

Labor Supply

- For the United States, the BLS (Bureau of Labor Statistics) releases the several measures of labor market aspects such as unemployment rate, labor force participation rates, etc → it relies on CPS (Current Population Survey).
- For Korea, the national statistics release such information based on the Economically Active Population Survey (EAPS).
- The CPS (or EAPS) classifies all persons of 16 or older into three categories such as employed, the unemployed and out of labor force.

- Employed (E): worked at least one hour for pay or worked at least 15 hour on a nonpaid job such as family business.
- Unemployed (U): temporary layoff or actively looking for work in the past four weeks.
- Out of labor force: neither employed nor unemployed → soldiers, students, housewives, etc.
- Therefore, Labor Force (LF) = E + U
- The labor force does not say about hours of work → need to examine the intensity of work (hours of work) in the future.

- Hidden unemployed: persons who have given up in their search for work and have therefore left the labor force.
- In recent years, official unemployment rate does not seem to correctly capture the real condition of labor market, particularly for young people.
- Currently, young people who tried to enter into labor market after their finishing education have very difficult time to find out jobs in the labor market.
- Discourage unemployed: stop actively looking for jobs but instead taking courses in private institution related to human capital development → count as out of labor force.

- In the year of 2009, labor force participation rate is about 65.4% in Korea → men's participation rate is 74% but women's rate is 49.2%
- Korean women's LF participation rate is the lowest level among OECD countries.
- LF participation rate is the highest for the age of 30–40 yrs and it begins to fall before and after those aged groups.
- LF participation rate is shown to be increasing as the educational level of person goes up.

Big Questions: whether to work and the–hours–of–work decision

Tool box: utility function and budget constraint

Labor–Leisure Decision Model

- A person's utility function is represented by the amount of consumption and leisure → compare utility function we studied in microeconomics.

