

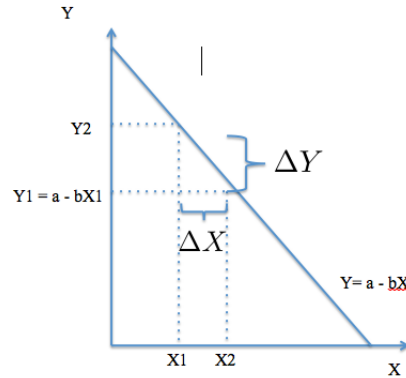
EE312 Macroeconomics, 2/2013 (Sec. 046402)
Chapter 5. Two Period Model

Review Intertemporal Consumption,
Consumption-Savings Decision and The Credit Market (Supplement 1)

1 Intertemporal Decision (Review)

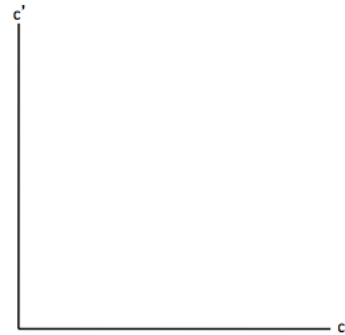
1.1 Basic Mathematics

- $Y = a - bX$: linear equation, $b > 0$
- $Y_1 = a - bX_1$
- $Y_2 = \dots - \dots X_2$
- $\Delta X = X_2 - X_1$
- $\Delta Y = \dots - \dots$
- $\Delta Y = (\dots) \times \Delta X$



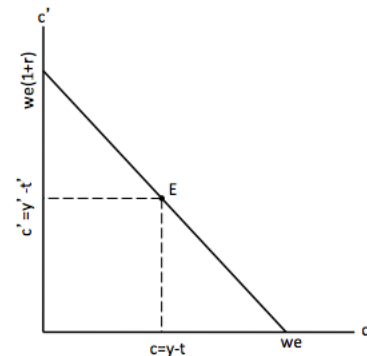
1.2 Intertemporal Consumption

- Read : Salvatore Ch.16, Frank Ch.15 Appendix, Perloff Ch. 16, Hirshleifer Ch.14, Miller & Fishe Ch.5 (pp.617-632), Pindyck & Rubinfeld Ch.15, Varian Ch. 10.
- (Do not forget to write down the name of both axes in the exam.)
- Let $we = y + \frac{y'}{1+r} - \left(t + \frac{t'}{1+r} \right)$
- Write down life time budget constraint and interpret its meaning
.....
.....
.....
.....
- Draw the budget line. Define a lender, a borrower and a person who is neither a borrower nor a lender. Mark all important points on the graph.



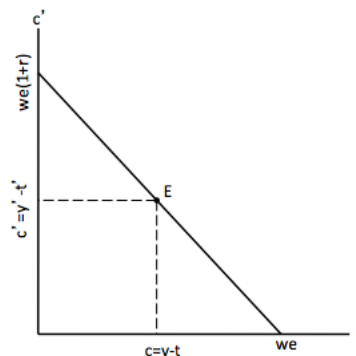
1.2.1 Suppose a person is a borrower.

- Suppose he or she borrow B units of consumption goods.
- He or she needs to repays units of consumption goods in the future period.
- On the graph,
 - Show the amount he or she borrows.
 - Show the amount he or she repays.



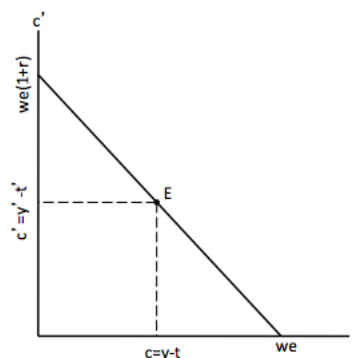
1.2.2 Suppose a person is a lender.

- Suppose he or she lends L consumption goods.
- He or she will receive a repayment of units of consumption goods in the future period.
- On the graph,
 - Show the amount he or she saves and lends.
 - Show the amount of loan repayment he or she received .



