# Test Yourself: Economic Growth

Exploration is the engine that drives innovation. Innovation drives economic growth. So let's all go exploring.

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# What are the two distinct ways to increase output?

There are two distinct ways to increase output.

- an increased use of *existing* productive resources
- an *expansion* of productive capacity

# Where does the easiest kind of growth come from?

The easiest kind of growth comes from increased use of our *existing* productive capabilities.

An economy moves to a point on the production possibilities curve where it uses all of its resources.

# What must we do to achieve large and lasting increases in output?

To achieve large and lasting increases in output, we must push our production possibilities *outward*.

Economic growth is an increase in output (real GDP) – an expansion of production possibilities.

Economic growth implies a rightward shift of the long-run aggregate supply curve.

# What is real GDP?

Real GDP is the value of final output produced in a given period, adjusted for changing prices.

Economic growth is referred to in terms of *real* GDP, not *nominal* GDP. Growth is measured in real goods and services, not inflation-distorted dollars.

# What is a base period?

A **base period** is the time period used for comparative analysis; the basis of indexing (e.g., of price changes).

# What do we mean by growth rate?

Growth rate is the percentage change in real output from one period to another. Changes in real GDP are presented in percentage terms as a growth rate.

Growth rate is calculated as the *change in real output between two periods divided by the total output in the base year.*

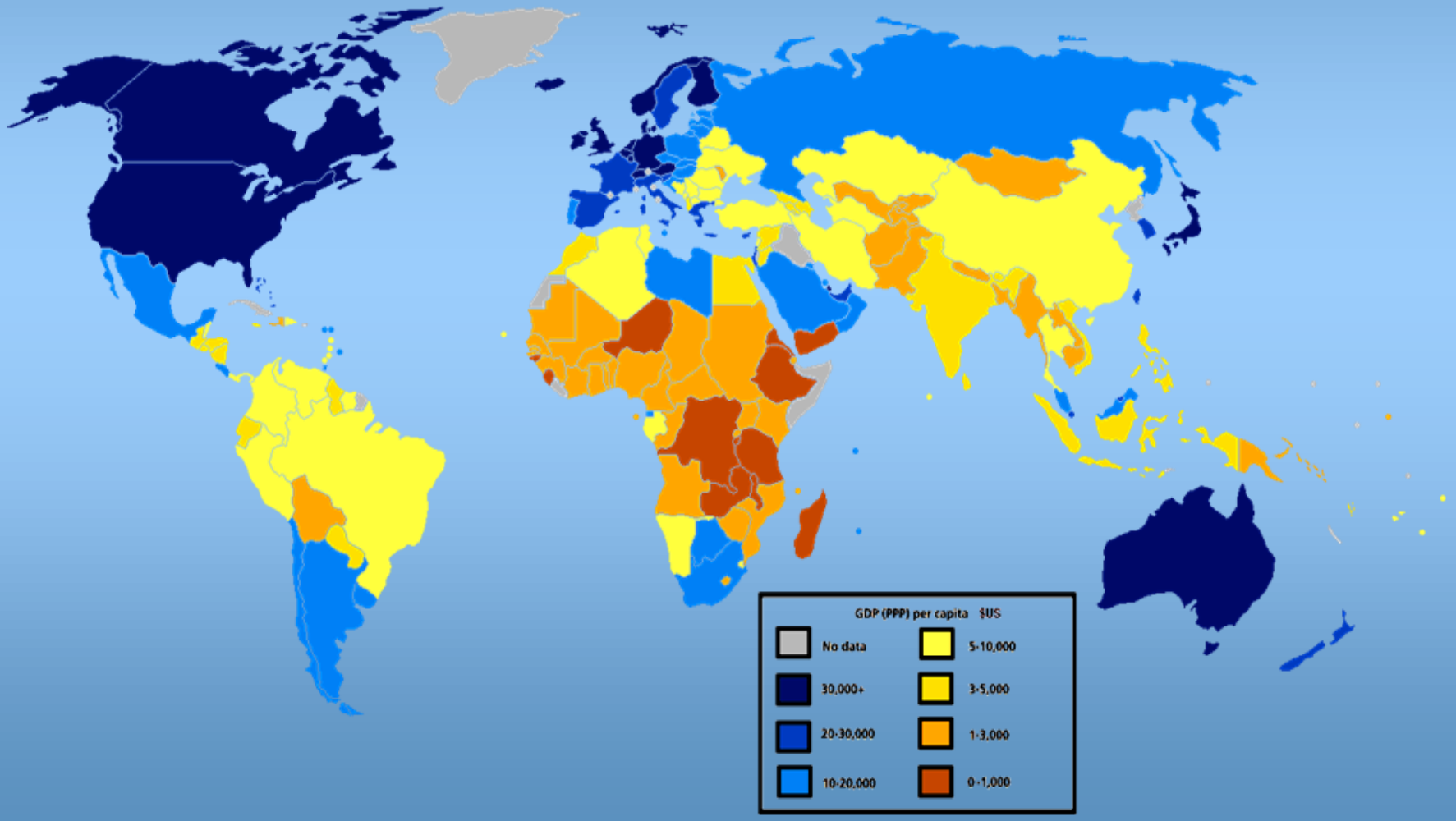
The growth of the economy is an exponential process. Small economic growth compounds from year to year.