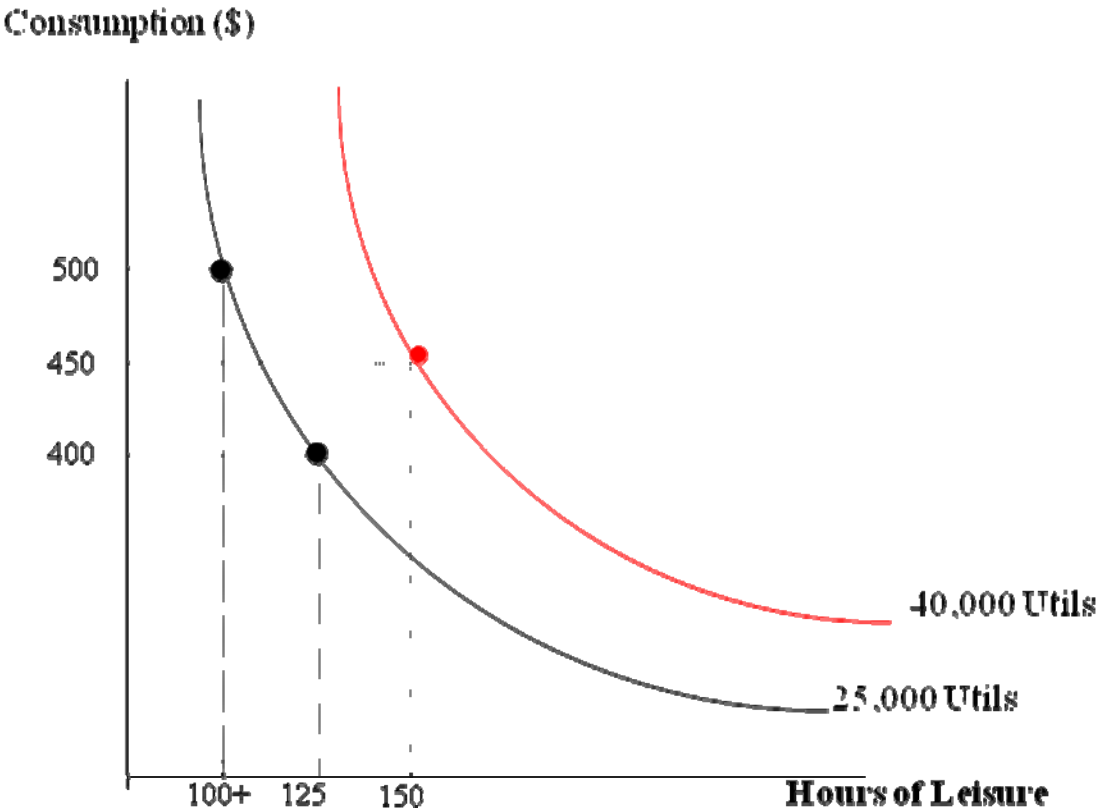
$$U = f(C, L)$$

- The indifference curve can be derived from this utility function by connecting locus of combination between two goods that maintain a person's level of utility as the same.

General Properties of Indifference Curves

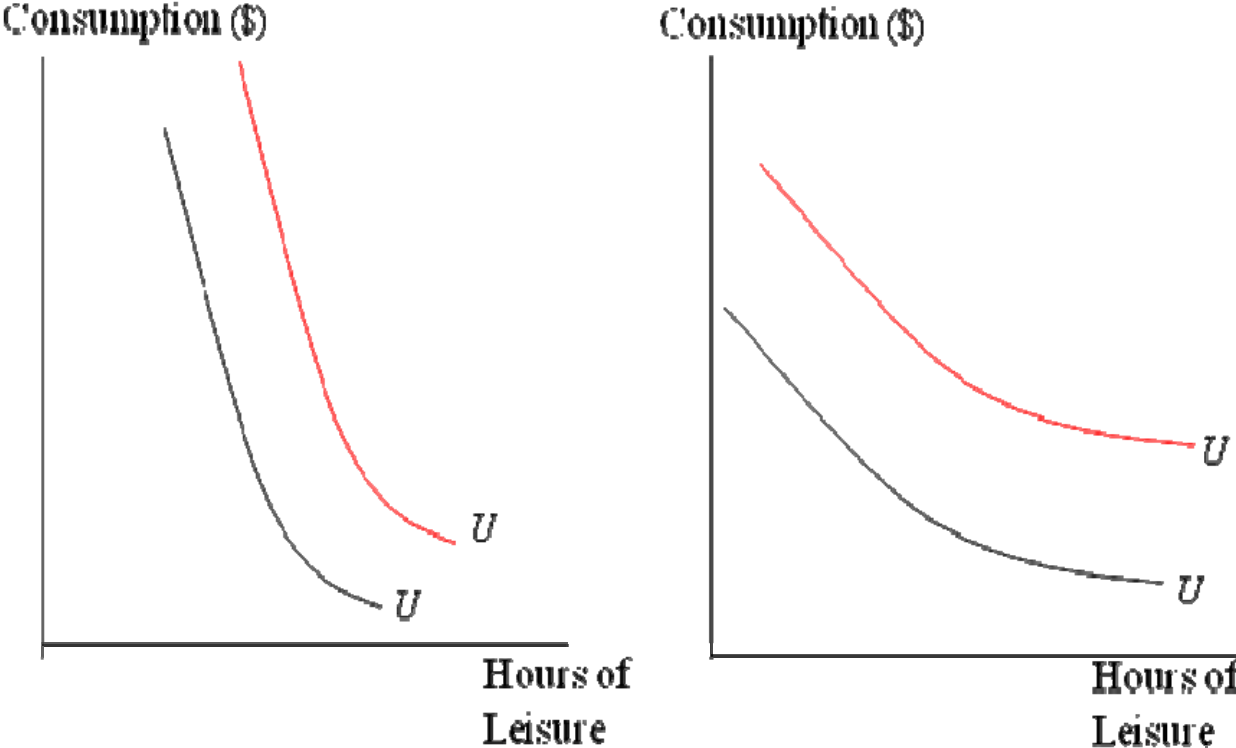
- Indifference curves are downward sloping.
- Higher indifference curves indicate higher level of utility.
- Indifference curves do not intersect.
- Indifference curves are convex to the origin.

