CHAPTER 22:Taxes on Savings

Abel Embaye

UofA

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Taxation and Savings- Theory and Evidence: Traditional Theory

- The intertemporal choice model is the main model for understanding how taxes affect savings.
- **Intertemporal choice model:** The choice about how much to save is really the choice about how to allocate one's consumption over time.
- **Savings:** The excess of current income over current consumption.
- The model focuses on the trade-off between consumption today and consumption tomorrow .

A Simplified Model

- **Intertemporal budget constraint:** The measure of the rate at which individuals can trade off consumption in one period for consumption in another period:

$$c^R = (1 + r)(Y - C^W)$$

- The opportunity cost of one dollar of first-period consumption is $(1 + r)$ dollars of second-period consumption.
- Taxes on savings affect behavior by changing the effective interest rate, shifting the budget constraint.

A Simplified Model

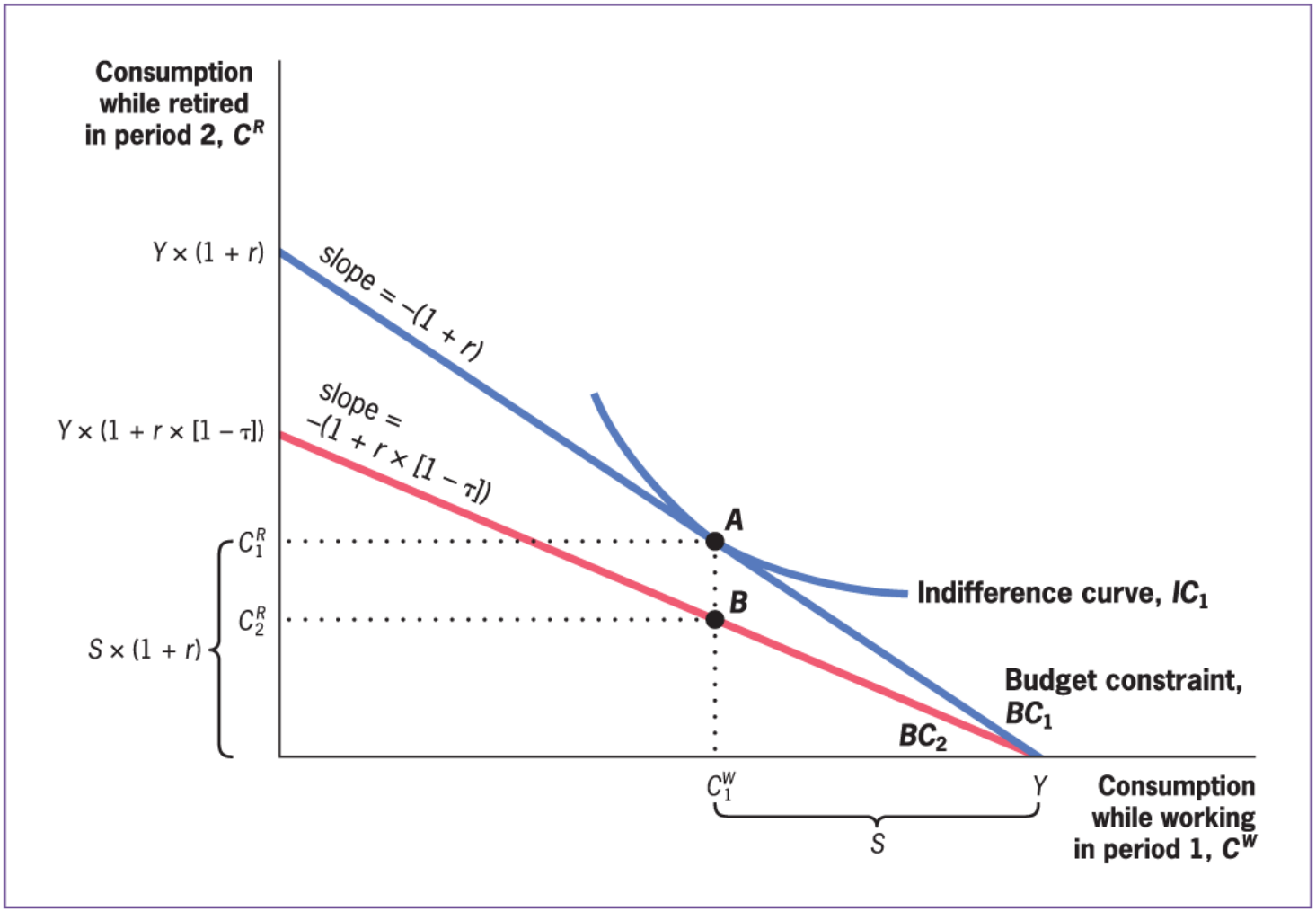

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Figure 1: Inter-temporal choice

Substitution and Income Effects of Taxes on Savings

Taxes and other price changes affect savings in two ways:

- **Substitution effect:** Lower after-tax interest rates cause first-period consumption to rise, reducing savings.
- **Income effect:** Lower after-tax interest rates reduce the lifetime value of income, reducing first-period consumption and increasing savings.
- Substitution effects may seem more natural, but a "target savings" model generates complete income effects .