# Growth in GDP per capita is attained only when the growth of ___ exceeds ___ growth.

Growth in GDP per capita is attained only when the growth of *output* exceeds *population* growth.

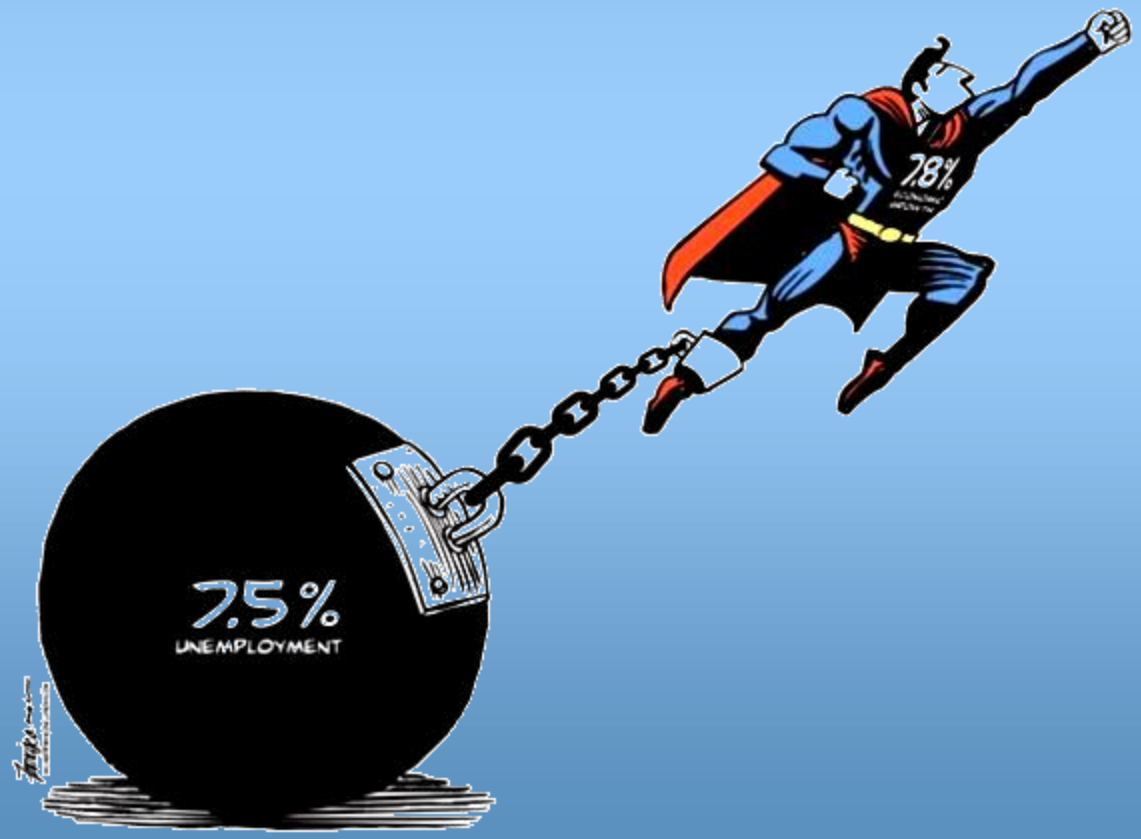
# What is GDP per capita?

GDP per capita is total GDP divided by total population … average GDP.



