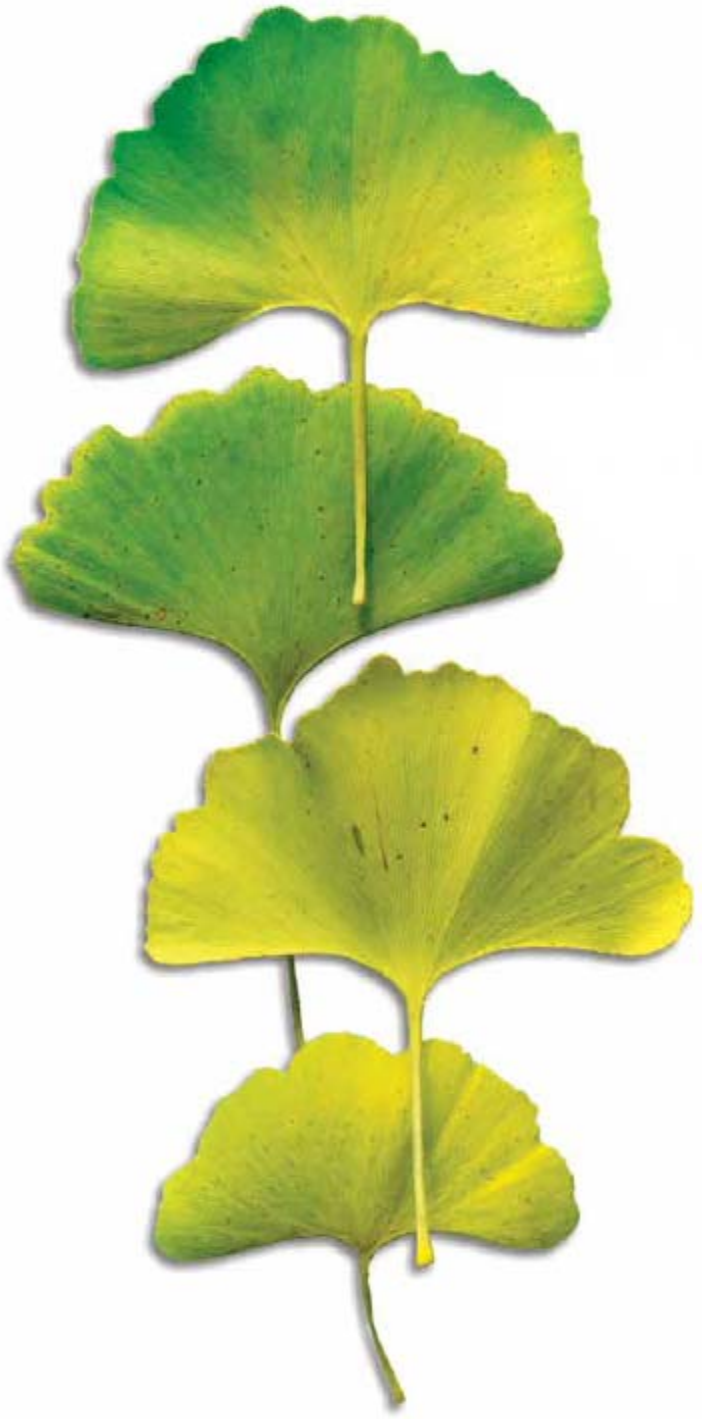
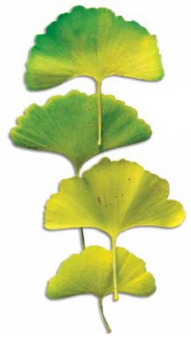


Chapter 17

General Equilibrium and Market Efficiency

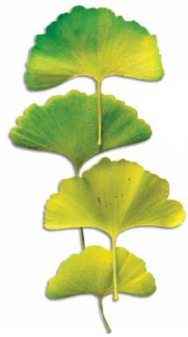
Chapter Outline

- A Simple Exchange Economy
- The Invisible Hand Theorem
- Efficiency In Production
- Efficiency In Product Mix
- Gains From International Trade
- Taxes In General Equilibrium
- Other Sources Of Inefficiency



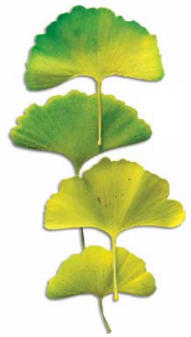
A Simple Exchange Economy

- ***General equilibrium analysis:*** the study of how conditions in each market in a set of related markets affect equilibrium outcomes in other markets in that set.



A Simple Exchange Economy

- Consider a simple economy in which there are only two consumers—Ann and Bill— and two goods, food and clothing.
  - *Allocation:* an assignment of these total amounts between Ann and Bill.
  - *Initial endowments: t*he amounts of the two goods with which Ann and Bill begin each time period.



Edgeworth Exchange Box

- ***Edgeworth exchange box:*** a diagram used to analyze the general equilibrium of an exchange economy.

