the year in question.

⁵ Some sales of illicit alcohol through normal retail outlets will pay some or all of the VAT that would accrue on legitimate sales, and the estimates will overstate the revenue lost to this extent. Illicit tobacco is not generally sold through normal retail outlets so the same issue does not apply to the tobacco revenue evaded figures.

3.23 It is not known what proportion of packeted cigarettes is consumed by smokers in the “*mainly hand rolled cigarettes*” category, nor what proportion of HRT is consumed by smokers in the “*mainly packeted cigarettes*” category. It has therefore been assumed that these proportions have remained constant over time.

3.24 As with cigarettes, the estimate of cross-border shopped HRT is measured using data from the IPS and Customs’ own cross-Channel smuggling survey. However, data is not available on the scale of duty free purchases of HRT. It is therefore assumed that duty free, as a proportion of overall consumption, is the same as in the cigarette market for the year in question.

3.25 While there remain a large number of uncertainties, the methodological changes above represent a worthwhile improvement in the accuracy of the estimates relating to the illicit HRT market. However, comments on this methodology from interested parties would be particularly welcome.

RESULTS

3.26 The figures presented below are the most robust, up-to-date estimates presently available of revenue losses from excise fraud and avoidance, and where possible of the illicit market share in the different excise regimes. However, estimating the scale of illicit activity is inherently difficult and the results are therefore subject to some margins of error.

3.27 Where available, estimates have been provided for the three financial years 1999-00, 2000-01 and 2001-02, including revisions to previously published estimates where data has either been revised or where the methodological approach has been refined and improved. Where necessary due to the timing of data, calendar year estimates have been provided instead.

Cigarettes

3.28 Estimates of revenue losses and the market shares of smuggling and cross-border shopping are set out below. The figures for the year 2000-01 have been reviewed since previous publication due to the availability of data from the GHS and changes to the methodology.

3.29 Previously, the data from household surveys on prevalence of smoking cigarettes was used without smoothing. To reduce the effect of sample variability, recent data has been smoothed.

3.30 The results show that the proportion of cigarettes supplied by the illicit market has stabilised.

Table 3.1: Cigarettes: total revenue evaded and avoided (£bn)¹

	1999-2000	2000-01	2001-02 ²
Cross-border shopping ³	0.6	0.8	0.9
Cross-Channel passenger smuggling	0.3	0.4	0.2
Fraud, freight smuggling and other smuggling	1.7	2.4	2.5
Total non UK duty paid ⁴	2.7	3.5	3.6

¹ Figures include duty and VAT.

² Estimated using Omnibus data. Subject to revision on publication of the next GHS later this year.

³ Includes duty free as well as EU duty paid.

⁴ Figures are independently rounded to the nearest £0.1bn. As a result components may not appear to sum.

Table 3.2: Cigarettes: market shares (per cent)¹

	1999-2000	2000-01	2001-02
Illicit market share	17	21	21
Cross-border shopping ¹	5	6	7

¹ Includes duty free as well as EU duty paid.

3.31 Table 3.3 provides estimates of the numbers of sticks consumed, smuggled and cross-border shopped. It also provides details of the number of sticks successfully seized by Customs.

Table 3.3: Cigarettes: quantities (billion sticks)¹

	1999-2000	2000-01	2001-02
Total Consumption	80.0	77.0	75.0
UK Tax Paid consumption	62.5	56.0	54.5
Successfully smuggled	13.5	16.5	15.5
Cross-border shopping ²	4.0	5.0	5.0
Seized	1.9	2.8	2.6

¹ Figures are rounded to the nearest half billion sticks except seizures, which are rounded to the nearest 100 million sticks.

² Includes duty free as well as EU duty paid.

3.32 Customs believe that the estimate of market share of smuggled cigarettes is accurate to around ± 2 per cent. However, this is based on analysis of a range of plausible scenarios rather than a formal statistical analysis. Customs will continue to investigate ways to improve the accuracy of these estimates.

3.33 In *Measuring indirect tax fraud*, it was noted that the estimates of the size of the total UK market and hence the non UK-duty paid market produced by the tobacco trade are broadly in line with those produced by Customs⁶. This remains the case.

⁶ See, for example, estimates from the Tobacco Manufacturers' Association available on their website (www.the-tma.org.uk).

Hand Rolled Tobacco (HRT)

3.34 Results for HRT are set out below. The market share of illicit tobacco fell in 2001-02, a result of declining illicit consumption – driven mainly by lower cross-Channel passenger smuggling – while overall consumption remained stable. Market shares are given in Table 3.5, which are thought to have a greater margin of error than those for cigarettes.

