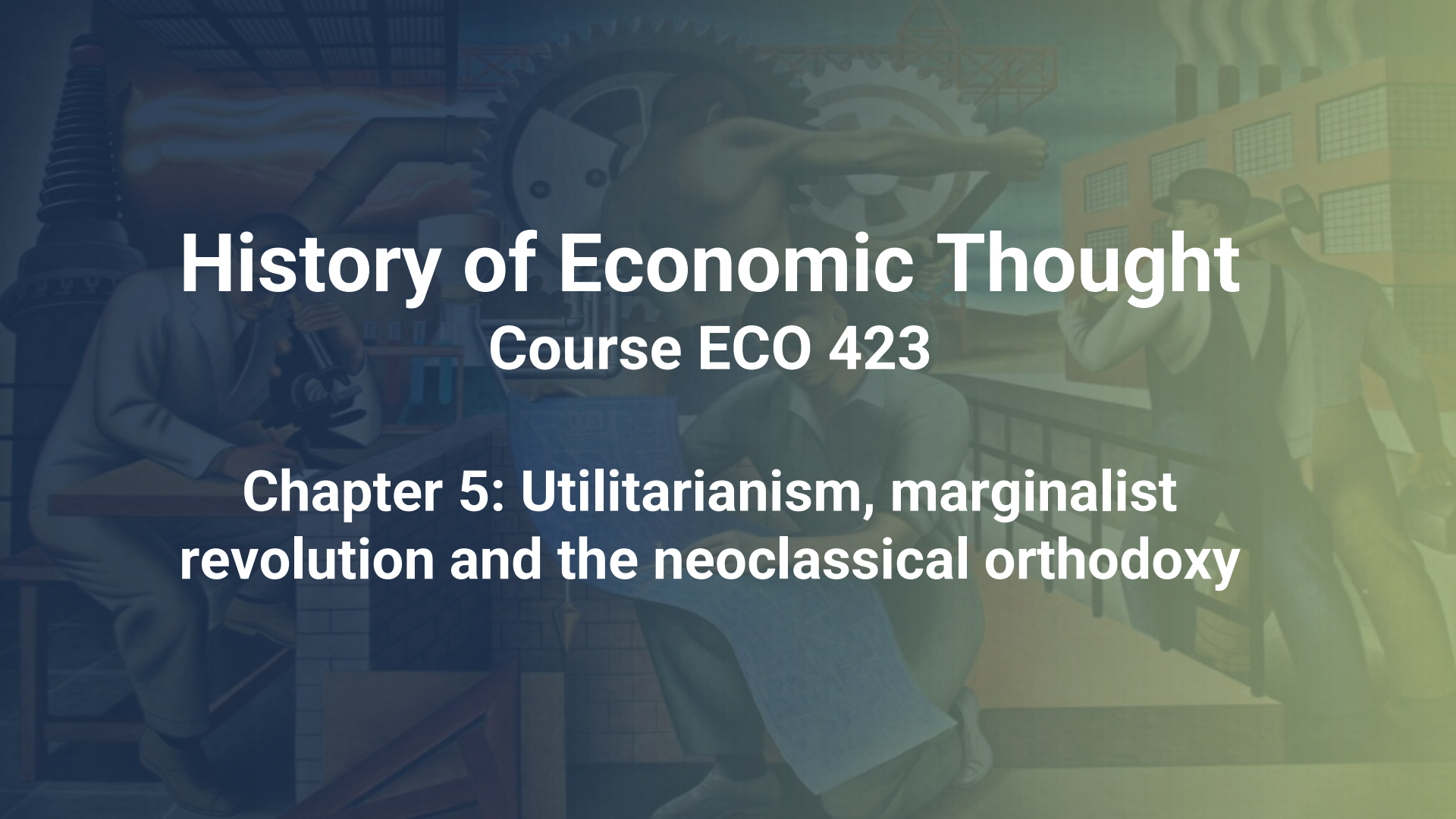


History of Economic Thought

Course ECO 423

Chapter 5: Utilitarianism, marginalist revolution and the neoclassical orthodoxy

Economic thinkers

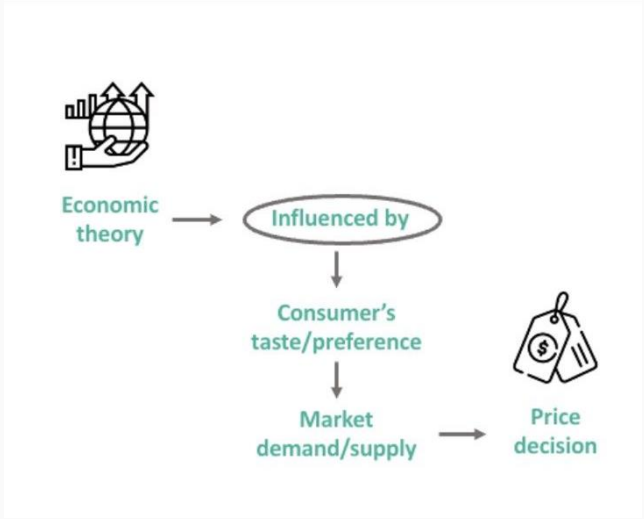
William Stanley Jevons

Leon Walras

Carl Menger

Alfred Marshall

Irving Fisher



Historical Background

- A century after the Industrial Revolution, **poverty and inequality** persisted despite rising productivity and living standards.
- **Urban migration** increased due to rural poverty and the lure of better opportunities.
- Workers faced **long hours, unsafe conditions, and weak bargaining power**, with little protection before labor laws.
- **Classical economics** failed to address new social and economic challenges.
- Three major **19th-century responses** emerged:
    a) **Socialism**
    b) **Trade unionism**
    c) **Government regulation and redistribution**
- **Marginalist economists** rejected all three, defending **market-based systems** and opposing intervention.
- They criticized classical theories of **rent as unearned income** and **labor as the source of all value**, which influenced **Henry George** and **Karl Marx**.
- Marginalists argued economics needed revision but maintained **classical policy views**.

