Taxes and tax burden

By Carsten Petersen and Bjarne G. Johansson

1. Introduction

Taxes are crucial to household budgets

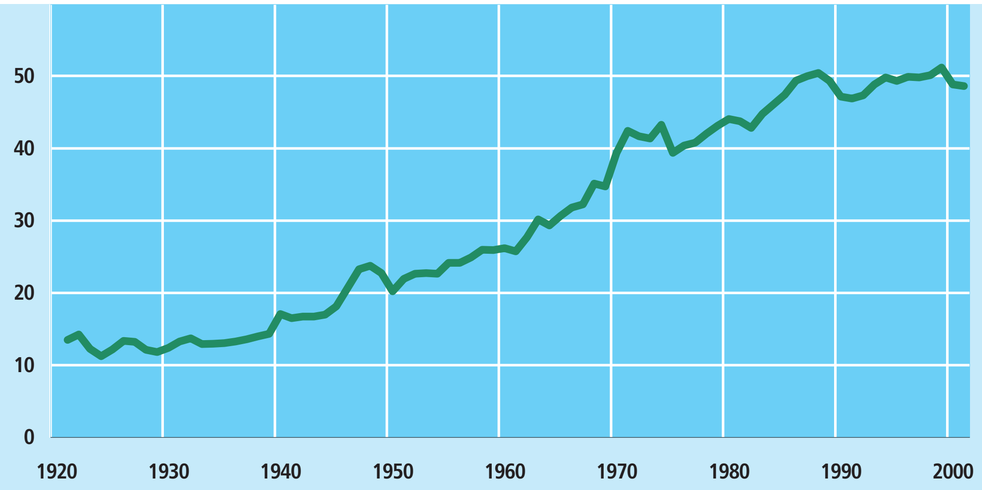
Taxes are a central feature of our everyday lives and affect many of our economic dispositions. We pay taxes on our salaries, student grants or other income, and we also pay taxes – indirectly – when buying consumer goods due to VAT and other duties. On average, each Dane pays 45 per cent of his income in taxes and duties. Tax issues are important when we make major decisions such as buying a home, or when we plan our savings for our old-age. From time to time, politicians change the legislation behind the taxes, something that always attracts great attention. Whenever this happens, people ask themselves the same question: how will this affect my personal budget?

Tax burden of 48.6 per cent in 2001

Danish households and enterprises paid a total of DKK 653 billion in taxes in 2001. During the same period, total production in Denmark – known as the gross domestic product (GDP) – was DKK 1,343 billion. You can get a measure of how much "room" taxes take up in the overall economy by comparing the total tax revenue to the GDP. This is known as the tax burden, which was 48.6 per cent in 2001.

Figure 1 **The tax burden**

Per cent of the GDP



The tax burden has increased dramatically …

The tax burden has increased ever since the 1930s, where it was around 12 per cent, and up until the late 1980s, where it reached 50.4 per cent in 1988. The dramatic increase in the tax burden is due to the expansion of the Danish welfare state during the same period.

… but stopped increasing in 1988

After 1988, the tax burden stopped increasing, and it has remained at around 50 per cent ever since. It is true that total revenues from taxes have grown year by year, but this is because the total production in society has grown at the same rate.

The second highest tax burden in the world ?

Denmark has the second highest tax burden in the world, topped only by Sweden. There can be no doubt that Danish taxes are high, but it is, however, difficult to determine Denmark's exact level of taxation in comparison to the rest of the world. For example, it is important to consider whether welfare benefits, e.g. old-age pensions, are paid out as large benefits that are subject to taxation, or as smaller amounts which do not attract tax. The tax burden is affected, but the citizens do not necessarily feel any difference.

A broad subject

Despite the marked increase on the tax burden, the Danes are wealthier now than ever before. But would a Dane be better off living in e.g. Germany, where the tax burden is significantly lower? This is a difficult question. The debate on taxation is complex and very wide-ranging, but at its core, it is about the way we want our society to look. Seen in a wider perspective, it has to do with many important and seemingly unrelated social issues, such as the (re)distribution of wealth, user's fees, moonlighting, and environmental issues.

2. Delimitation of taxes

Discussions on taxes often concern borderline cases, i.e. payments that are somewhere between being taxes or some other fee, e.g. user's fees, to the public sector. As a result, it is useful to know the rules on how taxes are defined in statistics.

The definition of taxes

These statistics follow the guidelines laid down in the international systems of national accounts (SNA and ESA). They define taxes as:

- compulsory payments to the general government
- payments to the general government where payers do not receive any direct service in return, but which provide indirect access to public services (services and benefits/transfer income).

Compulsory contributions to social security schemes are included in taxes

The compulsory contributions to social security schemes are a special kind of tax. They consists of all payments to:

- Labour Market Supplementary Pension Scheme (ATP)
- unemployment funds and early retirement schemes
- Special Pension Savings Scheme (SP)
- Employees' Wage Guarantee Fund (LG).

Collective savings

The objective of the compulsory contributions to social security schemes is to ensure that we all save up collectively for social benefits such as pensions and unemployment benefits, both now and in future. Only those who have been attached to the labour market qualify for social benefits under these schemes. In contrast to private saving schemes, the funds paid into these collective savings are redistributed somewhat between the payers.

Borderline cases

The compulsory contributions to social security schemes constitute an important borderline case at present. The exact nature of the laws behind the schemes determine whether they are regarded as taxes or not, even though the public will not notice much difference. The total payments of almost DKK 6 billion to the Temporary Pension Savings Scheme (Den Midlertidige Pensionsopsparing – DMP) in 1998 have not been classified as taxes, as this scheme is based on individual accounts. This scheme was made permanent in 1999 under a new name: the Special Pension Savings Scheme (SP). At the same time, the rules were changed to introduce some measure of redistribution of the funds. The payments to the Special Pension Savings Scheme (between DKK 6 and 7 billion) are classified as a tax.

Fees and user's fees are not included

Taxes do *not* include fees and user's fees paid to public authorities and enterprises, e.g.:

- fees for passports and driving licences
- user payments for day-care for children
- user payments for medicine and treatment by doctors/dentists
- payments for electricity, gas, water and heating supply
- payment for public transport (buses, trains)
- licence fees for radio and TV.

These are so-called voluntary payments, and payers receive a service in return for their money.

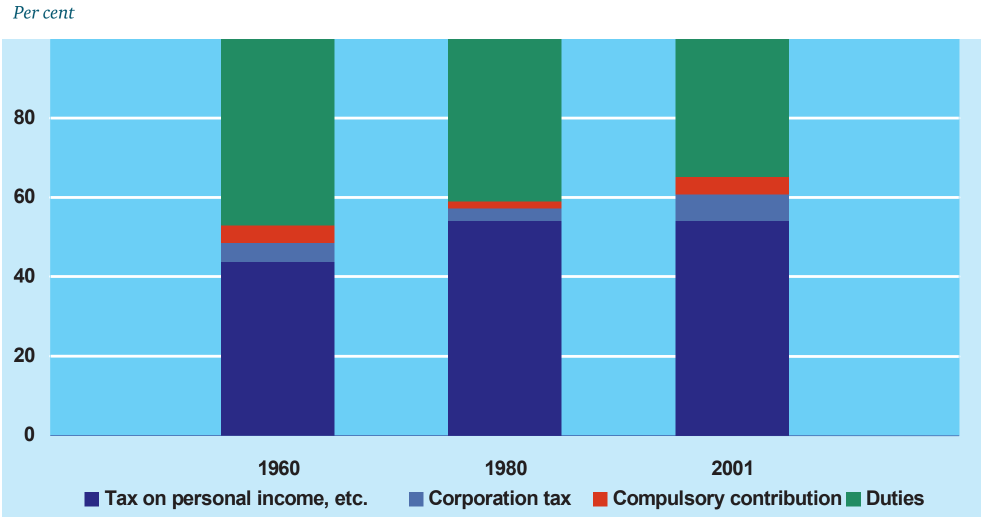
3. Types of tax

In Denmark, the public authorities collect many types of tax according to many different principles. A good overview of them can be gained by dividing taxes into three main groups:

- tax on income and assets such as cars and houses, and capital taxes on e.g. inheritances – paid by individuals and enterprises alike
- duties on goods and services, also known as production and import taxes, e.g. VAT
- compulsory contributions to social security schemes.