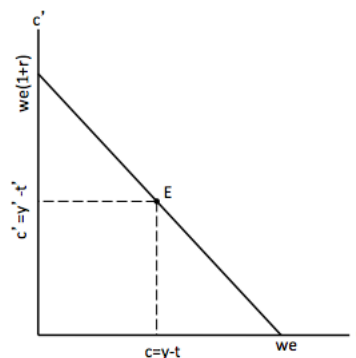
2 An increase in current income

- An increase in current income: y increases
- The new endowment point moves (horizontally, vertically) {(to the right, to the left), (upward, downward)}.
- Budget line shifts (horizontally, vertically) {(to the right, to the left), (upward, downward)}.
- On the graph,
 - Show the new budget line.
 - Show the new initial endowment point.



2.1 Suppose the consumer is a lender.

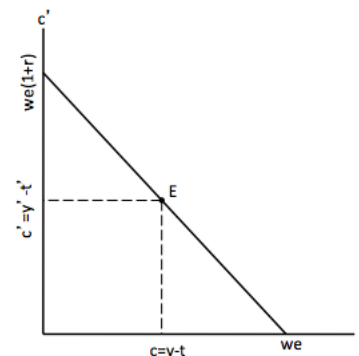
- On the graph,
 - Show the **initial** optimal consumption the consumer chooses.
 - Show the new budget line.
 - Show the new initial endowment point.
 - Show the new optimal consumption the consumer chooses.



- Summarizes and show the effect of an increase in y .
- current income increases from y_1 to y_2 ($\Delta Y = \dots$; mark/show the value on the graph)
 - current consumption (increases or decreases) from to by (mark/show the value on the graph)
 - $\Delta C \dots \Delta Y$ ($>, <, =$)
 - future consumption (increases or decreases) from to by (mark/show the value on the graph)
 - saving (increases or decreases) from to by (mark/show the value on the graph)

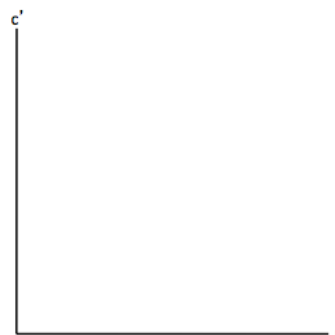
2.2 (do the graphs and the analysis for other cases for self study)

3 An increase in future income



- An increase in future income: y' increases
- The new endowment point moves (horizontally, vertically) {(to the right, to the left), (upward, downward)}.
- Budget line shifts (horizontally, vertically) {(to the right, to the left), (upward, downward)}.
- On the graph,
 - Show the **initial** optimal consumption the consumer chooses.
 - Show the new budget line.
 - Show the new initial endowment point.
 - Show the new optimal consumption the consumer chooses.
 - Summarizes and show the effect of an increase in y' .
 - * current income increases from y_1 to y_2 ($\Delta Y = \dots$; mark/show the value on the graph)
 - * current consumption (increases or decreases) from to by (mark/show the value on the graph)
 - * $\Delta C \dots \Delta Y$ ($>, <, =$)
 - * future consumption (increases or decreases) from to by (mark/show the value on the graph)
 - * saving (increases or decreases) from to by (mark/show the value on the graph)

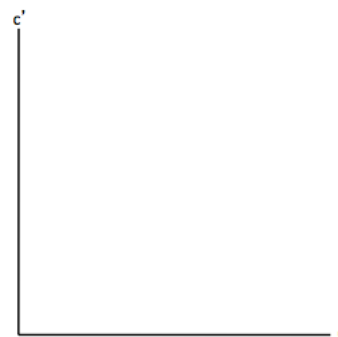
4 Temporary and permanent increases in income



- **HJ** = effect of temporary rise in y .
- Show the effect of an increase in temporary income (an increase in y)
- **HK** = effect of permanent rise in y .
- Show the effect of an increase in permanent income (an increase in y and y' by equal amount)
- **A temporary increase in y** = HL: the budget line shifts from AB to ED. Current consumption increases from c_1 to c_2 .
- **A permanent increase in y** = ($y_2 - y_1 = y'_2 - y'_1$, $y_2 - y_1 = HL = y'_2 - y'_1 = LM$.) : the budget line shifts from AB to GF. Current consumption increases from c_1 to c_3 .

