

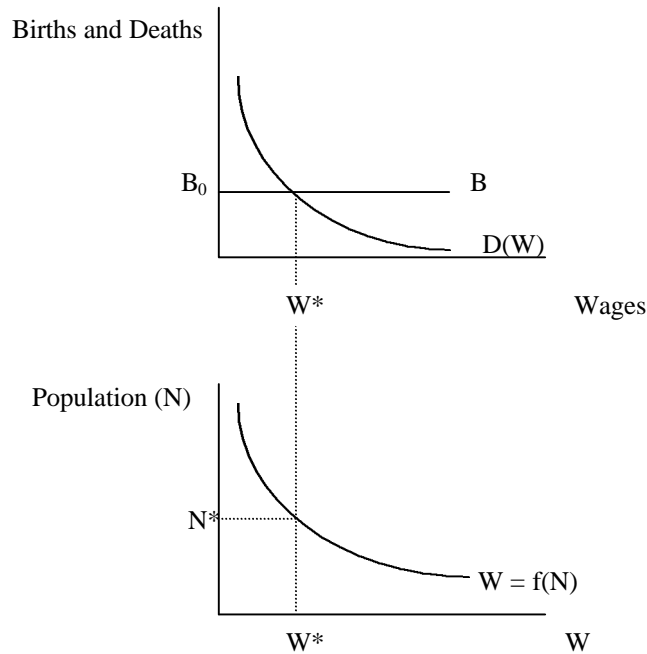
The Malthusian Economy

This model presents a simple neoclassical version of Malthus's famous model.

Assumptions:

- 1) $B = B_0$ The birthrate is determined by the "passion of the sexes" and therefore is assumed to be exogenous to this economic model.
- 2) $D = D(W)$ The death rate is a decreasing function of wages. Poor people have less nutrition and poorer sanitation and therefore are more likely to die.
- 3) $W = F(N)$ This is the standard neoclassical relationship between number of workers and wages. As the number of workers increase, wages fall. (In other words the demand for labor is downward sloping.)

In the model, equilibrium occurs where births are equal to deaths:

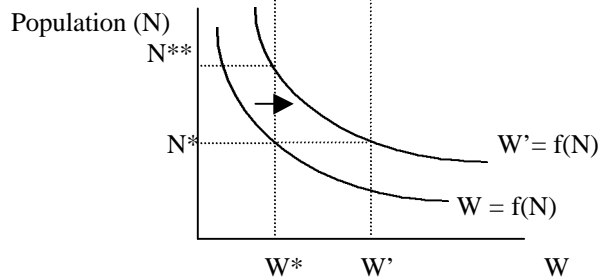
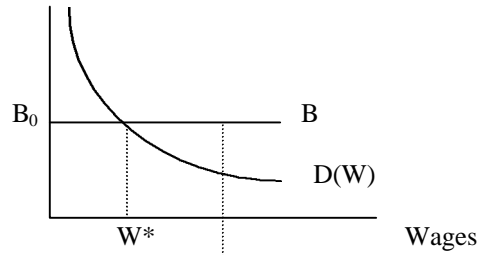


In the first diagram above, equilibrium occurs where births equal deaths; the second diagram shows the equilibrium population rate.

Dynamics: The depressing thing about the Malthusian model (and the reason Economics is often called "the dismal science" is that, unlike Solow-type growth models, changes in technology do not, ultimately, increase the standard of living.

Example 1: Increase in Technology

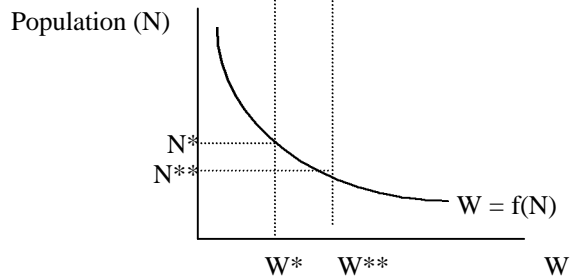
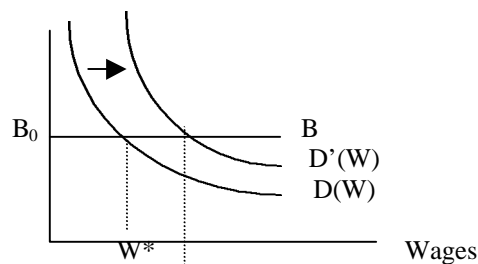
Births and Deaths



In the 2nd diagram above, technology shifts the demand curve for labor (why?) from W to W' and increases wages temporarily from W^* to W' . However, higher wages lead to a lower death rate. Since births are now greater than deaths, population increases, eventually reaching N^{**} . **Note that at this point births are again equal to deaths and wages are back to W^* again!** This is sometimes referred to as **the iron law of wages**.

