

Second Generation Marginalists

- Mainly in the 1880s
- Some further development of exchange theory
- Development of theory of production and distribution
- Marginal Productivity theory
- Development of theories of Interest and Capital
- Edgeworth, Wicksteed, J. B. Clark, Böhm-Bawerk, Wicksell

Francis Ysidro Edgeworth

1845-1926



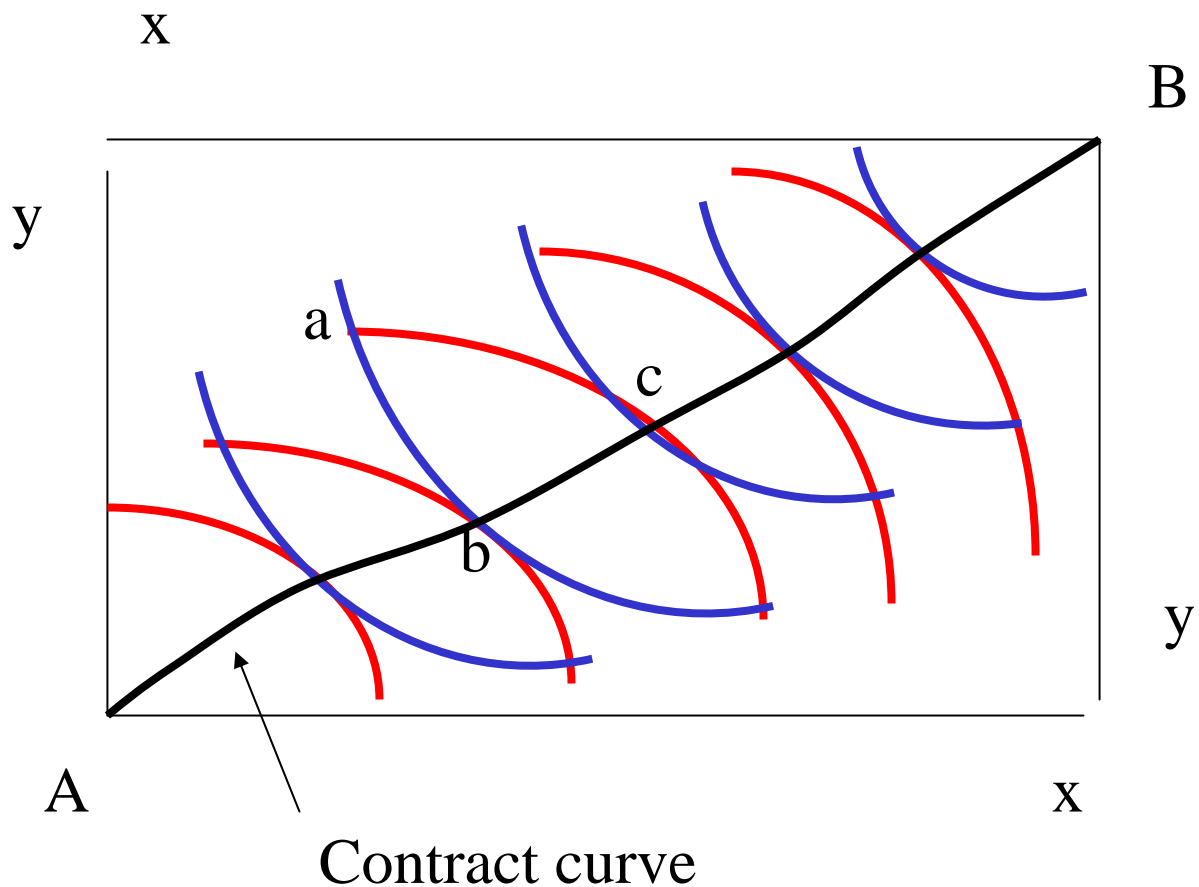
F. Y. Edgeworth

1845-1926

- *Mathematical Psychics* 1881
- Developed Jevons' treatment of exchange
- Used a general form of the utility function in place of Jevons' additive form
- Development (along with Pareto) of the indifference curve concept (indifference curves did not become popular until the 1930s)
- Edgeworth box diagram and the contract curve
- Importance of the number of traders for determinacy

