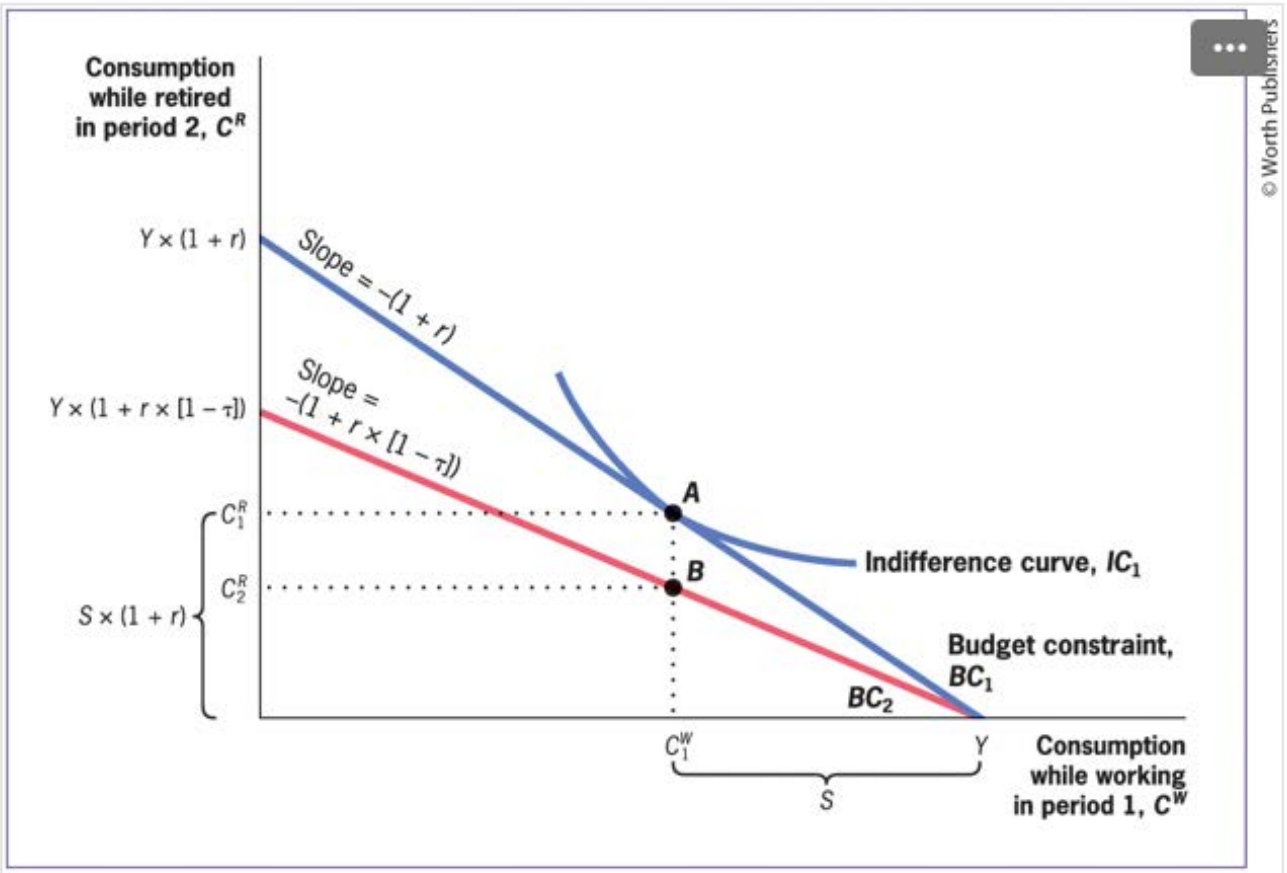

FIGURE 22-1 Taxation and the Intertemporal Consumption Decision • Before taxes are introduced, individuals lose $-(1 + r)$ worth of consumption in period two (C^R) for every dollar of consumption in period one (C^W). Based on this budget constraint (BC_1), individuals will choose to do some amount of savings, S, in the first period, and consume $S \times (1 + r)$ in the second period. When taxes rise, the budget constraint pivots inward to BC_2. Individuals lose only $-(1 + r \times [1 - \tau])$ worth of consumption in period two for every dollar of consumption in period one. This may raise or lower savings depending on which is more powerful, the income or substitution effect.