Figure 2 shows how the total taxes paid are distributed by type.

Figure 2 **Taxes by tax type**



Tax on personal income dominates the picture

In 2001, tax on income etc. accounted for DKK 397 billion or 61 per cent of the total tax revenue. The relative proportion has increased since 1960, when it was approx. 45 per cent. Tax on personal income dominates the picture, while taxes on corporate income (profits) account for a lesser percentage.

Duties are the second largest source of income

In 2001, duties generated DKK 228 billion or 35 per cent of the total tax revenue. VAT accounts for approx. 55 per cent of all duties. The rest are taxes on special goods and services. In 2001, the most important duties were the environmental duties (DKK 34.8 billion), the motor vehicle registration duty (DKK 12.3 billion), and the tobacco duties (DKK 7.6 billion). Since 1960, duties have accounted for ever-smaller shares of the total tax revenue.

Compulsory contributions – a lesser source of income

In 2001, compulsory contributions for social security generated DKK 29 billion or 4 per cent of the total tax revenue. In contrast to many other countries, compulsory contributions play a relatively minor role in Denmark. It is important to note that labour market contributions are not included here; for statistical purposes, they belong under income taxes. This is because payment of labour market contributions does not provide any specific right to receive social benefits.

4. Who receives the taxes?

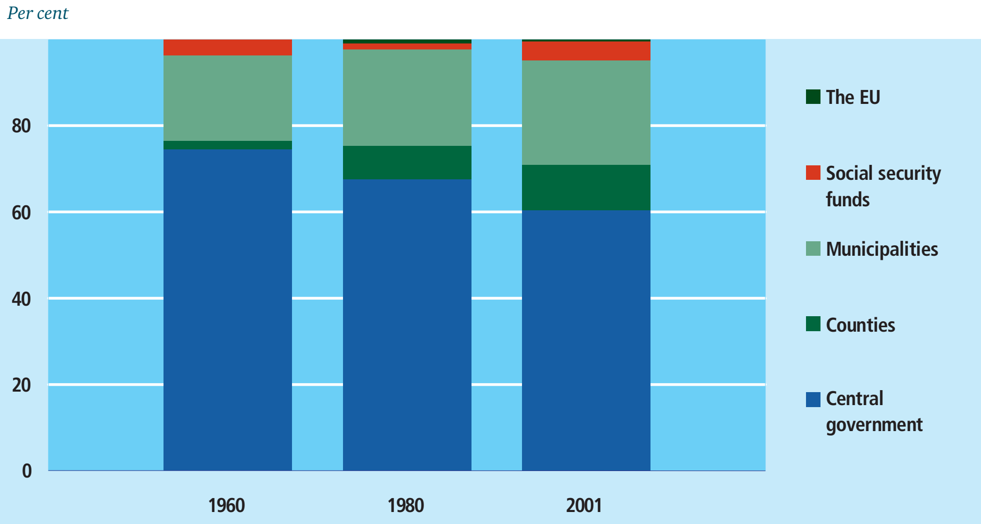
The public sector and the EU collect taxes

Taxes are collected by public administrations and services (central government, counties, municipalities, and social security funds) and the EU. Figure 3 illustrates the relative share of the total tax revenue received by each sector.

The central government collects the most taxes

In 2001, the central government collected DKK 395 billion, corresponding to 60 per cent of all the taxes paid. The central government collects taxes on income, etc., as well as the vast majority of all duties.

Figure 3 **Taxes by recipient sector**



Municipalities and counties collect a growing share …

The Danish municipalities collected DKK 158 billion (24 per cent of all taxes) and the counties collected DKK 69 billion (11 per cent of all taxes) in 2001. Municipalities and counties primarily collect taxes on personal income and real property. Part of the corporate taxes (13 per cent) also falls to the municipalities.

…which is a result of the decentralization process

An ever-increasing part of all public services are decentralised, so that services are carried out close to taxpayers. As a result, municipalities and counties have collected an increasing share of all taxes paid since 1960, whereas the share collected by central government has fallen.

A small share goes to social security funds

Only a relatively small share, DKK 29 billion or 4 per cent of the total taxes paid in 2001, go to social security funds. In 2001, payments were distributed as follows: unemployment funds: DKK 15.7 billion; the Special Pension Savings Scheme (SP): DKK 7.0 billion; the Labour Market Supplementary Pension Scheme (ATP): DKK 6.3 billion; and the Employees' Wage Guarantee Fund (LG): DKK 0.2 billion.

The EU collects 1 per cent of the total taxes

The EU collects a small part of the total taxes paid, DKK 3 billion or nearly 1 per cent. These taxes are custom duties and import duties (agricultural duties). The general trend is for more free trade, with duties being reduced or removed. The overview on page 156 illustrates how taxes account for only 15 per cent of the EU's income – the rest comes from contributions from the Member States.

5. Redistribution of taxes between the central government, counties, and municipalities

Redistribution from the central government to counties and municipalities via block grants …

The central government transfers part of its tax revenue to the counties and municipalities via block grants. These are largely given in direct proportion to the municipalities' own tax income, which is to say that wealthy municipalities receive higher block grants than poorer municipalities. This is because the objective of block grants is not to redistribute wealth between rich and poor municipalities; instead, the purpose is to give all the same relative opportunity to either lower taxes or increase the level of service. The block grants allow the central government to provide compensation for e.g. additional expenses caused by changes in the distribution of tasks between the central government and the municipalities and counties. The block grant can also be adjusted if the current economic climate means that the total public expenditure should be increased or lowered.

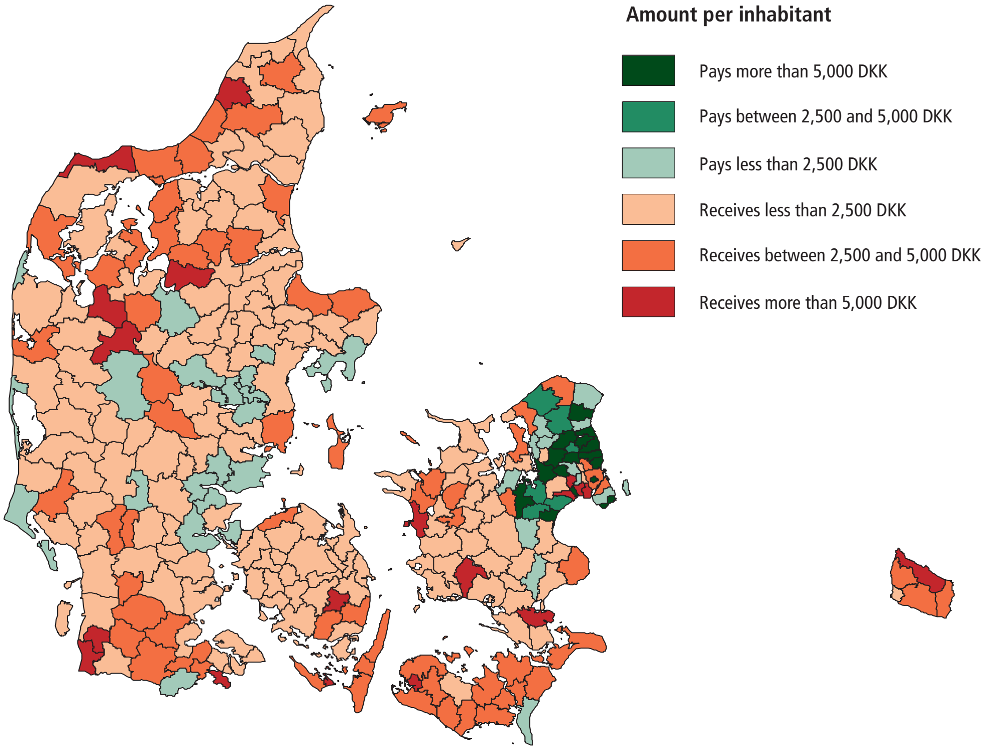
… and refunds

The central government also provides municipalities and counties with complete or partial refunds of their expenditure on social benefits that are required by law, e.g. old-age pensions.