Table 3.4: HRT total revenue evaded and avoided (£mn) ¹

	1999-2000	2000-01	2001-02 ²
Cross-border shopping ³	60	140	190
Fraud and Smuggling	630	670	580
Total non UK duty paid ⁴	700	810	760

¹ Figures include duty and VAT.

² Estimated using Omnibus data. Subject to revision on publication of the next GHS later this year.

³ Includes duty free as well as EU duty paid.

⁴ Figures are independently rounded to the nearest £10m. As a result components may not appear to sum.

Table 3.5: HRT: market shares (per cent)

	1999-2000	2000-01	2001-02
Illicit market share	68	61	52
Cross-border shopping ¹	7	13	17

¹ Includes duty free as well as EU duty paid.

Spirits

3.35 Estimates of the illicit market share for spirits rely on data from the Expenditure and Food Survey⁷, which only becomes available after a delay of around 18 months. For this reason, complete estimates for 2001-02 are not yet available.

Table 3.6: Spirits total revenue evaded and avoided (£mn) ¹

	1999-2000	2000-01
Cross-border shopping ²	100	100
Cross-Channel passenger smuggling	<50	<50
Fraud, freight smuggling and other smuggling ³	500	500
Total non UK duty paid ⁴	600	650

¹ Figures include duty and VAT although will overstate losses to the extent that VAT is collected on sales of illicit alcohol through normal retail outlets.

² EU duty paid.

³ 'Other' includes smuggling by air passengers, Internet and parcel.

⁴ Figures are independently rounded to the nearest £50m. As a result components may not appear to sum.

⁷ The Expenditure and Food Survey replaces the National Food Survey and Family Expenditure Survey.

3.36 The scale of the fraud problem appears to have remained constant between the latest two years for which estimates are available.

Table 3.7: Spirits: market shares (per cent)

	1999-2000	2000-01
Illicit market share	15	15
Cross-border shopping ¹	3	3

¹ EU duty paid.

Beer

3.37 Until recently, the vast majority of illicit beer has been EU tax paid product smuggled into the UK by cross-Channel passengers. Rather than use a gap analysis, the Customs cross-Channel smuggling survey has therefore been used to produce a robust estimate of the scale of illicit beer consumption in the UK.

3.38 However, at the same time as cross-Channel passenger smuggling of beer has significantly diminished in the past two years, there has been operational evidence to suggest that at least some beer fraud is now accounted for by freight smuggling and diversion fraud. It has not been possible to estimate the size of this fraud using a gap analysis because a comparison of UK duty paid consumption with estimates of total consumption does not generate a gap of meaningful size.

3.39 Estimates for cross-Channel passenger smuggling, cross-border shopping, and the total non UK duty paid market therefore continue to be based on the cross-Channel smuggling survey. Customs are considering other methods for providing a more robust, evidence-based assessment of the total scale of the illicit market.

Table 3.8: Beer: total revenue evaded and avoided (£mn)^{1,2}

	1999-2000	2000-01
Cross-border shopping ³	50	50
Cross-Channel passenger smuggling	250	200
Fraud, freight smuggling and other smuggling ⁴	<50	<50
Total non UK duty paid	300	300

¹ Figures include duty and VAT although will overstate losses to the extent that VAT is collected on sales of illicit alcohol through normal retail outlets.

² Figures are independently rounded to the nearest £50m. As a result components may not appear to sum.

³ EU duty paid.

⁴ A small indicative level of revenue evaded from fraud and other forms of smuggling is included but - because this is not estimated directly - no allowance is made for this in the totals.

Table 3.9: Beer: market shares (per cent)

	1999-2000	2000-01
Illicit market share	4	4
Cross-border shopping ¹	1	1

¹ EU duty paid.

Wine

3.40 Previously, a gap analysis was used to estimate illicit consumption of wine. However, the estimates generated by this approach now suggest that the only source of illicit wine consumption is cross-Channel passenger smuggling (although operational evidence continues to suggest that there are small quantities of fraud and other smuggling).

3.41 As with beer, the estimates of cross-border shopping, cross-Channel passenger smuggling, and the total non UK duty paid market are therefore based on the cross-Channel smuggling survey. Customs are again considering how to improve their methodologies to address this issue.

Table 3.10: Wine total revenue evaded and avoided (£mn)^{1,2}

	1999-2000	2000-01
Cross-border shopping ³	200	200
Cross-Channel passenger smuggling	50	50
Fraud, freight smuggling and other smuggling ⁴	<50	<50
Total non UK duty paid	250	250

¹ Figures include duty and VAT although will overstate losses to the extent that VAT is collected on sales of illicit alcohol through normal retail outlets.

² Figures are independently rounded to the nearest £50m. As a result components may not appear to sum.

³ EU duty paid.

⁴ A small indicative level of revenue evaded from fraud and other forms of smuggling is included but - because this is not estimated directly - no allowance is made for this in the totals.

