*Fall Semester '05-'06*
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# Lecture 22: Consumption

## I. OVERVIEW

- In the last 20% of the class, we explore the microeconomics underlying each of the component parts of the IS Curve in a thorough manner, first consumption, then investment, government spending and net exports and the open economy in order. This will enable us to look at more sophisticated economic concepts beyond the scope of the IS-LM model
- We initially focus on the consumption decision, which is the largest component of GDP (about 65% of GDP). It is also the most important from an individual's perspective. In the IS-LM analysis we worked with a very simple Keynesian consumption function where consumption today depended only on current disposable income. While this is analytically convenient, it does not in anyway capture the complications of the consumption decision that people undertake everyday.

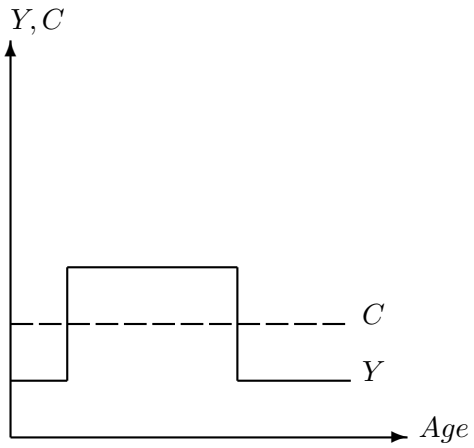
## II. FORWARD LOOKING THEORIES OF CONSUMPTION

- In the IS-LM model we used the Keynesian consumption function $C = \bar{C} + b(1-t)Y$. Any changes to Consumption that are unrelated to current income are captured by the exogenous consumption term $\bar{C}$. However, we would like to incorporate some of these additional determinants more directly into our consumption function.
- The Keynesian consumption function seemed to hold up empirically when researchers used data over a long period of time. The MPC ($b$) seemed to be about 0.93. However, when they surveyed the consumption patterns of households over shorter periods of time, they found that the MPC was much lower about 0.72. Since the Keynesian Consumption function did not allow for the pattern of consumption to differ between the short run and the long run, a better theory was required.
- There were two such theories proposed in the 1960's. Milton Friedman's **Permanent Income Hypothesis** and Franco Modigliani's **Life Cycle Hypothesis**. These 2 theories collectively are often referred to as the **Forward Looking Theories of Consumption** and share a common economic intuition. This intuition is built on the assumption that consumers are forward looking individuals who calculate a plan for their future consumption and then attempt to smooth consumption as much as possible.

### The Life Cycle Theory of Consumption

- Modigliani's life-cycle model describes individuals as going through several phases in life - youth when typically little or no income is earned, middle-aged working years when most of their income is earned and the retired years when they have to live off savings and social security.

- Consumers then are likely to dissave when young and old and save when they are middle aged so as to consume most of their resources over their lifetime.
- This can help explain the discrepancies in the short and long run link between $C$ and $Y$. In the long run, $C$ and $Y$ will be closely related as individuals will consume most of their income so the MPC will be high. But in the short run, many groups such as the young, the old and the working will not consume in proportion to their incomes because they will be either saving or dissaving depending on the stage of the life-cycle that they are in.




**The Permanent Income Hypothesis**

- Friedman's Permanent Income Hypothesis is similar to the Life Cycle Theory. Instead of focusing on the age of the consumer, Friedman focused on the type of income that the consumer received.
- He categorized income into 2 types: permanent income and transitory income. **Permanent income** is income that people expected to last into the future while **transitory income** consists of temporary deviations from permanent income.
- He then observed that the MPC out of permanent income should be close to 1 while the MPC from temporary income should be considerably less than 1 because individuals would tend to smooth consumption over time.
- The intuitive reasonableness of this argument can be illustrated by thinking about a Powerball lottery winner who has a choice of receiving a single lump-sum payment of \$150 million or something like 30 annual payments of \$10 million a year). The single lump-sum would be counted as transitory income while the \$10 million payment would count as permanent income.
- Intuition would tell us that they would increase annual consumption by about \$10 million a year in the 2nd case (a MPC close to 1) while they would save most of the \$150 million in the first case (a MPC close to 0).
- This too can explain the short and long run differences in consumption. When we use long-term data, permanent income dominates income so we would expect MPC to be close to 1. However, when looking at short-term data, income consists of both permanent and transitory income so the MPC would be much lower.