Effect of Taxes on Savings: Substitution Effect Is Larger

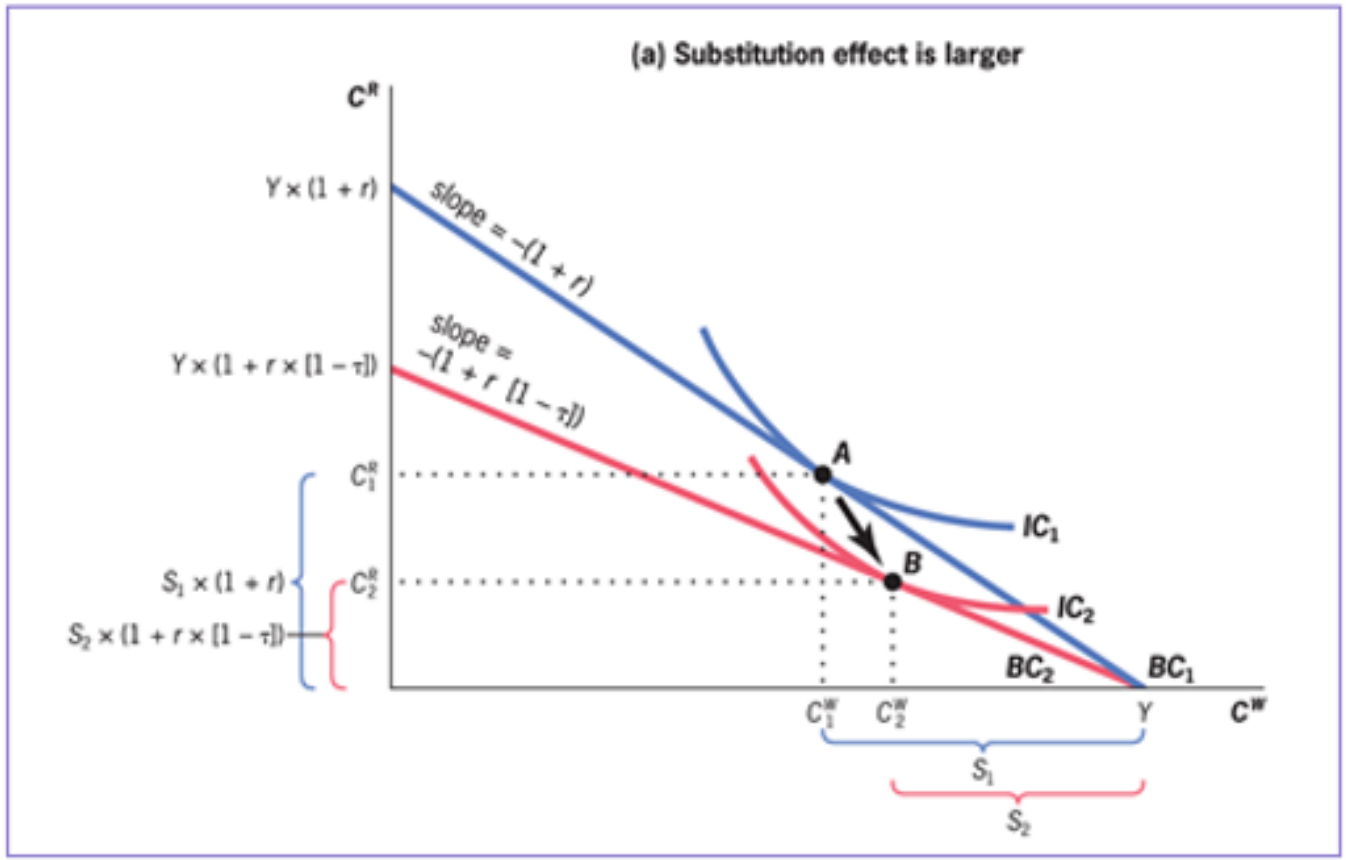


Figure 2: Inter-temporal choice

Effect of Taxes on Savings: Income Effect Is Larger

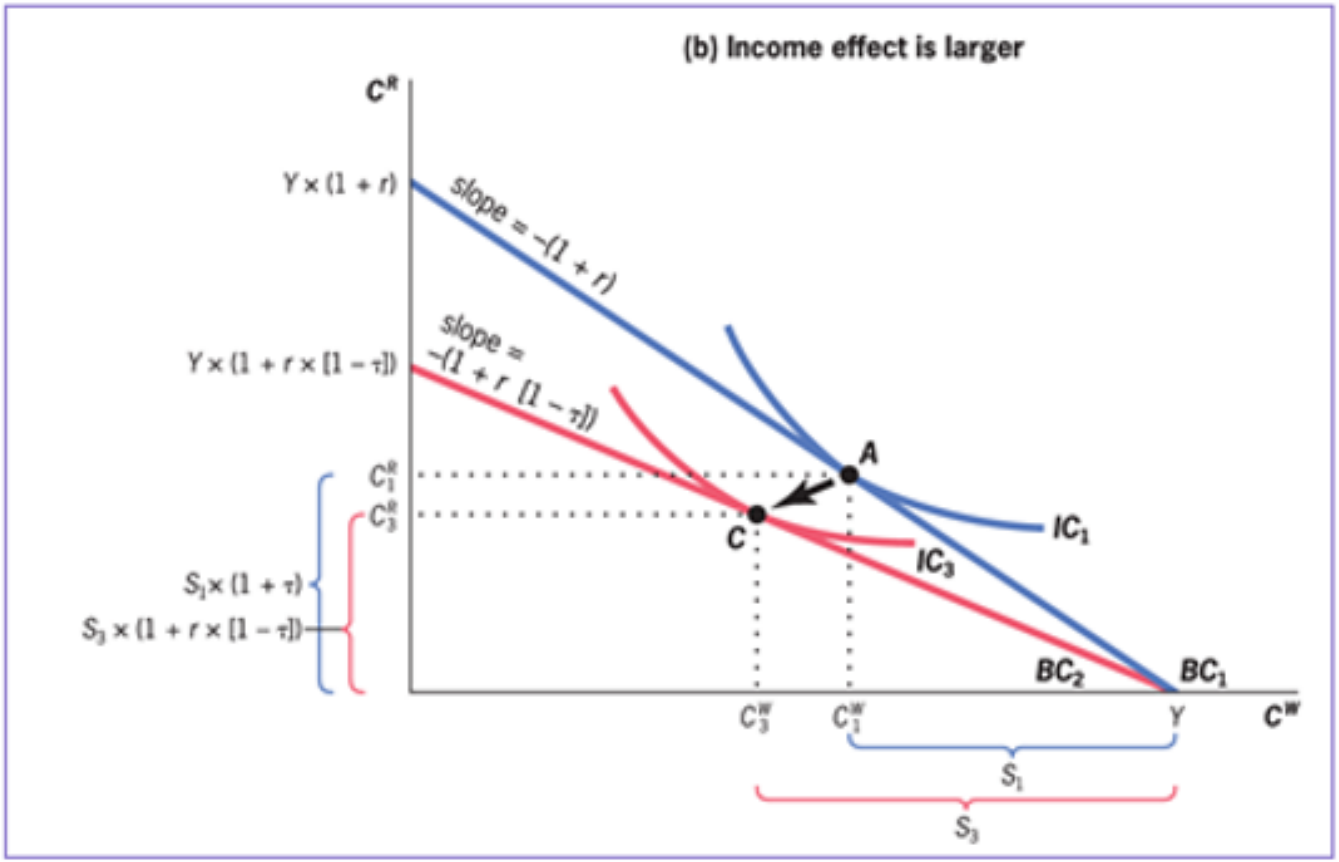


Figure 3: Inter-temporal choice

Evidence: How Does the After-Tax Interest Rate Affect Savings?

- Evidence is ambiguous: either no impact or positive.
- Studying the connections between after-tax interest rates and savings is a difficult problem:
  - Hard to measure the relevant interest rate.
  - Interest on any type of savings typically changes over time in the same way for all individuals, making it hard to find appropriate treatment and control groups for studying how savings respond to interest rate changes .

Inflation and the Taxation of Savings

The United States taxes nominal, not real, interest income.

- **Nominal interest rate:** The interest rate earned by a given investment.
- **Real interest rate:** The nominal interest rate minus the inflation rate; this measures an individual's actual improvement in purchasing power due to savings .

Inflation and the Taxation of Savings

- The relationship between real and nominal interest rates is:

$$r = \frac{1+i}{1+\pi} - 1 \Rightarrow r \approx i - \pi$$

  where r is the real interest rate, i is the nominal interest rate and π inflation rate

- Inflation increases the nominal but not the real interest rate, but taxes are levied on nominal interest rates.
- Inflation reduces the real after-tax return on savings.

Inflation Exacerbates Capital Taxation

Case	Inflation	Tax Rate on Interest	Savings	Nominal Interest Rate	Interest Earnings	After-Tax Resources	Price of Skittles	Bags of Skittles
No inflation	0%	0%	100	10%	$10	$110	$1.00	110
	0%	50%	100	10%	$10	$105	$1.00	105
Inflation	10%	0%	100	10%	$10	$110	$1.10	100
	10%	50%	100	10%	$10	$105	$1.10	95.5
Constant real rate	10%	0%	100	21%	$21	$121	$1.10	110
	10%	50%	100	21%	$21	$110.5	$1.10	100.5

Figure 4: Inter-temporal choice

Save $100, 10% real interest rate, 50% tax on interest .

Precautionary Savings Models

- The traditional model assumes that people save only to smooth consumption, not to self-insure.
- **Precautionary savings model:** A model of savings that accounts for the fact that individual savings serve to smooth consumption over future uncertainties, at least partly.