Table 3.11: Wine: market shares (per cent)

	1999-2000	2000-01
Illicit market share	2	2
Cross-border shopping ¹	8	7

¹ EU duty paid.

Oils

3.42 While *Measuring indirect tax fraud* made clear the intention to publish financial year estimates of fraud whenever possible, the data used to generate the oils estimates allows only calendar year estimates.

3.43 Results for Great Britain are shown below. Partly as a result of Customs' enhanced operational activity, the illicit market share fell to 5 per cent in calendar year 2001.

Table 3.12: Great Britain diesel: total revenue evaded and avoided (£mn) ¹

	1999	2000	2001
Cross-border shopping	450	500	450
Fraud	700	950	600
Total non UK duty paid ²	1,150	1,400	1,050

¹ Estimates include duty and VAT. Estimating total revenue evaded for diesel is complicated by the fact that a significant amount is purchased by commercial users who can reclaim VAT incurred on their purchases. However, it is assumed that lower fuel costs are reflected in lower prices further up the supply chain for the final products being transported and that VAT is therefore lost on these products. Hence, a simplifying assumption for calculating total revenue evaded has been made that VAT is evaded for all non UK duty paid diesel. This assumption will mean that estimates of revenue loss are slightly overstated as some of the products being transported will be zero rated and therefore have no VAT implications.

² Figures are independently rounded to the nearest £50m. As a result components may not appear to sum.

Table 3.13: Great Britain diesel: market shares (per cent)

	1999	2000	2001
Illicit Market Share	6	7	5
Cross-border shopping	4	4	4

3.44 Previous estimates suggested that cross-border shopping comprised 7 per cent of the diesel market in 2000, and that the illicit market share was 4 per cent. The significant revision arises from the change in methodology for assessing cross-border shopping, as outlined in paragraphs 3.11 to 3.13.

3.45 Petrol is less amenable to frauds involving the misuse of rebated or low-tax fuels supplied for road uses. Furthermore, because diesel tends to be the fuel of choice for commercial vehicles, petrol consumers seem less likely to be driven by economic incentives. As a result, there is still only a relatively small market for non UK duty paid petrol (less than 1 per cent of the market).

3.46 It is not possible to make an accurate split between shopping and illicit use because of the small level of non UK duty paid consumption.

Table 3.14: Great Britain petrol: total revenue evaded and avoided (£mn) ¹

	1999	2000	2001
Total non UK duty paid ²	<50	50	100

¹ Figures include duty and VAT.

² Figures are rounded to the nearest £50m.

3.47 Northern Ireland presents a number of distinct factors compared to Great Britain, particularly the large land boundary across which smuggling and legitimate cross-border shopping of fuel can be undertaken more easily.

3.48 A large part of the Northern Ireland fuel market is therefore accounted for by both illicit supplies and legitimate cross-border shopping. While Customs will continue to try to establish a robust breakdown between these two sources of non UK duty paid fuel, it is currently impossible to do so, in particular because no information is available about consumers' cross-border shopping behaviour.

3.49 Details of the revenue losses resulting from all use of non UK duty paid fuel in the Northern Ireland diesel market are shown below.

Table 3.15: Northern Ireland diesel: total revenue evaded and avoided (£mn)

	1999	2000	2001
Total non UK duty paid ¹	180	245	240

¹ Figures are rounded to the nearest £5m.

3.50 Estimates of the revenue losses resulting from use of non UK duty paid petrol are shown below.

Table 3.16: Northern Ireland petrol: total revenue evaded and avoided (£mn)

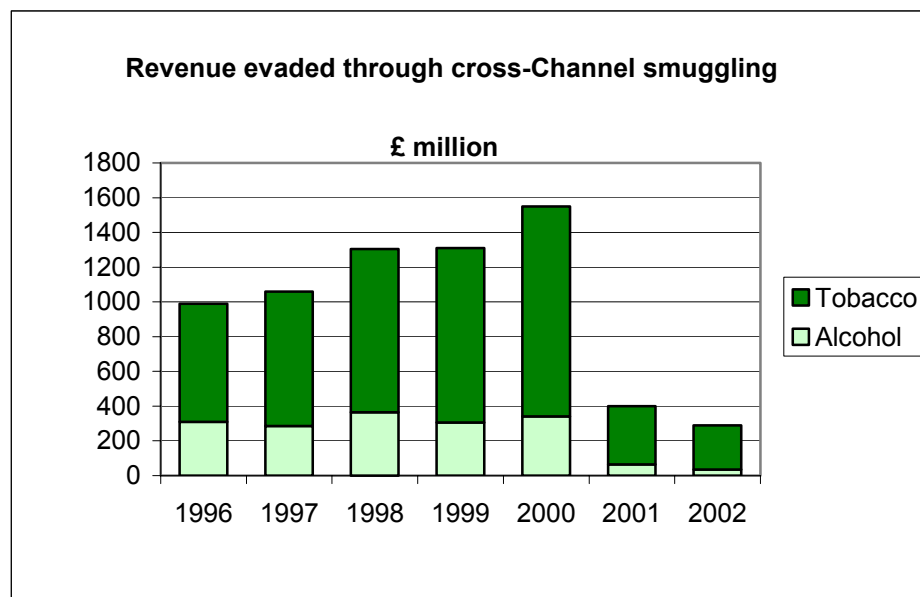
	1999	2000	2001
Total non UK duty paid ¹	140	145	130

