Taxpayers’ Behavioural Responses and Measures of Tax Compliance ‘Gaps’: A Critique

Norman Gemmell
Victoria University of Wellington
Chair in Public Finance

John Hasseldine
University of New Hampshire
Associate Professor of Accounting

Discussion Paper: 002-13
Taxpayers’ Behavioural Responses and Measures of Tax Compliance ‘Gaps’:
A Critique †

Norman Gemmell and John Hasseldine*

September 2013

Abstract
The work of Feldstein (1995, 1999) has stimulated substantial conceptual and empirical advances in economists’ approaches to analysing taxpayers’ behavioural responses to changes in tax rates. Meanwhile, a largely independent literature proposing and applying alternative measures of tax compliance has also developed in recent years, which has sought to provide tax agencies with tools to identify the extent of tax non-compliance as a first step to designing policies to improve compliance. In this context, measures of ‘tax gaps’ – the difference between actual tax collected and the potential tax collection under full compliance with the tax code – have become the primary measures of tax non-compliance via (legal) avoidance and/or (illegal) evasion. In this paper we argue that the tax gap as conventionally defined is conceptually flawed because it fails to capture behavioural responses by taxpayers. We show that, in the presence of such behavioural responses, tax gap measures both for indirect taxes (such as the ‘VAT-gap’) and direct (income) taxes exaggerate the degree of non-compliance. Further, where these conventional tax gap measures motivate reforms designed to increase the tax compliance rate, they will likely have a tax base reducing effect and hence generate a smaller increase in realised tax revenues than would be anticipated from the tax gap estimate.

† Acknowledgements: An earlier version of this article was presented at the inaugural conference of the Institute of Fiscal Studies/University of Exeter Tax Administration Research Centre, Exeter and at the IMF’s Fiscal Affairs Department, Washington DC, both in January 2013. We thank the conference and workshop participants for their detailed and helpful comments.

* The authors: Respectively, Chair in Public Finance, Victoria Business School, Victoria University of Wellington, New Zealand; and Associate Professor, Peter T. Paul College of Business and Economics, University of New Hampshire, Durham, New Hampshire, USA.
1. Introduction

The seminal contributions of Feldstein (1995, 1999) have stimulated substantial conceptual and empirical advances in public economists’ approaches to analysing taxpayers’ behavioural responses to changes in tax rates (see, for example, Saez, 2001; Chetty, 2009; Saez et al. 2012; Creedy and Gemmell, 2012). A largely independent literature proposing and applying alternative measures of tax compliance has also developed in recent years. This latter literature (see, for example, IMF, 2013; OECD, 2012, Shaw et al. 2010) has sought to provide tax agencies with tools to identify the extent of tax non-compliance as a first step to designing policies to improve compliance behaviour. In this context, measures of ‘tax gaps’ – generally, the difference between actual tax collected and the potential tax collection under full compliance with the tax code – have become the primary measures of tax non-compliance via (legal) avoidance and/or (illegal) evasion.

In this paper we argue that the tax gap as conventionally defined is conceptually flawed because it fails to capture those behavioural responses by taxpayers analysed in the Feldstein-related literature. We show that, in the presence of such behavioural responses, tax gap measures both for indirect taxes (such as the ‘VAT-gap’) and direct (income) taxes exaggerate the degree of non-compliance. Further, where these conventional tax gap measures motivate reforms designed to increase the tax compliance rate, they will likely serve to reduce the tax base and hence potentially have a tax revenue-lowering effect which will counteract the anticipated additional revenue via greater compliance effort.

The remainder of this paper is organised as follows. Section 2 defines the tax gap and behavioural response measures in more detail and summarises the recent contributions of the two literatures described above. Section 3 then provides a simple model of the tax gap that integrates the insights from the ‘behavioural responses’ literature and Section 4 concludes.