Redistributions between counties and municipalities

The various counties and municipalities have very different bases for collecting taxes, and their levels of necessary expenditure also vary, e.g. with the number of children and elderly people living in the area. Danish law dictates that well-to-do counties and municipalities must contribute funds to less affluent counties and municipalities through the municipal revenue sharing system. The objective is to ensure that all Danes have access to a more uniform level of service, regardless of the tax revenues generated by each individual municipality. Figure 4 shows which municipalities pay out funds and which receive them via this system.

Figure 4 **The municipal revenue sharing system. 2000**



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The Copenhagen area pays

The "wealthy" part of the Copenhagen area, particularly the municipalities around the city proper, makes net payments. Most other municipalities receive funds.

Large variations between the tax rates of municipalities and counties ...

The municipalities have some opportunity to determine their own levels of taxation and service, which is reflected by the large differences in municipal tax rates across Denmark. In 2001, the municipality of Tornved had Denmark's highest total local government tax rate for personal taxation, i.e. the highest total municipal and county tax rates for personal taxation (35.2 per cent), whereas the municipality of Holmsland had the lowest (27.1 per cent). Page 152 provides an overview of the tax rates for personal taxation of Danish counties and municipalities.

... provides freedom of choice

The municipalities' autonomy and the revenue sharing system provide people with an important opportunity to choose: they can choose to live in a municipality with relatively high taxes and service levels, or vice versa. Of course, financial considerations are not the only factors determining where people choose to live.

An example

Gentofte and Nakskov are model examples of an affluent and less affluent municipality, respectively. Both municipalities receive a block grant from the central government. Gentofte makes payments to the municipal revenue sharing scheme, while Nakskov receives funds. Without the municipal revenue sharing scheme, tax rates in Nakskov would be higher and the service would be poorer, and in all likelihood the opposite would be true in Gentofte.

Block grant and revenue sharing for Gentofte and Nakskov. 2001

	Gentofte	Nakskov
Block grant	+ DKK 516 million	+ DKK 50 million
- per inhabitant	+ DKK 7,576	+ DKK 3,279
Municipal revenue sharing	– DKK 1,268 million	+ DKK 94 million
- per inhabitant	– DKK 18,628	+ DKK 6,090
Municipal tax rate for personal taxation	19.5 per cent	22.3 per cent

6. Families and taxes

This section looks at taxes as families experience them. Table 1 illustrates how taxes affect selected family types.

Table 1 **Taxes paid by family type. 1999**

	Two skilled workers with children	Two employees, higher level, with children	A single student	Two pensioners	All families
	DKK				
Total income	529 183	818 305	91 187	303 641	401 160
Income tax, etc.	151 764	295 707	20 131	73 907	124 411
VAT and duties, etc.	111 994	92 496	20 686	48 388	55 152
Total tax	**263 758**	**388 203**	**40 817**	**122 295**	**179 562**
	per cent of total income				
Income tax, etc.	28.7	36.1	22.1	24.3	31.0
VAT and duties, etc.	21.2	11.3	22.7	15.9	13.7
Total tax	**49.8**	**47.4**	**44.8**	**40.3**	**44.8**

Please note: these figures are based on the Statistics Denmark's consumption survey, which is a sample survey of Danish families' income and consumption. The figures for 1999 are avetage of the years 1998-2000. The definitions of taxes and duties used in this study vary from those used in the national accounts, and it is not possible to show compulsory contributions to social security schemes as a separate item.

Key features Two issues are immediately apparent:

- Families with high incomes pay *relatively* more in income tax. This is known as progressive or graduated taxation and is an inherent feature of the Danish tax rate systems.
- Families with low incomes pay *relatively* more in VAT and duties. This is because families with low incomes spend a greater proportion of their income on consumption. This difference is, however, offset somewhat by the fact that the higher income brackets pay relatively more in income tax.

6.1 Personal tax

Simple calculation of income tax Tax on income is calculated on the basis of a number of special rules. Many think of these rules as being very complicated, but the basic rules are actually relatively simple. Table 2 illustrates the calculations made in a tax return for two skilled workers with children.

Income concepts Incomes are divided into personal income, capital income, and income deductions. The sum of these is known as the taxable income.

Personal income includes the following:
– Wages, salaries, pensions, etc.
– Deductions for contributions to certain insurance and pension schemes.

– Deductions for labour market contributions and the Special Pension Savings Scheme.

Capital income includes:
– Income from interest.
– Interest expenditure.

Income deductions include:
– Contributions to employment funds and early retirement schemes.
– Travelling expenses.

The tax return

Table 2 shows an example of a tax return for a family consisting of two skilled workers with children. The family owns their own home, which was bought after 1 July 1998 and is set at a taxable value of DKK 1.5 million. The family does not own a car. The couple are taxed jointly.

Table 2

Tax return for two skilled workers with children. 2001

	Income, by type	**Spouse 1**	**Spouse 2**
		DKK	
	Wages	343 969	185 214
	– Deposits to capital pension schemes	29 476	0
	– Labour market contribution (8 per cent of total wages)	27 517	14 817
	– The Special Pension Savings Scheme (1 per cent of total wages)	3 439	1 851
A.	**Personal income, total**	**283 537**	**168 545**
A1.	Personal income without payments to capital pension schemes	313 013	168 545
	Income from interest	2 345	0
	– Interest expenditure	25 241	25 241
B.	Net capital income	– 22 896	– 25 241
	Travelling expenses	3 978	0
	Trade union membership fees	9 785	9 785
C.	Income deductions	13 763	9 785
D.	**Total taxable income (A+B÷C)**	**246 878**	**133 519**
D1.	Taxable income without capital income	269 774	158 760
	Taxes to be paid		
1.	Income tax to municipality and county (32.5 per cent of item D – DKK 33 400)	69 380	32 539
2.	Church tax (0.8 per cent of item D – DKK 33 400)	1 707	801
3.	Ordinary income tax, lower limit (6.25 per cent of item D1– DKK 33 400)	14 773	7 835
4.	Additional income tax, intermediate limit (6.0 per cent of item A in excess of DKK 177 900) [1]	5 777	0
5.	Additional income tax, upper limit (15.0 per cent of item A1 in excess of DKK 276 900)	5 417	0
6.	Property tax (1 per cent of the taxable property value)	6 900	6 900
7.	**Total taxes (1-6)**	**103 956**	**48 075**
8.	Reduction according to tax ceiling regulations (0.75 per cent of A1 in excess of DKK 276 900)	271	0
9.	**Total income taxes to central government, county, and municipality authorities**	**103 685**	**48 075**
10.	Labour market contribution and the Special Pension Savings Scheme	30 956	16 668
11.	**Total taxes paid by the household**	**199 384**	

Note. The tax return is constructed according to the 2001 tax regulations.
1. Unused deduction on DKK 9.355 is transfered from the spouse.

Tax concepts

Taxes are calculated on the basis of various combinations of taxable income, personal income, and capital income.