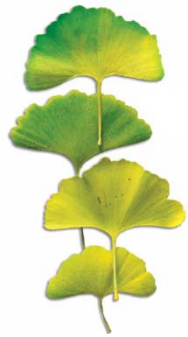


Figure 17.1: An Edgeworth Exchange Box

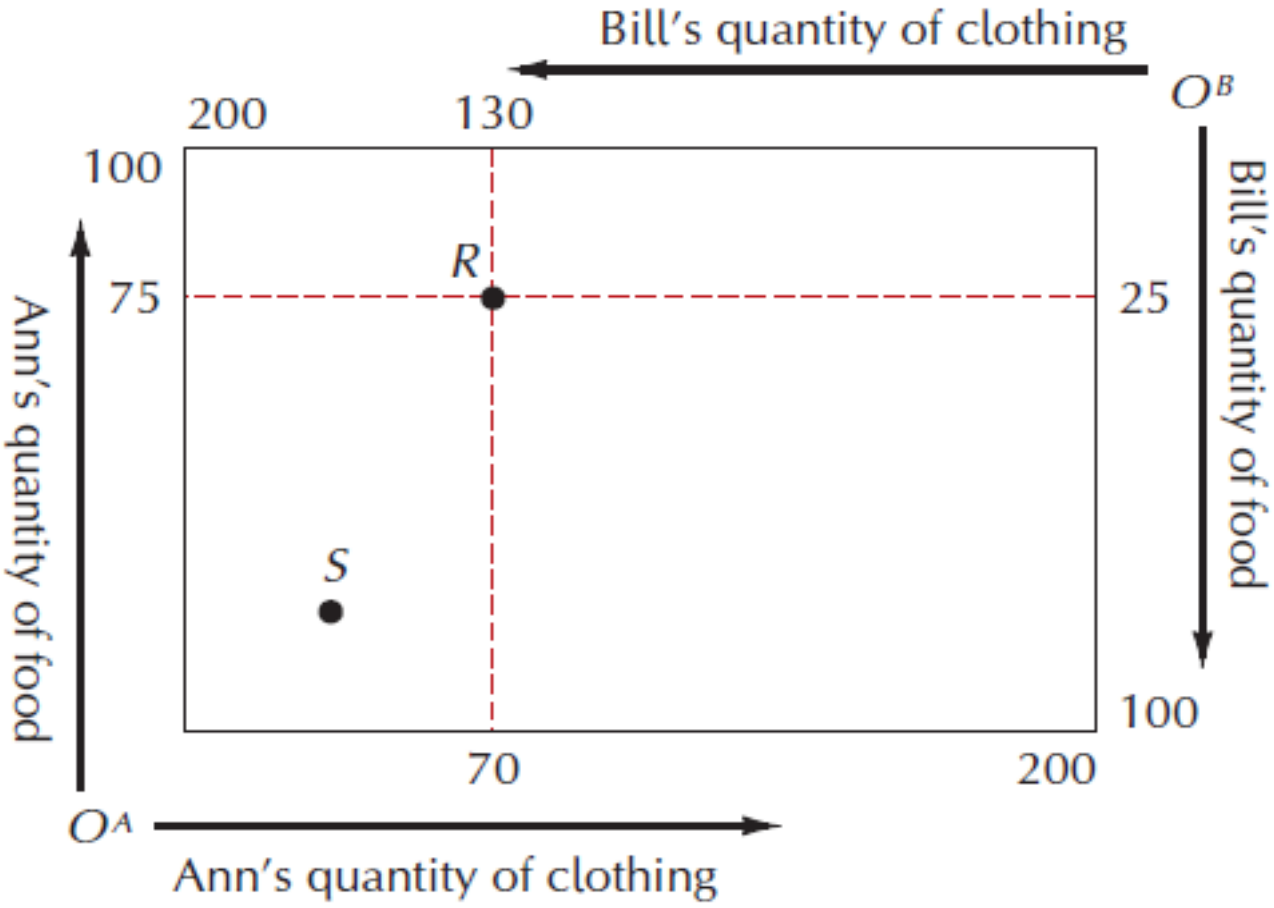


Figure 17.2: Gains from Exchange

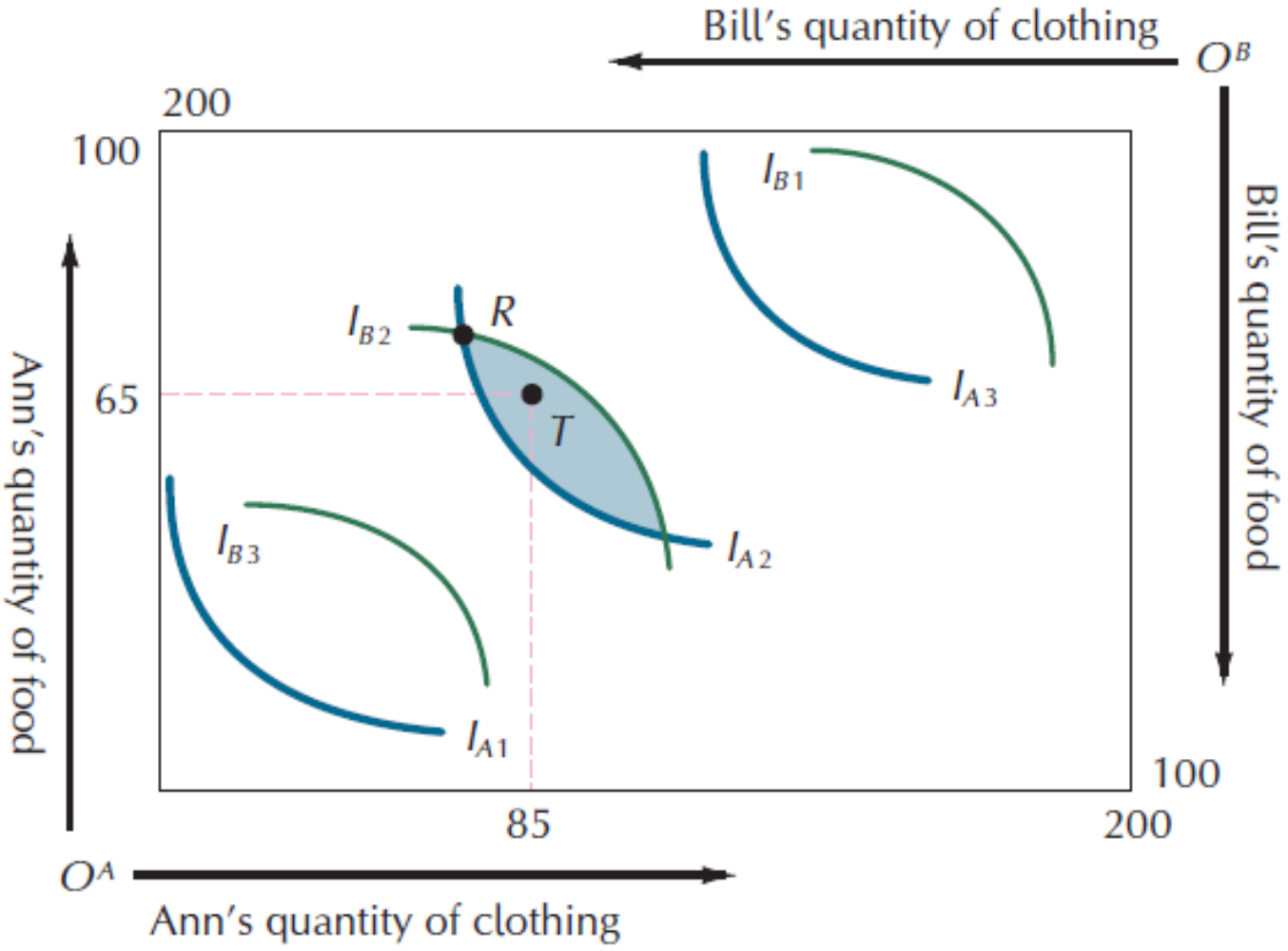
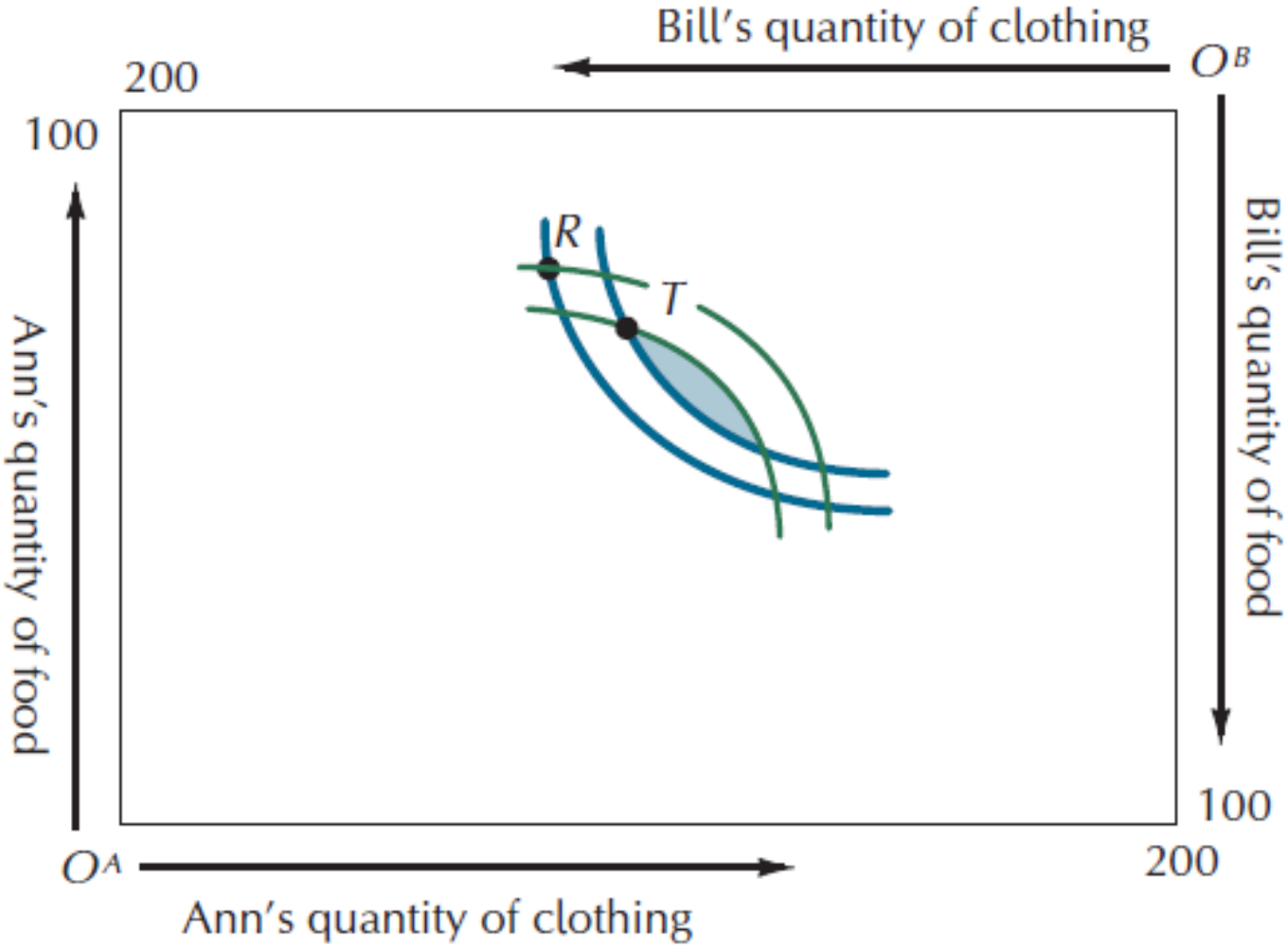


Figure 17.3: Further Gains from Exchange



Pareto Allocations

- ***Pareto superior allocation***: an allocation that at least one individual prefers and others like at least as well.
- ***Pareto optimal allocation***: used to describe situations in which it is impossible to make one person better off without making at least some others worse off.