2. Tax Gap and Taxpayer Behavioural Response Definitions

Tax evasion is both pervasive and endemic and has been the subject of a great deal of economic modelling since the early contribution of Allingham and Sandmo (1972).\(^1\) Despite explicit modelling of taxpayer behaviour in these models, and numerous studies’ attempts to estimate their extent, the

\(^1\) See, for example, Feinstein (1991, 1999) and the reviews by Andreoni et al. (1998) and Sandmo (2005).
literature on defining and estimating tax gaps has generally ignored these behavioural responses. This may in part reflect the characteristic of many of the tax evasion models which treat the total potential tax base as given and address the question of what determines the fraction of that base that is hidden from tax. Conventional tax gap measures can be thought of as capturing this sort of non-compliance.

Recent modelling of taxpayer responses to tax rate changes, following Feldstein (1995, 1999), has however focused on shifts in the total tax base for a particular tax. This literature has mainly considered income taxes and derived expressions, and estimates, for the responsiveness of taxable income (and, by extension, tax revenue) to marginal tax rate changes. The usual measure of this responsiveness is the ‘elasticity of taxable income’ (ETI) – the proportionate change in taxable income in response to a given proportionate change in the ‘net-of-tax’ rate (one minus the tax rate). By using the net-of-tax rate, rather than the tax rate, the ETI is expected to be positive in the presence of behavioural responses.

The ETI has been shown to provide a simple yet powerful tool in the analysis of the revenue and welfare (deadweight cost) effects of tax rate changes. Saez et al (2012), for example, highlight the difference between the ‘mechanical’ and ‘behavioural’ revenue responses to a tax rate change. The mechanical effect describes the revenue change consequent on a tax rate change in the absence of an associated behavioural change. Observed revenue changes reflect the combination of both responses, with the behavioural effect summarised by the ETI and the elasticity of revenue with respect to taxable income changes. This latter elasticity is a function of the tax structure; see Creedy and Gemmell (2012).

Increasing awareness of erosion of key tax bases in advanced economics in recent years (in response to such changes as globalization, factor mobility and increasing public indebtedness following the global financial crisis) has stimulated an increased focus within tax agencies on measuring the extent of avoidance or evasion. International organisations such as the OECD and IMF are also increasingly examining and proposing methods to estimate ‘tax gaps’ – broadly the difference between revenue actually raised and potential revenue that would be raised if non-compliance was reduced or eliminated e.g., HMRC (2011, 2012) OECD (2012), IMF (2013). Separately, Gemmell and
Hasseldine (2012) review the various tax gap definitions and their use in practice, measurement methods and prior estimates.

These ‘tax gap’ measures are also increasingly popular as a means of assessing the degree of success with which a particular tax or tax system is implemented, and have been proposed as possible performance indicators for tax collection agencies. Given observed tax revenues, the key component of tax gap measures is the unobservable ‘theoretical’ or hypothetical tax base and revenue that would be expected without evasion or avoidance.\(^2\)

There are several possible definitions of the tax gap. Most have been developed within tax agencies to capture the aggregate tax revenue lost through non-compliance (for a specific tax or tax system). In the U.S. the ‘official’ IRS definition is simply: “The difference between the tax that taxpayers should pay and what they actually pay on a timely basis”.\(^3\) Plumley (2005) notes that this defined gap is split into three components: non-filing (failure to file a return), under-reporting (of income, and also overstating of deductions), and under-payment (failure to fully pay reported taxes owed).\(^4\)

The IRS definition of the tax gap, as well as definitions used by other tax agencies, all attempt to capture the notion of revenue losses through non-compliance with the tax code. However, conventional tax gap measures do not formally consider how the ‘theoretical’ tax base from which the theoretical tax liability is calculated, may differ when tax agencies alter enforcement policy to change the extent of non-compliance, compared to estimates based on the current extent of non-compliance. That is, they ignore behavioural responses that may alter taxpayers’ total ‘theoretical’ tax base or liability rather than simply the fraction of a given total base that is declared for tax collection purposes.

---

\(^2\) For tax base measures at a high level of aggregation, the methods currently used are often based on measures of the ‘hidden economy’ or ‘hidden income’. Almost all of the methods proposed or implemented are subjected to the same criticism of ignoring consideration of behavioural response. See Gemmell and Hasseldine (2012) for further discussion.