Edgeworth Box

Drawn for two individuals with given initial endowments of x and y



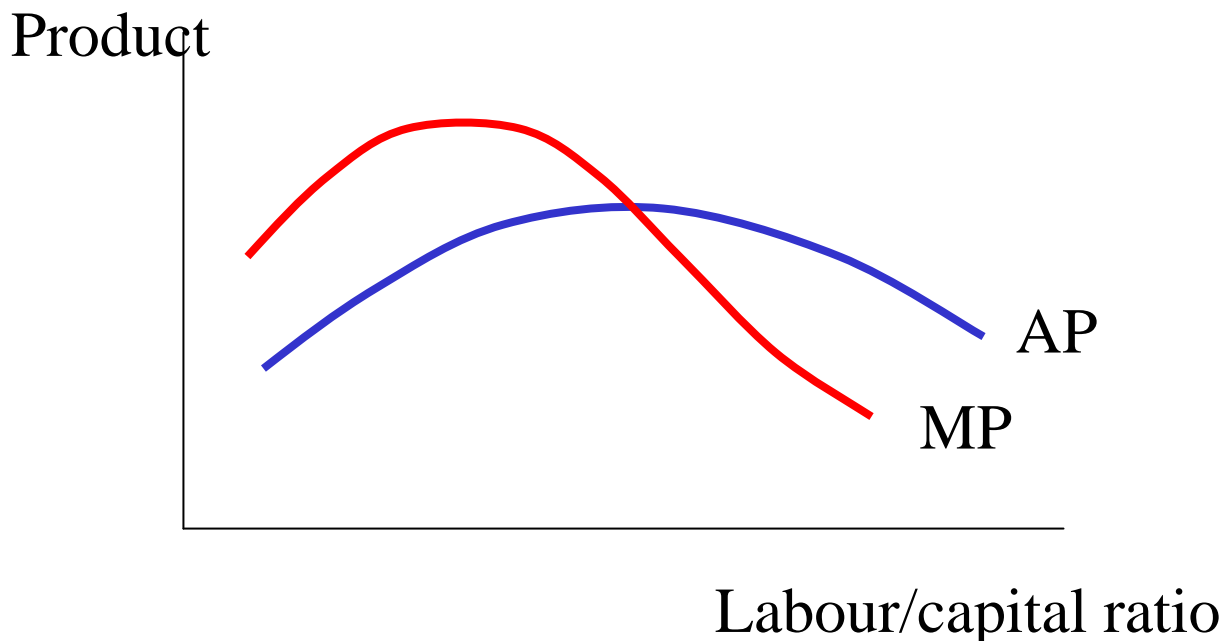
a is the point of initial endowments—parties will move onto the contract curve somewhere between b and c

Edgeworth on Production

- Production was not well treated by Jevons or Menger
- Even Walras assumed fixed proportions production functions
- Edgeworth developed the theory of short run production when one factor is fixed and the other is variable—
law of diminishing returns
- In classical economics this was applied only to production from land (Ricardian rent theory)
- Edgeworth generalized this and made a clear distinction between average and marginal products (these had often been confused in the past)

Edgeworth on Production

- Edgeworth pointed out that diminishing returns due to the change in the *factor proportions*
- Diminishing returns as the Law of Variable Proportions



Philip Henry Wicksteed

1844-1927



Philip Wicksteed on Production

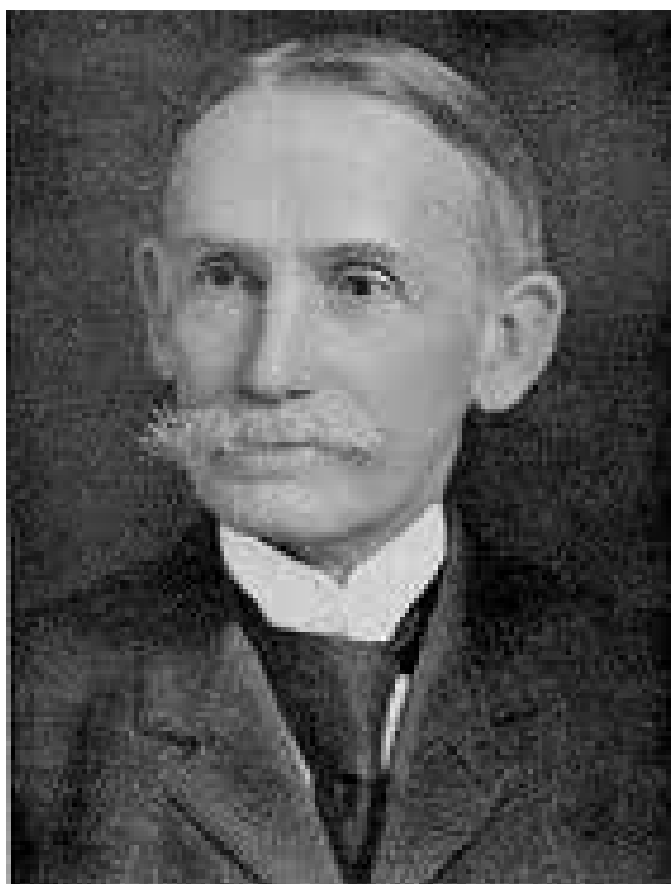
- Wicksteed's contribution was to clarify the concept of returns to scale
- J. S. Mill has talked of increasing returns to scale in manufacturing industry
- Wicksteed discusses constant, increasing, and decreasing returns to scale
- What happens to output when all inputs are increased *in proportion*
- Linearly homogeneous production functions display constant returns to scale