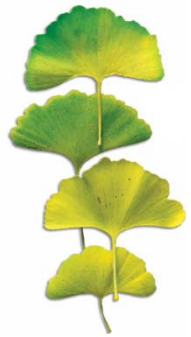
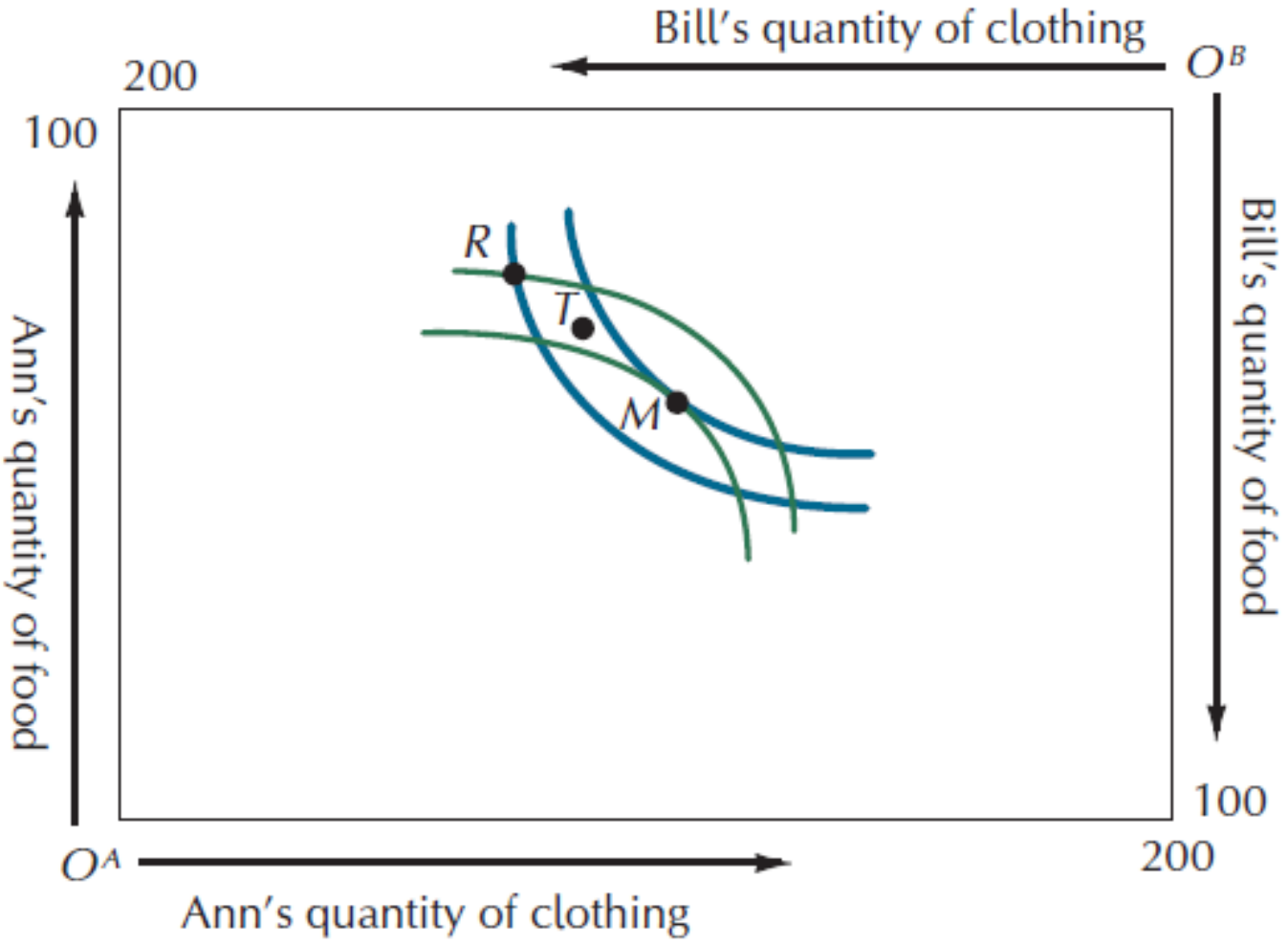


Figure 17.4: A Pareto-Optimal Allocation



The Contract Curve

- ***Contract curve:*** a curve along which all final, voluntary contracts must lie.
  - Identifies all the efficient ways of dividing the two goods between the two consumers.