# When does GDP per capita rise?

GDP per capita rises when *the labor force grows faster than the population.*



# What is the labor force?

The labor force consists of all persons over age 16 who are either working for pay or actively seeking paid employment.

# What is the employment rate?

The employment rate is the percentage of the adult population that is employed.

The employment rate cannot rise forever.

# Other than labor force growth, where else can increases in GDP per capita come from?

Increases in GDP per capita can also come from *increases in output per worker.*

For economic growth to continue, the productivity of the average worker must continue to rise.

# How do we measure productivity?

Productivity is measured as output per unit of input, *e.g.*, output per labor-hour.

$$\text{labor productivity} = \frac{\text{total output}}{\text{total labor hours}}$$

# On what two factors does future growth depend?

Future growth depends on two factors:

- growth rate of the *labor force*
- growth rate of *productivity*

growth rate of total output = growth rate of labor force + growth rate of productivity

# What are some sources of productivity gains?

Sources of productivity gains include:

- Higher skills – an increase in labor skills … Education and skills training have greatly increased the quality of US labor.
- More capital – an increase in the ratio of capital to labor
- Technological advances – the development and use of better capital equipment and products
- Improved management – better use of available resources in the production process

# What is human capital?

Human capital is the knowledge and skills possessed by the labor force.

Gains in productivity reflect greater human capital investment.

# What is a primary determinant of labor productivity?

A primary determinant of labor productivity is the **rate** of *capital investment*.

# Where does US investment come from?

Virtually all US investment has been financed with *business saving* and *foreign investment*.

Savings are not just a form of leakage, but a basic source of investment financing. *Household* saving rates in the US are notoriously low.

*There must be enough saving to at least finance net investment.*

Net investment is gross investment minus depreciation.

# What other type of investment is a source of economic growth?

Investments in managerial talent are another source of economic growth.

US corporations spend billions of dollars on management training.

# What sorts of things does research and development include?

Research and development include

scientific research,

new and existing product development,

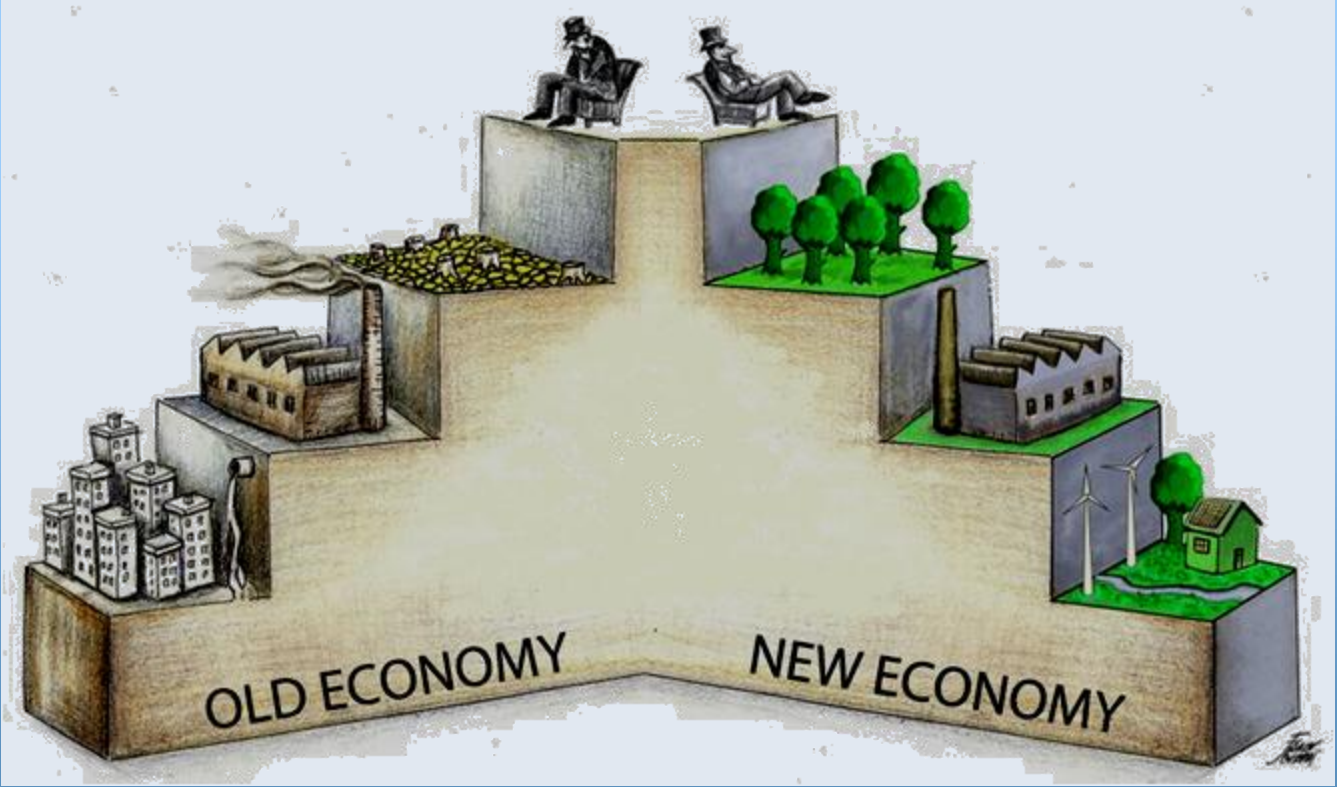
innovations in production techniques and