\(^4\) Other definitions of the tax gap found in the literature include those employed by, for example, Giles (1997; 1999), who first define the ‘hidden economy’ or ‘hidden income’. This is designed to capture income that is earned but is hidden from the tax authorities and, usually, official statisticians. The tax gap is then defined as hidden income multiplied by a suitable tax rate. This raises numerous conceptual and measurement issues, such as: what is included in hidden income, and what is a ‘suitable’ tax rate?
However, since an extra dollar raised in tax revenue via greater compliance enforcement represents an increase in the taxpayer’s effective marginal tax rate, this need not necessarily reduce the tax gap by a dollar. The ‘one for one’ condition is achieved only if the ‘theoretical’ tax base is unaffected by changes in the effective tax rate. If the arguments and evidence from the ETI literature are accepted, greater compliance success and/or higher statutory tax rates which raise the taxpayer’s effective tax rate will tend, ceteris paribus, to reduce the total tax base (as distinct from changes which affect only the extent to which a given tax base is hidden).

3. **Modelling Tax Gaps in the Presence of Behavioural Responses**

This section considers the consequences for conventional tax gap estimates of ignoring taxpayers’ behavioural responses.\(^5\) It demonstrates that omitting behavioural responses biases conventional tax gap measures upwards, for both direct and indirect taxes, and can provide a perverse measure of the success of efforts to improve compliance.

Consider the following simple tax compliance model. Actual (observed) tax paid can be defined as:

\[
(1)
\]

where \(B\) is the observed tax base (e.g. taxable incomes net of any deductions available as off-sets against that income); \(t\) is the average (and marginal) tax rate applicable to base, \(B\), and \(T\) is actual tax revenue raised. If some tax base is hidden from taxation then we may define:

\[
(2)
\]

where \(B^*\) is the total tax base including that which is hidden and \(0 \leq \theta \leq 1\) is the proportion observed and taxable, with \((1-\theta)\) the proportion hidden from tax. Combining (1) and (2) gives:

\[
(3)
\]

so that the ‘true’ effective marginal and average tax rates that the taxpayer faces is \(dT/dB^* = T/B^* = \theta \leq t\).

The tax gap, \(G\), may therefore be defined as:

\(^5\) Perhaps unfortunately the term ‘theoretical’ (rather than ‘hypothetical’) tax liability has become common usage in a number of tax agencies; see, for example HMRC (2012) who use the abbreviation ‘VTTL’ for the ‘VAT Theoretical Tax Liability’.
where $T^* = tB^*$ is the maximum potential tax revenue with full compliance at tax rate, $t$. Thus, for a given tax base, the tax gap increases if the tax rate rises or the compliance rate worsens ($\theta$ declines).

If the tax gap measure is to be used to judge compliance success – which typically is its main purpose – an important property of such a measure is that, in response to a change in compliance effort, $dG = -dT$. That is, an extra dollar raised in revenue reduces the tax gap by a dollar. From (4) it can be seen that this is achieved when $dT^* = 0$, which can be shown from (3) implies $dT/T = d\theta/\theta$, e.g., a 10% improvement in the compliance rate (say, from 0.8 to 0.88) produces a 10% increase in tax revenues.

Unfortunately this condition is achieved only if the total tax base, $B^*$, is unaffected by changes in the tax rate, $t$, or changes in compliance success, $\theta$. However, greater compliance success and/or higher tax rates both raise the taxpayer’s effective marginal tax rate which, as the ETI literature demonstrates, can be expected to elicit a tax base reducing response; that is:

\[(5)\]

where are the derivatives of $B^*$ with respect to $t$ and $\theta$ respectively,

As a result, the so-called ‘theoretical tax liability’, obtained by multiplying the observed tax base when $\theta < 1$ by the tax rate, $t$, would not be expected to be observed, were the revenue authority successful in eliminating non-compliance. Notice that it is the total tax base, $B^*$, that is hypothesized in (5) to respond to $t$ and $\theta$. That is, total tax base changes (as distinct from changes which affect only the extent to which the tax base is hidden) occur in response to changes in tax rates or compliance rates.