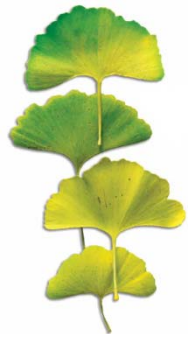


Figure 17.5: The Contract Curve

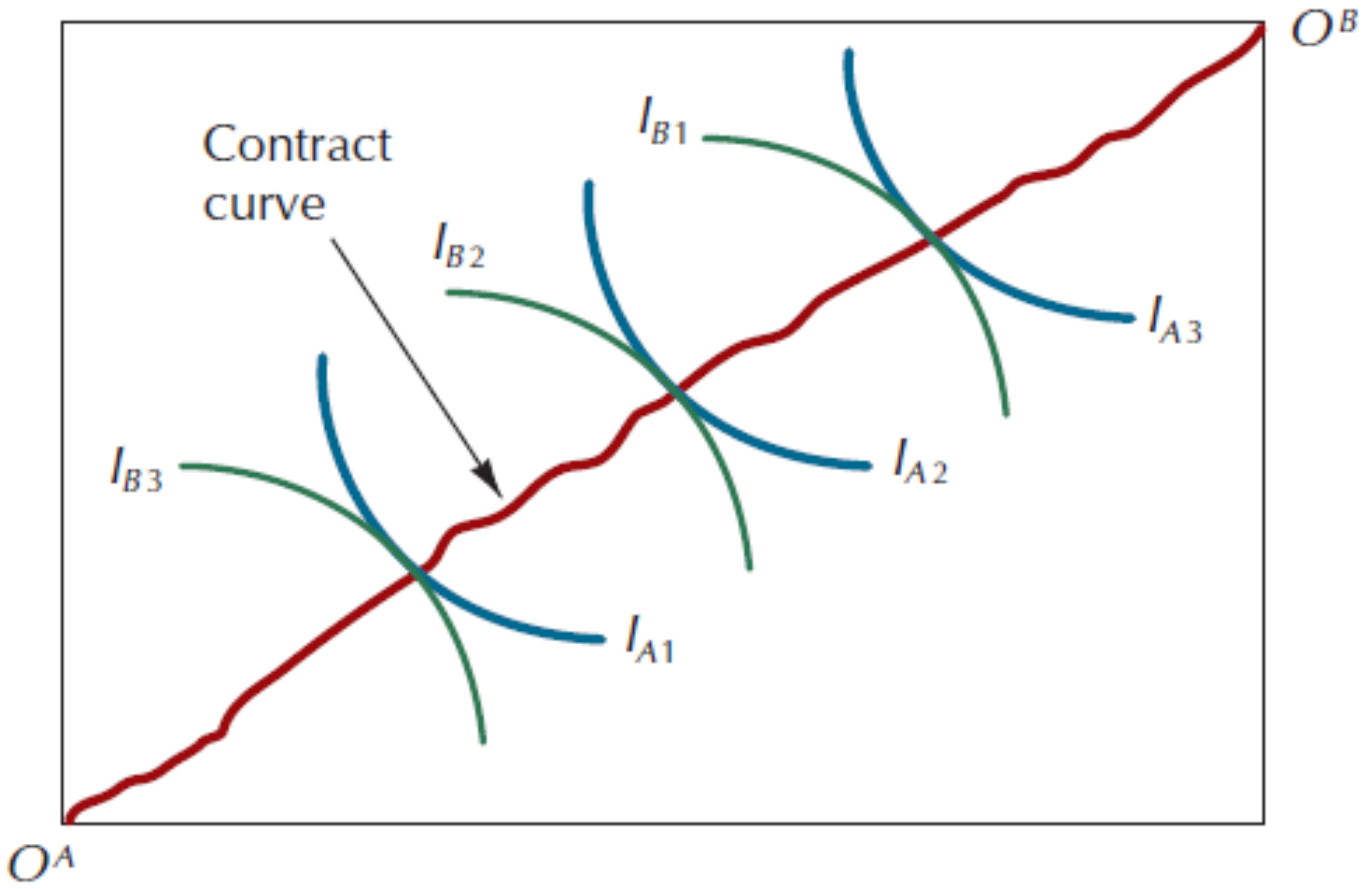


Figure 17.6: Initial Endowments Constrain Final Outcomes

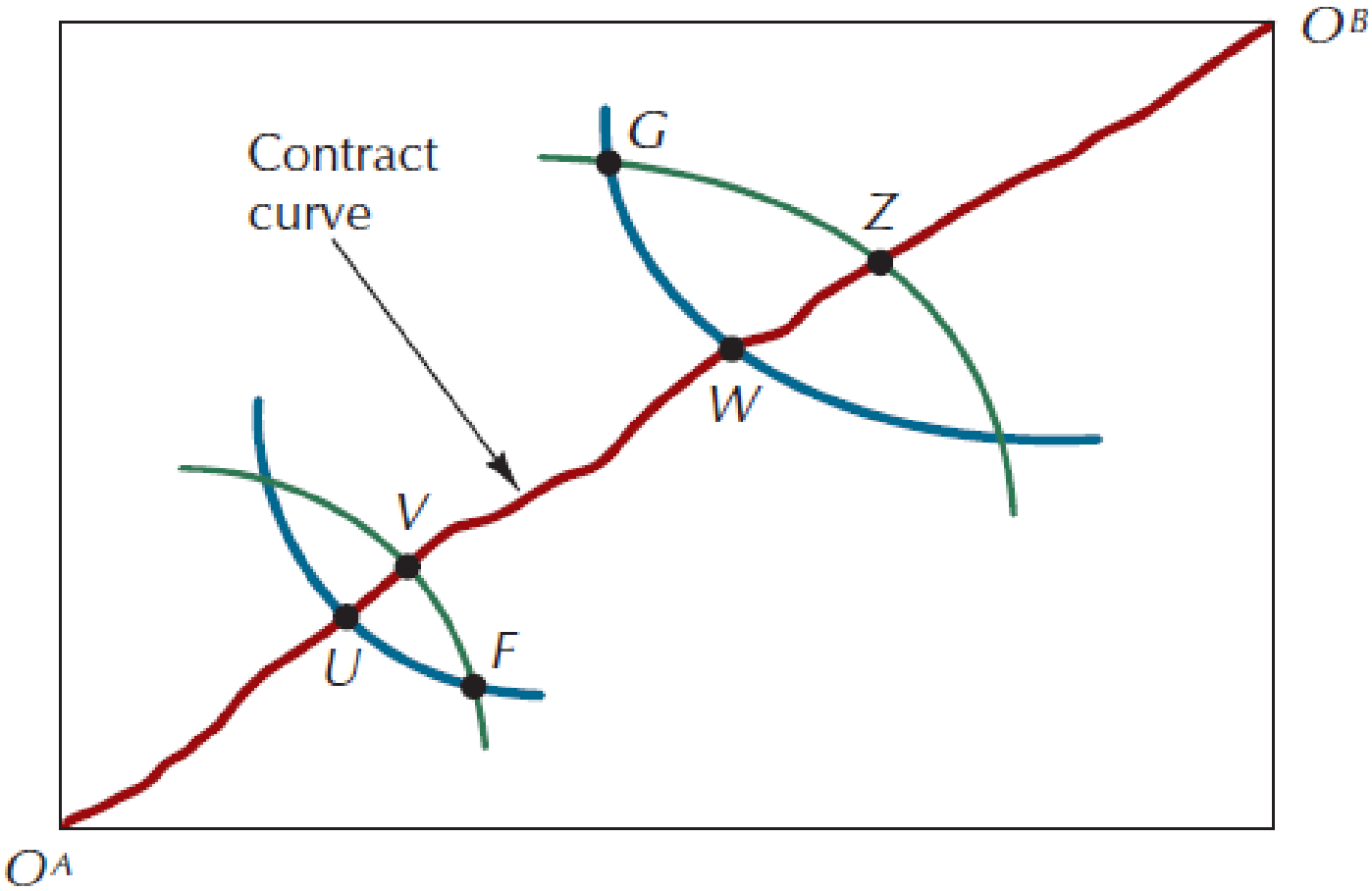


Figure 17.7: A Disequilibrium Relative Price Ratio

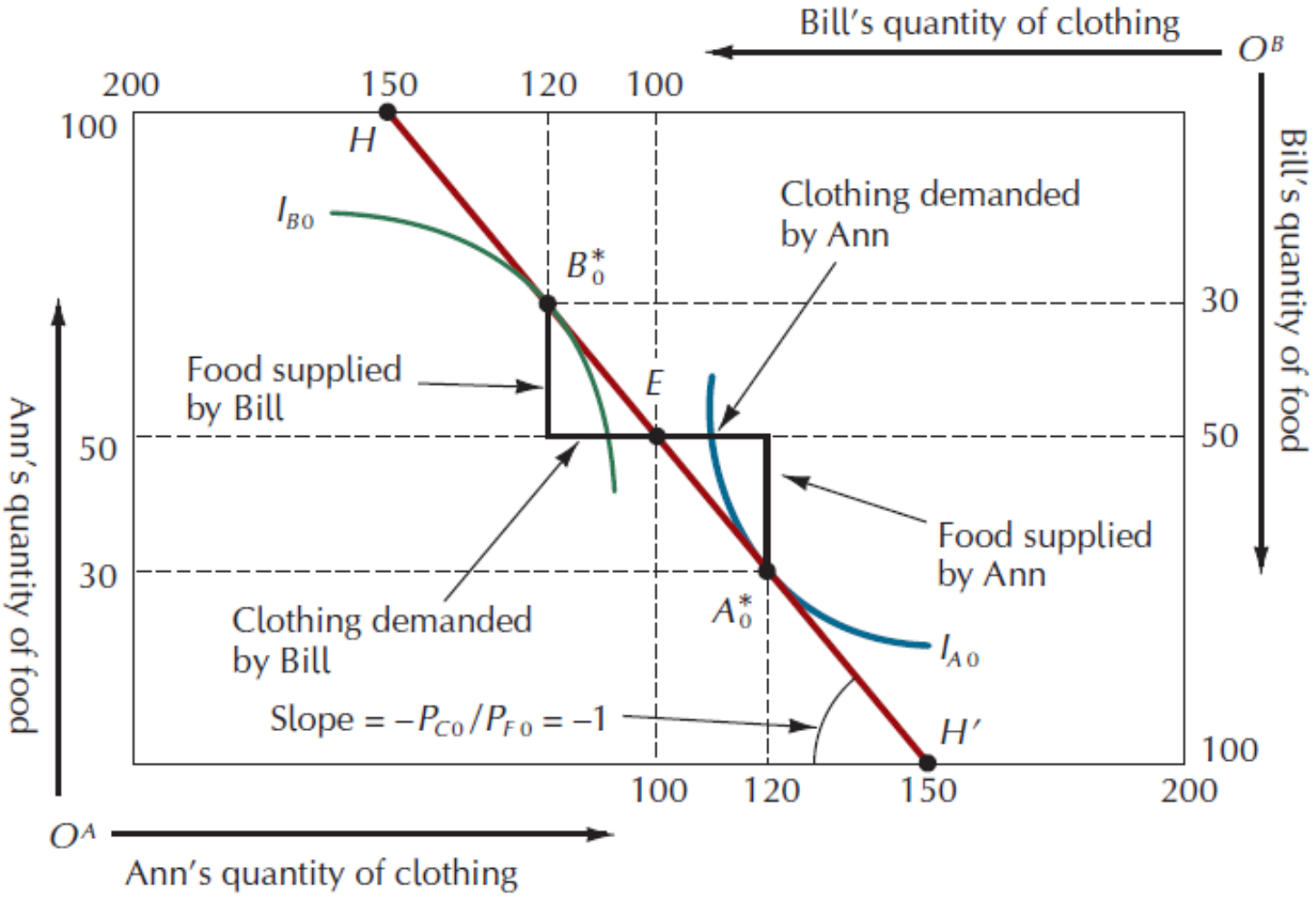
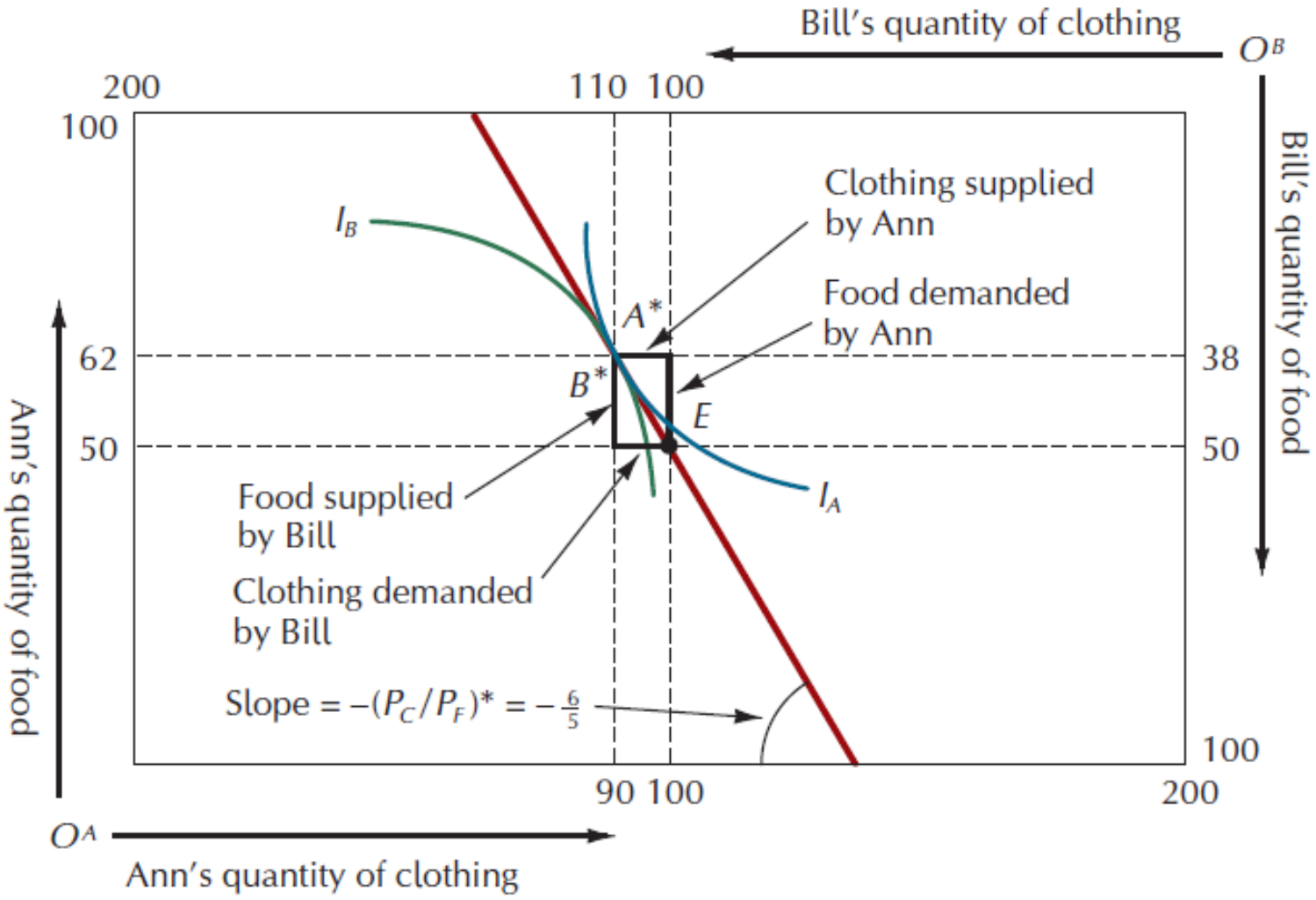