improvements in management.

# What is the difference between old growth theory and new growth theory?

Old growth theory emphasized the importance of saving and investing in new plants and equipment.

New growth theory emphasizes the importance of investing in knowledge and ideas.



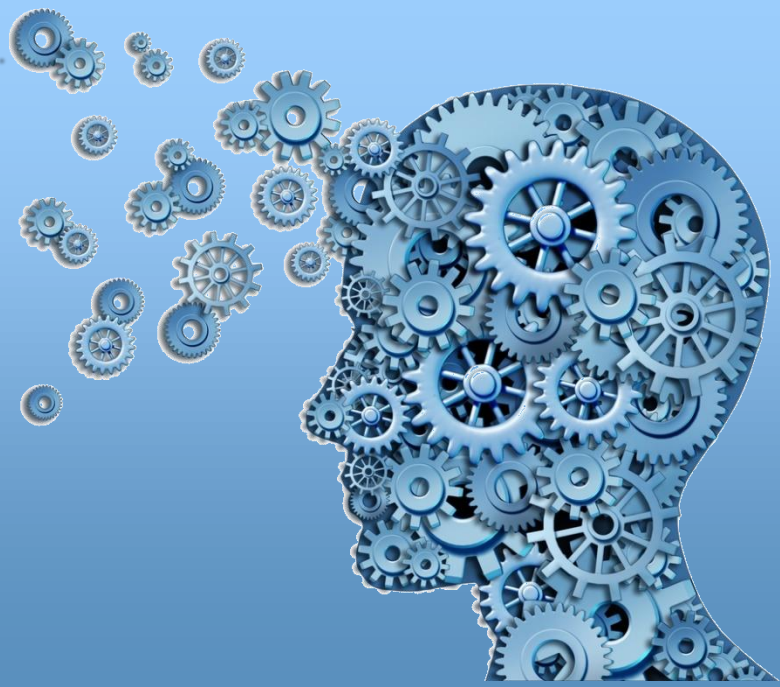
# Are most of the policy options to accelerate long-term growth macro or micro in nature?

Most of the policy options to accelerate long-term growth are distinctly *micro* in nature, although *macro* policy decisions are also important.

# How do governments invest in human capital?

Governments invest in human capital by building, operating and subsidizing *schools*.

*Immigration* laws that promote immigration of skilled workers also increase a nation's stock of human capital.



# How do governments invest in physical capital?

As in the case of human capital, the possibilities for increasing physical capital investment are many and diverse.

The *tax code* offers mechanisms for stimulating investment.

- faster depreciation schedules
- tax credits for new investments
- lower business tax rates

The government can use the tax code to deepen the savings pool that finances investment.

The government also directly affects the level of physical capital through its *public works spending*.