Major Tenets of the Marginalist School

- **Focus on the margin.** This school focused its attention on the point of change where decisions are made; in other words, on the margin. The marginalists extended to all economic theory the marginal principle that Ricardo developed in his theory of rent.
- **Rational economic behavior.** The marginalists assumed that people act rationally in balancing pleasures and pains, in measuring marginal utilities of different goods, and in balancing present against future needs. They also assumed that purposeful behavior is normal and typical and that random abnormalities will cancel each other out. The approach employed by the marginalists had its roots in the works of Jeremy Bentham, in that they assumed the dominant drive of human action is to seek utility and avoid disutility (negative utility).
- **Microeconomic emphasis.** The individual person and firm take center stage in the marginalist drama. Instead of considering the aggregate economy, or macroeconomics, the marginalists considered individual decision making, market conditions for a single type of good, the output of specific firms, and so forth.
- **The use of the abstract, deductive method.** The marginalists rejected the historical method in favor of the analytical, abstract approach pioneered by Ricardo and other classicists.

Major Tenets of the Marginalist School

- **The pure competition emphasis.** Marginalists based their analysis on the **assumption of pure competition**, where markets consist of many small, independent buyers and sellers. Products are **homogeneous**, prices are **uniform**, and **no single participant** has the power to influence market prices. Individuals act independently, adjusting to demand and supply, but their actions are too small to affect the overall market.
- **Demand-oriented price theory.** Early marginalists focused primarily on **demand** as the key factor in determining price, in contrast to classical economists who emphasized **supply and cost of production**. This demand-oriented view dominated until **Alfred Marshall** later integrated both supply and demand, forming the foundation of **neoclassical economics**.
- **Emphasis on subjective utility.** According to marginalists, demand depends on marginal utility, which is a subjective, psychological phenomenon. Costs of production include the sacrifices and irksomeness of working, managing a business, and saving money to form a capital fund.
- **Equilibrium approach.** The marginalists believed that economic forces generally tend toward equilibrium—a balancing of opposing forces. Whenever disturbances cause dislocations, new movements toward equilibrium occur.

Major Tenets of the Marginalist School

- **Merger of land with capital goods.** Marginalists merged **land and capital** into a single category of **property resources**, treating **rent, interest, and profit** as similar returns. This approach simplified analysis and countered claims that **land rent is unearned** or unnecessary.
- **Minimal government involvement.** The marginalists continued the classical school's defense of minimal government involvement in the economy as the most desirable policy. In most cases, no interference with natural economic laws was in order if maximum social benefits were to be realized.

Whom Did the Marginalists Benefit or Seek to Benefit?

- Marginalists aimed to promote **economic efficiency** and **liberty** by explaining how markets allocate resources effectively.
- They argued that in competitive markets, **workers are paid according to their contribution**, countering **Marxist calls for revolution**.
- Marginalism supported **liberal or conservative economic ideologies**, often defending the **status quo**.
- The theory benefited **employers** by: Opposing labor unions. Blaming **unemployment** on **high or rigid wages**.
- It supported **landowners** by rejecting **Ricardian rent theory**.
- It indirectly helped the **wealthy**, who typically opposed **government intervention** and **income redistribution**.

How Was the Marginalist School Valid, Useful, or Correct in Its Time?

- **Marginalists introduced powerful analytical tools**, including geometric diagrams and mathematical techniques, making economics more precise.

- They emphasized **demand conditions** as crucial in determining prices of goods and production factors.
- Focused on **individual decision-making**, highlighting its impact on economic outcomes.
- Clearly **stated assumptions** behind their theories, unlike many classical economists.
- Helped separate **objective analysis** from **value-laden judgments**.
- Developed **partial equilibrium analysis**, simplifying complex economic problems by isolating variables.
- Their **microeconomic approach** complemented macroeconomics by addressing issues often missed in aggregate analysis.
- Provided practical insights, such as:
    - Rising national income may **mask localized poverty**.
    - Small businesses face different challenges than large corporations during economic shifts.
    - **Individual credit decisions** may differ from broad investment trends, revealing the limits of aggregate conclusions.

Which Tenets of the Marginalist School Became Lasting Contributions?