Figure 17.8: General Equilibrium



The Invisible Hand Theorem

- *Theorem of the invisible hand:* an equilibrium produced by competitive markets will exhaust all possible gains from exchange.
  - *Equilibrium in competitive markets is Pareto optimal.*

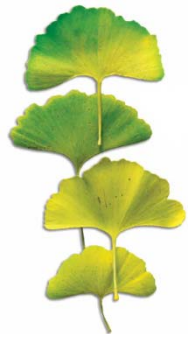
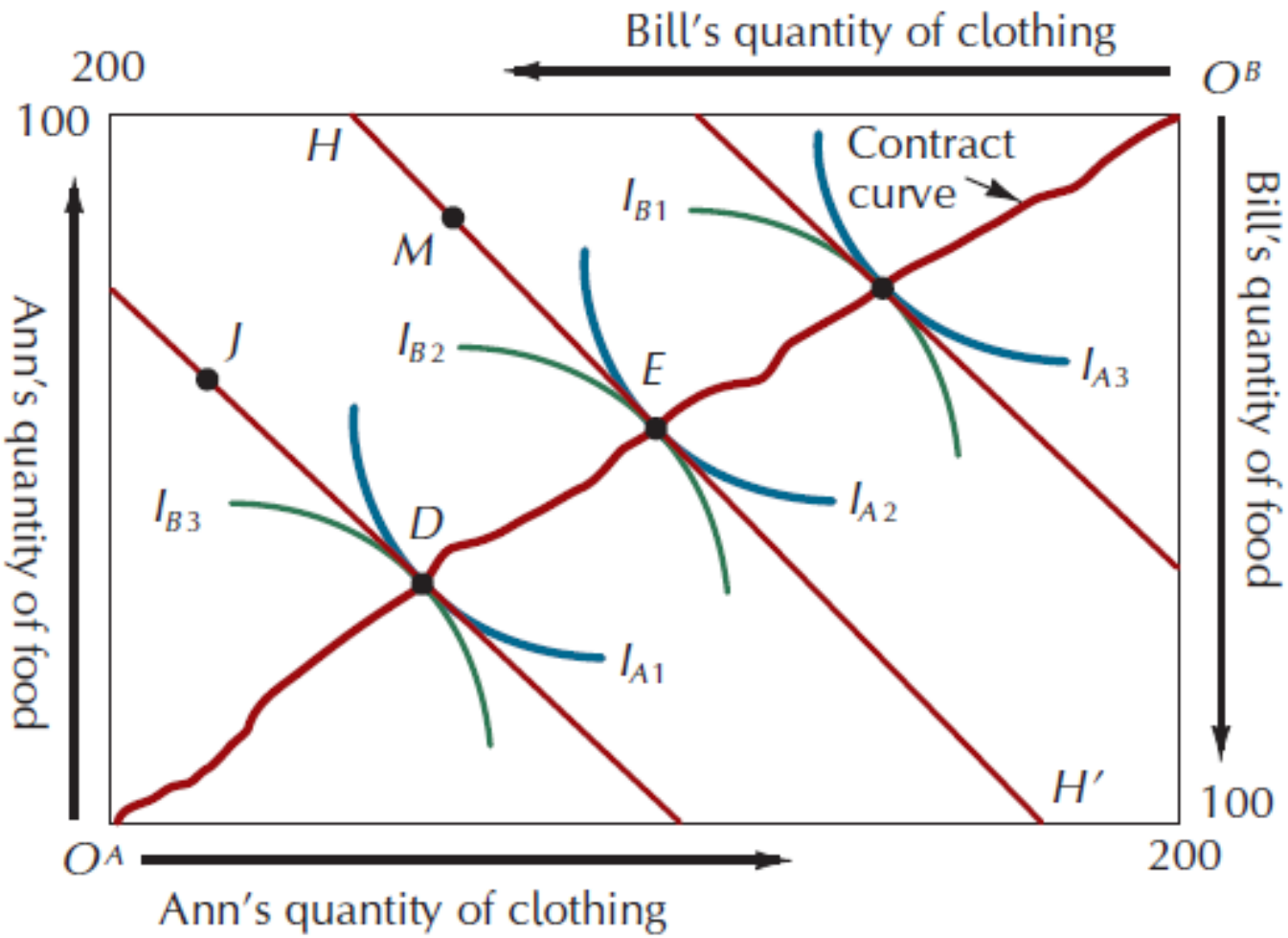


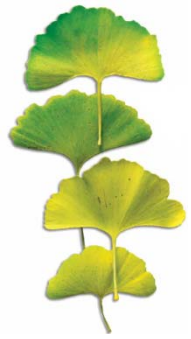
Figure 17.9: Sustaining Efficient Allocations



Second Welfare Theorem

- The *second theorem of welfare economics says* that, under relatively unrestrictive conditions:
  - *Any* allocation on the contract curve can be sustained as a competitive equilibrium.

