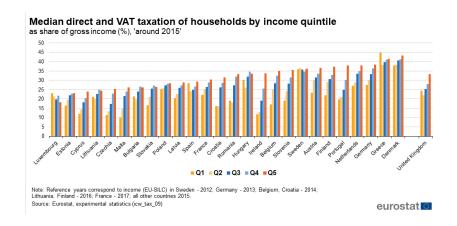
Interaction of household income, consumption and wealth – statistics on taxation

Statistics Explained

Data extracted in September 2020 Planned article update: September 2024





This article elaborates further on the experimental statistics on income, consumption and wealth first published in 2017 for the reference year 2010 and in 2019 for the reference year 2015, and last revised in 2020. It is based on data resulting from the statistical matching of income and consumption expenditure household surveys described in "Interaction of household income, consumption and wealth - methodological issues". The joint income and consumption data set enables us to observe at the same time how much money households receive and how much they spend in a certain year. By combining these two economic dimensions with data on taxes paid by households on their income and expenditures, we can assess the impact of direct and indirect taxation on different groups of households, and in particular on different income groups.

For the figure above, we sum up our estimate of value added tax (VAT) paid by the median household as a share of gross income and the share of direct income tax paid by the median household for each income group 'around 2015'. We see that direct taxation mitigates the regressive pattern of VAT, as in most EU Member States the share of gross income paid for both VAT and direct taxation together increases with increasing income.

1

Background

National governments use two major systems to tax individuals: A direct system of taxes on wages, pensions, benefits, capital gains, income from property or from any other sources, including as well social insurance contributions paid by employees, self-employed and possibly unemployed and retired individuals. An indirect system of taxes paid on all goods and services that are bought or sold for use or consumption: the Value Added Tax (VAT). Both tax systems offer opportunities to mitigate the different levels of income and savings across households. These opportunities are used to different degrees by the fiscal systems of EU countries. The EU has standard rules on VAT¹ providing for the application of a standard VAT rate of not less than 15%, but the rate may be higher and, for a list of certain products, countries may apply reduced VAT rates. As such, the majority of EU countries apply reduced VAT rates for basic food and other indispensable products (even zero percent in exceptional cases)². They do so to account for the fact that low income households devote a higher share of their budget to such indispensable products than high income households do. As for direct taxes, most countries apply a progressive tax system where persons with higher incomes pay a higher percentage of their income as tax.

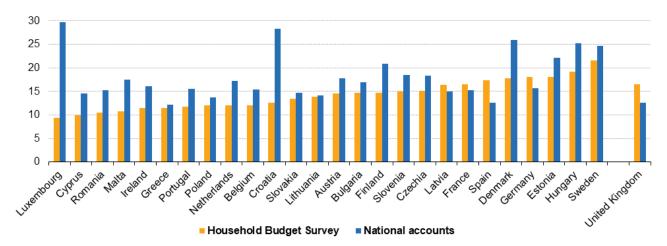
Indirect taxation as a share of expenditure

Figure 1 shows the VAT rate that applies to average consumption, according to data obtained from household budget surveys (HBS) and the VAT rate obtained from national accounts. According to the national accounts data, in 2015 the highest VAT rate paid on average was for consumption of the average Luxembourgish household (up to 29.7%), whereas expenditure was only taxed at 12.2% on average in Greece and 12.6% in Spain. HBS data for the same year show a different picture, as the tax rate is the lowest in Luxembourg (9.4%) and the highest in Sweden (21.6%).

¹Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax The VAT Directive provides for the application of a standard rate of not less than 15%, but with the option to apply up to two reduced rates of at least 5% to a restricted list of goods and services listed in Annex III to the VAT Directive.

² https://ec.europa.eu/taxation_customs/business/vat_en

Share of VAT in the total consumption expenditure of the average household (%), 2015



Note: For HBS, the rate is computed by multiplying the shares of COICOP items (hbs_str_t211) by the average consumption of households (hbs_exp_t111) and by experimental COICOP tax rates (icw_tax_10). The national accounts aggregate is derived by dividing the total VAT (D211) received by governments by the individual consumption expenditure aggregate (P31) of the household sector.

Source: Eurostat (experimental statistics - icw_tax_10), (hbs_exp_t111, hbs_str_t211) and (gov_10a_taxag & nasa_10_nf_tr), 2015.