- Liquidity constraints make it harder to borrow in tight times, so people develop a **buffer stock**.
- **Liquidity constraints:** Barriers to credit availability that limit the ability of individuals to borrow .

EVIDENCE: Social Insurance and Personal Savings

- Theory predicts that social insurance reduces precautionary savings.
- Chou et al. (2003) study the introduction of National Health Insurance (NHI) in Taiwan in 1995.
  - After NHI, savings fell among the public ...
  - but *rose* among people unaffected by NHI.
- In the United States, Medicaid expansions significantly reduced the savings of low-income groups .

Self-Control Models

- Individuals may not be able to save as much as they would like because of self-control problems.
- Use of commitment devices is evidence for this model:
  - Christmas clubs, other traditional devices, "save more tomorrow" plans .
  - Keep money away from impatient "short-run self": rising credit card debt, rising housing wealth .

Learn by Doing: Practice Question 1

Which of these are TRUE concerning savings models?

I.In the intertemporal choice model, the choice about how to save is a choice about how to allocate one's consumption over time.

II.In the precautionary savings model, saving is primarily used to self-insure against risk.

III.In self-control models, individuals require commitment devices in order to save for future consumption.

a. I & II only

b. I & III only

c. II & III only

d. I, II, & III

Tax Subsidy to Employer-Provided Pensions

- Employer contributions to pensions are tax deductible .
- **Pension plan:** An employer-sponsored plan through which employers and employees save on a (generally) tax-free basis for the employees' retirement.
- **Defined benefit pension plans:** Pension plans in which workers accrue pension rights during their tenure at the firm, and when they retire, the firm pays them a benefit that is a function of that workers' tenure at the firm and of their earnings.
- **Defined contribution pension plan:** Employers set aside a certain proportion of a worker's earnings in an investment account, and upon retirement, the worker receives the investment and any earnings .

