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A Comparison of the Tax Burden on Labor in the OECD

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Key Findings

- Average wage earners in the OECD have their take-home pay lowered by two major taxes: individual income and payroll (both employee and employer side).
- Value-added (VAT) and sales taxes also place a tax burden on take-home pay used for consumption.
- Before accounting for VAT and sales tax, the average tax burden a single average wage earner faced in the OECD was 34.6 percent of pretax earnings in 2020. The average OECD tax burden on labor has dropped 1.8 percentage points over the past two decades.
- The average tax burden among OECD countries varies substantially. In 2020, a worker in Belgium faced a tax burden seven times higher than that of a Chilean worker.
- In 2020, the average tax burden from income and payroll taxes for families in OECD countries was 24.4 percent, 10.2 percentage points lower than for single taxpayers without children. In general, countries with higher tax wedges provide greater tax relief for families with children.
- Between 2019 and 2020, the OECD average tax burden decreased by 0.39 percentage points and COVID-19 measures accounted for roughly one-fifth of that.
- In 2020 an Italian worker making €38,396 (US $56,839) faced a marginal tax wedge as high as 117 percent on a 1 percent increase in earnings. Such marginal tax wedges might deter workers from pursuing additional income and working extra hours.
- Accounting for VAT and sales tax, the average tax burden on labor in 2020 was 40.1 percent, 5.5 percentage points higher than when only income and payroll taxes are considered.

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Introduction

Individual income taxes, payroll taxes, and consumption taxes like value-added taxes (VAT) make up a large portion of many countries' tax revenue.[1] These taxes combined make up the tax burden on labor both by taxing wages directly and through the tax burden on wages used for consumption.

The Organisation for Economic Co-operation and Development (OECD) reports data on the composition of the tax burden on labor across 37 developed countries.[2] The most recent data available shows that, on average, single workers with no children, earning a nation's average wage in the OECD, faced a tax burden from income and payroll taxes of 34.6 percent in 2020. After accounting for VAT and sales taxes, which reduce the purchasing power of earnings, the OECD average tax wedge was 40.1 percent in 2020.

In many countries, taxes are progressive, which means that higher-income workers are taxed at higher rates. However, the average worker does not necessarily escape from being burdened by these taxes. It is also important to note that the tax burden on families is often lower than the burden on single, childless workers earning the same pretax income.

As noted in our primer[3] on the tax wedge on labor, there is a negative relationship between the tax wedge and employment. Because of this, countries should explore ways to make their taxation of labor less burdensome to improve the efficiency of their labor markets.

The Tax Burden on Labor

The tax burden on labor is referred to as a "tax wedge," which simply refers to the difference between an employer's cost of an employee and the employee's net disposable income. For the purpose of the OECD study, the wedge is determined by several factors: the amount of pretax income (referred to as "labor cost") of a worker, the taxes that apply to that income, and whether the taxpayer is filing as single or as a family.

The OECD calculates the tax burden by adding together the income tax payment, employee-side payroll tax payment, and employer-side payroll tax payment of a worker earning the average wage in a country. The OECD then divides this figure by the total labor cost of this average worker, or what the worker could have earned in the absence of these three taxes.

Personal Income Taxes

Personal income taxes are levied directly on an individual's income, including wage income. These taxes are typically levied in a progressive manner, meaning that an individual's average tax rate increases as income increases. The amount of income tax paid typically also depends on whether the taxpayer is filing as single or as family, as most countries allow for some targeted tax relief for families with children.

1 Cristina Enache, "Sources of Government Revenue in the OECD," Tax Foundation, Feb. 11, 2021, https://www.taxfoundation.org/publications/sources-of-government-revenue-in-the-oecd/.

2 OECD Publishing, *Taxing Wages 2021*, https://www.oecd.org/ctp/tax-policy/taxing-wages-20725124.htm.

3 Scott A. Hodge and Bryan Hickman, "The Importance of the Tax Wedge on Labor in Evaluating Tax Systems," Tax Foundation, 2018, https://www.files.taxfoundation.org/20180913095728/Global-Primer_tax_wedge.pdf.

Payroll Taxes

Payroll taxes are typically flat-rate taxes levied on wages and are in addition to the taxes on income. In most OECD countries, both the employer and the employee pay payroll taxes. These taxes usually fund specific social programs, such as unemployment insurance, health insurance, and old age insurance.

The Economic Incidence of Payroll Taxes

Although payroll taxes are typically split between workers and their employers, economists generally agree that both sides of the payroll tax ultimately fall on workers.

In tax policy, there is an important distinction between the "legal" and the "economic" incidence of a tax. The legal incidence of a tax falls on the party that is legally required to write the check to the tax collector. However, the party that legally pays a tax is not always the one that ultimately bears the burden of the tax. The "economic" incidence of a tax can fall on any number of people and is determined by the relative elasticities of supply and demand of a taxed good, or how people and businesses respond to a tax.[4]