Figure 1: Share of VAT (%) in the overall consumption expenditure of the average household, derived from 2015 National Accounts and Household Budget Survey data. Source: Eurostat (hbs_exp_t111), (hbs_str_t211), (icw_tax_10), (gov_10a_taxag) and (nasa_10_nf_tr)

Such differences may be conceptual. The national accounts figure compares receipts made by the government from VAT paid by households in the country regardless of whether or not the households live in the country. By contrast, the HBS measures only the VAT paid by households living in the country. In countries where cross-border consumption accounts for an important share of the economy, this may explain part of the difference. However, it may also be explained by the fact that the national accounts do not measure consumption in the same way as HBS, meaning that the consumption basket used in the calculation of consumer prices in national accounts may differ from the consumption basket in HBS. Since different VAT rates may apply for the different products in the consumption basket, the average VAT rates will differ as well. Nevertheless, although there are reasons for finding different average VAT rates between national accounts and HBS, the difference in rates is particularly large for some countries.

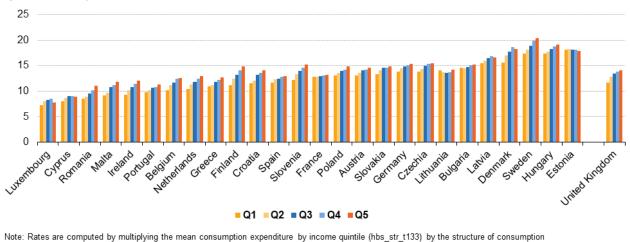
Now we are not only interested into the VAT rate paid by the average household of the entire population, but we do want to know whether this average VAT rate varies for different subgroups. In the following sections, we use the social survey data to shed further light on different household groups.

Indirect taxation as share of expenditure for different income groups

Due to reduced VAT rates on food and some other indispensable products, and because low income households spend more on such indispensable items than on other items as compared to high income households, the average rate of VAT on expenditure is generally lower for low-income households than it is for high-income households. In Figure 2, we show the share of VAT in the overall expenditure on consumption and how it relates to income levels. In some countries (Ireland, the Netherlands, Finland, Slovenia and Sweden), we clearly observe that the more income households earn, the more VAT they will pay on their expenditure. This confirms that the regressive pattern of standard VAT rates for all households, regardless of their income, has been reversed by the use of reduced, super-reduced or zero rates targeted at lower income groups in the national VAT policies. In other countries, however, this effect is rather limited

or does not materialise at all, with households of all income levels paying the same share of VAT on their expenditure.

Share of VAT in the total consumption expenditure of households (%) by income quintile, 2015



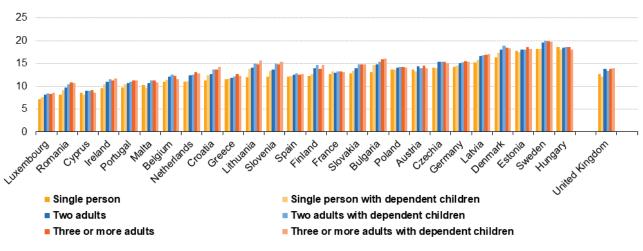
Note: Rates are computed by multiplying the mean consumption expenditure by income quintile (hbs_str_t133) by the structure of consumption expenditure by income quintile and COICOP consumption purpose (hbs_str_t223) and by experimental COICOP tax rates (icw_tax_10).

Source: Eurostat (hbs_exp_t133, hbs_str_t223 and icw_tax_10), 2015.

Figure 2: Share of VAT in the overall consumption expenditure of households by level of income, 2015 Source: Eurostat (hbs_exp_t133), (hbs_str_t223) and (icw_tax_10)

Indirect taxation as share of expenditure for different types of households

Share of VAT in the total consumption expenditure of households (%) by household type, 2015



Note: Rates are computed by multiplying the mean consumption expenditure by type of household (hbs_str_t134) by the structure of consumption expenditure by type of household and COICOP consumption purpose (hbs_str_t224) and by experimental COICOP tax rates (icw_tax_10).

Source: Eurostat (hbs_exp_t134, hbs_str_t224 and icw_tax_10), 2015.

Figure 3: Share of VAT in the overall consumption expenditure of the average household by household type, 2015 Source: Eurostat (hbs_exp_t134), (hbs_str_t224) and (icw_tax_10)

We are also interested in the share of VAT paid by different household types on their average consumption expenditure. Is there a pattern for specific types of households? Are households with children on average taxed less than those without children? For most countries, Figure 3 shows small to negligible differences of VAT paid by different household types. In general, single households seem a bit better off. Having or not having children hardly makes a difference, but is rarely associated with paying lower VAT shares, despite of some countries applying reduced or even zero tax rates on products for children (Ireland and the United Kingdom, for example, have zero tax

rates on children clothing and nappies, Czechia and Croatia apply reduced VAT rates for baby food). Consumption behaviours are likely to differ widely within a given type of household and consequently, different household sizes and compositions do not result into differences in the average rate of VAT paid on the overall expenditure.

