

MOT1421
Economic Foundations
Week One

INTRODUCTION &
THEORIES OF CONSUMER DEMAND

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LECTURE NOTE MOT1421-W-1

The Lecture Note MOT1421-W-1 is part of the exam materials.

Supporting videos:

- <https://www.youtube.com/watch?v=LwLh6ax0zTE&list=PL8oXFCVYIVwR8RLfT6piBC2G8GP9yWAxL> explains the market-demand curve; and
- <https://www.youtube.com/watch?v=ewPNuglqCUM&list=PL8oXFCVYIVwR8RLfT6piBC2G8GP9yWAxL&index=2> explains the market-supply curve.
- <https://www.youtube.com/watch?v=iOmDo5jLFw8> an explanation of indifference curves.
- <https://www.youtube.com/watch?v=MXlgp-P-FeY> on consumer optimisation.

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Introduction & Theories of Consumer Demand

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Economics: a short introduction

Co-ordination through the market: production and distribution

What may be called the ***economic problem*** is the ***coordination*** of individual, decentralised activities associated with material provisioning into a coherent social whole — coherent in the sense of providing a social order with the goods or services it requires to ensure its own continuance and to fulfil its perceived historic mission. The individual activities range from providing subsistence foods in hunting and gathering societies, agricultural production, to administrative or financial tasks in modern industrial systems.

An ***economic system*** is defined by the system of social coordination chosen to ensure the material provisioning. History has produced but three such kinds of economic systems: (a) those based on the principle of ***tradition***, (b) those centrally planned and organized according to ***command and hierarchy***, and (c) the rather small number, historically speaking, in which the central organizing form and co-ordination mechanism is the ***market mechanism*** and competition.

Social coordination can in turn be analysed as two distinct tasks:

1. The ***production of the goods and services*** needed by the social order, a task that requires the ***mobilization*** of society's resources, including its most valuable, human effort, and the ***allocation*** of these resources across activities.
2. The appropriate ***distribution of the product***. This distribution must provide for the subsistence of the members of society and also must accord with the prevailing values (concerning distributive justice) of different social orders, all of which favour some recipients of income over others.

All economic systems rely on social rewards or penalties of one kind or another. Tradition-based societies depend largely on communal expressions of approval or disapproval. Command systems (such as used in formerly centrally-planned

economies) utilize the open or veiled power of physical coercion or punishment, or the bestowal of wealth or prerogatives. The third mode—the market economy—also brings **pressures and incentives** to bear, but the stimuli of gain and loss are not usually within the control of any one person or group of persons. Instead, the incentives and pressures emerge from the “workings” of the system itself, and, on closer inspection, those workings turn out to be nothing other than the efforts of individuals to gain financial rewards by supplying the things that others are willing to pay for.

Micro- versus macro-economics

The working of a market economy can be studied [at the micro-economic level and at the macro-economic level](#).

The unit of analysis of micro-economics is the individual decision-maker, who operates in one specific market. For example, micro-economics analyses the decision-making by individual consumers (who are assumed to aim for maximum utility derived from what they consume); by individual firms (which are assumed to aim for maximum profits); or by an individual investor (who wants to obtain the maximum returns on her wealth). The key assumption underlying micro-economics is the **ceteris paribus** assumption:

[Ceteris paribus](#) means: keeping all other factors constant/unchanged. In micro-economics, when we zoom in on one particular market of interest, we assume that (a) all other markets and in the economy at large will remain unperturbed by what happens in ‘our’ market; and (b) income, tastes, technology of production and other prices do not change.

Microeconomists are typically concerned with the following research questions:

- What is the impact of government regulation of a particular market on consumers and producers?
- What is the nature of competition in a market? (We shall see in this course that this can vary from perfect competition to oligopoly to monopoly.)
- What happens to employment in a particular industry/market when there is technological progress?
- Does the market process lead to external effects?

The unit of analysis of macro-economics is the aggregate economic system: the national economy (which is the aggregation of all individual markets). Macroeconomics analyses the causal relationships between aggregate demand, production and income; between income and private consumption; between profits and business investment; and between demand, production and aggregate employment. Typical research questions addressed in macroeconomic analyses include:

- What are the causes of economic downswings (recessions) and upswings (booms)?
- What are the impacts on the macro-economy of fiscal and monetary policies?
- Which factors are driving inflation?
- Which variables matter for unemployment? And how does higher unemployment affect aggregate demand?

In the course MOT1421 we will study the basics of both microeconomics and macroeconomics.

**During the first four weeks, we will study microeconomics;
and during the final four weeks, we will go deep into macroeconomics.**

We will now turn to MICRO-ECONOMICS – which will keep us busy for the next four weeks.

Micro-Economics

The market mechanism and the 'invisible hand'

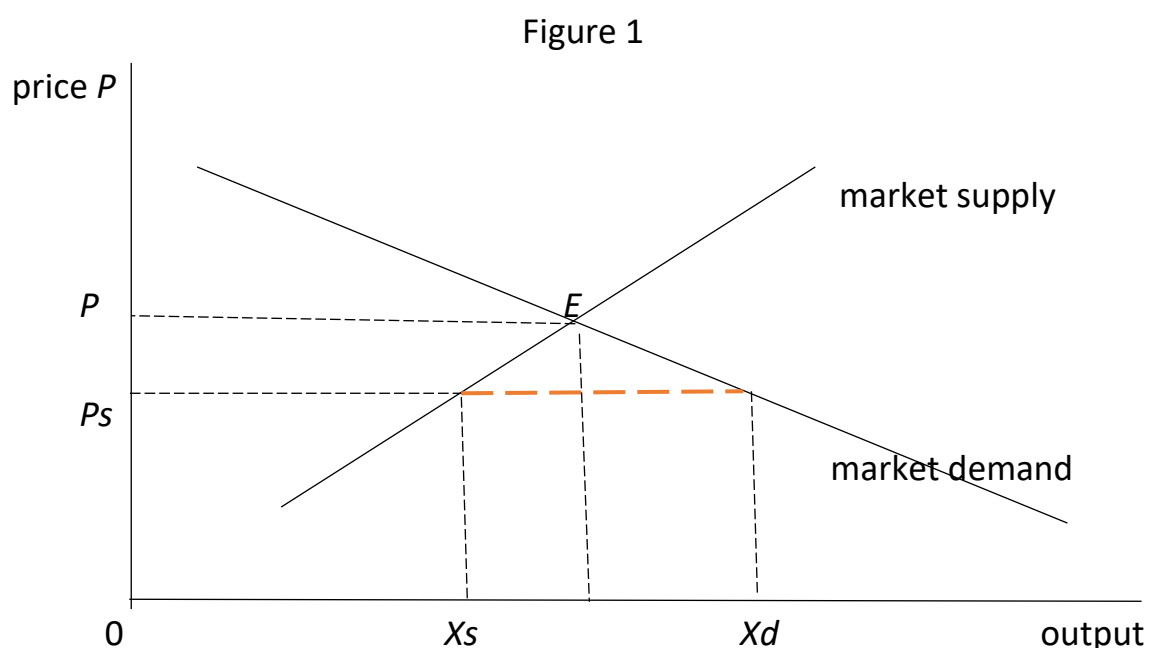
The market mechanism is a device for organizing the production of goods & services and the distribution of income of society. Markets work through **rationing** (this is one of the most important ideas in microeconomics): the price mechanism is a way of determining who will participate in economic activity as a seller or buyer, and who will not. Let us see how this rationing works in the market for mobile phones (see Figure A).

The supply of mobile phones is assumed to be a positive function of the price of mobile phones. A higher price will motivate suppliers to produce more mobile phones. The market-supply curve reflects the willingness and ability of mobile-phone producers to supply goods to the market: a relatively high price P will induce a relative high supply of mobile phones.

The demand for mobile phones is assumed to be a negative function of the price of a mobile phone. A higher price will motivate users/consumers to reduce their demand. The market-demand curve reflects user/consumer preferences and the willingness of users/consumers to purchase mobile phones at a given price: a relatively high P will induce a relatively low demand for such phones.

The price mechanism brings about equilibrium or a balance between demand and supply. Let us see how this works in Figure 1. We start by assuming that producers have decided to produce X_s units of mobile phones, which they want to sell. Based on the market-supply curve, we can see that these producers are willing to sell X_s at the price P_s (as this price would cover their marginal production costs). However, if the mobile-phone producers announce that they are willing to sell phones at the price P_s , users/consumers will react by demanding X_d mobile phones (based on the demand curve). The positive difference between X_d and X_s is an (unmet) excess demand. Producers notice the excess demand and are quick to understand that in these circumstances they can get a higher price – hence, producers will charge a higher P .

It should be clear from Figure 1 that the higher P raises market supply (we move up along the market-supply curve in the direction of point E) and reduce market demand (we move up the market-demand curve in the direction of point E). This price-adjustment stops once we reach the equilibrium price P , at which $X_d = X_s$. This is the price mechanism, also known as the '[invisible hand](#)' (see **box 1**), which clears the market for mobile phones.

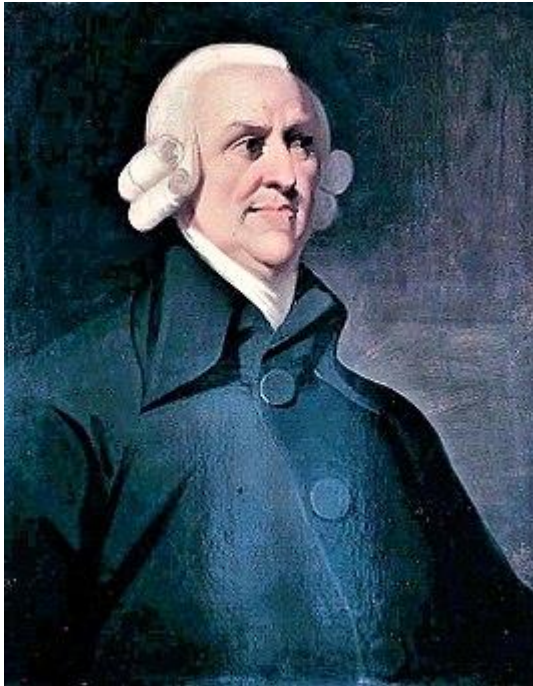


So where is the rationing? All users/consumers who would be willing to buy a mobile phone at a price below the equilibrium price P are rationed – they will not purchase the mobile phone, because it is too expensive. All producers willing and able to supply at a price above P are also rationed – the market is not supporting their activity and they have to stop production.

In economics the dominant framework for exploring the structure of market economies is provided by the neoclassical school of thought. In the remainder of the Lecture Note, we will consider (1) the neoclassical theory of consumer demand; and (2) three alternative theories of consumer behaviour, namely the

theories of consumer dependency proposed by Thorstein Veblen, Pierre Bourdieu and John Kenneth Galbraith.

Box 1



Adam Smith,
(1723-1790),
British political economist
and moral philosopher

Adam Smith used the metaphor or the invisible hand to describe the unintended social benefits of an individual's self-interested actions.

According to Paul Samuelson (1948) , “Even Adam Smith, the canny Scot whose monumental book, *"The Wealth of Nations"* (1776) , represents the beginning of modern economics or political economy - even he was so thrilled by the recognition of an order in the economic system that he proclaimed the mystical principle of the "invisible hand": that each individual in pursuing his own selfish good was led, as if by an invisible hand, to achieve the best good of all, so that any interference with free competition by government was almost certain to be injurious. This unguarded conclusion has done almost as much harm as good in the past century and a half, especially since too often it is all that some of our leading citizens remember, 30 years later, of their college course in economics.”

The neoclassical theory of consumer demand

The neoclassical theory of consumer demand is covered in Chapter 2 on “CONSUMER SOVEREIGNTY” (pp. 27-58) in S. Himmelweit, R. Simonetti and A. Trigg, *Microeconomics. Neoclassical and Institutional Perspectives on Economic Behaviour*. Here we review Chapter 2 by having a closer look at the basic neoclassical model of consumer demand for durable and non-durable consumer goods. The purpose of the neoclassical theory of demand is to determine the various factors that affect consumer demand. Demand is a multivariate relationship, that is, demand is determined by many factors simultaneously. The most important determinants of consumer demand for a particular product are:

- its own price
- the income (or budget) of the consumers
- consumers’ tastes (or consumer preferences)
- prices of other commodities
- income distribution
- the availability of credit
- government policy

The neoclassical theory of demand has concentrated on the first four of these determinants. The theory of demand is partial in its approach, because it examines the demand in one market in isolation from the conditions of demand in other markets (the ceteris-paribus assumption). Let us first consider the key assumptions which underly the neoclassical theory of demand.

1. **Methodological individualism:** the unit of analysis of the neoclassical theory of demand is the representative consumer. It is assumed that market demand is the summation of the demand of individual consumers. The individual representative consumer takes his/her decisions in isolation from the rest of the world – as a kind of Robinson Crusoe (before the arrival of Friday).
2. **Instrumental rationality:** the consumer is assumed to be instrumentally rational, which means that (given the prices of the various goods & services) he/she spends his/her available income so as to attain the highest possible satisfaction or utility from consumption.

3. **Complete knowledge/perfect information:** in order to be able to choose the best possible (utility-maximising) combination of goods & services, the representative consumer must have complete knowledge of all available commodities and services, their prices and her/his income.
4. **Utility is ordinal:** it is taken as axiomatically true that the consumer can rank her/his preferences (= order the various combinations of goods & services) according to the utility of each combination. It suffices that he/she expresses his preferences for the various bundles of commodities. Utility need not be cardinally measurable, but the consumer should be capable of comparing relative utilities derived from different combinations ('bundles') of goods & services.
5. **Consistency or transitivity of choice:** it is assumed that the representative consumer is consistent in his/her choice. Specifically, consistency means that if the consumer chooses consumption bundle A over B, she/he will not choose B over A in another period. Hence, if $A > B$, then $B \not> A$. Similarly, consumer's choices are characterised by transitivity: if bundle A is preferred to bundle B ($A > B$) and bundle B is preferred to bundle C ($B > C$), then the transitivity conditions holds if bundle A is preferred to bundle C or $A > C$.
6. **Diminishing marginal utility:** it is assumed that the utility (satisfaction) gained from consuming successive units of a commodity diminishes. When I am thirsty, the first glass of water will provide me with more additional utility than the fifth glass of water.
7. **Consumer sovereignty:** in the neoclassical theory of consumer demand the consumer is 'sovereign'. Consumer sovereignty means that exogenous consumer preferences determine the production of goods and services. This means consumers can use their spending power as 'votes' for goods. In return, producers will respond to those preferences and produce those goods. If firms produce goods for which there is no demand, they will not manage to survive. The idea of primacy of consumption over production was first pronounced by Adam Smith in 1776: "Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer." Consumers can only be 'sovereign' if their individual

preferences are exogenous and independent – which means that advertising, marketing, discounts, social (peer) pressure, nudging, policy interventions etc. do not change the fundamental preferences of consumers.