¹ Figures are rounded to the nearest £5m.

Cross-Channel Passenger Smuggling

3.51 Customs' cross-Channel smuggling surveys have been carried out over a two-week period every year since 1996 and cover passengers arriving on foot, in cars or in vans, and lorry drivers' 'perks' (goods carried separate from the main cargo). The survey is carried out by Customs staff and aims to build up a representative picture of all traffic. Further details can be found in Annex A of *Measuring indirect tax fraud*.

3.52 Results from the 2002 survey are now available⁸, and the chart below shows the results from 1996 to 2002. Figures for the years before 2002 have been revised to take account of revisions to traffic numbers and to the prices used, as described in paragraphs 3.16 to 3.17.



⁸ As calendar year 2002 is not yet complete, the results are based on a projection of passenger numbers until the end of the year. As a result, the figures are subject to revision.

3.53 The chart shows a sharp decline in the amount of revenue evaded through cross-Channel smuggling. A breakdown of the results for the calendar years 2000 to 2002 is shown in the table below.

Table 3.17: Revenue evaded through cross-Channel smuggling, 2000 – 02

Type	Revenue evaded (£mn)			Percentage change	
	2002	2001	2000	2001-02	2000-02
Beer	15	20	260	-22	-94
Still wine	10	35	60	-62	-80
Sparkling/fortified wine	0	0	5	75	-89
Spirits	5	10	15	-53	-75
Alcohol	35	65	340	-47	-90
HRT/other tobacco	95	170	785	-44	-88
Cigarettes	160	160	415	-1	-62
Cigars/cigarillos	0	5	10	-22	-72
Tobacco	255	335	1,210	-23	-79
All	290	395	1,550	-27	-81

¹ Figures have been independently rounded to the nearest £5mn. As a result, components may not sum to the totals shown.

A USE OF NATIONAL ACCOUNTS DATA IN CONSTRUCTING ESTIMATES OF VTTL

Although national accounts data are the best available for the purpose of estimating the VAT theoretical liability, they do have some limitations which might affect the exact accuracy of the estimates.

Timeliness - Some of the necessary data are derived from ONS Input/Output supply-use tables published with a considerable time lag. So, for instance, the Blue Book published in June 2002 contains provisional supply-use balances for 2000. As a result, 2000 is the latest year that can be estimated in full for the VTTL analysis without some extrapolation. In this analysis, projections for 2001 Input/Output data have been used.

Treatment of shadow economy - The national accounts contain adjustments for the shadow economy that aim to be comprehensive, but this is an inherently difficult exercise. The national accounts are compiled under two main pieces of European legislation, the European System of Accounts (ESA95) and the GNP Directive. The latter is the basis for defining the 'Fourth Resource' contribution to the EU budget (VAT is the 'Third Resource'). ESA95 requires that any economic transactions between consenting parties, hidden or illegal, be included in the accounts. Under the GNP Directive there has been an 'exhaustiveness programme' under which all Member States' accounts have been audited by Eurostat and the Court of Auditors to ensure that they comply with the law.

Revisions - National accounts data are often significantly revised. For instance, in Blue Book 2001, the expenditure measure of GDP for the year 1999 was revised up by £10.8bn and the resulting changes were carried back for ten years or more. This was a large, but not unprecedented revision. From time to time, major reclassification exercises are carried out that make it difficult to construct consistent time series, e.g. the introduction of ESA95 in Blue Book 1998.

Accuracy - National accounts data have a fairly wide margin of error. The ONS have not published error margins for many years, but a reasonable assumption is plus or minus five per cent on expenditure aggregates. It should be noted of course that the gap is the difference between two large numbers and so small errors in the liability constitute large relative errors in the gap.

Exempt transactions – Exempt liability cannot be determined directly from national accounts data. The national accounts only provide data on intermediate purchases of exempt sector industries. A separate Customs survey is required to ascertain what proportion of purchases is liable for sticking VAT. This survey only measures what it finds. Legitimate tax planning schemes that remain successfully in use do not therefore enter the gap.

