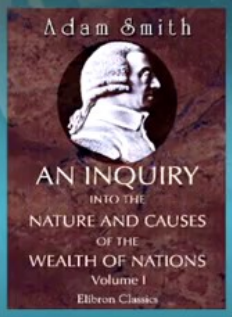
LECTURE SEVEN - PART THREE

Which Wheel To Ride On?

- Some experts stress capital investment.
- Others advocate more R&D and technological change.
- A third group emphasizes education.

The Critical Role of Land in Early Growth Theory

- An Idyllic Age.
- Land freely available to all.
- Capital accumulation did not yet matter.



Adam Smith's Growth Model

- People spread out onto more acres as population increases.
- With no capital, national output doubles as population doubles.
- Wages represent the entire national income.

Key Result

Output expands with population so real wage per worker stays constant!!

The Golden Age Ends!

- With population growth, all land occupied.
- Balanced growth of land, labor, and output no longer possible.
- As land becomes scarce, rents rise to ration it among different uses.

Output Grows Slower Than Population

- Population still grows along with output.
- But output grows more slowly than does population.
- Why?

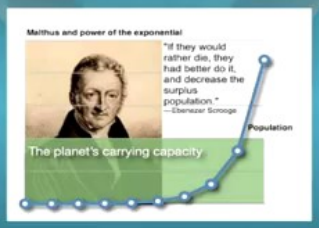
Key Concept
The Law of Diminishing Returns.

The Law of Diminishing Returns

- New laborers added to a fixed supply of land means each worker has less land to work with.
- The "marginal product" of each additional worker must decrease.
- Wages must fall with falling productivity!

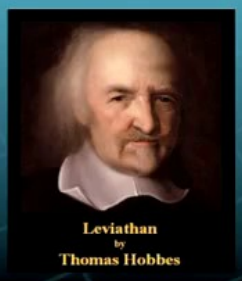
Malthusian Growth Theory

- Population pressures will drive wages and workers to subsistence levels.
- If subsistence wages go up, population will expand.
- This drives productivity and wages back to subsistence levels.
- Mortality rates rise and population declines.

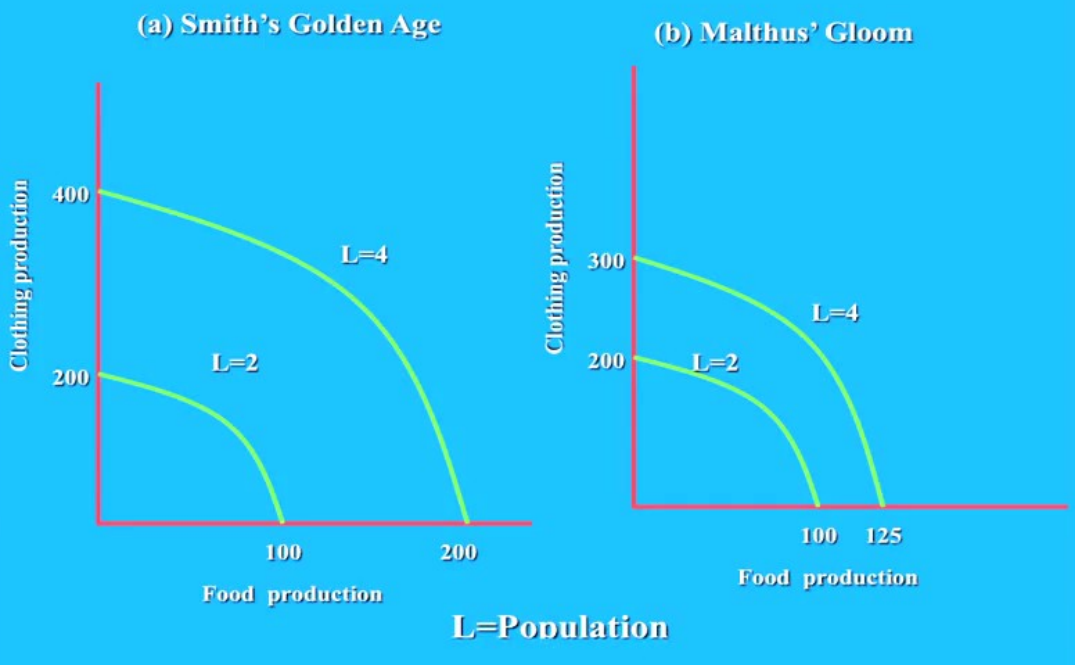


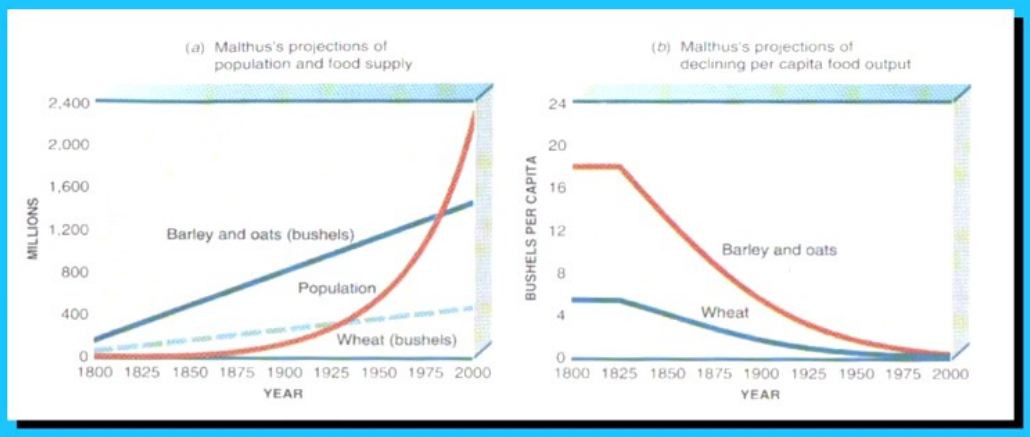
When Malthus Met Hobbes

- Only at subsistence wages is population stable.
- Working class doomed to a life "nasty, brutish, and short."
- Malthusian growth theory is the origin of the term "the dismal science."



Leviathan
by
Thomas Hobbes





Overcoming Malthusian Doom

Key Points

1. **Technological innovation & capital investment can overcome the law of diminishing returns.**
2. **Land need not become the limiting factor in production!**

Lessons From the Industrial Revolution

- Power-driven machinery increased production.
- Teams of workers gathered into giant firms.
- Railroads and steamships linked the globe.
- Iron and steel made possible stronger and faster machines.

New Industries Grow Up

- Key Innovations: Telephone, automobile, electric power.
- Capital accumulation & new technologies became the dominant force affecting economic development.