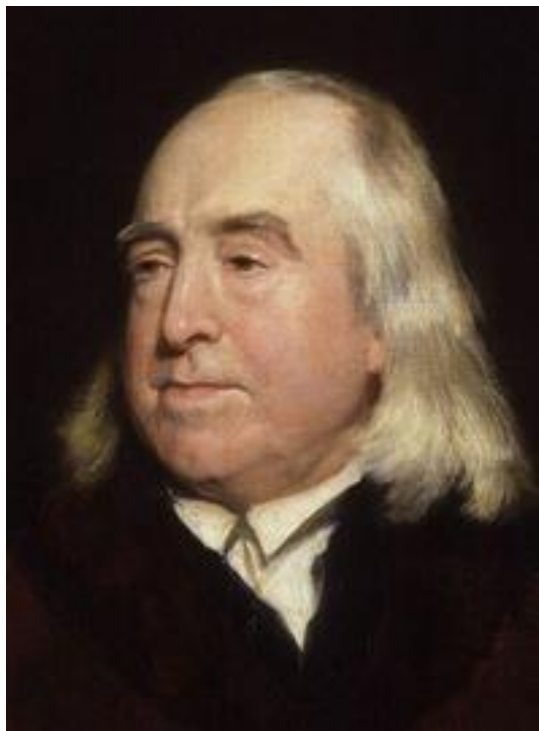
The utility function and indifference curves

Based on assumptions 3-5, the representative consumer can formulate an explicit utility function which expresses the total utility U of the consumer as a function of the quantities q of the goods & services consumed:

$$(1) \quad U = f(q_1, q_2, q_3, q_4, \dots, q_N)$$

where the subscript refers to commodity $i = 1, \dots, N$. In the neoclassical theory of demand, the utility function of eq. (1) has to satisfy the following two conditions.

Box 2



Jeremy Bentham
(1748-1832),
English philosopher, jurist, and social
reformer

Jeremy Bentham is regarded as the founder of modern utilitarianism. Bentham defined as the "fundamental axiom" of his philosophy the principle that "it is the greatest happiness of the greatest number that is the measure of right and wrong."

He advocated individual and economic freedoms, the separation of church and state, freedom of expression, equal rights for women, and the right to divorce. He called for the abolition of slavery, capital punishment and physical punishment. Bentham was an obsessive writer and reviser, but was constitutionally incapable, except on rare occasions, of bringing his work to completion and publication. On his death in 1832, Bentham left instructions for his body to be permanently preserved as an "auto-icon" (or self-image). This was done and the auto-icon is now on public display in the entrance of the Student Centre at University College London (UCL).

First, the partial (first) derivative of total utility U with respect to the consumption of commodity j has to be strictly positive:

$$(2) \quad MU_j = \frac{\partial U}{\partial q_j} > 0$$

This first derivative of U with respect to the consumption of commodity j (in eq. (2)) is called the marginal utility (MU) of good j . The **marginal utility** of a good is the extra (additional) utility which the consumer obtains by consuming one extra unit of that commodity. The assumption that $\frac{\partial U}{\partial q_j} > 0$ means, in daily language, that “**more is always better**”. Since the neoclassical theory of demand assumes that the representative consumer strives for maximum utility (see assumption 2), the consumer will always consume more if that is possible (in terms of his/her income). This then is the insatiable consumer of neoclassical demand theory, about whom [John Kenneth Galbraith \(1958\)](#) wrote the following:

“... the urgency of wants does not diminish appreciably as more of them are satisfied or, to put the matter more precisely, to the extent that this happens it is not demonstrable and not a matter of any interest to economists or for economic policy. When man has satisfied his physical needs, then psychologically grounded desires take over. These can never be satisfied or, in any case, no progress can be proved. The concept of satiation has very little standing in economics. It is neither useful nor scientific to speculate on the comparative cravings of the stomach and the mind.”

We can call eq. (2) the first postulate of the neoclassical theory of demand: more is always better.

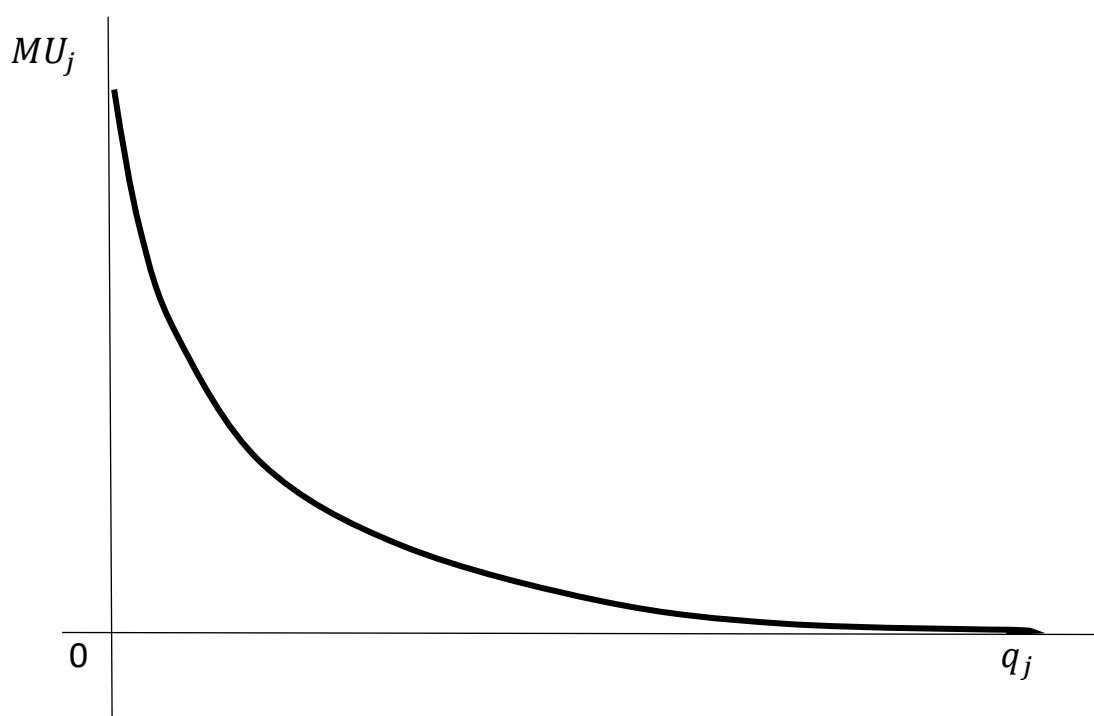
Second, the second derivative of total utility U with respect to the consumption of commodity j has to be negative:

$$(3) \quad \frac{\partial^2 U}{\partial^2 q_j} < 0$$

This condition states that the marginal utility of consuming commodity j declines, the more the consumer has already consumed of this good. This condition is known as the **Law of Diminishing Marginal Utility** and it is supposed to hold true for all goods & services. Figure 2 illustrates this “Law”. When the quantity consumed q_j is low, marginal utility MU_j is high. When the quantity consumed q_j is high, marginal utility MU_j has declined to a low level. We can call eq. (3) the second postulate of the neoclassical theory of demand: the one consumes of

good j , the lower will be the marginal utility derived from consuming one additional unit of good j .

Figure 2
Diminishing marginal utility of consuming good j



We assume that the utility function of the representative consumer (eq. (1)) is known. Using eq. (1), and fixing the level of utility at some level \bar{U} , we can derive the **indifference curve** corresponding to that level of utility \bar{U} .

An **indifference curve** is the locus of points – particular combinations of goods & services – which yield the same level of utility to the consumer, so that she/he is indifferent as to the particular combination she/he consumes.

To illustrate the concept, we will use the following utility function for only two goods:

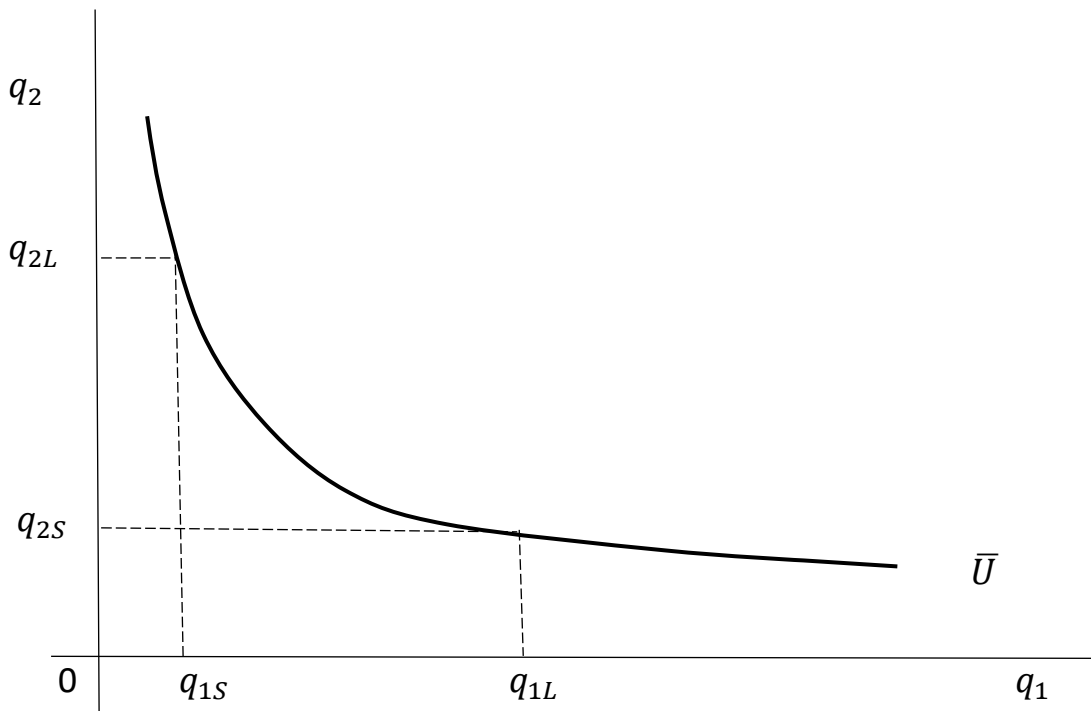
$$(4) \quad \bar{U} = f(q_1, q_2) = q_1^\alpha \times q_2^{1-\alpha}$$

Note that we have fixed the level of utility at \bar{U} . We can rewrite eq. (4) as follows:

$$(5) \quad q_2 = \bar{U}^{\frac{1}{1-\alpha}} \times q_1^{-\alpha/(1-\alpha)}$$

Eq. (5) is the expression for the indifference curve corresponding to a level of utility \bar{U} . If we assume that $\alpha = \frac{1}{2}$, eq. (5) becomes: $q_2 = \frac{\bar{U}^2}{q_1}$. This indifference curve for two goods q_1 and q_2 is shown as the convex curve in Figure 3. If the consumer chooses the consumption bundle (q_{1S}, q_{2L}) , she/he is consuming a small quantity good 1 and a large quantity of good 2; the utility derived from this particular bundle is equal to \bar{U} . The consumer might as well choose combination (q_{1L}, q_{2S}) , a large quantity of good 1 and a small quantity of good 2, which also yields a utility level of \bar{U} . In terms of utility, the consumer will be different between choosing bundle (q_{1S}, q_{2L}) or bundle (q_{1L}, q_{2S}) – or, for that matter, any other combination on this indifference curve.

Figure 3
An indifference curve



The indifference curve in Figure 3 has a negative slope, which denotes that if the quantity of one commodity consumed (say q_2) is lowered, the quantity consumed of the other commodity (q_1) must increase, if the consumer is to remain on the same level of utility. The negative of the slope of the indifference curve is called the **marginal rate of substitution** (MRS) of the two commodities:

$$(6) \quad MRS = -\frac{\partial q_2}{\partial q_1}$$

The **marginal rate of substitution** (MRS) of q_1 for q_2 is defined as the number of units of commodity q_2 that must be sacrificed for one extra unit of commodity q_1 , so that the consumer remains at the same level of utility \bar{U} .

The MRS (= the slope of the indifference curve) is equal to the ratio of the marginal utilities of the commodities included in the utility function. To show this, let us return to the indifference curve for two goods: $\bar{U} = f(q_1, q_2)$. The total differential of this function is: $\partial \bar{U} = 0 = \frac{\partial U}{\partial q_1} \partial q_1 + \frac{\partial U}{\partial q_2} \partial q_2 = MU_1 \partial q_1 + MU_2 \partial q_2$. This gives the following result: $\frac{\partial q_2}{\partial q_1} = -\frac{MU_{q_1}}{MU_{q_2}}$. Substituting this expression into eq. (6), we obtain:

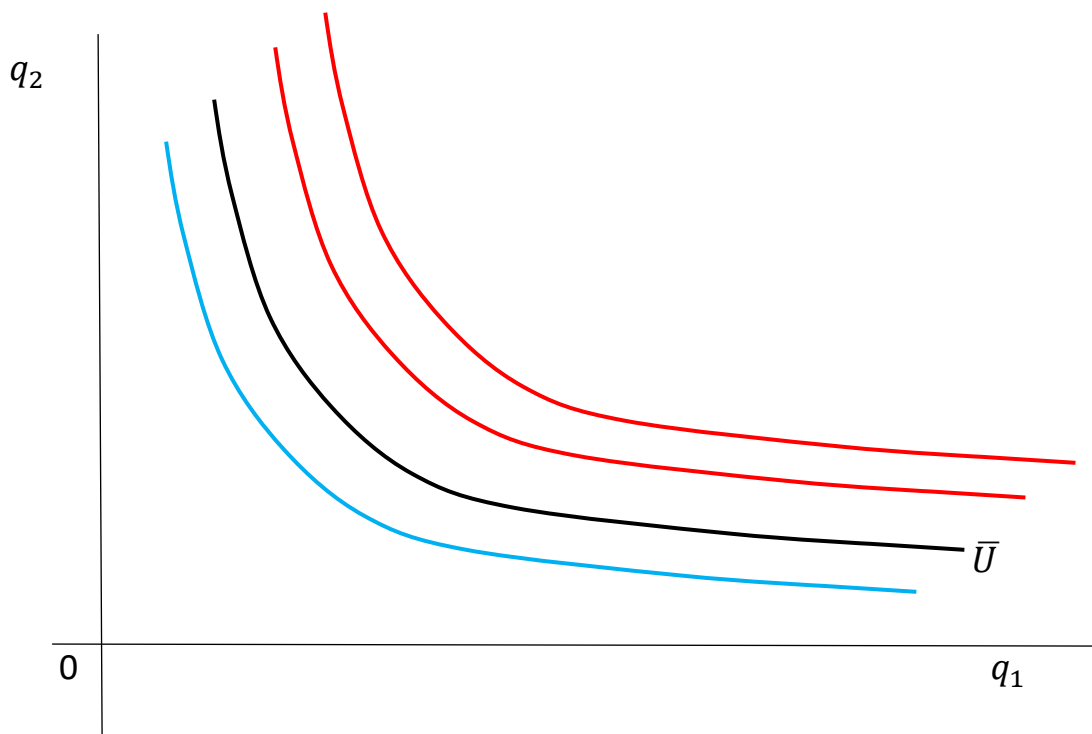
$$(7) \quad MRS = \frac{\partial q_2}{\partial q_1} = -\frac{MU_{q_1}}{MU_{q_2}}$$

The indifference curve is convex to the origin. As a result, the slope of the indifference curve (= the MRS) declines (in absolute terms) as we move along the curve from the left downwards to the right: the MRS declines. This shows that the number of units of good q_2 the consumer is willing to give up in order to obtain one extra unit of q_1 decreases as the quantity consumed of q_2 decreases. It becomes increasingly difficult to substitute q_1 for q_2 as we move along the indifference curve.

