

TAXES

Chapter 1: TAXATION AND ITS ECONOMIC EFFECTS

Overview of Taxation Principles

A **tax** (from the Latin *taxo*) is a compulsory financial charge or some other type of levy imposed upon a **taxpayer** (an individual or other legal entity) by a governmental organization in order to fund various public expenditures.

Most countries have a tax system in place to pay for public, common or agreed national needs and government functions.

Some levy a *flat percentage rate* of taxation on personal annual income, but most scale taxes based on annual income amounts.

Most countries charge a tax on *individual income* as well as on *corporate income*.

Countries often also impose wealth taxes, inheritance taxes, estate taxes, gift taxes, property taxes, sales taxes, payroll taxes or tariffs.

Tax Collection

In modern taxation systems, governments levy taxes *in money*; but **in-kind** and **corvée** taxation are characteristic of traditional or pre-capitalist states and their functional equivalents.

The method of taxation and the government expenditure of taxes raised is often highly debated in politics and economics.

Tax collection is performed by a government agency, for example:

- Canada Revenue Agency,
- Internal Revenue Service (IRS) in the United States,
- Her Majesty's Revenue and Customs (HMRC) in the UK
- Federal Tax Service in Russia
- VID in Latvia.

When taxes are not fully paid, the state may impose civil penalties (such as fines or forfeiture) or criminal penalties (such as incarceration) on the non-paying entity or individual.

Purposes of Taxation

Purposes of Taxation

The levying of taxes aims to

- raise revenue to fund governing or to
- alter prices in order to affect demand.

Governments use money provided by taxation to carry out many functions, e.g.:

- expenditures on economic infrastructure (roads, public transportation, sanitation, legal systems, public safety, education, health-care systems),
- military,
- scientific research,
- culture and the arts,
- public insurance, and
- the operation of government itself.

A government's ability to raise taxes is called its **fiscal capacity**.

When expenditures exceed tax revenue, a government accumulates debt. A portion of taxes may be used to service past debts.

Economic Effects of Taxation

Economic Effects of Taxation

Imposition of taxes may have the following effects:

1. Taxes cause an *income effect* because they reduce purchasing power to taxpayers.
2. Taxes cause a *substitution effect* when taxation causes a substitution between taxed goods and untaxed goods.
3. Both buyers and sellers are worse off when a good is taxed:
A tax raises the price buyers pay and lowers the price sellers receive. This can be shown with the concept of a *tax incidence*.

Economic Effects of Taxation

Tax Incidence

Tax incidence is the division of the burden of a tax between buyers and sellers.

When the government imposes a tax on the sale of a good or services, the price paid by buyers might rise by:

- the full amount of the tax,
- a lesser amount, or
- not at all.

If the price paid by buyers rises by the full amount of the tax, then the burden of the tax falls entirely on buyers—the buyers pay the tax.

If the price paid by buyers rises by a lesser amount than the tax, then the burden of the tax falls partly on buyers and partly on sellers.

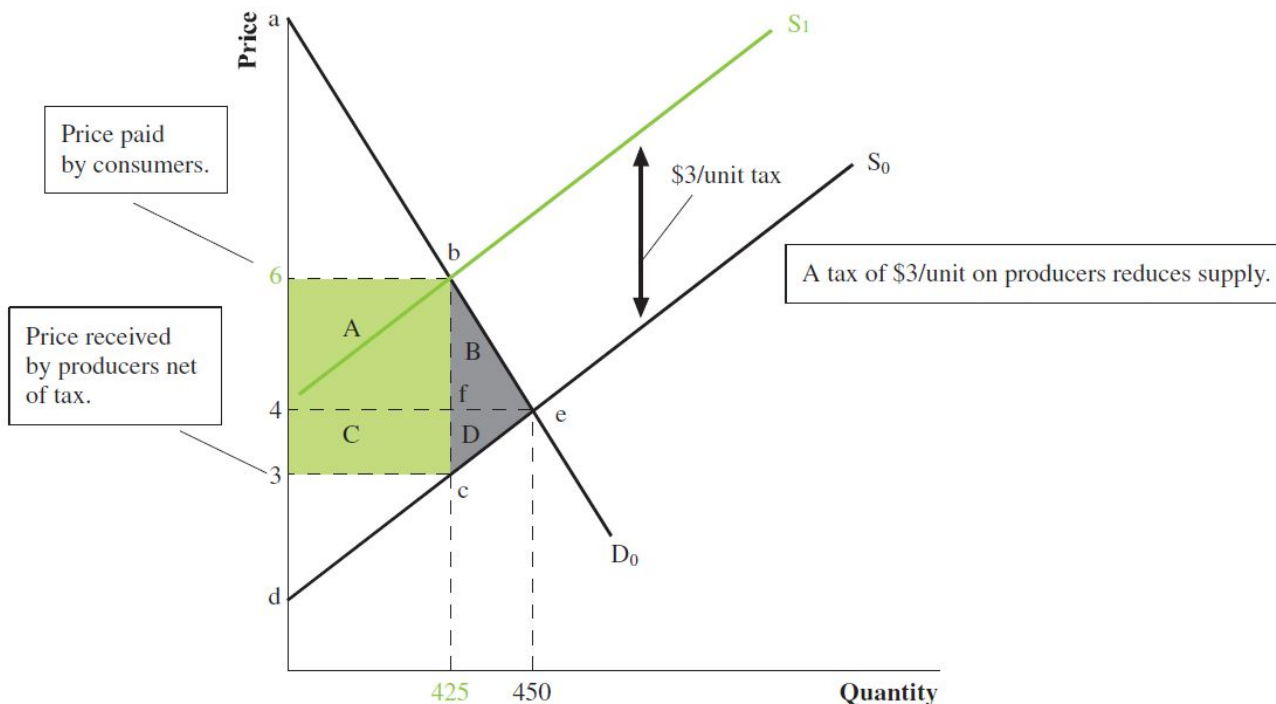
And if the price paid by buyers doesn't change at all, then the burden of the tax falls entirely on sellers.

Economic Effects of Taxation

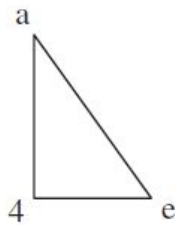
Example 1:

Tax on Sellers

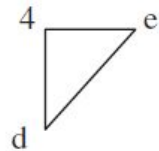
Assume a tax per unit of \$3 is levied on suppliers (see Figure). The supply curve presents the minimum prices that producers are willing and able to sell various quantities of output for. Since they must now pay \$3 in taxes on each unit sold, suppliers will sell every given quantity for \$3 higher (so that they still cover their marginal cost on each unit sold). As a result, supply shifts to the left to S_1 . Consequently, equilibrium price rises to \$6 and equilibrium quantity falls to 425 units.



Before the Tax is Imposed



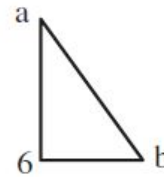
Consumer surplus is the area of the triangle between the demand curve, y-axis and market price (\$4).



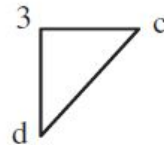
Producer surplus is the area of the triangle between the supply curve, y-axis and market price (\$4).

Surplus is maximized.

After the Tax is Imposed



Consumer Surplus:
Consumers pay \$6/unit for 425 units.



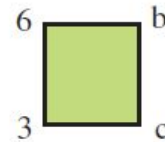
Producer Surplus:
Producers receive \$6 - \$3 = \$3/unit for 425 units.



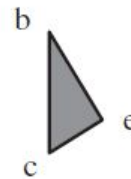
Reduction in consumer surplus that is offset by tax revenue for the government.



Reduction in producer surplus that is offset by tax revenue for the government.



Total government tax revenue.



There is a deadweight loss because there is no activity in the market beyond 425 units. The deadweight loss to society from underproduction equals the reduction in consumer and producer surplus that is not offset by government tax revenue.

Economic Effects of Taxation

- Consumers purchase 425 units and pay \$6/unit. Effectively prices paid by consumers have gone up by $\$6 - \$4 = \$2$. Consumer surplus has therefore fallen by Rectangle A and Triangle B.
- Producers sell 425 units at \$6/unit but only pocket \$3/unit after paying the tax. Effectively, their realized prices have fallen by $\$4 - \$3 = \$1$. Producer surplus has therefore fallen by Rectangle C and Triangle D.
- The government earns tax revenue of \$3/unit on 425 units that are sold. So part of the loss in consumer surplus (Rectangle A) and producer surplus (Rectangle C) is transferred to the government.
- However, some consumer surplus (Triangle B) and producer surplus (Triangle D) remains untransferred and is lost due to the imposition of the tax. These two triangles comprise society's deadweight loss.

Even though this tax was levied on suppliers only, consumers and producers share the actual burden of the tax as consumer and producer surplus both decline once the tax is imposed.

Further, in our example, consumers actually end up bearing the brunt of the tax in the form of an effective increase in prices of \$2, versus an effective decrease in producer realized prices of only \$1. Note that consumer surplus transferred to the government, Rectangle A, is greater than producer surplus transferred to the government, Rectangle C. This is because the demand curve is steeper than the supply curve. If the supply curve were steeper, the reverse would be true regardless of whom the tax was imposed upon by law.

Economic Effects of Taxation

Example 2:

Why taxes result in deadweight losses

Imagine that Joe cleans Jane's house each week for €100. The opportunity cost of Joe's time is €80, and the value of a clean house to Jane is €120. Thus, Joe and Jane each receive a €20 benefit from their deal. The total surplus of €40 measures the gains from trade in this particular transaction.

Now suppose that the government levies a €50 tax on the providers of cleaning services. There is now no price that Jane can pay Joe that will leave both of them better off. The most Jane would be willing to pay is €120, but then Joe would be left with only €70 after paying the tax, which is less than his €80 opportunity cost.

Conversely, for Joe to receive his opportunity cost of €80, Jane would need to pay €130, which is above the €120 value she places on a clean house. As a result, Jane and Joe cancel their arrangement. Joe goes without the income, and Jane lives in a dirtier house.

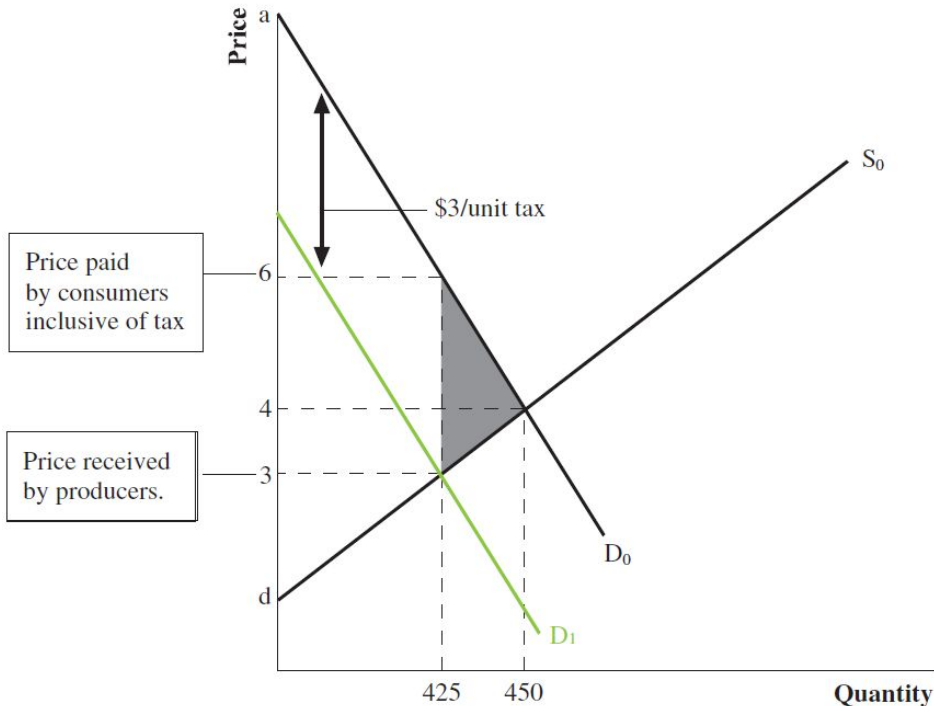
The tax has made Joe and Jane worse off by a total of €40 because they have each lost €20 of surplus. But note that the government collects no revenue from Joe and Jane because they decide to cancel their arrangement. The €40 is pure deadweight loss: It is a loss to buyers and sellers in a market that is not offset by an increase in government revenue. From this example, we can see the ultimate source of deadweight losses: Taxes cause deadweight losses because they prevent buyers and sellers from realizing some of the gains from trade.

Economic Effects of Taxation

Example 3:

Tax on Buyers

Now assume that instead of being levied upon producers, the same \$3/unit tax is imposed on consumers (see Figure). The demand curve shifts to the left to D_1 . The actual burden of the tax is shared by consumers and producers, and once again (since the demand curve is steeper than the supply curve) consumers bear a greater burden of the tax. Further, the increase in government revenue from tax collections does not entirely offset the reduction in consumer and producer surplus, and society suffers a deadweight loss from underproduction (the region shaded in grey).



Economic Effects of Taxation

The impact of a tax on a market outcome is the same whether the tax is levied on buyers or sellers of a good.

When a tax is levied on buyers, the demand curve shifts downward by the size of the tax;
when it is levied on sellers, the supply curve shifts upward by that amount.

In either case, when the tax is enacted, the price paid by buyers rises, and the price received by sellers falls.

In the end, the *elasticities of supply and demand determine* how the tax burden is distributed between producers and consumers. This distribution is the same regardless of how it is levied.

Economic Effects of Taxation

Tax Incidence and Elasticity of Demand

The division of the tax between buyers and sellers depends in part on the *elasticity of demand*.

Price elasticity of demand is a measure of the responsiveness of the quantity demanded of a good to a change in its price when all other influences on buying plans remain the same.

There are two extreme cases:

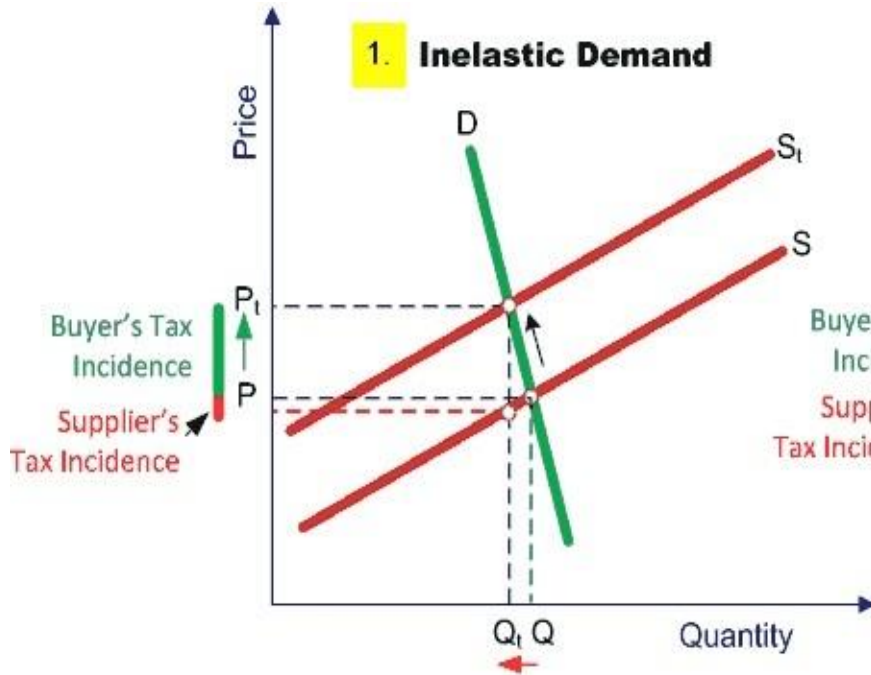
- Perfectly inelastic demand → Buyers pay the entire tax.
- Perfectly elastic demand → Sellers pay the entire tax.

Also, the more inelastic the demand (relative to supply), the larger is the buyers' share of the tax.

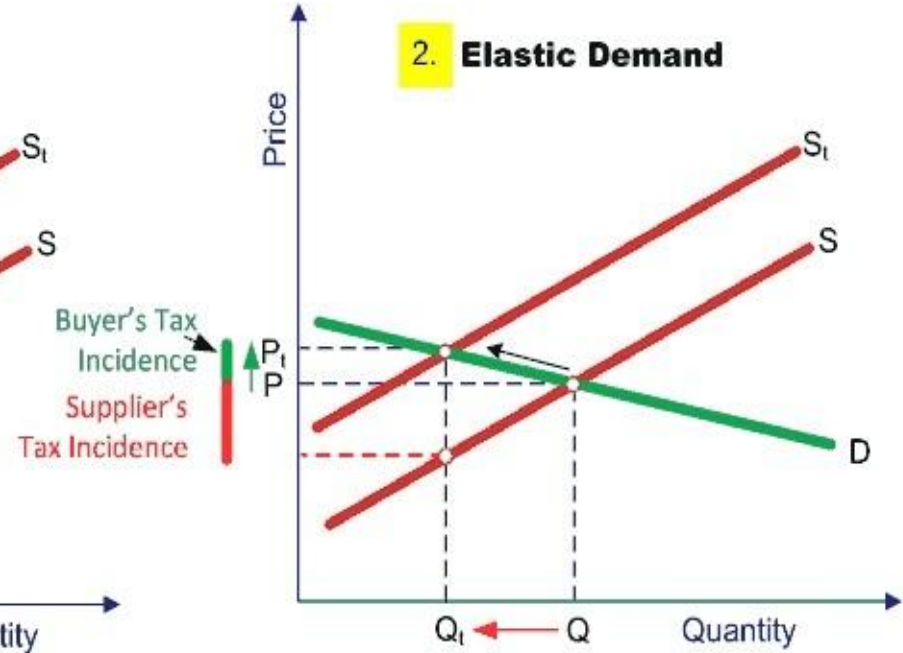
See Fig. 1 and 2 (next slide)

Economic Effects of Taxation

1. Inelastic Demand



2. Elastic Demand



Economic Effects of Taxation

Example 4:

Tax with Perfectly Inelastic Demand

Figure shows the market for insulin, a vital daily medication for those with diabetes.

Demand is perfectly inelastic at 100,000 doses a day, regardless of the price, as shown by the vertical demand curve D .

If insulin is taxed at 20¢ a dose we must add the tax to the minimum price at which drug companies are willing to sell insulin. The result is the new supply curve $S + tax$.

When a tax is imposed on this good, buyers pay the entire tax.



Economic Effects of Taxation

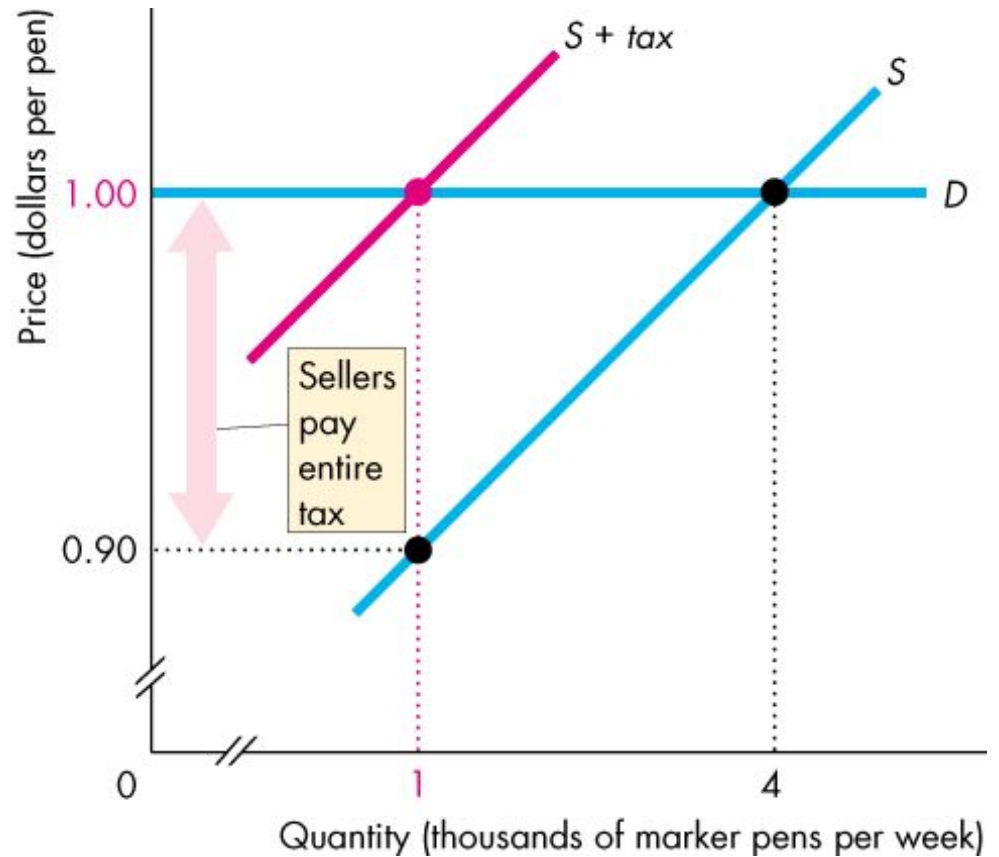
Example 5:

Tax with Perfectly Elastic Demand

Figure shows the market for pink marker pens.

The demand for this good is perfectly elastic — the demand curve is horizontal.

When a tax of 10¢ is imposed on this good, sellers pay the entire tax.



Economic Effects of Taxation

Tax Incidence and Elasticity of Supply

The division of the tax between buyers and sellers also depends, in part, on the *elasticity of supply*.

The elasticity of supply measures the responsiveness of the quantity supplied to a change in the price of a good, when all other influences on selling plans remain the same.

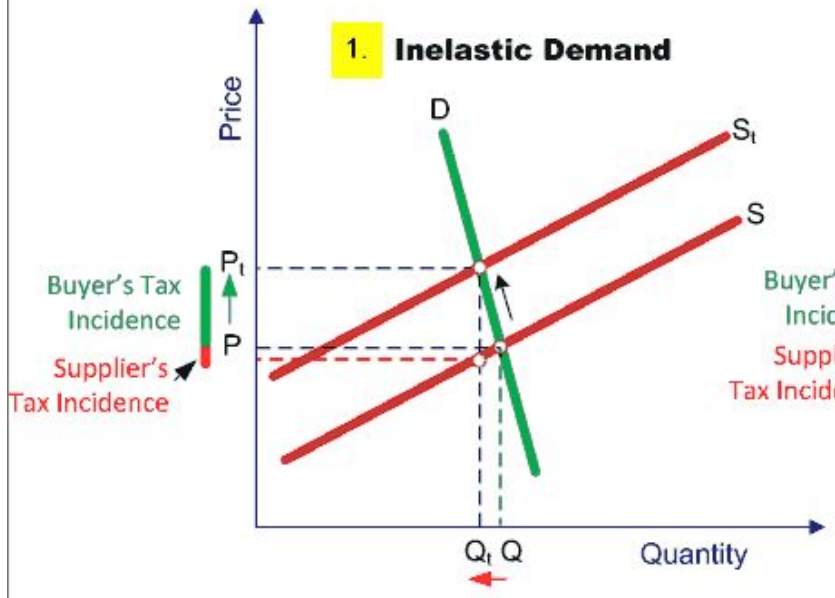
Again, there are two extreme cases:

- Perfectly inelastic supply → Sellers pay the entire tax.
- Perfectly elastic supply → Buyers pay the entire tax.

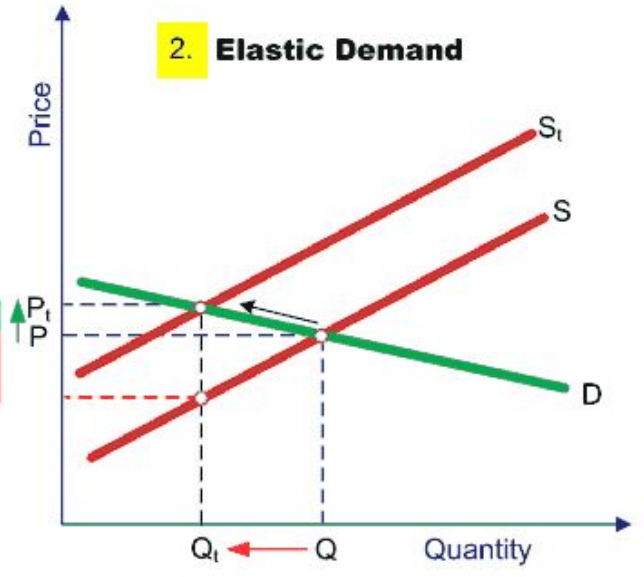
Also, the more elastic the supply (relative to demand), the larger is the amount of the tax paid by buyers.