Wicksteed on Production

- If the production function is linearly homogeneous it also has the property of product exhaustion
- That is the sum of the marginal products add up to the total product
- If each factor is paid its marginal product that will exactly equal the total product available to be distributed
- Vital link between theory of production and theory of distribution

John Bates Clark

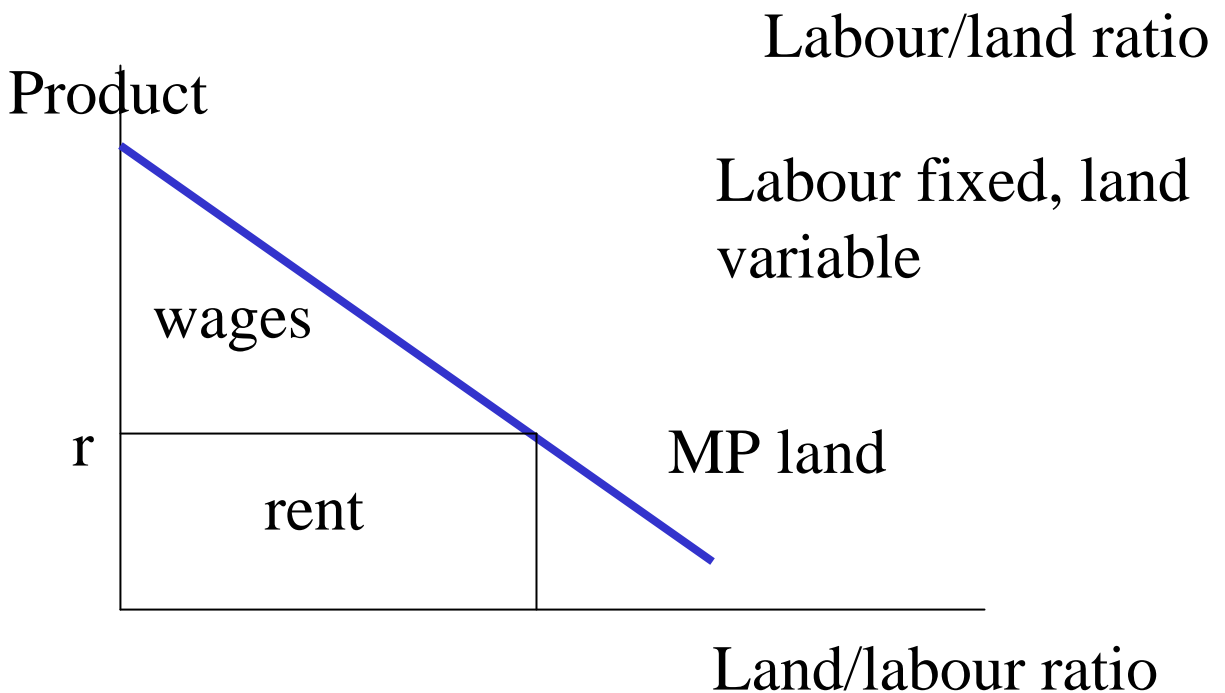
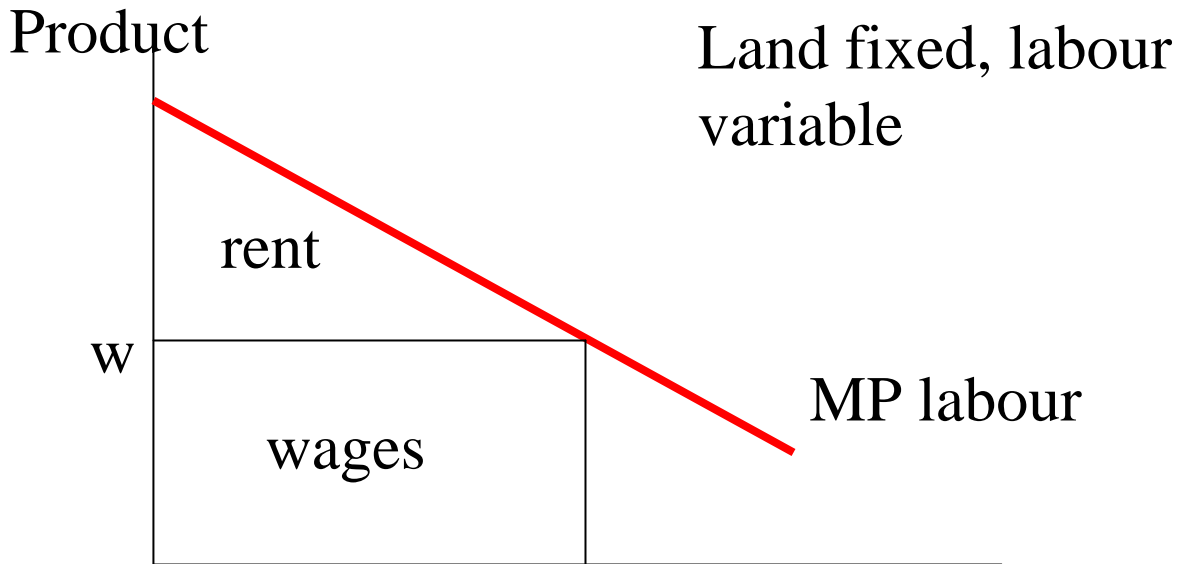
1847-1938