Average OECD Tax Burden

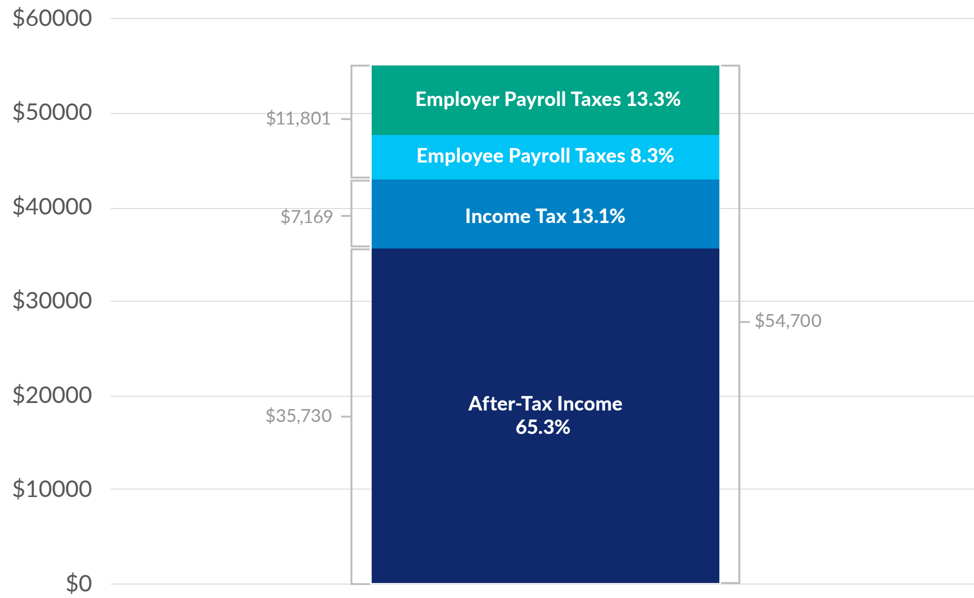
In 2020, the average OECD tax wedge for a single worker with no children earning a nation's average wage was 34.6 percent. The average annual total labor cost per worker was $54,700. Income taxes accounted for 13.1 percent ($7,169) of the labor cost. Employee-side payroll taxes made up 8.3 percent ($4,517) and employer-side payroll taxes 13.3 percent ($7,284). The average annual disposable after-tax income of a worker in the OECD amounted to $35,730, or 65.3 percent of total labor cost.[5]

4 Congressional Budget Office, "The Distribution of Household Income and Federal Taxes, 2013," June 8, 2016, https://www.cbo.gov/publication/51361.

5 Individual items may not sum to total because of rounding.

FIGURE 1.
A Hypothetical Average Worker in the OECD Faced a Tax Burden of 35 percent in 2020

OECD Average of the Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage, 2020



Note: Note: Individual items may not sum to total because of rounding.
Source: OECD, *Taxing Wages 2021*.

Tax Burden by OECD Country

The OECD average described above reflects overall tendencies of the tax burden on labor among the 37 OECD countries. However, as shown below, many countries deviate from this average quite substantially, reflecting economic and policy differences across countries.

Single Worker with No Children

In 2020, the tax wedge faced by single workers without children ranged from only 7 percent[6] in Chile to 51.5 percent in Belgium, a difference of 44.5 percentage points. Fourteen of the countries had a tax wedge above 40 percent, another 14 countries between 40 and 30 percent, and nine countries below 30 percent.

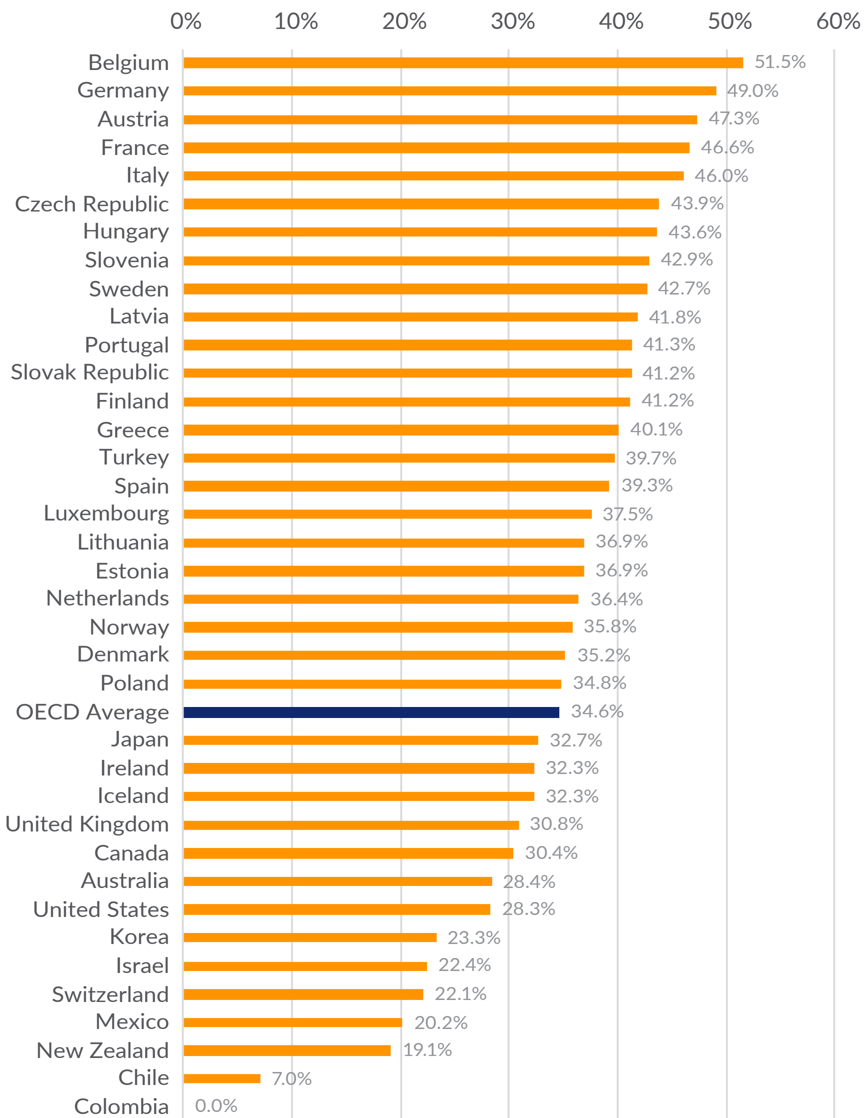
Tax wedges are particularly high in European countries—the 23 countries with the highest tax burden in the OECD are all European. In contrast, 10 out of the 14 OECD countries with the lowest tax burden are non-European (the United Kingdom, Switzerland, Iceland, and Ireland are the four European countries in this category).

