

Expected Outcomes

Upon completion of this unit, you should be able to:

- * describe the major elements of von Thunen's model and its value in explaining agricultural land use
- * distinguish among primary, secondary, tertiary, quaternary, and quinary activities and be able to classify economic activities accordingly
- * identify the major problems and challenges associated with activities in the primary sector
- * understand the economic implications of changes in the primary sector for developing and developed nations

Key Concepts & Questions

- * resource
- * Green Revolution
- * extensive and intensive subsistence agriculture
- * primary, secondary, tertiary, quaternary, and quinary activities
- * renewable and nonrenewable resource
- * shifting cultivation
- * 'tragedy of the commons'
- * economic rent (R)
- * von Thunen's rent theory
- * arable land
- * physiological density

Describe the major elements of von Thunen's model of agricultural land use. Identify the ways in which it assists use in understanding distributional patterns of agriculture.

What are the major positive and negative impacts associated with the Green Revolution in developing nations?

What are the major contributors to the so-called world 'food problem'?

What are the environmental impacts of various extensive subsistence agricultural land uses world-wide? Assess their prospects for continuation in several of the developing nations.

How does the so-called 'tragedy of the commons' explain the depletion of fishing grounds, forest reserves and mineral deposits. Cite specific examples.

Your textbook includes a discussion of positive and negative environmental impacts of urban agricultural activities. Are there other positive/negative, short/long-run consequences of such efforts for developing nations? On balance, aren't such activities a good thing for developing nations? (For example, over 80% of vegetables consumed in China's cities are produced in these same cities!) Explain.

CATEGORIES OF ECONOMIC ACTIVITY (Stages of Production)

- ✓ **PRIMARY**
 - Agriculture**
 - Forestry**
 - Fishing**
 - Mining/quarrying**
 - Hunting**

- ✓ **SECONDARY**
 - Manufacturing**
 - Construction/public works**
 - Materials processing**
 - Energy production**

- ✓ **TERTIARY**
 - Retail/wholesale trade**
 - Personal/professional services**

- ✓ **QUATERNARY**
 - FIRE**
 - Information processing**
 - Administrative services**

- ✓ **QUINARY**
 - Medical care**
 - Education/Research**
 - Recreation**
 - Arts**

TYPES OF AGRICULTURAL ACTIVITIES

Extensive Subsistence

Nomadic herding

Shifting cultivation (slash & burn/ swidden)

Intensive Subsistence

Rural and urban

Intercropping and multiple cropping

VON THUNEN'S MODEL OF AGRICULTURAL LAND USE

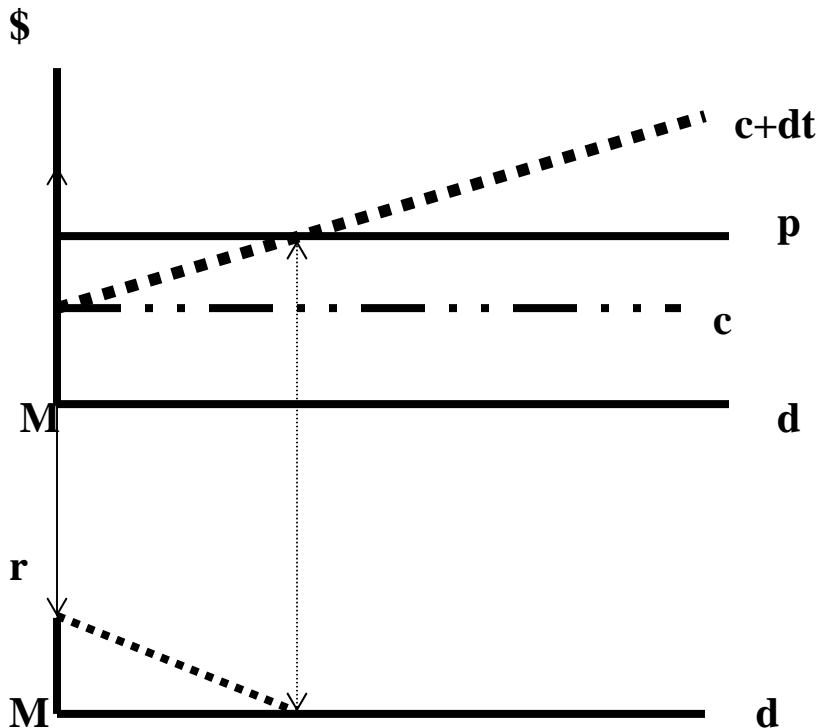
Assumptions

- ✓ = fertility and population distribution
- ✓ = production costs (labor productivity, technology)
- ✓ perfect knowledge
- ✓ single market