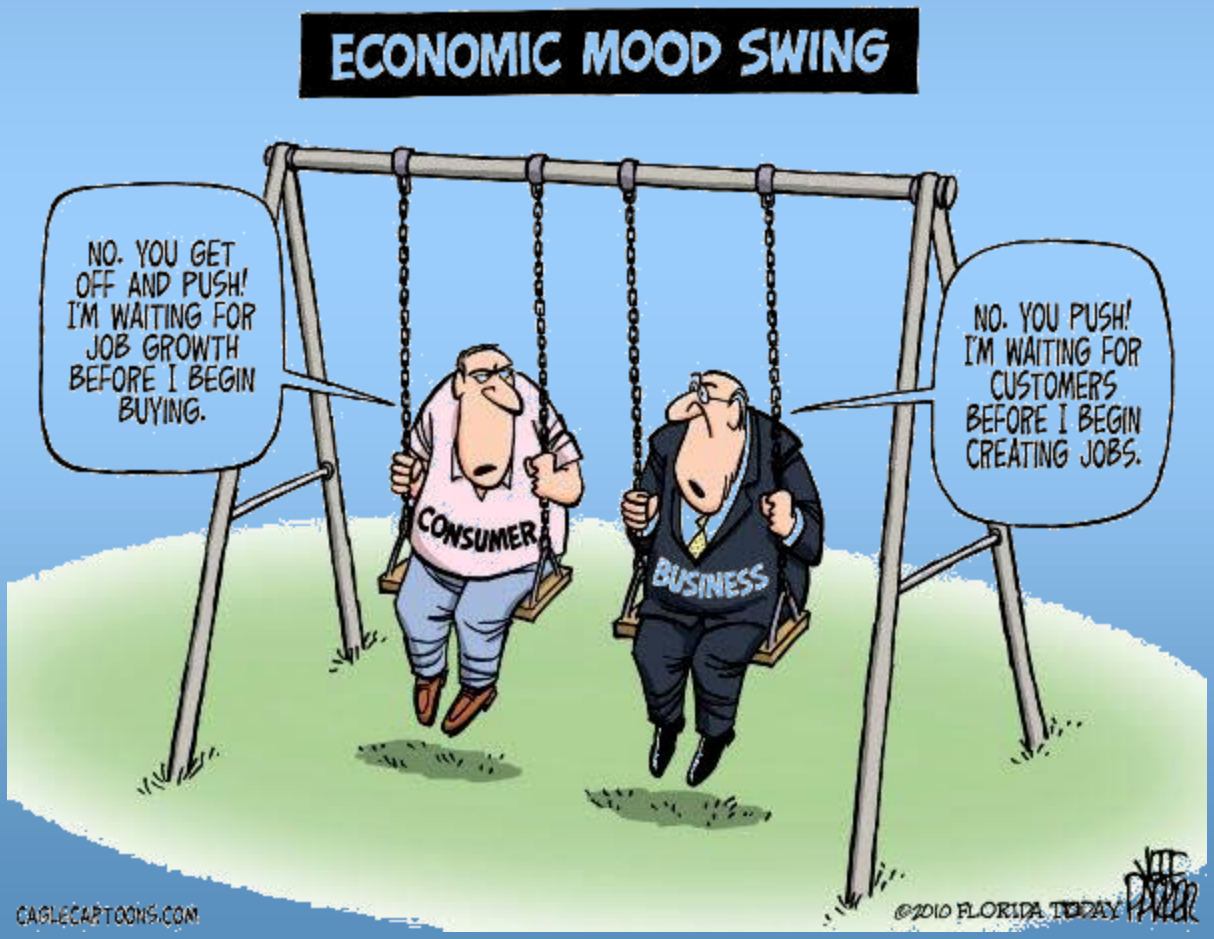
# What is crowding out?

Crowding out is a reduction in private-sector borrowing and spending caused by increased government borrowing (Government borrows so much of the loan-available money that there's none left for the private sector, or there's so little left that the price (interest rate) has increased greatly.)

Short-run government policies may lead to a crowding out of consumer saving and investment.

# How much do expectations affect consumption and investment behavior?

Expectations are a *critical* factor in both consumption and investment behavior. A sense of political and economic stability is critical to any long-run current trends.