6 In Colombia, the single worker at the average wage level does not pay personal income tax. Also, contributions to pension, health, and employment risk insurances are considered to be nontax compulsory payments (NTCPs) and therefore are not included as taxes in the OECD publication.

FIGURE 2.

The Tax Burden on Labor in Belgium is Seven Times that of Chile

Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage, 2020



Note: In Colombia, the single worker at the average wage level does not pay personal income tax. Also, contributions to pension, health, and employment risk insurances are considered to be nontax compulsory payments (NTCPs) and therefore are not included as taxes in the OECD publication.
Source: OECD, *Taxing Wages 2021*.

In 30 out of 37 OECD countries, total payroll taxes accounted for a larger share of the tax burden on labor than income taxes did.[7] Australia, Denmark, Iceland, Ireland, New Zealand, and the United States were the only countries in which the share from income taxes exceeded payroll taxes.

Comparing a Single Worker with No Children to a Married Worker with Two Children

Most countries in the OECD provide some targeted tax relief for families with children, typically through lower income taxes. The average wedge for families, defined as a one-earner married couple with two children, was 24.4 percent in 2020, compared to an average tax wedge of 34.6 percent for single workers without children.

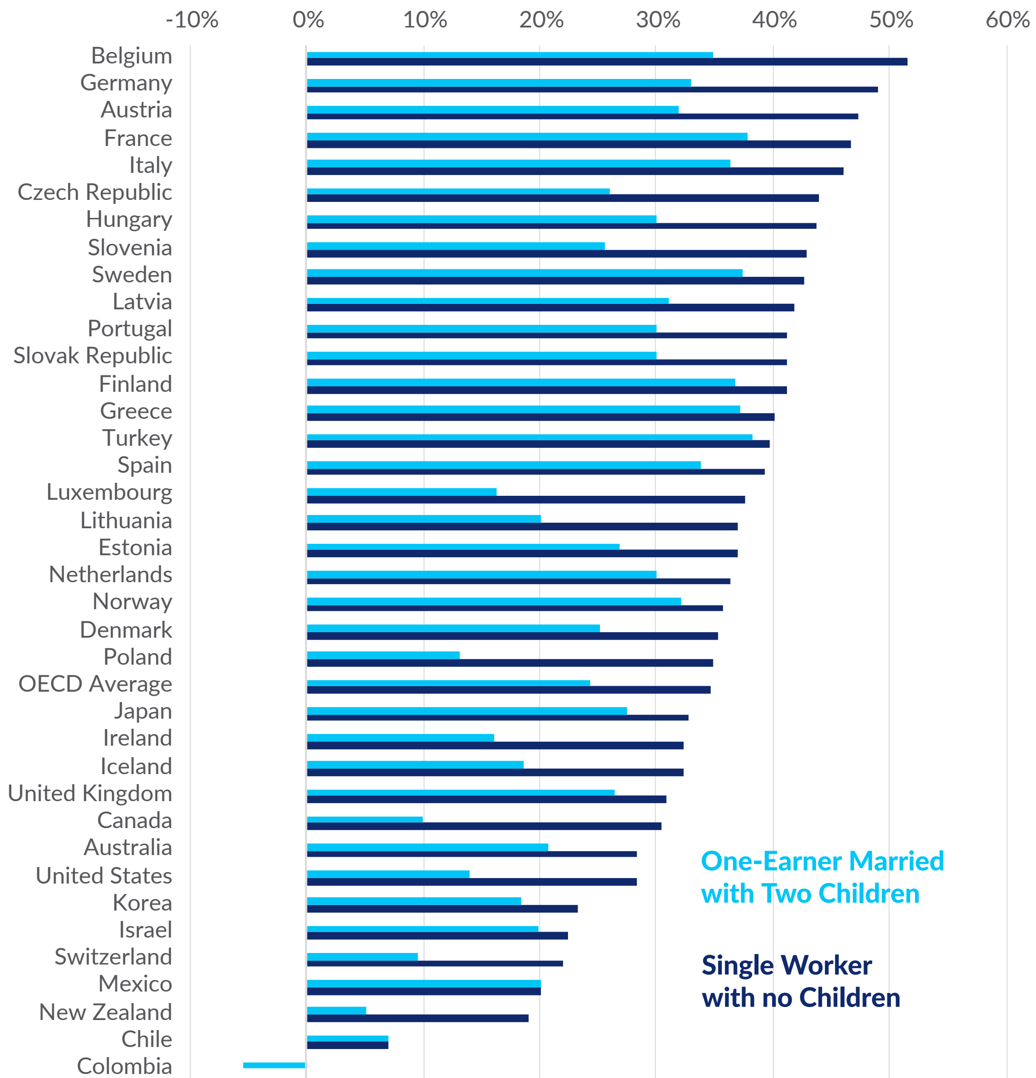
7 See Table 2 in the Appendix.

The following figure compares the tax burden faced by a one-earner married couple with two children with that of a single worker without children.

FIGURE 3.

Apart from Mexico and Chile, OECD Countries Use Labor Taxes to Benefit Families with Children

Tax Wedges on Singles and Families at a Nation's Average Wage, 2020



Note: In Colombia, the single worker at the average wage level does not pay personal income tax. Also, contributions to pension, health, and employment risk insurances are considered to be nontax compulsory payments (NTCPs) and therefore are not included as taxes in the OECD publication.
Source: OECD, *Taxing Wages 2021*.

In general, countries with a higher tax wedge provide greater tax relief for families with children. Belgium, Germany, Austria, and the Czech Republic, which had the first, second, third, and sixth-highest tax wedge for single workers without children, drop more than seven positions, ranking seventh, ninth, eleven and twentieth respectively once family relief is included.

In 2020, the highest family tax wedge was in Turkey, at 38.2 percent, followed by France, at 37.9 percent, while the lowest family tax wedge was in New Zealand, at 5 percent.