Taxes to the central government are separated into three categories: ordinary income tax (lower limit), additional income tax (intermediate limit), and additional income tax (upper limit).

- *Ordinary income tax (lower limit)*: in 2001, the lower limit tax rate was 6.25 per cent of the taxable income. Interest expenditure cannot be deducted from the taxable income.
- *Additional income tax (intermediate limit)*: in 2001, the intermediate limit tax rate was 6 per cent of all personal income in excess of DKK 177,900.
- *Additional income tax (upper limit)*: in 2001, the upper limit tax rate was 15 per cent of all personal income in excess of DKK 276,900. Deposits made to capital pension schemes cannot be deducted from the personal income.

Municipal taxes, county taxes, and church taxes are calculated on the basis of the entire taxable income. The tax rates for personal taxation are determined by the individual municipalities and counties.

Marginal tax

In order to prevent taxation on the last krone – the marginal tax rate – from becoming unreasonably high, the Danish tax laws include a number of provisions which dictate that in certain cases, the income tax rate that would normally apply must be replaced by a lower rate.

"The tilted tax ceiling"

These rules make sure that no-one will pay more than 59 per cent in income tax of the last krone (not including church tax). This is known as the tilted tax ceiling. In 2001, the tax ceiling applied where the total municipal tax rate for personal taxation was higher than 31.75 per cent, as income taxes for the central government did not exceed 27.25 per cent.

Actual marginal tax

The true tax ceiling is calculated by adding labour market contributions (8 per cent) and payments to the Special Pension Savings Scheme (1 per cent) to the tilted tax ceiling (59 per cent) of the remaining income. This results in an actual marginal tax close to 63 pct.: 9 per cent + (0.91 × 59) per cent.

6.2 Duties on goods and services

Uniform VAT

The most important duty is the VAT. In Denmark, the VAT rate is 25 per cent, and this amount is added to the cost of all goods. VAT is levied on practically all goods and services in Denmark. There are, however, a few exceptions which do not attract any VAT, e.g. newspapers, stamps, medical treatment, and fares on busses and trains and in cabs. Unlike most other European countries, Denmark applies the same VAT rate to all goods and services. Many other countries use differentiated VAT rates, with reduced rates on e.g. food, water supply, medicine, and cultural events.

Table 3 **VAT rates in different countries**

	Standard rate	Reduced rates
	per cent	
Denmark	25	-
Germany	16	7
Sweden	25	6/12
Finland	22	8/17
France	19.6	5.5/2.1
The Netherlands	19	6
Belgium	21	6/12
United Kingdom	17.5	5
Ireland	21	12.5/4.2
Luxembourg	15	6/3

Source: The Danish Ministry of Taxation.

Harmonization of duties within the EU

For a number of years now, the EU Member States have worked their way towards a harmonization of the duty structure. In order to secure the function of the Single Market, it was decided to introduce an interval of 15 per cent and 25 per cent for standard rates for VAT. This decision was made in 1998.

Duties on many goods

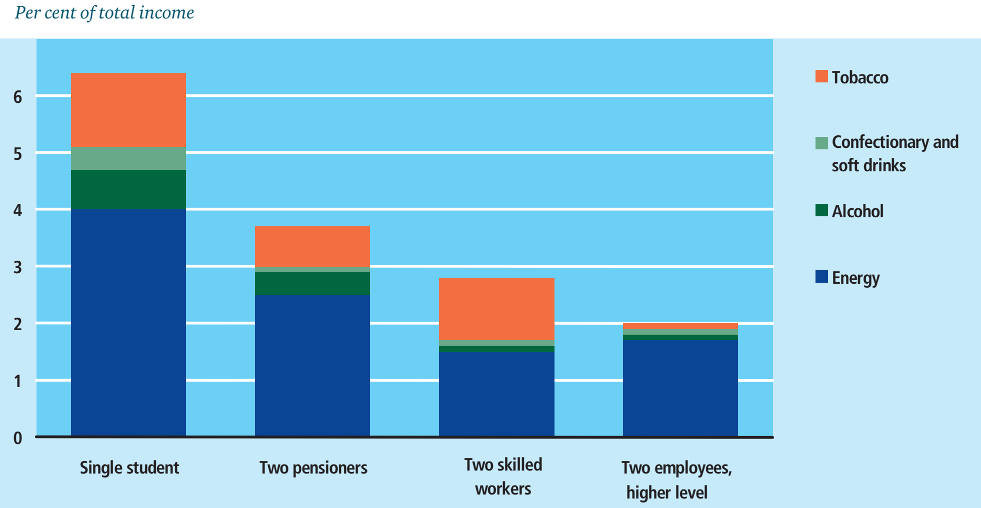
In addition to VAT, duties are levied on many specific goods, e.g. alcohol and cigarettes. The exact rates and methods of calculation vary with each group. Figure 5 shows examples of what Danish families paid in terms of significant duties.

Exactly how much families pay in terms of duties depends on their consumption patterns. The figure clearly illustrates how taxes and duties on goods account for a greater relative share of the total taxes paid among the lower income brackets.

Health reasons

The need to generate tax revenues is not the only reason for imposing duties on goods. The duties on tobacco and alcohol are also motivated by health concerns, as an important objective is to limit consumption of these goods. At the same time, however, it must be acknowledged that other issues besides cost affect our consumption of tobacco and alcohol, e.g. lifestyles, attitudes, and advertising. Despite quite heavy taxation on cigarettes, the average consumption remained at approximately 1,300 cigarettes per Dane per year ever since 1970.

Figure 5 **Duties on selected consumer goods in relation to total household income, 1999**



Source: Statistics Denmark's consumption survey.

Examples

A packet of 20 cigarettes costs DKK 33 in shops. Of this amount, a total of DKK 25.75 – corresponding to almost 80 per cent - is VAT and duties:

- *VAT amounts to DKK 6.60.*
- *Duty on individual cigarettes amount to DKK 12.14 (DKK 0.6068 per cigarette).*
- *Duty amounts to DKK 7.00 (21.22 per cent of DKK 33).*

High taxation on cars

Cars are also subjected to high levels of taxation in Denmark. Taxes are collected when you buy a car, and when you use it. Buying a car is expensive, but actually using it is relatively inexpensive.

An example

A VW Polo (1.4 with five doors, five gear and 75 HP) costs DKK 177,087 at the dealer's. Of this amount, VAT and duties account for a total of DKK 107,052 – corresponding to approximately 60 per cent:

- *VAT amounts to DKK 16,861 (25 per cent of the standard price).*
- *The motor vehicle registration fee amounts to DKK 90,191 (105 per cent of the standard price up to DKK 50,800 and 180 per cent of the price in excess of this amount).*

You will also pay taxes on your car after its purchase. The VW Polo costs DKK 2,720 a year in weight duties. This duty is calculated on the basis of fuel consumption, which is to say that energy-efficient cars attract less tax. If you drive approximately 20,000 km a year, you will pay approximately DKK 6,000 in fuel duties.

Duties are split

Taxes, especially duties, are often split between buyers and sellers. Up until now, the cost price less duties has been lower in Denmark than in other countries in order to compensate for the higher levels of taxation.

6.3 Compulsory contributions to social security schemes

Contributors are entitled to certain social services

Another type of taxation is the compulsory contributions for social security. These contributions often involve the condition that contributors must have some attachment to the labour market, either by being employed or by being members of an unemployment fund. Payment of compulsory contributions gives contributors the right to receive the relevant social services. For example, only members of unemployment insurance funds who pay their contributions are entitled to certain unemployment benefits. In addition to this, all employees are guaranteed a pension from the Labour Market Supplementary Pension Scheme (ATP).

