



Consumer Choice and Demand

Utility Analysis

Measuring Utility

The Role of Time in Demand



Analyze the Demand

- Why demand curve slopes downward?
 - ❑ Substitution effect of a price change
 - Substitute other goods with this cheap good.
 - ❑ Income effect of a price change
 - Consumer's purchase power increases as price decreases.
 - ❑ Derive the demand by the satisfaction : Utility.
 - ❑ People are assumed to max their utility.



Definition of Utility

- **Utility** is the sense of pleasure, or satisfaction, that comes from consumption
- The utility of a person from consuming a particular good depends on person's tastes or preferences
- Utility is subjective
 - You will say
 - I like A more than B
 - You wouldn't say
 - It deserves a rate of 80 on Satisfaction

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Utility Analysis

- Economists have little to say about the origin of tastes or why tastes differ across individuals
- Simply assume that tastes are given and are relatively stable → different people may have different tastes but an individual's tastes are not constantly changed
- If taste are not relatively stable, we can't make other-things-constant assumption in demand analysis

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Total and Marginal Utility

- ***Total utility*** is the total satisfaction a person derives from consumption
- ***Marginal utility*** is the change in total utility resulting from a one-unit change in consumption of a good

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Law of Diminishing Marginal Utility

- The more of a good an individual consumes per time period, other things constant, the smaller the increase in total utility from additional consumption
- That is, the smaller the marginal utility of each additional unit consumed
- Marginal utility may not decline right away and quickly, but it eventually declines.

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Units of Utility

- The utility can't be objectively measured.
 - You might figure out how much you enjoy each glass of water.
 - Second glass is half as good as the first one
 - The third glass is half as good as the second
 - The fourth glass is half as good as the third
 - Pass up the fifth glass
 - Assign arbitrary numbers to the amount of utility from each quantity consumed

Units of Water		
Consumed (8 ounce glass)	Total Utility	Marginal Utility
0	0	-
1	40	40
2	60	20
3	70	10
4	75	5
5	73	-2



Units of Utility

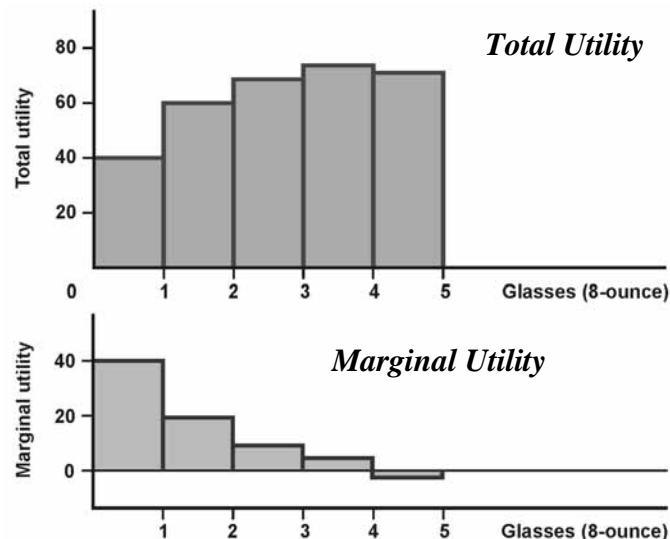
- We can compare the total utility a particular consumer
 - gets from different goods
 - same consumer gets from additional consumption
- Employ units of utility to evaluate a consumer's preferences for additional units of a good or even additional units of different goods
- We should not try to compare units of utility across consumers → *each person has a uniquely subjective utility scale*

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Total and Marginal Utility

Because of law of diminishing marginal utility, each glass adds less to total utility → Total utility increases for the first four glasses but at a decreasing rate



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Utility Maximization Without Scarcity

- We assume that the individual wants to maximize total utility
- How much water do you consume to maximize your utility?
- In a world without scarcity,
 - → the price of water is zero
 - → you would consume, as long as each additional glass increases total utility
 - → Consume 4 glasses of water

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Utility Maximization with Scarcity