Poland has the largest disparity between the two tax wedges, at 21.6 percentage points, between its 34.8 percent wedge for single workers and 13.2 percent wedge for families. Chile and Mexico are the only countries that do not provide any tax relief for families with children but they keep the average tax wedge low.

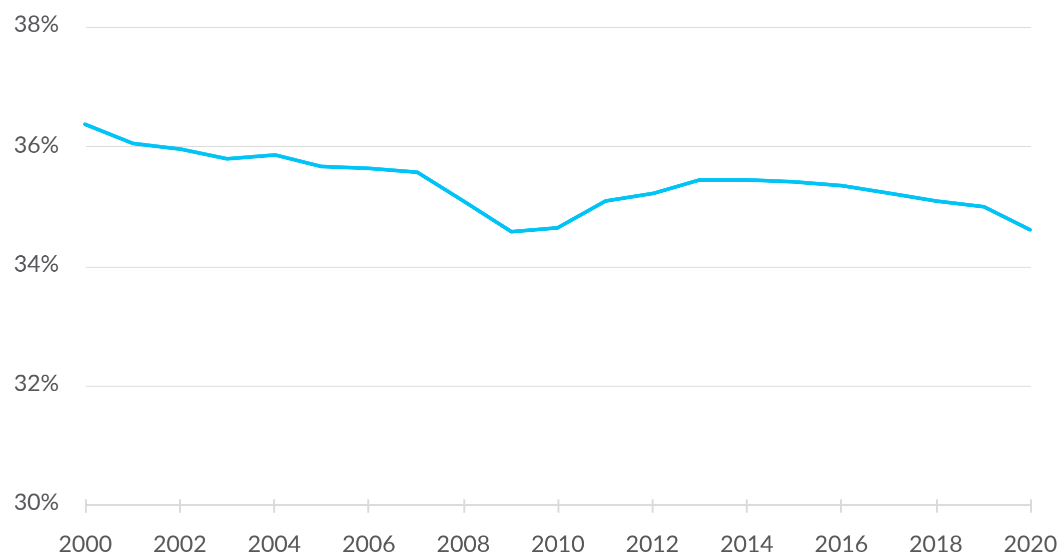
OECD Tax Burden from 2000 to 2020

Although the tax wedge has changed quite substantially in some countries over time, the average OECD tax burden on labor has dropped just 1.8 percentage points over the past two decades. In 2000, the average OECD tax wedge was 36.4 percent, compared to 34.6 percent in 2020. However, in 2020, the average OECD tax burden dropped to its lowest level, also reached in 2009 post-financial crisis.

FIGURE 4.

Average Tax Burden on Labor Remains High Despite Incentives on Work

OECD Average Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage, 2000-2020



Source: OECD, *Taxing Wages 2021*.

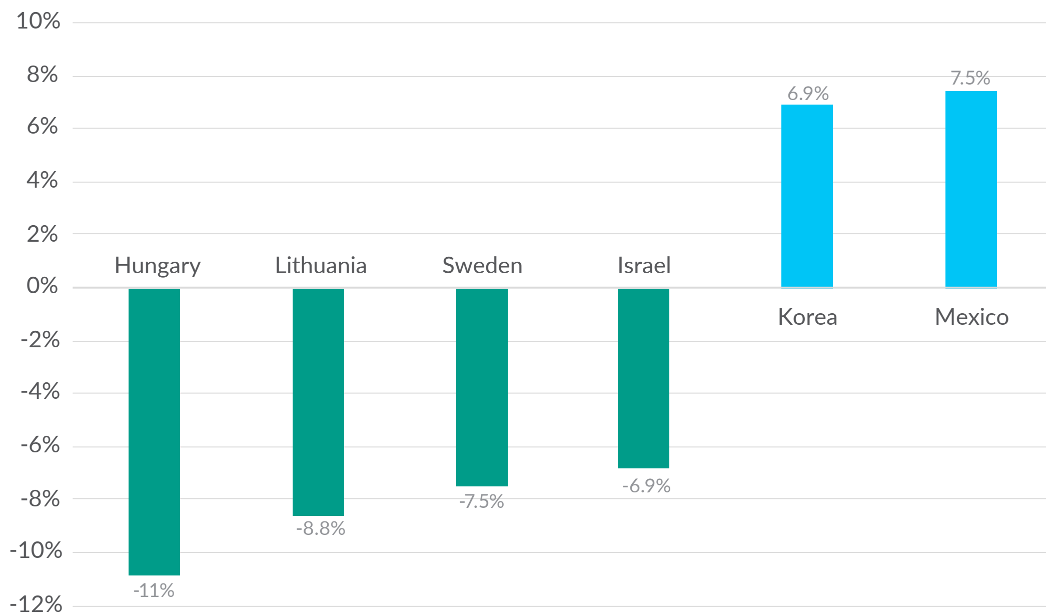
Most Notable Changes in the Tax Burden since 2000

Some individual countries have made substantial changes to their income and payroll taxes in the last two decades. The following graph shows the OECD countries with the largest increases and decreases in their respective tax wedges.

FIGURE 5.

Changes to Income Tax Systems Directly Impact the Tax Burden on Labor

Percentage-Point Difference between 2000 and 2020 in the Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage



Source: OECD, *Taxing Wages 2021*.

Hungary, the OECD country with the highest tax burden on labor in 2000, has had the most notable decrease in its tax wedge, from 54.7 percent to 43.6 percent in 2020. This is partially due to the introduction of a flat tax on income, which lowered the income tax burden relative to total labor costs. Additionally, Hungary reduced its payroll taxes relative to total labor costs. Israel, Sweden, and Lithuania have also lowered their tax burden on labor substantially, with a reduction between 7.2 and 8.8 percentage points each.

Mexico has seen the highest increase in its tax wedge since 2000, with an additional tax burden of 7.5 percentage points. While payroll taxes relative to total labor costs have roughly stayed the same in Mexico, income taxes as a percent of total labor costs have increased from 0.9 percent in 2000 to 8.5 percent in 2019. The tax wedge has also increased in South Korea, by 6.9 percentage points.