The Tax Gap and the Laffer Curve

The difficulty with conventional definitions of the tax gap can be demonstrated for any tax, by noting that equation (5) above is related to the well-known Laffer curve – the ‘inverted-U’ shaped relationship between tax revenues and the tax rate. This can be expressed in $(T, B^*)$ space as:

\[6\]

Note also that higher tax rates may also encourage greater non-compliance; that is, $d\theta/dt < 0$. Thus, if taxpayers’ non-compliance is proportionately greater (lower $\theta$) at higher tax rates, governments may have to expend additional resources to keep $\theta$ constant when tax rates rise, and vice versa.
Thus, increases in the effective tax rate, $\theta$, have a positive ‘mechanical’ effect on total tax revenues and a negative ‘behavioural’ effect via induced reductions in the tax base: $T$. The net effect depends on the relative strengths of these two, but is usually expected to be positive at low tax rates and negative at high tax rates.\(^7\)

Figure 1 shows the relationship between total tax revenues, $T$, and the total potential tax base, $B^*$. The horizontal axis represents the case of $\theta = 0$; that is, the tax rate and/or compliance rate are zero. For this ‘no-tax’ case, let the exogenously determined tax base be $X$; tax revenue is of course zero. The 45° line represents the case of a fully enforced ($\theta = 1$) 100% tax rate (such that $\theta = 1$). At this extreme, standard Laffer arguments suggest tax revenue will also be zero, though an argument can be made that revenue may still be positive (though likely small).\(^8\)

The curve $OX$ shows there is a maximum revenue (between $O$ and $X$) associated with the relationship, $T = \theta t B^*$, as $\theta$ rises from zero to one. Thus, with zero tax revenues at $X$ when $\theta = 0$, persistent increases in $\theta$ and/or $t$ result in positive tax revenue but at a declining rate such that the negative behavioural effect eventually outweighs the mechanical effect – left of the maximum of the curve $OX$. To simplify the exposition, we assume here that taxpayers respond identically to changes in $\theta$ and changes in $t$, though in practice this need not be the case ( ). Indeed, it might be expected that changes in statutory tax rates would be more visible, or ‘salient’, to taxpayers than changes in the extent of compliance enforcement; hence behavioural responses may differ.\(^9\)

Figure 2 illustrates an intermediate case. Consider an initial situation at point $B$, on the ray from the origin, $OW$, with a tax rate of $t_1$ and a compliance rate of $\theta_1$. This yields actual revenue of $OC$ from a potential tax base of $X$; the actual tax base is (not shown). Possible tax revenues with full compliance ($\theta = 1$) for this case are given by the ray $OZ$ from the origin. If the tax base were to remain unaltered with full compliance, an outcome at $A$, with tax revenues of $OE$ would be expected. However, taxpayer responses result in an outcome at point $J$ in Figure 2. As a result the conventional

\(^7\) Typically, zero tax revenues are predicted at the two extreme tax rates of 0% and 100%, in the latter case because the penal rate eliminates the tax base. In practice zero revenue might result at tax rates below 100%.

\(^8\) The usual argument for zero revenue is that complete appropriation of the tax base by the tax authorities makes it pointless for individuals to ‘earn’ a positive amount of the tax base. However, depending on how tax revenues are used, some individuals may nevertheless be willing to see all of their income (or other tax base) taken by the government and continue to generate positive amounts.

\(^9\) On the salience of different taxes to taxpayers, see Chetty (2010).
estimate of the tax gap, $AB = CE$, is an overestimate of the true tax gap of $CD$. How much of an overestimate depends on the extent of tax base response as determined by the curve $F$.

