OECD TAX POLICY STUDIES

USING MICRO-DATA TO ASSESS AVERAGE TAX RATES

NO. 8
EXECUTIVE SUMMARY

This study presents findings drawn from country examples of the use of micro-level data (that is, data measured at the taxpayer level) to measure various effective average tax rates. The work was carried out by Delegates for Austria, Belgium, Canada, Denmark and Norway to Working Party No.2 (WP2) of the OECD Committee on Fiscal Affairs. The study may be seen as a follow-up to analysis provided in OECD Tax Policy Studies No.4, *Tax Burdens – Alternative Measures*, which reviews relative strengths and weaknesses of a number of measures found in the literature to gauge tax burdens of households and firms.

Rather than elaborating possible applications of average tax rates derived from micro-data to address various tax policy questions, the study only briefly reviews a subset of applications while focusing mainly on the diversity in tax burden results across different taxpayer groups, uncovered in the country work. In identifying this diversity, questions are raised over the informational content and policy relevance of ‘implicit tax rates’, which are average tax rates based on aggregate tax revenue and income data as reported in OECD *Revenue Statistics* and *National Accounts*. Indeed, throughout the study, many comparisons are drawn between the two approaches, one relying on aggregate data and the other on micro-level data, to highlight the relative precision and guidance offered by the latter. The basic implicit tax rate approach is briefly summarised in annexes to the study, with the interested reader directed to OECD Tax Policy Studies No.4 (noted above) and OECD Tax Policy Studies No.5, *Tax Ratios – A Critical Survey*, for further discussion and review of this particular approach.

The average tax rates reviewed in this study rely on actual tax revenues. Relying on actual revenue data (rather than modelling tax parameters) to measure effective tax rates on labour, capital and other types of income holds out the advantage of incorporating the actual net effect of a complex set of factors that determine tax liabilities and are difficult to model. This stands in contrast to other approaches that attempt to model these factors (or a subset of them) or more generally rely on notional estimates or proxies of tax burdens.

In using actual tax revenue figures, an important distinction can be drawn between approaches relying on aggregate tax revenue data which sum across all taxpayers in a given country, and approaches relying on disaggregate or micro-level tax data. As argued throughout the study, reliance on aggregate tax revenue and income or profit data, as under the implicit tax rate approach, to measure effective average tax rates requires restrictive assumptions and significantly limits the scope of analysis. In contrast, the use of micro-level data permits the analysis of tax burdens for individual taxpayers or taxpayer groups, providing a basis for tax policy analysis.

Indeed, the main advantage of micro-data is that it allows one to measure various average tax rates separately for various taxpayer groups with different taxpayer characteristics relevant to policy analysis (for example, for individuals: income level and mix, household structure; for firms: profit level, asset size, industry sector, ownership structure). This is critically important when attempting to assess, for example, the degree of ‘fairness’ or progression in a personal income tax system, or the tax burden on families with children compared to the tax burden on those without. Interest may also exist in comparing tax burdens on small versus large firms, or on firms in one industry versus another. Differences in tax burdens across taxpayers get lost in figures that sum across all taxpayers, leaving the analyst unsure about the degree of dispersion of tax burdens for different taxpayer groups around a single economy-wide average. This in
turn makes it difficult to assess how representative an economy-wide tax rate is, and how that rate should be interpreted, tending to limit its policy relevance.

In addition to helping address questions over the sharing of tax burdens across different taxpayers groups, taxpayer level data may be applied to analyse the impact of taxation on employment incentives, or investment incentives, or other incentives for different taxpayer groups. Micro-based average tax rate measures are particularly useful where one has evidence that the behavioural response to a given tax distortion (or ‘tax wedge’) differs depending on the taxpayer group. Tax-related disincentives to enter the labour force may be stronger, for example, for individuals with a working spouse, as compared to single individuals. Where such differences exist, gauging taxpayer responses may require grouping taxpayers by household structure, for example, measuring average tax wedges for the different groups, and applying different elasticity estimates to those groups. Such a targeted approach at assessing behavioural responses to tax policy reforms is generally not possible when working with aggregated data alone.

Work by Austria illustrates the difficulties met in interpreting a single average tax rate derived from aggregated data, given the variability in average tax rates across income levels observed in the Austrian data. In particular, the overall average tax rate on wage income was found to be nearly double that applicable to workers at the average production wage, half that applicable to top wage earners, and roughly triple that applicable to the lowest-skilled workers. Given this variability, the interpretation to be given to the overall average tax rate computed for all wage earners combined is not clear, making it difficult to infer possible labour market implications. Moreover, taking the overall average rate as an estimate of the tax burden on ‘labour’ to be compared with that on ‘capital’ is difficult, given the variability in observed results across income levels.