Indirect taxation as share of expenditure for different age groups

Share of VAT in the total consumption expenditure of households (%) by age of the reference person, 2015

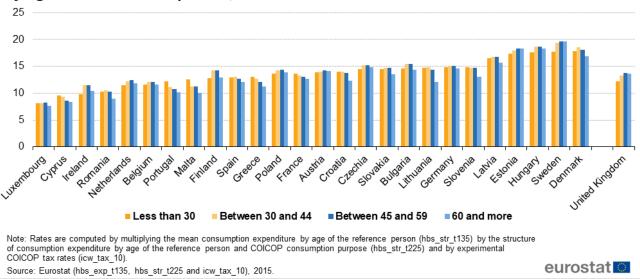
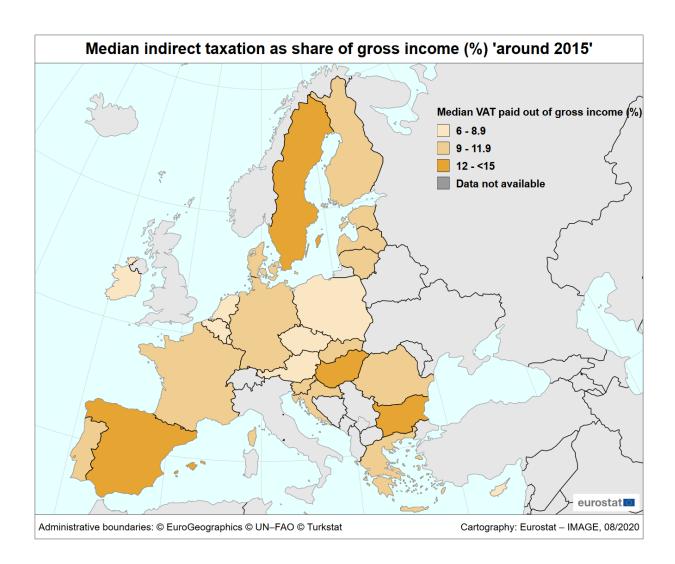


Figure 4: Share of VAT in the overall consumption expenditure of the average household by age of the reference person, 2015 Source: Eurostat (hbs_exp_t135), (hbs_str_t225) and (icw_tax_10)

Another variable of interest, the age of the reference person, makes it possible to take into account changes in consumption habits over the life cycle. VAT rates tend to follow changes in income over a person's life cycle. In general, VAT is lower at the beginning of a person's working life and then goes up as the person grows older, reaching a maximum in midlife, and then decreasing, in particular upon retirement when income drops. Income drives consumption choices, at least in part: households with higher income tend to consume a wide variety and even luxury goods, while households with lower income dedicate a significant proportion of their budget to the purchase of goods that fulfil basic needs (which in general have lower VAT rates, if any). Hence, for certain countries, we find this hump-shaped curve for VAT rates over the life cycle (Figure 4), whose pattern is most likely driven by income. The effect is rather small though and for many countries it cannot be observed at all.

Indirect taxation as a share of gross income



Map 1: Median amount of VAT paid by households as share of their gross income (%), around 2015

Above we have seen that consumption behaviour and therefore average VAT rates on consumption strongly depend on income levels. On average, lower income households pay a smaller share of their expenses as VAT than high income households. Now we do want to know how the burden of VAT is spread among households, not only as share of their expenditure but also as share of their income. Does the progressive pattern of higher VAT rates for higher income households hold when looking at actual incomes?

Map 1 shows a large range of the median amount of VAT paid as a share of gross income for EU countries. The country with the highest share of VAT in relation to gross income is Hungary, where VAT represents 14.7% of gross income (compared to 19.2% of consumption). The share of VAT is the lowest in Luxembourg with 6.1% of gross income (and 9.4% of consumption).

Indirect taxation as share of gross income for different income groups

Differentiating this picture by looking at different income groups (Figure 5) shows large differences not only between countries, but even more so for different income groups within the same country. For all countries without exception, the median share of gross income that goes to pay VAT is highest for the poorest 20% of households, it decreases as income increases and is lowest for the richest 20% of households. The variation across the income distribution may be wider in some countries than in others, but in 10 out of 27 countries, half of the poorest 20% of household pay more than 15% of their gross income for VAT, while in the vast majority of countries (all except Hungary) not more than 10 % of household gross income goes to pay VAT for half of the richest 20% of households. The most extreme case is Spain where the median VAT paid ranges from 9.3% for the richest 20% of households to 23.1% for the poorest 20% of households. Thus, in relation to income levels VAT is not progressive at all.