For some tax and compliance rates, tax revenues could actually be smaller, or unchanged, when compliance is increased to eliminate non-compliance. Figure 3 shows an initial situation at point $B$. Now consider an increase in the tax rate to $t_2$. With the same compliance rate, $\theta_1$, taxpayers move to $L$ (not $G$). If non-compliance is eliminated, taxpayers move to $K$, yielding the same revenue, $OC$, as before the tax and compliance rate changes. Thus, the increased tax revenue delivered by the tax rate change, for given $\theta$, is completely wiped out by the compliance “improvement”. A conventional measure of the tax gap, however, would show it falling from $FB$ or $FG$ to zero (where $FB$ is the tax gap based on the tax base and revenue before both the tax rate and compliance changes).\(^\text{10}\)

Finally, the analysis above has demonstrated how the ‘true’ tax gap, measured in units of tax revenue (e.g. in dollars, euro, yen etc.) can be quite different from conventional tax gaps measured this way. Of course, tax gap estimates are often presented as percentages of total tax revenue raised: such as $100G/T$ or $100G/T'$ from equation (4). As should now be clear, the tax revenue, $T$ or $T'$, that can be expected following changes in tax rates or compliance, can be quite different from conventional ‘mechanical effect only’ estimates. As a result percentage tax gap estimates could change in magnitude and even direction, quite differently from tax gap measures based on $G$ alone. For example, the percentage gap could rise or fall even if there was no change in the gap measured in units of revenue.

**Indirect Tax Gaps**

The above analysis can be applied to any tax base – income, general consumption spending, or spending on specific goods or services such as tobacco, alcohol etc. In practice, ‘conventional’ tax gap analysis as described above is most often applied to general and specific consumption taxes such as VAT and excises. This reflects a view that data to estimate the theoretical (full compliance) tax base are more readily available and reliable than for direct taxes such as on personal and corporate

---

\(^{10}\) Additional revenue expected from the tax increase with no change in compliance, when taxpayers’ behavioural responses are ignored, is given by $BG$. If implemented, this tax rise would produce a lower tax base (at $L$) and tax gap given by the distance between $L$ and a point on the ray $OF$ vertically above $L$. 

9
incomes. However, though estimates of behavioural responses to tax rates have typically been calculated for ‘taxable income’ responses to personal (and, to a lesser extent, corporate) income taxes, the potential for behavioural responses to indirect tax changes could potentially be more relevant for tax gap analysis than those for direct income taxes.

Consider the following simple example for tobacco taxation. Assume 1 million cigarettes are sold legally for $3 per unit, $1 of which is tax from an excise, yielding $1 million in tax revenue. A further 0.5 million smuggled cigarettes are sold without tax, at $2 per unit. A conventional tax gap estimate would suggest there is an additional potential $500,000 in tax revenue (0.5 million x $1). However, many cigarettes purchased illegally at $2 will no longer be bought when the price becomes $3. For example, those whose marginal valuation for cigarettes lies between $2 and $3 will smoke less or drop out of the market. Suppose formerly smuggled cigarette sales are cut in half when these are taxed and the price rises to $3, with sales of formerly legal cigarettes unaffected, implying additional tax revenue of only $250,000. That is, the ‘true’ tax gap is only half that estimated using the conventional definition, and depends on taxpayers’ behavioural responses to changes in \( \theta \) and \( t \).

The general case can be illustrated with the help of Figure 4. This shows the demand for cigarettes in price and quantity space. The pre-tax price is $2 which, if this was the final consumer price, would be associated with a demand of \( Q_2 \). With an excise tax of $1 per unit of cigarettes, the tax-inclusive price becomes $3 and demand falls to \( Q_1 \). With full tax compliance, revenue equals the area \( ABCD \) raised from a tax base of \( OQ_1 \).

Now consider the case where cigarette smuggling occurs such that observed total demand for cigarettes could be as high as \( OQ_2 \). In this case we would observe \( OQ_1 \) cigarettes purchased legally at $3, with an additional \( Q_1Q_2 \) purchased illegally at $2. A conventional estimate of the tax gap would be the area \( BCEH \), or as a ratio of current revenue: \( BCEH/ABCD \). However, with full tax compliance all cigarettes are now sold at $3, such that demand for cigarettes contracts to \( OQ_1 \). Hence zero additional revenue is raised as a result of a successful compliance campaign and the potential tax base has shrunk from \( OQ_2 \) to \( OQ_1 \) – the full amount of the previously non-compliant spending.