See Fig. 3 and 4 (next slide)

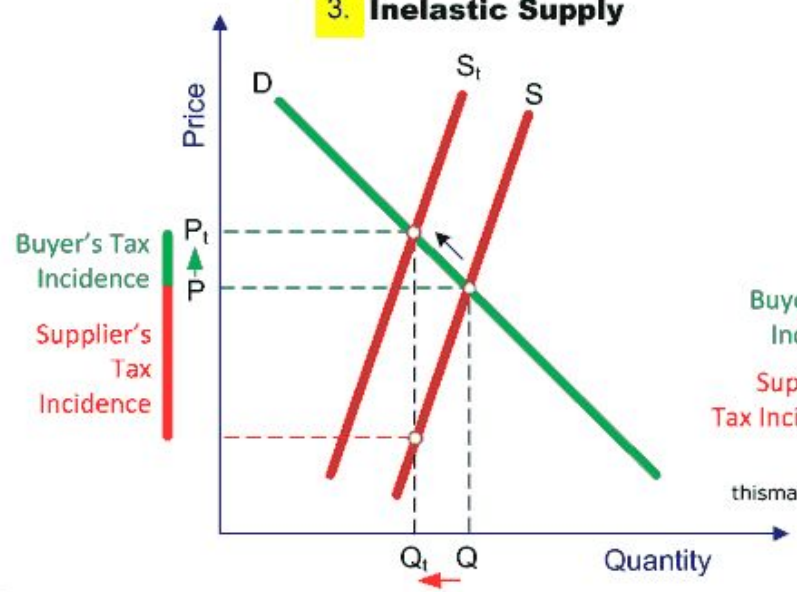
1. Inelastic Demand



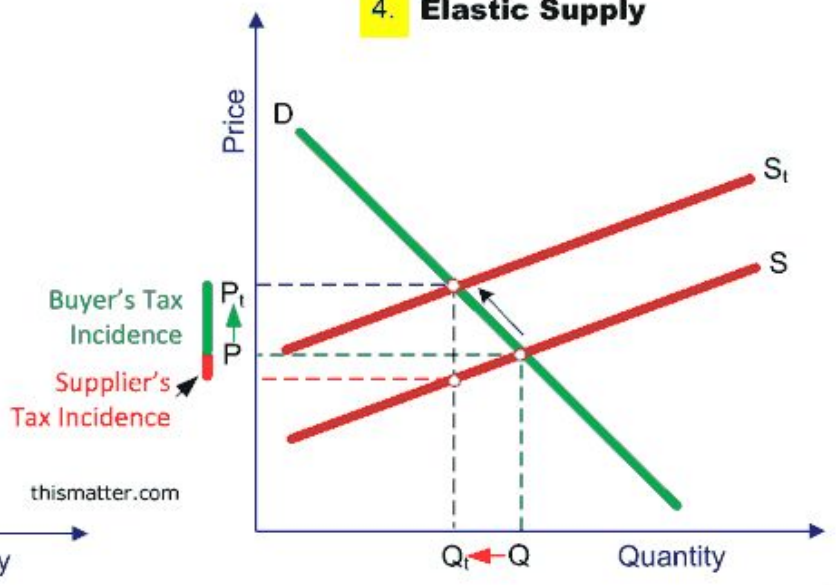
2. Elastic Demand



3. Inelastic Supply



4. Elastic Supply



Economic Effects of Taxation

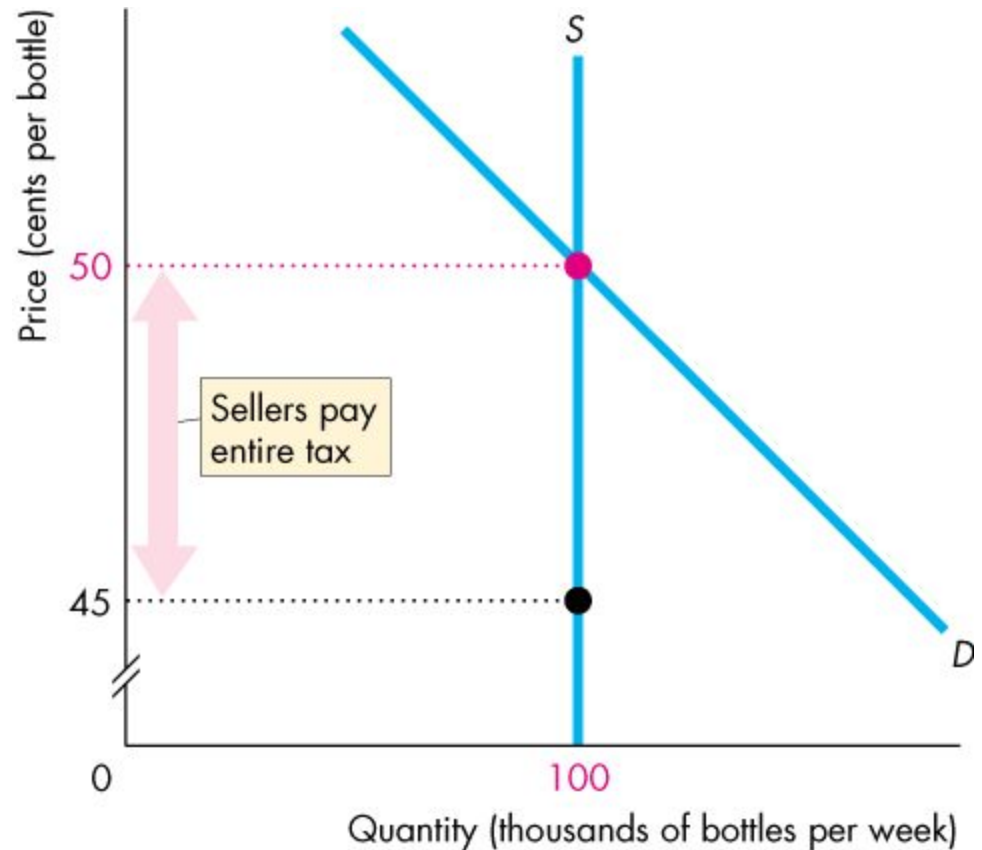
Example 6:

Tax with Perfectly Inelastic Supply

Figure shows the market for water from a mineral spring that flows at a constant rate that cannot be controlled.

The supply of this good is perfectly inelastic at 100,000 bottles a week, as shown by the vertical supply curve *S*. With no tax, the price is 50¢ a bottle and the quantity is 100,000 bottles.

When a tax is imposed on this good at 5¢ a bottle, the supply curve does not change because the spring owners still produce 100,000 bottles a week, even though the price they receive falls. But buyers are willing to buy the 100,000 bottles only if the price is 50¢ a bottle, so the price does not change. The tax reduces the price received by sellers to 45¢ a bottle, and sellers pay the entire tax.



(a) Perfectly inelastic supply

Economic Effects of Taxation

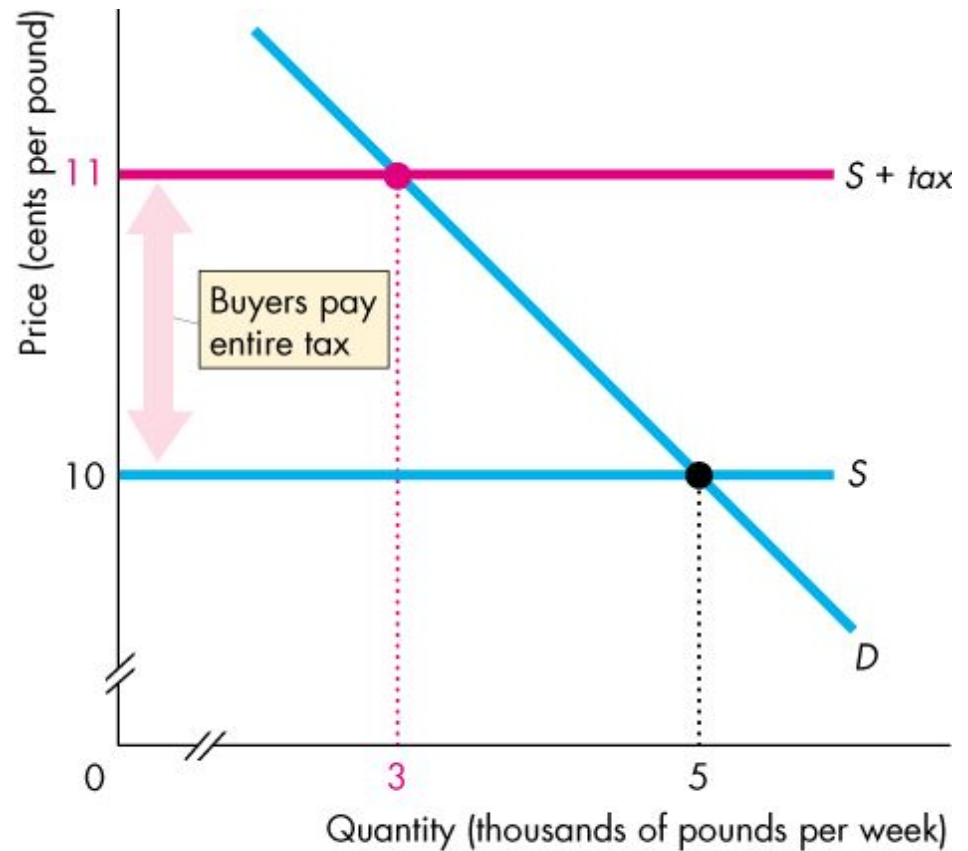
Example 7:

Tax with Perfectly Elastic Supply

Figure shows the market for sand.

The supply of this good is perfectly elastic — the supply curve is horizontal. With no tax, the price is 10¢ a pound and 5,000 pounds a week are bought.

When a tax of 1¢ a pound is imposed, we must add it to the minimum supply-price. Sellers are now willing to offer any quantity at 11¢ a pound along the curve $S + tax$. A new equilibrium is set at a price of 11¢ and 3,000 pounds a week. The tax has increased the price buyers pay by the full amount of the tax – 1¢ a pound – and has decreased the quantity sold. Buyers pay the entire tax.



(b) Perfectly elastic supply

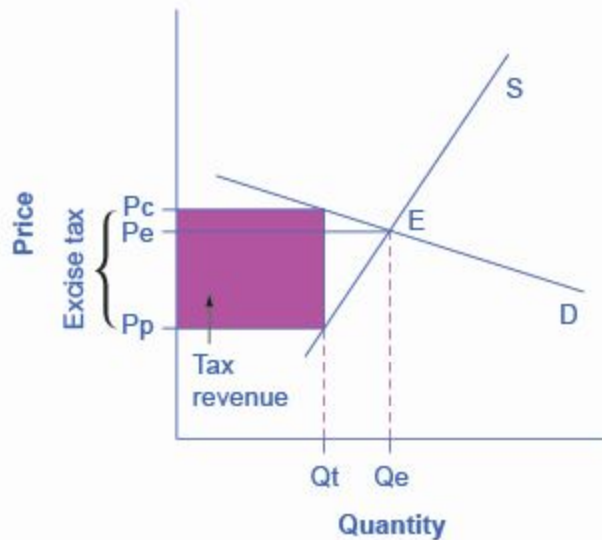
Economic Effects of Taxation

Example 8:

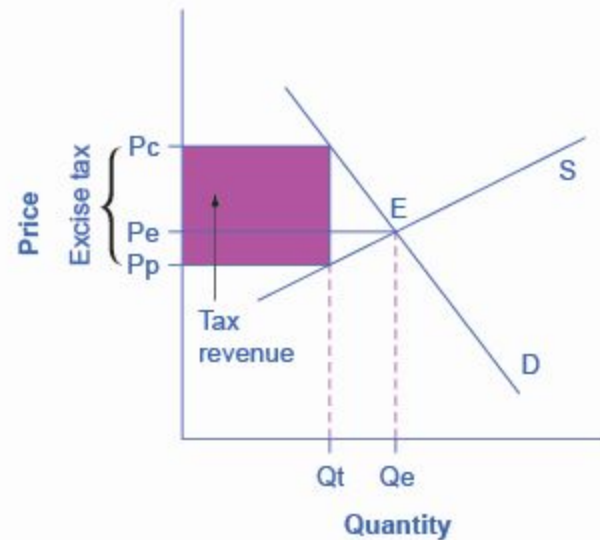
The burden of tax

Depending on the circumstance, the burden of tax can fall more on consumers or on producers.

In the case of tobacco products, for example, demand is inelastic — because tobacco is an addictive substance — and taxes are mainly passed along to consumers in the form of higher prices.



(a) Elastic demand and inelastic supply

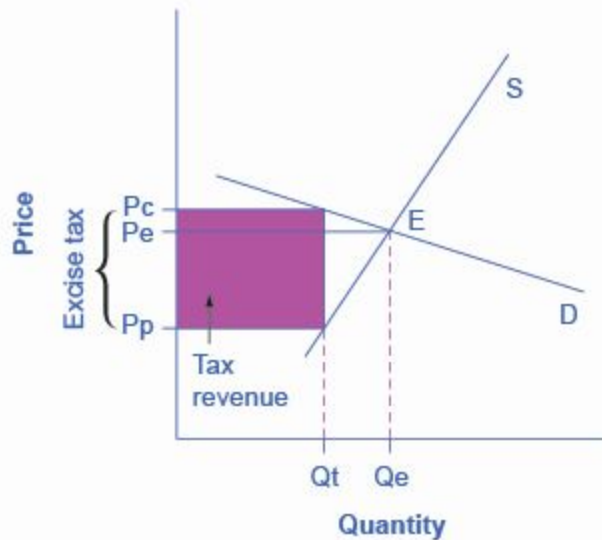


(b) Elastic supply and inelastic demand

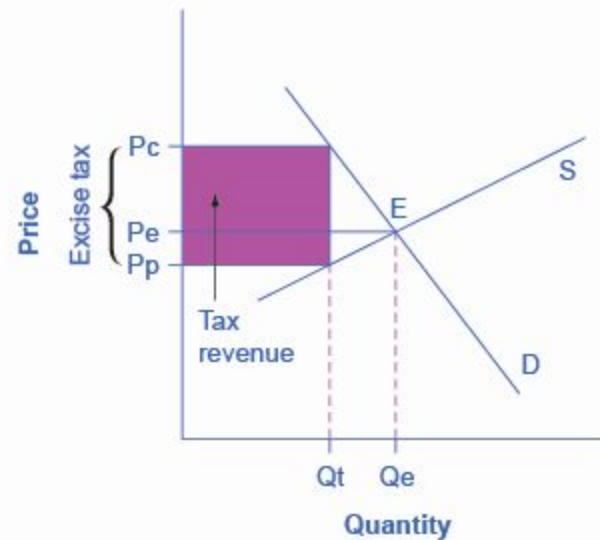
Economic Effects of Taxation

In the tobacco example, the tax burden falls on the most inelastic side of the market. If demand is more inelastic than supply, consumers bear most of the tax burden. But, if supply is more inelastic than demand, sellers bear most of the tax burden.

When the **demand is inelastic** (see Fig. B), consumers are not very responsive to price changes, and the quantity demanded remains relatively constant when the tax is introduced. In the case of smoking, the demand is inelastic because consumers are addicted to the product. The seller can then pass the tax burden along to consumers in the form of higher prices without much of a decline in the equilibrium quantity.



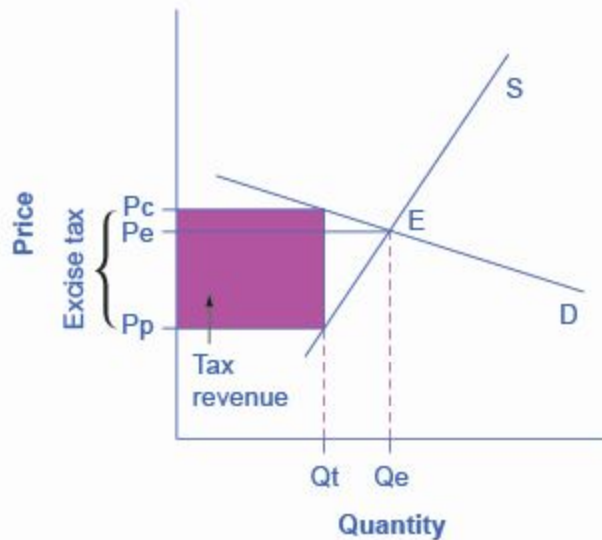
(a) Elastic demand and inelastic supply



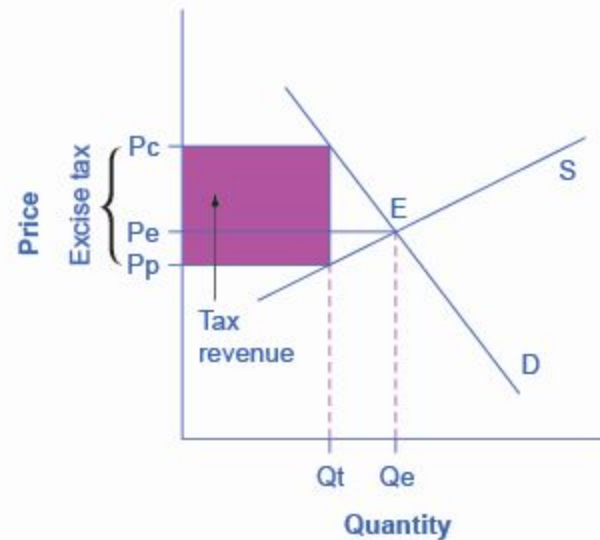
(b) Elastic supply and inelastic demand

Economic Effects of Taxation

When a tax is introduced in a market with an **inelastic supply** (see Fig. A) — such as, for example, beachfront hotels — sellers have no choice but to accept lower prices for their business. Taxes do not greatly affect the equilibrium quantity. The tax burden in this case is on the sellers. If the supply were elastic and sellers had the possibility of reorganizing their businesses to avoid supplying the taxed good, the tax burden on the sellers would be much smaller, and the tax would result in a much lower quantity sold instead of lower prices received.



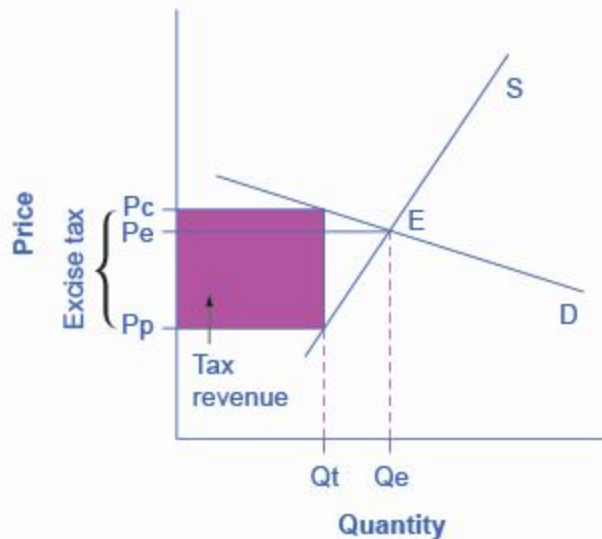
(a) Elastic demand and inelastic supply



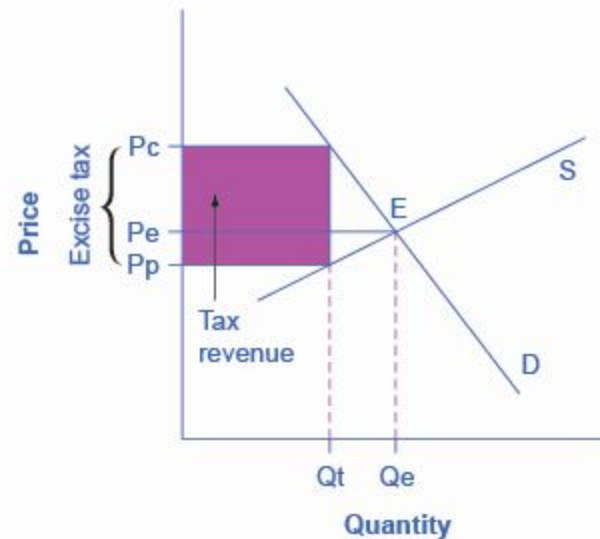
(b) Elastic supply and inelastic demand

Economic Effects of Taxation

In Fig. A, the supply is inelastic and the demand is elastic — as it is in the beachfront hotels example. While consumers may have other vacation choices, sellers can't easily move their businesses. By introducing a tax, the government essentially creates a wedge between the price paid by consumers, P_c , and the price received by producers, P_p . The new market price is P_c , but the sellers receive only P_p per unit sold since they pay $P_c - P_p$ to the government. Since a tax can be viewed as raising the costs of production, this could also be represented by a leftward shift of the supply curve. The new supply curve would intercept the demand at the new quantity Q_t . For simplicity, the figure omits the shift in the supply curve.



(a) Elastic demand and inelastic supply



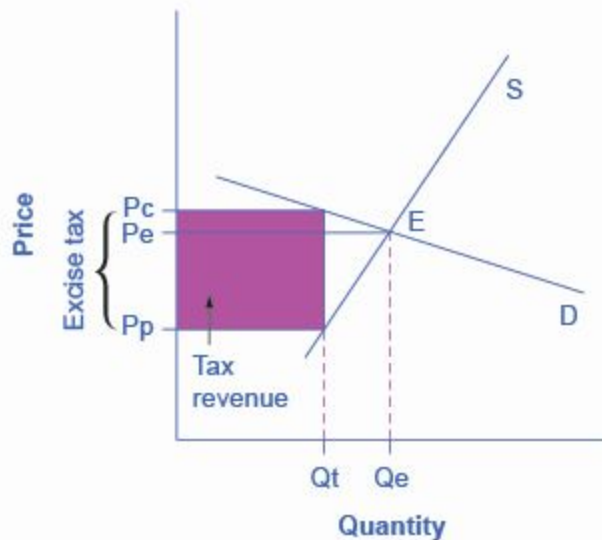
(b) Elastic supply and inelastic demand

Economic Effects of Taxation

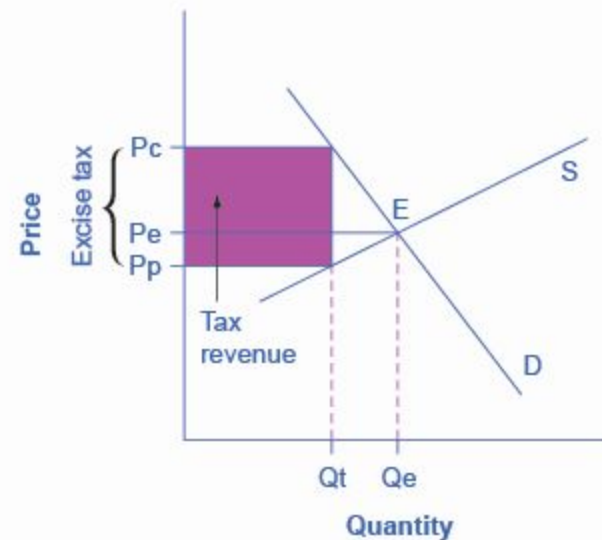
The tax revenue is given by the shaded area, which is obtained by multiplying the tax rate per unit by the total quantity sold, Q_t .

The tax incidence on the consumers is given by the difference between the price paid, P_c , and the initial equilibrium price, P_e .

The tax incidence on the sellers is given by the difference between the initial equilibrium price, P_e , and the price they receive after the tax is introduced, P_p .



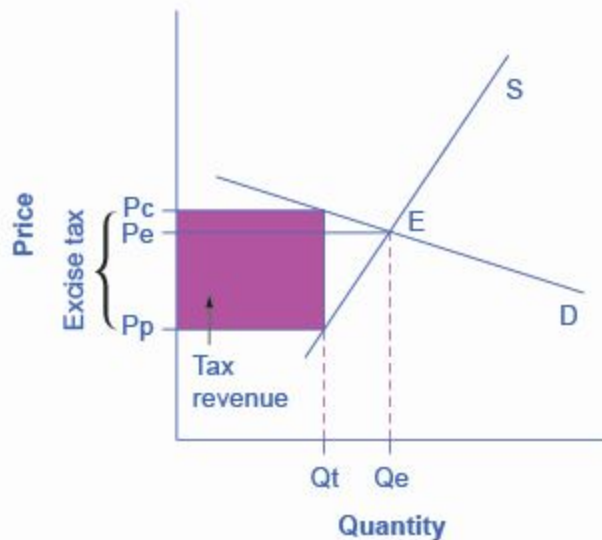
(a) Elastic demand and inelastic supply



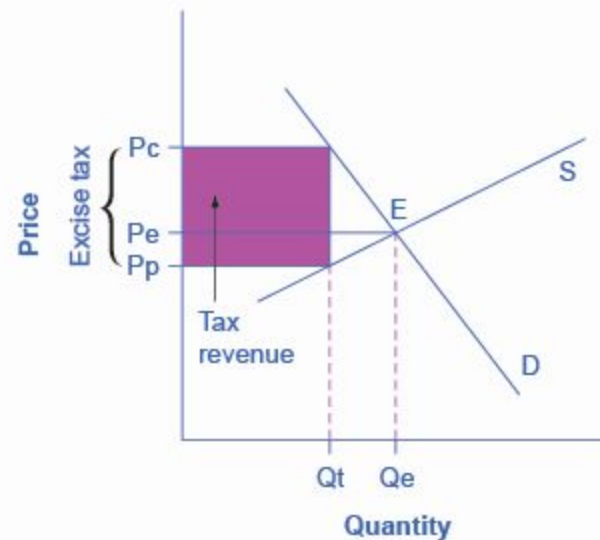
(b) Elastic supply and inelastic demand

Economic Effects of Taxation

In figure A, the tax burden falls disproportionately on the sellers, and a larger proportion of the tax revenue – the shaded area – is due to the resulting lower price received by the sellers than but the resulting higher prices paid by the buyers.



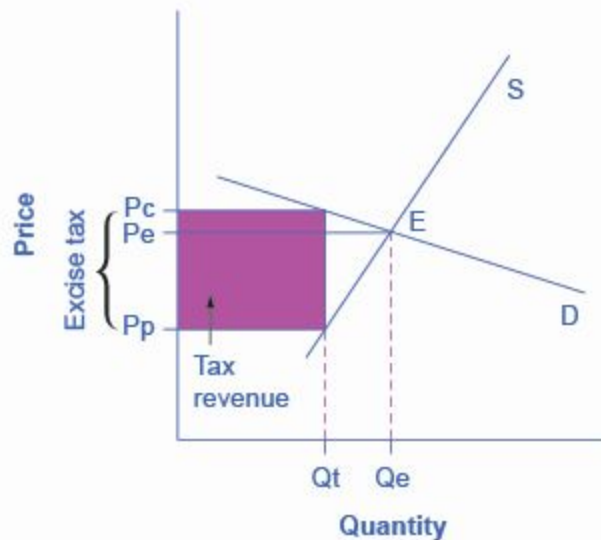
(a) Elastic demand and inelastic supply



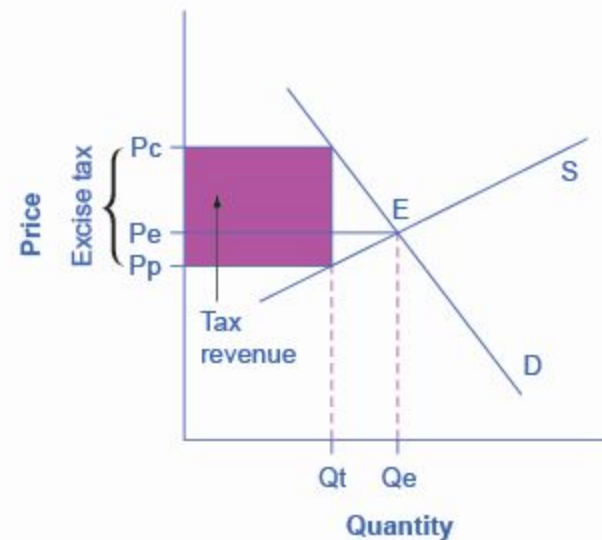
(b) Elastic supply and inelastic demand

Economic Effects of Taxation

On the other hand, if we go back to our example of cigarette taxes, the situation would look more like in Fig. *B*, where the supply is more elastic than demand. The tax incidence now falls disproportionately on consumers, as shown by the large difference between the price they pay, P_c , and the equilibrium price, P_e . Sellers receive a lower price than before the tax, but this difference is much smaller than the change in consumers' price.



(a) Elastic demand and inelastic supply



(b) Elastic supply and inelastic demand

Economic Effects of Taxation

Practice Problem 1:

The original equilibrium price is €3.00 and the equilibrium quantity is 100.

The government then imposes a tax of €0.50 on the sellers. This leads to a new supply curve which is shifted upward by €0.50 compared to the original supply curve.

The new equilibrium price will be in the range between €3.00 and €3.50 and the equilibrium quantity will decrease.

Assume that the consumers pay €3.30 and the new equilibrium quantity is 90.

1. What is the price that sellers will receive after the tax is imposed?

$$P_p = P_c - \text{tax}$$

$$P_p = €3.30 - €0.50 = €2.80 \quad (\text{producers will keep } €2.80)$$

2. What is the total tax revenue for the government?

$$\text{The government will collect } €0.50(90) = €45$$

3. Who shares more of the tax burden, sellers or buyers?

$$\text{Buyers' share of the tax burden is } (€3.30 - €3.00)(90) = €27$$

$$\text{Sellers' share of the tax burden is } (€3.00 - €2.80)(90) = €18$$

Economic Effects of Taxation

Other economic effects of taxation

1. Redistribution of Income

This effect is felt most in developing countries.