We can, of course, draw another indifference curve for a (say) higher level of utility. This is shown in Figure 4, where the combinations of goods & services situated on the red indifference curves yield a higher level of utility than \bar{U} . Combinations of goods & services on the lower (blue) indifference curve generate a lower level of utility than \bar{U} . We can draw as many (parallel)

indifference-curves as we want. The set of indifference-curves is called an indifference map. Indifference curves do not intersect. If they did, the point of intersection would imply that the same combination of q_1 and q_2 would yield two different levels of utility, which is a possibility ruled out by assumption.

Figure 4
An indifference map



The budget line

Since the neoclassical theory of demand assumes that the representative consumer aims for maximum utility, it follows that this consumer will try to reach the highest possible indifference curve. After all, more is always better. Utility maximisation makes sense, however, only if the consumer faces a restriction on his consumption possibilities. That restriction is the income or budget restriction: the consumer has a given income with – together with the prices of the goods – sets limits to her/his maximising behaviour.

The income constraint facing the representative consumer can be written as follows, in the case of two commodities:

$$(8) \quad Y = P_1 \times q_1 + P_2 \times q_2$$

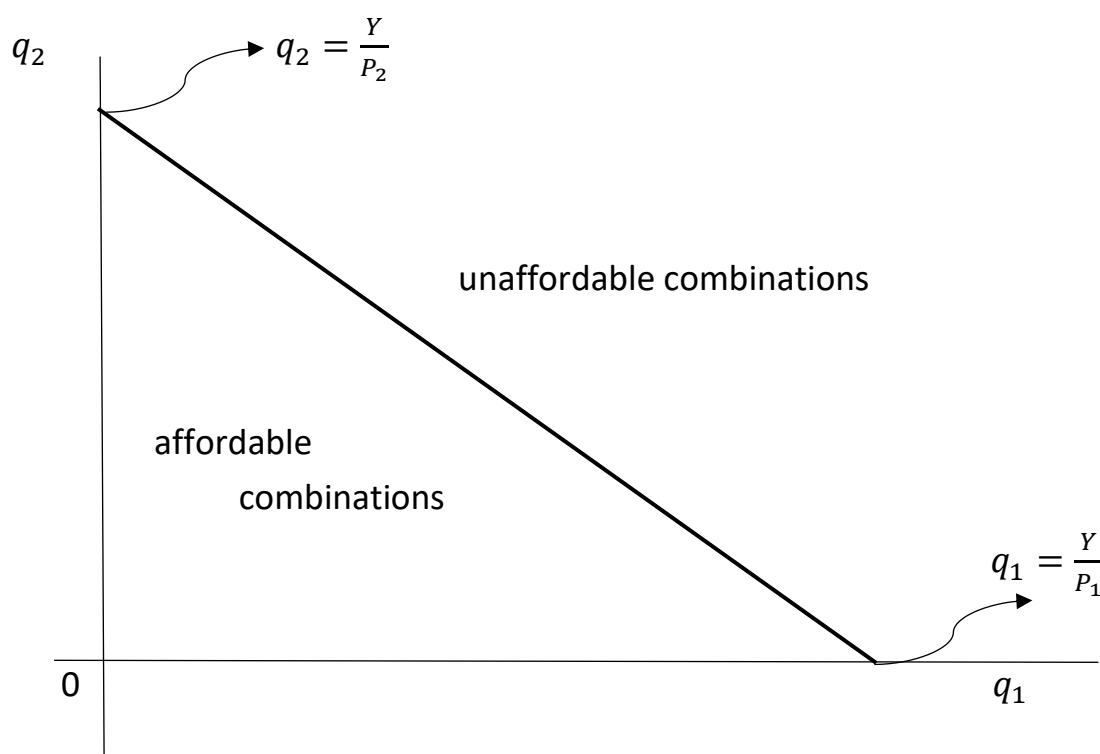
where Y = the income of the consumer; and P_1 = the price of commodity 1; and P_2 = the price of commodity 2. Y , P_1 and P_2 are assumed to be exogenous (which means these variables are determined outside the model; the consumer accepts them as 'givens'). We present the income constraint graphically by the budget line in Figure 5, which is given by the following expression, derived from eq. (8);

$$(9) \quad q_2 = \frac{Y}{P_2} - \frac{P_1}{P_2} \times q_1$$

All combinations of q_1 and q_2 which lie below the budget line and on the budget line are affordable; all combinations above the budget line can only be bought by Jeff Bezos.

Figure 5

The budget line of the representative consumer



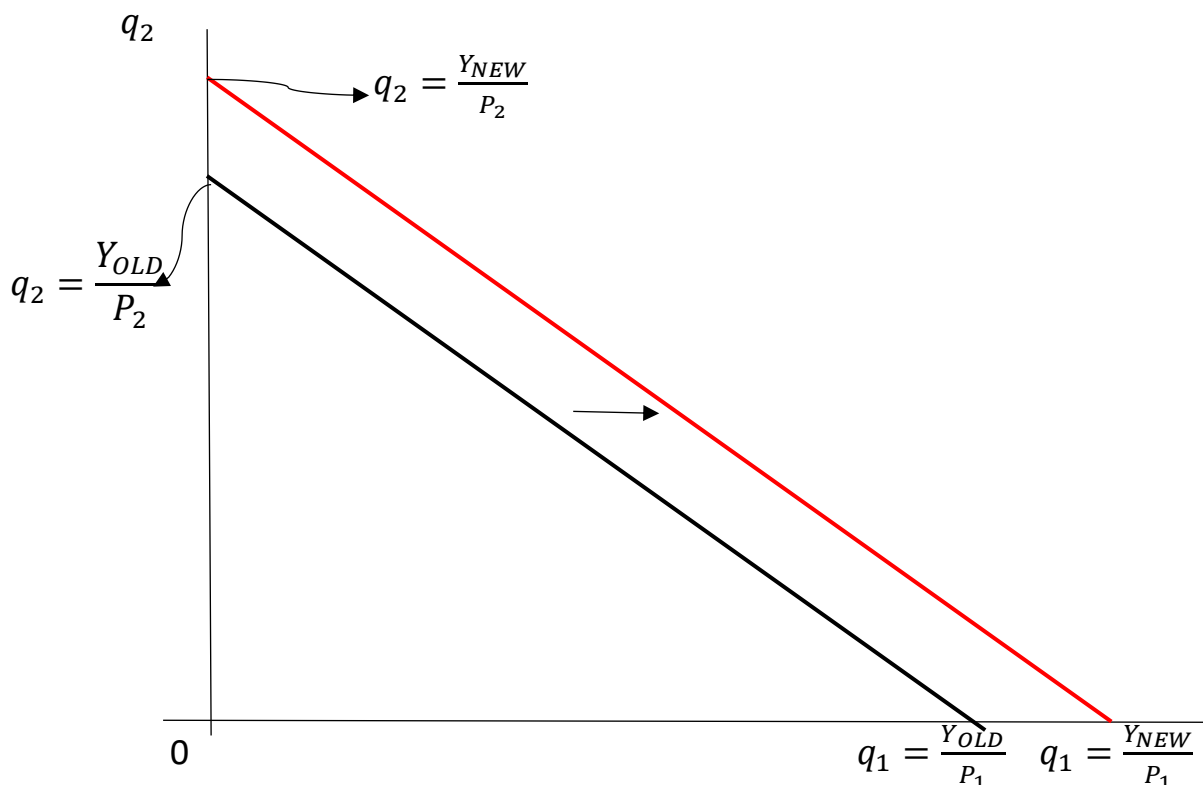
Before proceeding, let us note that the representative consumer, whose only aim in life is to obtain maximum utility, will always spend his/her complete income on buying goods and services. The reasons are that (a) income itself does

not yield utility; and (b) more utility is always better (the 1st postulate of the neoclassical theory of demand); hence, income will be spent up to the last euro-cent. This means, the consumer will always choose a combination of q_1 and q_2 which lies on the budget line (and not below the budget line).

Let us finally do two thought-experiments with the budget line, which will be useful to our subsequent analysis. In the first experiment, we assume that the consumer gets a pay-rise and her/his income is higher than before. What happens to the budget line in Figure 5? The answer is given in Figure 6: the budget line shifts to the right (and up). The red budget line is associated with Y_{NEW} which is higher than Y_{OLD} . It will be clear that the set of affordable consumption bundles has expanded.

Figure 6

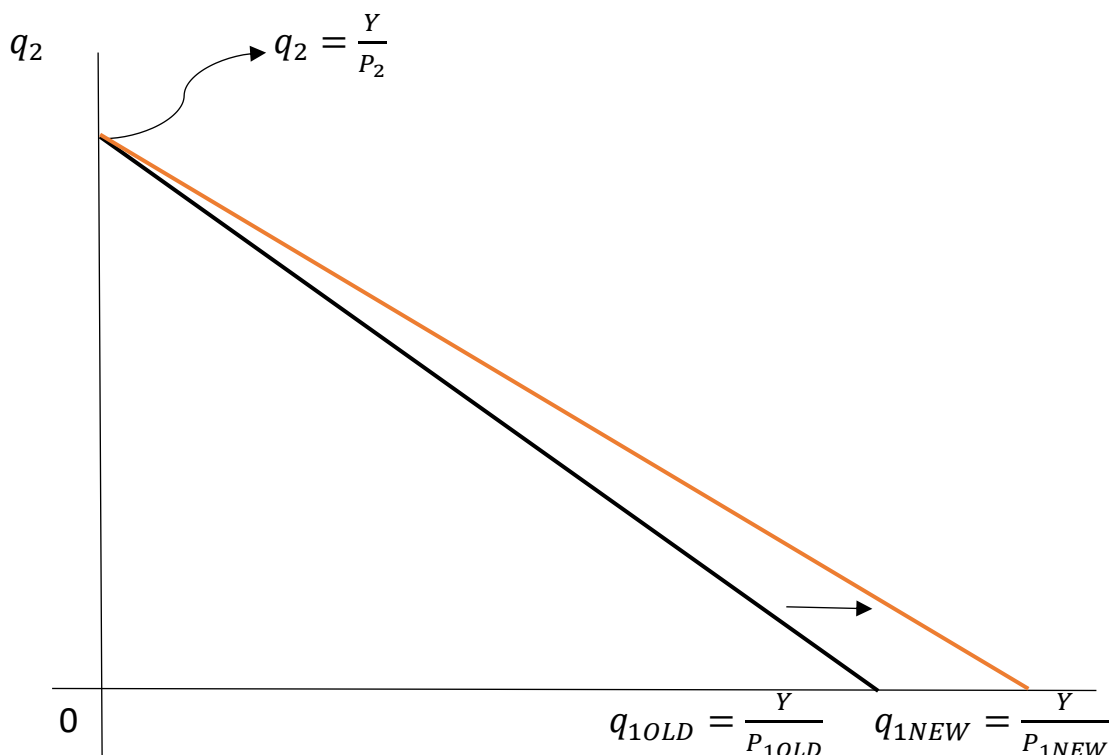
The budget line of the representative consumer:
A rise in income shift the budget line



In the second thought-experiment, we assume that the price of one of the two goods changes. Specifically, we suppose that P_1 declines, while P_2 remains unchanged. What happens to the budget line in Figure 5? The decline in P_1 leads to two changes in the graph. First, the negative slope $-\frac{P_1}{P_2}$ of the budget line in eq. (9) declines (in absolute terms), as P_1 declines. The new (red) budget line in Figure 7 declines less steeply than the original budget line. Second, the point of intersection of the budget line with the q_1 -axis shifts to the right: if the consumer only consumes q_1 (and nothing of q_2), he/she can buy more units of q_1 than before the price decline. Again, the set of affordable consumption bundles has expanded.

We are all set now to turn to the problem of utility maximisation by the representative consumer.

Figure 7
The budget line of the representative consumer:
A decline in P_1 .



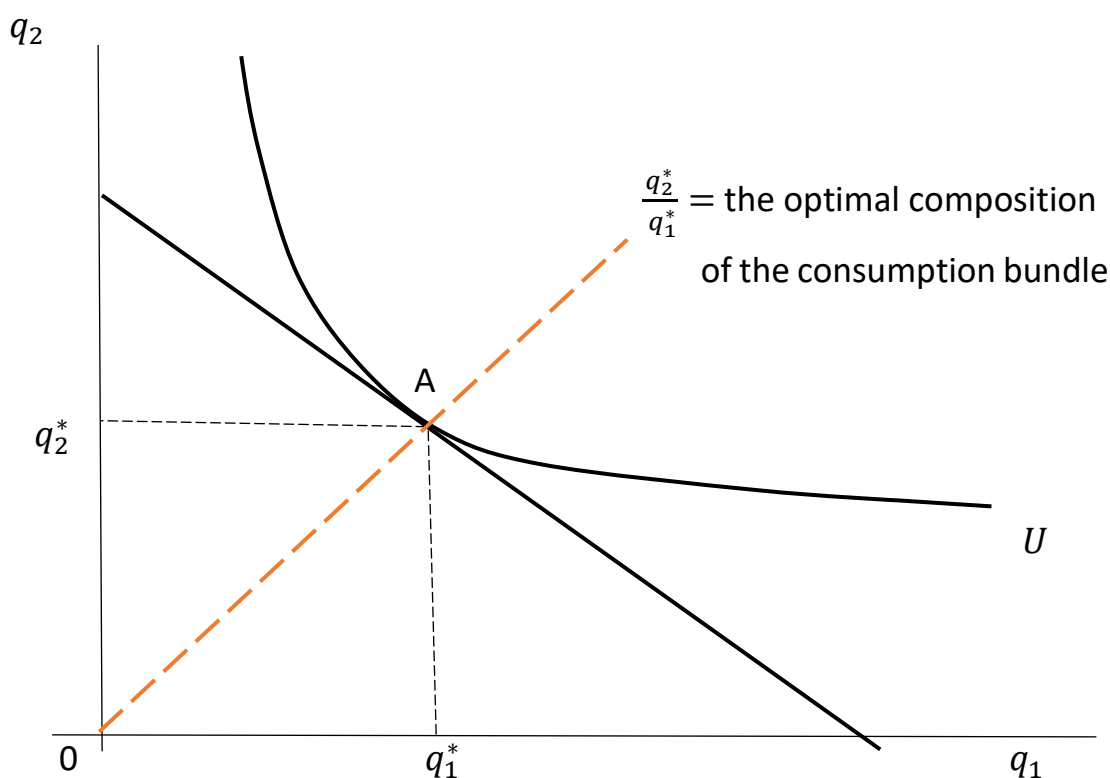
Utility maximisation by the representative consumer

Given the indifference map of the consumer (Figure 4) and her/his budget line (Figure 5), the optimal (utility-maximising) outcome is defined by the point of tangency of the budget line with the highest possible indifference curve – which is point A in Figure 8. At the point of tangency, the slope of the budget line $-\frac{P_1}{P_2}$ is equal to the slope of the indifference curve $MRS = \frac{\partial q_2}{\partial q_1} = -\frac{MU_{q_1}}{MU_{q_2}}$. This gives the following condition for maximum utility:

$$(10) \quad \frac{MU_{q_1}}{MU_{q_2}} = \frac{P_1}{P_2}$$

This is a necessary but not sufficient condition for maximum utility. The second condition is that the indifference curves be convex to the origin. This condition is fulfilled by the axiom of diminishing MRS. Hence, we conclude that the consumer maximises her/his utility by buying q_1^* units of good 1 and q_2^* units of good 2.