Median indirect taxation by income quintile,

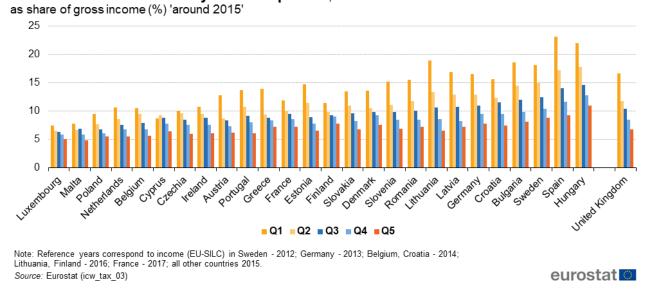


Figure 5: Median VAT paid by households as a percentage of their gross income by income quintile, around 2015. Countries ordered by the median VAT paid out of gross income for the total population Source: Eurostat (icw_tax_03)

Indirect taxation as share of gross income for different types of households

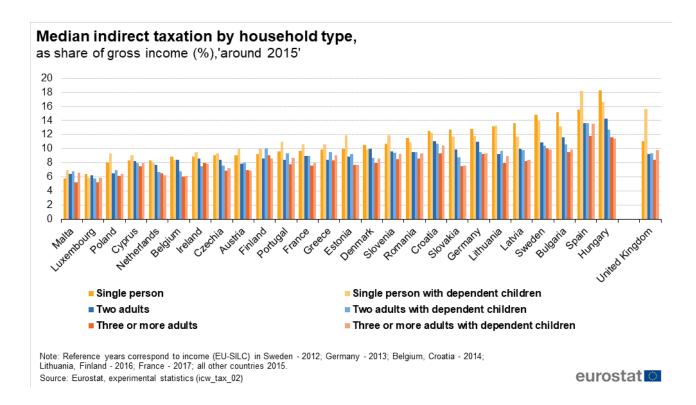


Figure 6: Median VAT paid by households as a percentage of their gross income by household type, around 2015 Source: Eurostat (icw_tax_02)

VAT as a share of gross income (Figure 6) exhibits in general a higher variability across household types than VAT as a share of consumption (Figure 3). Moreover, in a majority of countries single person households turn out to be more heavily taxed in proportion to their income than the other household types. This may be explained by a lower income of these households on average, because of having only one earner or respectively due to a high proportion of retired people living in single households. Lower incomes go together with lower median saving rates, since the fraction of income used for consumption increases with decreasing income (see also Interaction of household income, consumption and wealth - statistics on main results). Having to use a higher share of income for consumption means paying a higher share of it on VAT.

Indirect taxation as share of gross income for different age groups

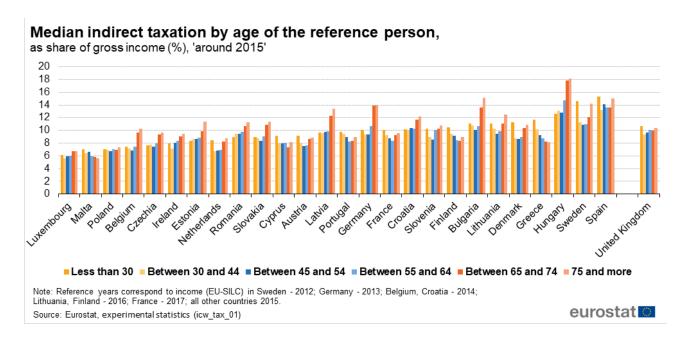


Figure 7: Median VAT paid by households as a percentage of their gross income by age of the reference person, around 2015 Source: Eurostat (icw tax 01)