- *The significance of the second welfare theorem is that the issue of equity in distribution is logically separable from the issue of efficiency in allocation.*



Efficiency In Production

- Suppose we now add a productive sector to our exchange economy, one with two firms, each of which employs two inputs—capital (*K*) and labor (*L*)—to produce either of two products, food (*F*) or clothing (*C*).
  - Suppose firm *C* produces clothing and firm *F* produces food.
  - The marginal rates of technical substitution for the two firms will be equal in competitive equilibrium.

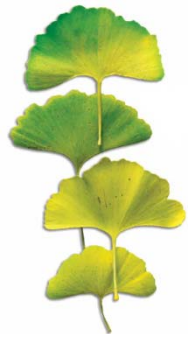
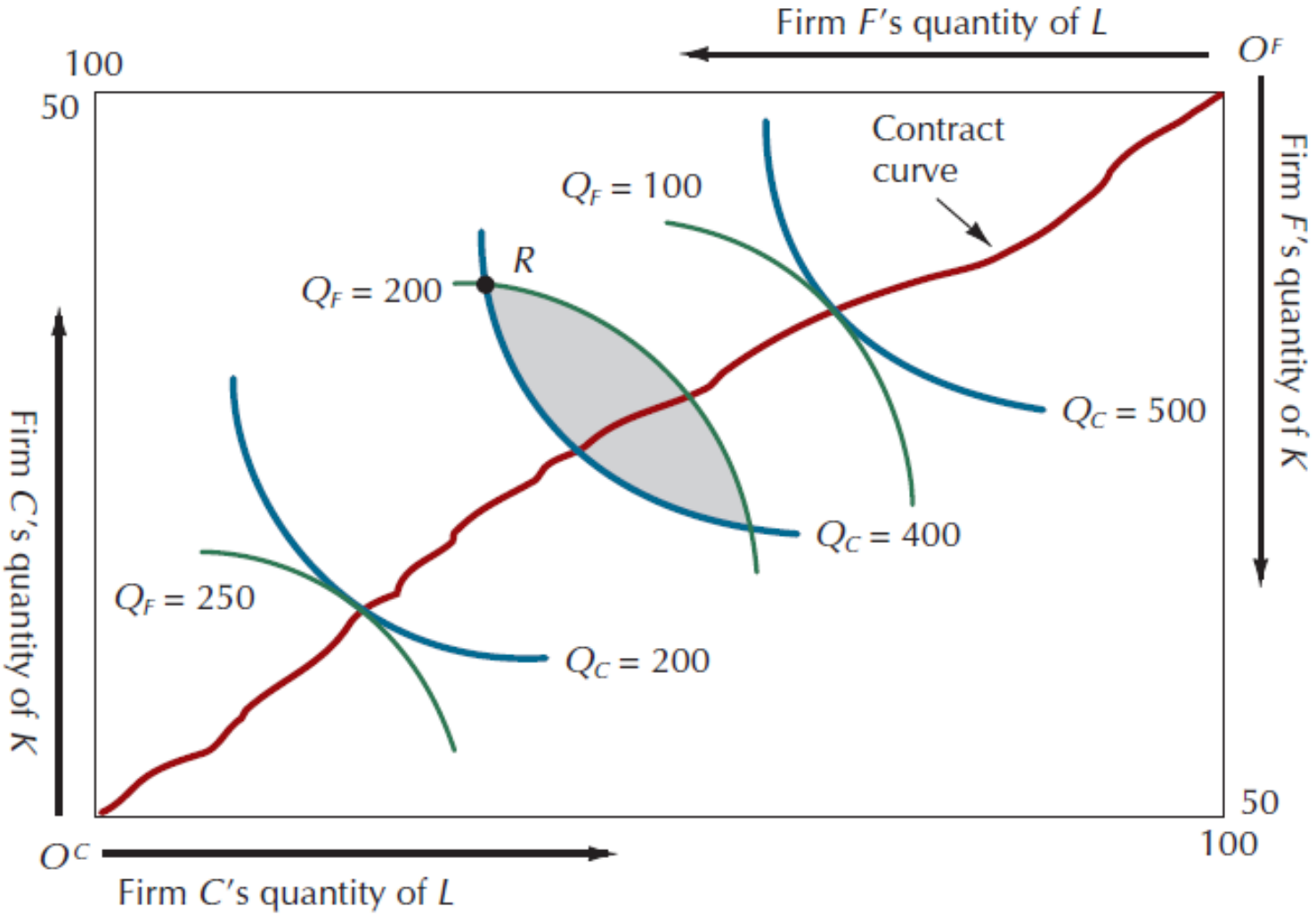
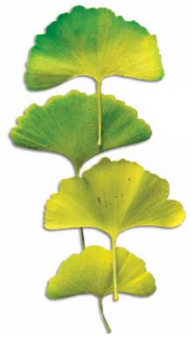


Figure 17.10: An Edgeworth Production Box



Efficiency In Production

- Competitive general equilibrium is efficient not only in the allocation of a given endowment of consumption goods, but also in the allocation of the factors used to produce those goods.
- Firms will trade inputs until they reach the contract curve where the marginal rates of technical substitution are the same for all firms



Efficiency In Product Mix

- ***Production possibilities frontier:*** the set of all possible output combinations that can be produced with a given endowment of factor inputs.

- ***Marginal rate of transformation (MRT):*** the rate at which one output can be exchanged for another at a point along the production possibilities frontier.

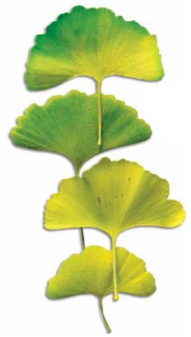
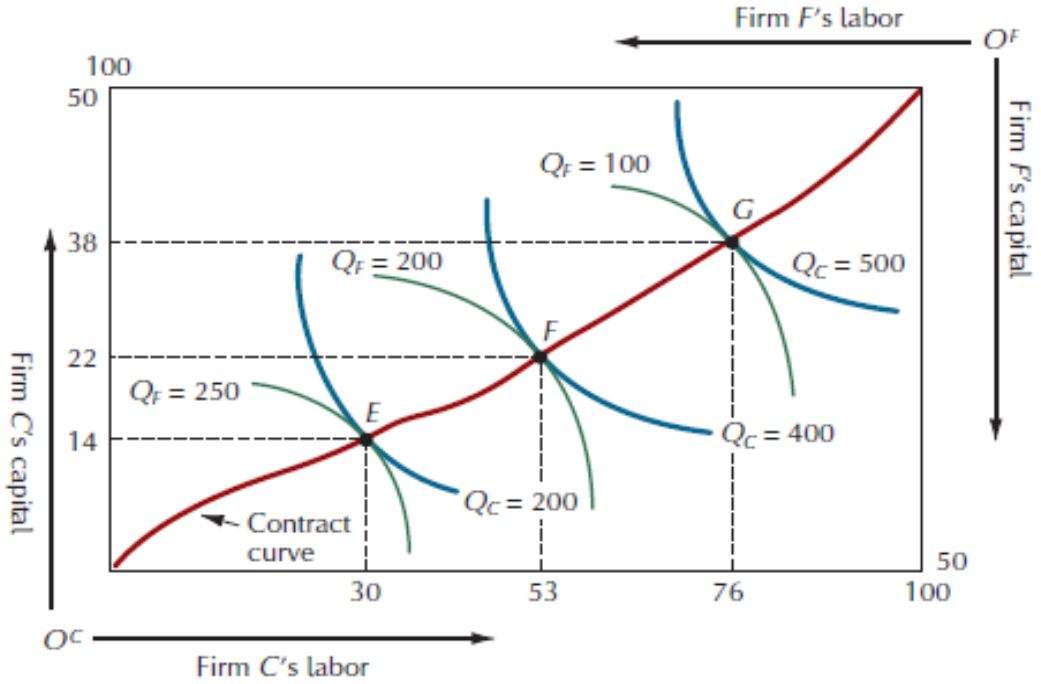
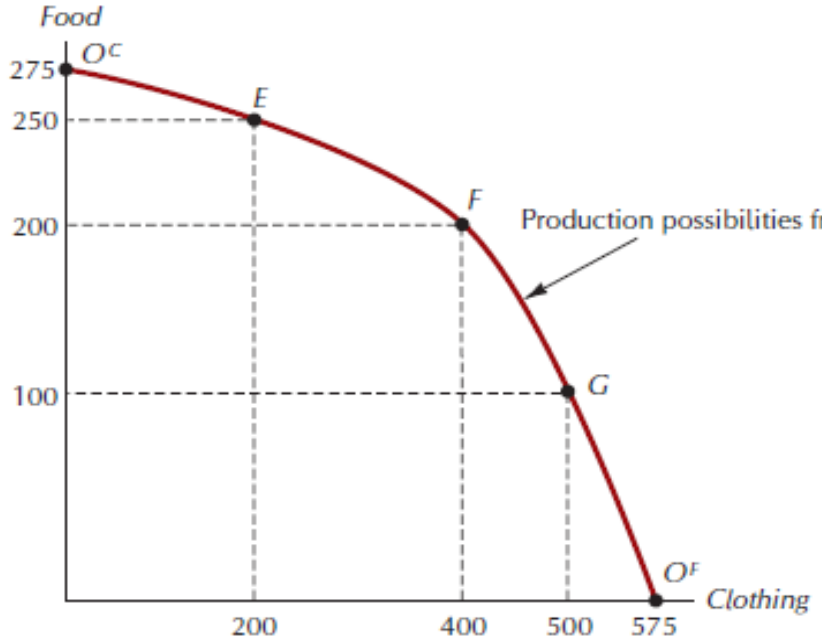
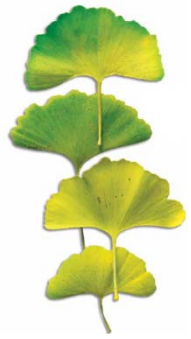