Examples

A member of a trade union affiliated with HK pays DKK 505 per year to the Labour Market Supplementary Pension Scheme (ATP) (the employer pays DKK 1,010 on the employee's behalf), and also pays DKK 4,596 to her unemployment insurance fund and DKK 4,224 to her early retirement scheme. The exact amounts paid depend on the unemployment insurance fund in question. These contributions go towards funding of ATP pensions, unemployment benefits, and early retirement pensions.

An employee who was born in 1944 and who entered the labour market at the age of 20 has paid contributions to the Labour Market Supplementary Pension Scheme ever since it started. If she retires at the age of 65, she will receive approximately DKK 21,000 a year (in 2002 prices) from the Labour Market Supplementary Pension Scheme for the rest of her life.

6.4 User's fees

User's payment

The high taxes in Denmark mean that the Danes can receive many public services for free, and that user's fees are not used extensively. For example, our model family consisting of two skilled workers with children received indirect subsidies from the public sector of DKK 73,806 for education (primarily the children's education), whereas the family had to pay DKK 3,572 themselves in user's fees (mainly in connection with courses). See table 4.

Table 4 **Average user's fees and indirect subsidies from the public sector. 1999**

	Childcare		Education		Health	
	Indirect subsidies	User's fees	Indirect subsidies	User's fees	Indirect subsidies	User's fees
	DKK					
A single student	41	0	42 462	744	2 708	744
Two skilled workers with children	34 731	11 943	73 806	3 572	9 916	3 789
Two employees, higher level, with children	42 732	14 029	62 468	6 764	8 572	2 510

Source: Statistics Denmark's consumption survey.

In Denmark, care for children at day-care institutions is partly financed by user's fees, with up to 30 per cent of the total cost of day-care being paid for by the users. Certain health services also attract partial user's payments, e.g. dentists and medicine. The national health insurance provides a standard subsidy for dentistry work ranging from between 40 to 65 per cent of the total cost, depending on the nature of the treatment and the patient's age.

7. The role and function of taxes

Taxes have many functions

Taxes and duties are called upon to perform many tasks in our modern society. The most important ones are:

- financing public expenditure
- redistributing income and consumption between high and low income brackets
- influencing the financial dispositions made by households and enterprises
- controlling the overall economy.

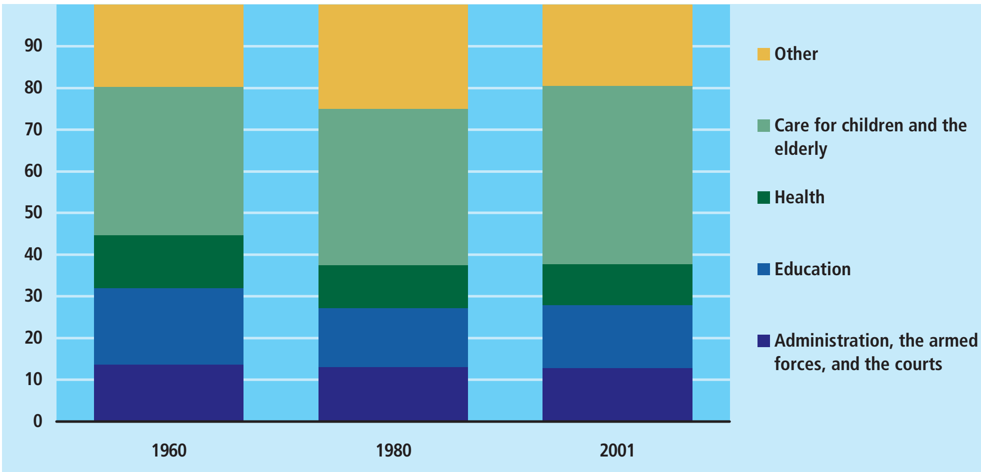
Taxes and duties finance public expenditure

Taxes and duties finance approximately 90 per cent of the total expenditure on the services provided by the public sector to all Danes. Figure 6 illustrates how tax revenues were spent in 1960, 1980, and 2001.

Figure 6

Total public expenditure, by purpose

Per cent



More funds for care, less for education and health

The three largest areas of expenditure are care for children and the elderly, education, and health. Since 1960, the relative proportion of funds allocated for care has gone up, whereas expenditure on education and health has, relatively speaking, diminished.

Public or private production ?

When it comes to the extent of public expenditure, two particular questions keep coming up in discussions: whether welfare services should be produced by the public sector or private enterprises, and to what extent users should pay for these services. Approximately one third of all public services are *collective*. For example, this applies to ministerial administration, the foreign service, and the military. It is difficult to picture these services being provided by private enterprises. The rest of the services are *individual*, e.g. education, health, and care. These services could, in principle, be produced by private providers. Doctors' and dentists' services would be one example.

Taxes redistribute income from the affluent to the poor

Our tax system redistributes our incomes so that the rich and the poor become more equal. The objective is to ensure greater equality in terms of income and opportunities for consumption. At the same time, this redistribution applies to our entire lifespan, from cradle to grave. In order to get a complete overview of the redistribution, we need to consider the redistribution that takes place via direct income transfers, e.g. pensions and social benefits, and the indirect transfers, i.e. the services provided by the public sector to the citizens, for example schools and hospitals.

Extensive redistribution

Taxes and public services effect an extensive redistribution of wealth between the high and low-income brackets. This is illustrated clearly in table 5, where the families described have been ordered by their level of wealth (the total income in relation to the family's composition in terms of number of children and adults). We see that the most affluent quarter of the population paid an annual average of DKK 267,000 more to the public sector than they received, while the least affluent quarter received an annual average of DKK 83,000 more than they paid. The middle group – i.e. the second quartile – experiences no redistribution, as they receive transfer incomes and services to an amount corresponding more or less to their level of taxation. It is important to note that our incomes vary throughout our lifetime. For example, a student will not spend his entire life belonging to the 1st quartile; his income will increase once he completes his studies, and he will then begin to contribute to the public sector.

Table 5 **Redistribution via taxes and public services, 1999**

	1st quartile	2nd quartile	3rd quartile	4th quartile	All
	DKK thousands				
Citizen's payments to the public sector	**69**	**145**	**216**	**330**	**179**
Income tax, etc.	38	95	148	250	124
VAT, duties, property tax	31	50	68	80	55
Public services to the citizens	**152**	**132**	**94**	**63**	**114**
Direct transfers of income	110	80	45	27	70
Indirect transfers	42	52	48	36	44
Net payments to the public sector	**– 83**	**13**	**122**	**267**	**65**
Total income	165	329	466	737	401

Source: Statistics Denmark, consumption survey.

Redistribution occurs mainly via taxes…

The redistribution of wealth primarily takes place via taxes.The least affluent quarter of the population paid an average of only DKK 69,000 each in taxes, whereas the most affluent quarter paid DKK 330,000 on average.

… and to a lesser extent via transfers and services

A certain amount of redistribution also takes place via public services, primarily via income transfers. The least affluent quarter of the population received an average of DKK 110,000 each as direct transfer incomes, whereas those belonging to the most affluent quarter received only DKK 27,000 each on average. The indirect transfers that take place whenever citizens receive public services, such as education and health services, involve virtually no redistribution, as all groups receive more or less the same amount of service.

Taxes affect our behaviour…

Taxes and duties are also meant to affect our financial dispositions. For example, duties can be used to make particular goods more expensive, thereby encouraging us to consume less of them.

…and our environmental habits

Some taxes specifically target special goods that are harmful to the environment. Environmental taxes (also known as "green" taxes) affect our environmental habits by prompting us to cut down on consumption which is harmful to the environment. Environmental taxes have been regarded as increasingly important after the 1994 tax reform. See Figure 7.

An example

Both in connection with the 1994 and 1998 tax reform a number of new taxes were introduced while the rates of other taxes went up. Energy taxes in particular were increased. The new taxes included taxes on shopping bags and water supply.

