ECON3102-005
Chapter 4: Consumer and Firm Behavior

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Spring 2014
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Consumer's preferences over consumption and leisure as represented by indifference curves. The preferences can be captured by the utility function $U(c, l)$. 

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The Representative Consumer’s Preferences

- If $U(c_1, l_1) > U(c_2, l_2)$, then the consumer strictly prefers bundle $(c_1, l_1)$ to bundle $(c_2, l_2)$. 

- If $U(c_1, l_1) < U(c_2, l_2)$, then the consumer strictly prefers bundle $(c_2, l_2)$ to bundle $(c_1, l_1)$. 

- If $U(c_1, l_1) = U(c_2, l_2)$, then the consumer is indifferent between the two bundles. 

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Assumptions on The Representative Consumer’s Preferences

- More is always preferred to less: the consumer always likes more leisure, and more consumption.
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- Consumption and leisure are normal goods to the consumer (as opposed to inferior goods!): he consumes more of each as his income goes up.
**Indifference Curves (IC curves)**

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- IC curves are downward sloping (more is preferred to less).
- convex or bowed-in toward the origin (consumer’s preferences for diversity).
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**Definition**

The marginal rate of substitution of leisure for consumption, denoted $MRS_{lc}$, is the rate at which the consumer is just willing to substitute leisure for consumption goods.

- Between bundles $A$ and $B$, the rate at which the consumer substitutes $c$ for $l$ is $\frac{c_1 - c_2}{l_1 - l_2} = -\text{the slope of line AB}$.
- This is because if you take away $(c_1 - c_2)$ from him, he would ask to be given $(l_2 - l_1)$ in return, in order to remain indifferent between bundles $A$ and $B$.
- As bundle $B$ gets arbitrarily close to bundle $A$, this rate of substitution becomes $\frac{\partial c}{\partial l} = -\text{the slope of the line tangent to the IC at point A (the derivative of IC at A)}$. 
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![Indifference Curves Diagram](image)
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Indifference Curves

\( MRS_{l,c} = - \) the slope of the IC passing through bundle \((c, l)\):
Consumer’s Time Constraint

- Each period, the consumer has $h$ units of hours of time available, to allocate between $l$ units of leisure and $N^s$ units of work.
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The time constraint is

$$l + N^s = h$$
The Consumer’s Real Disposable Income

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- Hence, his disposable income is:

  $$wN^s + \pi - T$$
The consumer’s budget constraint (BC) is:

\[ c = wN^s + \pi - T \]

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or,

\[ \underbrace{c + wl}_{\text{Implicit expenditure on goods}} = \underbrace{wh + \pi - T}_{\text{Implicit Real Disposable Income}} \]

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For convenience, we rewrite the BC as: $c = -wl + wh + \pi - T$

The Consumer’s Budget Constraint if $T > \pi$

The Consumer’s Budget Constraint if $T < \pi$
Consumer’s Budget Constraint

Just to show that either case is easy to analyze and that the implications do not change, we will assume in this chapter that $T < \pi$. That is, we will be working with the kinked budget constraint.
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- We next show that the OCB is the point where the IC is tangent to the budget constraint.
Consumer Optimization

- First the consumer will never choose a point inside the budget constraint, so we know the OCB is on line (AB).

\[ \text{MRS}_{l,c} > w \]

Hence, at point F, the rate at which the consumer would trade leisure for consumption is greater than the rate at which he can trade leisure for consumption. The consumer would then be better off if he sacrifices consumption for more leisure.
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- At point F, $-\text{slope of IC (} MRS_{l,c} \text{)} > -\text{slope of the budget constraint (} = w \text{)}: MRS_{l,c} > w$).
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- At point E, \(-\text{slope of IC (MRS}_l,c\) < -slope of the budget constraint (} = w\): \(MRS_l,c < w\)).

Hence, the consumer would then be better off sacrificing leisure for more consumption. So, E is not the OCB.

Hence, the OCB is the point where: \(MRS_l,c = w\): where the rate at which the consumer would trade consumption for leisure = price of leisure in units of consumption.
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- Hence, the OCB is the point were: \( MRS_{l,c} = w \): where the rate at which the consumer would trade consumption for leisure= price of leisure in units of consumption.
An Increase in $\pi - T$ for the Consumer ($w$ is constant.)

- Real dividends or taxes change for the consumer:

![Graph showing consumption and leisure with indifference curves and a budget line.]

Points A and B represent initial consumption levels, C1 and C2 represent the new consumption levels after the change in dividends or taxes. The graph illustrates the consumer's choice in leisure and consumption, with the indifference curves showing the trade-off between the two. The increase in leisure from $l_1$ to $l_2$ and the decrease in consumption from $C_1$ to $C_2$ indicate the effect of the change in dividends or taxes.
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- An increase in dividends or a decrease in taxes will then cause the consumer to increase consumption and reduce the quantity of labor supplied (increase leisure).
An Increase in the Market Real Wage Rate

- This has income and substitution effects.

![Diagram showing consumption (C) vs. leisure (L) with indifference curves I₁ and I₂, indicating changes in consumption and leisure due to a market real wage rate increase.](image)
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- Conclusion: Consumption must rise, but leisure may rise or fall.
Breaking Down the Income and Substitution Effects

- Because of the increase in \( w \), the budget constraint pivots around point B (from AB to EB).

- Given the new higher \( w \), suppose we take away disposable income from him (example from \( \pi \)) until he is indifferent between his new OCB (point O) and his original OCB (point F).

- Concretely, we force the consumer to face fictive budget constraint (JKD). The movement from F to O is the substitution effect:
  - As \( w \) increases, leisure becomes relatively more expensive and the consumer substitutes away from it.
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For the income effect, suppose \( w \) stays the same, but non-wage income increases so that the budget constraint shifts in a parallel way from (JKD) to EBD.

Because both goods are normal, the consumer consumes more of both.
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Labor Supply Curve

- We assume that the substitution effect dominates so that as $w$ increases, the consumer consumes less leisure and hence works more.
Labor Supply Curve: Effect of an Increase in Dividend Income or a Decrease in Taxes