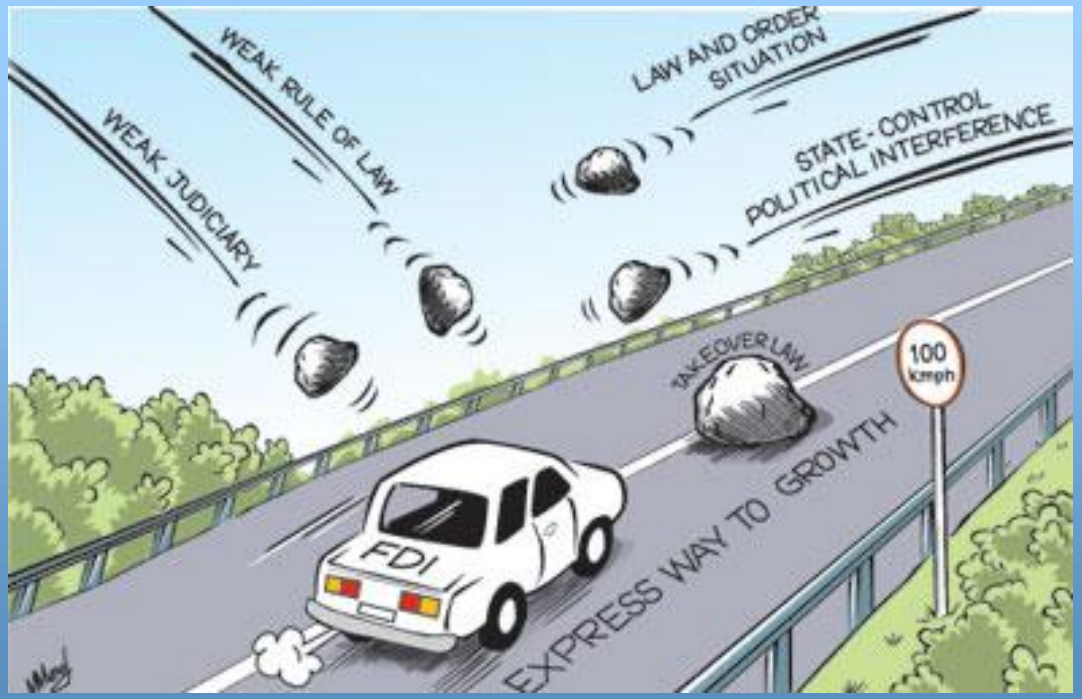


# How does economic freedom affect growth?

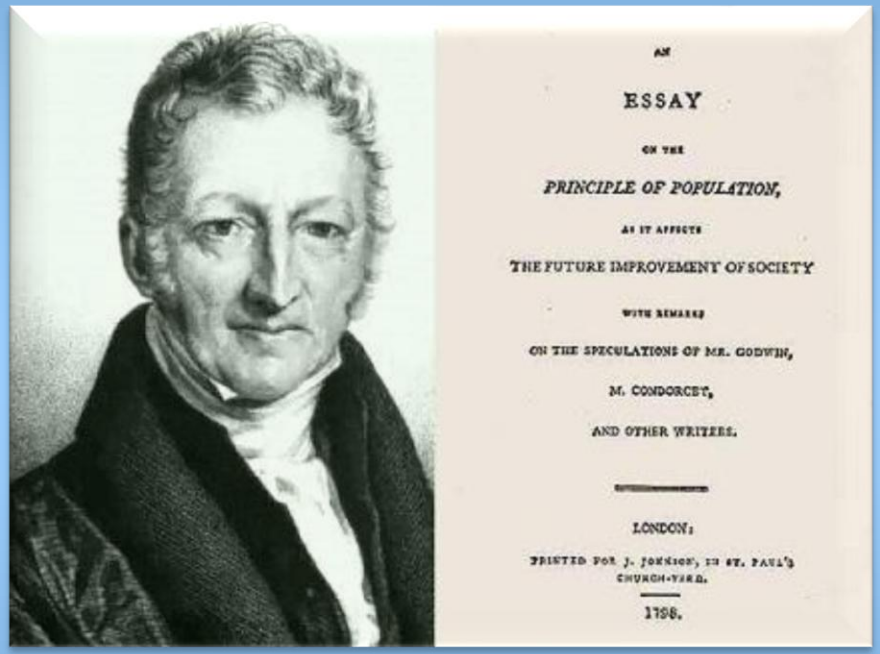
## *Greater* economic freedom

– secure property rights, open trade, lower taxes, less regulation –

typically fosters *faster* growth.



# What is the relationship between population and food predicted by Thomas Malthus?




Malthus believed that *population* increases at a geometric rate (an increase in quantity by a constant proportion each year. For example: 2, 4, 8, 16, 32…) while food supplies increase at a slower arithmetic rate (an increase in quantity by a constant amount each year. For example: 2, 3, 4, 5, 6, 7, 8…).