While stressing the ability of micro-data to assess tax burden measures for various taxpayer groups, and arguing that micro-level analysis is required to address many (if not most) tax-policy questions, the report acknowledges interest in economy-wide average tax rates (e.g. derived for labour or capital income) for certain purposes. Because micro-level data can be grouped at various levels of aggregation including full aggregation (but not the reverse), micro-data may be used to derive economy-wide average tax rates with a relatively high degree of precision. Such rates may be needed in macro-models that admit only a single ‘representative’ average tax rate, for example to account for the possible impact of taxation on aggregate unemployment, or aggregate investment. While the ability of an overall rate to properly capture overall tax effects may be questioned, certain models may nevertheless require a single summary measure.

The study reviews work by Norway and Denmark that illustrates how micro-data can permit a more targeted assessment of personal tax collected on different income types to feed into economy-wide measures. In particular, by isolating taxes that apply to a single income type, and by using taxpayer-specific (rather than economy-wide) average tax rates to decompose revenues raised by taxes levied on multiple income types, one can measure average tax rates for different categories of income with greater precision. A related advantage arises where one is able to more precisely match numerator (tax) and denominator (income) amounts than is possible when relying on aggregate data drawn from different sources (and based on different samples).

The second half of the study focuses on the use of micro-data to measure effective average tax rates on corporate profits. The analysis in this part emphasises the critical importance of accounting for business losses in a consistent manner when measuring corporate profits and the amount of tax thereon, taking into account loss carryover provisions. A number of examples are provided to illustrate the difficulties in interpreting average tax rates based on aggregate data given the inability to properly align profits and tax. The country work shows how both levels and trends in average corporate tax rates may be misrepresented when using aggregate data. The final sections highlight a diverse range of average tax rate results for corporations grouped according to various criteria. As in the work addressing the taxation of labour
income, this diversity in results leads one to reconsider what can be made of results derived at the

The caveats discussed in the study focusing on the treatment of losses are noteworthy. Much has been
said in recent years in many countries about the need to rebalance the tax burden on labour versus capital.
While not always fully articulated, these calls seem to stem from a general concern that the sharing of the
tax burden between ‘capital’ and ‘labour’ is not fair. They also reflect worries that tax systems may be
impeding employment and possibly investment. To support the need for reform, advocates would like to
point to annual measures of the tax burden on capital and labour, which could be compared across
countries and over time. Yet developing reliable annual indicators based on aggregate data has proven to
be elusive. The study reviews obstacles met in measuring effective tax rates on income from capital tied to
loss considerations, with reference to the analysis of tax on income from capital at the corporate level.

In particular, the work by Belgium and Canada highlights the critical importance of adjusting for
business losses in measuring an economy-wide corporate average tax rate. This finding also has
implications when considering implicit tax rates on capital income, given that tax on income from capital
applies in most systems at both the corporate and personal levels. The study reviews two methods relying
on micro-data to adjust for business losses, considers country results based on one methodology, and flags
difficulties of interpretation when such adjustments are not possible. While not specifically addressed in
the work reviewed in this study, the findings also have implications for the measurement of average tax
rates on business or total income of the self-employed.

The study also reports significant variation on average corporate tax rates across firms grouped by
industry and firm size. The analysis by Belgium and Canada reveals that economy-wide results may not
provide accurate indicators of levels and trends in corporate average tax rates for certain groups of firms.
A disaggregate view is normally required to steer policy analysis and decisions. For example, an increase
in an economy-wide average corporate tax rate may be driven by changes in tax provisions that affect one
group of corporations, largely to the exclusion of others. Elimination of a tax credit for R&D, for example,
would hit primarily R&D-intensive firms. Or restrictions on loss carry forward rules may impact small
firms more than large. In addressing the increase in the economy-wide average corporate tax rate, focus
may therefore be best directed at the affected firms, rather than all firms. This may lead one to possibly
consider targeted (tax or non-tax) relief for the affected firms, rather than across the board relief. Or no
change may be called for. But the salient point is that micro-data enables a more informed assessment of
where and why tax burdens are changing, necessary to guide tax policy debate and reform.

The relative strengths of working with micro-data raise a central issue of the confidentiality of
taxpayer information, and the general inability of those outside government to undertake revenue-based
average tax rate analysis at the micro-level. This is unfortunate (yet understandable), as broader access to
micro-level data would accelerate progress in this field. One area that countries might wish to explore, on
the corporate tax side, would examine possible levels of aggregation of taxpayer-level data that maintain
confidentiality, while supporting revenue-based average tax rate analysis on a disaggregate basis. On the
personal tax side, it would be useful to explore whether confidentiality could be maintained and access to
data supported through the used of anonymous taxpayer records.