A proportional tax will not affect the distribution of income, but both **progressive and regressive taxes** will cause a change in income distribution.

With progressive taxes, the post-tax distribution of income is more equal than the pre-tax distribution, whereas with regressive taxes the post-tax distribution is more unequal than the pre-tax distribution.

Economic Effects of Taxation

Other economic effects of taxation

2. A Reduction in Incentive

It may be argued that increased taxation can have a *disincentive effect* on workers. They may feel that it is not worth taking on extra responsibility or putting in more hours because so much of their extra income would be taken in taxation.

However, it may be argued that workers may want to maintain their present standard of living or may have heavy financial commitments so that if income tax was increased, they would work for longer hours to make up for the income lost in tax.

There are, therefore, conflicting views on the effect of incentives.

Economic Effects of Taxation

Other economic effects of taxation

3. A Reduction in Business Activity

Entrepreneurs undertake investment in anticipation of increasing profit. Investment projects may be risky so the expectation of large profits is an important incentive.

If, however, profits are heavily taxed, the entrepreneurs may feel that it is not worth taking such risks and so they will be far more cautious in their attitudes.

Such caution may lead to *reduced progress and efficiency* with a consequent deterioration in the ability of domestic producers to compete with foreign rivals.

Economic Effects of Taxation

Other economic effects of taxation

4. Effects on the Ability to Work, Save and Invest

Imposition of taxes results in the reduction of disposable income of the taxpayers. This will reduce their expenditure on necessities which are required to be consumed for the sake of improving efficiency.

As efficiency suffers ability to work declines. This ultimately adversely affects savings and investment. However, this happens in the case of poor persons.

Taxation on rich persons has the least effect on the efficiency and ability to work.

Note: Not all taxes, however, have adverse effects on the ability to work. There are some harmful goods, such as cigarettes, whose consumption has to be reduced to increase ability to work. That is why high rate of taxes are often imposed on such harmful goods to curb their consumption.

But all taxes adversely affect ability to save. Since rich people save more than the poor, progressive rate of taxation reduces savings potentiality. This means low level of investment. Lower rate of investment has a dampening effect on economic growth of a country.

Thus, on the whole, taxes have the *disincentive effect* on the ability to work, save and invest.

Economic Effects of Taxation

Other economic effects of taxation

It is suggested that effects of taxes upon the willingness to work, save and invest depends on the *income elasticity of demand*.

Income elasticity of demand measures the responsiveness of demand for a particular good to a change in income, holding all other things constant.

Income elasticity of demand varies from individual to individual.

If the income demand of an individual taxpayer is *inelastic*, a cut in income consequent upon the imposition of taxes will induce him to work more and to save more so that the lost income is at least partially recovered.

On the other hand, the desire to work and save of those people whose demand for income is *elastic* will be affected adversely.

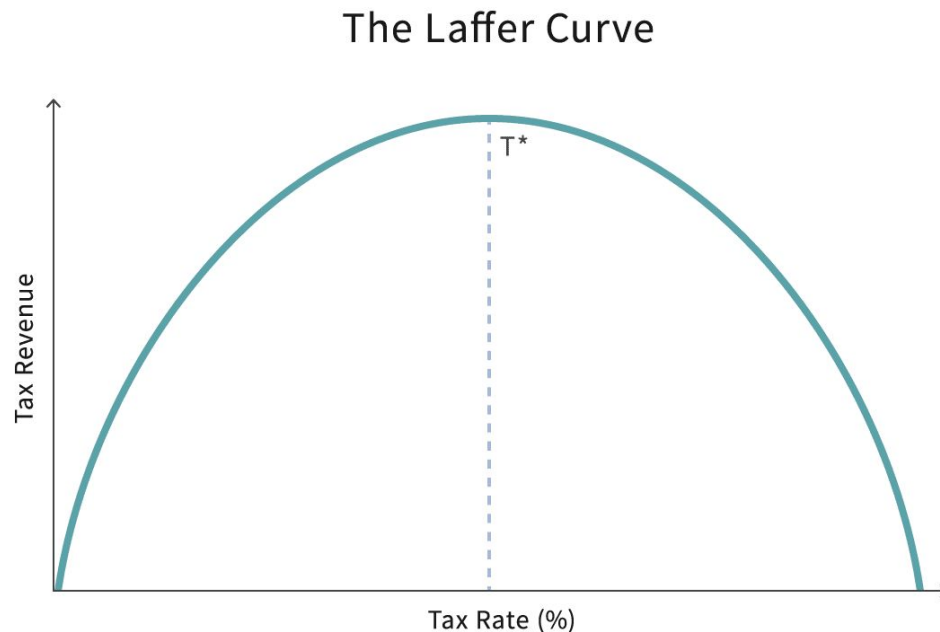
Thus, we have conflicting views on the incentives to work. It would seem logical that there must be a disincentive effect of taxes at some point but it is not clear at what level of taxation that crucial point would be reached.

Economic Effects of Taxation

Laffer Curve

The **Laffer Curve** is a theory developed by supply-side economist *Arthur Laffer* to show the relationship between *tax rates* and the amount of *tax revenue* collected by governments.

The Laffer Curve describes the relationship between tax rates and total tax revenue, with an optimal tax rate that maximizes total government tax revenue.



If taxes are too high along the Laffer Curve, then they will discourage the taxed activities, such as work and investment, enough to actually reduce total tax revenue. In this case, cutting tax rates will both stimulate economic incentives and increase tax revenue.

Chapter 2: BASIC PRINCIPLES OF TAXATION

Goals of an Ideal Taxing System

Principles of taxation vary across countries.

The basic objective of taxation is to raise revenues to finance governments.

Governments also attempt to achieve other objectives in designing and implementing tax systems. These objectives are frequently complicated by the dynamics of political, economic, and social forces.

People designing tax systems have often considered the criteria for *good taxation* formulated by *Adam Smith* (1776):

- Equality
- Certainty
- Convenience
- Economy

Canons of Taxation

1. Equality

Taxpayers should bear a *fair* level of tax relative to their economic positions (e.g., income, for income taxes).

Equality can be defined in terms of **horizontal** and **vertical equity**.

Horizontal equity:

Two similarly situated taxpayers are taxed the same.

Example 9:

Bill's income for the year consists solely of \$15,000 in dividends. Ted's income consists solely of \$15,000 in interest income.

Both pay a tax rate of 15%, or \$2,250 in taxes; there is horizontal equity.

Example 10:

Corporation A has net income from the sales of widgets of \$15,000. Corporation B has net income of \$15,000 from the performance of services.

Both pay a tax of \$2,250; there is horizontal equity.

Canons of Taxation

Vertical equity:

When taxpayers are in different economic positions, the taxpayer with the greatest ability to pay, pays the most in taxes.

Example 11:

Refer back to Example 9. Assume, in addition to the \$15,000 of income, Bill has an additional \$45,000 of dividend income, giving him a total of \$60,000 in income.

If he is still taxed a 15% rate, there is no vertical equity;

if he is taxed a higher rate (say, 25%) there may be vertical equity, since Bill pays proportionately more taxes than Ted.

Note:

Income taxes tend to be *progressive*. That is, higher tax rates apply when there are higher levels of the amount being taxed. For income taxes, this amount—called the *tax base*—is taxable income.

However, consumption-related taxes (such as VAT) are rarely progressive (and are often considered regressive) because there is typically only one tax rate.

Canons of Taxation

2. Certainty

Taxpayer knows when, how, and how much tax is paid.

It would protect the taxpayer from the exploitation of tax authorities in any way and enable the taxpayer to manage his income and expenditure. Violation of this principle may lead to tax evasion.

3. Convenience

Taxes should be levied at the time it is most likely to be convenient for the taxpayer to make the payment. This generally occurs as they receive income because this is when they are most likely to have the ability to pay.

e.g. tax on dividends is usually paid when dividends are received and tax on capital gains is paid when shares are sold

4. Economy

A tax should have *minimum* compliance and administrative costs. That is, it should require a minimum of time and effort for the taxpayer to calculate and pay the tax. Administrative costs are expenses incurred by the government to collect the tax. Compliance and administrative costs are highest for income taxes, because of their complexity.

Framework for Understanding Taxes

Tax Base

Taxes are computed by multiplying the tax rate by the *tax base*, that is:

$$\text{Tax} = \text{tax rate} \times \text{tax base}$$

Tax base is the amount that is subject to tax.

- For income taxes, the tax base is *taxable income*, defined roughly as income less allowable expenses.
- For property taxes, the tax base is some measure of the value of the property.
- Consumption taxes, such as VAT and sales tax, are most often based on the sales price of the merchandise sold.
- For payroll taxes, a common tax base is employment compensation.

Framework for Understanding Taxes

Tax Deduction

Tax deduction is a *reduction* of income that is able to be taxed and is commonly a result of expenses, particularly those incurred to produce additional income.

e.g. A tax deduction reduces the taxable income of a taxpayer. If a single filer's taxable income for the tax year is \$75,000 and he falls in the 25% marginal tax bracket, his total marginal tax bill will be $25\% \times \$75,000 = \$18,750$. However, if he qualifies for an \$8,000 tax deduction, he will be taxed on $\$75,000 - \$8,000 = \$67,000$ taxable income, not \$75,000. The reduction of his taxable income is a tax relief for the taxpayer who ends up paying less in taxes to the government.

Tax Credit

Tax credit is a tax relief that provides more tax savings for an entity than a tax deduction as it directly reduces a taxpayer's bill, rather than just reducing the amount of income subject to taxes.

In other words, a tax credit is applied to the amount of tax owed by the taxpayer after all deductions are made from his or her taxable income.

e.g. If an individual owes \$3,000 to the government and is eligible for a \$1,100 tax credit, he will only have to pay \$1,900 after the tax relief is applied.

Framework for Understanding Taxes

Example 12:

Tax Credit (U.S. Example)

As the simplified example in the table shows, a tax credit can provide more savings for a taxpayer than a tax deduction.

	\$10,000 tax deduction	\$10,000 tax credit
Adjusted Gross Income	\$100,000	\$100,000
Less: Tax Deduction	(\$10,000)	
Taxable Income	\$90,000	\$100,000
Tax Rate*	25%	25%
Calculated Tax	\$22,500	\$25,000
Less: Tax Credit		(\$10,000)
Tax Payable	\$22,500	\$15,000

*Example rate only. The U.S. uses a progressive tax system

Framework for Understanding Taxes

Tax Rates

For most taxes there are four types of tax rates:

- statutory rates
- marginal rates
- average rates
- effective rates

Statutory tax rate is the *legally imposed* rate. An income tax could have multiple statutory rates for different income levels, where a sales tax may have a *flat* statutory rate.

Marginal tax rate is the tax rate that will be paid on the next dollar of tax base (i.e., the rate on the next dollar of income for income taxes).

Average tax rate is computed as the total tax divided by the total tax base.

Framework for Understanding Taxes

Example 13:

At the end of the year, XYZ Corporation has taxable income of \$50,000. Its tax rate is 15%, so it pays a tax of \$7,500. Suppose it sells some inventory on the last day of the year for a net gain of \$20,000. The gain would put the corporation in the 25% bracket.

1. What is the marginal tax rate?

Marginal tax rate on this income is 25%.

2. What is the average tax rate?

Average tax rate is $(\$7,500 + \$5,000) / \$70,000 = 17.9\%$

Effective tax rate is the *average tax rate* paid by a corporation or an individual.

The effective tax rate for individuals is the average rate at which their earned income, such as wages, and unearned income, such as stock dividends, are taxed.

The effective tax rate for a corporation is the average rate at which its pre-tax profits are taxed.

Framework for Understanding Taxes

Example 14:

Effective tax rate

The company reports the following financial data:

Sales	€60,000,000
Profit before taxes	€6,000,000
Corporation tax	€2,400,000
After-tax profit	€3,600,00
Operating profit margin (profit before taxes / sales)	10% (= 6m / 60m)
Effective tax rate	40% (= 2.4m / 6m)

Assume that the company implements a tax planning strategy reducing income tax expenses by €360,000 to €2,040,000.

As a result, the effective tax rate is reduced by 6 percentage points from **40%** to **34%** (= 2.04m / 6m) and the after-tax profit increases by 10% to €3,960,000 (= 6,000,000 – 2,040,000).

Framework for Understanding Taxes

Effective Tax Rate vs. Marginal Tax Rate

The effective tax rate is a more accurate representation of a person's or corporation's overall tax liability than their marginal tax rate and is typically lower.

The marginal tax rate refers to the highest tax bracket into which their income falls.

In a *progressive income-tax system*, income is taxed at *differing* rates that *rise* as income reaches certain thresholds. Two individuals or companies with income in the same upper marginal tax bracket may end up with very different effective tax rates, depending on how much of their income was in the top bracket.

Framework for Understanding Taxes

Example 15:

Assume the progressive income-tax system, where taxes are imposed as follows:

Taxable Income, \$	Tax Rate
0 – 100,000	10%
100,000 – 300,000	15%
Over 300,000	25%

Consider two individuals whose taxable income exceeds \$300,000, so both individuals hit the upper tax bracket of 25%.

Assume that individual *A* has taxable income of \$500,000, while individual *B* has taxable income of \$360,000.

For individual *A*, the overall tax liability would be:

$$(\$100,000 - \$0) \times 0.1 + (\$300,000 - \$100,000) \times 0.15 + (\$500,000 - \$300,000) \times 0.25 = 10,000 + 30,000 + 50,000 = \$90,000,$$

For individual *B*, the tax liability would be:

$$(\$100,000 - \$0) \times 0.1 + (\$300,000 - \$100,000) \times 0.15 + (\$360,000 - \$300,000) \times 0.25 = 10,000 + 30,000 + 15,000 = \$55,000,$$

While both individuals might say they're in the 25% bracket, the one with the higher income has an effective tax rate of 18% (\$90,000 in tax divided by \$500,000 in income), while the other's effective tax rate is 15.3% (\$55,000 divided by \$360,000).

Framework for Understanding Taxes

Tax Rate Structures

In most tax jurisdictions, a tax rate structure applies to ordinary income (such as earnings from employment). Other tax rates may apply to special categories of income such as investment income (sometimes referred to as capital income for tax purposes).

Investment income is often taxed differently based on the nature of the income: interest, dividends, or capital gains and losses.

Tax rates vary from country to country. Some countries implement a progressive tax system, while others use regressive or proportional tax rates.

A *regressive tax system* is one in which the tax rate increases as the taxable amount decreases.

A regressive tax is a tax applied uniformly, taking a larger percentage of income from low-income earners than from high-income earners.

Note: A regressive tax affects people with low incomes more severely than people with high incomes because it is applied uniformly to all situations, regardless of the taxpayer. While it may be fair in some instances to tax everyone at the same rate, it is seen as unjust in other cases. As such, most income tax systems employ a progressive schedule that taxes high-income earners at a higher percentage rate than low-income earners, while other types of taxes are uniformly applied.

Framework for Understanding Taxes

Though many countries have a progressive tax regime when it comes to *income tax*, certain levies that are paid are considered to be regressive taxes.

e.g., in the U.S., some of regressive taxes include state sales taxes, user fees, and, to some degree, property taxes.

Example 16:

U.S. Sales tax (regressive)

Governments apply sales tax uniformly to all consumers based on what they buy. Even though the tax may be uniform (such as a 7% sales tax), lower-income consumers are more affected.

For example, imagine two individuals each purchase \$100 of clothing per week, and they each pay \$7 in tax on their retail purchases. The first individual earns \$2,000 per week, making the sales tax rate on her purchase 0.35% of income. In contrast, the other individual earns \$320 per week, making her clothing sales tax 2.2% of income. In this case, although the tax is the same rate in both cases, the person with the lower income pays a higher percentage of income, making the tax regressive.

Framework for Understanding Taxes

Example 17:

U.S. User Fees (regressive)

User fees levied by the U.S. government are another form of regressive tax. These fees include admission to government-funded museums and state parks, costs for driver's licenses and identification cards, and toll fees for roads and bridges.

For example, if two families travel to the Grand Canyon National Park and pay a \$30 admission fee, the family with the higher income pays a lower percentage of its income to access the park, while the family with the lower income pays a higher percentage. Although the fee is the same amount, it constitutes a more significant burden on the family with the lower income, again making it a regressive tax.

Example 18:

Property Taxes (regressive)

Property taxes are fundamentally regressive because, if two individuals in the same tax jurisdiction live in properties with the same values, they pay the same amount of property tax, regardless of their incomes.

However, they are not purely regressive in practice because they are based on the value of the property. Generally, it is thought that lower income earners live in less expensive homes, thus partially indexing property taxes to income.

Framework for Understanding Taxes

Other examples of regressive taxes

Gambling taxes

Those on low incomes have a high propensity to spend money on gambling and therefore pay a higher percentage of their income on gambling taxes.

Fuel tax

Those on high income may spend more on petrol, but it is unlikely to be too significant, therefore as your income rises, the percentage of income going on petrol tax is likely to fall.

Sin taxes

Taxes levied on products that are deemed to be *harmful to society*.

These are added to the prices of goods like alcohol and tobacco in order to dissuade people from using them.

These taxes are generally regressive, because they are more burdensome to low-income earners rather than their high-income counterparts.

Framework for Understanding Taxes

A *progressive tax system* is one in which the average tax rate (taxes paid ÷ personal income) increases as the taxable amount increases.

Progressive taxes are imposed in an attempt to reduce the tax incidence of people with a lower ability to pay, as such taxes shift the incidence increasingly to those with a higher ability-to-pay.

Example 19:

U.S. Tax Rates and Brackets, 2019

Rate	Single	Married/Joint
10%	\$0-\$9,700	\$0-\$19,400
12%	\$9,701 - \$39,475	\$19,401 - \$78,950
22%	\$39,476 - \$84,200	\$78,951 - \$168,400
24%	\$84,201 - \$160,725	\$168,401 - \$321,450
32%	\$160,726 - \$204,100	\$321,451 - \$408,200
35%	\$204,101 - \$510,300	\$408,201 - \$612,350
37%	\$510,300+	\$612,350+

Framework for Understanding Taxes

Example 20:

Calculation of Tax Due on Taxable Income (progressive tax structure)

In a progressive rate structure, the tax rate increases as income increases. For example:

Taxable income (€)		Tax on column 1	% on excess over column 2
Over	Up to		
0	15,000	-	23
15,000	28,000	3,450	27
28,000	55,000	6,960	38
55,000	75,000	17,220	41
75,000		25,420	43

If an individual has taxable income of €60,000, the first €15,000 is taxed at 23%; the next €13,000 is taxed at 27%, and so on. The amount of tax due on taxable income of €60,000 would be:

$$(\text{€}15,000 - \text{€}0) \times 0.23 + (\text{€}28,000 - \text{€}15,000) \times 0.27 + (\text{€}55,000 - \text{€}28,000) \times 0.38 + (\text{€}60,000 - \text{€}55,000) \times 0.41 = \text{€}19,270$$

This would represent average tax rate of **32.12%** (€19,270/ €60,000).

Framework for Understanding Taxes

A *proportional tax system* (a.k.a., flat tax system) is the one in which a tax is imposed so that the tax rate is *fixed*, with no change as the taxable base amount increases or decreases.

The amount of the tax is in proportion to the amount subject to taxation, so that the marginal tax rate is equal to the average tax rate.

Proponents of proportional taxes believe they stimulate the economy by encouraging people to work more because there's no tax penalty for earning more.

They also believe that businesses are likely to spend and invest more under a flat tax system, thus stimulating the economy.

Example 21:

Proportional Tax Rate System

In a proportional tax system, all taxpayers are required to pay the same percentage of their income in taxes. For example, if the rate is set at 20%, a taxpayer earning \$10,000 pays €2,000 and a taxpayer earning €50,000 pays €10,000. Similarly, a person earning €1 million would pay €200,000.

Framework for Understanding Taxes

Important Principles and Concepts in Tax Law

Most tax systems have developed around fundamental concepts that do not change much and thus provide a deep structure to tax rules.

Ability-to-Pay Principle

Under the ability-to-pay principle, the tax is based on what a taxpayer can afford to pay.

One concept that results from this is that taxpayers are generally taxed on their *net* incomes.

Example 22:

Ability-to-Pay Principle

X and Y firms each have sales revenues of €500,000. Expenses for the two firms are €100,000 and €300,000, respectively. Firm X will pay more taxes, because it has greater net income and cash flows, and thus can afford to pay more.

Framework for Understanding Taxes

Entity Principle

Under the entity principle, an entity (such as a corporation) and its owners (for a corporation, its shareholders) are *separate* legal entities.

As such, the operations, record keeping, and taxable incomes of the entity and its owners (or affiliates) are separate.

Example 23:

Entity Principle

An entrepreneur forms a corporation that develops and sells the entrepreneur's software products. During the year, the corporation has \$200,000 in revenue and \$50,000 in expenses. The entrepreneur also has a salary of \$100,000.

The corporation will file a corporate tax return showing \$50,000 in taxable income, and the entrepreneur will file an individual tax return showing \$100,000 of income.

Framework for Understanding Taxes

Arm's Length Principle

The condition or the fact that the parties to a transaction are *independent* and on an equal footing. Such a transaction is known as an *arm's-length transaction*.

Arm's Length Transaction

A business deal in which the buyers and sellers act independently and do not have any relationship to each other. The concept of an arm's length transaction assures that both parties in the deal are acting in their own self-interest and are not subject to any pressure from the other party.

Note: Deals between family members or companies with related shareholders are usually not considered arm's length transactions.

Tax laws throughout the world are designed to treat the results of a transaction differently when parties are dealing at arm's length and when they are not.

e.g., if the sale of a house between father and son is taxable, tax authorities may require the seller to pay taxes on the gain he would have realized had he been selling to a neutral third party. They would disregard the actual price paid by the son.

Framework for Understanding Taxes

Example 24:

Arm's Length Principle

Assume that in Example 23 the corporation pays its entire \$250,000 in net income to the entrepreneur as a salary for being president of the corporation.

Suppose that a reasonable salary for a president of a small software company is \$100,000.

The effect of the salary is to reduce the corporation's taxable income to zero, so that it does not have to pay any taxes. While salaries in such closely held corporations are deductible in general, in this case the arm's length test is not met.

As a result, only \$100,000 (i.e., the reasonable portion) of the salary will be deductible by the corporation. The remaining \$150,000 will be considered a dividend.

Arm's Length vs. Arm-in-Arm Transactions

In determining whether the arm's length rule is likely to be violated with regard to expenses and losses, tax authorities look to see if the transaction is between related taxpayers.

Related taxpayers generally include individuals related by blood and marriage, and business entities owned more than 50% by a single entity or individual.

Framework for Understanding Taxes

Example 25:

Arm's Length Test

Assume that an entrepreneur sells an asset to his corporation, and that the sale results in a loss. The entrepreneur owns 49% of the corporation's stock; the other 51% is owned by a group of unrelated investors.

Since the loss is not between related taxpayers, it may be considered arm's length.

In applying the ownership test, *constructive ownership* is considered. That is, indirect ownership and chained ownership are considered.

Example 26:

Arm's Length Test

Assume the same facts as Example 25, except that the other 51% of the stock is owned by Z Corporation, which is owned 100% by the entrepreneur.

By the rules of attribution and constructive ownership, the entrepreneur is considered to own 100% of the stock: by direct ownership in the first corporation, plus the stock owned by the Z Corporation.

Thus, the transaction is not arm's length, and none of the loss would be deductible.

Framework for Understanding Taxes

Arm's Length Principle: Business Expenses

Ordinary and necessary business expenses are deductible only to the extent they are also *reasonable in amount*.

Tax authorities have interpreted this requirement to mean that an expenditure is not reasonable when it is *extravagant* or exorbitant.

If the expenditure is extravagant in amount, it may be presumed that the excess amount is spent for personal rather than business reasons and, therefore, is not deductible.

Generally, tax authorities test for extravagance by comparing the amount of the expense to a *market price* or an **arm's length amount**.

If the amount of the expense is within the range of amounts typically charged in the market by unrelated persons, the amount is considered to be reasonable.

Framework for Understanding Taxes

Example 27:

Business Deductions

Assume John hired four part-time employees and paid them \$10 an hour to mow lawns for an average of 20 hours a week.

When things finally slowed down in late fall, John released his four part-time employees. John paid a total of \$22,000 in compensation to the four employees.

He still needed some extra help now and then, so he hired his brother, Devin, on a part-time basis. Devin performed the same duties as the prior part-time employees (his quality of work was about the same). However, John paid Devin \$25 per hour because Devin is a college student and John wanted to provide some additional support for Devin's education.

At year-end, Devin had worked a total of 100 hours and received \$2,500 from John.

Question:

What amount can John deduct for the compensation he paid to his employees?

Answer:

\$23,000. John can deduct the entire \$22,000 paid to the four part-time employees. However, he can only deduct \$10 an hour for Devin's compensation because the extra \$15 per hour John paid Devin is unreasonable in amount. Hence, John can deduct a total of \$23,000 for compensation expense this year [$\$22,000 + (\$10 \times 100)$].

Framework for Understanding Taxes

All-Inclusive Income Principle

This principle basically means that if some simple tests are met, then receipt of some economic benefit will be taxed as *recognized income*, unless there is a tax law specifically exempting it from taxation.

The tests are as follows (each test must be met if an item is considered to be income):

- Does it seem like income?

This test is meant to eliminate things that cannot be income.

For example, making an expenditure cannot generate income.

- Is there a transaction with another entity?

This test is the *realization* principle from accounting; that is, for income to be recognized, there must be a measurable transaction with another entity.

Framework for Understanding Taxes

Example 28:

Realization Principle

A corporation owns two assets that have gone up in value. It owns common stock in another corporation, which it originally purchased for \$100,000 and is now worth \$500,000. It also owns raw land worth \$1 million, which it originally purchased for \$200,000.

It sells the stock for its fair market value, but not the land.

Income is recognized only on the stock; there has been no realization on the land.

- Is there an increase in wealth?

This test means that unless there is a change in net wealth, no income will be recognized. This eliminates a number of transactions from taxation.

Example 29:

Increase-in-wealth test

A corporation borrows \$5 million from a bank, issues \$1 million in common stock, and floats a bond issue for which it receives \$10 million. Although each of these transactions involves cash inflows and transactions with other entities, there is no change in net wealth. This because for each of the three cash inflows, there is an offsetting increase in liabilities (or equity) payable.

Framework for Understanding Taxes

Business Purpose Concept

Relates to tax deductions.

Here, business expenses are deductible only if they have a business purpose, that is, the expenditure is made for some business or economic purpose, and not for tax-avoidance purposes.

Example 30:

Business Purpose Test

An entrepreneur owns 100% of the stock of her corporation. She has the corporation buy an aircraft to facilitate any out-of-town business trips she might make. The entrepreneur, who also happens to enjoy flying as a hobby, rarely makes out-of-town business trips.

Since the plane will not really help the business, and there is a tax-avoidance motive (the plane would generate tax-depreciation deductions), there is no business purpose to the aircraft. Accordingly, any expenses related to the aircraft, including depreciation, are nondeductible.

Framework for Understanding Taxes

Tax-Benefit Rule

Under the *tax-benefit rule*, if a taxpayer receives a refund of an item for which it previously took a tax deduction (and received a tax benefit), the refund becomes taxable income in the year of receipt.