Figure 17.11: Generating the Production Possibilities Frontier







Efficiency in the Product Mix

- For an economy to be efficient in terms of its product mix, it is necessary that *the marginal rate of substitution for every consumer be equal to the marginal rate of transformation.*

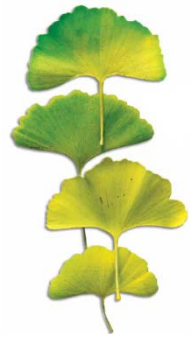
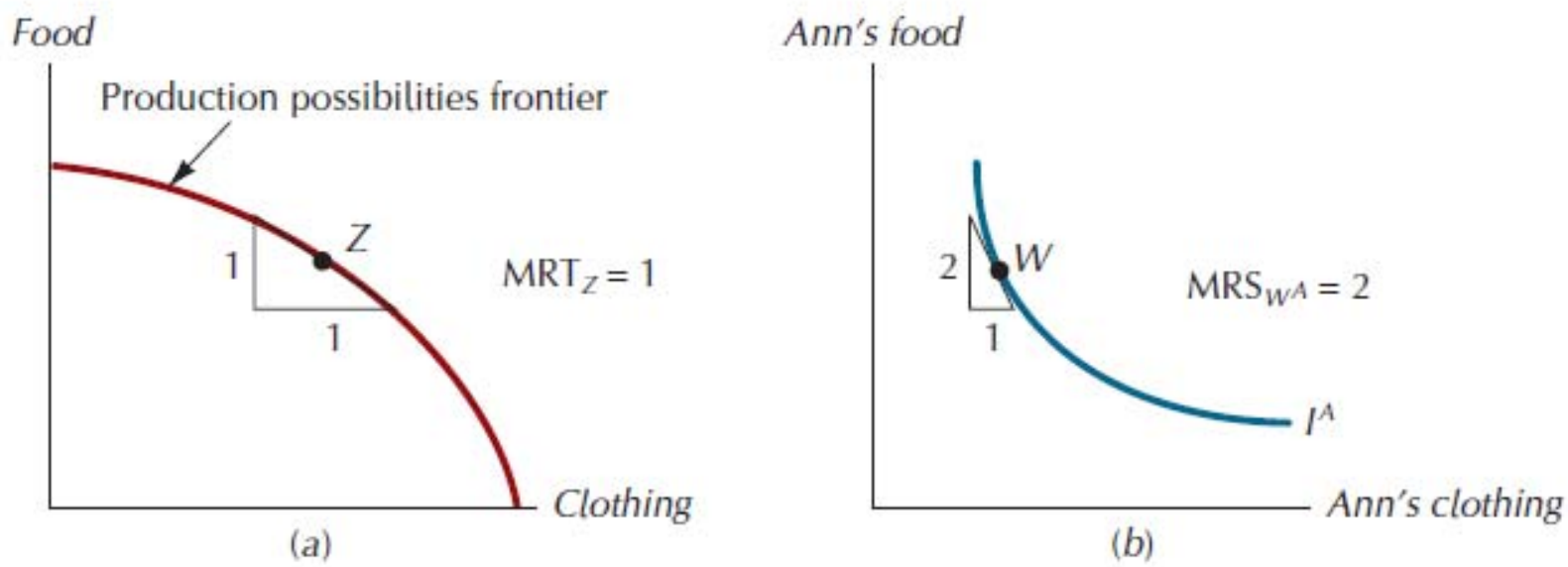


Figure 17.12: An Inefficient Product Mix



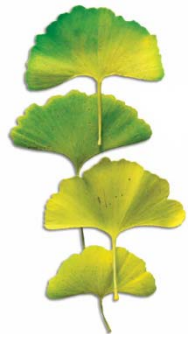
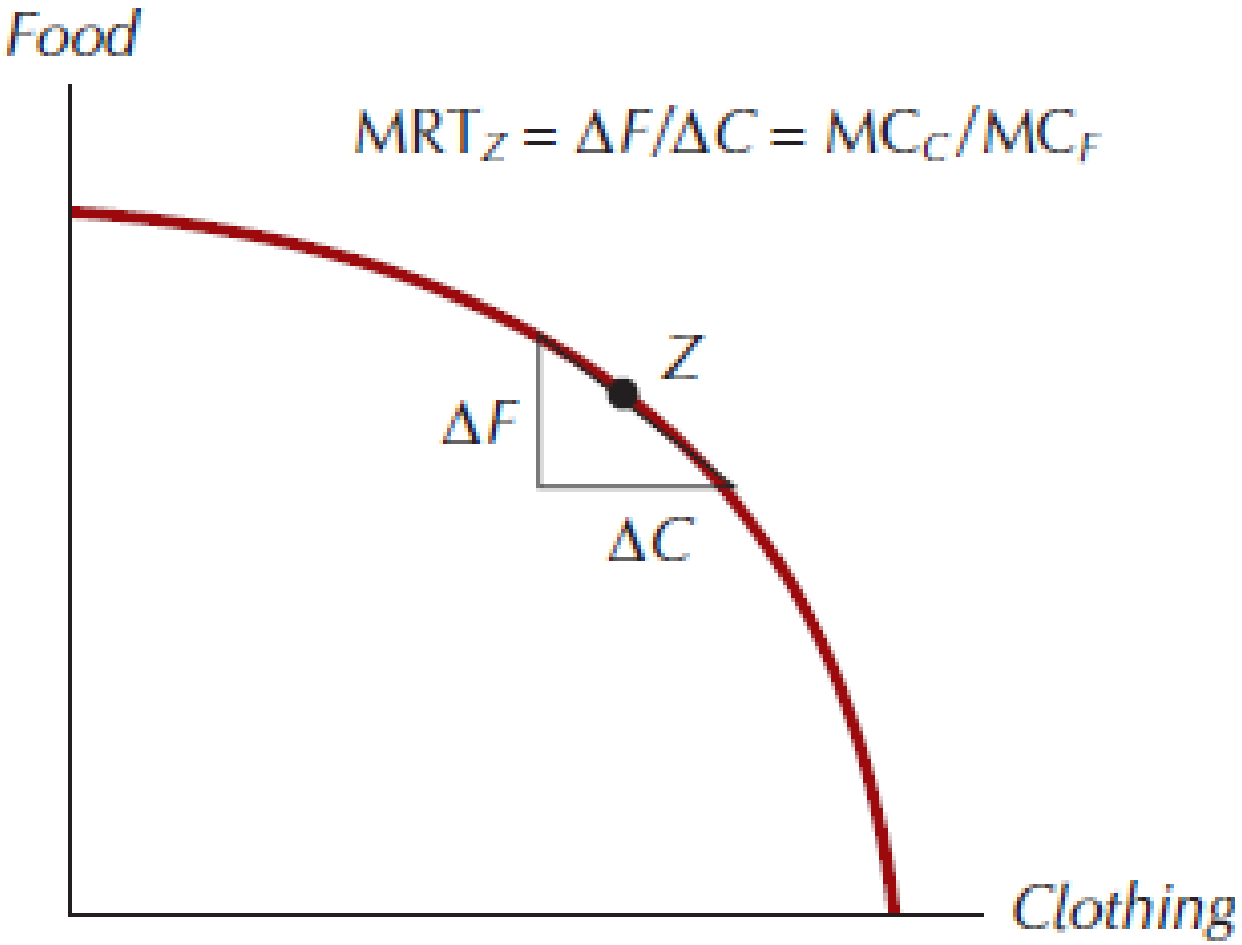


Figure 17.13: MRT Equals the Ratio of Marginal Costs



Gains From International Trade

- The fact that the international budget constraint contains the original competitive equilibrium point means that it is possible to make everyone better off than before.
  - But the impersonal workings of international trading markets provide no guarantee that every single person will in fact be made better off by trade.