COVID-19 Support Measures Had Little Impact on the Tax Burden

Between 2019 and 2020, the OECD average tax burden decreased by 0.39 percentage points.

In 2020, the tax burden for the single worker earning the average wage increased by less than 0.5 percentage points in seven of the 37 OECD countries. In all but one country, Korea, the increases were driven by rising average wages, offset slightly by policy changes.

On the other hand, the tax burden fell in 29 countries. The decrease that reached 1.91 percentage points in Italy and 1.37 percentage points in the United States was mainly driven by policy changes rather than the decline of the average wages. Policy changes included lower income taxes, and tax and benefit measures introduced in response to the COVID-19 pandemic. In Austria, a rebate was applied in one of the income tax payments; in Lithuania, the tax-exempt amount was increased; in Canada, the decline in the tax burden resulted from a one-time special payment through the Goods and Services Tax credit; in the United States, the decrease in the tax wedge was mainly due to the Economic Impact Payment that was part of the Coronavirus Aid, Relief, and Economic Security Act (CARES).

However, the COVID-19 support measures were primarily designed to reduce the tax burden for families with children rather than that of a single taxpayer without children. Overall, the impact of the COVID-19 measures was smaller than other policy changes and accounted for roughly one-fifth of the decrease in the average tax burden a single average wage earner faced in 2020.

Marginal and Average Tax Wedges

Comparing the tax wedge on the average worker across countries is only a partial representation of how taxes on labor impact the economy, both by changing incentives to work and by raising revenue for the government at various levels.

The OECD's *Taxing Wages 2021* report presents both average and marginal tax wedges (MTW). The average tax wedge is what has been presented so far and is the combined share of labor and payroll taxes relative to gross labor income, or the tax burden. The marginal tax wedge, on the other hand, is the share of labor and payroll taxes applicable to the next dollar earned and can impact individuals' decisions to work more hours or take a second job. The marginal tax wedge is generally higher than the average tax wedge due to the progressivity of taxes on labor across countries—as workers earn more, they face a higher tax wedge on their marginal dollar of earnings. However, a drastic increase in the marginal tax wedge, especially at lower levels of income, might deter workers from pursuing additional income and working extra hours.

In order to check for possible spikes, the marginal tax wedge[8] has been analyzed for gross earnings that range between 50 and 150 percentage points of the average wage in each OECD country.

TABLE 1.

Earning the Extra Dollar that Gets Taxed Away

	Average Marginal Tax Wedge	Top Marginal Tax Wedge	Annual Gross Wage at which the Top MTW Applies in US Dollars
Canada	38%	63%	$40,770
France	59%	93%	$62,382
Italy	61%	117%	$56,839

Note: Both top and average MTW are calculated for wages that are between 50% and 150% of the average country's wage.

Source: OECD, "Taxing wages – Tax wedge decomposition," https://www.stats.oecd.org/Index.aspx?DataSetCode=TXWDECOMP, and OECD, *Taxing Wages 2021*.

A Canadian worker faces a marginal tax wedge of 63 percent for a 1 percent increase in gross earnings on top of the gross annual wage of $40,770. This is because the provincial health-care premium[9] moves to a different rate at this level of income (CAD 48,000).

A French worker will face a marginal tax wedge of 93 percent for a 1 percent increase in the gross earnings on top of the gross annual wage of $62,382. This is because employer social security contributions increase by 6 percentage points[10] at this level of income.

Of the three countries, an Italian worker will see the biggest tax rate spike and face a marginal tax wedge of 117 percent for a 1 percent increase in the gross earnings on top of the gross annual wage of $56,839. This is because the local income tax rate raises drastically at this level of income.[11]

This shows that progressive tax rates and several layers of social security contributions can create marginal tax rate spikes that can distort or change incentives to work.

Tax Burden Including VAT

The tax burden on labor is broader than personal income taxes and payroll taxes. In many countries, individuals also pay a value-added tax (VAT) on their consumption. Because a VAT diminishes the purchasing power of individual earnings, a more complete picture of the tax burden should include the VAT. Although the United States does not have a VAT, state sales taxes also work to diminish the purchasing power of earnings.

Accounting for VAT rates and bases in OECD countries increased the tax burden on labor by 5.5 percentage points on average in 2020. The effective VAT rate is much lower than the statutory rate for each country because of exclusions in the tax base. The distribution of VAT-inclusive tax wedges across countries is similar to that shown in Figure 2.

8 In this case the OECD calculated the marginal rates by increasing gross earnings by 1 percentage point in order to reduce the number of calculations as marginal rates needed to be calculated for every single currency unit within the income range included.