# Was Malthus correct?

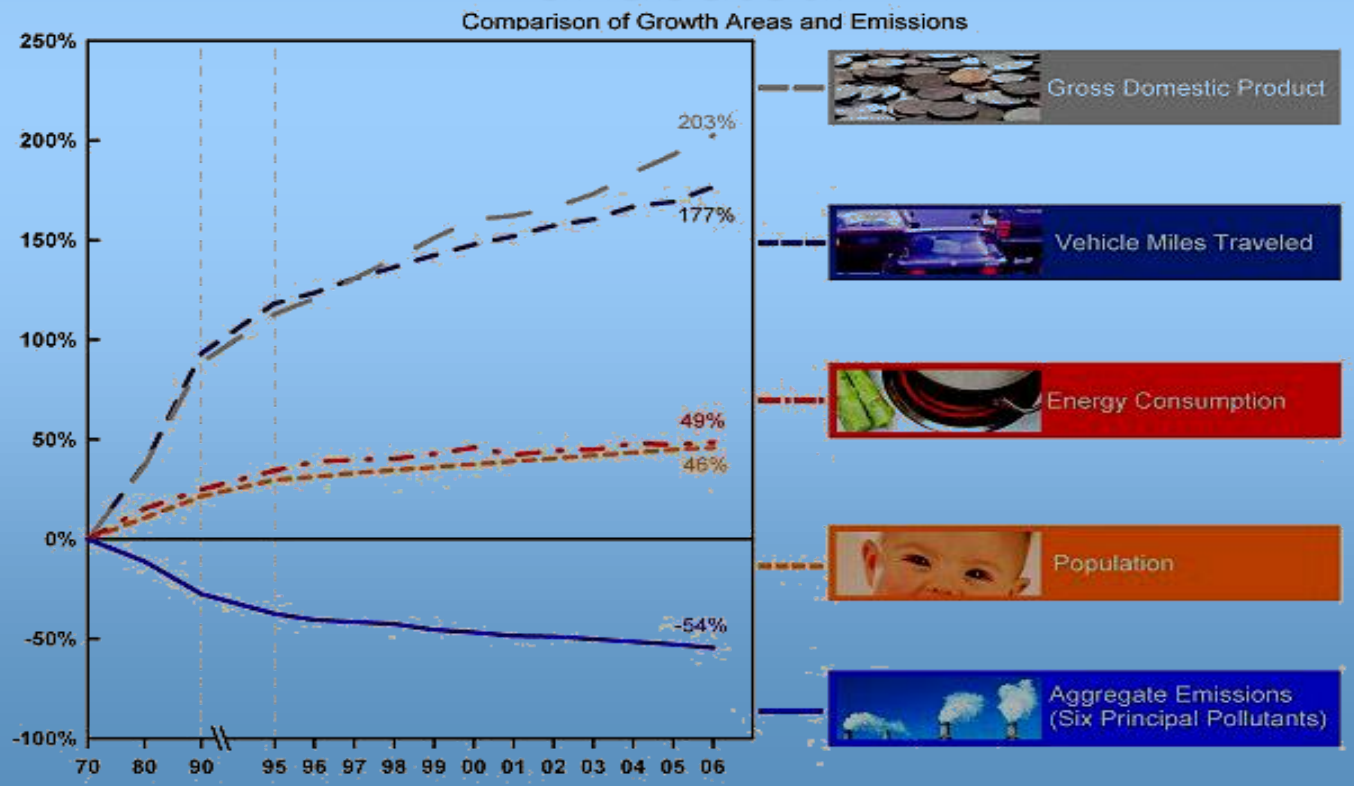
As it turns out, output – including agricultural products – has increased at a geometric rate, not at the much slower arithmetic rate predicted by Malthus.


"Efficiency," he whispered.

# What is the relationship between growth and pollution?

Pollution levels have *risen* along with GDP and population expansion.

With current and future pollution-abatement policies, the rate of pollution does not *have* to increase unabated.



# Is it possible to have limitless economic growth?

To keep growing, we need productivity improvements and resource availability.

All doomsday predictions ignore how markets promote efficient uses of scarce resources and find substitutes for them.

There are probably *no* limits to growth … but is it desirable?

Continued economic growth is desirable only so long as it brings a higher standard of living and an increased ability to produce and consume socially desirable goods and services.

How did you do?! If you didn't do as well as you'd like, review the margin notes and presentations and test yourself again.


Continued in
Test Yourself: Trade