Figure 8
Utility maximisation by the representative consumer



Mathematical derivation of the optimal outcome

Assume that there are only 2 commodities q_1 and q_2 available to the consumer, with given market prices P_1 and P_2 , respectively. (This is a simplification; the neoclassical model of consumer demand can be solved for any number of goods and services.) The consumer has a given nominal income Y which is completely spent on the two commodities. The consumer aims at the maximisation of utility U . Formally, the constrained-optimisation problem facing the consumer may be stated as follows:

$$\begin{array}{ll} \text{Maximise} & U = f(q_1, q_2) \\ \text{subject to} & P_1 \times q_1 + P_2 \times q_2 - Y = 0 \end{array}$$

Using the Lagrangian method for the solution of this constrained maximum, we next define the Lagrangian function (which is to be optimised):

$$\mathcal{L} = U - \lambda (P_1 \times q_1 + P_2 \times q_2 - Y)$$

The first-order condition for a maximum is that its partial derivatives be equal to zero. Differentiating \mathcal{L} with respect to q_1 and q_2 and λ , we get:

$$\frac{\partial \mathcal{L}}{\partial q_1} = \frac{\partial U}{\partial q_1} - \lambda P_1 = 0 \rightarrow MU_{q1} = \lambda P_1$$

$$\frac{\partial \mathcal{L}}{\partial q_2} = \frac{\partial U}{\partial q_2} - \lambda P_2 = 0 \rightarrow MU_{q2} = \lambda P_2$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = P_1 \times q_1 + P_2 \times q_2 - Y \rightarrow P_1 \times q_1 + P_2 \times q_2 = Y$$

If we divide $MU_{q1} = \lambda P_1$ by $MU_{q2} = \lambda P_2$, we obtain eq. (10) which states that $\frac{MU_{q1}}{MU_{q2}} = \frac{P_1}{P_2}$. Alternatively, we can solve for λ which gives:

$$\lambda = \frac{MU_{q1}}{P_1} = \frac{MU_2}{P_2}$$

This condition tells us that in the optimal point A (in Figure 8), the marginal utility of good 1 (as a ratio of P_1) is equal to the marginal utility of good 2 (as a ratio of P_2). In a sense, the consumer reaches maximum utility by consuming so much of each good that the marginal utilities obtained from consuming those goods are equal per euro spent.

Box 3: A numerical illustration of utility maximisation

Suppose the representative consumer maximises the following utility function:
 $U = f(q_1, q_2) = q_1 \times q_2$. His/her budget restriction is: $100 = 5 \times q_1 + 10 \times q_2$. This means that $Y = 100$; $P_1 = 5$; and $P_2 = 10$. Note that

$$MU_{q_1} = \frac{\partial U}{\partial q_1} = q_2 \text{ and that } MU_{q_2} = \frac{\partial U}{\partial q_2} = q_1$$

The Lagrangian then becomes:

$$\mathcal{L} = U - \lambda (5 \times q_1 + 10 \times q_2 - 100).$$

Differentiating \mathcal{L} with respect to q_1 and q_2 and λ , we get:

$$\frac{\partial \mathcal{L}}{\partial q_1} = q_2 - \lambda \times 5 = 0 \rightarrow MU_{q_1} = q_2 = \lambda \times 5$$

$$\frac{\partial \mathcal{L}}{\partial q_2} = q_1 - \lambda \times 10 = 0 \rightarrow MU_{q_2} = q_1 = \lambda \times 10$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = 5 \times q_1 + 10 \times q_2 - 100 \rightarrow 5 \times q_1 + 10 \times q_2 = 100$$

If we divide $MU_{q_1} = q_2 = \lambda \times 5$ by $MU_{q_2} = q_1 = \lambda \times 10$, we obtain:

$$\frac{MU_{q_1}}{MU_{q_2}} = \frac{q_2}{q_1} = \frac{5}{10} \text{ which gives as a result: } q_2 = \frac{1}{2} q_1$$

Substitution of $q_2 = \frac{1}{2} q_1$ into the budget restriction $5 \times q_1 + 10 \times q_2 = 100$ yields the following solution:

$$q_1^* = 10 \text{ and } q_2^* = 5.$$

Utility is maximised at 50 ('utils'). We can finally formally derive the consumer demand function for commodity 1. We know that $\frac{MU_{q_1}}{MU_{q_2}} = \frac{q_2}{q_1} = \frac{P_2}{P_1}$, which gives:

$P_2 \times q_2 = P_1 \times q_1$. Substituting this expression into the budget restriction then gives:

$$Y = P_1 \times q_1 + P_2 \times q_2 = 2 \times P_1 \times q_1$$

or:

$$q_1 = \frac{1}{2 \times P_1} \times Y$$

which is the demand function for good 1.

The derivation of the demand function

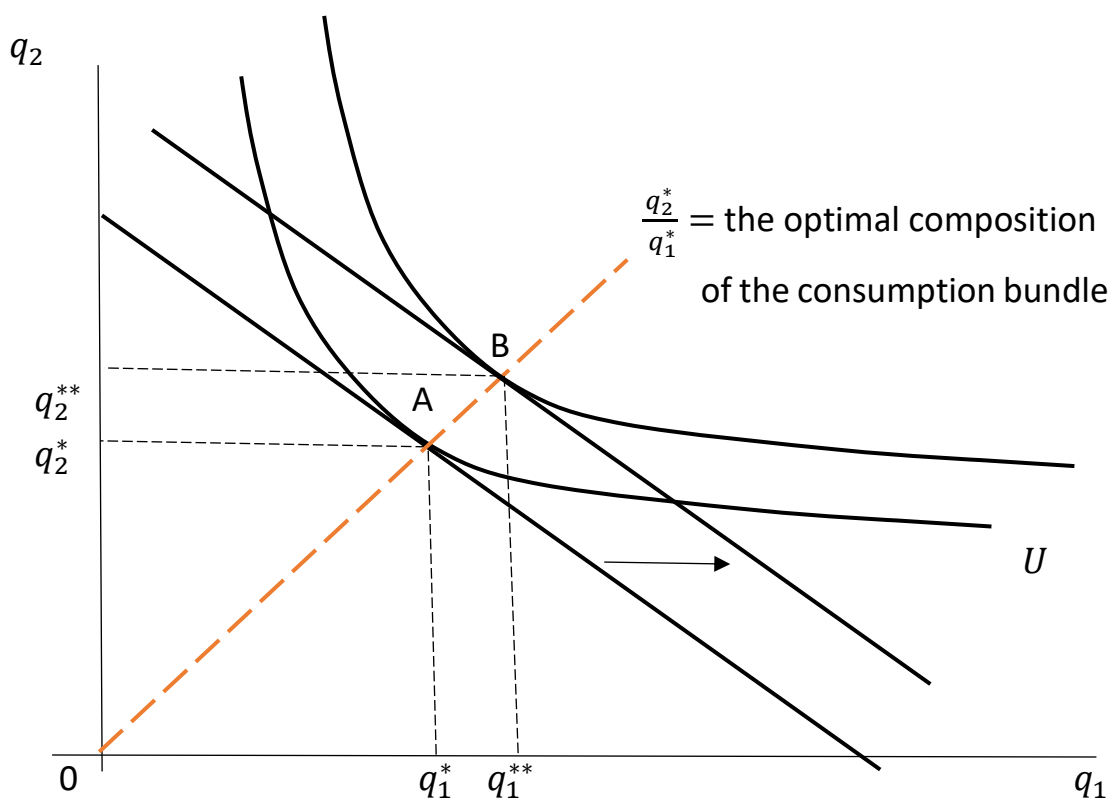
A general formulation of the demand function for a particular commodity, say q_1 , is as follows:

$$(1) q_1 = f(P_1, Y, P_2; \text{other factors})$$

The demand for q_1 depends on its own price P_1 , the income of the consumer Y , and the price of other – substitute – goods, which we restrict here to the price of commodity 2 P_2 . How can we derive this demand function using the indifference-curves approach? (see also **box 3**).

Let us first consider the impact of a change in income Y on the demand q_1 for good 1, illustrated in Figure 9. We already know from Figure 6 that an increase in Y shifts the budget line to the right. The set of affordable consumption bundles expands – and the consumer can reach a higher indifference curve. The utility maximising point changes from A to B in Figure 9.

Figure 9
The effects of an increase in income



We can see that the utility-maximising level of consumption of good 1 is equal to $q_1^{**} > q_1^*$. Hence, consumer demand for good 1 increases as income rises. This means in terms of eq. (11) that $\frac{\partial q_1}{\partial Y} > 0$. Higher income leads – in this case – to higher demand. Commodity 1 can therefore be classified as a **normal good** (as we shall below). Note further that the optimal composition of the consumption bundle $\frac{q_2^*}{q_1^*}$ does not change and that, as a result, the consumer is stepping up consumption of both goods in the same proportion. The demand for commodity 2 also increases, in other words.

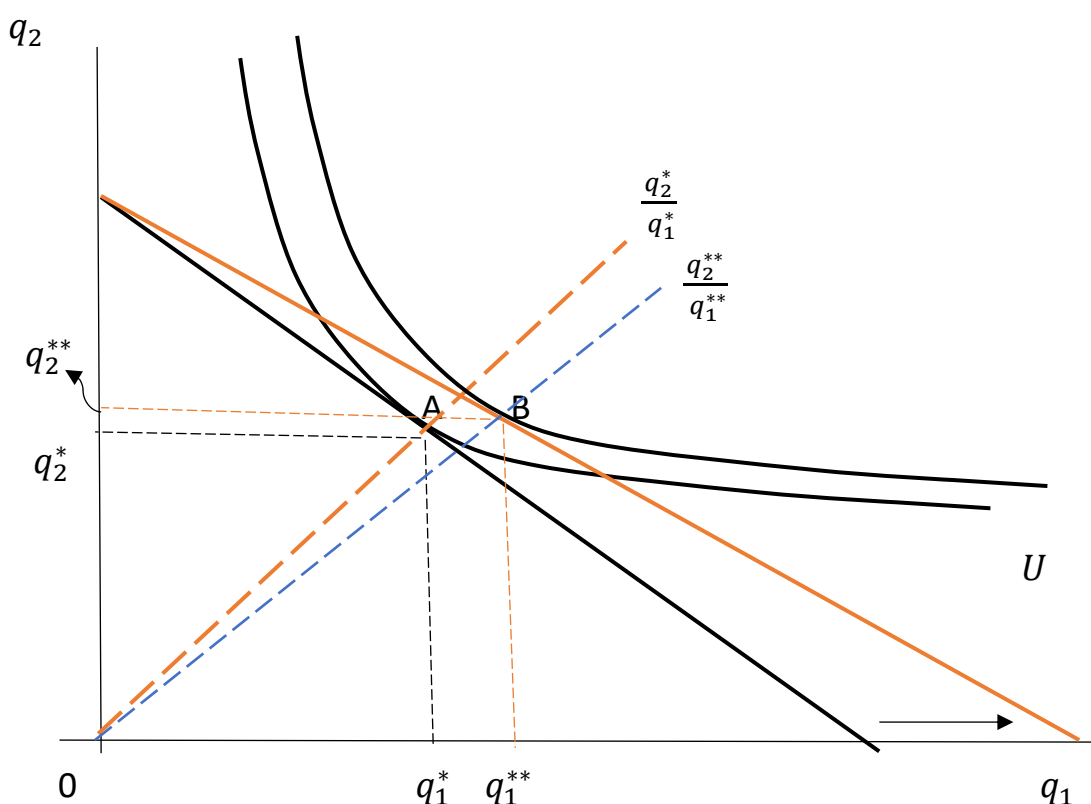
Let us next consider what happens to the demand for good 1, q_1 , when its price declines. This is illustrated in Figure 10. We already know from Figure 7 that the budget line will shift to the right on the horizontal q_1 -axis, while the point of intersection with the vertical q_2 -axis remains unchanged. The number of affordable consumption opportunities increase, but the more so, the more the consumer demand q_1 . The consumer can move up to a higher indifference curve – and the utility maximising point changes from point A to point B.

Three insights follow from Figure 10. The **first insight** is that the lower price P_1 raises the demand for good 1; therefore, in terms of eq. (11) that $\frac{\partial q_1}{\partial P_1} < 0$. The impact of a higher (lower) price on consumer demand is negative (positive). This is known as ‘the law of demand’: usually (but not always), the quantity bought increases as the price falls.

The **second insight** is that the lower price P_1 increases the demand for commodity 2 as well. The utility-maximising demand for commodity 2 increases from q_2^* to q_2^{**} , because of the so-called **income effect**. What is the income effect? The income effect occurs, because commodity 1 becomes cheaper, which means that the **purchasing power** of the same nominal income Y increases. However, the demand for q_2 increases less than the demand for q_1 , and accordingly the optimal composition of the consumption bundle $\frac{q_2^*}{q_1^*}$ changes in favour of commodity 1.

The third insight is that $\frac{\partial q_2}{\partial P_1} < 0$. This is called a cross-price effect: the lower price P_1 increases the demand for commodity 2, which means the two goods are not (close) substitutes, but **complementary goods**.

Figure 10
The effects of a decline in the price of good 1



Consider the following example. Your income is €17.50 and you spend it, buying five *croissants* (€2 each) and three *Pain a l'Ail* (€2.50 each). To attract new customers, your bakery shop temporarily reduces the price of a croissant to €1 each. This means that all of a sudden you are left with €5 unspent cash. You can decide to buy five extra *croissants*, or two extra *Pain a l'Ail*, or some combination of the two. This is the income effect.



In the neoclassical theory of demand, the **total price effect** can be split into two separate effects:

- a **substitution effect**, which is the increase in the quantity bought as the price falls, after ‘adjusting’ income so as to keep the real purchasing power of the consumer the same as before; this is done by ‘forcing’ the consumer to remain on the original indifference curve.
- an **income effect**, which is the increase in the quantity bought as the price falls, due to the fact that the consumer has a higher purchasing power; see the example featuring *croissants* and *Pain a l’Aile* above.

In Figure 10, the total price effect is an increase from q_1^* to q_1^{**} . This shows that good 1 is a normal good (more on this below). How can one decompose this total price effect into a substitution effect and an income effect? The answer is given in Figure 11. The figure is obviously complicated. Here is a [link to a useful video explanation](#) of how Figure 11 is constructed and how it should be read.