Available Tax Subsidies for Retirement Savings

401(k) accounts and IRAs also subsidize savings.

- **401(k) accounts:** Tax-preferred retirement savings vehicles offered by employers, to which employers will often match employees 'contributions.
- **Individual Retirement Account (IRA):** A tax-favored retirement savings vehicle primarily for low- and middle-income taxpayers who make pre-tax contributions and are then taxed on future withdrawals .

Individual Retirement Accounts

For moderate-income households, IRAs work as follows:

- Almost any form of asset can be put in an IRA (from stocks to bonds to holdings of gold).
- Individuals can contribute up to \$5,000 tax-free each year (deducted from their taxable income).
- Interest on IRA contributions accumulates tax-free.
- IRA balances can't be withdrawn until age $59\frac{1}{2}$, and withdrawals have to start at age 70.
- IRA balances are taxed as income on withdrawal.

Simplified Employee Pension IRAs

- **Simplified Employee Pension IRA (SEP-IRA) accounts:** Retirement savings accounts specifically for the self-employed, under which up to $55,000 per year can be saved on a tax-free basis.
- SEP-IRA accounts function in the same way as do 401(k) accounts (without matching), except that they are not run through employers.

Why Do Tax Subsidies Raise the Return to Savings? 1/2

- With tax-deferred retirement savings, you get to defer paying the taxes you would have paid on both your initial contribution and any interest earnings.
- You also get to earn the interest on the money that would have otherwise been paid in taxes .

Why Do Tax Subsidies Raise the Return to Savings? 2/2

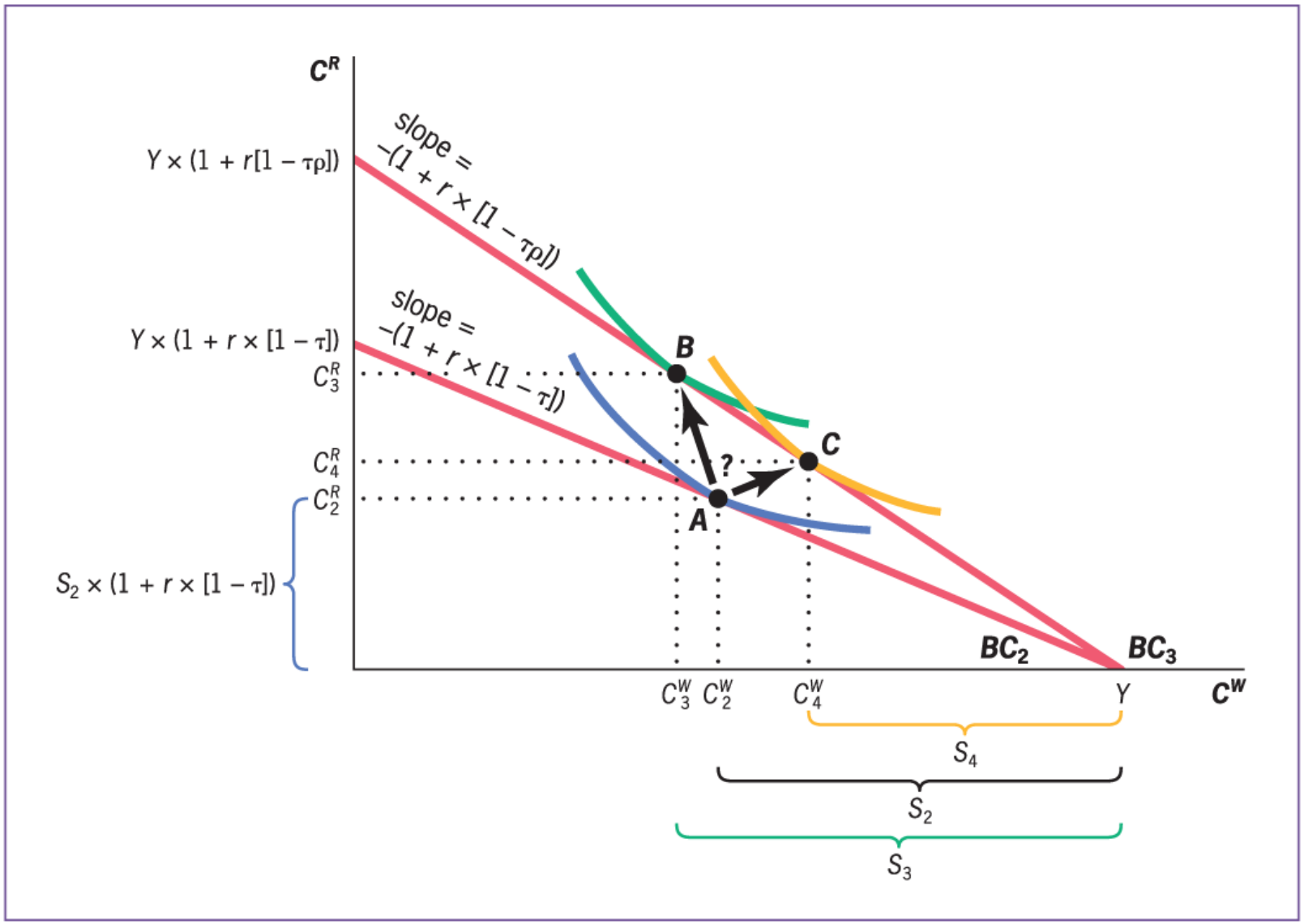
Account Type	Earnings	Tax on Earnings (tax rate = 25%)	Initial Deposit	Interest Earned (interest rate = 10%)	Taxes Paid upon Withdrawal	Total Amount Withdrawn
Regular	\$100	\$25	\$75	\$7.50	0.25 × (\$7.50) = \$1.88	\$75 + 7.50 − \$1.88 = \$80.62
IRA	\$100	0	\$100	\$10	0.25 × (\$110) = \$27.50	\$100 + 10 − \$27.50 = \$82.50

