The Malthusian Growth Model

- As noted earlier, for most of human history per capita income levels + living standards were unchanged. The lifestyle of the typical laborer in 1750 was pretty much the same as the lifestyle of the typical laborer in the Middle Ages, which in turn was pretty much the same as it was during Roman times. Of course, at the very top of the income scale (i.e., the nobility), technological advances delivered substantial improvements in the standard of living. (Louis XVI led a far more extravagent lifestyle than did Charlemagne!).

- Why was this? The answer was provided by Thomas Malthus, in a famous essay published in 1798. Malthus' analysis was perhaps the first explicit, dynamic, macroeconomic model in history! It was also one of the most successful. It explained over 2,000 years of recorded economic data! Unfortunately for Malthus, it was beginning to become obsolete just around the time it was published.
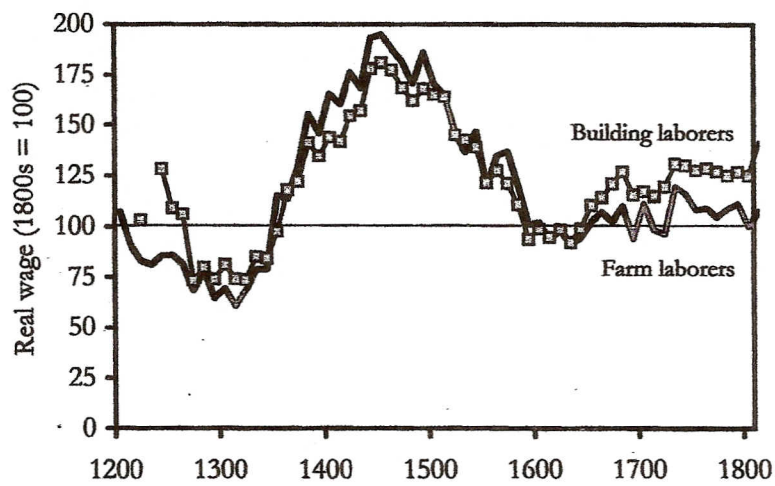
Figure 3.1 English laborers' real wages, 1209–1809.

Table 3.1 Expenditure Shares of Laborers before 1800

Category of expenditure	Share (%)
Food and drink	75
Grains and starches	44
Dairy	10
Meat	9
Drink	8
Sugar and honey	3
Salt and pepper	1
Clothing and bedding	10
Housing	6
Heating	5
Light and soap	4

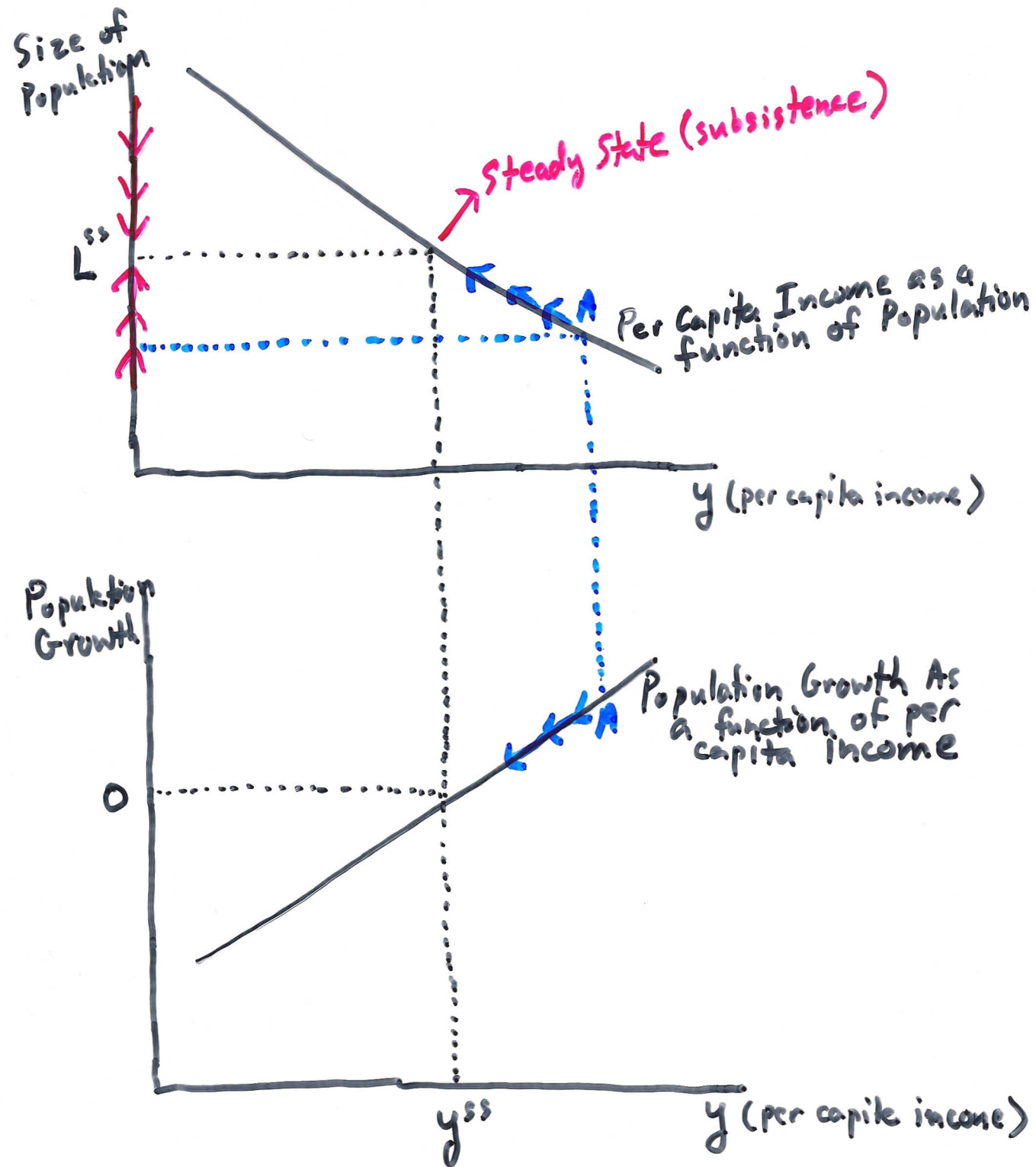Malthus' model is extremely simple. It is based on just two assumptions:

1.) Per Capita Income is Negatively Related to Population

At the time Malthus wrote, most of the economy was still based on agriculture, and land was by far the most important factor of production. Malthus argued that with a fixed quantity of land, diminishing returns would cause per capita incomes to decline with population.

2.) The Population Growth Rate Increases with Per Capita Income

The population growth rate (ignoring immigration) is the difference between the birth rate and the death rate. Malthus noted that higher income led to improved health + nutrition, which lowered the death rate. Higher incomes would also allow families to support more children, so the birth rate would rise. For both reasons, population would grow more rapidly as incomes rose.

We can depict these 2 assumptions as follows

Size of Population

L^{ss}

Steady State (subsistence)

A

Per Capita Income as a function of Population

y (per capita income)

Population Growth

O

A

Population Growth As a function of per capita Income

y^{ss}

y (per capita income)

At pt. A, income is above the subsistence level, population grows, and living standards get pushed down to subsistence level!

How does the economy respond to an improvement in technology?
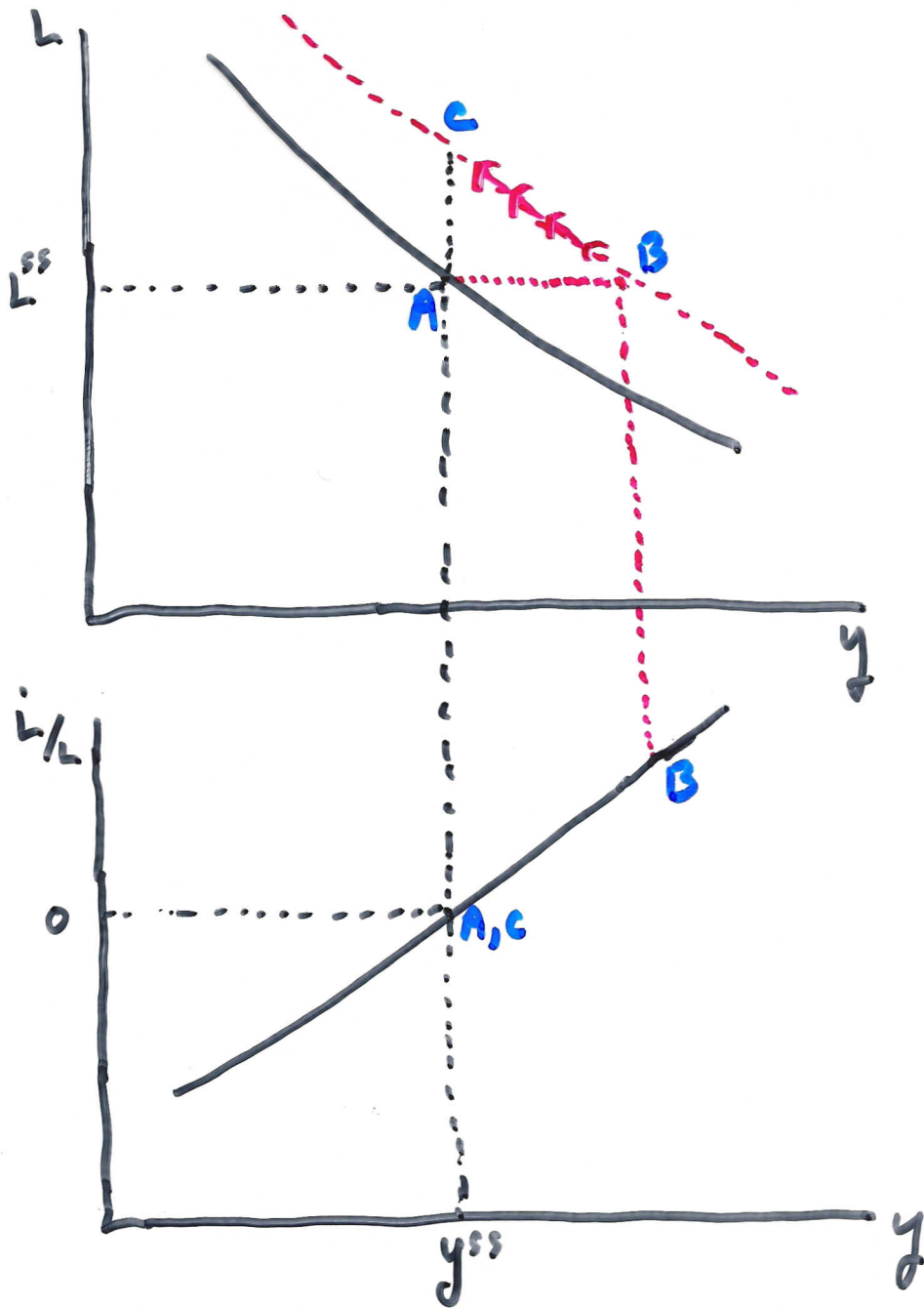
Technological advance leads to a growth in the size of the population, but **not** to growth in per capita income.

How can society raise its standard of living?
According to Malthus, by lowering the birth rate.