[Figure 1] Indifference Curves between Leisure and Consumption



- The slope of indifference curve \rightarrow Marginal Rate of Substitution (MRS) = $-\text{MU}_L / \text{MU}_C$
- The slope of indifference curve would be changed depending on the person's tastes \rightarrow "tastes for work"
- If MRS is relatively steep \rightarrow a person has a stronger taste for leisure than consumption.
- If MRS is relatively flat \rightarrow a person has a stronger taste for consumption than leisure.

[Figure 2] Differences in Preferences across Workers



- Consumer decides the amount of consumption under the budget of his/her own labor and non-labor income.

$$C = w * h + V$$

where w is wage rate (hourly wage rate), h being working hours and, V is non-labor income.

- Note that the amount of leisure time is represented in the horizontal line rather the amount of working hours.

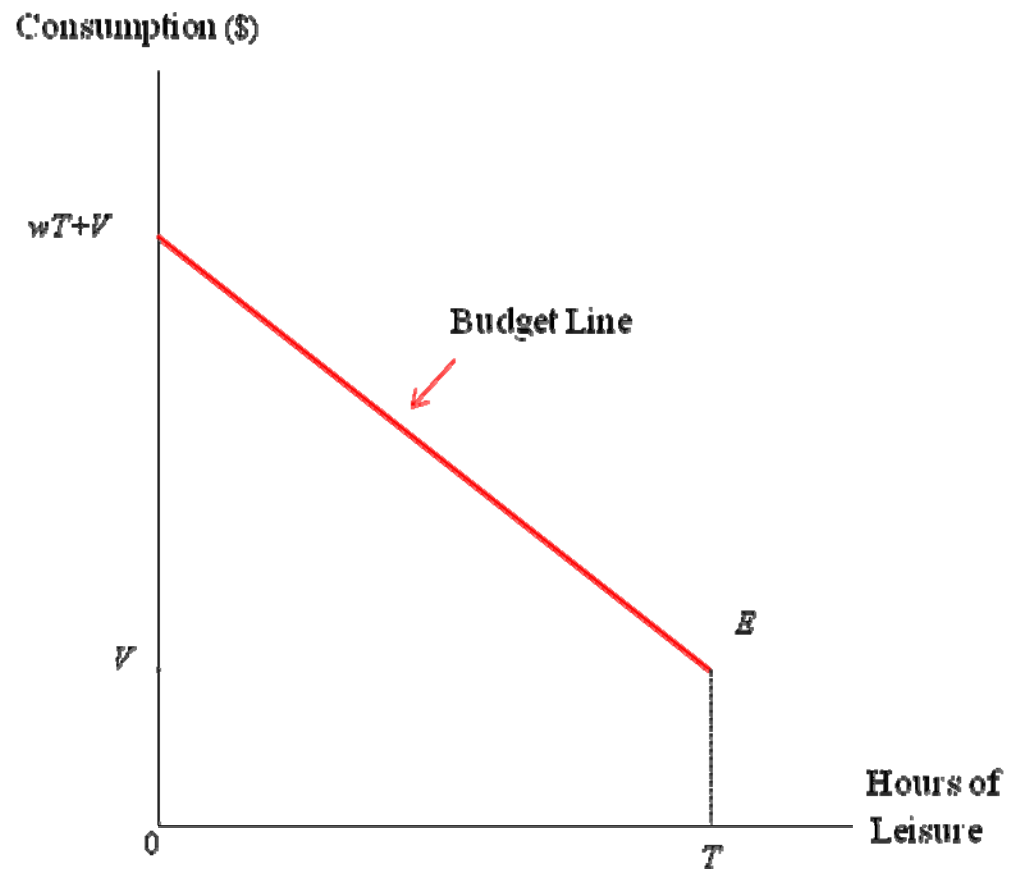
- Total available time to person is $T = h + L$ (leisure) $\rightarrow h = T - L$

- Therefore, consumer is faced by the budget line

$$C = w \cdot h + V = w(T - L) + V = -w \cdot L + (w \cdot T + V)$$

- Here, the slope of indifference curve is hourly wage rate when we put the amount of leisure in the horizontal axis.
- $w \cdot T + V$ can be interpreted as intercept in the vertical line.