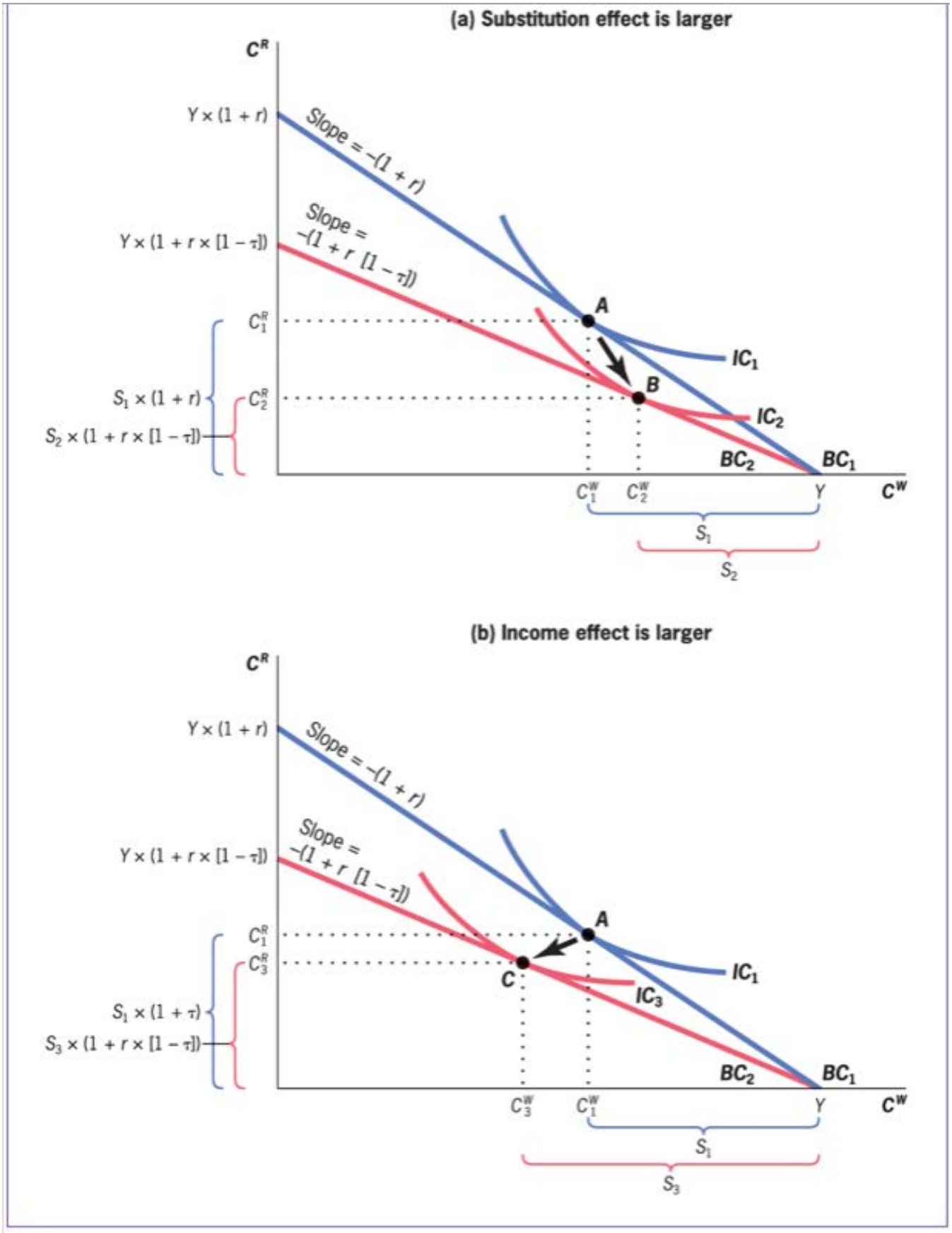

FIGURE 22-2 Intertemporal Substitution Versus Income Effect • If the substitution effect is larger than the income effect [panel (a)], individuals will move from point *A* to point *B*, consuming more in the first period (C_2^W) and thus saving less (S_2). As a result, their consumption in period two (C_2^R) falls by a lot. If the income effect is larger [panel (b)], individuals will move from point *A* to point *C*, consuming less in the first period (C_3^W) and thus saving more (S_3). Their consumption in period two (C_3^R) still falls, but not by as much.