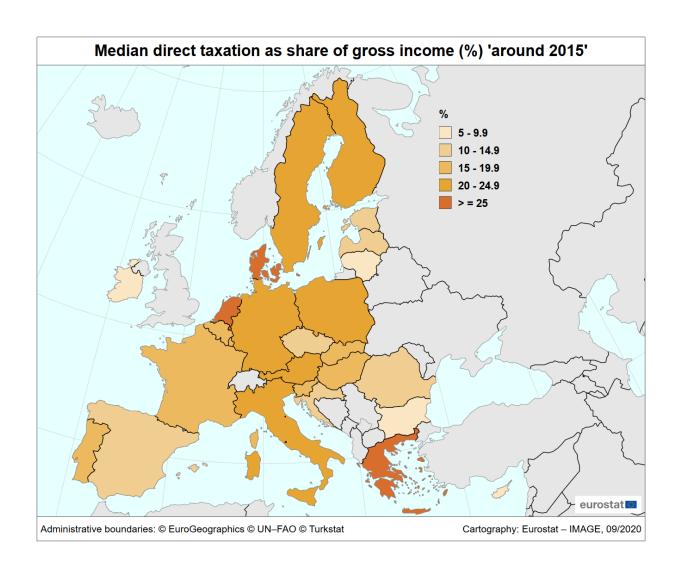
In contrast to Figure 4, Figure 7 shows that the VAT rate as a share of income follows a U-shaped curve over the life cycle. In many EU countries, households whose reference person is under 30 years old face a high median VAT rate as a share of their income (sometimes even the maximum in relation to other age classes, like in Denmark, Greece, Spain, France, Cyprus, Malta, Austria, Portugal, Slovenia, Finland and Sweden). This figure then usually decreases with age, and in most cases increases again for households with a reference person over 65 years old, in some cases already for the age class 55-64. Here again, it seems that the change in income over the life cycle drives the pattern, as households at the beginning and the end of the life cycle tend to have higher marginal propensities to consume. In Belgium, Bulgaria, Czechia, Germany, Estonia, Croatia, Latvia, Hungary, Romania and Slovakia the shares of VAT paid by the elderly as part of their gross income are very pronounced as compared to younger households, whereas in Greece, Cyprus, Malta and Finland the under 30ties pay by far the highest share.

However, VAT paid as a share of gross income is only one part of the picture. It does not reflect the burden of VAT once direct taxes and social contributions have been paid. Therefore, VAT as a share of gross income needs to be complemented by direct taxes paid as a share of gross income. We understand as direct taxes, taxes levied on income and wealth, as well as social insurance contributions paid by employees, self-employed and if applicable unemployed and retired individuals. In the following section, we try to account also for these direct taxes paid.

Direct taxation

If we want to analyse the tax burden on households in the EU and compare different household groups, we need to account for the difference in fiscal policies not only with regard to VAT, but in particular for direct taxation. In this paper, direct taxation refers to taxes on income as well as social contributions, as defined in EU statistics on income and living conditions (EU-SILC). However, we also include in direct taxes regular taxes on wealth, i.e. taxes that are payable on a periodic basis

on the ownership of real-estate assets, and taxes on wealth as a whole, net of indebtedness, or any tax on valuables.



Map 2: Median amount of direct taxes paid by households as share of their gross income (%), 2015 Source: Eurostat (icw tax 04)

The median direct tax rate as a share of gross income varies widely across national tax systems in the EU (Map 2), ranging from 6.4% in Ireland up to over 30% in Greece and Denmark in 2015. It remains relatively stable over time for most of the countries though, except for Greece where a sudden increase of more than 10 percentage points can be observed in 2014 (see table icw_tax_04), which may be partly, but not entirely be explained by a decrease in incomes from 2014.

Direct taxation as share of gross income for different income groups

More important, in a social context, than the overall median tax rate, is the way in which national tax systems spread the burden and thereby partly mitigate the large differences in gross income between low and high income groups. All EU countries use a progressive system of direct taxation, which means that the share of gross income paid for direct taxes increases with income (Figure 8).

Median direct taxation by income quintile,

as share of gross income (%), 2015

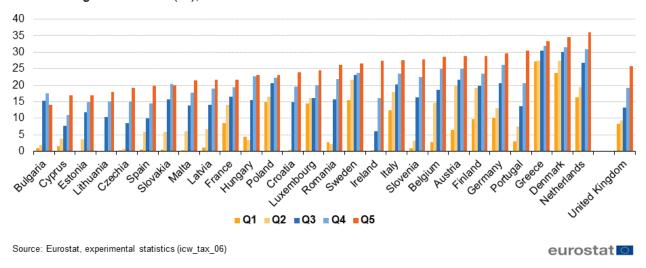
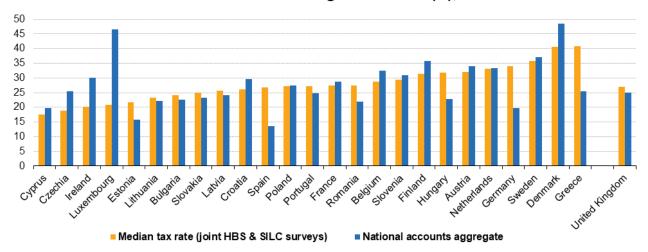