Example 31:

Tax-Benefit Rule

A company pays a consulting firm \$100,000 for consulting services in one year. Because this is a normal business expense, the corporation takes a tax deduction for \$100,000.

Early the next year, the consulting firm realizes it has made a billing mistake and refunds \$20,000 of the fees.

The \$20,000 is taxable income to the corporation in second year because it received a tax benefit in the prior year.

Framework for Understanding Taxes

Substance over Form Doctrine

Under the *doctrine of substance over form*, even when the form of a transaction complies with a favorable tax treatment, if the substance of the transaction is the intent to avoid taxes, the form will be ignored, and the transaction recast to reflect its real intent.

Example 32:

Substance over Form Doctrine

An entrepreneur is the sole stockholder of his corporation. The corporation never pays dividends to the entrepreneur, and instead, each year it pays out 100% of the corporation's net income as a salary to the entrepreneur (who also serves as company's chief executive officer).

The doctrine of substance over form empowers tax authorities to tax at least part of the salary as if it were a dividend.

Framework for Understanding Taxes

Pay-As-You-Earn Concept (PAYE)

Taxpayers must pay part of their estimated annual tax liability throughout the year, or else they will be assessed penalties and interest.

For individuals, the most common example is *income tax withholding*.

Typically, withholding is required to be done by the *employer* of someone else, taking the tax payment funds out of the employee or contractor's salary or wages. The withheld taxes are then paid by the employer to the government body that requires payment, and applied to the account of the employee, if applicable.

This ensures the taxes will be paid first and will be paid on time, rather than risk the possibility that the tax-payer might default at the time when tax falls due.

Note:

In most countries, amounts withheld are determined by employers but subject to government review.

Framework for Understanding Taxes

Taxation of Gains and Losses on Property Sale

In virtually every tax jurisdiction, only the *net* gain or loss from the sale of property is taxable (or deductible) for income tax purposes.

Gain or loss is computed as

Amount realized (the value of what is received)
– Adjusted basis of property given
= Gain or loss

The adjusted basis of the property given is computed as

Original basis +
Capital improvements –
Accumulated depreciation –
Other recoveries of investments (such as write-offs
for casualty losses)
= Adjusted basis

The original basis usually is the original purchase price.

Capital improvements are additions that have an economic life beyond one year.

Accumulated depreciation applies only in the case of an asset used in business (see ex.).

Framework for Understanding Taxes

Example 33:

Calculation of Gain / Loss

A corporation buys a factory building for \$2 million in 2008. It sold the building for \$3 million in the current year. At the time of sale, the building had \$600,000 of accumulated depreciation. In 2015, the corporation spent \$400,000 on a new roof. The gain is

Amount Realized:		\$3,000,000
Adjusted Basis:		
Original Basis	\$2,000,000	
Add: capital improvements	400,000	
Less: Accumulated Depreciation	<u>(600,000)</u>	
		<u>(1,800,000)</u>
Net Gain		\$1,200,000

Chapter 3: PERSONAL INCOME TAX

Definition of Personal Income Tax

According to OECD, **tax on personal income** is defined as the taxes levied on the net income (gross income minus allowable tax reliefs) and capital gains of *individuals*.

Throughout its history it is the tax that generates and has generated the most revenue for governments of the developed countries.

- Personal income tax calculations as well as personal income tax rates may vary significantly depending on a tax jurisdiction.
- Taxation rates may vary by type or characteristics of the taxpayer.
- Individuals are often taxed at different rates than corporations. Individuals include only human beings.
- Residents are generally taxed differently from non-residents.

Personal Income Tax Calculation Examples



Example 34:

Personal Income Tax Calculation (U.S. example)

Resident alien husband and wife with two children; one spouse earns all the income, none of which is foreign-source income. A joint return is filed. AMT liability is less than regular tax liability. Calculations are based on preliminary 2019 tax tables

Gross income		USD
Salary		150,000
Interest		18,500
Long-term capital gain (on assets held for more than one year)		<u>3,000</u>
Total gross income		171,500
Adjustments		<u>0</u>
Adjusted gross income (AGI)		171,500
Less - standard deduction	<u>24,400</u>	
Taxable income		147,100
Tax thereon		
On taxable income of 144,100 (147,100 less capital gain of 3,000) at joint-return rates		23,581
On 3,000 capital gain at 15%		450
Total tax		24,031

Taxpayer's income from salary and interest (\$144,100) is taxed at ordinary tax rates, see Schedule Y-1, Appendix 1. Here, taxpayer is in 22% tax bracket

Personal Income Tax Calculation Examples



The calculation of personal income taxes due (or refund) is based on the following simplified formula:

	Gross income	1
<i>Minus:</i>	<u>For AGI (above the line) deductions</u>	2
<i>Equals:</i>	Adjusted gross income (AGI)	
<i>Minus:</i>	<u>From AGI (below the line) deductions:</u>	3
	(1) Greater of	
	(a) Standard deduction or	
	(b) Itemized deductions and	
	(2) Deduction for qualified business income	
<i>Equals:</i>	Taxable income	
<i>Times:</i>	<u>Tax rates</u>	4
<i>Equals:</i>	Income tax liability	
<i>Plus:</i>	<u>Other taxes</u>	5
<i>Equals:</i>	Total tax	
<i>Minus:</i>	Tax Credits	6
<i>Minus:</i>	<u>Tax Prepayments</u>	7
<i>Equals:</i>	Taxes due or (refund)	

Personal Income Tax Calculation Examples



Explanations:

- 1** **Gross income** may include:
- income from a job,
 - business income,
 - retirement income,
 - interest income,
 - dividend income, and
 - capital gains from selling investments.

Based on the *all-inclusive income principle*.

Under this principle, gross income generally includes all **realized income** from whatever source derived.

Realized income is income generated in a transaction with a second party in which there is a measurable change in property rights between parties (for example, appreciation in a stock investment would not represent realized income unless the taxpayer sold the stock).

One type of income may be taxed at a different rate than another type of income depending on whether income is *ordinary* or *capital*.

Note: Examples of ordinary income are compensation for services, business income, retirement income. Ordinary income (loss) is taxed at *ordinary tax rates* (also depending on the family status), see App.1 (next slide).

Examples of capital income are gains and losses on the disposition or sale of capital assets.

If the gain is a long-term capital gain, it is generally taxed at a 15% tax rate (taxed at 20% for high-income taxpayers and 0% for low-income taxpayers).

If the gain is a short-term capital gain, the gain is taxed at ordinary income rates.

Appendix 1

2018 Tax Rate Schedules



Individuals

Schedule X-Single

If taxable income is over:	But not over:	The tax is:
\$ 0	\$ 9,525	10% of taxable income
\$ 9,525	\$ 38,700	\$952.50 plus 12% of the excess over \$9,525
\$ 38,700	\$ 82,500	\$4,453.50 plus 22% of the excess over \$38,700
\$ 82,500	\$157,500	\$14,089.50 plus 24% of the excess over \$82,500
\$157,500	\$200,000	\$32,089.50 plus 32% of the excess over \$157,500
\$200,000	\$500,000	\$45,689.50 plus 35% of the excess over \$200,000
\$500,000	—	\$150,689.50 plus 37% of the excess over \$500,000

Schedule Z-Head of Household

If taxable income is over:	But not over:	The tax is:
\$ 0	\$ 13,600	10% of taxable income
\$ 13,600	\$ 51,800	\$1,360 plus 12% of the excess over \$13,600
\$ 51,800	\$ 82,500	\$5,944 plus 22% of the excess over \$51,800
\$ 82,500	\$157,500	\$12,698 plus 24% of the excess over \$82,500
\$157,500	\$200,000	\$30,698 plus 32% of the excess over \$157,500
\$200,000	\$500,000	\$44,298 plus 35% of the excess over \$200,000
\$500,000	—	\$149,298 plus 37% of the excess over \$500,000

Schedule Y-1-Married Filing Jointly or Qualifying Widow(er)

If taxable income is over:	But not over:	The tax is:
\$ 0	\$ 19,050	10% of taxable income
\$ 19,050	\$ 77,400	\$1,905 plus 12% of the excess over \$19,050
\$ 77,400	\$165,000	\$8,907 plus 22% of the excess over \$77,400
\$165,000	\$315,000	\$28,179 plus 24% of the excess over \$165,000
\$315,000	\$400,000	\$64,179 plus 32% of the excess over \$315,000
\$400,000	\$600,000	\$91,379 plus 35% of the excess over \$400,000
\$600,000	—	\$161,379 plus 37% of the excess over \$600,000

Schedule Y-2-Married Filing Separately

If taxable income is over:	But not over:	The tax is:
\$ 0	\$ 9,525	10% of taxable income
\$ 9,525	\$ 38,700	\$952.50 plus 12% of the excess over \$9,525
\$ 38,700	\$ 82,500	\$4,453.50 plus 22% of the excess over \$38,700
\$ 82,500	\$157,500	\$14,089.50 plus 24% of the excess over \$82,500
\$157,500	\$200,000	\$32,089.50 plus 32% of the excess over \$157,500
\$200,000	\$300,000	\$45,689.50 plus 35% of the excess over \$200,000
\$300,000	—	\$80,689.50 plus 37% of the excess over \$300,000

Source: Spilker, Ayers:
Taxation of Individuals and
Business Entities,
McGraw-Hill, 2019 Edition

Personal Income Tax Calculation Examples



Exclusions and Deferrals

Certain tax provisions allow taxpayers to *permanently exclude* specific types of realized income *from gross income* (excluded income items are never taxable) and other provisions allow taxpayers to *defer* including certain types of realized income items in gross income until a subsequent year (deferred income items are included in gross income in a later year).

Examples of **exclusions**:

- Interest income from municipal bonds
- Gifts and inheritance
- Gain on sale of personal residence

Examples of **deferrals**:

- Installment sale

Personal Income Tax Calculation Examples



Adjusted Gross Income (AGI)

It can be shown that

Gross Income
– For AGI Deductions
= AGI

2

Some common **For AGI deductions** are:

- Contribution to individual retirement account (IRA)
- Health insurance deduction for self-employed taxpayers
- Rental expenses
- Capital losses (net losses limited to \$3,000 for the year)

Personal Income Tax Calculation Examples



3 From AGI Deductions

After calculating AGI, the taxpayer can then apply:

- *standard deductions* to reach their taxable income or,
- *itemized deductions*, which can be better for the taxpayer in some situations.

Standardized Deduction

A *fixed amount* which varies by taxpayer filing status:

Filing status	2019 standard deduction	Increase from 2018
Married filing jointly	\$24,400	\$400
Married filing separately	\$12,200	\$200
Single	\$12,200	\$200
Head of household	\$18,350	\$350

Every year the government indexes this deduction for inflation.

See how the standard deduction of \$24,400 is applied in Example 34.

Personal Income Tax Calculation Examples



Itemized Deduction

An expenditure on eligible products, services, or contributions that can be subtracted from adjusted gross income (AGI) to reduce taxable income.

Primary categories of itemized deductions are:

- Medical and dental expenses
- Taxes, e.g., state and local income taxes, sales taxes, real estate taxes, personal property taxes, and other taxes (an aggregate \$10,000 deduction limitation applies to taxes).
- Interest expense (mortgage and investment interest expense)
- Gifts to charity

Note: Taxpayers generally deduct the higher of the standard deduction or itemized deductions.

Deduction for Qualified Business Income

This deduction applies to individuals with qualified business income (QBI) from flow-through entities, including partnerships, S corporations, or sole proprietorships. This is a deduction for individuals not for business entities.

In general, a taxpayer can deduct 20% of the amount of QBI allocated to them from the entity, subject to certain limitations.

Personal Income Tax Calculation Examples



4 Tax Rates

After determining taxable income, taxpayers can generally calculate their regular income tax liability using a tax rate schedule (see App. 1), depending on their filing status and income level.

However, as shown above, certain types of income included in taxable income are taxed at rates different from those in tax rate schedules (e.g., 15% tax applicable to capital gains, see. Ex.34).

5 Other Taxes

In addition to the individual income tax, individuals may also be required to pay other taxes such as the **alternative minimum tax (AMT)** or **self-employment taxes**. These taxes are imposed on tax bases other than the individual's regular taxable income.

6 Tax Credits

These may include the child tax credit, the child and dependent care credit, the lifetime learning credit etc.

Note: Unlike deductions, which reduce taxable income, tax credits directly reduce taxes payable.

Personal Income Tax Calculation Examples



7 Tax Prepayments

These include:

- (1) withholdings, or income taxes withheld from the taxpayer's salary or wages by her employer,
- (2) estimated tax payments the taxpayer makes for the year (paid directly to the IRS), and
- (3) tax that the taxpayer overpaid on the prior-year tax return that the taxpayer elects to apply as an estimated payment for the current tax year instead of receiving as a refund.

Note: If tax prepayments exceed the total tax after subtracting credits, the taxpayer receives a **tax refund** for the difference.

If tax prepayments are less than the total tax after credits, the taxpayer owes additional tax and potentially a penalty for the underpayment.

Personal Income Tax Calculation Examples



Example 35:

Personal Income Tax Calculation (UK example)

In 2017-18, Kenneth (who is not a Scottish taxpayer) has business profits of £44,200 and bank interest of £980. His personal allowance for the year is £11,500. He makes no Gift Aid donations or pension contributions during 2017-18.

	Total , £	Non-savings income, £	Savings income, £
Business profits	44,200	44,200	
Bank interest	980		980
Total income	45,180	44,200	980
Less: Personal allowance	11,500	11,500	
Taxable income	33,680	32,700	980
Income tax due			
Non-savings income : Basic rate	32,700 @ 20%	6,540.00	
Savings income : Nil rate	500 @ 0%	0.00	
: Basic rate	300 @ 20%	60.00	
: Higher rate	<u>180</u> @ 40%	72.00	
	<u>33,680</u>		
Tax liability		6,672.00	

Personal Income Tax Calculation Examples



A typical structure of an income tax computation for year 2017-18 may appear as follows:

	Total income	1	
<i>Less:</i>	<u>Tax reliefs</u>	2	
<i>Equals:</i>	Net income		
<i>Less:</i>	<u>Personal allowance</u>	3	
<i>Equals:</i>	Taxable income		
<i>Times:</i>	Tax rates	4	
<i>Less:</i>	<u>Tax reductions</u>	5	
<i>Equals:</i>	Tax borne		
<i>Add:</i>	<u>Tax withheld on payments</u>		6
<i>Equals:</i>	Total liability for the year		
<i>Less:</i>	<u>Tax paid by deduction at source</u>		
<i>Equals:</i>	Tax payable		

Source: Alan Melville: Taxation, Finance Act 2017, Pearson, 23rd Edition, 2018

Personal Income Tax Calculation Examples



Explanations:

1 **Total income** may include:

- Employment income,
- Pensions,
- Social security income,
- Trading income,
- Property income,
- Interest,
- Dividends,
- Miscellaneous income

Note: Certain types of income are specifically exempt from income tax

Taxpayer's "total income" for the year is calculated by adding together income from all sources, including the *pre-tax* equivalent of any income from which tax has been deducted at source but excluding income which is exempt from income tax.

Certain types of income are **taxed at source**, which means that basic rate income tax is deducted from the income before the taxpayer receives it.

In tax year 2017 -18, the main types of income normally received net of basic rate tax are:

- *debenture and other loan interest;*
- *interest on UK government securities* (if taxpayer applies to receive this interest with tax deducted at source;
- *income element of a purchased life annuity;*
- *patent royalty.*

Note:

To calculate a taxpayer's income tax liability it is necessary to bring together all of the taxpayer's income into a single computation. The *gross equivalent* of any income received net of income tax must be included in the computation.

Personal Income Tax Calculation Examples



Savings Income and Non-Savings Income

Tax liability on a taxpayer's "savings income" is calculated *differently* from the tax liability on non-savings income.

Common categories of **savings income** are:

- (a) *interest* received from banks, building societies and NS&I, plus interest received on gilt-edged securities and corporate bonds (e.g. debentures and loan stocks);
- (b) income element of purchased *life annuities* (other than annuities from registered pension schemes, which are treated as non-savings income)
- (c) certain foreign income.

Note: Savings income does not include dividends received, which are treated in accordance with *dividend income* taxation principles.

Common categories of **non-savings income** are:

- (a) income from employment and pensions;
- (b) profits of trades, professions and vocations;
- (c) income from property letting.

Personal Income Tax Calculation Examples



2 Tax reliefs may include:

- Certain *payments* made by the taxpayer (e.g., eligible interest payments, certain “annual payments”, gifts of listed securities, land or buildings to a charity)

Note: Most of the payments which are deductible from total income are made gross (without deduction of income tax)

- Certain loss reliefs (e.g. trading losses) and
- Relief for certain pension contributions

3 Personal allowance (PA)

The allowance is deducted from taxpayer’s income when computing the tax liability. The basic PA for 2017-2018 is £11,500 (see how it is applied in Ex. 35) but this is reduced (possibly to zero) if the taxpayer has income exceeding £100,000.

Note: Subject to certain conditions, an individual may elect to transfer part of his / her PA to a spouse or to a civil partner. The transferable amount is 10% of the basic PA for the year (i.e., £1,150 in 2017-18). This amount is called *marriage allowance*.

Personal Income Tax Calculation Examples



4 Tax rates

Income tax is charged on the taxable income, using the tax rates in force for the year.

Rates of Income Tax for 2017 – 2018

First £33,500 of taxable income	20% (basic rate)
Next £116,500 of taxable income (up to £150,000)	40% (higher rate)
Remaining taxable income after the first £150,000	45% (additional rate)

The amount of tax calculated in this way is then subject to a number of adjustments.

Savings income and dividend income are treated specially.

Personal Income Tax Calculation Examples



Tax Treatment of Savings Income

Savings income which falls into the first £5,000 (for 2017-18) of taxable income is taxed at the starting rate for savings of 0%, so that such income is tax-free.

If a taxpayer has both savings income and non-savings income, it is necessary to split taxable income between these two categories before the tax liability can be calculated.

Note: Basic rate band is made available to non-savings income in priority to savings income.

The figure of £5,000 (for 2017-18) is known as the *starting rate limit for savings*.

IF	Tax Treatment of Savings Income
non-savings taxable income \geq £5,000	starting rate (0%) is not available
non-savings taxable income $<$ £5,000	some portion (or all) of £5,000 of savings income is tax-free

Personal Income Tax Calculation Examples



Personal Savings Allowance (PSA)

Taxpayers may be entitled to a PSA of up to £1,000 for tax year 2017-18.

In general, this means that the first £1,000 of savings income included in taxable income is taxed at the *savings nil rate* of 0%.

However, the PSA is lower than £1,000 in some cases:

IF	PSA available
taxable income \leq basic rate limit of £33,500	£1,000
taxable income $>$ basic rate limit of £33,500 \leq higher rate limit of £150,000	£500
taxable income $>$ higher rate limit of £150,000	£nil

Note: Figures are based on tax year 2017-2018



Personal Income Tax Calculation Examples

Example 36:

Personal Income Tax Calculation (UK example)

In 2017-18, Robert has business profits of £39,700 and receives bank interest of £1,250. His personal allowance is £11,500. Find Robert's income tax liability for the year.

	Total , £	Non-savings income, £	Savings income, £
Business profits	39,700	39,700	
Bank interest	1,250		1,250
Total income	40,950	39,700	1,250
<u>Less:</u> Personal allowance	11,500	11,500	
Taxable income	29,450	28,200	1,250
<i>Income tax due</i>			
Non-savings income : Basic rate	28,200 @ 20%	5,640.00	
Savings income : Nil rate	1,000 @ 0%	0.00	
: Basic rate	<u>250</u> @ 20%	50.00	
	<u>29,450</u>		
Tax liability		5,690.00	

Taxable income includes non-savings income of more than £5,000. Therefore the starting rate for savings is not available.

Taxable income does not exceed £33,500, so the PSA is £1,000.

Savings income of £1,000 is taxed at the savings nil rate.

The remaining £250 is taxed at basic rate.



Personal Income Tax Calculation Examples

Example 37:

Personal Income Tax Calculation (UK example)

In 2017-18, Roberta has rental income of £15,700 and building society interest of £1,100. Her personal allowance is £11,500. Find Roberta's income tax liability for the year.

	Total , £	Non-savings income, £	Savings income, £
Income from property	15,700	15,700	
Building society interest	1,100		1,100
Total income	16,800	15,700	1,100
<u>Less:</u> Personal allowance	11,500	11,500	
Taxable income	5,300	4,200	1,100
<i>Income tax due</i>			
Non-savings income : Basic rate	4,200 @ 20%	840.00	
Savings income : Starting rate	800 @ 0%	0.00	
: Nil rate	<u>300 @ 0%</u>	0.00	
	<u>5,300</u>		
Tax liability		840.00	

Non-savings income occupies £4,200 of the basic rate band. This allows £800 (£5,000 - £4,200) of savings income to be taxed at the starting rate of 0%.

Taxable income does not exceed £33,500, so the PSA is £1,000. The remaining £300 of savings income (£1,100 - £800) does not exceed £1,000, so this is taxed at the savings nil rate.



Personal Income Tax Calculation Examples

Example 38:

In 2017-18, Philip (who is not a Scottish taxpayer) has business profits of £240,235 and receives building society interest of £1,600. His personal allowance for the year is £0. He makes no Gift Aid donations or pension contributions during 2017-18. Find his income tax liability for the year.

	Total , £	Non-savings income, £	Savings income, £	
Business profits	240,235	240,235		
Building society interest	1,600		1,600	
Total income	241,835	240,235	1,600	
<u>Less</u> : Personal allowance	0	0		
Taxable income	241,835	240,235	1,600	Non-savings income occupies the whole of the basic band so the starting rate for savings is not available.
<i>Income tax due</i>				
Non-savings income	: Basic rate	33,500 @ 20%	6,700.00	Taxable income exceeds £33,500, so the PSA is nil.
	: Higher rate	116,500 @ 40%	46,600.00	
	: Additional rate	90,235 @ 45%	40,605.75	
Savings income	: Additional rate	1,600 @ 45%	720.00	The whole of the building society interest is taxed at the additional rate of 45%.
		<u>241,835</u>		
Tax liability			94,625.75	

Chapter 4: TAXATION OF INVESTMENT INCOME

Definition of Investment Income

Investment income is income that comes from *interest payments*, *dividends*, *capital gains* collected upon the sale of a security or other assets, and any other profit made through an investment vehicle of any kind.

e.g., interest earned on bank accounts and dividends received from stock owned by mutual fund holdings would all be considered investment income.

Investment Income and Taxes

Often, investment income undergoes different, and sometimes *preferential*, tax treatment, which varies by country and locality.

e.g., as of 2019, in the U.S., the top marginal tax rate on income was 37% (for amounts over \$500,000 a year). Meanwhile, long-term capital gains and qualified dividend income were subject only to a maximum 20% tax, even if that amount exceeds a half-million dollars in a given year.

The associated tax rate is usually based on the form of investment producing the income and other aspects of an individual taxpayer's situation.

Investment Income Taxation Examples



Taxation of Interest and Dividends (US. Case)

For tax purposes, individual investors typically are taxed on both interest and dividend income *when they receive it*.

- Interest income is taxed at *ordinary rates* (i.e., as ordinary income). This means the interest is taxed at the taxpayer's top marginal tax rate (see App.1);

Some types of interest are fully taxable, while other forms are partially taxable.

Examples of interest income:

- ✓ Interest from CDs, corporate bonds, and some types of government agency securities
- ✓ Checking, savings, or other interest-bearing accounts

- Dividend income is taxed *annually* and generally at *lower* capital gains rates.

Qualified dividends are taxed at a *preferential rate*: 0, 15, or 20%, depending on the taxpayer's filing status and amount of taxable income. Qualified dividends are those paid by domestic or certain qualified foreign corporations, subject to certain restrictions.

Nonqualified dividends are not eligible for the reduced rate and are therefore taxed at *ordinary rates*.

Investment Income Taxation Examples



Example 39:

Assume Courtney (head of household filing status) decides to purchase dividend-paying stocks to achieve her financial objectives. She invests \$50,000 in Xerox stock, which she intends to hold for five years and then sell to fund the Park City home down payment. She invests another \$50,000 in Coca-Cola stock, which she intends to hold for eight years and then sell to fund her son's education.

Question 1:

How much dividend income will Courtney report at the end of the first year if the dividend payments provide an 8% rate of return on her investments?

Answer:

At the end of the first year, Courtney will report \$4,000 ($\$50,000 \times 0.08$) of dividend income from her investment in the Xerox stock and \$4,000 ($\$50,000 \times 0.08$) of dividend income from her investment in the Coca-Cola stock, for a total of \$8,000 of dividend income.

Investment Income Taxation Examples



Example 39:

Assume Courtney (head of household filing status) decides to purchase dividend-paying stocks to achieve her financial objectives. She invests \$50,000 in Xerox stock, which she intends to hold for five years and then sell to fund the Park City home down payment. She invests another \$50,000 in Coca-Cola stock, which she intends to hold for eight years and then sell to fund her son's education.

Question 2:

Assume Courtney's ordinary marginal tax rate is 32%. How much tax will Courtney owe on her dividend income if the dividends are nonqualified?

Answer:

Courtney will owe \$2,560 ($\$8,000 \times 32\%$) of tax if the dividends are nonqualified because the income will be taxed at her ordinary income tax rate.

Investment Income Taxation Examples



Example 39:

Assume Courtney (head of household filing status) decides to purchase dividend-paying stocks to achieve her financial objectives. She invests \$50,000 in Xerox stock, which she intends to hold for five years and then sell to fund the Park City home down payment. She invests another \$50,000 in Coca-Cola stock, which she intends to hold for eight years and then sell to fund her son's education.

Question 3:

What amount of tax will Courtney owe if the dividends are qualified? Assume Courtney's tax rate on qualified dividends is 15%.

Answer:

Courtney will owe \$1,200 ($\$8,000 \times 15\%$) of tax if the dividends are qualified because qualified dividends are taxed at preferential rates.

Investment Income Taxation Examples



Taxation of Capital Gains and Losses (US. Case)

A **capital gains tax** is a tax on the increase in the value of an investment.

Example 40:

Let's assume you purchase 100 shares of XYZ Company for \$1 per share. After three months, the share price increases to \$5. This means the value of the investment has increased from \$100 to \$500, for a capital gain of \$400.

The capital gain of \$400 is subject to capital gains tax.

When a taxpayer sells a capital asset for more than its **tax basis**, he recognizes a capital gain;

However, if a taxpayer sells a capital asset for less than its tax basis, he recognizes a capital loss (to the extent the loss is deductible).

The tax basis of any asset is generally the taxpayer's *cost of acquiring the asset*, including the initial purchase price and other costs incurred to purchase or improve the asset.

Investment Income Taxation Examples



FIFO method and Specific Identification Method

When taxpayers sell a capital asset, e.g., stock, they may determine the basis of the stock using the **specific identification method** or the **FIFO method**.

By default, taxpayers are required to use the first-in, first-out (FIFO) method of determining the basis of the shares they sell.

However, if they track the basis of their stock, taxpayers can sell specific shares using the specific identification method to determine the basis of the shares they sell.