J. B. Clark and Marginal Productivity Theory

- J. B. Clark also developed a theory of marginal productivity of all factors
- Generalization of Ricardian rent theory
- With one factor fixed and one variable, the variable factor will have diminishing marginal productivity
- Could treat any factor as the fixed factor

J. B. Clark and Marginal Productivity



J. B. Clark and Marginal Productivity

- If the price of the output is fixed in a competitive market the addition to total revenue of an additional unit of the variable factor will be

$$MP \times P = MRP$$

- Profit maximizing firms will hire a factor only to the point where its price = MRP
- MRP curve is the firm's demand curve for that factor
- Problem of aggregation to market demand

Clark's Ethical Interpretation

- Under competitive conditions each factor will be receiving the value of its marginal product
- Clark regarded this as a refutation of Marx's theory of exploitation and regarded distribution on the basis of marginal product as "just"
- For Clark problems with distribution arose only where workers were not receiving their marginal products, and not simply because wages were low
- Bargaining power of employers, rapid technological change etc gave a role for unions in order that labour receive its marginal product

Eugen von Böhm-Bawerk

1851-1914



Böhm-Bawerk and the Austrian Theory of Interest

- In late Classical economics, interest had been seen as a return to abstinence
- Menger had rejected this as abstinence was not an economic good and could not have value
- Böhm-Bawerk also rejected the Marxian exploitation theory of profit
- Böhm-Bawerk attempted to build on Menger's theory of valuation and imputation by developing the treatment of the time dimension of production

Böhm-Bawerk and Interest

- Labour and land are the “original factors” of production
- These could be used to produce consumption goods or produced means of production (capital goods)
- Capital goods increase productivity but lengthen the period of production between the original factors and consumption goods
- Concept of the “roundaboutness” of production

Böhm-Bawerk and Interest

- Any good available now will have a greater value than goods available in the future
- Present goods command a premium over future goods
- Three reasons for interest
 - People hope to be better provided for in the future
 - People underestimate future wants
 - The “technical superiority” of presently available productive resources

Böhm-Bawerk and Interest

- The first two reasons result in consumer preference for present consumption goods over future consumption goods
- The third reason means that presently available capital goods have greater want satisfying power than capital goods available later
- Debate over whether the third reason is distinct from the first two

Böhm-Bawerk and Interest

- The third reason on its own would result in all present resources being used to increase the period of production which would become infinitely long
- This is prevented by the first two reasons which discount the value of future consumption goods
- Without a positive interest rate the first two reasons would result in an excess demand for consumption loans and the third reason would result in an excess demand for producer loans
- Interest is necessary for inter-temporal allocation

Böhm-Bawerk and Profit

- Profit is a form of interest
- Capitalists purchase inputs and production goods which will produce output in the future
- Labour is paid the present value of its future output
- Marxian theories of exploitation ignore the time dimension of production and compromise the important economic function of an interest rate

Wicksell and Capital Theory

- Wicksell's work on capital theory grew out of his study of Bohm-Bawerk
- Capital structure: “width” is the quantity of land and labour inputs invested in capital, while “height” is the period of production or the amount of time such inputs must remain invested before output is produced
- Value of the capital stock is the amount invested in labour and land compounded at the interest rate over the average investment period