- **Marginalist theories faced challenges**, especially from **Keynes**, who criticized their employment theory as a **fallacy of composition**: Wage cuts may help one firm, but if all firms cut wages, **aggregate demand could fall**, shrinking markets. **Pure competition**, a core marginalist assumption, was criticized as **outdated** post-1870s, as real-world markets became **less competitive**. **Institutional economists** argued that **historical and social factors**, not just rational decisions, shape behavior (e.g., work hours, wages, consumption). The marginalist view of **minimal government interference** became obsolete with **new events and theories**.
- Early marginalist analysis was **static, ahistorical**, and lacked **empirical verification**: Despite criticism, **many marginalist ideas endured** and are still present in **modern economics textbooks**. The marginalist school was absorbed into **neoclassical economics**, which, along with **Keynesian economics**, still dominates economic thought globally.
- Major lasting contributions of marginalism include: **Mathematical economics Monopoly and duopoly theory Theory of diminishing marginal utility Rational consumer choice theory Law of demand Law of diminishing returns in manufacturing Returns to scale Work-leisure choice analysis Marginal productivity theory of factor returns.**
- In recent decades, the **choice-theoretic approach** of marginalism has seen a **revival in economic theory**.

William Stanley Jevons

Value theory

Theory of diminishing marginal utility

Rational choice: equimarginal principle

Theory of exchange

Theory of labor

William Stanley Jevons: economic ideas

Value theory

In *The Theory of Political Economy* (1871), **William Stanley Jevons** asserted that **value depends entirely on utility**, challenging the classical **labor theory of value**.

Jevons argued that **labor influences value only indirectly** by affecting **supply**, which then changes **utility**.

He believed that value arises because people **derive utility from goods**, not because labor was used to produce them.

- Example: Pearls have value **because of the utility they provide**, not because divers work to obtain them.

Jevons emphasized the **law of diminishing marginal utility**—as people acquire more of a good, its **additional utility** decreases.

His theory involves: **Rational consumer behavior, Individual and market exchange mechanisms,** Determining the **optimal amount of work**

Jevons's utility-based theory of value laid the foundation for **marginalist economics**, linking **value** to **subjective preferences** and market behavior.

William Stanley Jevons: economic ideas

Theory of diminishing marginal utility

Jevons's theory of diminishing marginal utility built upon earlier ideas from **Gossen** and **Dupuit**.

He argued that **utility is subjective** and cannot be measured directly, only **inferred from human behavior and preferences**.

Jevons rejected comparing the **intensity of pleasure or pain across individuals**, but believed:

- A single person can compare **successive utilities** of one good.
- Individuals can also compare **marginal utilities** of different goods.

He used **graphical analysis** to illustrate the **law of variation of final degree of utility**:

- **Total utility (TU)** increases with more consumption, but at a **diminishing rate**.
- **Marginal utility (MU)** declines as more units are consumed—this is the **law of diminishing marginal utility**.

William Stanley Jevons: economic ideas

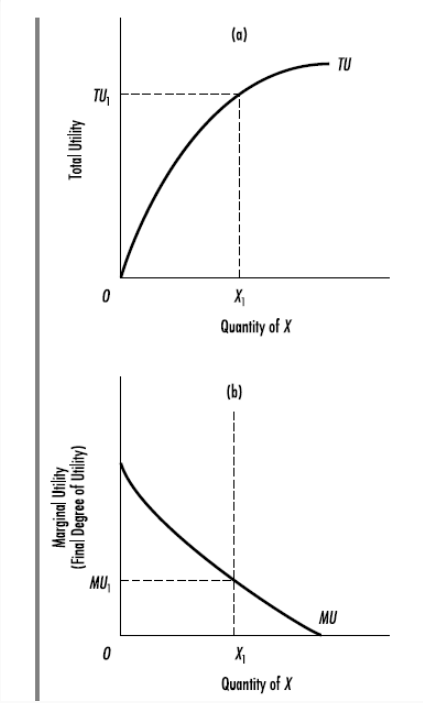
Theory of diminishing marginal utility

Marginal utility is defined as the **utility of the last or next small unit** consumed.

This theory **solved the water-diamond paradox**:

- Although **water has higher total utility**, its **marginal utility** is low due to abundance.
- **Diamonds have higher marginal utility**, making them more valuable in exchange despite lower total utility.

The insight: **Value in exchange** is determined by **marginal utility**, not total usefulness.



William Stanley Jevons: economic ideas

Rational choice: the equimarginal rule

Jevons used **marginal utility (final utility)** to develop a general theory of **rational choice**.

- Given a total stock of a commodity (s) that can be used in different ways (e.g., barley for beer or bread), the consumer allocates quantities (x_1 and y_1) so that: $\mathbf{x_1 + y_1 = s}$ (total amount is fixed).
- A rational consumer distributes the commodity so that the **marginal utility of the last unit used in each use is equal**.
- This reflects **Gossen's second law**, where utility maximization occurs when:
    - **Marginal utility per price (MUx/Px) is equal across all goods**.
- If the ratio MUx/Px is higher for one good, the consumer buys more of that good, increasing consumption until its marginal utility decreases.
- Simultaneously, marginal utilities of other goods rise as consumption decreases.
- The consumer maximizes total utility when **all marginal utility-to-price ratios are equalized** across goods.