At the opposite extreme, consider the case where all smuggled cigarettes (sold at $2 per unit prior to any compliance improvement), are consumed by individuals whose marginal valuation of each unit
exceeds $3 rather than $2. An example is shown in Figure 4 where all smuggled cigarettes are purchased by $Q_0$ consumers. They happen to have the highest marginal valuations in this illustration but the argument applies to any consumers on the segment $BJ$ of the demand curve. For this case, initial excise revenue is area $GBCF$, while area $AGFD$ (equals area $BHEC$) is lost revenue due to smuggling. A fully successful compliance campaign that eliminates smuggling will yield additional revenue of $AGFD$ on $Q_0$ cigarettes, and a ‘conventional’ measure of the tax gap would be correct. The tax base, $Q_1$, is unchanged in this case.

Between these two extremes, where some smuggled cigarettes are consumed by individuals with marginal valuations exceeding $3$ and some by those with marginal valuations between $2$ and $3$, the ‘true’ tax gap will lie between zero and the conventional estimate. In practice it seems likely that, before compliance improvements, many smuggled cigarettes will be consumed by those who value them at less than $3$. Such consumers have a much stronger incentive to seek out smuggled supplies. Hence, for those goods where illegal demand for tax-free units is primarily derived from those who value them at less than the tax-inclusive price, conventional tax gap estimates are most likely to involve substantial over-estimation.\footnote{For the case of tobacco in the UK, the illegality of this lost revenue can be questionable. For example, personal importing of relatively large quantities of tobacco products from other European Union countries is legally allowable at customs ports without paying excise tax provided that the amounts imported could reasonably be considered as for ‘personal use’ (i.e. not for re-sale) in an annual period. In practice for many individuals this allows quantities far in excess of actual personal consumption to be legally imported with the excess subsequently sold illegally without tax being paid, at less than tax-inclusive prices.}

Formally, it can be shown that the change in tax base resulting from the attempt to achieve full compliance depends directly on the Marshallian price elasticity of demand for the good. To analyse this we need only be concerned with the initially non-compliant – since the previously compliant face no change in their price as a result of the increased compliance effort.

Consider the case where compliance effort involves applying the tax rate to the previously untaxed element of the tax base, $(1 - \theta)B^*$. This is the theoretical tax base of the non-compliant which, for an excise, is the quantity of the goods they purchase, labelled $Q_1$ below. This tax base responds negatively to the newly imposed tax. Define the tax-exclusive price as $q$ and the tax-inclusive price as
\[ p, \text{ such that } p = q + t, \text{ and } dp = dt, \text{ where } dt = t \text{ for the previously non-compliant. Tax paid by the previously non-compliant, } \]
\[ \text{, when all untaxed goods are subject to tax is therefore given by:} \]
\[ p = q + t \]
\[ \text{(6)} \]

where \( t \) is the excise, \( t' \) is the tax-inclusive \textit{ad valorem} rate equivalent of the excise: \( t' = t/p \).

Differentiating (6), with respect to the excise, \( t \), the change in tax revenue as a result of imposing the excise on \( \) is given by:
\[ \text{(7)} \]

However, since \( dt = dp \); and defining the price elasticity of demand by the non-compliant, as \( \) , (7) can be re-arranged to give: \( ^{12} \)
\[ \text{(8)} \]

In (8), the ‘mechanical’ effect’ of levying the excise on the non-compliant is given by \( \) and the ‘behavioural effect’ is given by \( \), which is negative if \( \varepsilon < 0 \). The mechanical effect is, of course, the only element captured by the traditional tax gap measure. Also, from our definition of \( \), both the behavioural and mechanical responses are larger the greater the initial degree of non-compliance, \( \).