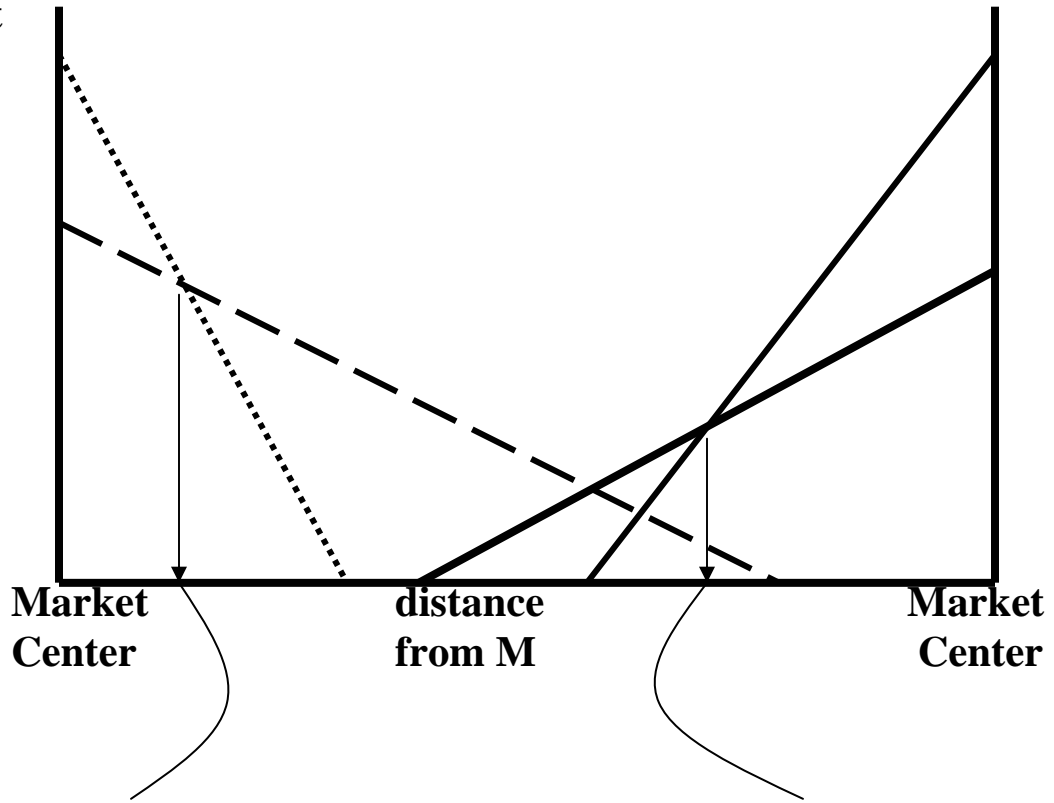
$$r = p - c - dt$$

economic rent = price - production costs - distance x transport rate

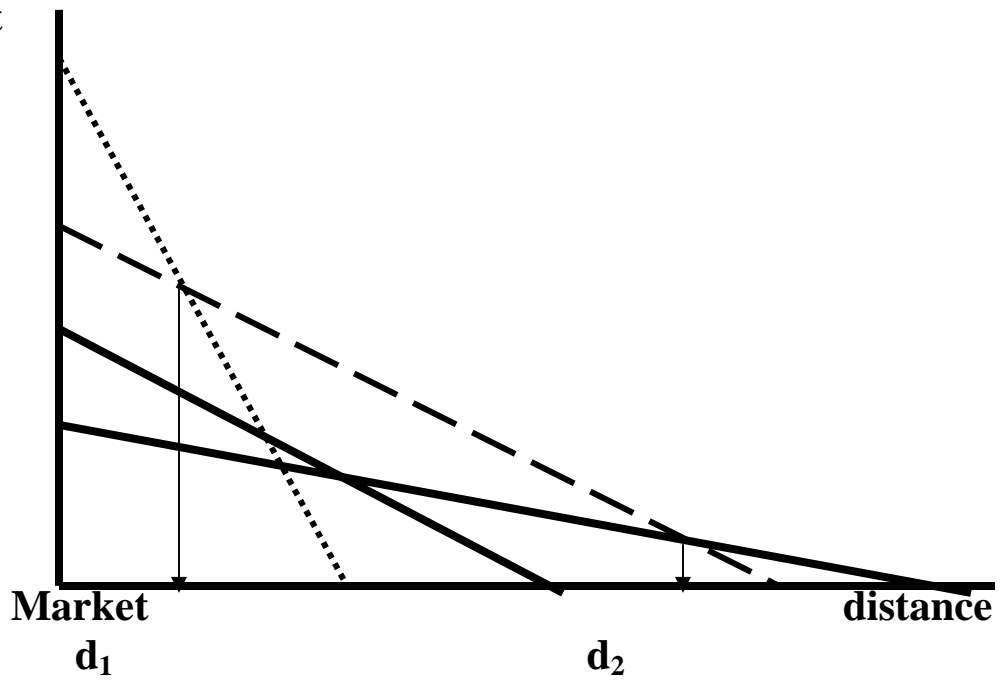
$$\text{Yield/rent} = Y(p-c) - Ydt$$



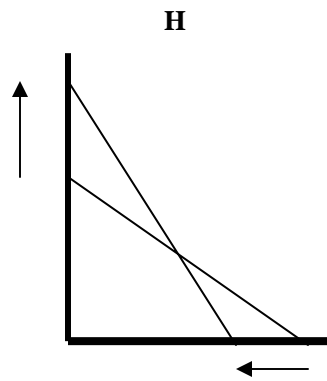
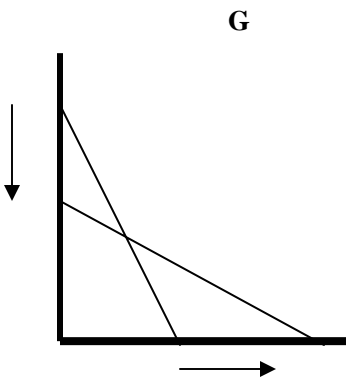
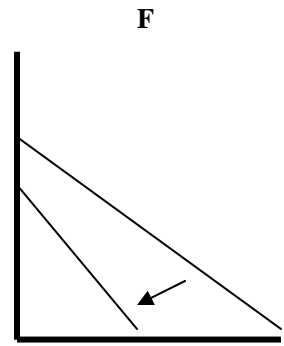
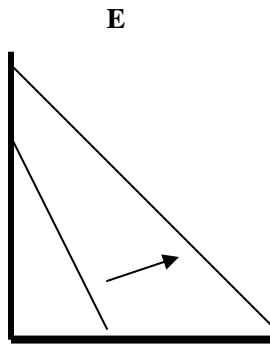
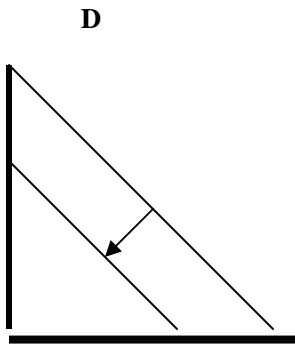
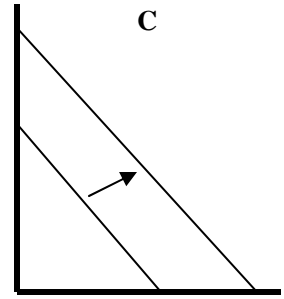
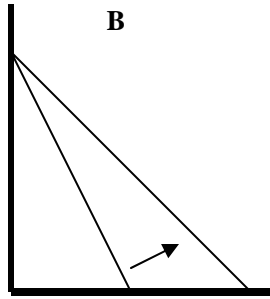
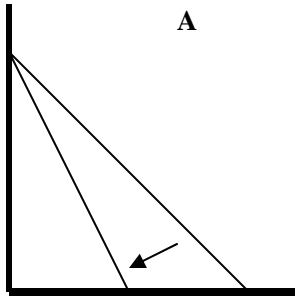
**Economic
Rent**



**Economic
Rent**



DYNAMICS OF CHANGE IN ECONOMIC RENT



DID YOU KNOW?

- ✓ **ave. African eats 10% less than 20 years ago**
- ✓ **Women in Africa account for 85% of the region's food production (70% subsistence agriculture in region)**
- ✓ **African nations account for 10% of world's population but only 6% of the entire region is arable land (South Asia ~45%)**
- ✓ **since the 1960's, annual population growth in Africa has been 1% greater than food production**
- ✓ **China (PRC) is self-sufficient in food; Japan must import over 50% of its food supplies**
- ✓ **Japan's food prices are 5 to 10 times above U.S. (1 melon costs \$50) and less than 15% of farmers are full time**
- ✓ **The physiological density in Japan is more than twice as high as China (8,000 vs. 3,600)**
- ✓ **In India, 10% of the farmers own 95% of the land that accounts for 75% of the employment (but only 30% of the GDP)**
- ✓ **The proportion of land in agriculture is highest in South Asia (45%); second highest is Europe (25%)**
- ✓ **15% of the world's cattle are found in India (home of the sacred cow); India is a world leader in production/export of leather/leather goods**
- ✓ **6 of the top 10 agricultural producers are European nations**
- ✓ **Central American countries are 'banana republics' – 25%-33% of all national exports are accounted for by one agricultural product**

The “Sacred Cow”