9 OECD Publishing, *Taxing Wages 2021*.

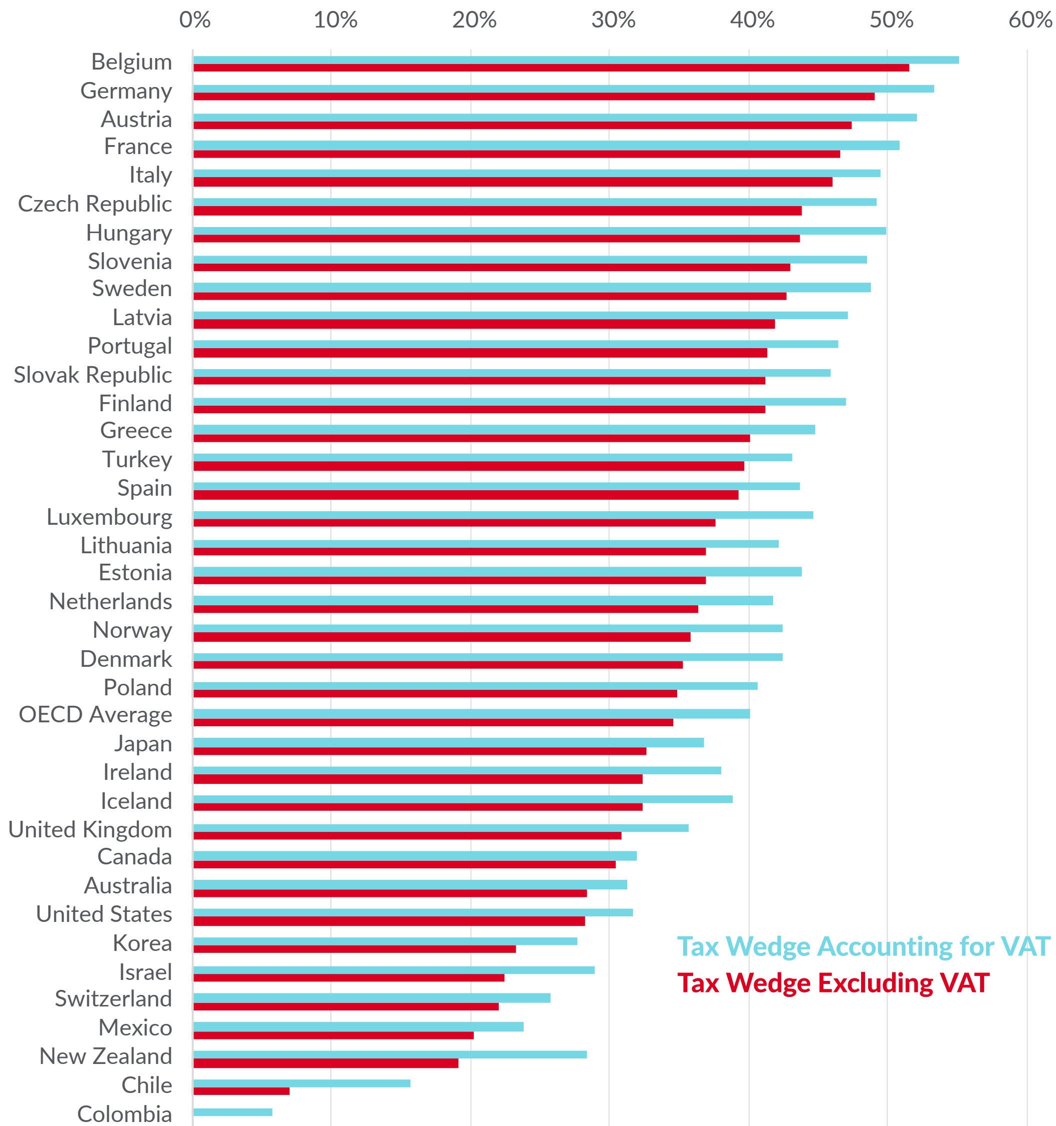
10 Employer contribution tax rate for illness, pregnancy, disability, and death is 7 percent up to 2.5 times the minimum wage. For wages that exceed 2.5 times the minimum wage a 13 percent rate applies. See OECD Publishing, *Taxing Wages 2021*."

11 Regional and local income surcharge taxes in Italy have five tax brackets. However, if the taxable income is under the threshold the lowest tax rate is applicable, but once it surpasses that amount the third tax bracket will be applied. See OECD Publishing, *Taxing Wages 2021*.

FIGURE 6.

Consumption Taxes Reduce the Purchasing Power of Wages and Add to the Tax Burden on Labor

Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage including Consumption Taxes, 2020



Source: OECD, *Taxing Wages 2021*; OECD Publishing, *Consumption Tax Trends 2020: VAT/GST and Excise Rates, Trends and Policy Issues*, 2020; Tax Foundation calculations.

In 2020, the country with the largest difference between the two measures was New Zealand, with a tax wedge accounting for the VAT that is 28.4 percent, 9.2 percentage points larger than the tax wedge that only accounts for income and payroll taxes.

Canada had the smallest difference between the two measures, at 1.6 percentage points. This is partially because its goods and services tax rates are generally much lower than VAT rates in other OECD countries.