Figure 5: Inter-temporal choice

Theoretical Effects of Tax-Subsidized Retirement Savings, 1/2

- Tax subsidies for retirement savings increase the after-tax return to savings by reducing the tax rate from τ to $(\tau \times \rho)$, where is the share of the tax burden that remains after accounting for the delay in tax payments.
- This can encourage savings through the substitution effect or discourage it through the income effect.
- But IRA contributions are capped, so there is only an income effect for high savers.
    - High savers will just reshuffle their assets from non-IRA to IRA accounts .

Theoretical Effects of Tax-Subsidized Retirement Savings, 2/2



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Limitations on Tax-Subsidized Retirement Savings

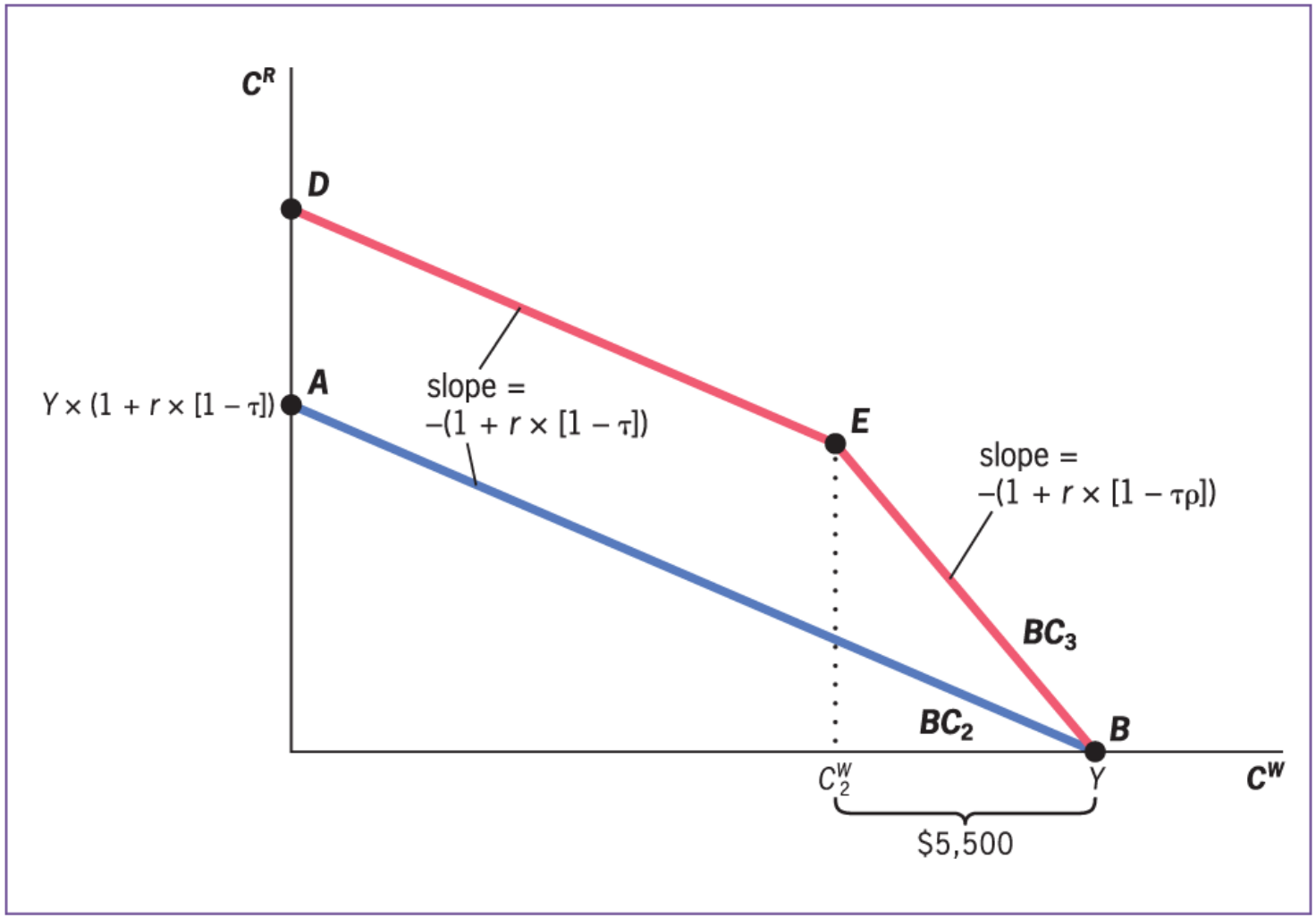

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Figure 7: Inter-temporal choice