Taxpayers using the specific identification method can choose to sell their high-basis stock first, minimizing their gains or increasing their losses on stock dispositions.

Investment Income Taxation Examples



Example 41:

Assume Courtney sold 200 shares of Cisco stock at the current market price of \$40 per share for a total amount realized of \$8,000. Courtney held the following blocks of Cisco stock at the time of the sale:

Holding Period	(1) Cost per Share	(2) Shares	(1) × (2) Basis	Basis of 200 Shares Sold	Explanation
5 years	\$25	250	\$6,250	\$5,000	FIFO basis (\$25 × 200)
2 years	\$32	250	\$8,000	\$6,400	Specific ID basis (\$32 × 200)

Question 1:

How much capital gain will Courtney recognize if she uses the FIFO method of computing the basis in the Cisco shares sold?

Answer:

\$3,000.

\$8,000 amount realized ($\40×200) minus \$5,000 FIFO basis ($\25×200). As indicated in the table above, under the FIFO (oldest first) method, the shares sold have a holding period of five years.



Investment Income Taxation Examples

Example 41:

Assume Courtney sold 200 shares of Cisco stock at the current market price of \$40 per share for a total amount realized of \$8,000. Courtney held the following blocks of Cisco stock at the time of the sale:

Holding Period	(1) Cost per Share	(2) Shares	(1) × (2) Basis	Basis of 200 Shares Sold	Explanation
5 years	\$25	250	\$6,250	\$5,000	FIFO basis (\$250 × 200)
2 years	\$32	250	\$8,000	\$6,400	Specific ID basis (\$32 × 200)

Question 2:

How much capital gain will Courtney recognize if she uses the specific identification method of computing the basis in the shares sold to minimize the taxable gain on the sale?

Answer:

\$1,600. \$8,000 amount realized ($\$40 \times 200$) minus \$6,400 ($\$32 \times 200$). To minimize her gain on the sale under the specific identification method, Courtney would choose to sell the 200 shares with the highest basis. As indicated in the table above, the shares with the higher basis are those acquired and held two years for \$32 per share.



Investment Income Taxation Examples

Short-Term Capital Gains vs. Long-Term Capital Gains

Taxpayers selling capital assets they have held *for a year or less* recognize **short-term capital gains or losses.**

Taxpayers selling capital assets they have held *for more than a year* recognize **long-term capital gains or losses.**

Short-term capital gains are taxed at *ordinary* rather than preferential rates.

In contrast, long-term capital gains are taxed at *preferential* rates.

Just like dividends, most long-term capital gains are taxed at either 0%, 15%, or 20%, depending on the taxpayer's filing status and taxable income as shown in Exhibit.

Preferential Tax Rates	Taxable Income by Filing Status [†]			
	Married Filing Joint	Married Filing Separate	Single	Head of Household
0%*	0 – \$77,200	0 – \$38,600	0 – \$38,600	0 – \$51,700
15%**	\$77,201 – \$479,000	\$38,601 – \$239,500	\$38,601 – \$425,800	\$51,701 – \$452,400
20%	\$479,000+	\$239,500+	\$425,801+	\$452,401+

Source: Spilker, Ayers: Taxation of Individuals and Business Entities, McGraw-Hill, 2019 Edition

Tax Loss Harvesting

Tax Loss Harvesting

Many tax jurisdictions allow realized capital losses to *offset* realized capital gains.

However, limitations are often placed on the amount of net losses that can be recognized or the type of income it can offset (e.g., short-term capital gains, long-term capital gains, or ordinary income).

Tax-loss harvesting is the practice of realizing a loss that offsets a gain or income – and thereby reducing the current year's tax obligation.

This strategy is typically employed to limit the recognition of short-term capital gains. Short-term capital gains are generally taxed at a higher income tax rate than long-term capital gains.

For many investors, tax-loss harvesting is the most critical tool for *reducing taxes*.

Although tax-loss harvesting cannot restore an investor to the previous position, it can lessen the severity of the loss and result in significant tax savings.

Tax Loss Harvesting

Example 41a:

Eduardo has a €1,000,000 portfolio held in a taxable account. The end of the 2019 tax year is approaching and Eduardo has recognized €100,000 worth of capital gains. His portfolio has securities that have experienced €60,000 of losses. These securities have not yet been sold and their losses are therefore unrecognized. Eduardo could sell these securities and replace them with similar securities expected to earn identical returns. The federal government taxes capital gains at 20%.

1. Without making any further transactions, how much tax does Eduardo owe this year?

Solution:

Capital gain tax = $0.20 \times €100,000 = €20,000$.

2. How much tax will Eduardo owe this year if he sells the securities with the €60,000 loss?

Solution:

If Eduardo realizes €60,000 of losses, the net gain will be reduced to €40,000.

New capital gain tax = $0.20 \times (€100,000 - €60,000) = €8,000$.

Tax Loss Harvesting

Example 41a:

Eduardo has a €1,000,000 portfolio held in a taxable account. The end of the 2019 tax year is approaching and Eduardo has recognized €100,000 worth of capital gains. His portfolio has securities that have experienced €60,000 of losses. These securities have not yet been sold and their losses are therefore unrecognized. Eduardo could sell these securities and replace them with similar securities expected to earn identical returns. The federal government taxes capital gains at 20%.

3. How much tax will Eduardo save this year if he sells the securities with the €60,000 loss?

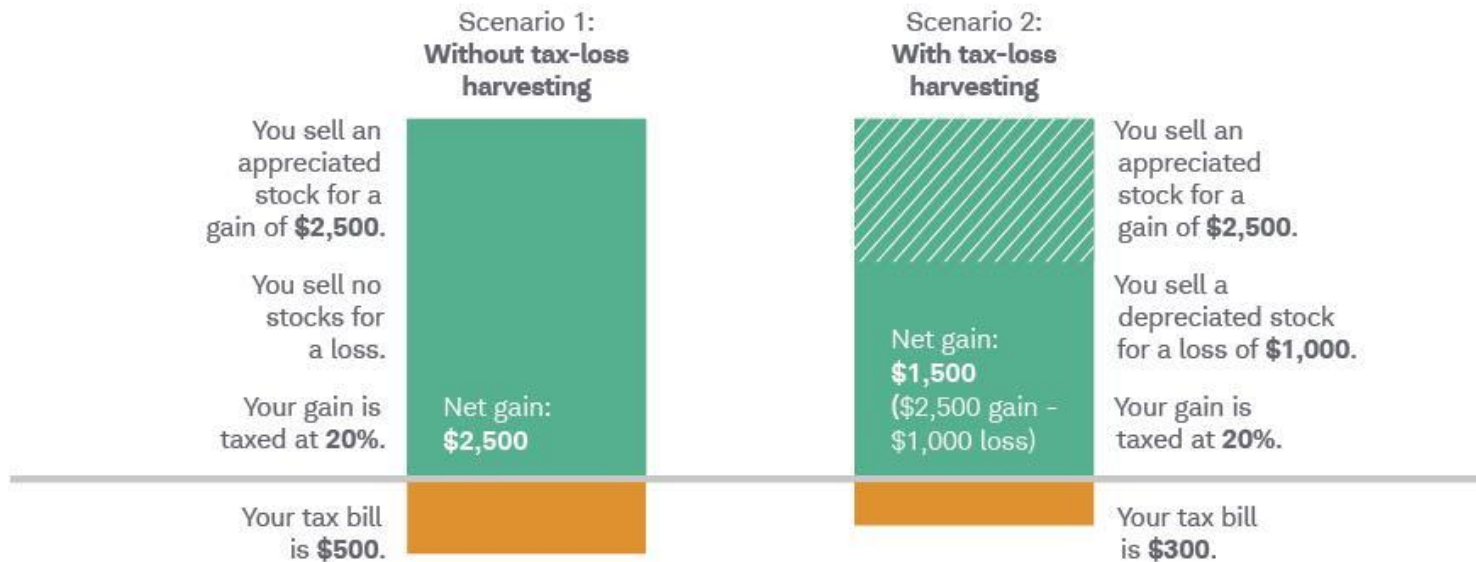
Solution:

Tax Savings = €20,000 – €8,000 = €12,000.

Tax Loss Harvesting

Figure 1: Tax-loss harvesting can result in significant savings

■ Appreciated stock sale ▨ Depreciated stock sale ■ Tax bill



Source: Schwab Center for Financial Research. Assumes a 39.6% federal marginal income tax bracket. This example is hypothetical and provided for illustrative purposes only. It is not intended to represent any specific investment or account and does not reflect any expenses or fees.

Investment Income Taxation Examples



Taxation of Interest and Dividends (UK Case)

- Interest received by a taxpayer is charged to income tax.

Interest ranks as *savings income* and so any interest which falls into the first £5,000 of taxable income (in 2017 -18) is taxed at the starting rate for savings of 0%.

Basic rate taxpayers are also entitled to a personal savings allowance (PSA) of £1,000. This is reduced to £500 if taxable income exceeds the basic rate limit and to £nil if taxable income exceeds the higher rate limit. Interest which falls within the PSA in 2017-18 is taxed at the savings nil rate of 0%.

When preparing an income tax computation, the *gross* equivalent of any interest received net of tax should be included in total income. The tax suffered by deduction at source is then subtracted from the income tax liability when calculating the amount of tax payable for the year.

Note: Accrued interest is ignored when computing the amount of interest arising in a tax year.



Investment Income Taxation Examples

Example 42:

In 2017-18, Alfred had business profits of £15,870 and received net debenture interest of £1,520. He acquired the debentures on 1 July 2017 and accrued interest (gross) on 5 April 2018 was £950. Calculate the income tax payable for the year.

	Total , £	Non-savings income, £	Savings income, £
Business profits	15,870	15,870	
Debenture interest $\text{£}1,520 \times 100/80$	1,900		1,900
Total income	17,770	15,870	1,900
<u>Less:</u> Personal allowance	11,500	11,500	
Taxable income	6,270	4,370	1,900
<i>Income tax due</i>			
Non-savings income : Basic rate	4,370 @ 20%	874.00	
Savings income : Starting rate	630 @ 0%	0.00	
	: Nil rate	1,000 @ 0%	0.00
	: Basic rate	<u>270 @ 20%</u>	54.00
	<u>6,270</u>		
Tax liability		928.00	
Less: Tax deducted at source ($\text{£}1,900 - \text{£}1,520$)		<u>380.00</u>	
Tax payable		<u>548.00</u>	

Non-savings income occupies £4,370 of the basic rate band. This allows £630 ($\text{£}5,000 - \text{£}4,370$) of savings income to be taxed at the starting rate of 0%.

Taxable income does not exceed £33,500, so the PSA is £1,000.

Accrued debenture interest of £950 is ignored

Investment Income Taxation Examples



- The income tax liability on a taxpayer's dividend income is calculated differently from the liability on non-savings income or savings income. The main points are as follows:
 - (a) Dividends are treated as the top slice of taxable income, ranking above both non-savings and savings income.
 - (b) Dividends which fall into the basic rate band are generally taxed at the "dividend ordinary rate" of 7.5%.

Dividends which fall into the higher rate band are generally taxed at the "dividend upper rate" of 32.5%.

Any dividends which lie above the higher rate limit are generally taxed at the "dividend additional rate" of 38.1%.
 - (c) Taxpayers are entitled to a tax-free "dividend allowance" of £5,000 for the year, which means that the first £5,000 of dividends included in taxable income are taxed at the "dividend nil rate" of 0%. Unlike the personal savings allowance (see above, Chapter 3) which is reduced for higher-rate and additional -rate taxpayers, the dividend allowance is £5,000 in all cases.



Investment Income Taxation Examples

Example 43:

In tax year 2017-18, Christopher has rental income of £24,590. He also receives bank interest of £1,050 and dividends of £204,100. His personal allowance for the year is zero. Calculate his income tax liability for the year.

	Total , £	Non-savings, £	Savings, £	Dividends, £
Income from property	24,590	24,590		
Bank interest	1,050		1,050	
Dividends	204,100			204,100
Total income	229,740	24,590	1,050	204,100
<u>Less:</u> Personal allowance	0	0		
Taxable income	229,740	24,590	1,050	204,100
<i>Income tax due</i>				
Non-savings income : Basic rate	24,590 @ 20%	4,918.00		
Savings income : Basic rate	1,050 @ 20%	210.00		
Dividend income : Nil rate	5,000 @ 0%	0.00		
	: Ordinary rate	2,860 @ 7.5%	214.50	
	: Upper rate	116,500 @ 32.5%	37,862.50	
	: Additional rate	<u>79,740 @ 38.1%</u>	30,380.94	
	229,740			
Tax liability		73,585.94		

Taxable income includes non-savings income of more than £5,000. Therefore the starting rate for savings is not available.

Taxable income exceeds the higher rate limit so the PSA is £nil. The whole of the bank interest is taxed at the basic rate of 20%.



Investment Income Taxation Examples

Example 43:

In tax year 2017-18, Christopher has rental income of £24,590. He also receives bank interest of £1,050 and dividends of £204,100. His personal allowance for the year is zero. Calculate his income tax liability for the year.

	Total , £	Non-savings, £	Savings, £	Dividends, £
Income from property	24,590	24,590		
Bank interest	1,050		1,050	
Dividends	204,100			204,100
Total income	229,740	24,590	1,050	204,100
<u>Less:</u> Personal allowance	0	0		
Taxable income	229,740	24,590	1,050	204,100
<i>Income tax due</i>				
Non-savings income : Basic rate	24,590 @ 20%	4,918.00		
Savings income : Basic rate	1,050 @ 20%	210.00		
Dividend income : Nil rate	5,000 @ 0%	0.00		
	: Ordinary rate	2,860 @ 7.5%	214.50	
	: Upper rate	116,500 @ 32.5%	37,862.50	
	: Additional rate	<u>79,740 @ 38.1%</u>	30,380.94	
	229,740			
Tax liability		73,585.94		

The first £5,000 of the dividends is taxed at the nil rate. There is now £ 2,860 of the basic rate band remaining (£33,500 – £24,590 – £1,050 – £5,000) and therefore the next £2,860 of the dividends is taxed at the dividend ordinary rate of 7.5%.



Investment Income Taxation Examples

Example 43:

In tax year 2017-18, Christopher has rental income of £24,590. He also receives bank interest of £1,050 and dividends of £204,100. His personal allowance for the year is zero. Calculate his income tax liability for the year.

	Total , £	Non-savings, £	Savings, £	Dividends, £
Income from property	24,590	24,590		
Bank interest	1,050		1,050	
Dividends	204,100			204,100
Total income	229,740	24,590	1,050	204,100
<u>Less:</u> Personal allowance	0	0		
Taxable income	229,740	24,590	1,050	204,100
<i>Income tax due</i>				
Non-savings income : Basic rate	24,590 @ 20%	4,918.00		
Savings income : Basic rate	1,050 @ 20%	210.00		
Dividend income : Nil rate	5,000 @ 0%	0.00		
	: Ordinary rate	2,860 @ 7.5%	214.50	
	: Upper rate	116,500 @ 32.5%	37,862.50	
	: Additional rate	<u>79,740 @ 38.1%</u>	30,380.94	
	229,740			
Tax liability		73,585.94		

Dividends of £116,500 which fall into the higher rate band are taxed at the dividend upper rate of 32.5% and the final £79,740 of the dividends is taxed at the dividend additional rate of 38.1%.

Investment Income Taxation Examples



Capital Gains Tax (UK Case)

For tax year 2017-18, there are two main rates of capital gains tax (CGT):

- the **standard rate** of 10% and
- the **higher rate** of 20%.

Tax rates which apply to gains arising on the disposal of residential property (to the extent that these gains are not eligible for principal private residence relief) are 18% and 28%.

Furthermore, a special rate of 10% applies to gains which qualify for "**entrepreneurs' relief**" (ER). In general terms, gains may qualify for ER if they arise on the disposal of a business.

Investment Income Taxation Examples



Capital Gains Tax: Basis of Assessment

A person's CGT liability for a tax year is based upon the **chargeable disposals** made by that person during the tax year.

Note:

The main and most obvious instance of a chargeable disposal occurs when a chargeable asset (e.g., personal possessions, property, shares, business assets) is sold. However, the sale of an asset in the course of trade (i.e. the sale of trading stock or inventory) does *not* constitute a chargeable disposal since any gain arising on such a sale is taxed as a trading profit.

No liability to CGT arises *until an asset is disposed of*, so the mere fact that an asset has appreciated in value will not of itself trigger a CGT liability. The amount on which CGT is payable is calculated as follows:

- (a) The chargeable gain or allowable loss arising on each disposal made during the tax year is calculated separately.
- (b) If total gains exceed total losses, the losses are subtracted from the gains to give the taxpayer's "**net gains**" for the year.
If total losses exceed total gains, the gains are subtracted from the losses to give the "**net losses**" for the year.

Investment Income Taxation Examples



- (c) If there are net gains for the year, these are reduced first by any unrelieved losses brought forward from *previous* tax years.
- (d) Net gains are then further reduced by the amount of the "**annual exemption**" for the year (£11,300 for 2017 -18). The amount of any net gains which remain after the annual exemption has been deducted is the "taxable gains" figure for the year.
- If net gains are too low to allow the whole of the annual exemption to be deducted, taxable gains for the year are £nil and the balance of the annual exemption is lost.
- (e) If there are net losses for the year, taxable gains for that year are £nil and the whole of the annual exemption is lost. The net losses may then be *carried forward* for relief in future years (i.e., net capital losses are carried forward and set against the net gains of subsequent years).

Investment Income Taxation Examples



Example 44:

Four taxpayers each make three chargeable disposals during 2017-18.

Compute their taxable gains for the year (assuming that there are no unrelieved losses brought forward or carried back) if these disposals give rise to the following gains and losses:

(a) Taxpayer A has gains of £3,500, £4,100 and £5,950.

Solution:

Total gains are £13,550 and there are no losses. Net gains are £13,550. Subtracting the annual exemption of £11,300 gives taxable gains for the year of £2,250.

(b) Taxpayer B has gains of £5,700, £6,840 and a loss of £350.

Solution:

Total gains are £12,540. Total losses are £350 so net gains are £12,190. Subtracting the annual exemption of £11,300 gives taxable gains for the year of £890.

Investment Income Taxation Examples



Example 44:

Four taxpayers each make three chargeable disposals during 2017-18.

Compute their taxable gains for the year (assuming that there are no unrelieved losses brought forward or carried back) if these disposals give rise to the following gains and losses:

(c) Taxpayer C has gains of £950 and £9,530 and a loss of £2,050.

Solution:

Total gains are £ 10,480 and total losses are £2,050. Net gains are £ 8,430. This is less than the annual exemption of £11,300, so taxable gains for the year are £nil. The unused part of the annual exemption (£2,870) is lost.

(d) Taxpayer D has a gain of £8,950 and losses of £9,500 and £800.

Solution:

Total gains are £8,950 and total losses are £10,300. Net losses are £1,350. Taxable gains for the year are £nil and the whole of the annual exemption is lost.

Investment Income Taxation Examples



Calculation of Capital Gains Tax Payable

CGT rates are applied to the taxable gains which remain after capital losses and the annual exemption have been deducted. For individuals, the process is as follows:

- (a) Gains which qualify for ER are always taxed at the ER rate of 10%.
- (b) If the individual's taxable income for the year (see previous notes) exceeds the basic rate limit, gains which do not qualify for ER are taxed at the higher rate of 20% (or 28% in the case of residential property gains).
- (c) If taxable income does not exceed the basic rate limit, any unused part of the basic rate band is first absorbed by gains which qualify for ER.

Gains which do not qualify for ER are then normally taxed at the lower rate of 10% to the extent that they do not exceed any remaining part of the basic rate band and at 20% otherwise. But these rates are increased to 18% and 28% in the case of residential property gains.

The **basic rate limit** for 2017-18 is usually £33,500 (see previous notes).



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

A: Taxable income exceeds the basic rate limit (£33,500), so the "other" gains are taxed at 20%.

Net gains are reduced by the annual exemption (£11,300), so CGT payable is (£12,500 – £11,300) x 20% = £240.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

B: Taxable income is not relevant since gains which qualify for ER are always taxed at 10%. CGT payable is $(£12,500 - £11,300) \times 10\% = £120$.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

C: The tax liability is minimized if the annual exemption is set against the residential property gains, since these are taxed at higher rates than gains which qualify for ER.

Taxable income exceeds the basic rate limit, so CGT payable is $(£32,800 \times 10\%) + ((£15,700 - £11,300) \times 28\%) = £4,512$.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

D: To minimize the tax liability, the allowable losses of £1,000 are set against the "other" gains of £4,900. Similarly, the annual exemption (£11,300) is set first against these gains. The remaining £7,400 of the exemption must then be set against the gains which qualify for ER. CGT payable is $(£27,600 - £7,400) \times 10\% = £2,020$.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

E: After deducting the annual exemption, taxable gains are £400 and these consist of residential property gains.

The unused part of the basic rate band is £2,710 (£33,500 – £30,790). This exceeds the taxable gains so CGT payable is (£400 x 18%) = £72.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

F: Taxable gains are £8,600 (£20,300 – £400 – £11,300) and these consists of "other" gains. The unused part of the basic rate band is £1,800 (£33,500 – £31,700).

So the CGT payable is (£1,800 x 10%) + (£6,800 x 20%) = £1,540.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

G: The tax liability is minimized if the losses of £2,200 and the annual exemption of £11,300 are both set against the residential property gains, leaving £3,500 of these gains remaining (£17,000 – £2,200 – £11,300). The unused part of the basic rate band is £10,400 (£33,500 – £23,100) and ER gains absorb £4,000 of this.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

If the basic rate band is allocated next to residential property gains, CGT payable is
 $(£4,000 \times 10\%) + (£3,500 \times 18\%) + (£2,900 \times 10\%) + (£5,600 \times 20\%) = £2,440$.

If the basic rate band is allocated next to the "other" gains instead, CGT payable is
 $(£4,000 \times 10\%) + (£6,400 \times 10\%) + (£2,100 \times 20\%) + (£3,500 \times 28\%) = £2,440$.



Investment Income Taxation Examples

Example 45:

Calculate the amount of CGT payable for 2017-18 by each of the following individuals. In each case, "taxable income" comprises the individual's total income, less reliefs which may be deducted from total income and less the personal allowance.

Name	Taxable income, £	ER gains, £	Residential property gains, £	Other gains, £	Allowable losses, £
A	71,000	nil	nil	12,500	nil
B	71,000	12,500	nil	nil	nil
C	47,500	32,800	15,700	nil	nil
D	52,700	27,600	nil	4,900	1,000
E	30,790	nil	11,700	nil	nil
F	31,700	nil	nil	20,300	400
G	23,100	4,000	17,000	8,500	2,200

The tax liability is unaffected by the allocation of the basic rate band and this will generally be the case in 2017-18, since the gap between the 10% and 20% rates is the same as the gap between the 18% and 28% rates.

Effect of Taxes on Investment Returns

After-Tax Accumulations and Returns for Taxable Accounts

Taxes on investment returns have a significant impact on the investment portfolio performance and future accumulations; hence, investors should evaluate returns and wealth accumulations of different types of investments subject to different tax rates and methods of taxation.

Effect of Taxes on Investment Returns

The effect of taxes on investment returns depends on the following factors:

- Tax rate
- Return on investment
- Frequency of payment of taxes

Effect of Taxes on Investment Returns

There are two types of methods of taxation:

1. Accrual taxes on interest and dividends that are paid annually.
2. Deferred capital gain taxes.

1. Returns-Based Taxes: Accrual Taxes on Interest and Dividends

Accrual taxes are taxes that are levied and paid *on a periodic basis*, usually annually, as opposed to **deferred taxes** that are *postponed until some future date*.

When returns are subject to accrual taxes, the **after-tax return** is equal to the pretax return, r , multiplied by $(1 - t_i)$ where t_i represents the tax rate applicable to investment income:

$$r_{AT} = r \times (1 - t_i)$$

Assumption:

an investment with a return that is entirely taxed at a single uniform rate.

Effect of Taxes on Investment Returns

The amount of money accumulated for each unit of currency invested after n years, assuming that returns (after taxes at rate t_i are paid) are reinvested at the same rate of return, r , is:

$$FVIF_i = [1 + r(1 - t_i)]^n$$

Equation is a future value interest factor (FVIF) based on an after-tax return.

Example 46:

Assume that €100 are invested at 6% per annum for 10 years in an environment in which returns are taxed each year at a rate of 30%.

This will accumulate to be $€100[1 + 0.06(1 - 0.30)]^{10} = €150.90$.

Had returns not been taxed, this investment would have grown to

$$€100[1 + 0.06(1 - 0.00)]^{10} = €179.08,$$

a difference of €28.18.

Effect of Taxes on Investment Returns

Tax Drag on Capital Accumulation

Tax drag is a reduction in after-tax returns on investment due to taxes during the compounded period. It refers to a negative effect of taxes on after-tax returns.

Tax drag can be expressed in currency units as follows:

Tax drag (€) = accumulated capital without tax – accumulated capital with tax

or in percentage terms:

Tax drag (%) =
$$\frac{\text{accumulated capital without tax} - \text{accumulated capital with tax}}{\text{accumulated capital without tax} - \text{initial investment}}$$

Note: The denominator of the formula can also be seen as an investment *gain*, assuming $t = 0\%$

Effect of Taxes on Investment Returns

Example 47:

John is determining the impact of taxes on his expected investment returns and wealth accumulations. John lives in a tax jurisdiction with a flat tax rate of 20% which applies to all types of income and is taxed annually.

Also he expects to earn 7% per year on his investment over a 20 year time horizon and has an initial portfolio of €100,000.

1. What is John's expected wealth at the end of 20 years?
2. What proportion of potential investment gains were consumed by taxes?

Solution:

1.
$$\begin{aligned} FV &= €100,000 \times FVIF_i \\ &= €100,000 \times [1 + 0.07(1 - 0.20)]^{20} \\ &= €297,357. \end{aligned}$$

2. Ignoring taxes, $FV = €100,000 [1 + 0.07]^{20} = €386,968$. The difference between this and the after tax amount accumulated from above is €89,611. The proportion of potential investment gains consumed by taxes was $€89,611/€286,968 = 31.23\%$ (tax drag (%)).

Effect of Taxes on Investment Returns

Implications of tax drag (assuming accrual taxation)

When investment returns are subject to accrual taxes on an annual basis (assuming returns are positive):

- Tax drag is greater than the nominal tax rate.
- Tax drag and investment time horizon (n) are positively correlated i.e. as the investment horizon (n) increases, tax drag increases, all else equal.
- Tax drag and investment returns (r) are positively correlated i.e. as the investment return increases, tax drag increases, all else equal.
- Investment return and time horizon have a multiplicative effect on the tax drag i.e.

Given investment returns, the longer the time horizon, the greater the tax drag.

Given investment time horizon, the higher the investment returns, the greater the tax drag.

Effect of Taxes on Investment Returns

2. Returns-Based Taxes: Deferred Capital Gains

Deferred capital gain taxes are taxes that are *postponed* until the end of the investment horizon.

Under deferred capital gain tax, investment grows tax free until assets are sold.