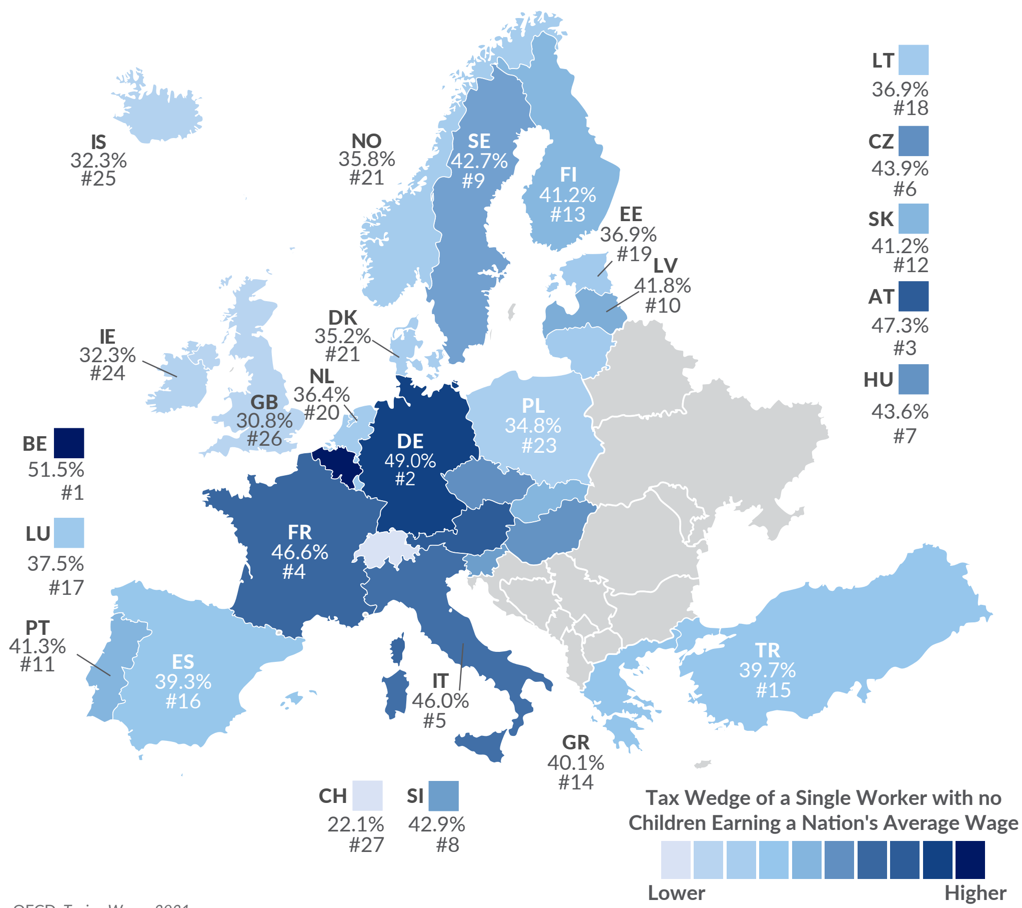
Tax Burden in Europe

Although the tax wedge in Europe is generally high, there is a relatively wide range. The following map illustrates how European countries differ in their tax burden on labor.

FIGURE 7.

Tax Burden on Labor in Europe

Tax Wedge of a Single Worker with no Children Earning a Nation's Average Wage, 2020



Source: OECD, *Taxing Wages 2021*.

In 2020, the average tax wedge of the 27 countries covered in this map of Europe was 39.6 percent for a single worker without children, compared to the OECD average of 34.6 percent. Belgium had the highest tax burden on labor, at 51.5 percent (also the highest of all OECD countries), while Switzerland had the lowest tax burden, at 22.1 percent.

Conclusion

In 2020, single, average-wage workers paid about one-third of their wages in taxes. In most OECD countries, families had smaller tax burdens than single workers without children earning the same income, but how much less varied. Accounting for consumption taxes reveals higher tax wedges than when just accounting for income and payroll taxes. Governments with higher taxes generally explain their high tax burdens with more extensive public services. However, the cost of these services can be more than half of an average worker's salary, and for many, at least a third of their salary.

Appendix

TABLE 2.

Tax Wedge of a Single Worker with No Children Earning a Nation's Average Wage, 2020

	Rank	Tax Wedge in % (As a Share of Labor Cost)	Income Tax in %	Employee Payroll Taxes in %	Employer Payroll Taxes in %	Total Average Annual Labor Cost per Employee in $
Belgium	1	51.5%	19.2%	11.0%	21.3%	$80,965
Germany	2	49.0%	15.7%	16.8%	16.6%	$84,456
Austria	3	47.3%	11.4%	14.0%	21.9%	$81,902
France	4	46.6%	11.7%	8.3%	26.6%	$70,841
Italy	5	46.0%	14.8%	7.2%	24.0%	$58,889
Czech Republic	6	43.9%	10.4%	8.2%	25.3%	$42,302
Hungary	7	43.6%	12.7%	15.7%	15.3%	$40,247
Slovenia	8	42.9%	10.0%	19.0%	13.9%	$41,541
Sweden	9	42.7%	13.4%	5.3%	23.9%	$69,879
Latvia	10	41.8%	13.5%	8.9%	19.4%	$32,802
Portugal	11	41.3%	13.2%	8.9%	19.2%	$41,504
Slovak Republic	12	41.2%	7.8%	10.3%	23.2%	$33,784
Finland	13	41.2%	16.9%	8.6%	15.7%	$63,713
Greece	14	40.1%	8.0%	12.5%	19.7%	$48,262
Turkey	15	39.7%	12.0%	12.8%	14.9%	$43,447
Spain	16	39.3%	11.4%	4.9%	23.0%	$55,937
Luxembourg	17	37.5%	14.6%	10.8%	12.1%	$76,211
Lithuania	18	36.9%	16.0%	19.2%	1.8%	$37,109
Estonia	19	36.9%	10.4%	1.2%	25.3%	$42,136
Netherlands	20	36.4%	14.5%	11.1%	10.8%	$77,594
Norway	21	35.8%	17.0%	7.3%	11.5%	$71,456
Denmark	21	35.2%	35.3%	0.0%	0.0%	$64,948
Poland	23	34.8%	5.4%	15.3%	14.1%	$39,515
Japan	24	32.7%	6.8%	12.5%	13.3%	$59,166
Ireland	25	32.3%	18.8%	3.6%	10.0%	$64,086
Iceland	26	32.3%	26.0%	0.3%	6.0%	$70,117
United Kingdom	27	30.8%	12.6%	8.4%	9.8%	$64,161
Canada	28	30.4%	14.3%	6.8%	9.4%	$53,570
Australia	29	28.4%	22.7%	0.0%	5.6%	$67,199
United States	30	28.3%	15.5%	7.1%	7.6%	$65,145
Korea	31	23.3%	5.4%	8.1%	9.7%	$59,031
Israel	32	22.4%	9.6%	7.5%	5.3%	$45,112
Switzerland	33	22.1%	10.1%	6.0%	6.0%	$81,822
Mexico	34	20.2%	8.4%	1.2%	10.5%	$15,555
New Zealand	35	19.1%	19.1%	0.0%	0.0%	$43,493
Chile	36	7.0%	0.0%	7.0%	0.0%	$24,050
Colombia	37	0.0%	0.0%	0.0%	0.0%	$11,961
OECD Average		**34.6%**	**13.1%**	**8.3%**	**13.3%**	**$54,700**

Note: Individual items may not sum to total because of rounding.
Source: OECD, *Taxing Wages 2021*.

TABLE 3.