- Consider consumption of two goods: pizza and video rentals
- How a consumer choose when goods are not free
 - → Maximizing utility subject to the constraint that your income is limited and prices are greater than zero
- Suppose that we have the following bits of information
 - The price of pizza is \$8
 - The rental price of a movie video is \$4
 - After tax income equals \$40 per week

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Utility Maximization with Scarcity

- ⊛ Income is allocated between two goods to maximize utility.
- ⊛ We start with some combination of pizzas and videos
- ⊛ If we can increase utility by reallocating our expenditures,
 - ⊛ → Continue to make adjustments as long as utility can be increased
 - ⊛ → *when no further utility-increasing moves are possible, we have arrived at the equilibrium combination*

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Utility of Pizza & Video Rentals

Pizza Consumed Per Week	Total Utility of Pizza	Marginal Utility of Pizza	Marginal Utility per Dollar Expended (price=\$8)	Video Rentals per Week	Total Utility of Videos	Marginal Utility of Videos	Marginal Utility per Dollar Expended (price=\$4)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	0	-	-	0	0	-	-
1	56	56	7	1	40	40	10
2	88	32	4	2	68	28	7
3	112	24	3	3	88	20	5
4	130	18	2¼	4	100	12	3
5	142	12	1½	5	108	8	2
6	150	8	1	6	114	6	1½

Suppose you start off spending your entire budget of \$40 on pizza → 5 pizzas per week at a total utility of 142.

Give up one pizza, you free up enough money to rent 2 videos.

→ You give up 12 units of utility – the marginal utility of the 5th unit of pizza,

→ You get 68 units of utility from the first 2 videos

→ total utility increases from 142 to 198.

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Equilibrium Combination of Pizza & Video Rentals

Pizza Consumed Per Week (1)	Total Utility of Pizza (2)	Marginal Utility of Pizza (3)	Marginal Utility of Pizza per Dollar Expended (price=\$8) (4)	Video Rentals per Week (5)	Total Utility of Videos (6)	Marginal Utility of Videos (7)	Marginal Utility of Videos per Dollar Expended (price=\$4) (8)
0	0	-	-	0	0	-	-
1	56	56	7	1	40	40	10
2	88	32	4	2	68	28	7
3	112	24	3	3	88	20	5
4	130	18	2¼	4	100	12	3
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6	150	8	1	6	114	6	1½

Reduce consumption of pizza to 3 units, you give up 18 units of utility from the 4th unit of pizza but gain a total of 32 units of utility from the 3rd and 4th videos, another utility-increasing move

Further reductions in pizza would reduce total utility because you would give up 24 units of utility from the 3rd pizza but gain only 14 from the 5th and 6th video rentals

The utility-maximizing equilibrium condition is 3 pizzas and 4 videos per week, Total utility of 212 and an outlay of \$24 on pizza and \$16 on videos

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Utility-Maximizing Condition

- Consumer equilibrium is achieved when
 - the budget is completely spent
 - the last dollar spent on each good yields the same utility

$$\frac{MU_p}{P_p} = \frac{MU_v}{P_v}$$

- Where MU_p is the marginal utility of pizza, p_p is the price of pizza, MU_v is the marginal utility of videos, and p_v the price of videos

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How to Construct the Demand Curve

- Preceding example generate a single point on the demand curve for pizzas
 - ❖ → at a price of \$8, the quantity demanded was 3 pizzas per week,
 - ❖ based on a given income of \$40 per week, a given rental price of \$4 per video, and tastes as reflected in the utility numbers

- To generate another point, suppose the price of pizza declines to \$6
 - ❖ See next slide

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Find New Equilibrium Combination when Pizza Price=6

Pizza Consumed Per Week (1)	Total Utility of Pizza (2)	Marginal Utility of Pizza (3)	Marginal Utility of Pizza per Dollar Expended (price=\$8) (4)	Video Rentals per Week (5)	Total Utility of Videos (6)	Marginal Utility of Videos (7)	Marginal Utility of Videos per Dollar Expended (price=\$4) (8)
0	0	-	-	0	0	-	-
1	56	56	9 1/3	1	40	40	10
2	88	32	5 1/3	2	68	28	7
3	112	24	4	3	88	20	5
4	130	18	3	4	100	12	3
5	142	12	2	5	108	8	2
6	150	8	1 1/3	6	114	6	1 1/2

Recall that the original consumer equilibrium was 3 pizzas and 4 video rentals.