TABLE 22-1 Capital Taxation in an Inflationary Environment

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

In the first two rows, there is no inflation. Robin earns $10 in interest on her $100 in savings. With no taxation in the first row, she can buy 110 bags of Skittles; with interest taxation at 50% in the second row, she can buy only 105 bags of Skittles. The next two rows introduce 10% inflation but keep the nominal interest rate fixed at 10%; now Robin can afford only 100 bags of Skittles without taxation, and 95.5 bags with a 50% tax rate. The final two rows raise the nominal interest rate to 21%, so that the real interest rate remains at 10% despite the 10% inflation. With no taxation, Robin is as well off as before inflation. With capital income taxation, however, she is worse off; she can now afford only 100.5 bags of Skittles, compared to the 105 bags that she could buy in the second row when there was taxation but no inflation.

TABLE 22-2 The Tax Advantage of IRA Savings

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

If Ted deposits his $100 earnings in a regular bank account, those earnings are taxed before deposit at a rate of 25%, and the interest earned on the remaining $75 is also taxed at 25%. He ends up with more money if he deposits his earnings in an IRA because those earnings are untaxed before the deposit, so he can gain interest on all $100 of his earnings (rather than just 75% of them).

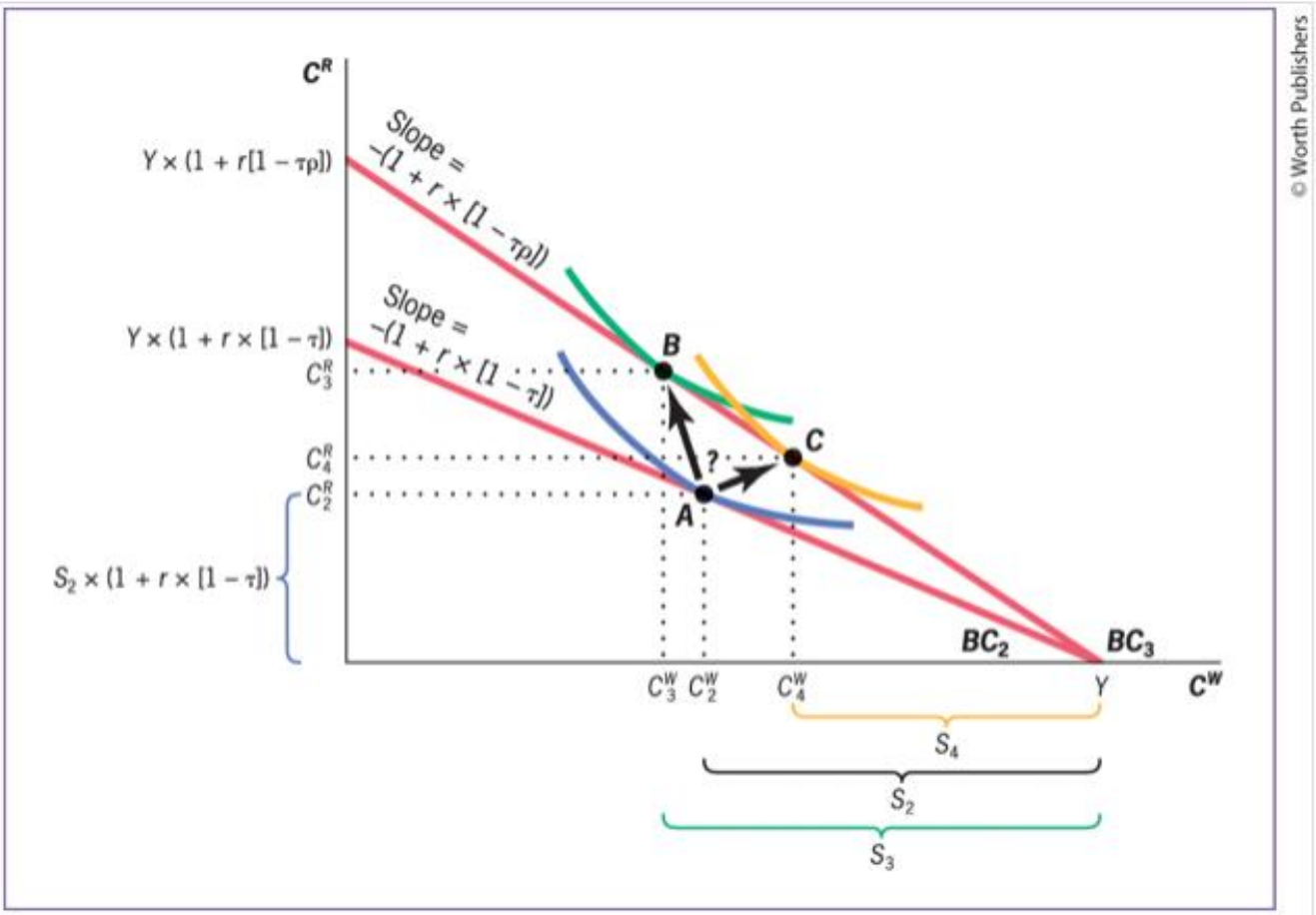

FIGURE 22-3 Tax Subsidies and the Intertemporal Consumption Trade-Off • Individuals initially face a budget constraint BC_2 with a slope $-(1 + r \times [1 + \tau])$. When retirement savings is tax-subsidized, the budget constraint moves to BC_3, with a higher slope $-(1 + r \times [1 - \tau \times r])$. This leads to a substitution effect toward more savings and an income effect toward less savings. If the substitution effect is larger, then first-period consumption will fall from C_2^W to C_3^W, and savings will rise from S_2 to S_3. If the income effect is larger, then first-period consumption will rise from C_2^W to C_4^W, and savings will fall from S_2 to S_4.