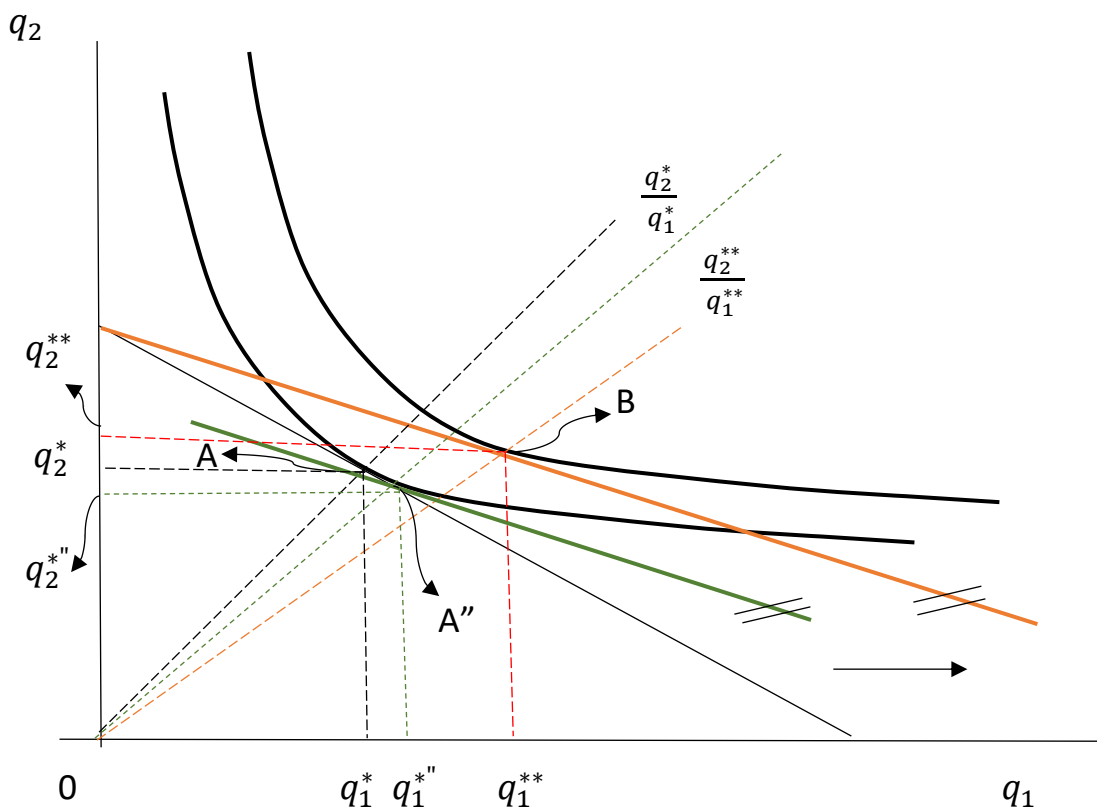
In order to decompose the total price effect into a substitution effect and an income effect, we first identify the substitution effect and next, derive the income effect as the residual (= total price effect minus substitution effect). To derive the substitution effect, we must do the following:

- we ‘force’ the consumer to remain on the original indifference curve, *i.e.* to remain on the same level of utility as before the price change.
- we shift the new budget line (downwards) in parallel fashion until it becomes tangent to the initial indifference curve (this procedure is called ‘compensating variation’).

- the resulting point of tangency is point A". Point A" is to the right of point A (the original optimum).
- the movement along the original indifference curve from point A to point A" shows the **substitution effect** of the (relative) price change: the consumer buys more of good q_1 , which has become cheaper, and less of good q_2 , which has become relatively more expensive.
- point A" does not constitute a new optimum for the consumer, however; after all, the consumer has in fact a higher purchasing power and can move up to point B on the highest reachable indifference curve. The shift from point A" to point B constitutes the **income effect**.

Figure 11

The substitution effect and the income effect due to a decline in P_1



We summarize the above as follows:

- total price effect on consumer demand for good 1: $q_1^{**} - q_1^* > 0$
- which consists of a substitution effect: $q_1^{*''} - q_1^* > 0$
- and an income effect: $q_1^{**} - q_1^{*''} > 0$

and for commodity 2:

- total price effect on consumer demand for good 1: $q_2^{**} - q_2^* > 0$
- which consists of a substitution effect: $q_2^{*''} - q_2^* < 0$
- and an income effect: $q_2^{**} - q_2^{*''} > 0$

The substitution effect of a decline in P_1 on the quantity demanded q_1 of good 1 is always negative, because q_1 increases. The substitution effect of a decline in P_1 on the quantity demanded q_2 of good 2 is always positive, because q_2 decreases.

Let us return to eq. (11), the consumer demand function, and see what we have learned. Eq. (11) states that consumer demand can be described by the following functional relationship:

$$(11) \quad q_1 = f(P_1, Y, P_2; \text{other factors})$$

We have found that

- $\frac{\partial q_1}{\partial P_1} < 0$ (in Figure 10)
- $\frac{\partial q_1}{\partial Y} > 0$ (in Figure 9)
- $\frac{\partial q_2}{\partial P_1} < 0$ (in Figure 11). We could also show that $\frac{\partial q_1}{\partial P_2} < 0$.

This way, the neoclassical theory of consumer demand, centred around the instrumentally-rational utility-maximising representative consumer, can 'explain' why demand for good 1 falls when the price of good 1 rises; why demand for good 1 increases, when consumer income rises; and why the demand for good rises, when the price of good 2 declines.

Once we know the micro-economic behaviour of the representative consumer, we know how all consumers in this market decide and respond to price or income changes; after all, the representative consumer is the average consumer (in this market).

Critique of the neoclassical theory of demand

The neoclassical theory of demand has severe limitations, notably:

- The main weakness is its axiomatic assumption of the existence and the convexity of the indifference curves. The theory does not establish the existence or the shape of the indifference curves.
- It is questionable whether the consumer is able to order his/her preferences as consistently as the theory assumes. The assumption of instrumental rationality rules out habit-based behaviour and fads and fashions.
- The assumption that the preferences of consumers are exogenous, independent and purely individual is questionable. The effects of advertising and marketing, of bandwagon effects¹ and the social interdependence of preferences of consumers are simply ruled out by the theory, without justification. This critique comes back in Chapter 3 of Himmelweit, Simonetti and Trigg on “**Consumer Dependency**”. We will review Chapter 3 later in this Lecture Note.

¹ The bandwagon effect refers to a situation in which the value of a good increases as the number of buyers or users increases. “By the bandwagon effect, we refer to the extent to which the demand for a commodity is increased due to the fact that others are also consuming the same commodity. It represents the desire of people to purchase a commodity in order to get into "the swim of things"; in order to conform with the people, they wish to be associated with; in order to be fashionable or stylish; or, in order to appear to be "one of the boys." Source: H. Leibenstein (1950) “Bandwagon, Snob, and Veblen Effects in the Theory of Consumers’ Demand”, *Quarterly Journal of Economics*, pp. 183-207.

Price and income elasticities of consumer demand

The micro-economic literature on consumer demand function is large: there are thousands of empirical studies in which microeconomists try to empirically identify the main determinants of consumer demand. This rich body of literature has generated a number of stylised findings regarding consumer behaviour. These stylised findings can best be summarised in terms of (a) the income elasticity of demand; (b) the own-price elasticity of demand; and (c) the cross-price elasticity of consumer demand. We briefly summarise the main stylised findings.

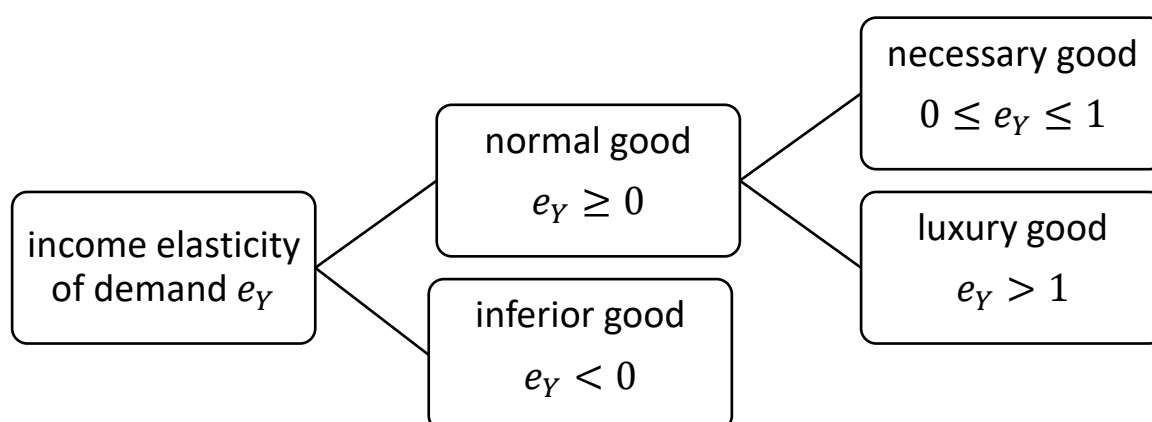
The income elasticity of consumer demand

The income elasticity of demand e_Y is defined as the proportionate change in the quantity (q) demanded of a particular good or service, resulting from a proportionate change in the income (Y) of consumers.

In symbols, we may write:

$$e_Y = \frac{\frac{\Delta q}{q}}{\frac{\Delta Y}{Y}} = \frac{\Delta q}{\Delta Y} \times \frac{Y}{q}$$

The observed [income elasticities of demand](#) are different for different classes of goods & services. We distinguish the following classes of goods & services:



The income elasticity of demand is positive for **‘normal’ goods**. There are two categories of normal goods. A normal good or service is considered a **‘necessity’** if its income elasticity of demand is less than unity. A normal good or service is called a **‘luxury’** if its income elasticity is greater than unity.

There are many examples of ‘necessary goods’ including the following:

- $e_Y \approx 0.2 - 0.4$ for household energy (electricity) demand. This means that if household incomes rise by 10%, household energy demand will rise less than proportionately by 2-4%. Conversely, in times of crisis, as household incomes fall by (say) 5%, household energy demand will decline by only 1-2%; households do not want to reduce their energy proportionately, because energy is essential, or a necessity.
- $e_Y \approx 0.4$ for the demand for health care. If incomes rise by 8%, the demand for health care will also rise – but less than proportionately, namely by only 3.2%.
- $e_Y \approx 0.2$ for the demand for (basic, essential) food. If incomes fall by 10%, households cut back on basic food consumption by only 2%.
- $e_Y \approx 0.2$ for the demand for beer or wine. Given this income elasticity of demand, beer & wine have to be classified as necessary goods, but it should be clear that the necessity derives from the addictive properties of these substances: if income declines by 5%, individuals cut back their beer & wine demand by only 1%.

Examples of ‘luxury’ goods abound as well including:

- $e_Y \approx 1.2$ for the demand for air travel. If household income rises by 10%, their demand for air travel will rise more than proportionately – by 12%. *Vice versa*, in a crisis, if household incomes decline by 5%, the demand for air travel will decline more than proportionately, namely by 6%.
- $e_Y \approx 1.2$ for the demand for new kitchens.
- $e_Y \approx 1.5$ for luxury cars or electric vehicles.

If the income elasticity of demand for a particular good or service is negative, that good or service is called an **‘inferior’** good or service. This does not mean that good or services itself is inferior in terms of quality or technology; what it

means is that once households become richer, their demand for these goods and services declines. Examples include:

- $e_Y \approx -0.3$ for second-hand goods. Poorer households rely more on buying from second-hand shops; as households grow richer, they buy more new goods and reduce their demand for second-hand goods. The second-hand
- $e_Y \approx -0.2$ for the demand for fast-food from limited-service restaurants—restaurants with counter service. This means that if household incomes rise by 10%, the demand for these food services declines by 2%.
- $e_Y \approx -0.2$ for the demand for inter-city bus services. These bus services are cheaper than travelling by train or plane, but travelling by bus takes more time. If household incomes rise by 5%, the demand for inter-city buss services declines by 1%.
- the income elasticity of demand is found to be negative for brandless products sold by large discount stores.

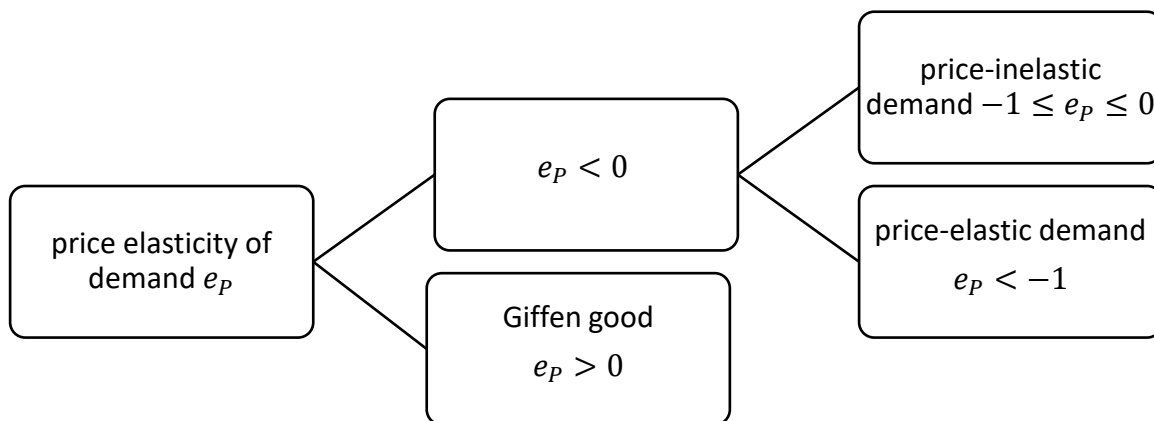
The own-price elasticity of consumer demand

The own-price elasticity of demand e_P is defined as the proportionate change in the quantity (q) demanded of a particular good or service, resulting from a proportionate change in the price (P) of that particular good or services.