The marginal utility per dollar expended on the third pizza is 4, while the marginal utility per dollar on the fourth video remains at 3.

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Pizza & Video Rentals

Pizza Consumed Per Week (1)	Total Utility of Pizza (2)	Marginal Utility of Pizza (3)	Marginal Utility of Pizza per Dollar Expended (price=\$8) (4)	Video Rentals per Week (5)	Total Utility of Videos (6)	Marginal Utility of Videos (7)	Marginal Utility of Videos per Dollar Expended (price=\$4) (8)
0	0	-	-	0	0	-	-
1	56	56	9 1/3	1	40	40	10
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4	130	18	3	4	100	12	3
5	142	12	2	5	108	8	2
6	150	8	1 1/3	6	114	6	1 1/2

New lower price of pizza → we would have \$6 unspent.
 Based on this new lower price for pizza, we would increase our consumption to 4 pizzas per week
 → total utility increases by the 18 units derived from the 4th pizza.
 → We are once again in equilibrium.

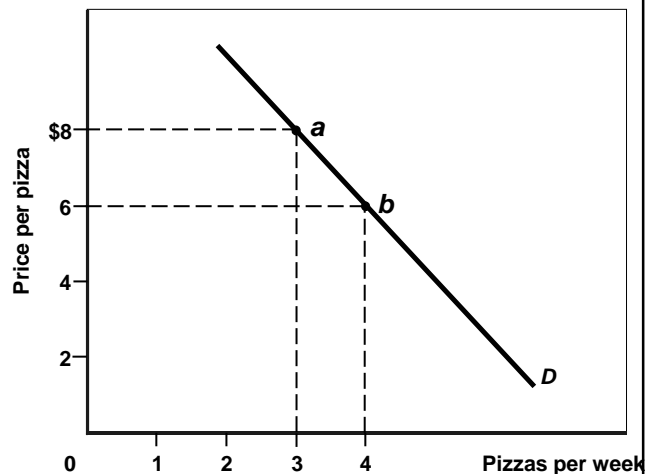
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Demand for Pizza Generated from Marginal Utility

The original position of consumer equilibrium is shown as point a where the consumer purchased 3 units of pizza.

After the price of pizza declines to \$6, the consumer purchases 4 units of pizza as shown by point b.



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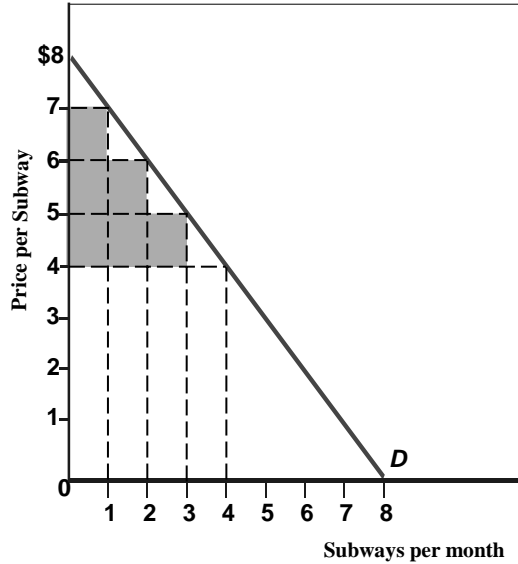


The demand curve for the subways

At price = \$8, → no Subways are purchased.
 At price = \$7, → buy one per month,
 At price = \$6, 2 are purchased
 At price = \$5, 3 are purchased,

In each case, the value of the last subway purchased must at least equal the price, otherwise it would not be purchased.

Along the demand curve, the price reflects the dollar value of the marginal utility derived from consuming each additional unit.