William Stanley Jevons: economic ideas

Theory of Exchange

- Jevons applied **utility maximization** to explain the **gains from exchange** between parties with different goods (e.g., corn and beef).
- Each party benefits by trading goods that have **higher marginal utility relative to their price**.
- Party A, holding only beef, values corn more and will trade beef for corn; Party B values beef more and will trade corn for beef.
- Exchange continues until there are **no further utility gains possible** from trading.
- Trade stops when the **marginal utility ratio of the two goods equals their price ratio** for both parties.
- Example: If beef costs 10 times as much as corn, then a pound of beef must have 10 times the marginal utility of a pound of corn for exchange to cease.
- Algebraically: Exchange ends when **(Marginal Utility of Beef) / (Marginal Utility of Corn) = Price of Beef / Price of Corn**.

William Stanley Jevons: economic ideas

Theory of labor

Jevons argued that **utility determines exchange value**, not cost of production directly:

- Cost of production → Supply → Final degree of utility → Value.

He rejected the **labor theory of value** because labor varies greatly in **quality and efficiency**.

Labor is a **subjective cost** (a "painful exertion"), and workers balance the **pain of work** against the **pleasure of earnings**.

Changes in exchange value affect the **value of labor (wages)**, which in turn influence the **optimal amount of work** chosen by workers.

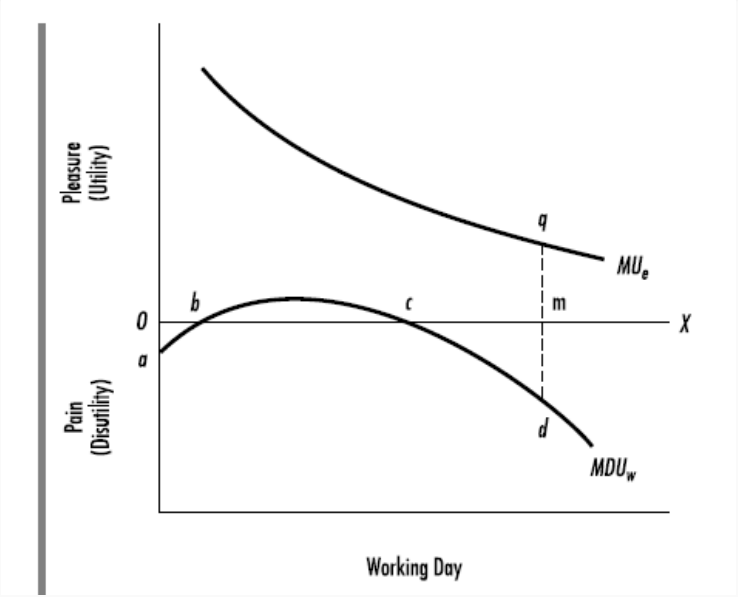
Therefore, labor time is **not the cause or measure** of exchange value; instead, the **value of labor depends on the marginal utility of the product produced**.

William Stanley Jevons: economic ideas

Theory of labor

Jevons's **optimal work theory**:

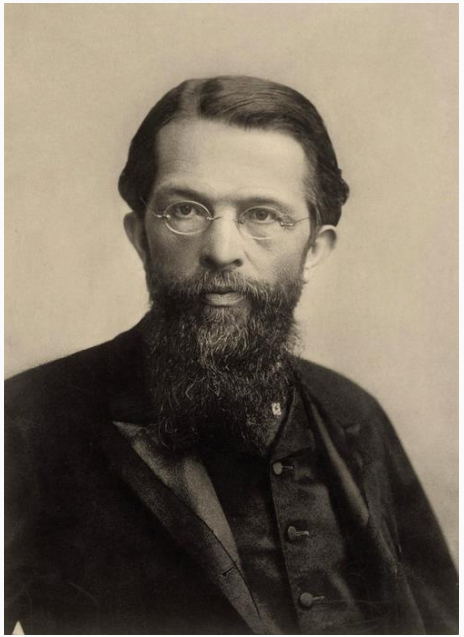
- Worker chooses to work up to the point where **marginal utility of earnings (MUe) equals marginal disutility of work (MDUw)**. The optimal amount of work is shown by m, where the marginal utility of earnings, qm,equals the marginal disutility of work, dm.
- Beyond this point, the pain of additional work outweighs the pleasure of extra earnings.
- Realistically, work hours may not always align with this optimal choice.



Carl Menger

Value theory

Theory of imputation



Carl Menger: economic ideas

Theory of value

- **Menger's value theory** is based on **utility** but avoids mathematics and Benthamite foundations, unlike Jevons. Each unit of a commodity adds less to total satisfaction than the previous one (**diminishing marginal utility**).
- Menger assumes equal expenditure per unit and that individuals can rank satisfactions **cardinally** (exact utility values), though this is debated. Using the **equimarginal rule**, consumers allocate limited budgets to equalize **marginal utility per price** across goods.
- Menger's concept of total utility differs from Jevons:
    - Menger values total utility as the **marginal utility of the last unit multiplied by quantity** (all units assumed equal utility).
    - Jevons values total utility as the **sum of the utilities of all units** (each unit has different utility).
- Menger's view implies that a **smaller quantity at higher marginal utility** can be more satisfying than a larger quantity with lower marginal utility.
- Value is entirely **subjective**, varying by individual preferences and income; it is **unrelated to labor or production costs**.
- Labor or production inputs do not determine value; instead, value depends on the **services the good provides and the satisfaction it yields**.
- Menger rejected the idea that trade is an end in itself; rather, **exchange occurs to increase total satisfaction** for all parties involved. Differences in **subjective valuations among individuals** form the basis of exchange value.