Figure 8: Median amount of direct taxes paid by households (as a percentage of their gross income) by income quintile, 2015 Source: Eurostat (icw_tax_06)

Direct and indirect taxation

Our objective now is to sum up direct taxes (including social contributions) and VAT paid as share of gross income to obtain a figure encompassing the main compounds of overall household taxation. Figure 9 shows that taxation continues to vary widely across EU countries: the median ratio of VAT and direct taxes out of gross income ranges from 17.6% in Cyprus to 40.8% in Greece. We compare these data with data from national accounts (NA), more specifically with taxes collected by the authorities as personal income taxes, social contributions and current wealth taxes compared to an ad hoc gross income derived from disposable income and taxes paid by households. According to national accounts, aggregate VAT and direct taxes out of household gross income is the lowest in Spain (13.5%) and the highest in Luxembourg (46.5%).

Median direct and VAT taxation as share of gross income (%), 2015



Note: The median rate is computed by dividing the sum of VAT and direct taxes paid by gross income at the household level (survey statistics). The national accounts aggregate is derived by dividing the sum of income taxes received by the government (D51A), social contributions (D613), other taxes (D59A) and VAT (D211) by the sum of disposable income (B6G) and taxes (D5) paid by households, as well as social contributions (D613). Source: Eurostat (experimental statistics - icw_tax_07) and (gov_10a_taxag & nasa_10_nf_tr), 2015.

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Figure 9: Median amount of direct taxes plus VAT paid by households as share of their gross income (%) - Source: Eurostat (icw_tax_07), (gov_10a_taxag) and (nasa_10_nf_tr)

The differences between the national accounts and survey data may be explained by differences in the indicators used: the median is a distributional indicator splitting the population into two equal shares, while aggregates consider the population of households as a whole. Thus, the differences may reflect distributional differences in the allocation of the tax burden across the population. Another explanation lays in the different concepts inherent to micro and macro economic statistics: Differing definitions of income, for instance. Further to that, NA and survey measurements differ as well: In the case of the median ratio, VAT is estimated based on the expenditure reported by households (whether the VAT has actually been paid or not), and direct taxes are reported by the households (and in many cases obtained from fiscal sources). In the case of the aggregate ratio, VAT and direct taxes are the amounts collected by the authorities. And finally, the reference year of NA data used here is always 2015, whereas the exact survey year of our income and consumption estimates varies slightly for some countries.

Direct and indirect taxation as share of gross income for different income groups

The spread of VAT and direct taxes combined as share of gross income over different income groups has been shown in Figure 10, where we see that the combination of VAT and direct taxes turns out to be progressive, meaning that the combined taxes paid by households out of their gross income increases with income in almost all EU countries. Hence, in most countries, the regressive pattern observed for VAT as a share of gross income is largely mitigated by direct taxes that are usually designed in a way that shifts the fiscal burden towards the top of the income (and possibly wealth) distribution. Not in all countries, however, is this mitigating effect of progressive systems of direct taxes sufficient to shift the overall burden of direct and indirect taxes to the top of the income distribution: in Greece, Spain, Lithuania, Luxembourg, Sweden and partially Bulgaria and Hungary, the combined tax burden does not necessarily increase with increasing income. In Sweden, the burden is almost equal for all income classes, and in Luxembourg, the tax burden even tends to decrease with rising income.

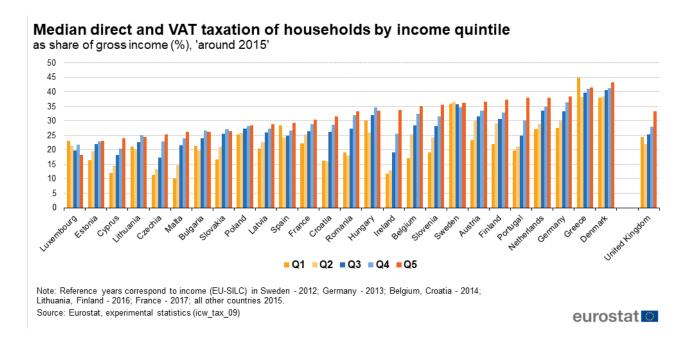


Figure 10: Median amount of direct taxes plus VAT paid by households as a percentage of their gross income by income quintile - Source: Eurostat (icw tax 09)

Direct and indirect taxation as share of gross income for different types of housholds