Profiting on environmental issues ?

The table on page 151 shows that environmental taxes generated total revenue of DKK 64 billion in 2001, while the corresponding public expenditure on environmental issues came to only DKK 25 billion. Consequently, one might be tempted to think that the main objective of the environmental taxes is to generate a profit. However, the purpose of the environmental taxes is not to just create a balance between income and expenditure. The environmental taxes also have an indirect impact on the environment by changing people's behaviour, making them more environmentally aware.

Taxes make us save more

The tax system affects our decisions to borrow money or to supplement our savings. Interest expenditure on e.g. housing mortgages can be deducted from our taxable income. Tax deductions are also awarded for deposits to capital pension schemes.

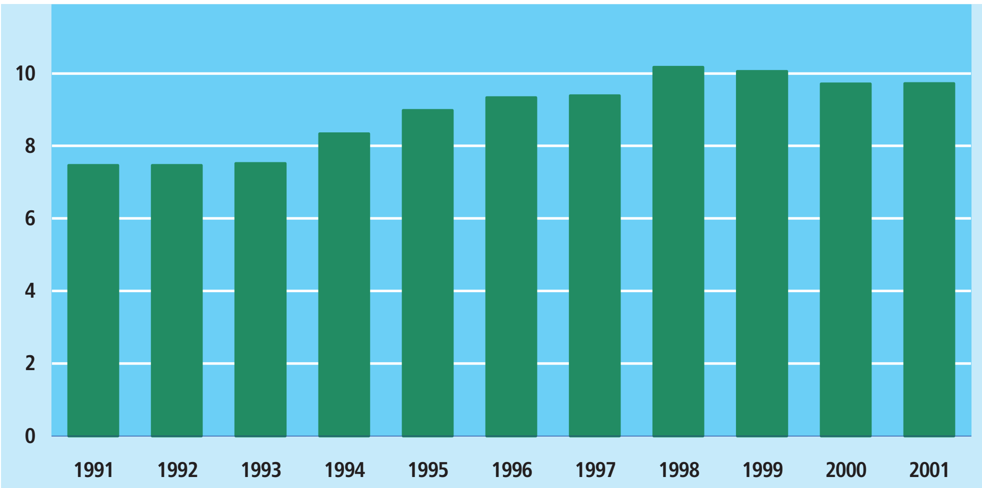
Examples

The opportunities for deducting interest expenditure from taxable income have been reduced on an ongoing basis. The first reduction occurred with the 1987 tax reform, where the deduction for interest expenditure was reduced to 50 per cent. In 1998 it was decided that interest expenditure could no longer be deducted from the basis for additional tax (intermediate limit) as at 1999. In 2000, only a 50 per cent deduction due to interest expenditure could be made in the taxable income used to calculate ordinary income tax (lower limit), and as at 2001, interest expenditure can no longer be deducted from the taxable income used to calculate ordinary income tax (lower limit).

Figure 7

Environmental taxes

Per cent of total taxes



Taxes are used to govern the overall economy

The State uses taxes to control the economy. This is known as fiscal policy. When taxes are raised or lowered, this affects the funds available to households and so will boost or deflate private consumption in households. Such consumption comprises goods manufactured in Denmark as well as goods imported from abroad. In this way, fiscal policies can affect economic growth, employment, the balance of payments, and inflation.

Examples

During the period October 1975 to February 1976, the Danish VAT rate (which was only 15 per cent at the time) was temporarily reduced to 9.25 per cent. The objective was to increase private consumption, thereby encouraging economic growth and the creation of more Danish workplaces after the 1973 oil crisis.

The year 1998 saw the introduction of the Temporary Pension Saving Scheme (DMP), which made it compulsory for all Danes to pay 1 per cent of their wages, etc. to this scheme. In 1999, this scheme was changed into a permanent tax and was renamed the Special Pension Savings Scheme (SP). The objective was to limit private consumption, thereby improving the balance of payments.

8. Unintentional effects of the tax system

Sometimes, taxes have unintentional and unfortunate effects on the economy.

Moonlighting and DIY work

High taxes can lead to a high incidence of moonlighting and do-it-yourself work. This means that the general government loses tax income that could have benefited the public-sector economy. When the Danes choose to try their hands at DIY (do-it-yourself) work, this also means that time is spent on activities that might have been better left to professionals.

Examples

Paying for the services of a VAT registered workman is expensive. You have to work approximately three hours to be able to pay for one workman for one hour. This is because you pay taxes of your own income, and you then have to pay VAT for the workman's services. As a result, it is no small wonder that many choose to carry out repairs, etc., in their homes themselves.

Calculations from the Rockwool Foundation show that the extent of moonlighting in Denmark corresponds to approximately 88,000 full-time jobs or 3 per cent of the GDP. The high incidence of moonlighting cannot, however, be explained solely by pointing to the high level of taxation. It also has to do with issues such as general attitudes in society and the current economic climate.

Incentives for working

A high marginal tax rate means that the financial benefits of working more can be relatively small. The consequence of this may be that we work less. This is unfortunate for the general economy, particularly in light of the increasing burden of support, where more and more children and elderly people need to be supported by the same number of working individuals. This problem is aggravated by the fact that some social services are reduced as incomes go up. This applies to e.g. housing benefits and subsidies for free places in day-care institutions. To certain groups, e.g. single parents with several children, the total profit of putting in extra work can be as little as DKK 0.15 for every DKK 1 made.

An example

In order to prevent taxation on the last krone from becoming too high, a ceiling on how much it is possible to pay has been introduced – the marginal tax rate. In connection with the 1987 tax reform, the marginal tax rate was reduced from 73 per cent to 68 per cent, and this figure was reduced to 58 per cent in 1994. It was increased to 59 per cent in 1998. The 1994 reduction should, however, be seen in connection with the reorganization of the income tax structure and the introduction of the labour market contribution.

The State misses out on DKK 0.6 billion due to cross-border shopping

Finally, the high Danish taxes lead to cross-border shopping, which means that the Danish State looses income from VAT and duties. Calculations carried out by the Danish Ministry of Taxation show that Danish net cross-border shopping (i.e. the Danes' expenditure on "duty-free" goods in other countries, especially Germany, less the foreigners' expenditure in Denmark) was approximately DKK 1.4 billion. This means that the Danish State missed out on approximately DKK 0.6 billion.

9. The tax burden

Measuring the tax burden

The total tax revenue usually goes up year by year, as does the total production in society. Production, and the income it generates, is the basis for taxation. This means that a picture of how much taxes account for in the overall economy can be obtained by relating them to society's production or income. These are known as tax burden measurements. Such measurements are useful when comparing taxation developments over a longer period of time. Tax burden measurements automatically adjust the results to take inflation into account. Tax burden measurements are also useful when comparing taxation in various countries, as the size of the countries is automatically taken into account.

The traditional tax burden

The tax burden is traditionally calculated by relating the total taxes paid to the GDP. Figure 1 shows the development since 1920.

The tax burden changed little during the 1990s

The tax burden rose rapidly during the period from 1960 to the late 1980s: from approximately 25 per cent to 50 per cent. This development was the result of the expansion of the welfare state, which was particularly pronounced during this period. Taxes paid for the expansion and operation of e.g. schools and hospitals. During the 1990s, the tax burden has remained relatively stable at around 50 per cent.

Higher expenditure in future?

Statistics Denmark has prepared a population projection which shows that the number of children and elderly people will increase during the next 40 years, whereas the number of people engaged in active employment will remain the same. In 2040, the number of people under the age of 24 or over the age of 64 will amount to 3.0 million individuals, whereas the current figure is 2.4 million individuals. At the same time, the working population between the ages of 24 and 64 will remain almost unchanged at 2.8 million individuals. This creates extra pressure on public expenditure – hence on taxes. The areas affected will primarily be care of children and the elderly, pensions, and the education sector. Whether this problem will be solved by means of higher taxes, greater emphasis on user payments, or poorer public services remains to be seen.