Carl Menger: economic ideas

Theory of value

Menger's Concept of Diminishing Marginal Utility

	DEGREE OF MARGINAL SATISFACTION									
Unit Consumed	(Food) I	II	III	IV	(Tobacco) V	VI	VII	VIII	IX	X
1st	10	9	8	7	6	5	4	3	2	1
2nd	9	8	7	6	5	4	3	2	1	0
3rd	8	7	6	5	4	3	2	1	0	
4th	7	6	5	4	3	2	1	0		
5th	6	5	4	3	2	1	0			
6th	5	4	3	2	1	0				
7th	4	3	2	1	0					
8th	3	2	1	0						
9th	2	1	0							
10th	1	0								
11th	0									

The table lists **10 commodities (I to X)** with **marginal utility values** assigned to successive units consumed.

Marginal utility decreases as more units of a commodity are consumed (law of diminishing marginal utility).

For example, **food (Commodity I)** has the highest initial marginal utility of **10** for the first unit, decreasing to **1** by the 10th unit, and zero beyond that.

Less essential goods like tobacco (Commodity V) start with a lower marginal utility (e.g., 6 for the first unit) and reach zero utility after fewer units.

The table demonstrates how a consumer would allocate a fixed budget ($10) across different goods by equalizing the **marginal utility per dollar spent** on each commodity.

Consumer maximizes total satisfaction by balancing consumption according to diminishing marginal utilities and prices.

Carl Menger: economic ideas

Theory of value

Given:

- Consumer has **$10 to spend**.
- All commodities cost **$1 per unit**.
- The table provides **marginal utilities (MU)** for each unit of 10 commodities. 1st unit of Food: MU = 10, 1st unit of Commodity II: MU = 9, 1st unit of Commodity III: MU = 8
- 2nd unit of Food: MU = 9, 2nd unit of Commodity II: MU = 8, 2nd unit of Commodity III: MU = 7
- Goal: Allocate $10 so that the **marginal utility per dollar spent (MU/P)** is equalized across all purchased goods.

Menger's Concept of Diminishing Marginal Utility

Unit Consumed	DEGREE OF MARGINAL SATISFACTION (Food) I	II	(Tobacco) III	IV	V	VI	VII	VIII	IX	X
1st	10	9	8	7	6	5	4	3	2	1
2nd	9	8	7	6	5	4	3	2	1	0
3rd	8	7	6	5	4	3	2	1	0	
4th	7	6	5	4	3	2	1	0		
5th	6	5	4	3	2	1	0			
6th	5	4	3	2	1	0				
7th	4	3	2	1	0					
8th	3	2	1	0						
9th	2	1	0							
10th	1	0								
11th	0									

Carl Menger: economic ideas

Theory of value

Since all prices are $1, the goal is to pick units with the **highest MU** first, then next highest, and so on, until $10 is spent. The consumer will buy units in descending order of MU values across all goods.

Units purchased:

- Food: 4 units (MU: 10, 9, 8, **7**)
- Commodity II: 3 units (MU: 9, 8, **7**)
- Commodity III: 2 units (MU: 8, **7**)
- Commodity IV: 1 unit (MU: **7**)

$$\frac{MU_1}{P_1} = \frac{MU_2}{P_2} = \frac{MU_3}{P_3} = \dots$$

Total units = 4 + 3 + 2 + 1 = 10 units, costing $10 total. The marginal utility of the last unit bought (the 10th unit) is 7. Marginal utility per price ratio (MU/P) for all goods at this point is approximately **7 / $1 = 7**.

Unit #	Food (I)	Commodity II	Commodity III	Commodity IV	Tobacco (V)
1	10	9	8	7	6
2	9	8	7	6	5
3	8	7	6	5	4
4	7	6	5	4	3
5	6	5	4	3	2

The consumer maximizes total satisfaction by purchasing quantities so that the **marginal utility per dollar spent is equal (7) across all goods**.

This allocation ensures no reallocation can increase total utility — if they bought more of any good with lower MU/P, it would reduce overall satisfaction.
This is the **equimarginal principle** in action, showing **optimal consumption balancing diminishing marginal utilities and prices**.

Carl Menger: economic ideas

Theory of imputation

- **Imputation Concept Originator**: Menger introduced the idea that the value of production goods (inputs) is **imputed from the value of the final consumer goods** they help produce.
- **Extension of Marginal Utility**: While marginal utility applies directly to consumer goods, Menger extended it to **higher-order goods** (like machinery, land, and raw materials) through imputation.
- **Indirect Utility**: These production goods have **indirect utility** because they contribute to the creation of goods that satisfy consumer wants.
- **Example**: The utility (and value) of iron depends on the utility of products made from it (e.g., a thimble). The **usefulness of the thimble is imputed to the iron**.
- **Land and Rent**: The **rent** of land is determined by the **utility of the products** grown on that land, not by land's inherent characteristics or cost.