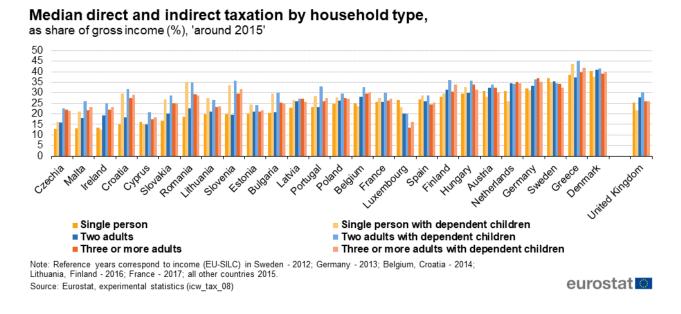


Figure 11: Median amount of direct taxes plus VAT paid by households as a percentage of their gross income by household type - Source: Eurostat (icw_tax_08)

As shown in Figure 11, there is no clear pattern for the incidence of VAT and direct taxation across household types. In some countries the tax burden seems to increase in relation to household size, in other countries it remains fairly stable. The amount of taxes paid as share of gross income across household types depends on several factors, such as income differences and the demographic structure of the population. Different birth policies may also contribute to the mixed results obtained here across countries.

Direct and indirect taxation as share of gross income for different age groups

Median direct and indirect taxation by age of the reference person,

as share of gross income (%), 'around 2015'

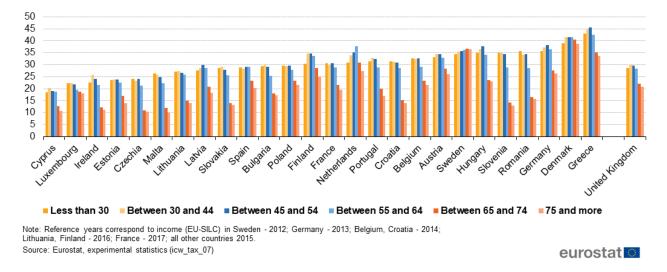


Figure 12: Median amount of direct taxes plus VAT paid by households as a percentage of their gross income by age of the reference person - Source: Eurostat (icw_tax_07)

Confirming the earlier observation that the share of taxes paid by households across the life cycle is very much driven by income, the pattern of the tax rate depending on the age of the reference person follows a hump-shaped curve that is consistent with the change in income over the life cycle (Figure 12). Noticeably, households whose reference person is 65 or older pay significantly less tax in relation to their gross income than other households. This is the consequence of both a drop in income due to retirement (and therefore a drop in the direct taxation rate) and a change in the consumption structure (as shown in Map 1). It can be observed for all countries except Denmark and Sweden where the direct taxation rate hardly drops with age and, for Sweden, consumption does not seem to change either.

Limitations

It should not be forgotten that all observations in this article are subject to some uncertainty. First, even though we describe the direct taxes quite comprehensively with income and wealth taxes and social contributions, there are still some taxes that are not accounted such as for example local taxes. Likewise, indirect taxes in this article include only VAT and no other excise taxes. In addition, the automatized application of VAT rates on COICOP items has limitations where national rules get very specific for certain items. Finally, the estimates presented here are based on the statistical matching of data from two different surveys and their quality may vary across countries, as do the exact reference years.

Feedback

To help Eurostat improve these experimental statistics, users and researchers are kindly invited to give us their feedback by email

Source data for tables and graphs

Interaction of household income, consumption and wealth - statistics on taxation- Graphs and tables

Data sources

Our experimental income, consumption and wealth statistics are based on the statistical matching of EU statistics on income and living conditions (EU-SILC) and Household Budget Survey (HBS) data. The collection of EU-SILC was launched in 2003 and is governed by Regulation 1700/2019 (previously: Regulation 1177/2003) of the European Parliament and of the Council. The Household Budget Survey (HBS) is a survey conducted every 5 years on the basis of a gentlemen's agreement between Eurostat, the Member States and the EFTA countries. Data are collected using national questionnaires and, in most cases, expenditure diaries that respondents are asked to keep over a certain period of time. The wave used for this article is the 2015 wave, although the exact reference year may vary across countries. EU-SILC and HBS data are matched according to the year of reference for HBS, such as to obtain a fused dataset containing household-level information on both income and consumption of the same year. The results are considered valid "around 2015". Results for Italy are irreliable due to the lack of an income proxy variable in HBS and have thus not been published. For more details on the statistical matching of EU-SILC and HBS, please see another Statistics Explained article describing the methodology used.