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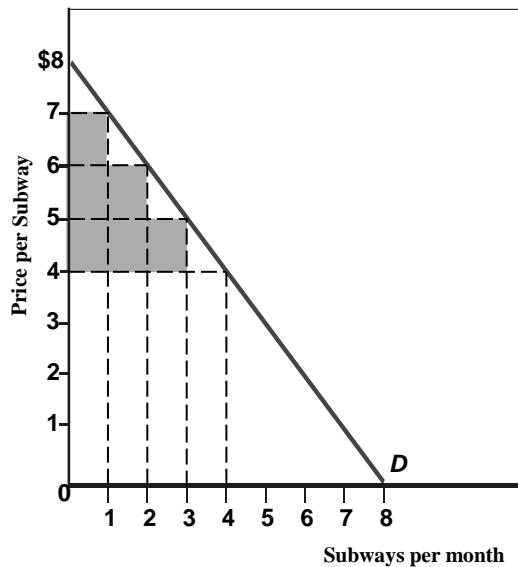


Consumer Surplus

The first sandwich provides marginal utility valued at \$7, \$6 for the second, \$5 for the third.

The dollar value of the total utility of the first four sandwiches is \$7 + \$6 + \$5 + \$4 = \$22.

A price of \$4 confers a *consumer surplus* equal to the difference between the maximum amount we would have been willing to pay (\$22) and what we actually paid (\$16).



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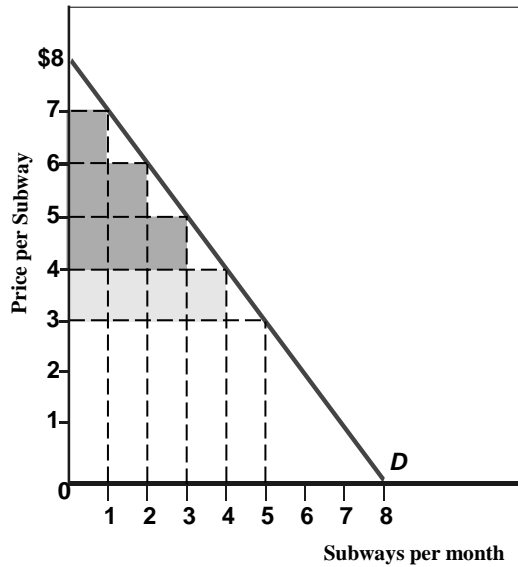


Consumer Surplus

This consumer surplus is shown by the six darker shaded blocks.

An approximation of the consumer surplus is the area under the demand curve but above the price.

If the price of Subways falls to \$3, the consumer would purchase 5 subways and the addition to consumer surplus is shown by the lighter shaded areas.



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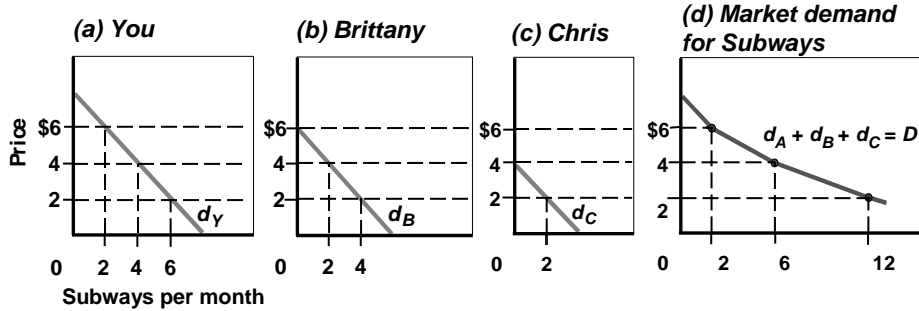
Market Demand and Consumer Surplus

- We previously discussed individual demand.
- Now we derive market demand for a good from individual demand
- The market demand is simply the horizontal sum of the individual demand curves for all consumers in the market
- See next slide

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Summing Individual Demands to Derive Market Demand



At a price of \$4, you demand 4 Subways, Brittany 2, and Chris none.
→ the market demand at a price of \$4 is 6.

At a price of \$2, you demand 6 per month, Brittany 4, and Chris 2.
→ market demand is 12

The market demand shows the total quantity demanded per period by all consumers at various prices.