Effect of Tax-Subsidized Retirement Savings for Low Savers

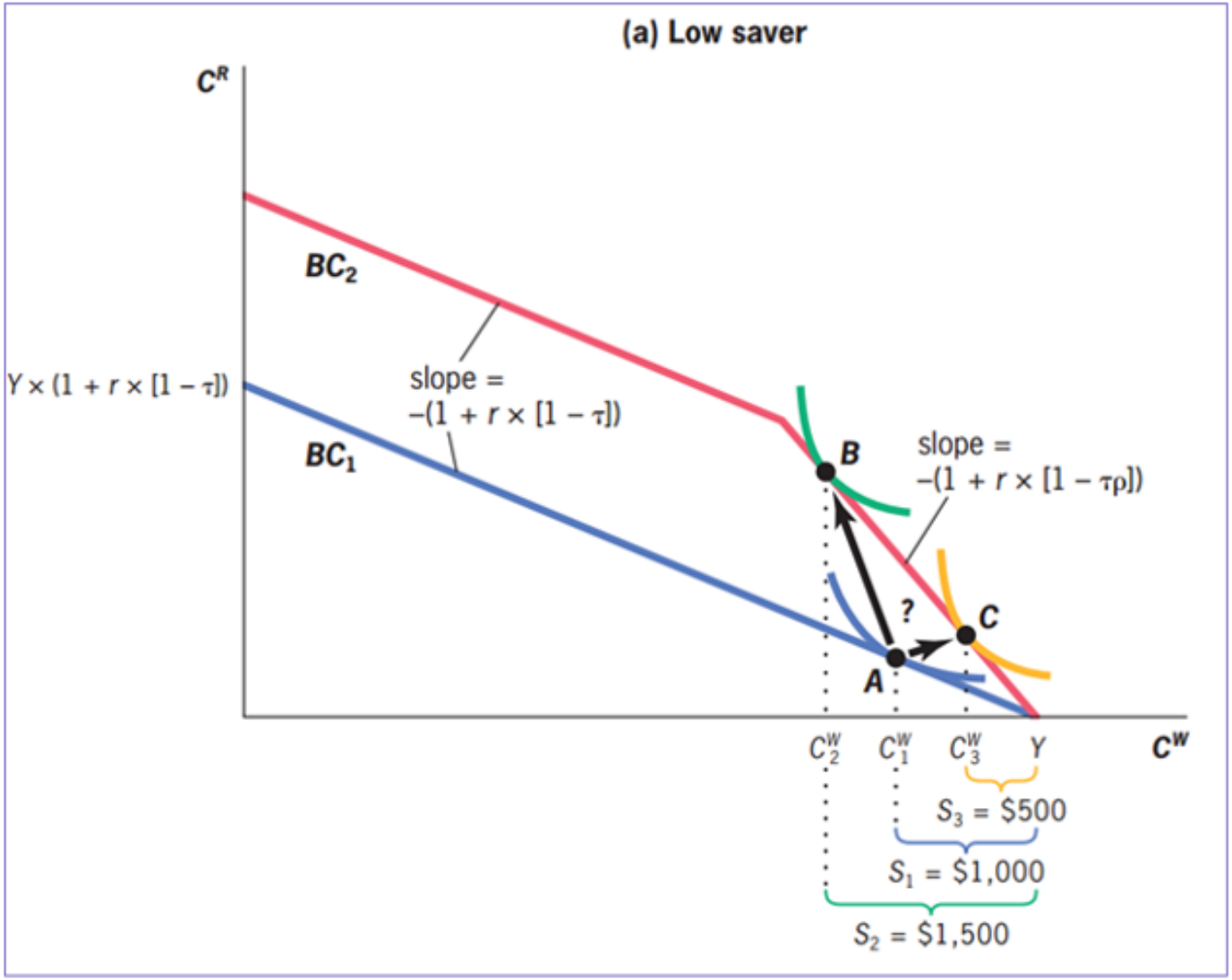

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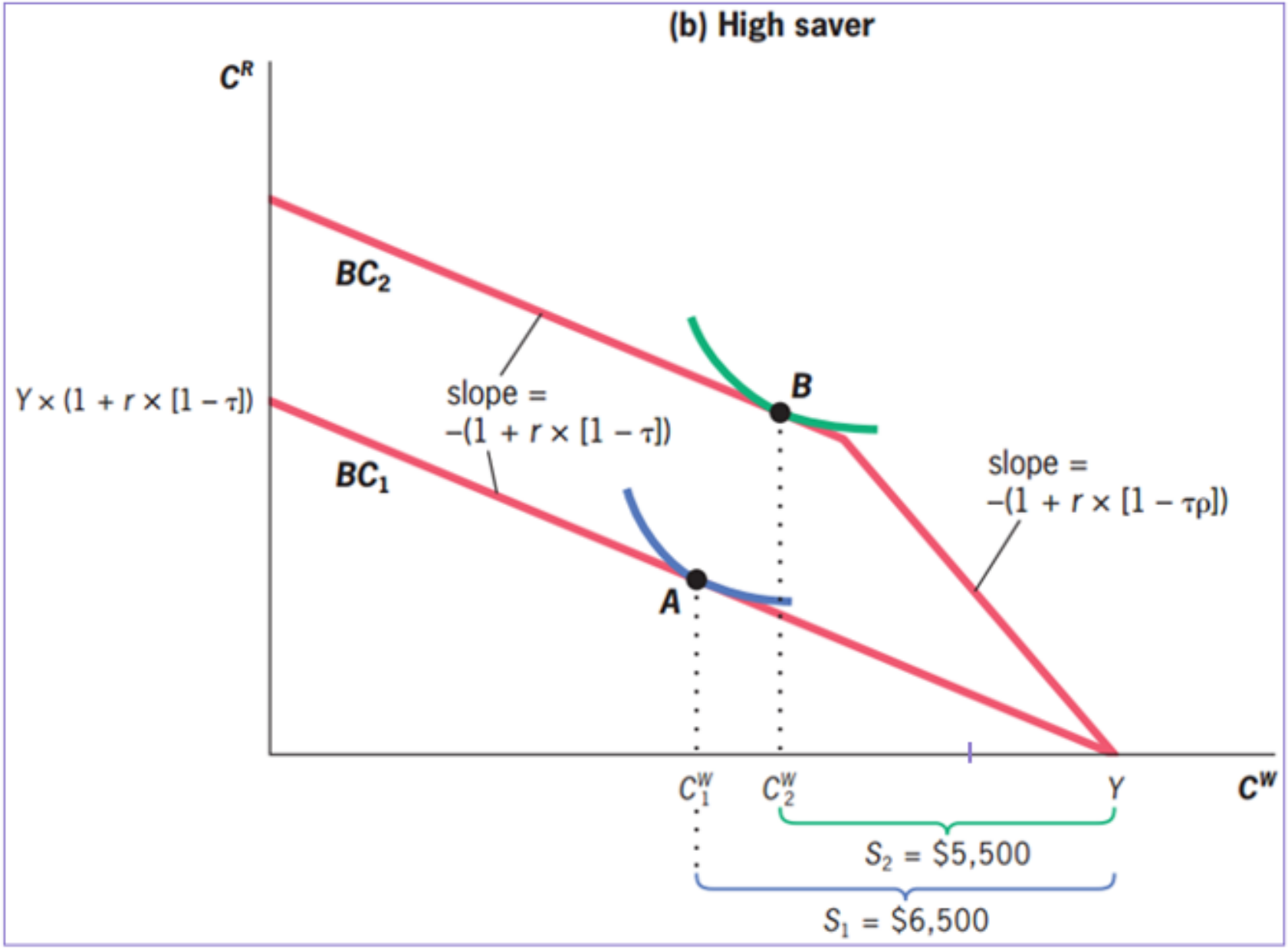
Figure 8: Inter-temporal choice

Effect of Tax-Subsidized Retirement Savings for High Savers



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APPLICATION: The Roth IRA

- Congress introduced the Roth IRA in 1997.
- **Roth IRA:** A variation on normal IRAs to which taxpayers make after-tax contributions but may then make tax-free withdrawals later in life.
- Similar to a regular IRA but with two key differences:
  - Individuals contribute **after-tax** dollars to a Roth IRA but make tax-free withdrawals.
  - Individuals are never required to withdraw, so earnings on assets can build up tax-free indefinitely.
- Provides more generous tax subsidy than regular IRA .

APPLICATION: The Roth IRA

Why did policy makers introduce this new option?

- The government collects tax revenues today and loses them in the distant future (since we don't tax interest earnings on the account or withdrawals from it).
- But budget implications of laws are only evaluated over a 10-year horizon.
- The plan allowed politicians to pay for a tax break **with a tax break!**

Implications of Alternative Models

Precautionary savings:

- People who have high precautionary savings, instead of high retirement savings, will not reshuffle their savings into retirement accounts, so there may be more new savings due to retirement incentives than suggested by the traditional model.

Self-control models:

- Retirement accounts are appealing.
- Excellent commitment devices: contributions are "taken directly out of the paycheck" and individuals can't access their money until retirement .
- Thus, self-control models suggest that savings may increase more than otherwise expected because retirement plans allow individuals to effectively commit to save.

Private Versus National Savings

- The net impact on national savings due to tax subsidies for savings depends on the marginal and inframarginal responses.
- If the inframarginal response is larger, then retirement savings plans will lower overall national savings.
- The size of the marginal and inframarginal response to tax incentives for savings will depend on two factors:
  - The size of the income and substitution effects for retirement savers below the savings limit
  - The share of retirement savers who are above the savings limit, for whom there is only an inframarginal response

EVIDENCE: Estimating the Impact of Tax Incentives for Savings on Savings Behavior

- How do tax subsidies affect savings in practice?
- Chetty et al. (2014) studied a retirement savings program in Denmark that experienced changes in the retirement system.
  - There was a sizeable reduction in the tax subsidy to savings for those taxpayers in the top bracket but not those below that level .
  - This sets up a natural differences-in-differences comparison between the change in savings for those just above the top bracket and those just below the top bracket .

EVIDENCE: Estimating the Impact of Tax Incentives for Savings on Savings Behavior