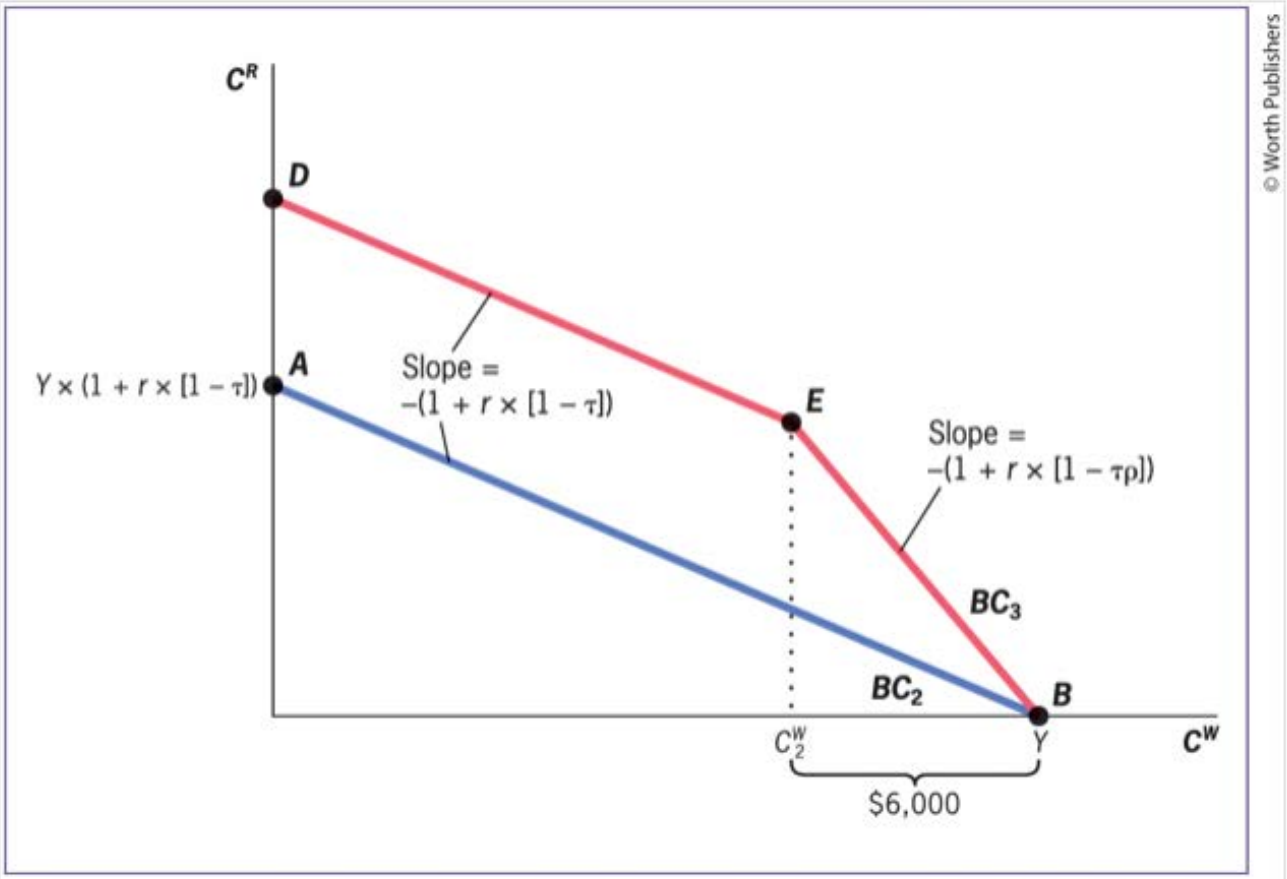

FIGURE 22-4 IRAs and the Intertemporal Consumption Decision • The availability of IRAs raises the return to saving less than $6,000 from $-(1 + r \times ([1 - \tau])$ to $-(1 + r \times ([1 - \tau \times r])$, where r is the net tax preference from using an IRA. Once savings is above $6,000 (period-one consumption less than C_2^W), the IRA simply increases period-two income, and the return to each dollar of savings returns to $-(1 + r \times ([1 - \tau])$.