If the tax on an investment's return is deferred until the end of its investment horizon, n , and taxed as a capital gain at the rate t_{cg} , then the after-tax future accumulation for each unit of currency can be represented as follows:

$$FVIF_{cg} = (1 + r)^n (1 - t_{cg}) + t_{cg}$$

Note:

The first term of equation represents the future accumulation if the entire sum (including the original basis) were subject to tax. The second term returns the tax of the untaxed cost (also known as cost basis or basis) associated with the initial investment.

Effect of Taxes on Investment Returns

Example 48:

Assume that €100 are invested at 6% per annum for 10 years in an environment in which capital gains are taxed at the end of that time at a rate of 30%.

This will accumulate to be $€100[(1 + 0.06)^{10}(1 - 0.30) + 0.30] = €155.36$.

Notice that this sum is greater than the €150.90 accumulated in example 46, where returns are taxed annually at the same rate. This comparison illustrates the value of tax deferral.

Notice, as well, that the after-tax investment gain equals the pretax investment gain multiplied by one minus the tax rate. That is, $€55.36 = €79.08 \times (1 - 0.30)$.

Whereas the tax drag on after-tax accumulations subject to annual accrual taxes compounds over time, the tax drag from deferred capital gains is a fixed percentage regardless of the investment return or time horizon. In other words, when deferral is permitted, the proportion of potential investment growth consumed by taxes is always the same as the tax rate, 30% in this case.

Effect of Taxes on Investment Returns

Implications of tax drag (assuming taxes on capital gains are deferred)

Investments taxed on a deferred capital gain basis are more tax-efficient than investments with returns that are taxed annually.

Example 49:

Assume the same facts as in Example 47. John invests €100,000 at 7%.

However, the return comes in the form of deferred capital gains that are not taxed until the investment is sold in 20 years hence.

1. What is John's expected wealth at the end of 20 years?
2. What proportion of potential investment gains were consumed by taxes?

Solution:

1.
$$\begin{aligned} FV &= €100,000 \times FVIF_{cg} \\ &= €100,000 \times [(1 + 0.07)^{20}(1 - t) + t] \\ &= €100,000 \times [(1 + 0.07)^{20}(1 - 0.20) + 0.20] = €329,575. \end{aligned}$$
2. Ignoring taxes, $FV = €100,000 [1 + 0.07]^{20} = €386,968$. The difference between this and the after tax amount accumulated from above is €57,393. The proportion of potential investment gains consumed by taxes was $€57,393/€286,968 = 20.0\%$ (tax drag (%)).

This result compares favorably to the potential investment gains consumed by taxes in Example 47.

Effect of Taxes on Investment Returns

3. Wealth-Based Taxes

Some jurisdictions impose a **wealth tax**, which is applied annually to a *specific capital base*.

Often the wealth tax is restricted to real estate investments (e.g., Australia, Singapore, Belgium, Germany, and the United Kingdom). In other countries, it is levied on aggregate assets including financial assets above a certain threshold (e.g., Colombia).

If limited to real estate holdings, the wealth tax may be levied at the federal level or a municipal level.

In any case, the wealth tax rate tends to be much lower than capital gains or interest income rates because it applies to the entire capital base—i.e., principal and return—rather than just the return.

Effect of Taxes on Investment Returns

If wealth is taxed annually at a rate of t_w , then after n years each unit of currency accumulates to

$$FVIF_w = [(1 + r)(1 - t_w)]^n$$

Example 50:

If wealth capital is taxed at 2%, then €100 invested at 6% for 10 years will grow to $100[(1.06)(1 - 0.02)]^{10} = €146.33$.

Because the form of a wealth tax differs from the form of taxes on either investment returns or deferred capital gains, this figure is not comparable to examples 46 and 48.

This figure is substantially less than the pretax accumulation of €179.08, however. In other words, the 2% wealth tax consumed 41.4% of the investment growth that would have accrued over 10 years in the absence of a wealth tax (i.e., $(€79.08 - €46.33)/€79.08$).

Effect of Taxes on Investment Returns

Implications of tax drag (assuming tax on wealth)

- Tax drag (%) is greater than the nominal tax rate
- A wealth tax consumes a greater proportion of investment growth when returns are low.
- When returns are flat or negative, a wealth tax effectively reduces principal.
- Like the previous two types of taxes, however, the wealth tax consumes a *greater* share of investment growth as the investment horizon increases.

Effect of Taxes on Investment Returns

Example 51:

Olga lives in a country that imposes a wealth tax of 1.0% on financial assets each year. Her €400,000 portfolio is expected to return 6% over the next 10 years.

1. What is Olga's expected wealth at the end of ten years?
2. What proportion of investment gains was consumed by taxes?

Solution:

1. $FV = €400,000[(1.06)(1 - 0.01)]^{10} = €647,844.$

2. Had the wealth tax not existed, $FV = €400,000(1.06)^{10} = €716,339.$

This sum represents a €316,339 investment gain compared to a €247,844 gain in the presence of the wealth tax. Therefore, the 1% wealth tax consumed 21.65% of the investment gain (i.e., $(€316,339 - €247,844)/€316,339$).

Effect of Taxes on Investment Returns

Blended Taxing Environments

In reality, investment portfolios are subject to a variety of different taxes depending on the types of securities they hold, how frequently they are traded, and the direction of returns.

The different taxing schemes mentioned above can be integrated into a single framework in which:

- a portion of a portfolio's investment return is received in the form of **dividends** (p_d) and taxed at a rate of t_d ;
- another portion is received in the form of **interest income** (p_i) and taxed as such at a rate of t_i ;
- and another portion is taxed as **realized capital gain** (p_{cg}) at t_{cg} .

The remainder of an investment's return is **unrealized capital gain**, the tax on which is deferred until ultimately recognized at the end of the investment horizon.

These return proportions can be computed by simply dividing each income component by the total euro return.

Effect of Taxes on Investment Returns

It can be shown that:

$$\text{Total realized tax rate} = [(p_i \times t_i) + (p_d \times t_d) + (p_{cg} \times t_{cg})]$$

So, the annual return after realized taxes can be expressed as

$$r^* = r(1 - p_i t_i - p_d t_d - p_{cg} t_{cg})$$

where:

r = pre-tax overall return on portfolio;

p = proportion of total return from each source;

Note:

The equation does not take into account tax obligations arising from gains not yet realized.

Effect of Taxes on Investment Returns

Example 52:

Michael has a balanced portfolio of stocks and bonds. At the beginning of the year, his portfolio has a market value of €100,000. By the end of the year, the portfolio was worth €108,000 before any annual taxes had been paid, and there were no contributions or withdrawals. Interest of €400 and dividends of €2,000 were reinvested into the portfolio. During the year, Michael had €3,600 of realized capital gains. These proceeds were again reinvested into the portfolio.

1. What percentage of Michael's return is in the form of interest?

Solution:

$$p_i = \text{€}400/\text{€}8,000 = 0.05 \text{ or } 5\%.$$

2. What percentage of Michael's return is in the form of dividends?

Solution:

$$p_d = \text{€}2,000/\text{€}8,000 = 0.25 \text{ or } 25\%.$$

Effect of Taxes on Investment Returns

Example 52:

Michael has a balanced portfolio of stocks and bonds. At the beginning of the year, his portfolio has a market value of €100,000. By the end of the year, the portfolio was worth €108,000 before any annual taxes had been paid, and there were no contributions or withdrawals. Interest of €400 and dividends of €2,000 were reinvested into the portfolio. During the year, Michael had €3,600 of realized capital gains. These proceeds were again reinvested into the portfolio.

3. What percentage of Michael's return is in the form of realized capital gain?

Solution:

$$p_{cg} = \text{€}3,600 / \text{€}8,000 = 0.45 \text{ or } 45\%.$$

4. What percentage of Michael's return is in the form of deferred capital gain?

Solution:

Unrealized gain = €8,000 - €400 - €2,000 - €3,600 = €2,000. Expressed as a percentage of return, €2,000/€8,000 = 0.25, or 25%.

The unrealized gain is the portion of investment appreciation that was not taxed as either interest, dividends, or realized capital gain.

Effect of Taxes on Investment Returns

Example 52:

Michael has a balanced portfolio of stocks and bonds. At the beginning of the year, his portfolio has a market value of €100,000. By the end of the year, the portfolio was worth €108,000 before any annual taxes had been paid, and there were no contributions or withdrawals. Interest of €400 and dividends of €2,000 were reinvested into the portfolio. During the year, Michael had €3,600 of realized capital gains. These proceeds were again reinvested into the portfolio.

5. What is the annual return after realized taxes?

Solution:

$$\begin{aligned} r^* &= r(1 - p_i t_i - p_d t_d - p_{cg} t_{cg}) \\ &= 8\%[1 - (0.05 \times 0.35) - (0.25 \times 0.15) - (0.45 \times 0.15)] \\ &= 7.02\% \end{aligned}$$

Effect of Taxes on Investment Returns

Example 52:

Michael has a balanced portfolio of stocks and bonds. At the beginning of the year, his portfolio has a market value of €100,000. By the end of the year, the portfolio was worth €108,000 before any annual taxes had been paid, and there were no contributions or withdrawals. Interest of €400 and dividends of €2,000 were reinvested into the portfolio. During the year, Michael had €3,600 of realized capital gains. These proceeds were again reinvested into the portfolio.

6. Assuming taxes are paid out of the investment account, what is the balance in the account at the end of the first year?

Solution:

Income Type	Income Amount (€)	Tax Rate (%)	Tax Due (€)
Interest	400	35	140
Dividends	2,000	15	300
Realized capital gains	3,600	15	540
Total tax due			980

After paying taxes there would be €107,020 in the account (€108,000 – €980). Note that this is consistent with the 7.02% return computed for the first question.

Chapter 5: CORPORATION TAX

Definition of Corporate Tax

Corporate tax (a.k.a. corporation tax) is a direct tax imposed by a jurisdiction on the income or capital of corporations or analogous legal entities. Many countries impose such taxes at the national level, and a similar tax may be imposed at state or local levels.

Partnerships are generally not taxed at the entity level.

Company income subject to tax is often determined much like taxable income for individual taxpayers. Generally, the tax is imposed on net profits.

In some jurisdictions, rules for taxing companies may differ significantly from rules for taxing individuals. Certain corporate acts, like reorganizations, may not be taxed. Some types of entities may be exempt from tax.

Countries may tax corporations on its *net profit* and may also tax shareholders when the corporation pays a dividend.

Corporate Tax Rates

International Corporate Tax Rates

Corporate tax rates vary widely by country, leading some corporations to shield earnings within offshore subsidiaries or to re-domicile within countries with lower tax rates.

Corporate Tax Rates (%)

Location	2015	2016	2017	2018	2019
Australia	30.00	30.00	30.00	30.00	30.00
China	25.00	25.00	25.00	25.00	25.00
Cyprus	12.50	12.50	12.50	12.50	12.50
Finland	20.00	20.00	20.00	20.00	20.00
France	33.33	33.30	33.33	33.00	31.00
Germany	29.72	29.72	29.79	30.00	30.00
India	34.61	34.61	34.61	35.00	30.00
Latvia	15.00	15.00	15.00	20.00	20.00
Russia	20.00	20.00	20.00	20.00	20.00
Spain	28.00	25.00	25.00	25.00	25.00
United Kingdom	20.00	20.00	19.00	19.00	19.00
United States	40.00	40.00	40.00	27.00	27.00

Source:
KPMG, 2019

Corporate Income Tax Calculation Examples



The calculation of corporate income taxes due (or refund) is based on the following simplified formula:

	Gross income	1
<u>Minus:</u>	<u>Deductions</u>	2
<u>Equals:</u>	Taxable income	3
<u>Times:</u>	<u>Tax rates</u>	
<u>Equals:</u>	Income tax liability	4
<u>Plus:</u>	<u>Other taxes</u>	
<u>Equals:</u>	Total tax	
<u>Minus:</u>	Tax Credits	
<u>Minus:</u>	<u>Tax Prepayments</u>	
<u>Equals:</u>	Taxes due or (refund)	

Source: Spilker, Ayers: Taxation of Individuals and Business Entities, McGraw-Hill, 2019 Edition

Corporations compute gross income as do other types of business entities and individual taxpayers. In contrast to individual taxpayers, corporations do not calculate adjusted gross income (AGI). Like other businesses, corporations are allowed to deduct ordinary and necessary business expenditures. Unlike individual taxpayers, corporations treat all deductions as related to a trade or business. Corporations also do not receive a standard deduction.

Corporate Income Tax Calculation Examples



Explanations:

1 Gross income may include:

- gross profit from inventory sales (sales minus cost of goods sold),
- income from services provided to customers,
- income from renting property to customers.

Note:

In most respects, the rules for determining business gross income are the same as for determining gross income for individuals. Business gross income generally includes all **income** from whatever source derived.

Corporate Income Tax Calculation Examples



2 Some common **business deductions** are:

- Ordinary and necessary *business* expenses

Examples of Typical Ordinary and Necessary Business Expenses

Advertising	Office expenses
Car and truck expenses	Rent
Depreciation	Repairs
Employee compensation	Supplies
Insurance	Travel
Interest	Utilities
Legal fees	Wages

Note:

Only *reasonable amounts* are allowed as business expense deductions (see example 27). Extravagant or excessive amounts are likely to be characterized by personal motives and are disallowed.

Corporate Income Tax Calculation Examples



Some **limitations** on business deductions:

- **Capital expenditures** (e.g., expenditures for tangible assets such as buildings, machinery, equipment etc.) that have useful lives of *more than one year* must be *capitalized* (i.e., they are not deducted).

For tax purposes, businesses recover the cost of capitalized tangible assets (excluding land) through *depreciation*.

Businesses also capitalize the cost to *create* or *acquire* intangible assets such as patents, goodwill, start-up costs, and organizational expenditures. They recover the costs of capitalized intangible assets either through amortization (when the tax laws allow them to do so) or upon disposition of the assets.

- **Personal expenses** (e.g., food, clothing etc. or family expenses) are generally not deductible.

Corporate Income Tax Calculation Examples



- **Business interest expense**

Deduction for business interest expense is *limited* to the sum of

- (1) business interest income and
- (2) 30% of the adjusted taxable income of the taxpayer for the taxable year.

Adjusted taxable income (ATI) is taxable income allocable to the business computed without interest income and before depreciation and interest expense deductions.

Disallowed business interest expense can be carried forward indefinitely.

Corporate Income Tax Calculation Examples



3 Computing corporate **taxable income**

To compute taxable income, most corporations begin with **book (financial reporting) income** and then make *adjustments* for **book–tax differences** to reconcile to the tax numbers (see Ex.53).

Book-Tax Differences

Many items of income and expense are accounted for differently for book and tax purposes. As a result, book-tax differences arise.

Each book–tax difference can be considered “**unfavorable**” or “**favorable**” depending on its effect on taxable income relative to book income.

- **Favorable book–tax differences** decrease taxable income relative to book income.
- **Unfavorable book–tax differences** increase taxable income relative to book income.

Corporate Income Tax Calculation Examples



In addition to the favorable/unfavorable distinction, book–tax differences can be categorized as **permanent** or **temporary**.

- **Permanent book–tax differences** arise in one year and *never reverse*.

Businesses, including corporations, are allowed to exclude certain income items from gross income, and they are not allowed to deduct certain expenditures for tax purposes.

Because these income items are included in book income, and the expenditures are deducted for financial reporting purposes, they generate permanent book–tax differences.

Corporate Income Tax Calculation Examples



Some Common Permanent Book-Tax Differences

Description	Explanation	Difference
Interest income from municipal bonds	Income included in book income, excluded from taxable income for regular purposes	Favorable
Interest expense on loans to acquire investments generating tax-exempt income	Deductible for books, but expenses incurred to generate tax-exempt income are not deductible for tax	Unfavorable
Business-related meal expenses	Fully deductible for books but only 50% deductible for tax	Unfavorable
Fines and penalties and political contributions	Deductible for books but not for tax	Unfavorable
Business-related entertainment expenses	Deductible for books, but not deductible for tax	Unfavorable

Source: Spilker, Ayers: Taxation of Individuals and Business Entities, McGraw-Hill, 2019 Edition

Corporate Income Tax Calculation Examples



- **Temporary book–tax differences arise** in one year and *reverse in a subsequent year*.

Corporations experience temporary book–tax differences because the accounting methods they apply to determine certain items of income and expense for financial reporting purposes *differ* from those they use for tax purposes.

Unlike permanent book–tax differences, temporary book–tax differences *balance out over time*, so corporations eventually recognize the same amount of income or deduction for the particular item.

Corporate Income Tax Calculation Examples



Some Common Temporary Book-Tax Differences

Description	Explanation	Initial difference*
Depreciation expense	Difference between depreciation expense for tax purposes and depreciation expense for book purposes	Favorable
Gain or loss on disposition of depreciable assets	Difference between gain or loss for tax and book purposes when corporation sells or disposes of depreciable property. Difference generally arises because depreciation expense, and thus the adjusted basis of the asset, is different for tax and book purposes.	Unfavorable
Bad debt expense	Direct write-off method for tax purposes; allowance method for book purposes.	Unfavorable
Organizational expenses and start-up costs	Immediately deducted for book purposes but capitalized and amortized for tax purposes	Unfavorable
Warranty expenses and other estimated expenses	Estimated expenses deducted for book purposes, but actual expenses deducted for tax purposes	Unfavorable
Interest expense	The deduction of interest expense is disallowed to the extent it exceeds the sum of business interest income and 30% of adjusted taxable income.	

*Note that each of the initial book–tax differences will reverse over time [the initially favorable (unfavorable) book–tax differences will reverse to become unfavorable (favorable) book–tax differences in the future].

Corporate Income Tax Calculation Examples



Corporate-Specific Deductions and Book-Tax Differences

Net Capital Losses

For corporations, all *net capital gains* (long- and short-term) are taxed at the *ordinary income* tax rate of 21%. Corporations will generally prefer capital gains to ordinary income when they have incurred net capital losses because only capital gains can be netted against capital losses in a particular year.

Unlike individuals, corporations cannot deduct net capital losses against ordinary income (individuals can deduct up to \$3,000 of net capital losses in a year against ordinary income)

Corporations *may not deduct net capital losses for tax purposes.*

However, they may carry them back three years and forward five years to offset capital gains in those other years.

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr)†		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
Capital gains (losses)	(28,000)		28,000 ^{Ex. 7}	0
Gain on fixed asset dispositions	<u>54,000</u>		16,000 ^{Ex. 4}	<u>70,000</u>
Gross income	\$22,176,000			\$22,208,000
Expenses:				
Compensation	(9,868,000)			(9,868,000)
Deferred compensation	(300,000)	(150,000) ^{Ex. 4}		(450,000)
Stock option compensation	(100,000)		100,000 ^{Ex. 6}	0
Bad debt expense	(165,000)		70,000 ^{Ex. 4}	(95,000)
Charitable contributions	Moved below			
Depreciation	(2,400,000)	(700,000) ^{Ex. 4}		(3,100,000)
Advertising	(1,920,000)			(1,920,000)
Warranty expenses	(580,000)		170,000 ^{Ex. 4}	(410,000)
Meals	(28,000)		14,000 ^{Ex. 1}	(14,000)
Life insurance premiums	(34,000)		34,000 ^{Ex. 1}	0
Other expenses	(64,000)			(64,000)
Federal income tax expense	<u>(2,000,000)*</u>		2,000,000 ^{Ex. 2}	<u>0</u>
Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
Income <i>before</i> charitable contribution, NOL, and DRD	4,717,000			\$ 6,287,000
NOL carryover from prior year		(24,000) ^{Ex. 9}		<u>(24,000)</u>
Taxable income for charitable contribution limitation purposes				6,263,000
Charitable contributions	(700,000)		73,700 ^{Ex. 13}	<u>(626,300)</u>
Taxable income before DRD				5,636,700
Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

In the example, \$12,000 of the total interest income is interest income earned from municipal bonds, which is deducted for tax purposes
(favorable adjustment, permanent book-tax difference)

Note:
Numbers in the debit column are favorable book–tax adjustments while numbers in the credit column are unfavorable book–tax adjustments.

Source: Spilker, Ayers: Taxation of Individuals and Business Entities, McGraw-Hill, 2019 Edition

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr) [†]		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
Capital gains (losses)	(28,000)		28,000 ^{Ex. 7}	0
Gain on fixed asset dispositions	<u>54,000</u>		16,000 ^{Ex. 4}	<u>70,000</u>
Gross income	\$22,176,000			\$22,208,000
Expenses:				
Compensation	(9,868,000)			(9,868,000)
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Stock option compensation	(100,000)		100,000 ^{Ex. 6}	0
Bad debt expense	(165,000)		70,000 ^{Ex. 4}	(95,000)
Charitable contributions	Moved below			
Depreciation	(2,400,000)	(700,000) ^{Ex. 4}		(3,100,000)
Advertising	(1,920,000)			(1,920,000)
Warranty expenses	(580,000)		170,000 ^{Ex. 4}	(410,000)
Meals	(28,000)		14,000 ^{Ex. 1}	(14,000)
Life insurance premiums	(34,000)		34,000 ^{Ex. 1}	0
Other expenses	(64,000)			(64,000)
Federal income tax expense	<u>(2,000,000)*</u>		2,000,000 ^{Ex. 2}	<u>0</u>
Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
Income <i>before</i> charitable contribution, NOL, and DRD	4,717,000			\$ 6,287,000
NOL carryover from prior year		(24,000) ^{Ex. 9}		<u>(24,000)</u>
Taxable income for charitable contribution limitation purposes				6,263,000
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Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Capital losses of \$28,000 are not deducted for tax purposes
(unfavorable adjustment)

Example 53: Book–Tax Reconciliation Template



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Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
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Other income:				
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Gross income	\$22,176,000			\$22,208,000
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Compensation	(9,868,000)			(9,868,000)
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Stock option compensation	(100,000)		100,000 ^{Ex. 6}	0
Bad debt expense	(165,000)		70,000 ^{Ex. 4}	(95,000)
Charitable contributions	Moved below			
Depreciation	(2,400,000)	(700,000) ^{Ex. 4}		(3,100,000)
Advertising	(1,920,000)			(1,920,000)
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Other expenses	(64,000)			(64,000)
Federal income tax expense	<u>(2,000,000)*</u>		2,000,000 ^{Ex. 2}	<u>0</u>
Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
Income <i>before</i> charitable contribution, NOL, and DRD	4,717,000			\$ 6,287,000
NOL carryover from prior year		(24,000) ^{Ex. 9}		<u>(24,000)</u>
Taxable income for charitable contribution limitation purposes				6,263,000
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Taxable income before DRD				5,636,700
Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Initial estimated fair value of stock options is deducted in books, but not deducted for tax
(unfavorable adjustment, permanent book-tax difference)

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr)†		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
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Stock option compensation	(100,000)		100,000 ^{Ex. 6}	0
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Charitable contributions	Moved below			
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Warranty expenses	(580,000)		170,000 ^{Ex. 4}	(410,000)
Meals	(28,000)		14,000 ^{Ex. 1}	(14,000)
Life insurance premiums	(34,000)		34,000 ^{Ex. 1}	0
Other expenses	(64,000)			(64,000)
Federal income tax expense	<u>(2,000,000)*</u>		2,000,000 ^{Ex. 2}	<u>0</u>
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Taxable income before DRD				5,636,700
Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Temporary book-tax differences

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr)†		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
Capital gains (losses)	(28,000)		28,000 ^{Ex. 7}	0
Gain on fixed asset dispositions	<u>54,000</u>		16,000 ^{Ex. 4}	<u>70,000</u>
Gross income	\$22,176,000			\$22,208,000
Expenses:				
Compensation	(9,868,000)			(9,868,000)
Deferred compensation	(300,000)	(150,000) ^{Ex. 4}		(450,000)
Stock option compensation	(100,000)		100,000 ^{Ex. 6}	0
Bad debt expense	(165,000)		70,000 ^{Ex. 4}	(95,000)
Charitable contributions	Moved below			
Depreciation	(2,400,000)	(700,000) ^{Ex. 4}		(3,100,000)
Advertising	(1,920,000)			(1,920,000)
Warranty expenses	(580,000)		170,000 ^{Ex. 4}	(410,000)
Meals	(28,000)		14,000 ^{Ex. 1}	(14,000)
Life insurance premiums	(34,000)		34,000 ^{Ex. 1}	0
Other expenses	(64,000)			(64,000)
Federal income tax expense	<u>(2,000,000)*</u>		2,000,000 ^{Ex. 2}	<u>0</u>
Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
Income <i>before</i> charitable contribution, NOL, and DRD	4,717,000			\$ 6,287,000
NOL carryover from prior year		(24,000) ^{Ex. 9}		<u>(24,000)</u>
Taxable income for charitable contribution limitation purposes				6,263,000
Charitable contributions	(700,000)		73,700 ^{Ex. 13}	<u>(626,300)</u>
Taxable income before DRD				5,636,700
Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Business-related meal expenses of \$28,000 are fully deductible for books but only 50% deductible for tax (unfavorable adjustment, permanent book-tax difference)

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr) [†]		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
Capital gains (losses)	(28,000)		28,000 ^{Ex. 7}	0
Gain on fixed asset dispositions	<u>54,000</u>		16,000 ^{Ex. 4}	<u>70,000</u>
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Other expenses	(64,000)			(64,000)
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Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
Income <i>before</i> charitable contribution, NOL, and DRD	4,717,000			\$ 6,287,000
NOL carryover from prior year		(24,000) ^{Ex. 9}		<u>(24,000)</u>
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Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Corporations deduct federal income tax expense in determining their book income. However, they are not allowed to deduct federal income tax expense for tax purposes (**permanent book-tax difference**).

Note: *This number is used only for illustrative purposes.

Example 53: Book–Tax Reconciliation Template



Description	Book Income (Dr) Cr	Book–Tax Adjustments (Dr) [†]		Taxable Income (Dr) Cr
Revenue from sales	\$60,000,000			\$60,000,000
Cost of goods sold	<u>(38,000,000)</u>			<u>(38,000,000)</u>
Gross profit	\$22,000,000			\$22,000,000
Other income:				
Dividend income	30,000			30,000
Interest income	120,000	(12,000) ^{Ex. 1}		108,000
Capital gains (losses)	(28,000)		28,000 ^{Ex. 7}	0
Gain on fixed asset dispositions	<u>54,000</u>		16,000 ^{Ex. 4}	<u>70,000</u>
Gross income	\$22,176,000			\$22,208,000
Expenses:				
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Total expenses <i>before</i> charitable contribution, NOL, and DRD	(17,459,000)			(15,921,000)
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Taxable income for charitable contribution limitation purposes				6,263,000
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Taxable income before DRD				5,636,700
Dividends received deduction (DRD)		(15,000) ^{Ex. 17}		<u>(15,000)</u>
Book/taxable income	<u>\$ 4,017,000</u>			<u>\$ 5,621,700</u>

Corporations are allowed a deduction for dividends received to help mitigate potential triple taxation of the income distributed as a dividend.

The amount of the deduction depends on the corporation's ownership in the distributing corporation. The deduction is 50% if the ownership is less than 20%; the deduction is 65% if the ownership is at least 20% but less than 80%; and finally, the deduction is 100% if the ownership is 80% or more.