In symbols, we may write:

$$e_P = \frac{\frac{\Delta q}{q}}{\frac{\Delta P}{P}} = \frac{\Delta q}{\Delta P} \times \frac{P}{q}$$

The observed [price elasticities of demand](#) are different for different classes of goods & services. We distinguish the following classes of goods & services:

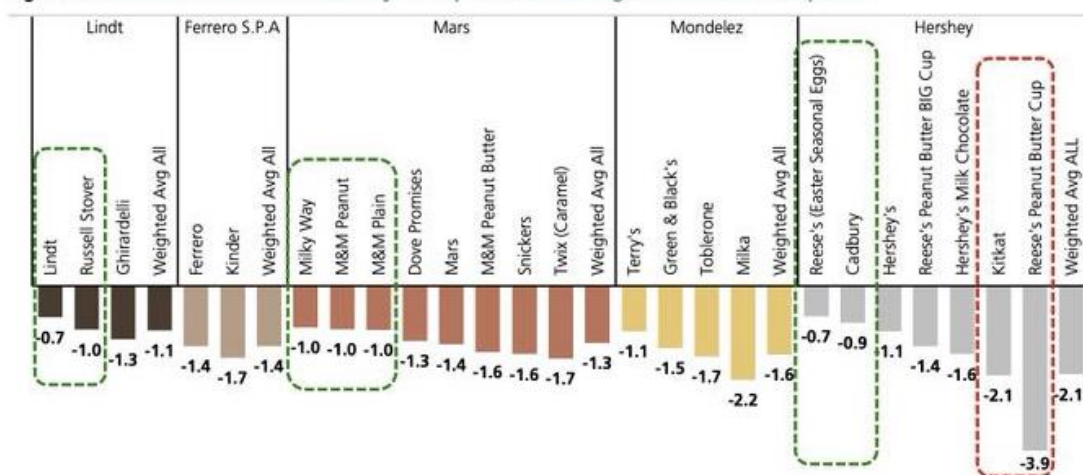


For most goods & services, the own-price elasticity of demand e_p is negative – as per ‘the law of demand’. If $e_p = 0$, the demand for that good or service is **perfectly inelastic**. If $-1 \leq e_p \leq 0$, the demand for this good or service is called **inelastic**; examples of such goods and services include:

- $e_p = -0.2/-0.4$ for the demand for health care and medical services. What this means is that if the price of health care is raised by 10%, the demand for health care will decline by 2% - 4% (or less than proportionally).
- $e_p = -0.4$ for the demand for energy (or electricity). A energy price hike by 5% will lower energy demand by 2% (less than proportionally, which is why energy demand is called ‘inelastic’).
- $e_p = -0.1$ for the demand for basic food (such as bread, cereals, rice etc.)
- $e_p \approx -0.4$ for the demand for cigarettes – which reflects the addictive properties of this product. If the price of cigarettes is raised by 10% (for instance, due to government taxes), the demand for cigarettes will decline by just 4%.
- The following figure gives the price elasticities of the demand for particular brands of chocolate – and one can see that $-1 < e_p < 0$ holds true for only a few chocolate brands such as Lindt. For the other chocolate brands, $e_p < -1$.

If $e_p < -1$, the demand for that particular good or services is called **elastic**. In general, **luxury goods are price-elastic**.

Figure 3: UBS Evidence Lab: Price Elasticity for Top SKUs for leading U.S. Chocolate Companies



Source: UBS Evidence Lab, Nielsen xAOC+C; UBS Analysis Note: only significant, directionally correct elasticities shown

Knowledge of the price elasticity of demand is an important for firms – as is explained in **box 4**.

Box 4

The price elasticity of demand e_p is of critical importance to firms. To see why this is the case, let us define firm revenue as the product of price P and quantity sold q : $R = P \times q$. Suppose this firm wants to raise revenue by increasing P by 10%. One might think that revenue will go up by 10% as well, but this is incorrect: in response to the higher P , consumers will reduce their demand and q will decline. By how q declines, depends on e_p . Let us look more closely and totally differentiate $R = P \times q \rightarrow \Delta R = \Delta P \times q + P \times \Delta q \rightarrow$ then divide both sides by $R \rightarrow \frac{\Delta R}{R} = \frac{\Delta P \times q}{P \times q} + \frac{P \times \Delta q}{P \times q} \rightarrow \hat{R} = \hat{P} + \hat{q}$, where a $\hat{}$ denotes a growth rate. The growth of revenue depends on the growth of the price and the growth of the quantity sold/demanded.

Using the price elasticity of demand, we can write $\hat{q} = e_p \times \hat{P}$. Substituting this expression into $\hat{R} = \hat{P} + \hat{q}$, we get:

$$\hat{R} = \hat{P} + \hat{q} = \hat{P} + e_p \times \hat{P} = (1 + e_p) \times \hat{P}$$

If demand is price-elastic and $e_p < -1$, firm revenue will decline if the price is raised by 10%. However, if demand is relatively price-inelastic $-1 < e_p < 0$, firm revenue increases if the price is raised by 10%. If $e_p = -1$, firm revenue remains unaffected, if the price is increased by 10%.

It is also possible that the own-price elasticity of demand $e_p > 0$. Those goods for which this holds true, are called **Giffen goods** (see **box 5**). The ‘law of demand’ does not hold for Giffen goods: an increase in the price for a Giffen good leads to an increase in the demand for this good. How can this occur?

Box 5



Sir Robert Giffen
(1837-1910),
Scottish statistician and economist

Robert Giffen was a Scottish economist and statistician who also had a great reputation in the fields of finance and taxation. He also participated in the editing process in numerous publications, such as *The Economist* and *The Times*. However, he is mostly known for giving name to the concept Giffen goods. Alfred Marshall wrote in the third (1895) edition of his *Principles of Economics*: “As Mr. Giffen has pointed out, a rise in the price of bread makes so large a drain on the resources of the poorer labouring families and raises so much the marginal utility of money to them, that they are forced to curtail their consumption of meat and the more expensive farinaceous foods: and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it.” In other words, Giffen goods are those “inferior goods” whose demand moves in the same direction as the price variation. This meaning, raising the price of the good will increase its demand.

We know that the substitution effect is always negative, which means that the price increase leads to a decline in demand. We also understand that the higher price reduces the purchasing power of the consumer – his/her real income goes down. Despite all this, the demand for this Giffen good increases. This means that the consumer decides to buy more of this (more expensive) Giffen good in response to a decline in her/his purchasing power. The income elasticity of demand for this Giffen good therefore must be negative; hence, the Giffen good is an inferior good (in terms of the income elasticity of demand). Figure 13 presents the consumer demand curve for a Giffen good.

Figure 12
A Giffen good

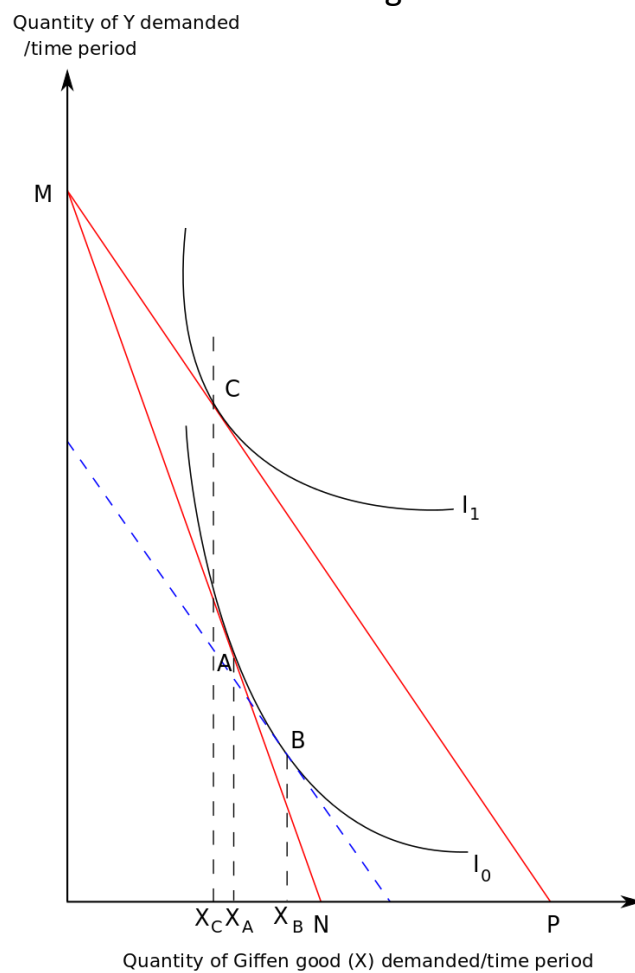
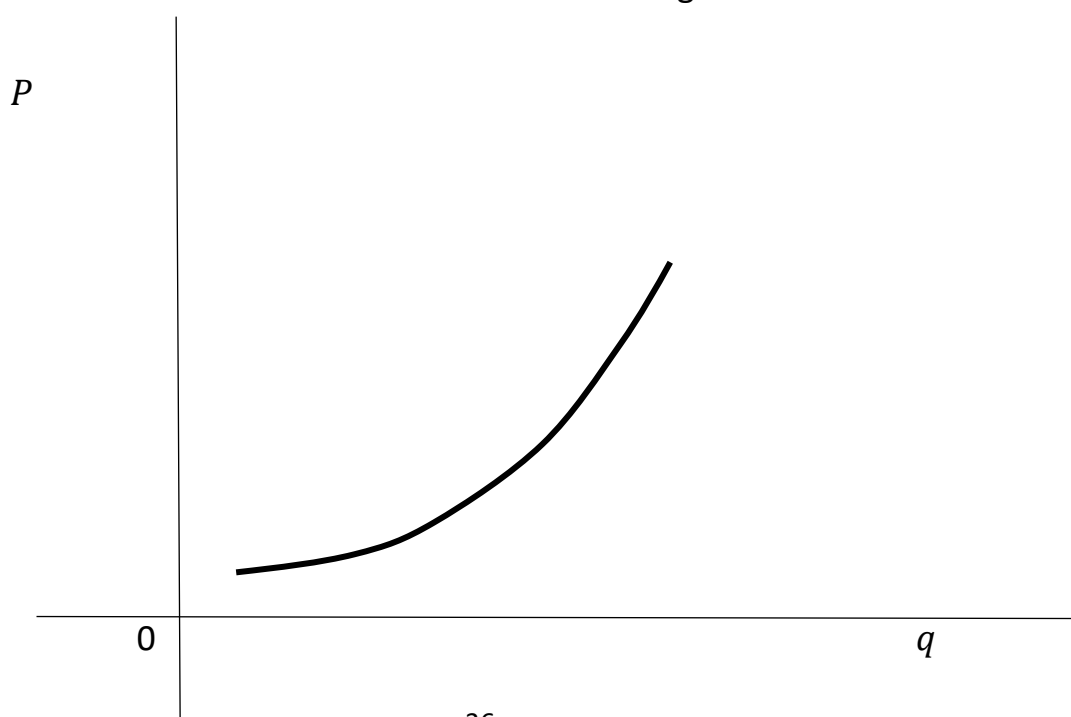


Figure 13
The demand curve for a Giffen good



The cross-price elasticity of consumer demand

The cross-price elasticity of demand e_{xz} is defined as the proportionate change in the quantity (q) demanded of good or service x , resulting from a proportionate change in the price (P_z) of another good or services.

In symbols, we may write:

$$e_{xz} = \frac{\frac{\Delta q_x}{q_x}}{\frac{\Delta P_z}{P_z}} = \frac{\Delta q_x}{\Delta P_z} \times \frac{P_z}{q_x}$$

For normal goods, the sign of the cross-price elasticity is negative if x and z are complementary goods, and positive if x and z are substitutes. The higher the value of e_{xz} , the stronger will be the degree of substitutability or complementarity between x and z .

Examples of empirically observed cross-price elasticities of demand include:

- $e_{xz} \approx 0.1$ for the demand for bus tickets and private-car operating costs. If the cost of operating a private car increases by 10%, the demand for bus tickets rise by 1%.
- $e_{xz} \approx 0.7$ for the demand for tickets of high-speed railways and the price of air travel.
- $e_{xz} < 0$ for the demand for printer ink and the price of printer paper. If printer paper becomes more expensive, the user will print less – and hence she/he will require less printer ink. Hence, the demand for printer ink declines when the price of printer paper rises.

Institutionalist Theories of Consumer Behaviour

A major critique of the neoclassical theory of consumer demand concerns its assumption that consumer preferences are exogenous, independent, purely individual and closed-off from social influences. This critique is taken up in Chapter 3 on “CONSUMER DEPENDENCY” (pp. 59-84) in S. Himmelweit, R. Simonetti and A. Trigg, *Microeconomics. Neoclassical and Institutional Perspectives on Economic Behaviour*. This chapter reviews three alternative theories of consumer behaviour which all three reject the neoclassical notion of ‘consumer sovereignty’ and instead argue in favour of the opposite notion of ‘consumer dependency’.

The three institutionalist theories of consumer demand have been proposed by the following three social scientists: American economist and sociologist Thorstein Bunde Veblen; French sociologist and philosopher Pierre Bourdieu; and Canadian-American economist John Kenneth Galbraith. Lecture Note W-1 briefly reviews the essence of each of their important contributions.

Thorstein Veblen: conspicuous consumption

At the close of the 19th century, American-Norwegian economist Thorsten Veblen (see **box 6**) proposed that consumer spending is driven by **relative status considerations**, that is by the desire to be a particular type of person as much as by the desire to enjoy the consumer goods per se. However, Veblen argued that the Joneses, with whom one had to keep up, were not the neighbours, but the super-rich: the leisure class. The level of living of the rich became the never-attainable objective in a consumption arms race among the less well-to-do. In *The Theory of the Leisure Class*, Veblen (1899, p. 81) wrote:

“The motive is emulation—the stimulus of an invidious comparison... especially in any community in which class distinctions are quite vague, all canons and reputability and decency and all standards of consumption are traced back by insensible gradations to the usages and thoughts of the highest social and pecuniary class, the wealthy leisure class.”

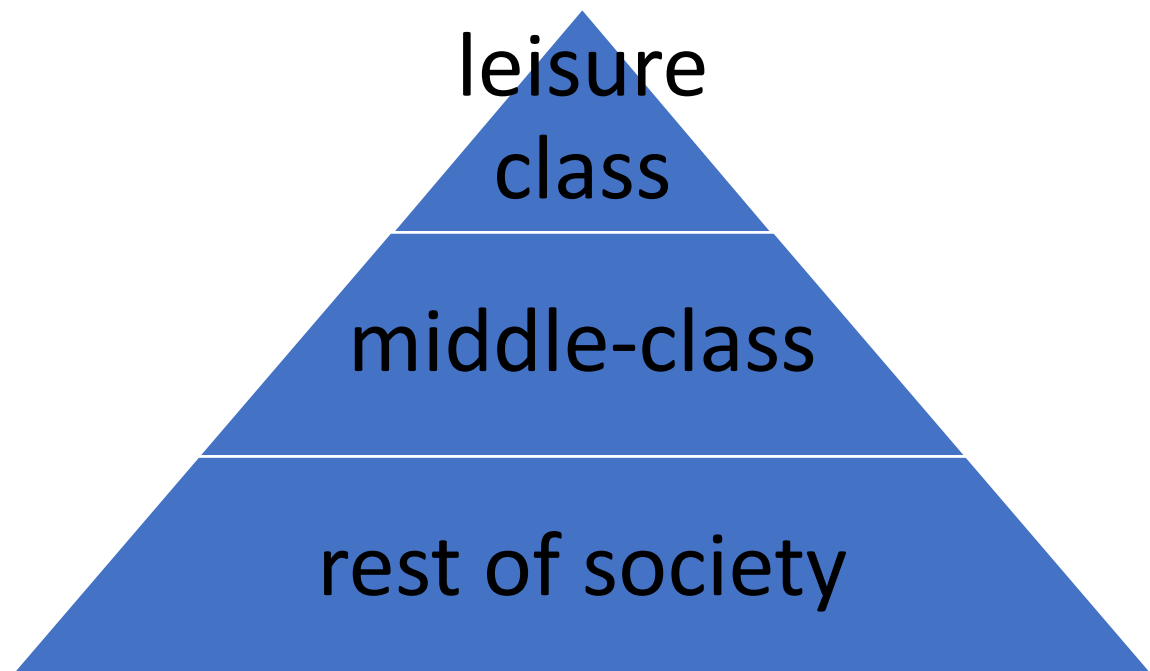
Veblen held that consumption is motivated by a desire for social standing as well as for the enjoyment of the goods and services per se:

“the proximate ground for expenditure in excess of what is required for physical comfort is ...a desire to live up to the conventional standard of decency” (Veblen 1899, p. 81).