[Figure 3] Budget Line

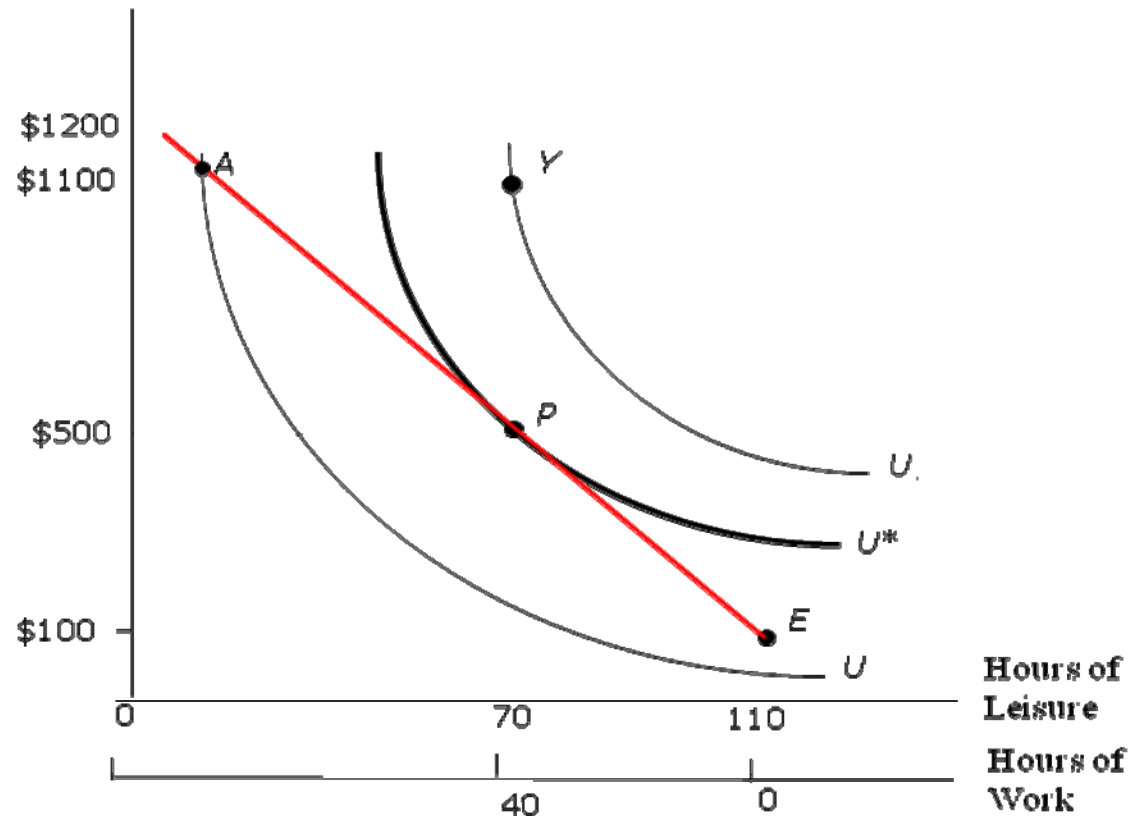


The Hours-of-Work Decision

- A utility maximizing worker chooses the consumption–leisure bundle given budget constraint → the entire problem goes toward the decision of working hours.
- As soon as the working hours are decided, both the amount of leisure time and consumption are determined.
- At optimal point, the budget line is tangent to the indifference curve

