

Chapter 6

A Two-Period Model: The Consumption-Saving Decision and Ricardian Equivalence

Introduction

- **Inter-temporal decisions** (across periods) and their implications on the influence of government deficits.
- An important implication of the models is the Ricardian Equivalence theorem.
- **The Ricardian Equivalence Theorem:** Under certain conditions, the size of the government's deficit is irrelevant. The timing of taxation does not matter for economic activity.
- HH decision is DYNAMIC.

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Decisions

Note

Intra-temporal
STATIC (chap 4-5)

c: consumption

N: labor supply

s: equals zero

Inter-temporal
DYNAMIC (chap 6)

c: consumption today

c': consumption tomorrow

s: saving today

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Model

- **Two-period model:**
 - **First period: current period.**
 - **Second period: future period.**
- **Real Interest Rate (r)** to borrow/lend, i.e., to transfer goods across periods.
- **r** : determines the relative price of future consumption in terms of present consumption = $1 / 1 + r$
- **Consumption-smoothing behavior:** important to understand how consumers respond to changes in government policies.
- For simplicity, leave out production and investment until chap 7 → income is exogenous, forget the intra-temporal decision.

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Notation

- Use primes to denote next (future) period variables. e.g., c' : future consumption
- Lowercase variables to denote individual level. e.g., c : individual consumption
- Uppercase variables to denote aggregate level. e.g., C : aggregate consumption

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Assumptions

- Consumer starts current period with no assets and ends future period with no assets (no bequests).
- Consumer and government can issue bonds.
- All bonds are indistinguishable → one interest rate for all bonds.
- No risk associated with holding bonds (no default risk, no risk) → no expectation.
- Bonds are traded directly on the credit market (no need for financial intermediaries, no banks) → r on borrowing is the same as r on lending.
- Income is exogenous → forget intra-temporal decision.

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Consumer Budget

- **Current period budget:**

$$c + s = y - t$$

$(y - t)$ is disposable income (after-tax income)

$s > 0 \rightarrow$ lender (buys bonds)

$s < 0 \rightarrow$ borrower (sells bonds)

- **Future period budget:**

$$c' = y' - t' + (1+r)s$$

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Consumer Problem

Max Utility

subject to

- **current period budget and**
- **Future period budget.**

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Derivation of the Lifetime Budget

$$c + s = y - t \quad \text{Current Budget}$$

$$c' = y' - t' + (1+r)s \quad \text{Future Budget}$$

From future budget solve for s

$$s = (c' - y' + t') / (1+r)$$

Plug into current budget

$$c + (c' - y' + t') / (1+r) = y - t$$

Rearrange to get the **LIFETIME BUDGET**

$$c + c' / (1+r) = y + y' / (1+r) - t - t' / (1+r)$$

$$PV(c) = PV(y) - PV(t) = \text{Lifetime wealth}$$

Let **LIFETIME WEALTH (we)** be the RHS of the Lifetime Budget.

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Consumer Optimization

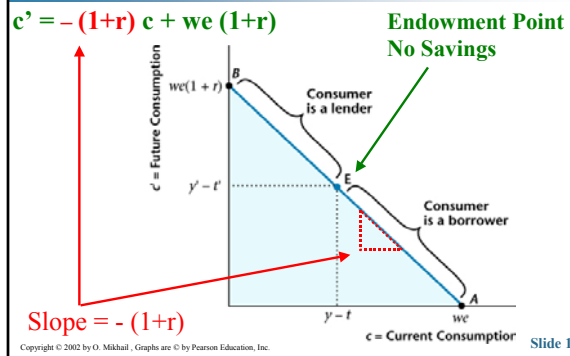
Given: r, y, y', t and t'

Choose: c, c' and consequently s

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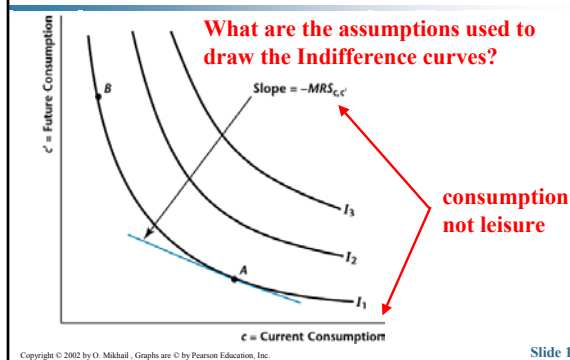
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Figure 6-1 Consumer's Lifetime Budget Constraint



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Figure 6-2 A Consumer's Indifference Curves



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Table 6-1 Desire for Consumption Smoothing

Table 6.1 Sara's Desire for Consumption Smoothing

	Week 1 Coconuts	Week 2 Coconuts	Total Consumption
Bundle 1	5	15	20
Bundle 2	17	3	20
Preferred Bundle	11	9	20

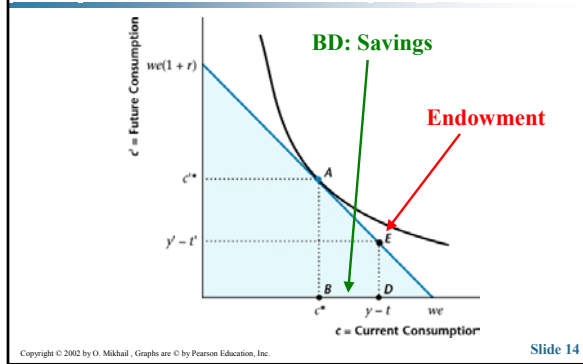
Which assumption made regarding the Utility implies consumption smoothing?

Note that consumption smoothing does not imply equal quantities over each period

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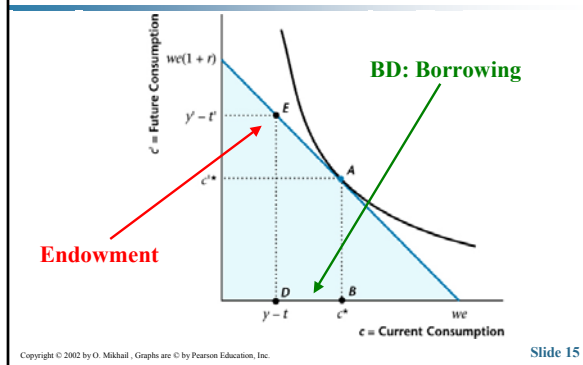
Figure 6-3 A Consumer Who Is a Lender



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Figure 6-4 A Consumer Who Is a Borrower



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