It can be seen from (8) that if \( \varepsilon = 0 \), then there is no behavioural response, such that \( \). At the other extreme, \( \), if \( \); that is, \( \). This latter expression captures the condition under which enforcement of the tax rate on the non-compliant yields no additional tax revenue; that is, the negative behavioural effect exactly cancels out the mechanical effect. At higher tax rates, or larger tax increases, this occurs at a lower (absolute) price elasticity. For example, at \( t' = 0.25 \) the critical value of \( \varepsilon \) is \( \varepsilon = -4 \), whereas when \( t' = 0.5 \) the critical value falls to \( \varepsilon = -2 \).

Conventional tax gap measures, \textit{ceteris paribus}, are therefore more likely to overestimate potential additional revenue for goods with high tax rates, such as those with large excises (fuel, alcohol,

\footnote{For simplicity of exposition we treat this price elasticity as common across all (non-compliant) taxpayers.}
tobacco). Where these goods have low price elasticities of demand, this will serve to counteract the above *ceteris paribus* effect of high tax rates.

In each of these cases, however, the conventional tax gap will appear to have been eliminated – there are no longer any tax-free goods. From our general definition of the tax gap earlier, we can specify it in this case as . But, as shown in (6), the imposition of the tax rate on the non-compliant yields actual tax revenue from them of which is equal to their theoretical tax liability, . However, whereas is unchanged in the case of $\varepsilon = 0$, it is reduced to zero when .

4. Concluding Remarks

Measures of ‘tax gaps’ – the difference between actual tax collected and the potential tax collection under full compliance with the tax code – have become the primary measures, used by revenue agencies, of tax non-compliance via (legal) avoidance and/or (illegal) evasion. This paper has argued, however, that the tax gap as conventionally defined is flawed because it fails to capture behavioural responses by taxpayers. This is despite the fact that tax gap estimates are frequently used to motivate compliance efforts by revenue agencies that seek to elicit behavioural responses (of a different sort) from taxpayers.

In essence, an improvement in taxpayer compliance implies an increase in those taxpayers’ effective marginal tax rates which, in turn, can be expected to induce a reduction in the relevant tax base. This may involve a loss of total tax revenue and/or a switching of the relevant tax base towards those that face lower effective tax rates, such as when personal taxpayers incorporate in response to personal marginal income tax rates in excess of corporate rates. These tax base responses are not immutable but rather are a function of the tax code and the legal and policy parameters that represent the complete tax ‘system’. For example, the ability of taxpayers to switch between different taxes in order to reduce their tax liabilities, is partly determined by the legal rules, administrative costs, policy choices, etc associated with the existing tax regimes. To reduce behavioural responses, changing these
‘rules’ may be a better approach to raising compliance than seeking to reduce the tax gap associated with the existing regime.\textsuperscript{13}

We have shown that, in the presence of such behavioural responses, tax gap measures both for indirect taxes (such as the ‘VAT-gap’) and direct (income) taxes exaggerate the degree of non-compliance. Conventional tax gap measures are often used to motivate reforms designed to increase the tax compliance rate and realise the ‘missing revenue’. However, where these efforts to reduce non-compliance are successful, in the sense of reducing the tax gap towards zero, this would be expected to be associated with a lower tax base and lower total revenues from the tax than the \textit{ex ante} tax gap estimate implies. In short, some of the ‘missing revenue’ is not recoverable and essentially non-existent! This is not merely a case of the ‘last dollar’ of missing revenue being impossible to collect (as is well-recognised), but rather that a fraction of all so-called missing revenue may be impossible to collect.

\textsuperscript{13} This alternative approach is referred to by IMF (2013) as changing the ‘policy gap’ as opposed to changing the ‘compliance gap’.
References


Figure 1: The Tax Revenue – Tax Base ‘Laffer Curve’

Figure 2: ‘Conventional’ and ‘True’ Tax Gaps
Figure 3: Effects of Changing Tax and Compliance Rates

Figure 4: Indirect Tax Gaps and Cigarette Taxation