Corporate Income Tax Calculation Examples



4 Corporate income tax liability:

Corporations

Rate	Taxable Income
21%	All

Source: Spilker, Ayers: Taxation of Individuals and Business Entities, McGraw-Hill, 2019 Edition

When corporations calculate their taxable income, they compute their tax liability using a flat rate of 21%.

In Example 53, the taxable income is \$5,621,700. Thus, the tax liability using a flat rate of 21% is \$1,180,557, i.e. $\$5,621,700(0.21)$.

Corporate Income Tax Calculation Examples



Scope of Corporation Tax (U.K. case)

A company's taxable total profits include both its income and its **chargeable gains**.

The term "chargeable gains" is normally used in preference to "capital gains".

Main source of income for most companies is likely to be **trading income**. But a company may also have other sources of income.

These could include:

- bank interest,
- loan interest,
- property income etc.

In general terms, a company's income is computed in a broadly similar way to that of an individual.

Corporate Income Tax Calculation Examples



Calculation of company's taxable total profits may be summarized as follows:

1

	£	£
Trading income	xxx	
<u>Less:</u> Trading losses brought forward	<u>xxx</u>	xxx
Income from property		xxx
Income from non-trading loan relationships		xxx
Non-trading income from intangible fixed assets		xxx
Chargeable gains	xxx	
<u>Less:</u> Allowable capital gains	<u>xxx</u>	<u>xxx</u>
		xxx
<u>Less:</u> Property business losses	xxx	
Deficit on non-trading loan relationships	xxx	
Trading losses relieved against total profits	xxx	
Relief for qualifying charitable donations	<u>xxx</u>	<u>xxx</u>
Taxable total profits (TTP)		<u>xxx</u>

Consists mainly of bank and building society interest and any other interest receivable by a company.

Source: Alan Melville:
Taxation, Finance Act 2017,
Pearson, 23rd Edition, 2018

Corporate Income Tax Calculation Examples



Calculation of company's taxable total profits may be summarized as follows:

1

	£	£
Trading income	xxx	
<u>Less:</u> Trading losses brought forward	<u>xxx</u>	xxx
Income from property		xxx
Income from non-trading loan relationships		xxx
Non-trading income from intangible fixed assets		xxx
Chargeable gains	xxx	
<u>Less:</u> Allowable capital gains	<u>xxx</u>	<u>xxx</u>
		xxx
<u>Less:</u> Property business losses	xxx	
Deficit on non-trading loan relationships	xxx	
Trading losses relieved against total profits	xxx	
Relief for qualifying charitable donations	<u>xxx</u>	<u>xxx</u>
Taxable total profits (TTP)		<u>xxx</u>

Capital gains on chargeable assets which consist of non-current assets such as land and buildings, plant and investments.

Non -chargeable assets include motor cars, chattels worth up to £6,000, gilts and qualifying corporate bonds.

Corporate Income Tax Calculation Examples



Notes:

- 1 **Trading income** consists of company's trading profit for an accounting period, *as adjusted for tax purposes.*

The starting point for the calculation is the company's **pre-tax profit**. This figure is then adjusted by:

- Excluding **non-trading income** and
- adding back **disallowed expenses**.

Capital allowances claimed for each accounting period are then deducted.

Corporate Income Tax Calculation Examples



Example 54:

Calculation of a company's trading income (UK case)

A company's income statement for the year to 31 December 2017 is as follows:

	£	£
Turnover		1,640,430
Cost of sales		<u>827,390</u>
Gross profit		813,040
Other income		<u>24,000</u>
		837,040
<u>Less: Distribution costs</u>	187,770	
Administrative expenses	<u>341,920</u>	<u>529,690</u>
Pre-tax profit		<u>307,350</u>

The other income of £24,000 consists of rents receivable.

Notes:

1. Distribution costs are as follows:

	£
Depreciation of distribution vans	18,530
Loss on disposal of distribution van	990
General distribution costs (all allowable)	<u>168,250</u>
	<u>187,770</u>

Corporate Income Tax Calculation Examples



2. Administrative expenses are as follows:

	£
Depreciation of office equipment	12,680
Profit on disposal of office equipment	(3,710)
Loss on disposal of investments	27,000
Trade debts written off	10,600
Increase in general allowance for doubtful debts	8,400
Customer entertaining	2,760
Staff entertaining	5,550
Gift Aid donations	10,000
Legal fees re acquisition of new freehold offices	4,500
Motor expenses	59,060
Patent royalties payable for trade purposes	20,000
Embezzlement by director	50,000
General administrative expenses (all allowable)	<u>135,080</u>
	341,920

Compute the company's trading income (before deduction of capital allowances) for the year to 31 December 2017.



Corporate Income Tax Calculation Examples

Solution:

	£	£
Profit per accounts		307,350
<u>Less: Non-trading income:</u>		
Income from property	24,000	
Profit on disposal of office equipment	<u>3,710</u>	<u>27,710</u>
		279,640
<u>Add: Disallowed expenses:</u>		
Depreciation of distribution vans	18,530	
Loss on disposal of distribution van	990	
Depreciation of office equipment	12,680	
Loss on disposal of investments	27,000	
Increase in general allowance for doubtful accounts	8,400	
Customer entertaining	2,760	
Gift Aid donations	10,000	
Legal fees re-acquisition of new offices	4,500	
Embezzlement of director	<u>50,000</u>	<u>134,860</u>
Trading income (before capital allowances)		414,500

Gift Aid donations are disallowed when computing trading income but are then treated as *qualifying charitable donations* and are deducted when calculating company's taxable total profits.



Corporate Income Tax Calculation Examples

Solution:

	£	£
Profit per accounts		307,350
<u>Less: Non-trading income:</u>		
Income from property	24,000	
Profit on disposal of office equipment	<u>3,710</u>	<u>27,710</u>
		279,640
<u>Add: Disallowed expenses:</u>		
Depreciation of distribution vans	18,530	
Loss on disposal of distribution van	990	
Depreciation of office equipment	12,680	
Loss on disposal of investments	27,000	
Increase in general allowance for doubtful accounts	8,400	
Customer entertaining	2,760	
Gift Aid donations	10,000	
Legal fees re-acquisition of new offices	4,500	
Embezzlement of director	<u>50,000</u>	<u>134,860</u>
Trading income (before capital allowances)		414,500

Losses caused by the dishonesty of a director are disallowed.

Corporate Income Tax Calculation Examples



Computation of Corporation Tax Liability (U.K. case)

Given a company's taxable total profits (*TTP*) for an accounting period (including any chargeable gains), the corporation tax liability arising in that period can be found as:

$$\text{Corporation tax liability} = TTP \times \text{corporation tax rate}$$

As from 1 April 2015, there is a *single* rate of corporation tax for each financial year. Main rates for FY2015 through to FY2020 are currently set as follows:

Rates of Corporation Tax, U.K.					
FY2015	20%	FY2016	20%	FY2017	19%
FY2018	19%	FY2019	19%	FY2020	17%

Source: Alan Melville: Taxation, Finance Act 2017, Pearson, 23rd Edition, 2018

Chapter 6: INDIRECT TAXES: VALUE-ADDED TAX

Definition of Value Added Tax

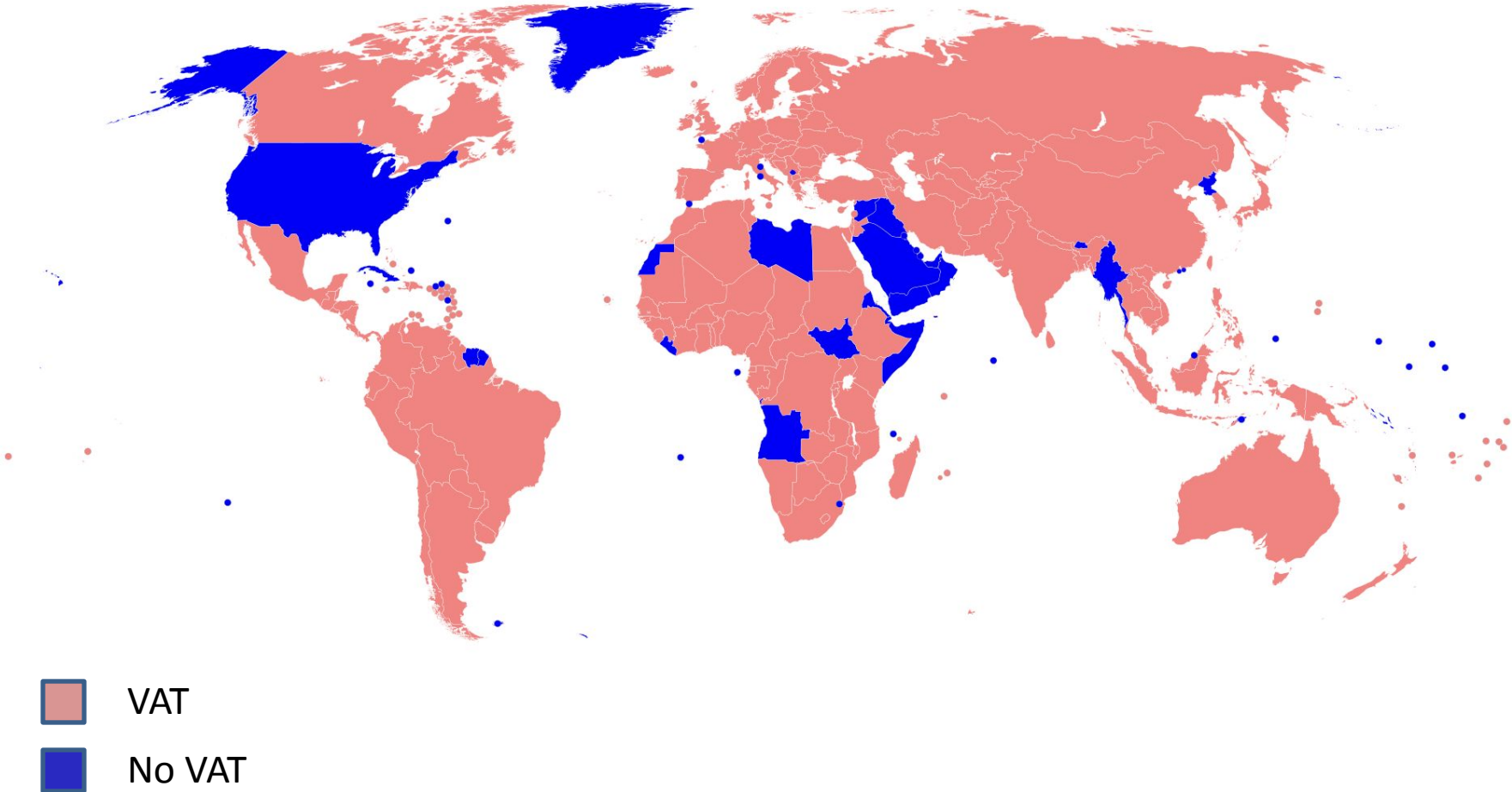
Value added tax (VAT) is a type of tax that is assessed *incrementally*.

VAT is based on the *increase in value* of a product or service at each stage of production or distribution.

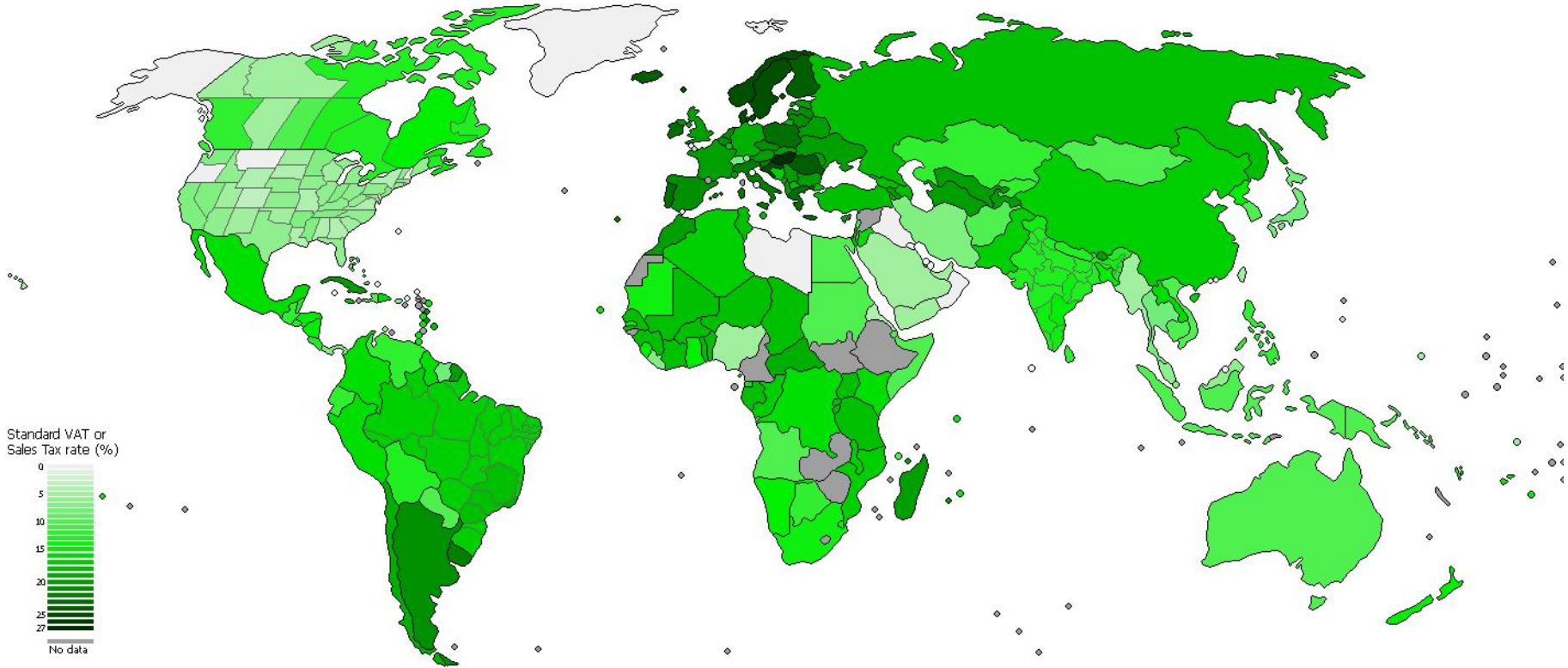
However, a VAT is collected by the end retailer and is usually a flat tax, and is therefore frequently compared to a sales tax.

Value-added taxation is based on taxpayers' *consumption* rather than their income. In contrast to a progressive income tax, which levies greater taxes on higher-level earners, VAT applies equally to every purchase.

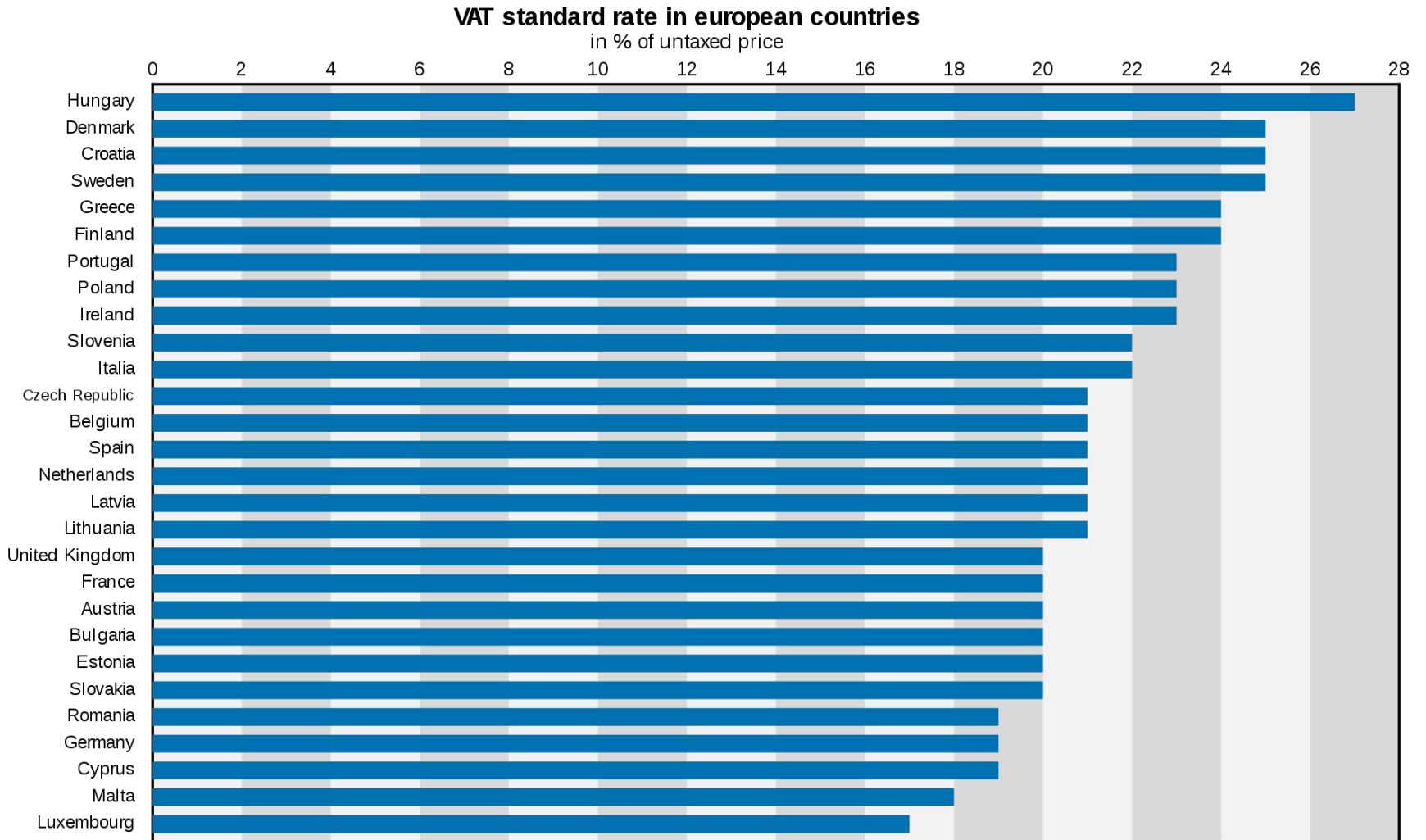
Map of countries and territories by their VAT status



Standard VAT or sales tax rate



Value Added Tax Rates in Europe



How Value Added Tax Works

VAT Calculation Principles

A VAT is levied on the **gross margin** at each point in the manufacturing-distribution-sales process of an item.

The VAT is assessed and collected *at each stage*, in contrast to a sales tax, which is only assessed and paid by the consumer at the very end of the supply chain.

The amount of VAT that the user pays is on the cost of the product, less any of the costs of materials used in the product that have already been taxed.

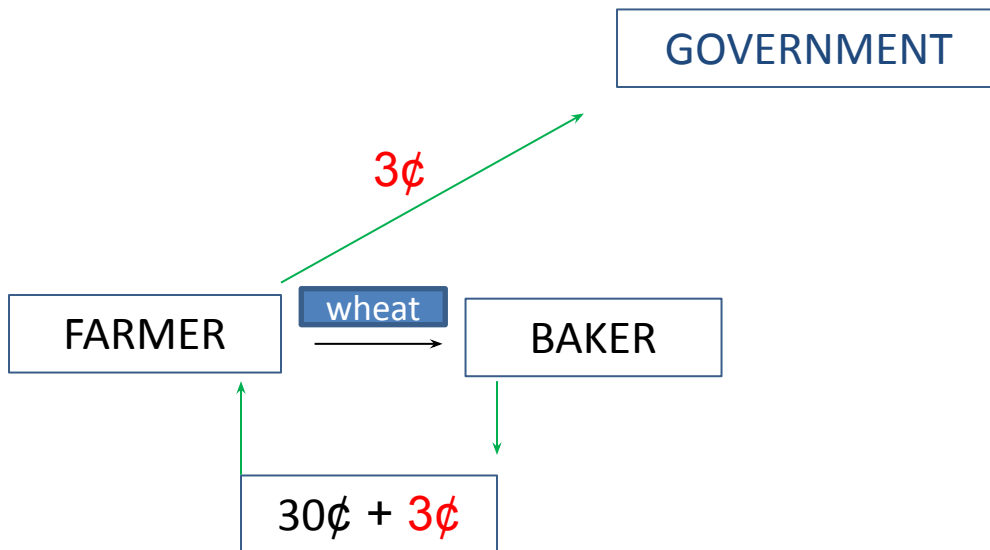
How Value Added Tax Works

Example 55:

Value Added Tax

Assume a VAT of **10%**.

A farmer sells wheat to a baker for 30¢. The baker pays 33¢; the extra 3¢ represents the VAT, which the farmer sends to the government.

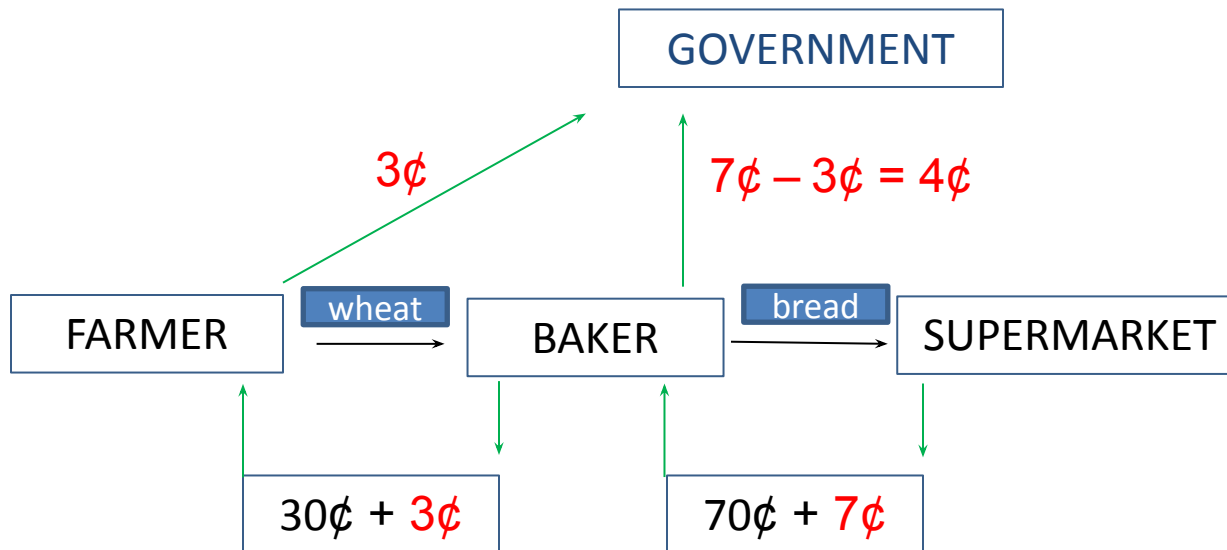


How Value Added Tax Works

Example 55:

Value Added Tax

The baker uses the wheat to make bread and sells a loaf to a local supermarket for 70¢. The supermarket pays 77¢, including a 7¢ VAT. The baker sends 4¢ to the government; the other 3¢ were paid by the farmer.

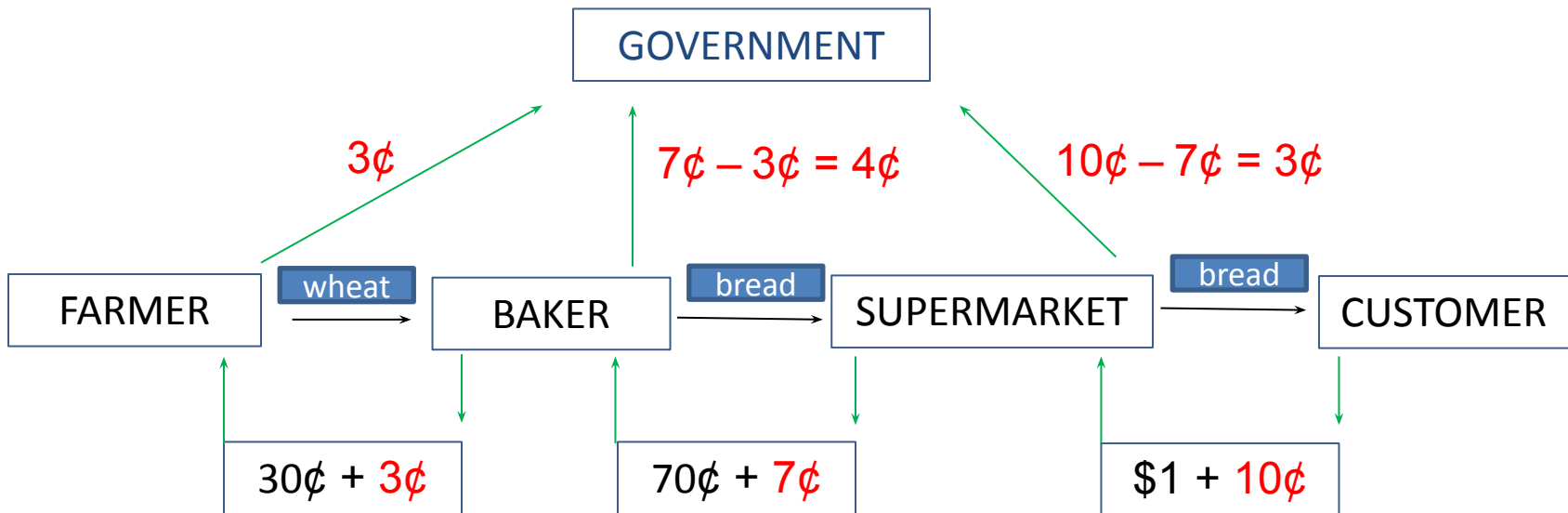


How Value Added Tax Works

Example 55:

Value Added Tax

Finally, the supermarket sells the loaf of bread to a customer for \$1. Of the \$1.10 paid by the customer, or the base price plus the VAT, the supermarket sends 3¢ to the government.



How Value Added Tax Works

VAT vs. Sales Tax

Sales tax is assessed only once *at the final stage* of the purchase.

Unlike VAT, which is assessed at each stage of purchase/production and paid by every successive buyer, sales tax is paid only once by the final consumer.

A key advantage of VAT over sales tax is that the former can allocate the tax amount to different stages at production based on the value added at that stage. Since sales tax is only paid once by the final buyer, one cannot measure the value added at each production stage. It makes it difficult to track and allocate the sales tax to specific stages of production.

How Value Added Tax Works

VAT: Advantages

Adoption of a regressive tax system, such as VAT, gives people a *stronger incentive to work* and earn higher salaries, as they get to keep their income (i.e., they are not taxed more for earning more, which is true with progressive taxes, such as income taxes) and are only taxed when purchasing goods.

VAT also makes it *harder to evade taxes*, as the tax is already embedded in the purchase of goods and services.

Conclusion:

- The regressive tax can provide strong incentives to work, which can boost the overall gross domestic product (GDP) of an economy.
- It can also increase government revenues by reducing tax evasion and providing a more timely and efficient framework for collecting taxes.

How Value Added Tax Works

VAT: Disadvantages

Unlike the income tax rate, which varies at different levels of income, VAT is a *fixed rate for everyone*, and thus the poor end up paying a greater VAT rate than the rich, relative to their respective incomes.