Carl Menger: economic ideas

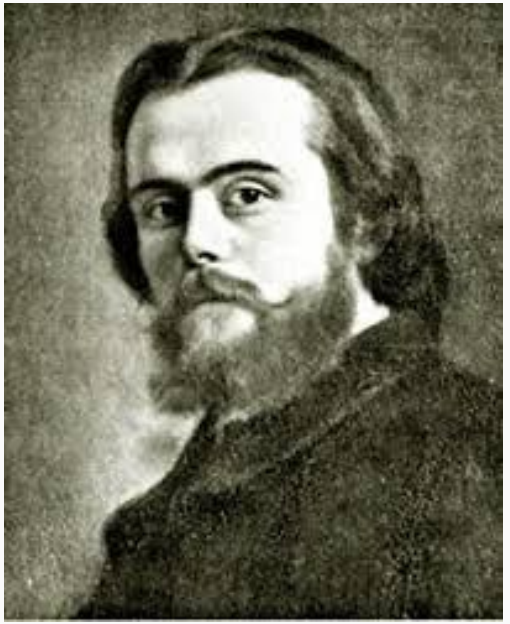
Theory of imputation

- **Valuation of Factors**: Factors of production (labor, capital, land) derive their **exchange value** from their **use value**, which in turn comes from the **marginal utility of final goods**.
- **Deduction for Capital and Profit**: The **present value** of production goods = **future value of final goods** minus **interest (capital services)** and **profit (entrepreneurial reward)**.
- **Critique of Cost-Based Theories**: Menger **rejected labor and real-cost theories** of value (like Ricardo's), stating that **value does not come from inputs**, but from **outputs**.
- **Labor Value**: The value of labor is not tied to **subsistence costs**, but to **the importance of the satisfactions** that would be **lost without it**.
- **Subjective Value Theory**: Prices are based on **subjective valuations** of utility, even for production inputs—not on **objective production costs**.

Léon Walras: economic ideas

Marginalist pioneer

Theory of general equilibrium



Léon Walras: economic ideas

Marginalist Pioneer: Léon Walras, along with Jevons and Menger, is one of the three founders of marginalism.

General Equilibrium: Walras developed **general equilibrium analysis**, examining the interdependence of **all markets simultaneously**, unlike partial equilibrium (one market at a time) used by Jevons, Menger, and Marshall.

Ripple Analogy: Changes in one market (like a rock in water) cause ripple effects across the economy, with feedback loops until a new overall equilibrium is reached.

Example – Oil Price Increase:

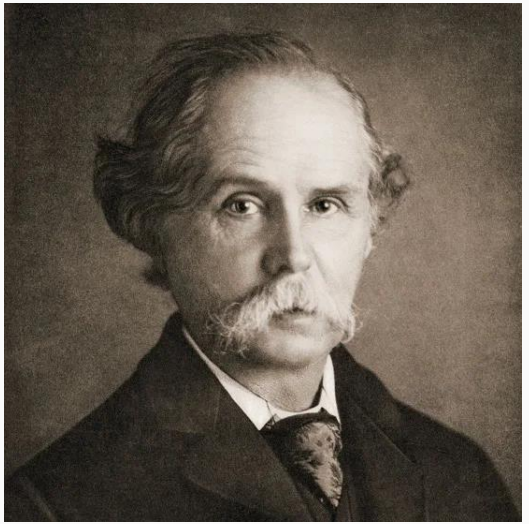
- Raises demand (and price) for substitutes like coal.
- Raises gasoline prices → affects demand for cars and car washes (complements).
- May increase demand for unrelated goods like books.
- Raises transport costs → raises prices of many goods.
- Shifts labor and capital among industries (e.g., less car production, more home insulation).
- Eventually a new general equilibrium is reached.

Léon Walras: economic ideas

- **Mathematical System**:
  a. Each commodity **quantity demanded and supplied depends on prices of all commodities**:
  b. $D_1 = F_1(p_1, p_2, ..., p_n)$, $D_2 = F_2(p_1, p_2 \dots p_n)$, $S_1 = F_1(p_1, p_2 \dots p_n)$, $S_2 = F_2(p_1, p_2 \dots p_n)$
  c. In equilibrium: **Demand = Supply** for each commodity. Creates **n simultaneous equations** to solve for **n unknown prices**.
- **Key Assumptions**:
  a. **Fixed supplies** of goods.
  b. **Constant returns**, **no externalities**, **perfect competition**, **flexible wages and prices**.
- **Price Determination**: Prices are mathematically solvable when all interdependencies are considered.
- **Difference from Marshall**: Walras treated **price as the independent variable**, quantity as the dependent one — opposite of Marshall's approach.
- **Limitations**: Too many variables for precise predictions, Requires unrealistic assumptions, Not a practical forecasting tool but a **conceptual model** of how interconnected economies work.
- **Importance**: Emphasizes **interdependence of markets**. Avoids misleading conclusions that might arise from partial analysis (e.g., assuming imports reduce overall employment without considering wider effects).

Alfred Marshall

Alfred Marshall, a foundational figure in neoclassical economics, was the son of a Bank of England cashier and raised by a strict father who pressured him to enter the ministry and discouraged both mathematics and leisure activities like chess. Rejecting his father's plans, Marshall declined an Oxford scholarship that would have led to a religious career and instead pursued mathematics, physics, and eventually economics at Cambridge, with financial support from a wealthy uncle. Despite being an expert in mathematics, Marshall was cautious about its role in economics, relegating most of his mathematical work to footnotes and appendices. He became known for popularizing the diagrammatic approach to economic analysis, which clarified key principles but has often challenged beginners. Many of his major ideas were developed well before the publication of his influential Principles of Economics in 1890. Marshall's work marked a significant shift by integrating classical insights with marginalist ideas, helping to shape the foundation of modern neoclassical economics.