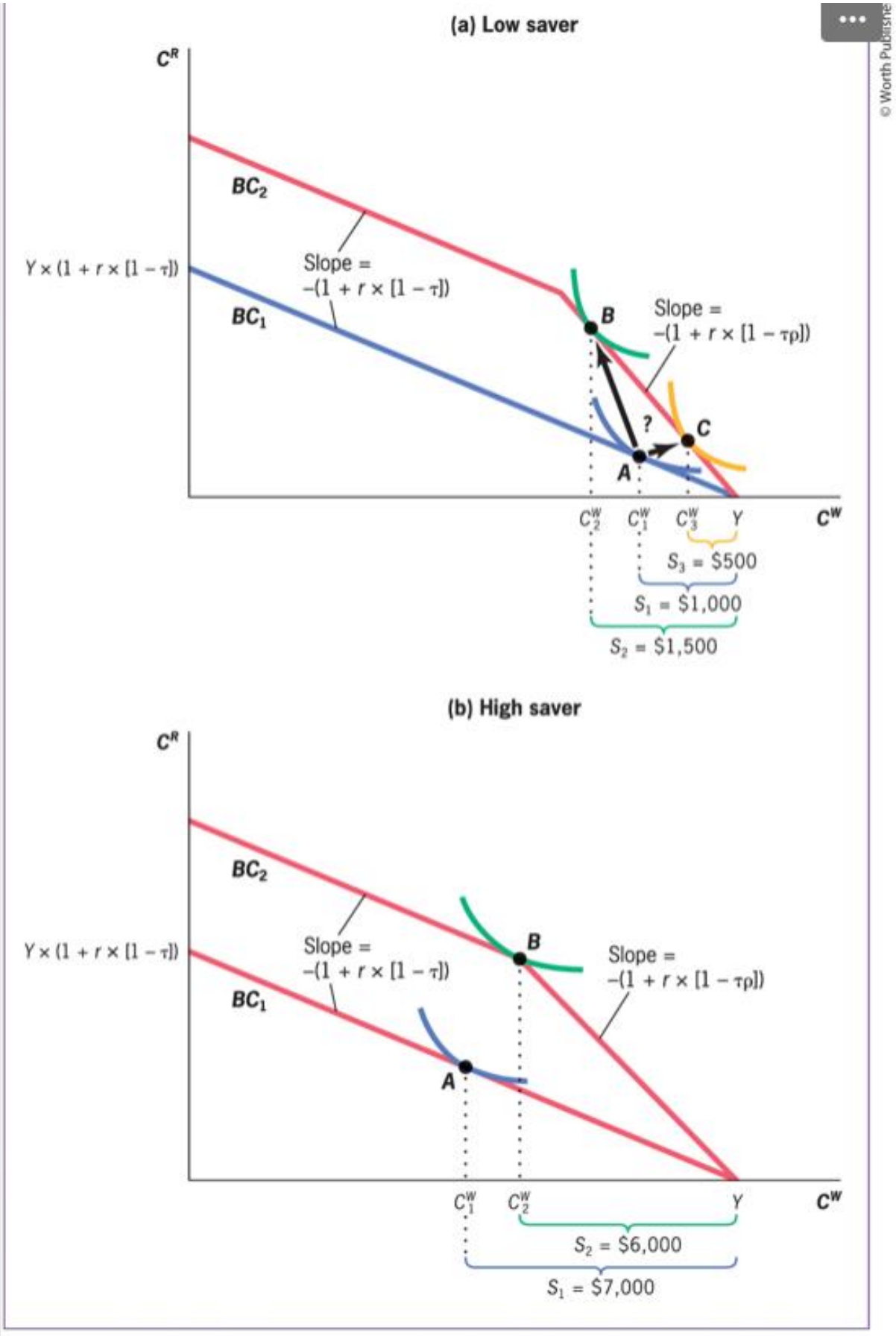

FIGURE 22-5 Low Savers Versus High Savers • In panel (a), Mr. Grasshopper saves little

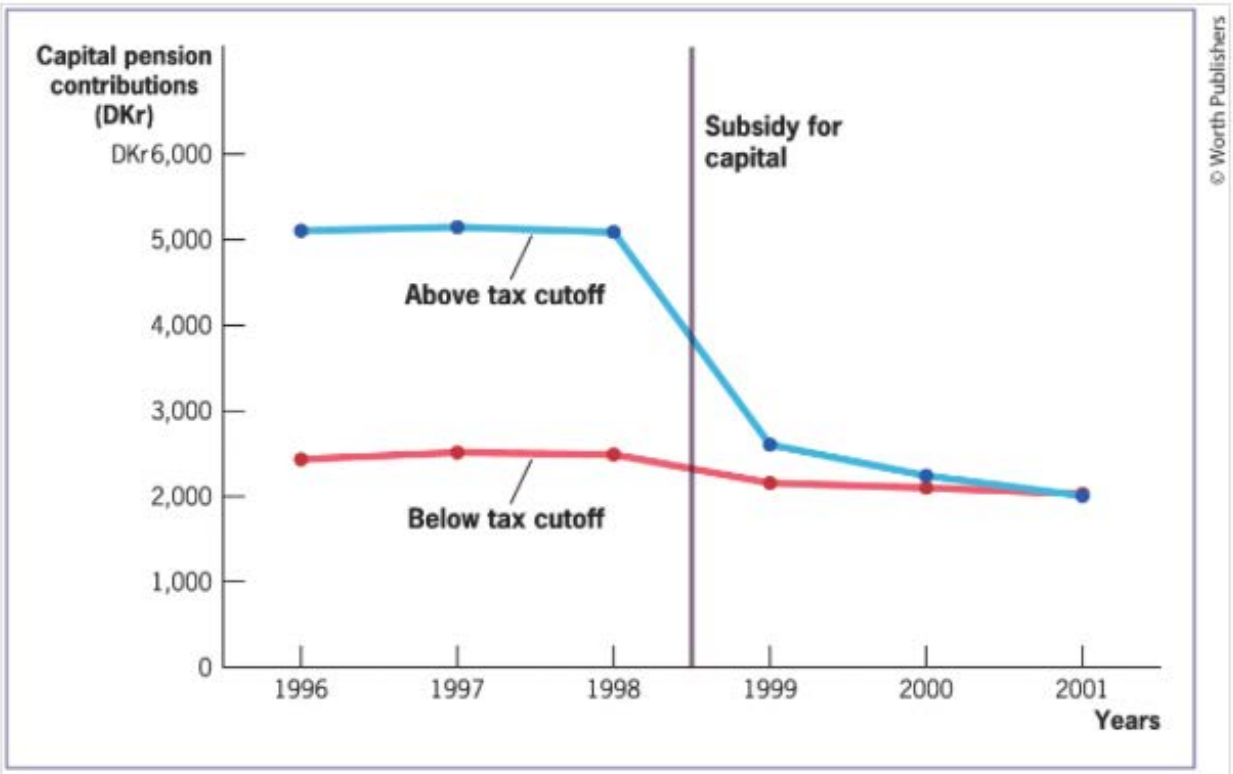

FIGURE 22-6 Individual Contributions Above and Below Top Tax Cutoff by Year • This figure shows the average individual capital pension contribution each year by two income groups: those above the tax cutoff and those below it. After the subsidy was reduced, contributions declined sharply in the top-income group from 5,089 Danish kroner (DKr) in 1998 to 2,604 DKr in 1999. In the lower income group, pension contributions hardly declined, falling from 2,488 DKr to 2,156 DKr.

Data from: Chetty et al. (2014).

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Fall 2024