His key idea was that the best-off members of a community -- “[the leisure class](#)” – establish the standards for the rest.

“The leisure class stands at the head of the social structure in point of reputability; and its manner of life and its standards of worth therefore afford the norm of reputability for the community. (Veblen 1899, p. 70)

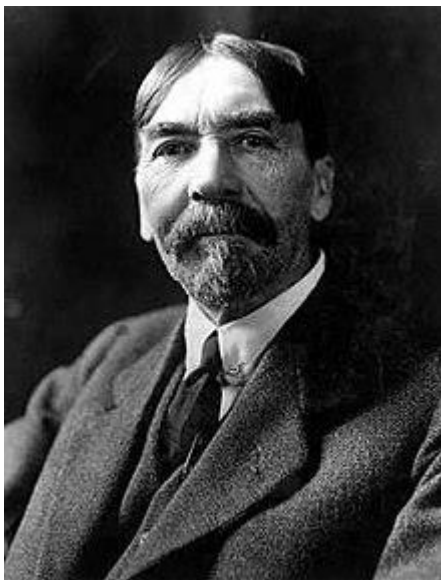
For Veblen, the structure of society is pyramidal – and the super-rich leisure class sits at the top. The consumption norms and habits of this leisure class determine the consumption aspirations of all lower classes. The consumption norms of the leisure class are mostly wasteful, useless and non-productive, meant to show off one’s wealth. Veblen calls it **conspicuous consumption**. The lower income-classes emulate the consumption norms and habits of the leisure class, to the extent they can afford and within their own (lower) budgets. This kind of status consumption leads to the existence of so-called **Veblen goods**.



A [Veblen good](#), named after Thorstein Veblen, is a type of status good for which the demand increases as the price increases, in apparent contradiction of the law of demand, resulting in an upward-sloping demand curve, when the price is set higher than some threshold P^* (see Figure 14). A price higher than P^* may make a product *desirable as a status symbol in the practices of conspicuous consumption* and conspicuous leisure. (However, if the price is set below P^* , the good loses its status position, and the ‘law of demand’ applies – as usual.) A product may be a Veblen good because it is a positional good, something few others can own. A corollary of the Veblen effect is that lowering the price decreases the quantity demanded.

To illustrate the Veblen effect, according to [researchers at the Stanford Graduate School of Business and the California Institute of Technology](#), if a person is told he or she is tasting two different wines and that one costs \$5 and the other a *Cabernet Sauvignon* of \$45 when they are, in fact, the same wine the part of the brain that experiences pleasure will become more active when the drinker thinks he or she is enjoying the more expensive vintage.

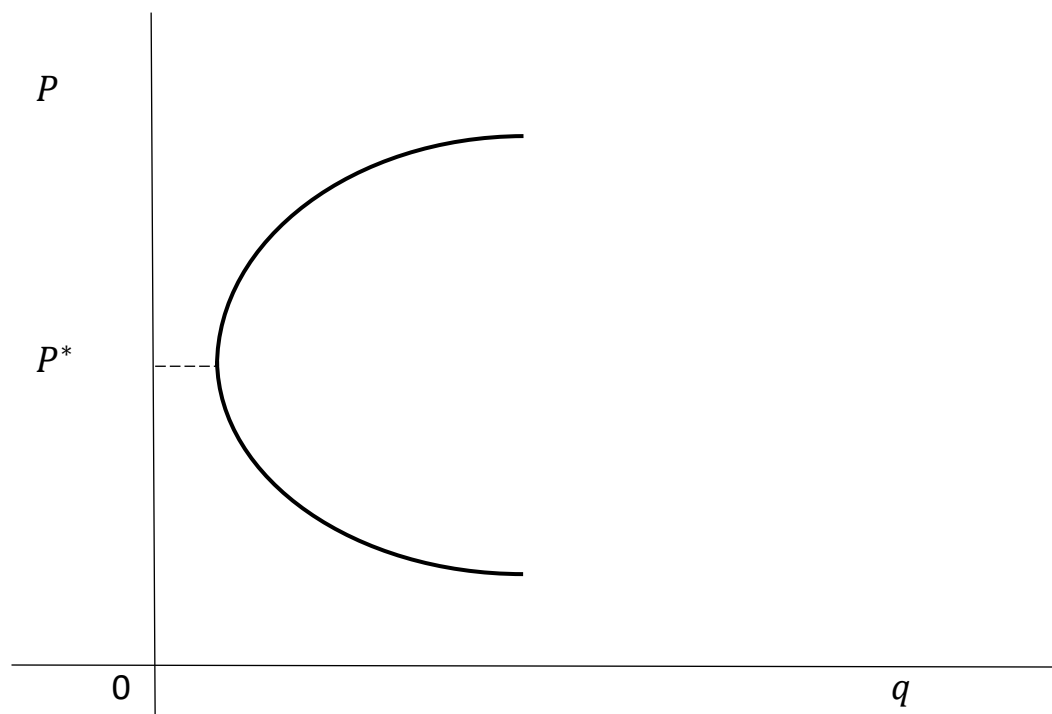
Box 6



Thorstein Bunde Veblen
(1857-1929),
American economist and sociologist

Thorstein Veblen laid the foundations for institutionalist economics. Veblen disagreed with his peers, as he strongly believed that the economy was significantly embedded in social institutions. Rather than separating economics from the social sciences, Veblen viewed the relationships between the economy and social and cultural phenomena. Veblen viewed the study of economic change as part of the broader process of institutional cultural development. His most famous work is The Theory of the Leisure Class: An Economic Study of Institutions (1899). In this book, Veblen writes critically of conspicuous consumption and its function in social-class consumerism and social stratification.

Figure 14
The demand curve for a Veblen good



According to Veblen, **consumers are not sovereign**, because their preferences are not given and exogenous, but are rather status-dependent on the consumption norms and habits of the leisure class. Under conspicuous consumption, **there is a change in preference in response to a price change**. A higher price will lead to an increase in demand, if this raises the status-dimension of the product.

Pierre Bourdieu: cultural capital and 'distinction'

Pierre Bourdieu (see **Box 7**) builds on Veblen's, making it a more general theory of consumption. Bourdieu rejects Veblen's pyramidal social structure (as a description of society) and instead argues that society is made up of various distinctive socio-economic classes. The adjective 'distinctive' is crucial – because for Bourdieu, (a) all individuals wish to **belong** to a particular socio-economic class; (b) each socio-economic class distinguishes itself from other classes by its consumption decisions (**distinction**); and therefore: (c) to belong to a particular social class, the individual has to acquire the **cultural capital** that characterises that particular class by cultivating its consumption norms and habits.

Typical [Dutch cultural capital](#)



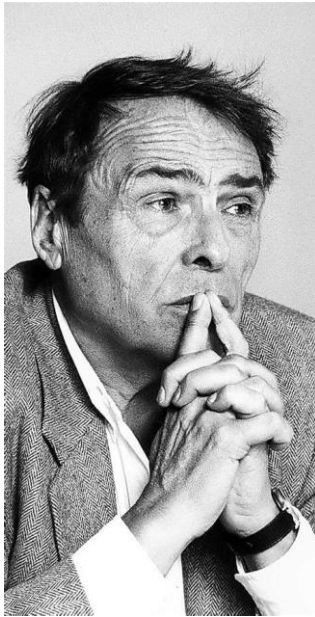
For Bourdieu, consumption preferences are (partly) socially determined, because consumption is about social positioning: the acquisition of cultural capital is a necessary condition for membership of the bourgeoisie and in the qualifications giving access to its rights and duties. If one looks for (smaller) contemporaneous examples, consider the social group called hipsters. If one wants to become a **hipster**, one has to grow thick busy facial hair (if a boy); frequent obscure coffee shops to drink an avolatte, wear musky-scented second-hand flannel, listen to indie music most people haven't heard, use an iPhone,

have a wooden lap-top cover and a polaroid camera, and wear a back pack. However, if one want to be a **yuccie** (*a young creative individual*), one has to wear a lot of olive green and grey, find expensive hoodies and denim, and parkas, and for one's feet colourful socks in Birkenstocks (see picture).



Bourdieu emphasised that the acquisition of cultural capital is inscribed, as an objective demand, in membership of each socio-economic group. Tastes, as Bourdieu argues, do not come from within, but are driven by the need to distinguish oneself from others, while at the same time belonging to a specific sub-culture. Tastes and preferences thus depend on membership of socio-economic classes – or on the aspiration to shift to another class. Preferences are therefore endogenous, since they depend on the way in which individuals relate to the social structure.

Box 7



Pierre Bourdieu
(1930-2002),
French sociologist and philosopher

Bourdieu was, for many, the leading intellectual of present-day France. His works have been translated into two dozen languages and have affected all disciplines in the social sciences and the humanities. Bourdieu's best known book is *Distinction: A Social Critique of the Judgment of Taste* (1979), in which he argues that judgments of taste are related to social position, or more precisely, are themselves acts of social positioning. The argument is put forward by an original combination of social theory and data from quantitative surveys, photographs and interviews, in an attempt to reconcile difficulties such as how to understand the subject within objective structures.

According to Bourdieu, **consumers are not sovereign**, because their preferences are not given and exogenous, but are rather dependent on one's (aspired) position in society's hierarchy. Consumption is about social positioning, locating oneself in a particular social class. Seen this way, consumption is the acquisition of the necessary cultural capital, belonging to a particular social class, to which one belongs or aspires to belong. **Consumer preferences are endogenous.**

John Kenneth Galbraith: want creation by oligopolists

According to John Kenneth Galbraith (1958), in his book *The Affluent Society*, modern capitalism is dominated by large oligopolistic enterprises and characterized by an abundance of contrived wants that are the product of corporate planning and massive advertising. [Galbraith \(1958\) writes](#):

“As a society becomes increasingly affluent, wants are increasingly created by the process by which they are satisfied.... Wants thus come to depend on output. In technical terms, it can no longer be assumed that welfare is greater at an all-round higher level of production than at a lower one. It may be the same. The higher level of production has, merely, a higher level of want creation necessitating a higher level of want satisfaction. There will be frequent occasion to refer to the way wants depend on the process by which they are satisfied. It will be convenient to call it the Dependence Effect.

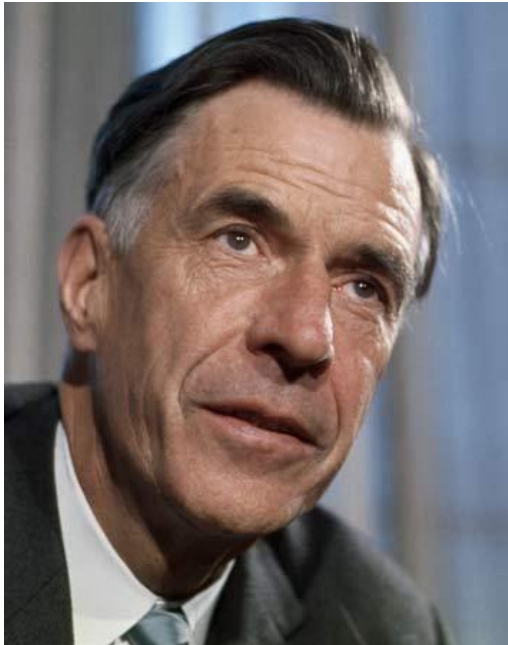
It is not consumers who are sovereign in the modern industrial system, but rather the gigantic oligopolistic firms that produce and market goods and services. In Galbraith's "revised sequence," producers decide what shall be produced and then mould consumers' tastes, so that they buy these products. Neoclassical economics holds that consumers are sovereign (because their preferences are exogenous); hence, initiative lies with the consumer, who buys goods and services in the market in response to personal desires or demands. The neoclassical theory of consumer demand takes wants as given. To say that consumers maximize their utility, says Galbraith, begs the important question of how consumers go about formulating those wants in the first place. And, if wants must be created through advertising, how urgent can they be? Furthermore, the neoclassical theory of consumer demand, with its emphasis on consumer sovereignty, implies that the market dictates the optimal composition of output and allocation of resources. This view, said Galbraith, makes little sense:

“If the individual's wants are to be urgent, they must be original with himself. They cannot be urgent if they must be contrived for him. And above all they must not be contrived by the process of production by which they are satisfied. For this means that the whole case for the urgency of production, based on the urgency of wants, falls to the ground. One cannot defend production as satisfying wants if that production creates the wants.”

In Galbraith's view, oligopolistic firms compete by constantly innovating – improving existing products or introducing new goods. Innovations are risky and hence, in order to minimise the risk of a failed market introduction of a new good, firms engage in largescale advertising and marketing. By this, they try to persuade consumers to buy their (innovated) product, pointing out that the new product meets a previously unmet, even unrecognised, want. Oligopolistic competition drives firms to a continuous strategy of want creation. Consumers are not sovereign; rather, **producers are sovereign in the market.**

To illustrate, U.S. firms are spending on advertising and marketing is around 2.5% of U.S. GDP – or around U.S. \$ 530 billion in 2019. This is more than one-third of what the U.S. are spending on education (which is 6.5% of GDP). Galbraith's theory of consumer demand has an important policy implication: there will be an under-allocation of resources to public goods. Galbraith called this circumstance **social imbalance**. The creation of artificial wants through advertising and the propensity for emulation shifts resources toward private goods and away from public goods that have greater inherent value. New automobiles are seen as being more important than new roads; vacuum cleaners in the home are desired more than street cleaners. Alcohol, comic books, and mouthwashes take on a greater aggregate importance than schools, courts, and municipal swimming pools. One way to remedy this imbalance, said Galbraith, would be to impose sales taxes on consumer goods and services, using the proceeds to increase the availability of public sector goods and services.

According to Galbraith, **consumers are not sovereign**, because their preferences are manipulated by the marketing efforts of big oligopolistic firms. **Consumer preferences are endogenous and the consumer is dependent.**

Box 8

John Kenneth Galbraith
(1908-2006),
Canadian-American economist,
Harvard University

John Kenneth Galbraith was one of the most influential economists of the 20th century. Galbraith's major writings constitute both an attack on neoclassical economic thought and an analysis of modern capitalism. Nearly all of the characteristics of the institutionalist school apply to his many works. According to Galbraith, "ideas are essentially conservative." He added: "The neoclassical system owes much to tradition - it is not implausible as a description of a society that once existed.... Additionally, it is the available doctrine. Students arrive; something must be taught; the neoclassical model exists. It has yet another strength. It lends itself to endless theoretical refinement. With increasing complexity goes an impression of increasing precision and accuracy. And with resolved perplexity goes an impression of understanding."