Alfred Marshall: economic ideas

Utility and demand

Rational consumer choice: law of demand

Consumer’s surplus

Elasticity of demand

Supply: immediate present, short-run, long-run

Equilibrium price and quantity

Distribution of income

Increasing and decreasing returns to scale

Internal and external economies

Alfred Marshall: economic ideas

Theory of supply

Marshall divided time into three periods: (1) the immediate present, (2) the short run, and (3) the long run.

1. Immediate Present (Market Period)

Market period, which may be as short as one day, is defined as that period during which the quantity supplied cannot be increased in response to a suddenly increased demand. Nor can the quantity supplied be decreased immediately in response to a decline of demand, because it takes time for production to be curtailed and inventories reduced.

- **No time to adjust supply** to changes in demand.
- **Market supply is fixed** for that short time—could be as brief as a day.
- For **perishable goods**, supply curve is **perfectly inelastic (vertical)**—sellers accept low prices to avoid spoilage, e.g. fish.
- For **non-perishables**, sellers may set **reservation prices**; some may sell below cost due to urgency for pressing bills, making the **market supply curve upward sloping until it becomes vertical** at the maximum available quantity, e.g., leftover canned food after a festival ends.

Alfred Marshall: economic ideas

Theory of supply

Marshall divided time into three periods: (1) the immediate present, (2) the short run, and (3) the long run.

2. Short Run

- **Some inputs (fixed costs)**, like plant or salaries, **cannot be changed**; **variable costs**, like labor and materials, **can be adjusted**.
- Firms will **operate as long as they can cover variable costs**, even if not covering fixed costs.
- **Short-run supply curve slopes upward** due to:
  - **Increasing marginal costs** from diminishing returns.
  - Firms expand output only when **price ≥ marginal cost**.
- Marshall's unique contribution:
  - Behind costs are **psychological sacrifices**:
    - **"Irksomeness"** of labor (disutility of extra work).
    - **"Waiting"** (postponing consumption via saving), replacing Senior's "abstinence".
  - Higher wages = higher marginal costs = higher prices needed to induce more supply.

Alfred Marshall: economic ideas

Theory of supply

Marshall divided time into three periods: (1) the immediate present, (2) the short run, and (3) the long run.

3. Long Run

- **All costs become variable**; **all must be covered** for a firm to remain in the industry.
- If **price > average cost**, new firms enter → **supply increases**, shifting the supply curve **rightward**.
- If **price < average cost**, firms exit → **supply decreases**, shifting the curve **leftward**.
- **Long-run equilibrium** occurs where **price = minimum average cost**, and no new firms have incentive to enter or exit.

Alfred Marshall: economic ideas

Theory of wage:

Wages are not determined by marginal productivity alone.

- **Marginal productivity** forms the **basis of labor demand**, which is **derived** from consumer demand for final products.
- **Wages depend on both demand and supply** of labor.

Changes in labor supply affect marginal productivity:

- **Increased supply** → marginal productivity falls → **wage rate falls**.
- **Decreased supply** → marginal productivity rises → **wage rate rises**.

At a given supply, wages equal marginal productivity.

Firms are **wage takers**; they adjust employment until **marginal revenue product = wage rate** (optimal employment level).

Alfred Marshall: economic ideas

Marshall's Four Laws of Derived Demand (as summarized by Pigou)

1. **Substitutability of other factors**:
   - More **substitutes for labor** (e.g., robots) → higher **elasticity of labor demand**.
   - Wage increases lead to **larger employment drops** if substitutes are available.
2. **Price elasticity of product demand**:
   - Greater product demand elasticity (e.g., restaurant meals) → greater **labor demand elasticity**.
   - A **wage rise increases costs** → product price rises → **sharp drop in sales and employment**.
3. **Labor's share in total cost**:
   - If **labor is a large portion** of total costs, wage increases cause **larger cost rises**, raising prices and **reducing employment** significantly.
4. **Elasticity of supply of other inputs**:
   - If other inputs (like capital) are **easily available (elastic supply)**, firms can **substitute them for labor** more easily when wages rise.
   - This increases **labor demand elasticity**.

These points explain how both the **market dynamics** and **input relationships** affect wage levels and labor demand responsiveness.

Alfred Marshall: economic ideas

Internal and External Economies

Internal economies refer to cost savings within a firm as it grows in size.

- Result from **specialization**, **mass production**, and **better machinery**.
- Larger firms benefit from **lower buying/selling costs**, **easier access to credit**, and **more efficient management**.

External economies arise from the growth of the **industry as a whole**, not just one firm. Caused by **local suppliers** setting up nearby, **cheaper inputs**, **reduced transport costs**, and **better infrastructure** like transportation services.
Industry growth generally:

- Increases both **internal economies** (for growing firms) and **external economies** (shared by all firms).
- **Lowers production costs** overall due to these combined efficiencies.

Challenge of competition: If larger firms become more efficient, why doesn't one firm dominate (natural monopoly)?

- **Marshall’s solution**: the **representative firm** concept.
  - Firms are **born, grow, and die**; no single firm dominates forever.
  - **New entrepreneurs** enter the market, ensuring **renewed competition and efficiency growth**.