Pitfalls when interpreting the tax burden

Seen over a long period of time, the tax burden and the total public expenditure will be interconnected. In the long term, an increasing tax burden is a sign that more public funds are being spent on services and transfer incomes. The tax burden can, however, go up or down from one year to the next for many other reasons, and without any changes in the tax rates. The key reasons for such variations are:

- The general economic climate and the nature of the demand for goods.
- New rules for taxation of e.g. pensions.

Examples

From 1982 and up until 1988, the tax burden rose from 42.8 per cent to 50.4 per cent. This increase was first and foremost the result of the positive economic climate in Denmark at the time. The economic growth led to increasing employment rates, higher incomes, and more private consumption and hence to much higher tax revenues.

From 1993 to 1994, the tax burden rose from 48.8 per cent to 49.8 per cent. A large part of this increase was caused by the fact that a number of pensions, including old-age pension, were increased and made liable to taxation. Pensioners, however, received more or less the same amounts as before.

From 1999 to 2000, the tax burden fell from 51.2 per cent to 48.8 per cent. This reduction was partly due to the fact that the increase in the GDP in 2000 was very much the result of more exports and less taxable private consumption.

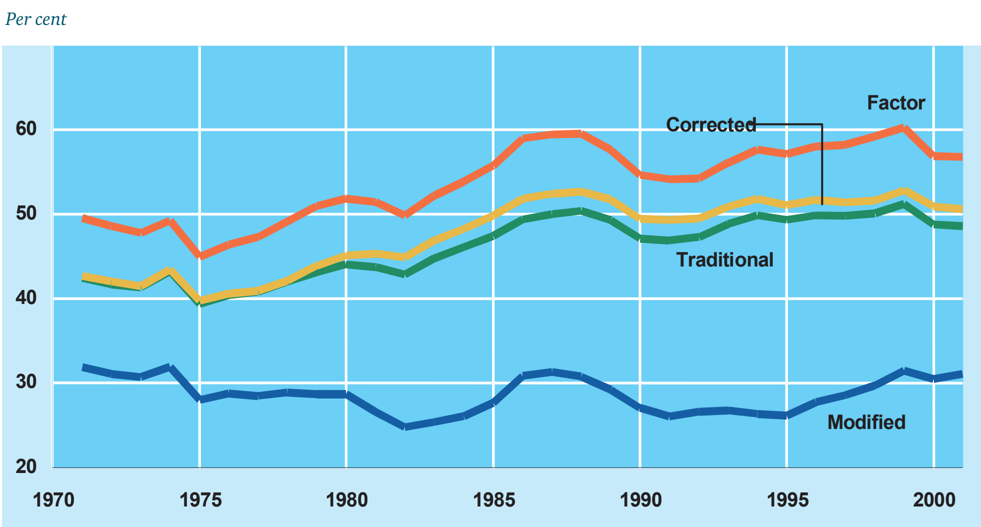
Many ways to measure the tax burden

The traditional tax burden is usually used for analyses of taxes over time and for comparing taxation issues across national borders. It does, however, have some weaknesses:

- Duties on goods are included as part of the total taxes and as part of the GDP, which is calculated in market prices. As a result, the combination of the total taxes by tax types can affect the tax burden measured. If, for example, a larger part of the total tax revenue is generated by income taxes and duties account for less, the tax burden will, all other things being equal, go up.
- The GDP is not a measure of society's income. Part of Denmark's production is transferred to other countries as interest and other transfers, e.g. development aid. If these amounts are ignored, we arrive at the gross national income (GNI), which is currently lower than the GDP. The tax burden will, all other things being equal, go up.
- The tax burden does not take into account the fact that part of the taxes "return" to the citizens in the form of transfer incomes.

Developments over time for the various measurement methods are illustrated in Figure 8.

Figure 8 **Tax burden measurements**



The measurements follow each other

Over longer periods of time, the various tax burden measurements show the same trends. This means that the exact choice of method does not greatly matter when analysing the general developments.

Table 6 **Different methods for measuring the tax burden**

Type of tax burden	Method	Comment	2001
Traditional tax burden	$\frac{\text{Taxes and duties}}{\text{GDP in market prices}} \times 100$	The traditional way of calculating the tax burden.	48. 6
Factor tax burden	$\frac{\text{Taxes and duties}}{\text{GDP in factor prices}} \times 100$	The GDP in factor prices does not include duties.	56.8
Corrected tax burden	$\frac{\text{Taxes and duties}}{\text{Disposable GNI in market prices}} \times 100$	The GNI is a better indication for the income of society, as all transfers abroad have been deducted.	50.6
Corrected factor tax burden	$\frac{\text{Taxes and duties}}{\text{Disposable GNI in factor prices}} \times 100$	Combines factor and corrected tax burden.	59.6
Modified tax burden	$\frac{\text{Disposable public gross income}}{\text{Disposable GNI in market prices}} \times 100$	Takes into account the fact that a significant part of the tax revenue is returned to the citizens in the form of transfer income.	31.1

Can you choose any method?

There are many different ways of measuring the tax burden. They all yield different results. There is no single “right” way of calculating tax burden; each method has its own strengths and weaknesses, but they all demonstrate more or less the same developments in the long term. Despite its drawbacks, the traditional tax burden remains the most frequently used, particularly because it is based on transparent and readily available information.

10. Taxes in Denmark and abroad

Figure 9 shows the traditional Danish tax burden in relation to a number of selected OECD countries.

Denmark has a high tax burden

Denmark has the second highest tax burden in the world – only Sweden has a higher rate. At the other end of the scale we find countries such as the USA and Japan.

Models of society

The tax burden reflects the model of society chosen in each individual country.

The Scandinavian model

Denmark and Sweden represent the mixed economy, known in these countries as the Scandinavian welfare model. It is characterized by extensive public administration and service. Many welfare services are provided by the public, whereas families play a lesser part. Public services and benefits are free to large groups of the population and are financed by taxes and duties.

The Anglo-Saxon model

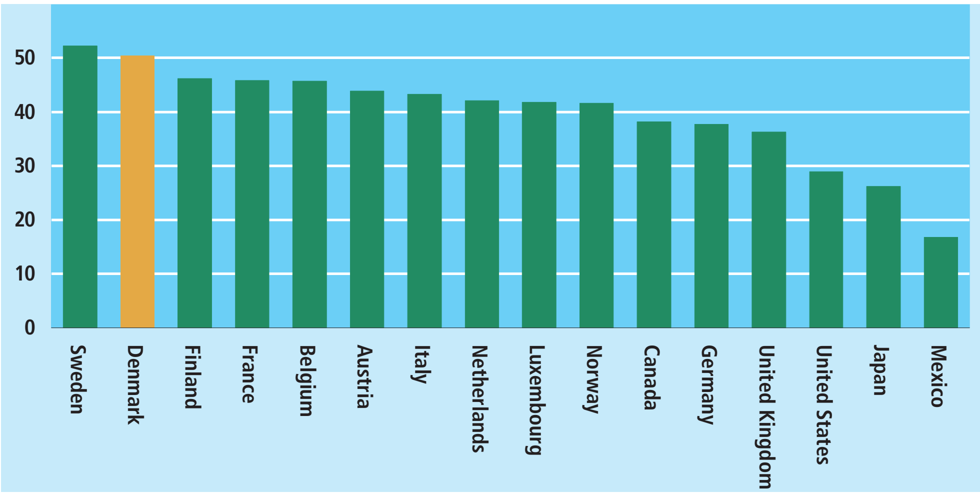
The USA and Japan represent the market economy. This model features little public administration and service. Welfare services are paid by individual citizens via user's payments or insurance schemes.