$$MRS_{LC} = -MU_L / MU_C = -w$$

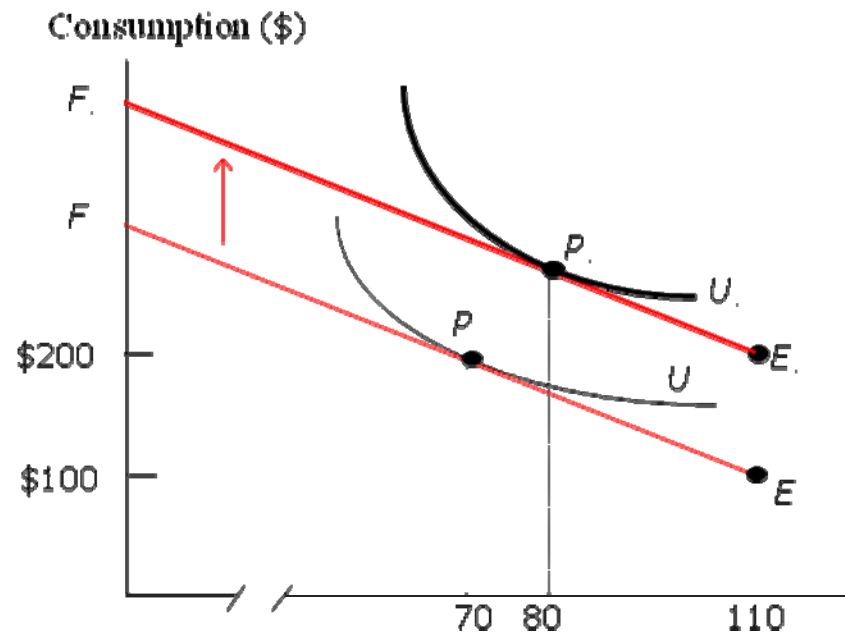
[Figure 4] The outcome of optimal decision between consumption and leisure by consumer



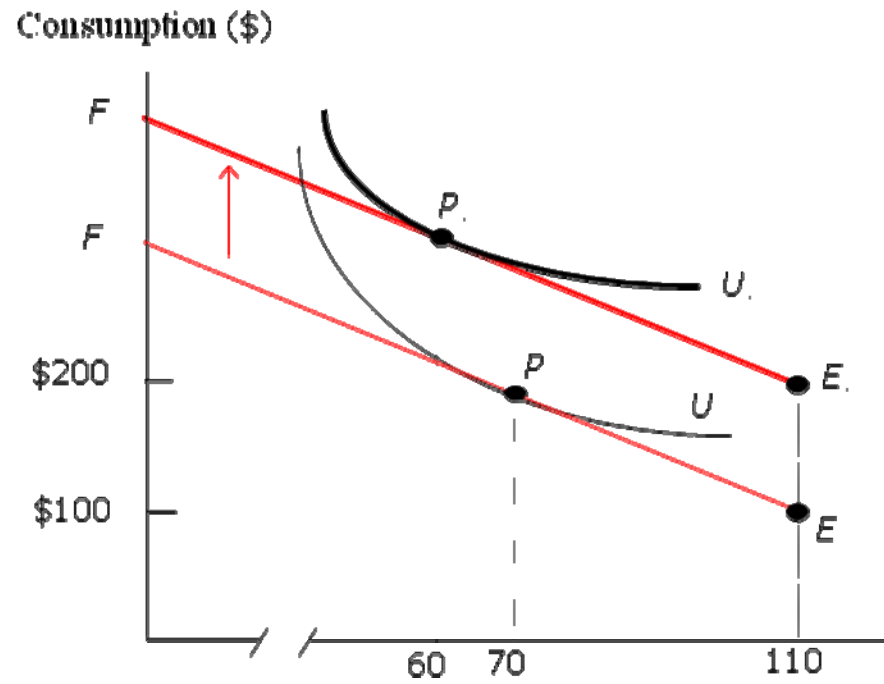
The Effect of Non-labor income on the hours of work

- The higher non-labor income leads to a parallel, upward shift in the budget line.
- Holding wages constant, the impact of the change in non-labor income on the hours of work is called an income effect.
- The direction of the change in hours of work depends on the types of leisure good, normal or inferior goods → if leisure is a normal good, the increase of non-labor income leads to the decrease of working hours and vice versa.

[Figure 5] The effect of a change in non-labor income of hours of work if leisure is a normal good



[Figure 6] The effect of a change in non-labor income of hours of work if leisure is an inferior good



- Generally, it is reasonable to assume that leisure is a normal good.
- An increase in non-labor income raises the demand for leisure hours and then reduces hours of work.
- The income effect, therefore, implies that an increase in non-labor income (holding the wage rate constant → typical example of “comparative static”), reduces hours of work.