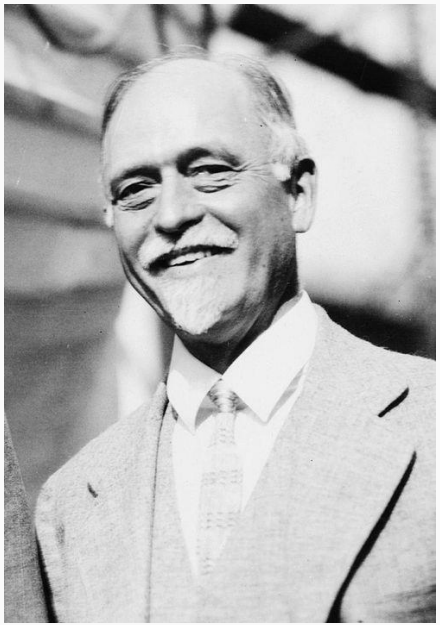
Alfred Marshall: economic ideas

Aspect	Walras	Marshall
Scope	General Equilibrium (all markets)	Partial Equilibrium (one market at a time)
Method	Highly mathematical	Math + verbal + diagrammatic
Equilibrium Concept	Simultaneous, static equilibrium	Dynamic adjustment process
Price Adjustment	Instantaneous (via auctioneer)	Gradual, through market forces
Time Frame	Timeless/static	Short-run vs. Long-run
Policy Orientation	Theoretical	Practical/everyday application
Application	Oil price increase	Oil Market (quantity of oil supplied and demanded and equilibrium price of oil)

Irving Fisher

Theory of interest

Quantity theory of money



Irving Fisher: economic ideas

Theory of Interest

Main Sources: Initial Work: *The Rate of Interest* (1906), **Expanded Version**: *The Theory of Interest* (1930)

Two Key Determinants of Interest Rates

a. Impatience Rate (Time Preference)

- Reflects society's **willingness to give up future consumption** for present consumption.
- High impatience = low saving = high interest rates.
- Low impatience = high saving = low interest rates.
- The **more present consumption a society has**, the **less it values additional units of it** at the margin.

b. Investment Opportunity Rate

- Determined by **real, objective factors**: resource availability, technology, productivity.
- Shows the **rate of return from investment** in capital goods.
- As society invests more, **diminishing marginal returns** occur → the opportunity rate declines.
- Follows the **principle of diminishing returns** on capital investment.

Irving Fisher: economic ideas

Theory of Interest

Interaction of the Two Rates

- The **equilibrium interest rate** is where:
  - **Impatience rate = Investment opportunity rate**
- At this point:
  - **Present vs. future consumption trade-offs** are balanced.
  - **Savings = Investment**
  - **Borrowing = Lending**
  - Some people lend (postpone consumption), others borrow (consume now).

Real vs. Nominal Interest Rate

- **Real interest rate**: Determined by impatience and investment opportunity rates.
- **Nominal interest rate**: Real interest rate **+ expected inflation rate**
- This relationship is known as the **Fisher Effect**.

Irving Fisher: economic ideas

Theory of Interest

The Fisher Effect

- If **expected inflation** rises:
  - **Nominal interest rate increases** to maintain the lender’s purchasing power.
- Thus, high nominal rates may reflect **inflation expectations**, not higher real returns.
- Example:
  - If real interest = 3%
  - Expected inflation = 5%
  - Then nominal interest ≈ 8%

This model bridges **subjective preferences** (impatience) and **objective opportunities** (returns to investment), providing a comprehensive explanation of how real and nominal interest rates are determined.

Irving Fisher: economic ideas

Quantity Theory of Money

The Equation of Exchange Fisher formulated the equation of exchange as: **$MV + M_0V_0 = PT$.** where:

- **M** = Quantity of currency
- **V** = Velocity of currency
- **M_0** = Volume of demand deposits
- **V_0** = Velocity of deposits
- **P** = Price level
- **T** = Volume of transactions (trade)

Fisher identified **five key determinants** of the purchasing power of money (or its inverse, the price level):

1. **M** – Quantity of currency in circulation
2. **V** – Velocity of currency circulation
3. **M_0** – Bank demand deposits
4. **V_0** – Velocity of deposits
5. **T** – Volume of trade (total transactions)

Irving Fisher: economic ideas

Quantity Theory of Money

Fisher stressed **V and V_0** (velocity), rather than the **Cambridge k** (the cash-balance ratio). Cambridge approach: **k = 1/V**

His version is more dynamic, focusing on **how quickly money changes hands**.

- **Prices (P)** vary: **Directly** with **M**, **M_0**, **V**, and **V_0 and Inversely** with **T**
- The **quantity of money** is the most important driver in the **short run** (assuming other variables constant).

Fisher assumed **M_0 is a stable multiple of M** because:

  - Banks maintain stable reserve ratios.
  - People hold stable currency-to-deposit balances.
- Any imbalance between M and M_0 is self-correcting through deposits or withdrawals.
- Transmission mechanism: People desire to **hold a fixed ratio of cash to expenditures**. If **M increases**, this balance is disturbed → people **increase spending**. This **additional expenditure raises prices** proportionally → **direct link between money supply and price level**.