Gross income is collected as variable HY010 in EU-SILC and comprises the sum for all household members of gross personal income components (wages, self-employment income, pensions and benefits) plus gross income components at household level.

Consumption is described according to the Classification of individual consumption by purpose (COICOP) for each household. Total consumption is obtained by adding up all COICOP items.

Direct taxation is estimated through variables collected in EU-SILC: HY120 'regular tax on wealth' and HY140 'Tax on income and social contributions'. Regular taxes on wealth refers to taxes that are payable on a regular basis on the ownership or use of land/buildings by their owners. It also includes taxes on net wealth or on valuables. HY140 includes taxes on income, profits and capital gains, as well as social insurance contributions paid by employees, self-employed and if applicable unemployed and retired individuals. For figures on direct taxation as share of gross income we divide the sum of HY120 and HY140 by HY010.

Value-added tax (VAT) is a tax paid by consumers on top of what they spend for consumption. Even if VAT collection may involve many parts of the economy (in general firms, or any seller of goods or services, are taxed), the households that consume in the country are the ones that end up paying the tax. And, within the EU, it does not matter whether a household lives in the country where it consumes or not. VAT applies to goods and services sold in the European Union, including between Member States; goods and services sold outside the EU are not subject to VAT. In the EU, all countries have a 'multi-rate' system, with a 'standard' rate as a general rule and reduced/super-reduced/zero rates as exceptions for specific goods and services. In accordance with European tax rules , the standard rate should not be below 15%, while the reduced rates (one or two reduced rates may apply to a specific list of goods and services defined by the rules) should not be below 5%. For further information, the reader may refer to the Commission's documentation on VAT .

In our calculations of **indirect taxes** paid by households, we apply the <u>rates obtained from the European Commission's Directorate-General for Taxation and Customs Union</u> onto data obtained through multiplication of the average household consumption (hbs_exp_t111) and the consumption structure of households (hbs_str_t211). This means a VAT rate is applied for every COICOP item. This makes it possible to compute the VAT that is paid by each household, assuming that every expense reported by the household has been made on the national territory and that none of the reported expenses have been made in the black economy. Note that we use for each country the VAT rates of the most recent year <= 2015. Then, for our VAT as share of total expenditure or as share of gross income, we divide this rate by the total consumption expenditure or respectively gross income in our matched dataset with HBS and EU-SILC income reference years "around 2015".

Context

In order to support its agenda for social fairness and a good balance between economic and social goals, the European Commission has stressed the need to bring social indicators up to a par with macroeconomic indicators within the EU's reinforced macroeconomic governance. To this end, it is important to ensure the availability of

harmonised statistics at EU level that cover the distributional aspects of households' income, consumption and wealth (ICW).

In September 2016, the Directorates General of the National Statistical Institutes (DGINS) conference³ in Vienna stressed the importance of ICW statistics shedding light on people's material well-being and on inequality. The conference concluded that there was a need for a harmonised statistical framework on ICW based on a multi-source approach integrating existing sources of data (EU-SILC, Household Budget Survey (HBS) and the Household Finance and Consumption Survey (HFCS). Eurostat's experimental statistics on income, consumption and wealth are the outcome of this data integration, which is based on certain statistical assumptions and decisions. They will be regarded experimental until they reach a sufficient level of maturity.

Other articles

- · Interaction of household income, consumption and wealth statistics on main results
- · Interaction of household income, consumption and wealth methodological issues
- · Living conditions in Europe income distribution and income inequality

Database

• Income, consumption and wealth - experimental statistics , see:

Saving rates (icw_sr)

Poverty (icw_pov)

Taxation (icw_tax)

Dedicated section

· Experimental statistics

Publications

Others

- De Agostini P., Capéau B., Decoster A., Figari F., Kneeshaw J., Leventi C., Manios K., Paulus A., Sutherland H., Vanheukelom T., Euromod Extension to Indirect Taxation: Final Report, Euromod Technical Note Series, 2017.
- OECD/KIPF, The Distributional Effects of Consumption Taxes in OECD Countries, OECD Publishing, 2014.

Legislation

- Regulation (EC) No 112/2006 of 28 November 2006 on the common system of value added tax
- Summaries of EU Legislation: The EU's common system of value added tax (VAT)

³The DGINS conference is held once a year and aimed at gathering the Directors General of the National Statistical Institutes so as to discuss topics related to the statistical programme. For more details, please have a look here.

Notes

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http://ec.europa.eu/eurostat/statistics-explained/index.php/Article_name