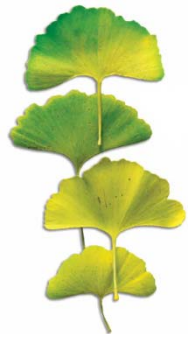


Figure 17.14: Gains from International Trade

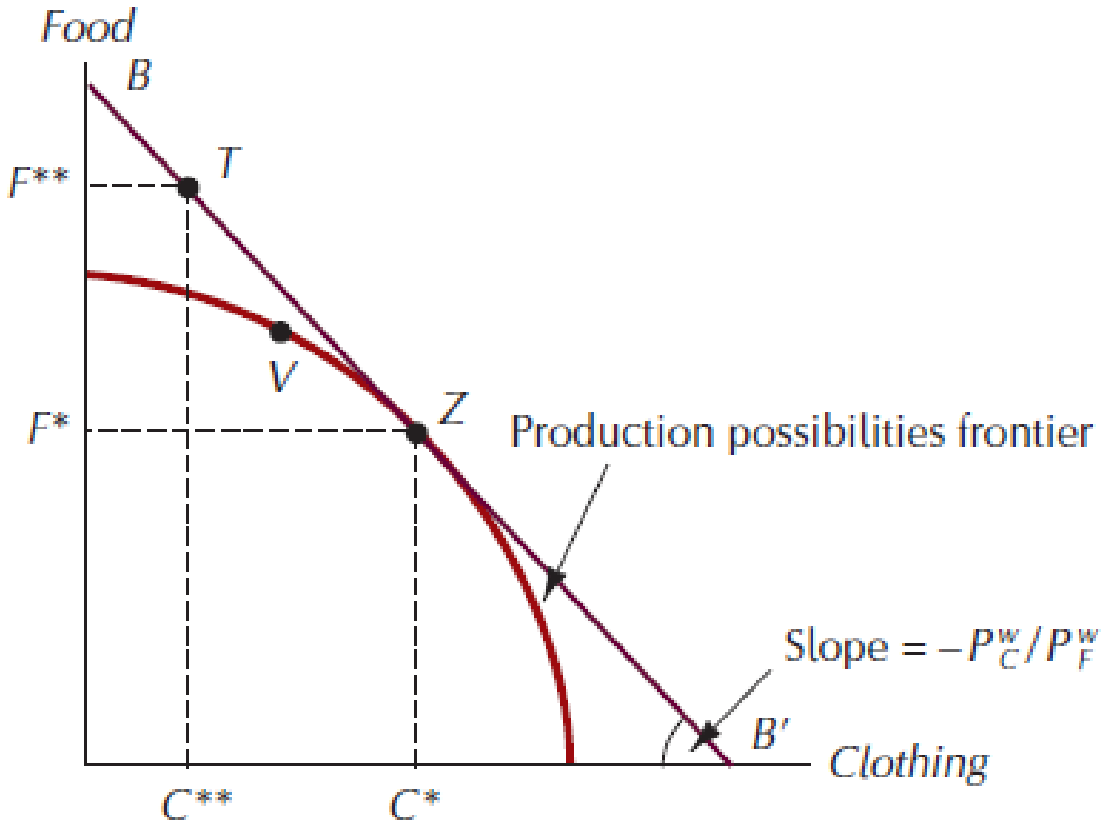
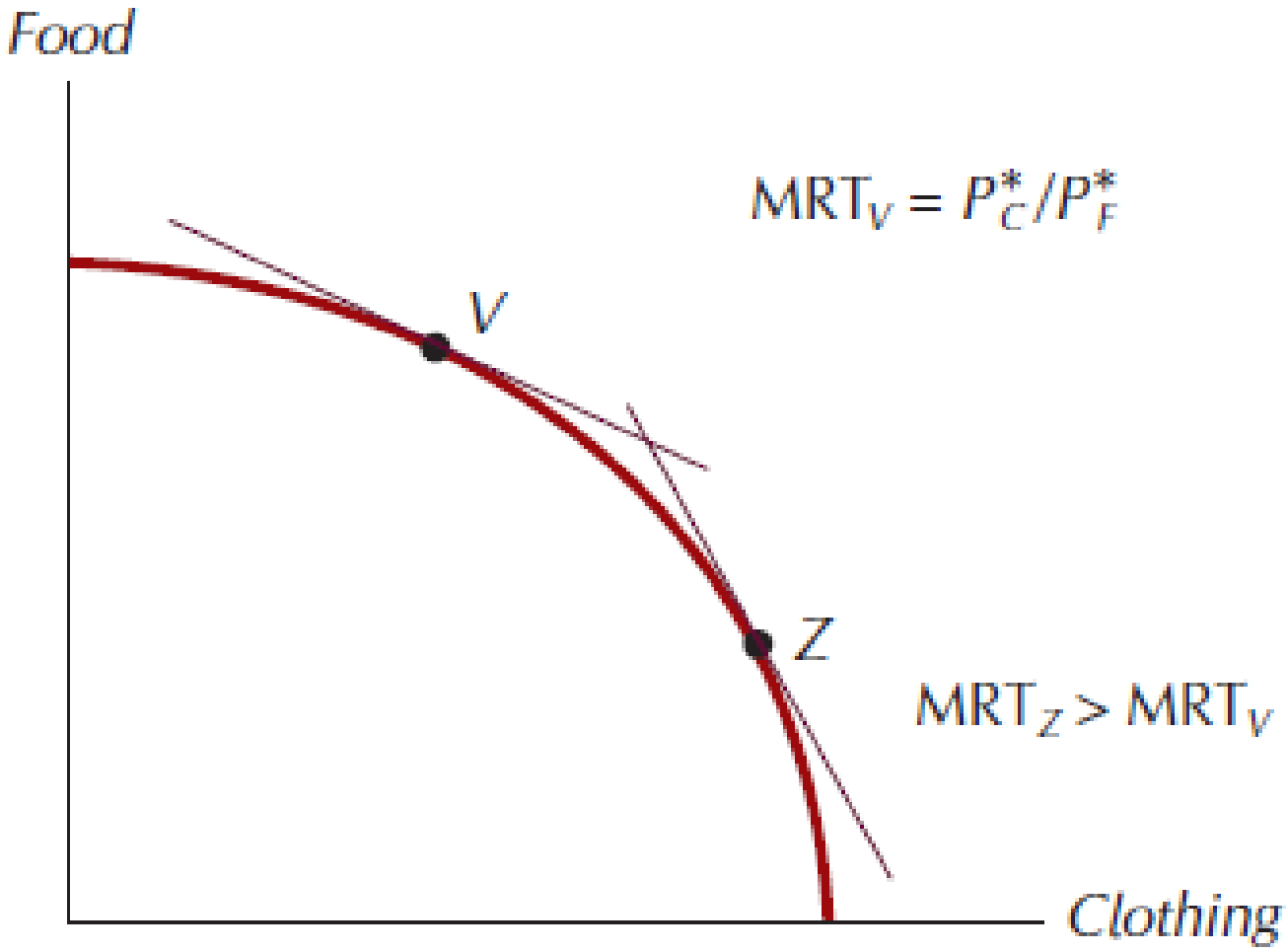


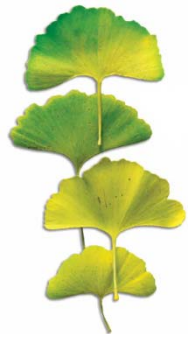
Figure 17.15: Taxes Affect Product Mix



Taxes In General Equilibrium

- A tax on food does not alter the fact that consumers will all have a common value of MRS in equilibrium.
  - Nor does it alter the fact that producers will all have a common value of MRTS.

- The real problem created by the tax is that it causes producers to see a different price ratio from the one seen by consumers.



Other Sources Of Inefficiency

- Monopoly
- Externalities
- Public Goods
- All of the above alter prices from their efficient market levels. This leads to decisions by producers and consumers that distort the most efficient outcomes of perfect competition.