Questions (to review Chapters 2 and 3 and Lecture Note W-1)

1. Which are the two tasks for any mechanism of social coordination?
2. What is the difference between micro-economics and macro-economics?
3. What is the ceteris-paribus assumption? Why is it important?
4. What do economists mean when they point to the 'invisible hand'?
5. What happens in a perfect market when there is an excess supply of goods and services?
6. What is meant by the assumption of methodological individualism?
7. What is meant by the assumption of instrumental rationality?
8. What is meant by the assumption of perfect knowledge and perfect information?
9. Utility is an ordinal concept. What does this mean?
10. Why do consumer preferences have to be consistent and transitive?
11. What does 'consumer sovereignty' mean in the neoclassical theory of demand?

12. What is a utility function?
13. Discuss two main properties of the utility function. Explain these properties in detail.
14. Why is “more is always better” in the neoclassical theory of demand?
15. What is an indifference curve? How can it be derived from the utility function?
16. What is the MRS? Why does it change when one moves down the indifference curve?
17. What is the difference between an indifference curve and an indifference map?
18. Give a definition of the consumer’s budget restriction? Why will the utility-maximising consumer always spend her/his total income?
19. Why is the utility maximising bundle of goods found in Figure 8 by identifying the point of tangency between the indifference curve and the budget line?
20. What happens to the composition of the utility-maximising bundle of goods when the income of the consumer increases (see Figure 9)?
21. Explain the total effect, the substitution effect and the income effect of a decline in the price of one of the goods.
22. What are bandwagon effects in consumption?
23. Give a precise definition of the income elasticity of demand for good A.
24. What are ‘normal’ goods and ‘inferior’ goods? What are ‘necessary’ goods and ‘luxury’ goods?
25. Give a precise definition of the own-price elasticity of demand for good A.
26. When is the demand for good A price-inelastic? When is it called price-elastic?
27. Give a precise definition of the cross-price elasticity of demand for good B (relative to the price of good B).
28. When is a good called a substitute good? When is it called a complementary good?
29. Discuss the consumer theory of Veblen? What is a Veblen good?
30. Discuss the consumer theory of Bourdieu? What does Bourdieu mean by cultural capital? Why is consumption about social positioning in Bourdieu’s view?

31. Discuss the consumer theory of Galbraith. What does Galbraith mean by want creation? Why is want creation by firms part of oligopolistic competition in Galbraith's theory?

The answers to the questions can be found in this lecture note 😊.

Exercises Lecture Note W-1

Exercise 1

Do you agree/disagree with each of the following statements? Briefly explain/motivate your answers.

1. Two normal goods cannot be substitutes for each other.
2. The price of good A falls. This causes an increase in the price of good B. Goods A and B are therefore complements.
3. If the price-elasticity of demand for long-distance telephone calls is -1.5 and if the price of long-distance calls falls by 20% as a result of increased competition in the telecommunications market, households on average will spend less in total on long-distance telephone calls.

Exercise 2

Suppose a consumer has a budget of € 8 which he/she can spend only on two goods: good A and good O. The price of good A is € 0.40 each and the price of good O is € 0.10 each. The consumer's utility function is given by

$$Utility = U = \sqrt{A \times O}$$

1. Construct a table which shows all possible combinations of quantities A and O, which can be purchased with the consumer's budget. Calculate the level of utility of each combination of A and O. Which combination would be most desirable?
2. Write down the algebraic equation for this person's budget constraint, and graph it (in (O, A) space).

3. Write down the equation of the indifference curves. Graph the indifference curve corresponding to the most desirable combination of A and O, identified in 1.
4. Determine the “optimal” consumption bundle (A, O) by using the condition for utility maximisation:

$$\frac{P_A}{P_O} = MRS = \frac{MU_A}{MU_O}$$

where MU_A = the marginal utility of A, *i.e.* (dU/dA) , and MU_X = the marginal utility of X, *i.e.* (dU/dX) .

Exercise 3

The market demand for potatoes is given by:

$$Q = 1300 + 0.2Y - 400P + 300P''$$

where Q = annual demand (in Kg), Y = average income (in €), P = price of potatoes (€ per Kg); and P'' = price of rice (€ per Kg). Suppose average income is € 12.000, P = € 2, and P'' = € 3.

1. Determine the income elasticity of the demand for potatoes. What kind of good are potatoes? Motivate your answer.
2. Determine the (own) price elasticity of the demand for potatoes. Is the demand for potatoes relatively price-elastic or price-inelastic? Motivate your answer.
3. Determine the cross-price elasticity of the demand for potatoes.

Exercise 4

Suppose that the current market price (P) of VCRs is € 300, that average disposable income Y is € 30.000, and that the price (P'') of DVD players (a substitute for VCRs) is € 500. Under these conditions the annual European demand for VCRs is 4 million per year. Statistical studies have shown that the income elasticity of VCRs = 1.6, the (own) price elasticity = -1.2 and the cross-price elasticity (with DVD players) = 0.9.

Use this information to predict the annual number of VCRs demanded under the following conditions:

1. Increasing competition from Korea reduces VCR prices to € 270 (Y and P'' remain unchanged).
2. Technical improvements in DVD players cause their price to fall to € 400 (with P and Y unchanged).
3. Disposable income increases to € 31.500 (with P and P'' unchanged).

Exercise 5

The representative consumer has the following utility function: $U = \sqrt{X \times Z}$; where X = the quantity of good X (**food**), and Z = the quantity of good Z (**books**). The prices of these goods are exogenously given: P_Z = Euro 1 and P_X = Euro 0.5. The consumer budget is exogenously given and equals Euro 10. The consumption budget is completely used up.

1. Determine how much food the consumer can buy when she/he is buying $Z = 0, 1, \dots, 10$ study books, and calculate the corresponding level of utility of this (feasible) consumption bundle.
2. Derive the formula for the marginal utility of good X and of good Z .
3. Derive the formula for the indifference curve(-s) associated with this utility function.
4. Calculate five or six coordinates of the indifference curve $U = \sqrt{50}$. Which combination of X and Z on this indifference curve also lies on the budget restriction?
5. Derive the formula for the budget line. What is the slope of the budget line?
6. The condition for utility maximisation is $\frac{P_X}{P_Z} = MRS = \frac{MU_X}{MU_Z}$. Identify the utility maximising consumption bundle of this consumer.

Exercise 6

1. Suppose $e_Y = 0.35$. The income of the consumer increases by 6%. By how much does consumer demand rise?
2. Suppose $e_Y = -0.2$. The income of the consumer falls by 4%. By how much does consumer demand rise?

3. Suppose $e_p = -0.2$. The price of the commodity increases by 7.5%. How does consumer demand change?
4. Suppose $e_p = +0.25$. The price of the commodity increases by 8%. How does consumer demand change?
5. Suppose $e_p = -1.3$. The price of the service increases by 5%. How does consumer demand change?

Answers to the Exercises

Exercise 1

Proposition 1 is false. A normal good is defined as a good having a positive income elasticity of demand. Substitutability means that the cross-price elasticity of demand for commodity X (with respect to P_z) is positive.

Proposition 2.

Case 1: Good A = a non-Giffen good. If P_a declines, and if commodity A is non-Giffen, then the demand for A (D_a) will rise. If due to this, D_b rises as well (because goods A and B are complements), then the higher D_b could (in principle, *ceteris paribus*) drive up the price of B (P_b).

Case 2: Good A = a Giffen good. If P_a declines, then D_a will decline. If goods A and B are complements, D_b will decline as well. This could not normally lead to a higher P_b . Proposition 2 is true for case 1, and false for case 2.

Proposition 3.

Household spending on long-distance calls = Price * Quantity (demanded) = $P * Q$
 If P declines by 20%, the demanded quantity Q will increase by: $-1,5 \times -20\% = +30\%$. Hence, household spending on long-distance calls will **RISE** as a result of the lower P . Proposition 3 is false.

Exercise 2

1.

 $Y = 0.4A + 0.1 O = 8$ gives:

$$A = 20 - (1/4) O$$

A	O	Y	U
0	80	8	0
4	64	8	16
8	48	8	19.6
10	40	8	20
12	32	8	19.6
16	16	8	16
20	0	8	0

Most desirable combination = 10A, 10 O

2. Budget constraint:

$$Y = 8 = 0.4 A + 0.1 O \text{ or } A = 20 - (1/4) O$$

3. Indifference curve corresponding to $U = 20$:

$$A = 400/O$$

4.

$$(MU_a/MU_o) = (P_a/P_o)$$

$$(MU_a/MU_o) = (O/A)$$

$$(P_a/P_o) = (0.4/0.1) = 4$$

This gives: $O = 4A$

Substitution in the budget constraint gives:

$$A = 20 - (1/4) O = 20 - A \text{ or: } A^* = 10 \text{ and } O^* = 40; (\text{maximum}) U^* = 20.$$

Exercise 3

The market demand for potatoes is given by:

$$Q = 1300 + 0.2Y - 400P + 300P''$$

where Q = annual demand (in Kg), Y = average income (in €), P = price of potatoes (€ per Kg); and P'' = price of rice (€ per Kg). Suppose average income is € 12.000, $P = € 2$, and $P'' = € 3$.

1. We FIRST calculate Q using all the information given.

$$Q = 1300 + 0.2 \cdot 12000 - 400 \cdot 2 + 300 \cdot 3 = 3800 \text{ units.}$$

$$\text{Income elasticity of demand for potatoes} = (dQ/Q)/(dY/Y) = (dQ/dY) / (Q/Y).$$

$$\text{The partial derivative } (dQ/dY) = +0.2$$

$$\text{The ratio } (Q/Y) = 3800/12000 = + 0,317.$$

$$\text{Hence: Income elasticity of demand for potatoes} = (0.2)/(0.317) = +0.63$$

This points to a normal, necessary good.

2. The Price elasticity of demand for potatoes = $(dQ/Q)/(dP/P) = (dQ/dP)/(Q/P)$.

$$\text{The partial derivative } (dQ/dP) = -400$$

$$\text{The ratio } (Q/P) = 3800/2 = 1900.$$

$$\text{Hence: own price elasticity of demand for potatoes} = (-400)/(1900) = - 0.21$$

This points to a relatively price-inelastic demand.

3. The cross price elasticity of demand for potatoes = $(dQ/Q)/(dP''/P'') = (dQ/dP'')/(Q/P'')$.

$$\text{The partial derivative } (dQ/dP'') = 300$$

$$\text{The ratio } (Q/P'') = 3800/3 = 1266\frac{2}{3}.$$

$$\text{Hence: Income elasticity of demand for potatoes} = (300)/(1266\frac{2}{3}) = + 0.24$$

This points to substitute products.

Exercise 4

1. Price of VCR declines by 10% (from 300 to 270). Price elasticity = -1.2.

$$\text{Hence: change in demand for VCR} = -1.2 \times -10\% = + 12\% = + 480.000 \text{ units.}$$

2. Price of DVD declines by 20% (from 500 to 400). Cross-price elasticity = 0.9. Hence: change in demand for VCRs = $0.9 \times -20\% = -18\% = -720.000$ units
3. Income increases by 5% (from 30.000 to 31.500). Income elasticity of demand = 1.6. Hence: change in demand for VCRs = $1.6 \times 5\% = +8\% = +320.000$ units.

Exercise 5

1. Alternative combinations of books (Z) and food (X) that can be bought with a budget of Euro 10 (when $P_Z = \text{Euro } 1$ and $P_X = \text{Euro } 0.5$)

Books Z	Food X	$U(Z, X)$
0	20	$\sqrt{0} = 0.0$
1	18	$\sqrt{18} = 4.2$
2	16	$\sqrt{32} = 5.7$
3	14	$\sqrt{42} = 6.5$
4	12	$\sqrt{48} = 6.9$
5	10	$\sqrt{50} = \mathbf{7.1}$
6	8	$\sqrt{48} = 6.9$
7	6	$\sqrt{42} = 6.5$
8	4	$\sqrt{32} = 5.7$
9	2	$\sqrt{18} = 4.2$
10	0	$\sqrt{0} = 0.0$

2. Marginal utility of X: $MU_X = \frac{dU}{dX} = 0.5X^{-1/2}Z^{1/2}$

Marginal utility of Z: $MU_Z = \frac{dU}{dZ} = 0.5X^{1/2}Z^{-1/2}$

3. The indifference curve is: $Z = f(\bar{U}, X) = \bar{U}^2 X^{-1}$

4. Alternative combinations of books (Z) and food (X) that yield a total utility U of $\sqrt{50}$ (This is the indifference curve $U = \sqrt{50}$)

Books Z	Food X	$U(X,Z)$
-	0	$\sqrt{50}$
25	2	$\sqrt{50}$
$12 \frac{1}{2}$	4	$\sqrt{50}$
$8 \frac{1}{3}$	6	$\sqrt{50}$
$6 \frac{1}{4}$	8	$\sqrt{50}$
5	10	$\sqrt{50}$
$4 \frac{1}{6}$	12	$\sqrt{50}$
$3 \frac{4}{7}$	14	$\sqrt{50}$
$3 \frac{1}{8}$	16	$\sqrt{50}$
$2 \frac{7}{9}$	18	$\sqrt{50}$
$2 \frac{1}{2}$	20	$\sqrt{50}$

Note that the indifference curve for $U = \sqrt{50}$ is drawn without reference to the consumer's budget constraint; only the combination $Z = 5$ and $X = 10$ satisfies the budget constraint.

5. The budget constraint is: $Y = P_Z Z + P_X X$

which can be rewritten as: $Z = \frac{Y}{P_Z} - \frac{P_X}{P_Z} X = \frac{10}{1} - \frac{0.5}{1} X = 10 - 0.5X$

The slope of the budget constraint is negative: $\frac{dZ}{dX} = -\frac{P_X}{P_Z} = -0.5 < 0$

6. The condition for utility maximisation becomes:

$$\frac{P_X}{P_Z} = \frac{0.5}{1} = MRS = \frac{MU_X}{MU_Z} = \frac{0.5X^{-1/2}Z^{1/2}}{0.5X^{1/2}Z^{-1/2}} = \frac{Z}{X}$$

which gives: $Z = 0.5X$ or $X = 2Z$. Substituting this result into the budget equation: $Z = 10 - 0.5X = 10 - 0.5(2Z) = 10 - Z$
gives: $Z = 5$ and $X = 10$. This is the utility maximising consumption bundle.

Exercise 6

1. By $0.35 \times 6\% = 2.1\%$.
2. This is an inferior good. Demand changes as follows: $-0.2 \times -4\% = +0.8\%$.
3. By $-0.2 \times 7.5\% = -1.5\%$. Demand declines by 1.5%.
4. This is a Giffen or a Veblen good. Demand changes by $0.25 \times 8\% = +2\%$. Demand increases by 2%.
5. By $-1.3 \times 5\% = -6.5\%$. The demand for this service is price-elastic. Demand declines more than proportionally.