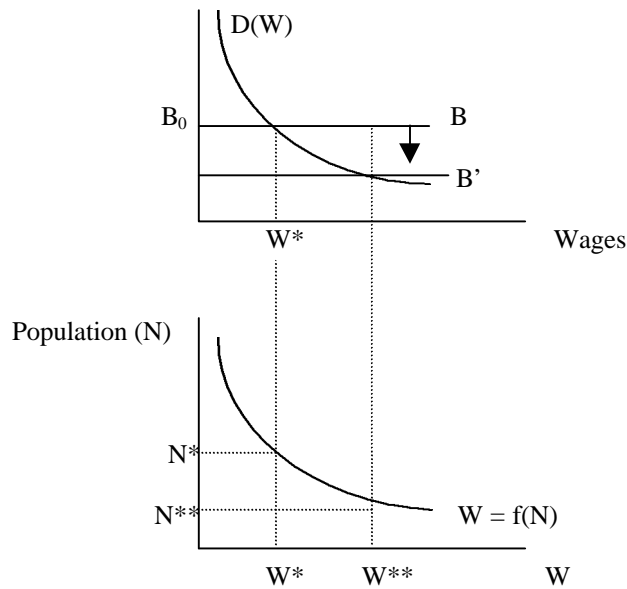
Example 2: Wars and Plagues

Births and Deaths



In the first diagram above, one can see that the plague has shifted the death rate upward from D to D' . Ironically, the reduction in population has actually increased wages from W^* to W^{**} . This represents a permanent increase in wages. **So, in the Malthusian model, wars and plagues actually increase the standard of living of the population.** (Again, you can see why economists don't always make the most desirable dinner companions.) Many contemporary environmentalists make similar neo-Malthusian arguments today.

Example 3: Moral Restraint Malthus' solution for population was "moral restraint" to reduce birth rates and hence increase the standard of living for all. (Malthus, like Adam Smith, was a minister.)



In the first diagram above, the birth rate is lowered (shifts down) due to "moral restraint." The result is similar to wars and plagues (without the bloodshed.) Again, wages permanently increase from W^* to W^{**} .

Is there any evidence for moral restraint in Europe from 1400 to today?

Any decent economic theory of development needs to explain the exceptionally high growth rates in Europe from 1400 onward. One partial explanation is given by modern demographers in terms of the "European marriage pattern." (For another interesting explanation of rapid rates of growth in Europe read *Guns, Germs and Steel* by Jared Diamond.)

European marriage pattern

1. European women married later than non-Europeans at the same level of development. The average age of marriage was 23-26. Men married later but this does not effect fertility patterns. (Why?)
2. A significant (12-25%) percentage of women did not marry at all.
3. Illegitimacy was very heavily stigmatized (read any European novel before 1900) leading to low out-of-wedlock birthrates.
4. Unlimited fertility within marriage: Once married, European women were baby-machines producing an average of 6 children in England and 8 children in France. Hence the importance of late marriage.

Most modern historians argue that Europeans made these choices deliberately to reduce the economic burden of bearing too many children. There is also evidence that some other cultures, most notably the Japanese, controlled births in a somewhat different way.

Japanese Marriage Pattern

1. Women married earlier than Europeans (roughly 22 years) though later than some other cultures.
2. Fertility was lower within marriage (about 20% lower.)
3. In small families, girls married later since they were still needed to help at home.
4. There appears to be some fertility control within marriages.

Methods of birth control in other societies

Despite our belief that we are more enlightened than previous cultures, most societies have developed ways of limited population growth rates to the desired rate. Note that most of these methods are less convenient than modern methods:

1. Infanticide
2. Withdrawal method
3. Rhythm methods (refraining from intercourse during the time when women are the most fertile.)