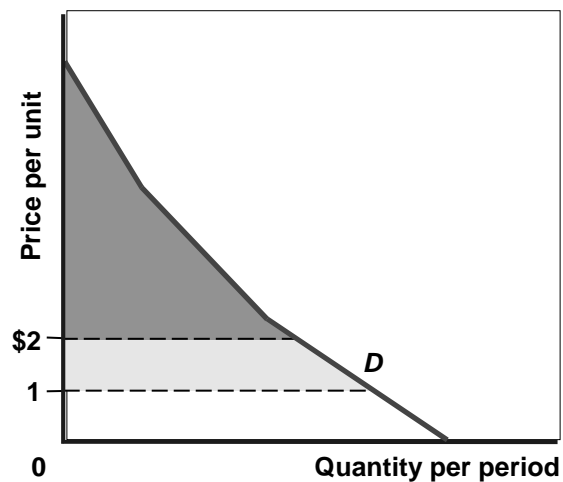
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Market Demand and Consumer Surplus

The dark shaded area, bounded above by the demand curve and below by the price of \$2 depicts the consumer surplus when the price is \$2.

The light shaded area shows the increase in consumer surplus if the price falls to \$1.



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Consumer Surplus

- Consumer surplus is the net benefit consumers get from market exchange
- It can be used to measure economic welfare and to compare the effects of such concepts as
 - Different market structures
 - Different tax structures
 - Different public expenditure programs

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分析:差別定價 掠奪消費者剩餘 (淡江大學產經系許教授松根)

- 差別定價現實生活中，廠商經常採用「差別定價」(price discrimination)來增加利潤。差別定價指生產者於生產某產品之成本相同的情況下，對不同顧客或不同之購買數量的要價不同，其存在之前提乃因需求者採購時，會產生「消費者剩餘」(consumer surplus)，所謂消費者剩餘指消費者願意付的代價與實際付出的差額。這種剩餘的發生導因於人對某種物品的邊際效用，會隨著他可享受數量的增加而減少。事實上，精明的業者即充分瞭解此種現象，並藉此影響市場定價、乘機圖利。
- 差別定價
「台北-高雄的機票單程900元，來回雙程1500元」，這是二級差別定價的一個典型例子。這種差別定價也可稱為「定額」的差別定價，其定價差別在於，購買量少時的要價較高，而購買量超過某一定額時的要價較低。
- 需求量隨著價格之下降而增加，就會造成消費者剩餘的存在，業者便可以利用這種剩餘的存在，而採用差別定價。前述航空公司的台北-高雄間機票的定價策略，便是利用消費者剩餘的存在。

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The Role of Time in Demand



Role of Time in Demand

- **Because consumption does not occur immediately, time also plays an important role in demand analysis**

- **Consequently, the cost of consumption has two components**
 - **The money price of the good**
 - **The time price of the good**

- **Time is money.**



Role of Time in Demand

- ⊕ Other things constant, a good or service that provides the same benefit in less time is preferred
- ⊕ The premium for time-saving goods and services depends on the opportunity cost of a persons time
- ⊕ Differences in the value of time among consumers help explain differences in the consumption patterns observed in the economy
 - ▣ Ex: Retire couple spend more time search coupons and sale
 - ▣ Working couple will by them in convenience store
 - Extra pay for convenience

Jump to appendix

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課堂報告

- ⊕ 請舉例說明何謂**Law of Diminishing Marginal Utility**
- ⊕ 請解釋有收入限制而且商品價格大於0之下,消費者想要**maximize utility**所應滿足的條件
- ⊕ 請說明何謂 **consumer surplus**
- ⊕ 請說明如何使用 **individual demand** 推導出 **market demand**
- ⊕ 請舉例說明時間在決定需求時所扮演的腳色

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Homework

- 5. 請計算在均衡點下消費商品Y所得到的 **marginal utility**.
- 7. 解釋收入增加之下,消費每個財貨所得到的 **marginal utility**是否增加
- 12. 13. Maximize the utility by the given information