- ❑ 200 million cattle in India – 15% of world total
- ❑ largest concentration of domesticated animals anywhere on earth
- ❑ tens of thousands wander streets of cities (40,000 in Delhi alone)
- ❑ Pakistan, India and Bangladesh major exporters of leather and leather goods (but it is mainly a Muslim-run industry)
 - ❑ cowcatchers exist in most cities to capture and relocate
 - ❑ many die from malnutrition and choking
 - ❑ goshalas – retirement homes for aged and infirmed

- ❑ Hinduism forbids slaughter of cows but not bulls; male/female water buffalo not protected
- ❑ The bull Nandi is associated with the Hindu god Shiva
- ❑ Surabhi, the mother of cows, was one of the treasures churned up from the cosmic oceans

- ❑ Pakistan, India and Bangladesh major exporters of leather and leather goods (but it is mainly a Muslim-run industry)

- ❑ The five products of cows are believed to have magical and medicinal powers: milk, curds, ghee, urine, and dung

- ❑ reverence has its benefits – Indians favor cows milk, ghee (clarified butter) and yogurt over the milk products of water buffalo
 - producers of male offspring serve as draft/transportation animals
 - milk used in religious ceremonies
 - fuel and fertilizer

GROSS DENSITY = NUMBER OF PEOPLE PER SQUARE MILE OF LAND

PHYSIOLOGICAL DENSITY = NUMBER OF PEOPLE PER SQUARE MILE OF ARABLE LAND

ARABLE LAND = NUMBER/PERCENT LAND IN A COUNTRY THAT IS USED FOR AGRICULTURAL PURPOSES (*f= technology, demand for land, physical environment/land resources*)

AGRICULTURE AND THE ECONOMY

In South Asian Realm

PROFILE

75% of the employment and 30% of the economy
unemployment, underemployment, disguised unemployment and the discouraged worker hypothesis
clear reflection of environmental constraints of the region
50% irrigated farmland; more land in rice than any other region but yields are relatively low

LAND TENURE

average farm size 2.5 hectares (= one acre); succession practices reduce landholdings for the farmer
10% of farmers own nearly all of the farmland
land reform has failed and created animosity (annually, 25% of crimes involve land disputes)

THE CHANGING MORAL ECONOMY

Caste system in operation; but moral economy traditionally ensured access to life-sustaining resources for poor: *age-old informal obligation of rich villagers to allow access to land resources by poor villagers*
Promoted paternalistic and unequal relationships among rich and poor but helped poor survive and imposed social responsibility on the rich
Children of poor villagers traditionally allowed to gather figs fallen from trees on rich owners land not allowed in many places anymore
Shared rearing of livestock disallowed – responsibility for feeding by poor led to being allowed to keep an agreed-upon number
'Gleaning' of rice grains fallen on field during harvesting not allowed

CAUSES OF THE FOOD PROBLEM

DEMOGRAPHICS

- ✓ **Population Growth**
- ✓ **Urbanization**

MALDISTRIBUTION

- ✓ **Transportation**
- ✓ **Marketing & Storage**
- ✓ **Hoarding/pricing**
- ✓ **Geographic Mismatch – supply and demand**

CIVIL UNREST

- ✓ **Biafra (Nigeria), Eritreans/Ethiopians (Ethiopia), Angola, Rwanda**

ENVIRONMENTAL DECLINE

- ✓ **Desertification and deforestation (overgrazing, fuelwood crisis)**

GOVERNMENT POLICY

- ✓ **Priority investments (military, government)**
- ✓ **Price supports, artificial pricing**

POVERTY

- ✓ **Flows to those who can afford it**

STRUCTURE OF AGRICULTURE

- ✓ **Land tenure – ownership patterns**
- ✓ **Parcel size**
- ✓ **Productivity – capital, seed, technology**

IMPLICATIONS OF THE GREEN REVOLUTION IN INDIA

Began in the 1960's and produced significant impacts in the region

India increased grain output from 80 million tons to 200 million over last 30 years

Region transformed from a food deficit to general self-sufficiency

- **Decline of the 'moral economy' obligations**

 - Development of commercial markets for products previously 'free'**

 - Commercialization of livestock economy**

 - Capitalization of grain harvesting reduces waste/unharvested crops**

- **Dependency on chemical fertilizers and pesticides**

 - water/groundwater pollution**

 - increased capital needs**

 - priced out poorer/less educated farmers into cities or tenancy**

- **Dependency on resistant/high yield seeds**

 - increased capital needs**

 - priced out poorer/less educated farmers into cities or tenancy**

- **Dependency on irrigation**

 - water/groundwater pollution from fluid withdrawal**

 - salinization problems**

 - increased capital needs 4 million wells now vs. 200,000 in 1960**

 - 50% of irrigation water is from wells**

 - priced out poorer/less educated farmers into cities or tenancy**

ISSUES

- o **Long-term prospects for food production in the realm?**

- o **Long-term prospects for the rural, landless, poor in the realm?**

- o **Implications for the region's urban areas due to migration?**