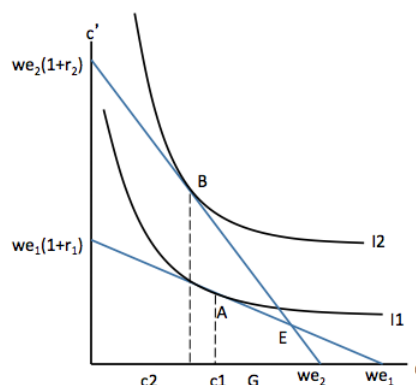
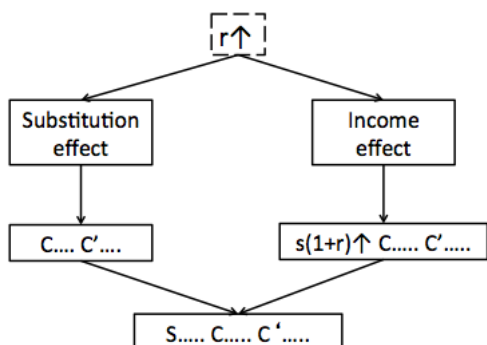
5 An increase in the real interest rate

- **Future consumption** becomes (cheaper, more expensive)
- **Current consumption** becomes (cheaper, more expensive)



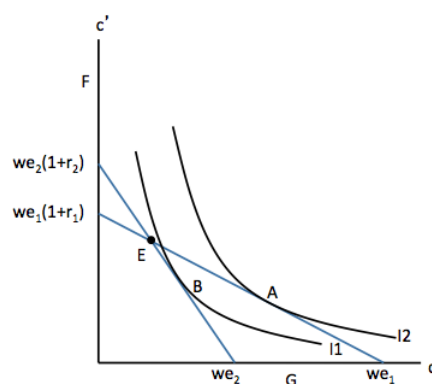
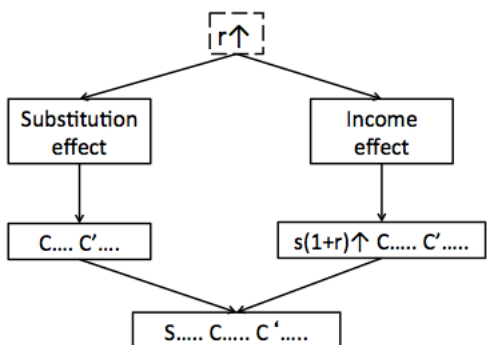
Lender: stronger substitution effect

The consumer is a lender



- = income effect; c.
 -= substitution effect; c.
 - Try other cases on your own : self practice
- borrowers:**

The consumer is a borrower



- = income effect; c.
-= substitution effect; c.
- Net effect: lower c; unclear c'.

6 The government sector

- Government's **current budget constraint**:
- Government's **future budget constraint** :

- Government's **life-time budget constraint** :

• Equilibrium

1. The credit market clears. $S^p = \dots\dots\dots$, $S = S^p + \dots\dots\dots = B\dots\dots\dots = \dots\dots\dots$

2. The income-expenditure identity.

$$\begin{array}{rcl} S^p & = & Y - \dots\dots\dots - \dots\dots\dots \\ B & = & G - T \\ Y - \dots\dots\dots - \dots\dots\dots & = & G - T \\ Y & = & C + \dots\dots\dots \end{array}$$

7 The Ricardian Equivalence

- A change in current taxes with an equal and opposite change in the present value of future taxes has effect on the real interest rate and the consumption of individual consumers.

Government budget constraint per one consumer :
..... (9.25)

Consumer budget constraint:
.....
(9.26)

- The change in current taxes (Δt) is matched by $-\Delta t(1+r)$ so that equation 9.25 holds.
- Equation 9.26 remains unchanged, given r (as y , y' , G , G' and N are the same).
- $Y = C + G$; the credit market clears. No welfare change for consumers.
- A current tax cut for a borrower
- A current tax cut equals a future tax increase: endowment point changes

- A decrease in current taxes private saving and government saving by the same amount ($S^p = Y - C - T$ and $S^g = T - G$).
- Consumers respond to a tax cut by private saving by the same amount.
 - Private saving to pay for higher future taxes.
 - The consumption bundle
 - $\Delta S^p = \Delta B = \Delta T$ so the credit market equilibrium remains.

Unchanged credit market