Tax Wedge Including VAT of a Single Worker with No Children Earning a Nation's Average Wage, 2020

	Rank	Tax Wedge Including VAT in % (As a Share of Labor Cost and VAT)	Income Tax in %	Employee and Employer Payroll Taxes in %	VAT in %	Total Average Annual Labor Cost per Employee Including VAT in $
Belgium	1	55.2%	17.8%	29.9%	7.5%	$87,569
Germany	2	53.3%	14.4%	30.6%	8.3%	$92,143
Austria	3	52.1%	10.4%	32.7%	9.1%	$90,092
France	4	50.8%	10.8%	32.2%	7.8%	$76,862
Hungary	5	49.9%	11.3%	27.5%	11.1%	$45,295
Italy	6	49.5%	13.9%	29.2%	6.4%	$62,925
Czech Republic	7	49.2%	9.4%	30.3%	9.6%	$46,781
Sweden	8	48.7%	12.0%	26.1%	10.6%	$78,125
Slovenia	9	48.5%	9.0%	29.7%	9.8%	$46,036
Latvia	10	47.2%	12.3%	25.7%	9.1%	$36,104
Finland	11	47.0%	15.2%	21.9%	9.9%	$70,742
Portugal	12	46.5%	12.0%	25.6%	8.9%	$45,540
Slovak Republic	13	45.9%	7.1%	30.8%	8.0%	$36,712
Greece	14	44.8%	7.3%	29.6%	7.8%	$52,372
Luxembourg	15	44.7%	13.0%	20.3%	11.5%	$86,066
Estonia	16	43.8%	9.3%	23.6%	11.0%	$47,333
Spain	17	43.7%	10.6%	25.9%	7.2%	$60,306
Turkey	19	43.1%	11.3%	26.1%	5.8%	$46,098
Denmark	19	42.5%	31.4%	0.0%	11.0%	$73,002
Norway	20	42.5%	15.3%	16.8%	10.4%	$79,745
Lithuania	21	42.2%	14.6%	19.2%	8.4%	$40,522
Netherlands	22	41.8%	13.3%	20.1%	8.4%	$84,731
Poland	23	40.6%	4.9%	26.8%	8.9%	$43,357
Iceland	24	38.8%	23.5%	5.7%	9.6%	$77,581
Ireland	25	38.0%	17.2%	12.4%	8.4%	$69,958
Japan	26	36.8%	6.4%	24.3%	6.1%	$63,039
United Kingdom	27	35.7%	11.8%	16.9%	7.0%	$68,973
Canada	28	32.0%	13.9%	15.8%	2.3%	$54,820
United States	29	31.7%	15.1%	14.3%	2.3%	$66,675
Australia	30	31.3%	21.8%	5.4%	4.1%	$70,070
Israel	31	28.9%	8.8%	11.7%	8.4%	$49,242
New Zealand	32	28.4%	16.9%	0.0%	11.4%	$49,109
Korea	33	27.7%	5.1%	16.8%	5.8%	$62,681
Switzerland	34	25.7%	9.6%	11.4%	4.7%	$85,858
Mexico	35	23.8%	8.1%	11.2%	4.5%	$16,284
Chile	36	15.7%	0.0%	6.4%	9.3%	$26,507
Colombia	37	5.7%	0.0%	0.0%	5.7%	$12,686
OECD Average		**40.1%**	**12.0%**	**19.8%**	**8.3%**	**$59,626**

Note: Individual items may not sum to total because of rounding. The data for the VAT Revenue Ratio used for this calculation is from 2018 and is the latest data available.

Source: OECD, *Taxing Wages 2021*; OECD Publishing, *Consumption Tax Trends 2020: VAT/GST and Excise Rates, Trends and Policy Issues*, 2020; Tax Foundation calculations.

Methodology

Tax Wedges Accounting for VAT

The formula for calculating tax wedges that accounts for VAT utilizes the VAT rates and the VAT revenue ratio (VRR) from the OECD's *Consumption Tax Trends 2020: VAT/GST and Excise Rates, Trends and Policy Issues*.[12,13] We first calculate the tax-inclusive VAT rate, which is VAT rate/(1 + VAT rate). Next, we multiply the tax-inclusive VAT rate by the VAT revenue ratio and by the total labor cost to calculate the VAT amount. The formula for calculating the tax wedge including the VAT is then:

$$\frac{\text{(Income Taxes + Employer and Employee Payroll Taxes + VAT/Sales Taxes)}}{\text{(Total Labor Cost + VAT/Sales Taxes)}}$$

VAT/sales taxes are in both the numerator and the denominator because the tax wedge is taxes on labor as a share of total labor costs. For employees, VAT/sales taxes are part of taxes on labor, and they are also part of the total labor costs that employers face. By definition, a VAT is the rate of tax placed on the value added by a business by employing capital and labor. The added value is measured by the difference between the purchase price of materials and the sale of those materials (most often after a business turns those materials into something more useful). Though businesses may raise prices to pass the cost of a VAT or sales tax on to consumers in the short run, over the long run, the economic incidence of the VAT falls on workers.[14]

12 OECD Publishing, *Consumption Tax Trends 2020: VAT/GST and Excise Rates, Trends and Policy Issues*, 2020, https://doi.org/10.1787/152def2d-en.

13 The most recent OECD data available for the VAT revenue ratio is from 2018. VAT rates are from 2020. The U.S. sales tax rate is the average of all U.S. state sales tax rates (weighted by population); see Janelle Cammenga, "State and Local Sales Tax Rates, 2019," Tax Foundation, Jan. 30, 2019, https://www.taxfoundation.org/sales-tax-rates-2019/. The U.S. sales tax revenue ratio was calculated as the ratio of the implicit sales tax base to state personal income.

14 Eric Toder, James R. Nunns, and Joseph Rosenberg, "Implications of Different Bases for a VAT," Tax Policy Center and The Pew Charitable Trusts, Feb. 14, 2012, https://www.taxpolicycenter.org/publications/implications-different-bases-vat/full.