- The next question that arises is how much C goes up in response to an increase in transitory income? The answer to this depends on the horizon over which I plan my consumption.
- A simple example: Consider an individual who lives for T periods and earns an income of $Y_t$ in period $t$ where $t = 1, 2, \cdots, T$.
- Since we only want to focus on the distinction between permanent and temporary income we will make certain assumptions for simplicity's sake.
- In particular, we will assume that the interest rate is zero, and that the individual does not discount future utility. This implies (I'll be happy to show to anyone who cares) that the individual prefers to keep consumption completely smooth (i.e. consume the same amount every period).
- The budget constraint faced by the individual is

$$\sum_{t=1}^{T} C_t = \sum_{t=1}^{T} Y_t$$

- We can use the fact that all the consumption levels are identical to write this as

$$C = \frac{1}{T} \sum_{t=1}^{T} Y_t$$

- In other words, consumption will always be equal to average income.
- Now suppose the individual got a raise so that their salary increased by a constant dollar amount $Z$ every period, i.e. their new income in a given period is $Y_t + Z$. Since the FOC conditions are unchanged, we know that $C_1 = C_2 = \cdots = C_T = C$ will still hold.
- Using the new budget constraint the solution will be

$$C = \frac{1}{T} \left[ \sum_{t=1}^{T} (Y_t + Z) \right] \equiv \frac{1}{T} \sum_{t=1}^{T} (Y_t) + Z$$

- So consumption will increase by $Z$ every period, i.e. by the amount of the permanent income.
- Suppose instead that the individual had received a raise of Z dollars in the first period and no raises thereafter. Using the new budget constraint the solution will be

$$C = \frac{1}{T} \left[ \sum_{t=1}^{T} (Y_t) + Z \right] \equiv \frac{1}{T} \sum_{t=1}^{T} (Y_t) + \frac{1}{T} Z$$

- In other words, consumption will increase by Z/T every period.
- Based on this, we can conclude that the MPC out of permanent income is 1, MPC out of temporary income is $\frac{1}{T}$. As the horizon gets longer the tendency to consume out of temporary income goes to zero.

## III. IMPLICATIONS FOR IS-LM ANALYSIS

- Both the Friedman and the Modigliani approaches to modeling consumption have powerful implications for IS-LM analysis.
- The length of tax cuts matter because we have to distinguish between permanent and temporary income. If individuals are forward looking then a temporary tax cut will affect them less than an equivalent tax cut that is permanent will. So we would have to incorporate the permanency of tax cuts into our IS-LM analysis. Example: A permanent tax cut announced in 1964 stimulated the economy because consumption increased. In contrast was the 1968 Vietnam War tax surcharge which lasted 1 year, this did not reduce aggregate demand at all because people smoothed out the tax increase over their lifetimes.
- Expectations matter. So announcements of future tax cuts will affect consumption today because forward looking consumers are likely to take the future into account.
- While the permanent income hypothesis can explain some puzzles it still is not empirically foolproof. In particular, consumption seems to depend much more on current income than on future income.
- Potential explanations for this are
    1. Irrationality: Consumers are likely to believe that good times will always stay and bad times will go away
    2. Short-sightedness: Consumers are not forward looking to the degree predicted by Friedman and Modigliani.
    3. Uncertainty about future income: so they save money for a rainy day
    4. Liquidity constrained consumers: even though people like to smooth consumption they are unable to spend more than they earn so they will use temporary income increases to finance consumption.