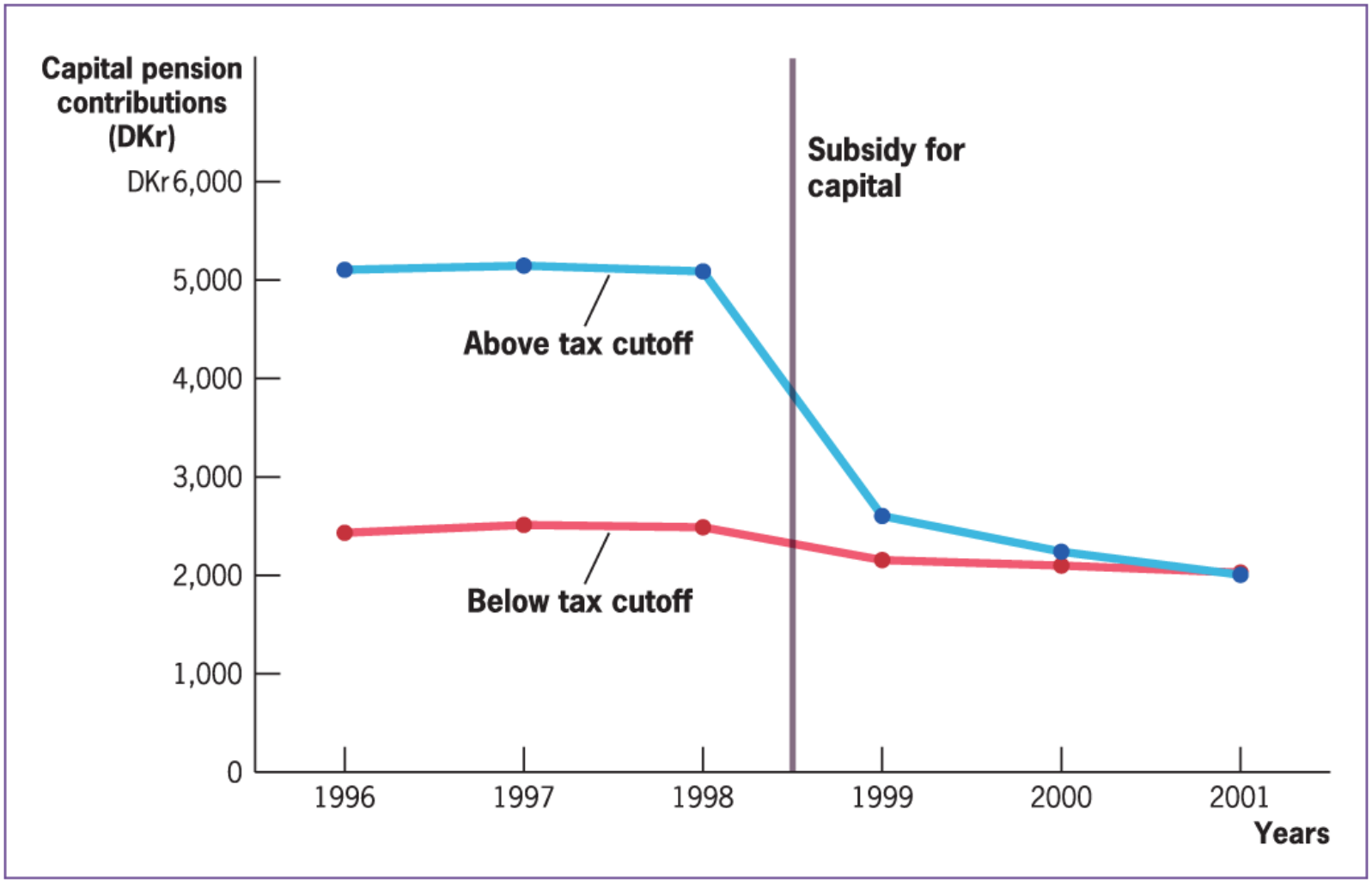

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Figure 10: Inter-temporal choice

EVIDENCE: Estimating the Impact of Tax Incentives for Savings on Savings Behavior

- The key question for policy purposes is what happens to total (private and national) savings .
- In fact, Chetty et al. (2014) found that there was no effect on private savings .
    - The reduction in contributions for the highest income group is completely offset by an increase in contributions to other types of savings. That is, this tax incentive had no impact on total savings- it simply caused individuals to reshuffle savings from one source to another .
- Given that there is a tax cost associated with the retirement incentive, this finding implies that national savings falls when tax incentives are introduced .

EVIDENCE: Estimating the Impact of Tax Incentives for Savings on Savings Behavior

- What is particularly striking about the Chetty et al. analysis is that they are were able to compare these results of the ineffectiveness of tax subsidies to very effective results for a different change: mandating savings contributions to a pension plan.
- This policy change, which mandated that all Danes contribute 1% of their earnings to a retirement savings account, led to a rise in savings of roughly 1%.
- The authors argue that most savers are passive: they don't make active decisions about savings but just do what is mandated .
- A much smaller share (they estimate 15%) are active savers who reallocate their savings in response to financial incentives.

EVIDENCE: Estimating the Impact of Tax Incentives for Savings on Savings Behavior

- In other words, the authors argued, retirement savers either don't respond to price incentives and just save what they are told to or respond to price incentives aggressively by shifting savings from taxed sources to tax-free sources.
- Either way, tax incentives for savings are not increasing total private savings. But alternative policies that move the "defaults" of these passive savers can increase total private savings .

Evidence on Tax Incentives and Savings

- Evidence from recent studies suggests that individuals do respond to these savings incentives by saving more and might even respond enough to raise not only private but national savings.
- Several studies suggest that "opt-out" policies of enrollment have an even larger impact on savings than do tax subsidies.
- These types of findings motivated President Barack Obama's plans to reform our retirement savings system .

Learn by Doing: Practice Question 2

According to the intertemporal choice model, tax subsidies for retirement savings _____ retirement savings because _____.

a. decrease; the increased returns on savings means that people don't need to save as much to reach savings goals

b. have an ambiguous effect on; subsidies reduce national savings

c. have an ambiguous effect on; the substitution and income effects move in different directions

d. increase; the increased returns on savings means that saving for retirement is a better investment

Conclusion

- Savings decisions are extremely important and likely are influenced by tax policy.
- Neither theory nor existing empirical evidence offers a clear lesson for the magnitude (or even the direction) of the effect of taxes on savings.
- In 1975, the tax expenditure on incentives for savings was less than $20 billion; in 2018, it had grown to $141 billion.
- Policy makers believe that tax incentives can make a difference in the savings decisions of individuals .