With VAT, goods and services become *more expensive*, and the *entire tax is passed on to the consumers*. It reduces the purchasing power of consumers and may make it difficult for low-income individuals and households to purchase necessities.

Businesses are faced with *increased costs* due to the administrative burden of calculating taxes at each stage of production. It can be especially challenging for global firms and multinational corporations with global supply chains spanning multiple tax regimes.

Value Added Tax Calculation Examples



Value Added Tax (U.K. case)

The basic principle of VAT is that tax should be charged at each stage of the production and distribution process but that the total tax due should be borne by the *final consumer* of the product.

This is achieved as follows:

- (a) Traders who are registered for VAT are required to charge VAT on their sales and must account for this **output tax** to HMRC, but
- (b) such traders are *allowed to recover* from HMRC the **input tax** which they pay to their own suppliers, so that
- (c) in effect, registered traders suffer no VAT and the total VAT is borne by the consumer at the end of the distribution chain.

Value Added Tax Calculation Examples



Example 57:

A Ltd owns a quarry. It extracts stone from this quarry and sells it to B Ltd for £10,000 plus VAT.

B Ltd converts all of the stone into paving slabs and sells these slabs to C Ltd for £18,000, plus VAT.

C Ltd owns a garden centre, where the paving slabs are sold to the general public for a total of £32,000, plus VAT.

Show how VAT is charged and collected at each stage of this process, assuming that VAT is to be calculated at 20% throughout.

Value Added Tax Calculation Examples



Example 57:

A Ltd owns a quarry. It extracts stone from this quarry and sells it to B Ltd for £10,000 plus VAT.

B Ltd converts all of the stone into paving slabs and sells these slabs to C Ltd for £18,000, plus VAT.

C Ltd owns a garden centre, where the paving slabs are sold to the general public for a total of £32,000, plus VAT.

Solution:

	Cost price before VAT, £	Input tax, £	Selling price before VAT, £	Output tax, £	Paid to HMRC, £
A Ltd	-	-	10,000	2,000	2,000
B Ltd	10,000	2,000	18,000	3,600	1,600
C Ltd	18,000	3,600	32,000	6,400	<u>2,800</u>
Total VAT charged					6,400

Chapter 7: INTERNATIONAL TAXATION ASPECTS

Taxation Systems

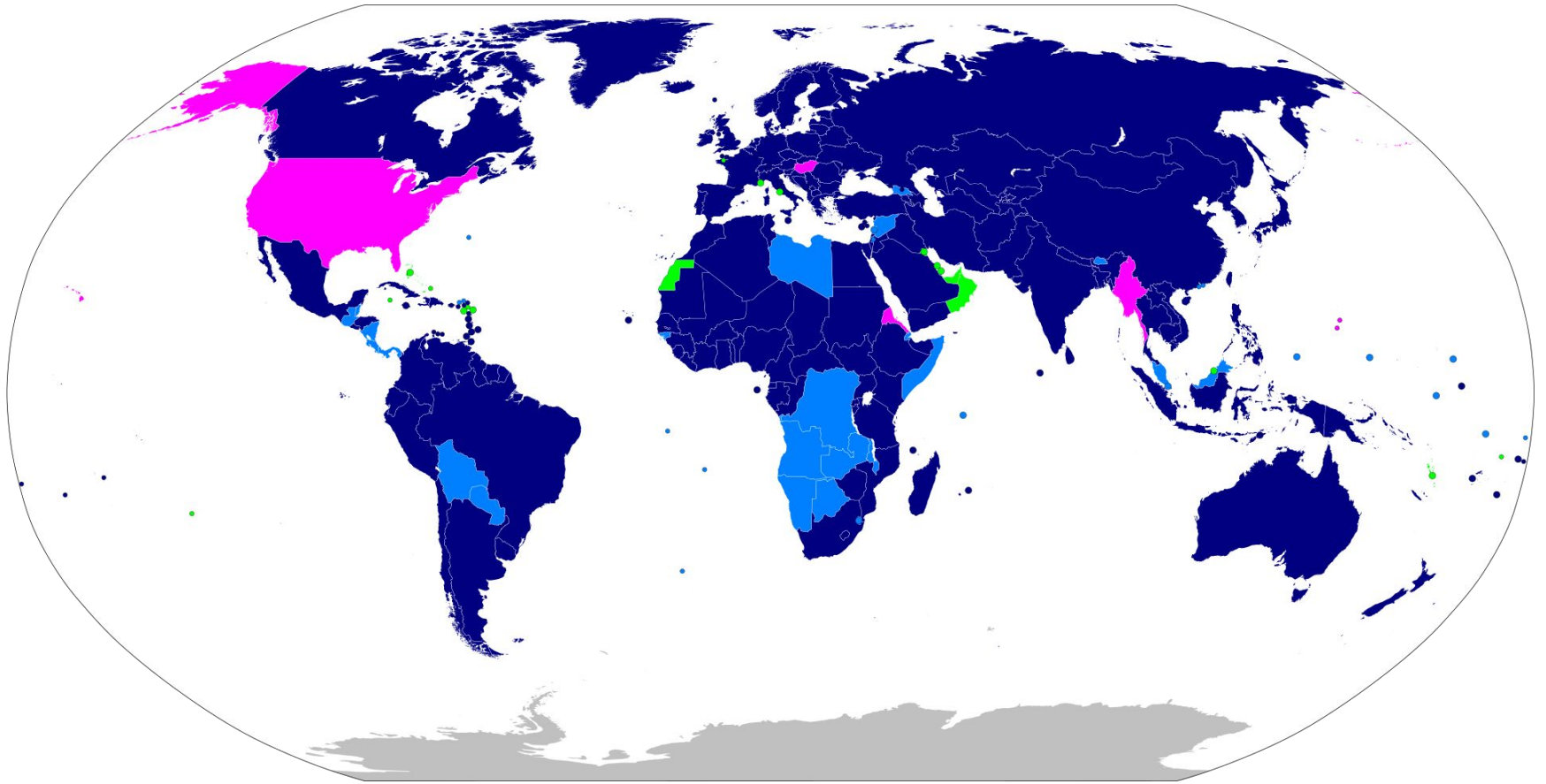
Countries that tax income generally use one of two systems:

- Territorial tax system
- Residential tax system

A country that taxes income sourced *within its borders* is said to impose **source jurisdiction**, also referred to as a **territorial tax system**.

Countries may also impose tax based on residency, called **residence jurisdiction**, whereby all income (domestic and foreign sourced) is subject to taxation.

Most countries use a residential tax system.



Systems of taxation on personal income ■ No income tax on individuals ■ Territorial ■ Residence-based ■ Citizenship-based

Source Jurisdiction vs. Residence Jurisdiction

Taxation of income

Under *source jurisdiction* a country levies taxes on all income generated within its borders, whether by citizens or foreigners.

Under *residence jurisdiction* (the most prevalent type), a country taxes the income of its residents, whether generated inside or outside the country.

Persons subject to residence jurisdiction are taxed on their worldwide income. Most countries impose residence jurisdiction on noncitizen residents, but not citizens who are non-resident in the jurisdiction.

Tax Conflicts

Double Taxation Conflicts

Interaction of country tax systems can result in *tax conflicts* in which two countries claim to have taxing authority over the same income or assets:

- **Residence-residence conflict:**

e.g., two countries claim residence for the same individual and hence claim taxing authority over the individual's world-wide assets and income.

- **Source-source conflict:**

e.g., think of a multinational company with operations that generate income in several countries.

- **Residence-source conflict:**

The individual's world-wide assets and income are taxed by the residence jurisdiction, and income generated by the foreign assets is taxed again under the source jurisdiction. **Most common source of double taxation.**

e.g., a U.S. citizen owning Singapore situated real estate would be subject to US income tax and Singapore income tax on rental income from property.

In response, some countries have adopted policies that help relieve the double taxation.

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

- credit method,
- exemption method
- deduction method.

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

CREDIT METHOD

Residence country reduces its taxpayers' domestic tax liability for taxes paid to a foreign country exercising source jurisdiction.

The credit is limited to the amount of taxes the taxpayer would pay domestically, which completely eliminates double taxation.

Tax liability equals the greater of the tax liability due in either the residence or source country:

$$T_{CreditMethod} = Max[T_{Residence}, T_{Source}]$$

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

CREDIT METHOD

Example 58:

Suppose a residence country imposes a 50% tax on world-wide income but offers a relief for tax paid on foreign-sourced income via the credit method.

If the foreign government taxes the foreign-sourced income at 40%, the taxpayer will pay a 50% tax rate (e.g., Max [50%, 40%]).

Of the total, 40% is paid to foreign tax authorities and 10% is paid to the domestic authorities.

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

EXEMPTION METHOD

Residence country imposes no tax on foreign-source income by providing taxpayers with an exemption, which, in effect, eliminates the residence–source conflict by having *only one jurisdiction impose tax*.

The tax liability under the exemption method is simply the tax imposed at the foreign source, or:

$$T_{ExemptionMethod} = T_{Source}$$

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

EXEMPTION METHOD

Example 59:

Suppose a residence country imposes a 50% tax on world-wide income and the foreign government taxes the foreign-sourced income at 40%.

Under the exemption method, the tax liability would be 40%, all of which is collected by the foreign taxing authority.

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

DEDUCTION METHOD

Residence country allows taxpayers to reduce their taxable income by the amount of taxes paid to foreign governments in respect of foreign-source income (i.e., provides a tax deduction rather than a credit or exemption).

The taxpayer is still responsible for both taxes, but the aggregate liability is less than the sum of the two with the residence country reducing the size of its percentage claim by the product of the two tax rates.

$$T_{DeductionMethod} = T_{Residence} + T_{Source} - T_{Residence}T_{Source}$$

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

DEDUCTION METHOD

Residence country allows taxpayers to reduce their taxable income by the amount of taxes paid to foreign governments in respect of foreign-source income (i.e., provides a tax deduction rather than a credit or exemption).

The taxpayer is still responsible for both taxes, but the aggregate liability is less than the sum of the two with the residence country reducing the size of its percentage claim by the product of the two tax rates.

$$T_{DeductionMethod} = T_{Residence} + T_{Source} (1 - T_{Residence})$$

Tax Conflicts

Foreign Tax Credit Provisions

A residence country may choose to unilaterally provide its taxpayers relief from residence source conflicts within its own tax code using one or more of the following methods:

DEDUCTION METHOD

Example 60:

Suppose a residence country imposes a 50% tax on world-wide income and the foreign government taxes the foreign-sourced income at 40%.

Under the deduction method, the total tax liability equals
 $70\% = 0.50 + 0.40 - (0.50 \times 0.40)$.

In this case, the source country receives 40% and the residence country receives 30% [i.e., $0.50 - (0.50 \times 0.40)$]. The residence country makes a partial concession recognizing the primacy of source jurisdiction.

Tax Conflicts

Double Taxation Treaties

Relief from double taxation may be provided through a **double taxation treaty** (DTT) rather than domestic tax laws (i.e., foreign tax credit, deduction or exclusion provisions).

Purpose:

Facilitate international trade and investment by eliminating double taxation.

By limiting source jurisdiction, DTTs *resolve residence–source conflicts* that are the most frequent cause of double taxation.

Virtually all modern tax treaties are based on the OECD (Organisation for Economic Co-operation and Development) Model Treaty.

Model Treaty sanctions the *exemption and credit method* to resolve residence source conflicts.

Tax Conflicts

Double Taxation Treaties

In addition to residence–source conflicts, DTTs resolve *residence–residence conflicts*.

A resident is taxable in a particular country “by reason of his domicile, residence, place of management or any other criterion of similar nature.”

In case of “dual residency” conflict, the following taxpayer’s criteria are used:

1. permanent home
2. center of vital interests
3. habitual dwelling
4. citizenship

DTTs typically do not resolve source–source conflicts.

Tax Avoidance and Tax Evasion

Tax Avoidance vs. Tax Evasion

Tax avoidance (a.k.a. “*tax minimization*”) uses *legal means* to lower the obligations of a taxpayer.

e.g., changing the asset location of high-dividend-paying equities that a taxpayer owns from a taxable account to a retirement account with tax-free earnings and withdrawals.

A company may choose to avoid taxes by establishing their company or subsidiaries in an offshore jurisdiction. Individuals may also avoid tax by moving their tax residence to a tax haven.

Tax evasion is the practice of circumventing tax obligations by *illegal means* such as misreporting or not reporting relevant information to tax authorities.

e.g., placing assets in jurisdictions with bank secrecy laws to avoid detection by taxing authorities in an individual’s home country. Income on these “undeclared funds” would therefore escape taxation by the home country that might otherwise impose a tax obligation if the income were reported.

Tax Avoidance and Tax Evasion

Current Trends in International Transparency and Information Exchange

Most countries attempt to maximize the amount of taxes to which they are legally entitled and to do so enter into *global treaties* which provide for the *sharing of information*.

Examples:

1. In an effort to maximize world-wide taxation on its residents and citizens, the United States demands that global banks disclose the names of U.S. securities' owners, whether U.S. citizens or not.

Tax Avoidance and Tax Evasion

Current Trends in International Transparency and Information Exchange

Most countries attempt to maximize the amount of taxes to which they are legally entitled and to do so enter into *global treaties* which provide for the *sharing of information*.

Examples:

2. *European Union Savings Directive* (EUSD), a directive on the taxation of interest income from savings within the EU, was created in 2005.

Under the EUSD system, EU member banks agree to automatically exchange customer information with each other.

As a result, a *EU withholding tax* was introduced to ensure that citizens of one member state do not evade taxation by depositing funds outside the jurisdiction of residence and so distort the single market. The tax is withheld at source and passed on to the EU Country of residence.

Note:

The EU withholding tax is levied *only on individuals* and not on companies, discretionary trusts, foundations, investment funds. The EU withholding tax applies only to bank interest, bond interest, and analogous income, such as income from money market funds, loans, and mortgages.

Tax Avoidance and Tax Evasion

Current Trends in International Transparency and Information Exchange

Most countries attempt to maximize the amount of taxes to which they are legally entitled and to do so enter into *global treaties* which provide for the *sharing of information*.

Examples:

3. In some cases authorities collect information from credit card companies about individuals who use credit cards in their country, whether or not they are citizens of that country. This information can then be shared with the individual's home country.

Tax Avoidance and Tax Evasion

Common Tax Evasion Schemes

Falsifying information on tax return

This occurs when a taxpayer understates its amount of income, claims personal expenses as business expenses, claims false deductions (or exemptions) or takes credits that aren't due.

Paying in Cash

An employer pays their employees in cash and fails to report to the taxing authority the full amount that was paid.

Pyramiding payroll taxes

A company that withholds payroll taxes from its employees intentionally fails to remit those withholdings to the taxing authority. The company continues to *accumulate* (“pyramid”) employment tax liabilities beyond its ability to pay, so it may close down, and then start up again within a new entity having a new employer identification number.

Transfer Pricing

Transfer Pricing

Transfer pricing is an accounting practice that represents the price that one division in a company charges another division for goods and services provided.

Multinational corporations are legally allowed to use the transfer pricing method for allocating earnings among their various subsidiary and affiliate companies that are part of the parent organization.

However, companies at times can also use (or misuse) this practice by altering their taxable income, thus reducing their overall taxes.

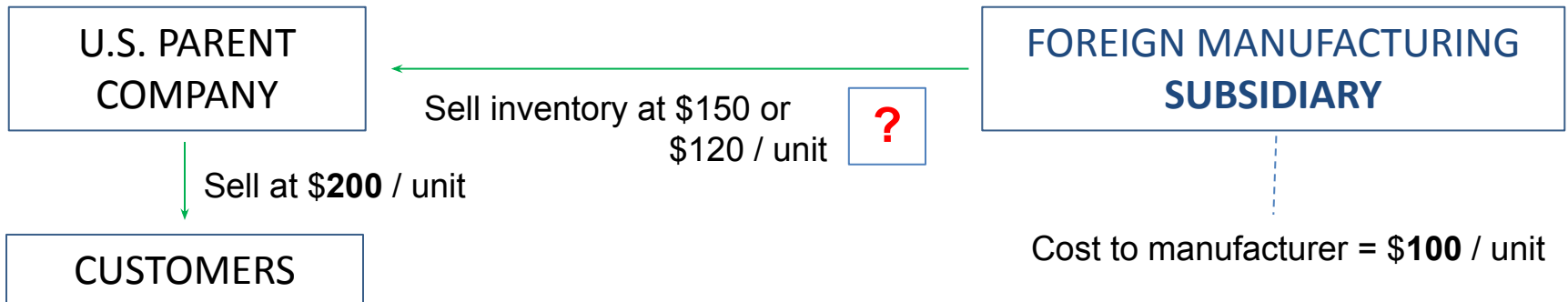
The transfer pricing mechanism is a way that companies can shift tax liabilities to low-cost tax jurisdictions known as **tax havens**.

Transfer Pricing

Example 62:

Transfer Pricing as a Tax Reduction Strategy

A U.S. parent has an overseas subsidiary, located in a low-labor-cost, low-tax-rate country. The manufacturer ships the product to the U.S. affiliate for resale, as follows:

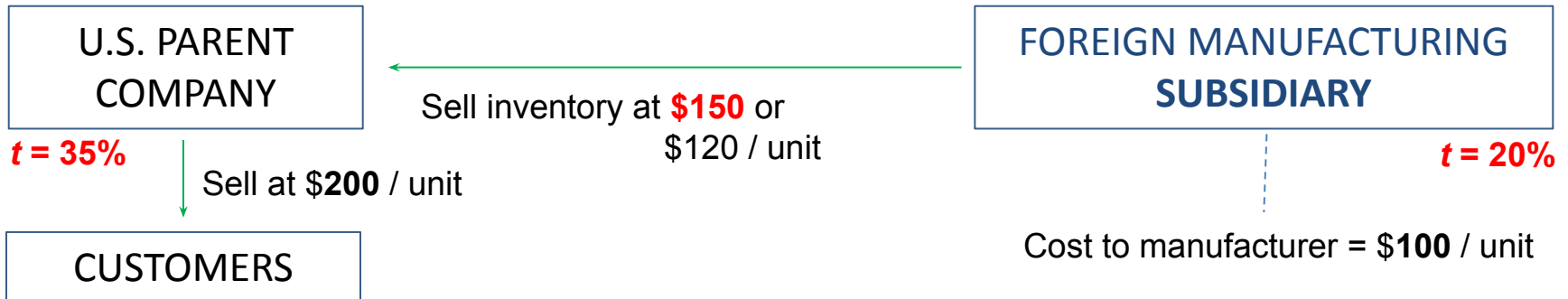


Transfer Pricing

Example 62:

Transfer Pricing as a Tax Reduction Strategy

A U.S. parent has an overseas subsidiary, located in a low-labor-cost, low-tax-rate country. The manufacturer ships the product to the U.S. affiliate for resale, as follows:



If the U.S. tax rate is higher than the foreign rate, the firm would like to set a *high* transfer price. Assume the U.S. and foreign tax rates are 35% and 20%, respectively.

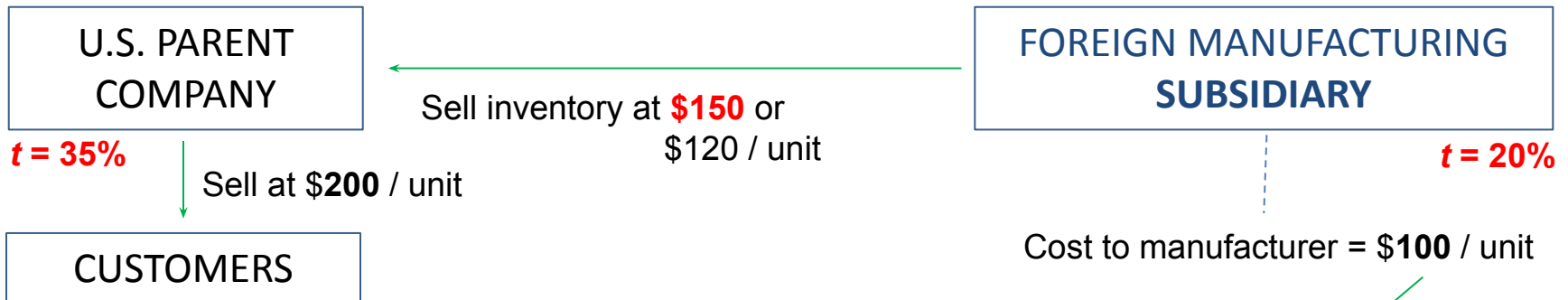
The analysis setting a low(higher) transfer price is as follows:

Transfer Pricing

Example 62:

Transfer Pricing as a Tax Reduction Strategy

A U.S. parent has an overseas subsidiary, located in a low-labor-cost, low-tax-rate country. The manufacturer ships the product to the U.S. affiliate for resale, as follows:



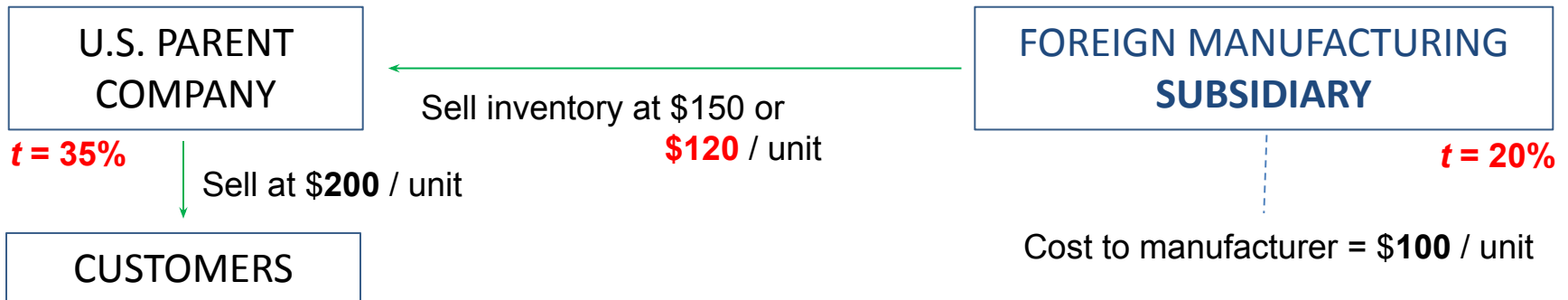
High Transfer Price (P = 150)		
	U.S. Parent	Foreign Sub.
Selling price	\$200	\$150
Cost of goods sold	<u>150</u>	<u>100</u>
Taxable Income	50	50
Tax rate	× 35%	× 20%
Tax	17.5	10
Total tax	\$27.5	

Transfer Pricing

Example 62:

Transfer Pricing as a Tax Reduction Strategy

A U.S. parent has an overseas subsidiary, located in a low-labor-cost, low-tax-rate country. The manufacturer ships the product to the U.S. affiliate for resale, as follows:



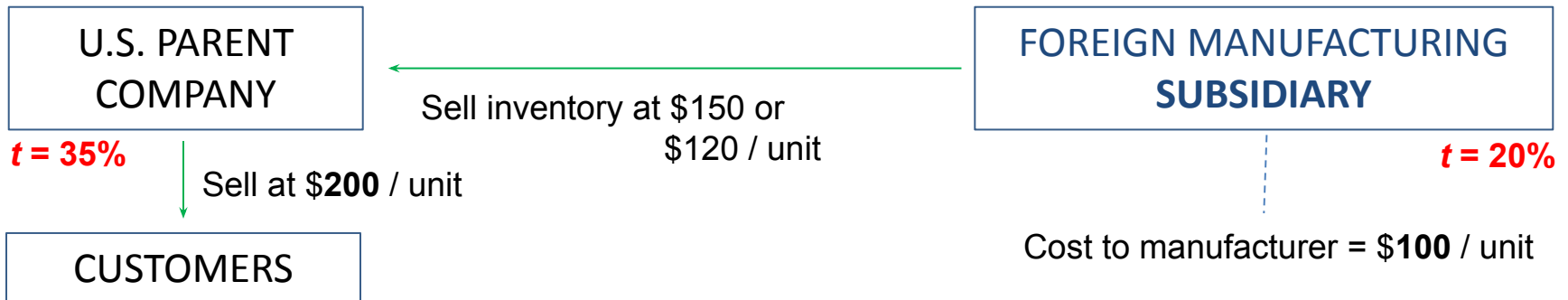
Low Transfer Price (P = 120)		
	U.S. Parent	Foreign Sub.
Selling price	\$200	\$120
Cost of goods sold	<u>120</u>	<u>100</u>
Taxable Income	80	20
Tax rate	× 35%	× 20%
Tax	28	4
Total tax	\$32	

Transfer Pricing

Example 62:

Transfer Pricing as a Tax Reduction Strategy

A U.S. parent has an overseas subsidiary, located in a low-labor-cost, low-tax-rate country. The manufacturer ships the product to the U.S. affiliate for resale, as follows:



Conclusion: a firm can save \$4.5 per unit on taxes by setting a high transfer price.

Transfer Pricing

Transfer Pricing via Tax Haven

Transfer pricing is a technique used by multinational corporations to shift profits out of the countries where they genuinely do business into a *tax haven* where they have to pay very little or no tax on income.

Example 63:

Assume it costs a multinational corporation \$100 to produce a crate of bananas in Ecuador. It then sells that crate to an affiliate located in a tax haven for \$100, leaving no profits in Ecuador.

The tax haven affiliate immediately sells that crate on to an affiliate in Poland for \$300, leaving \$200 profit in the tax haven.

That Polish affiliate sells the crate at the genuine market price of \$300 to a supermarket, leaving no profits in Poland. As a result, the multinational pays no tax in Ecuador and no tax in Poland, and the \$200 in profits shifted to the tax haven do not get taxed.

Tax Havens

Tax Haven

A **tax haven** (a.k.a., offshore financial center) is a tax jurisdiction with very low "effective" rates of taxation for foreign individuals and businesses.

Tax havens do not require businesses to operate out of their country or the individuals to reside in their country to receive tax benefits.

Criteria for Tax Havens

- No, or nominal, tax on relevant income
- Lack of effective exchange of information
- Lack of transparency
- No substantial activities

Top Tax Havens in the World

Bermuda	Declared the world's worst (or best if you're looking to avoid taxation) corporate tax haven in 2016 by Oxfam with a zero percent tax rate and no personal income tax.
Netherlands	Most popular tax haven among the world's Fortune 500.
Luxemburg	It gives benefits such as tax incentives and zero percent withholding taxes.
Cayman Islands	No personal income taxes, no capital gains taxes, no payroll taxes, no corporate taxes, and the country does not withhold taxes on foreign entities.
Singapore	Charges reasonable nominal corporate taxes. Reasonable corporate tax rates are provided through tax incentives, lack of withholding taxes, and what appears to be substantial profit shifting
The Channel Islands	No capital gains taxes, no council taxes, and no value-added taxes.
Isle of Man	No capital gains tax, turnover tax, or capital transfer tax. It also imposes a low income tax, with the highest rates at 20%.
Mauritius	Low corporate tax rate and no withholding tax.
Switzerland	Full or partial tax exemptions, depending on the bank used.
Ireland	Referred to as a tax haven despite officials asserting that it is not.

Source: corporatefinanceinstitute.com