The continental model

Germany and Italy represent the continental model. Here, certain welfare services are public, whereas families and employers have a greater responsibility for their own welfare than in Scandinavia.

Figure 9 **The tax burden in selected OECD countries. 1999**

Per cent of the GDP



Source: OECD: *National Accounts, Vol. II, 1988-1999.*

Pitfalls when making international comparisons

The tax burden is often used to present a "taxation world cup", which will usually see Denmark taking a position at the very top. In actual fact, it is not possible to carry out precise comparisons of international tax burdens. Of course, there can be no doubt that Denmark and Sweden levy high taxes, but our exact position in relation to other countries cannot be determined with complete accuracy. This is partly due to the following:

- The tax burden measured depends on whether social transfers are paid out as taxable income, as tax-free transfer income, or as tax deductions. In Denmark, a total of DKK 228 billion was paid out in 2001 in transfers to households, and the vast majority of these transfers were liable to taxation. For this reason, the Danish tax burden is higher than in e.g. Germany, where certain transfers are provided free of tax or as tax deductions.
- The composition of the total tax revenue in terms of income tax and duties will affect the size of the tax burden, because only duties are included in both the denominator and the numerator in calculations (the traditional tax burden), whereas income taxes are included only in the numerator. As a result, the Danish tax burden is lower than in other OECD countries, where less emphasis is placed on duties.
- The tax burden will reflect the economic outlook of the countries compared. In a society with an economic boom the tax burden will typically be high with a simultaneous surplus on public finances. In a society with an economic recession the opposite applies. Over recent years favourable economic conditions have characterised the Danish economy, wheras less favourable economic conditions have prevailed in, e.g. Germany.

Denmark and Germany

Denmark and Germany are at the same economic level. The two countries enjoy close relations, and Germany is Denmark's greatest single trade partner. Even so, the countries have decided to establish very different welfare systems, a fact which is also reflected in the tax burden.

Table 7 illustrates the various tax burden measurements for Denmark and Germany.

Table 7 **Tax burden. 1999**

	Denmark	Germany
Traditional tax burden	51.2	37.7
Factor tax burden	59.9	42.2
Corrected tax burden	52.8	38.5
Corrected factor tax burden	60.8	42.9

Source: OECD: *National Accounts, Vol. II, 1988-1999.*

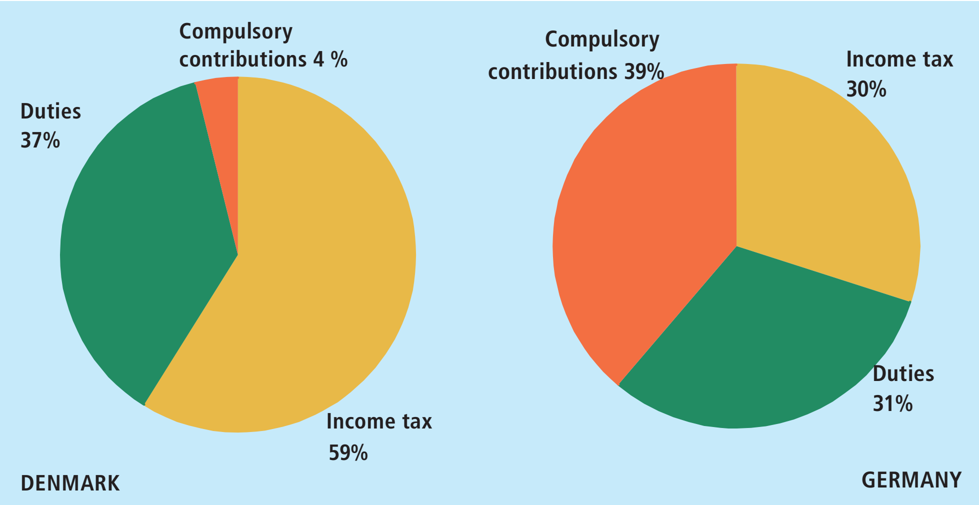
Regardless of which measurement is used, Denmark clearly has a higher tax burden than Germany. When applying the traditional tax burden, the difference is 13.5 per cent points, but this difference grows to 17.9 per cent points if we apply the corrected factor tax burden.

The tax structure

The tax structure is also different, however. This is illustrated in Figure 10.

Figure 10

Distribution of tax revenue in Denmark and Germany. 1999



Source: OECD: *National Accounts, Vol. II, 1988-1999.*

Little emphasis on compulsory contributions

Denmark focuses mainly on income taxes and duties and places little emphasis on compulsory contributions to social security schemes. In Germany, the opposite is true. Here, compulsory contributions to social security schemes account for a much greater share of all taxes. This difference is of key importance to our entitlement to receive social transfers. In Denmark, you are entitled to receive most transfers, e.g. old-age pension, regardless of your previous attachment to the labour market.

An example

In Germany, payments of social security contributions for pensions, unemployment funds, and care are compulsory. Payments for insurance schemes are shared between employers and employees. To an average German family, the annual expenditure on such schemes is approximately 40 per cent of their gross wages.

The differences in terms of tax burden and tax structure reflect the ways in which the Danish and German welfare systems are structured.

Universal welfare services in Denmark

A significant difference between the two welfare systems is the fact that in Germany, services within social security and welfare depend primarily on the recipients' previous attachment to the labour market and their payments made to the compulsory insurance system. Denmark, on the other hand, is characterized by having a universal welfare system. This means that anyone who needs to do so is entitled to receive a given social service without having had any prior attachment to the labour market.

More public service

Table 8 illustrates the total consumption in Denmark and Germany.

Table 8

Consumption per inhabitant in Denmark and Germany. 2000

	Denmark	Germany
	EUR per inhabitant	
Total consumption	**23 548**	**18 952**
Private consumption	15 379	14 302
Total public consumption	**8 170**	**4 650**
Collective	5 631	2 718
Individual	2 539	1 932

Source: Eurostat. New Cronos.

Same private consumption

Private expenditure on consumption in the two countries is more or less the same, which is to say approximately EUR 15,000 per inhabitant.

Greater public expenditure

Danes, however, have the opportunity to consume far more public services than German citizens. We pay for these services via our taxes. When compared to their German cousins, Danish families have the chance to consume twice as much in terms of *individual* public consumption, e.g. care for children and the elderly. We also have a higher rate of *collective* public consumption/expenditure than the Germans, e.g. on central and local government administration.

Table 9

Distribution of public expenditure in Denmark and Germany. 2000

	Denmark	Germany
	EUR per inhabitant	
General public administration	1 446	956
Armed forces	508	290
Public order and safety	308	403
Business economics	1 249	1 017
Environmental protection	-	172
Housing, etc.	302	265
Health	1 674	1 538
Recreation, culture, and religion	522	178
Education	2 611	1 052
Social welfare	7 606	5 366

Source: Eurostat. New Cronos.

Table 9 illustrates the distribution of public expenditure in Denmark and Germany. The difference between the two countries is most pronounced within social welfare and education.

An example

In Germany, adult children are financially responsible for their own parents. Depending on the adult children's level of income, German authorities can ask them for partial payment of the cost of caring for their elderly parent(s).

Difficult comparison

No matter how the Danish tax burden is measured, it is higher than the Germany tax burden. Part of the difference can be attributed to the circumstance that many social income transfers are taxable in Denmark, but are exempt from taxation in Germany. But the difference in the tax burden also indicates that the supply of free social welfare services is higher in Denmark, compared to Germany. The higher tax burden is the price we have to pay to make our social welfare services available to all. Danish families delegate the responsibility for taking care of children and the elderly to the public sector, and of course this costs money, which equals higher taxes. The figures themselves cannot be used to conclude that the Danish model is better than the German or vice versa – the real question is what type of society you prefer.