CHAPTER 24:Taxation of Business Income

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Taxation of Business Income

- What Are Corporations, and Why Do We Tax Them ?
- The Structure of the Corporate Tax
- The Incidence of the Corporate Tax
- The Consequences of the Corporate Tax for Investment
- Treatment of International Corporate Income
- The Consequences of the Corporate Tax for Financing
- Conclusion

What Are Corporations, and Why Do We Tax Them?

- In the corporate sector, most production occurs in firms owned by many shareholders.
    - **Shareholders:** Individuals who have purchased ownership stakes in a company.
- Having many shareholders spreads the risk of ownership across many people.
- S-corporations generate income that is treated as personal income.
- C-corporations generate income that is taxed under the corporate income tax .

Ownership Versus Control

- Owners of large corporations rarely also control them.
- This separation creates an agency problem.
  - **Agency problem:** A misalignment of the interests of the owners and the managers of a firm.
- Managers may buy jets or other items for their own pleasure rather than to improve the company.
- Detecting and preventing this behavior is especially difficult when managers control the accountants .

Ownership Versus Control: Examples

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## [1] 0.12
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## [1] 0.16
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## [1] 66.4
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Many recent compensation packages seem wildly out of proportion to the executives' actual value.

- In 2012, Amgen CEO Kevin Sharer earned $21.1 million, plus a jet and other perks, while shareholders lost 3%.
- In 2008, the Abercrombie and Fitch CEO received $71.8 million in compensation, including $6 million retention bonus. In 2007, A&Fs stock dropped more than 70%.
- In 2011, Hewlett-Packards CEO was fired after a disastrous term but received a $13 million firing benefit.

Firm Financing

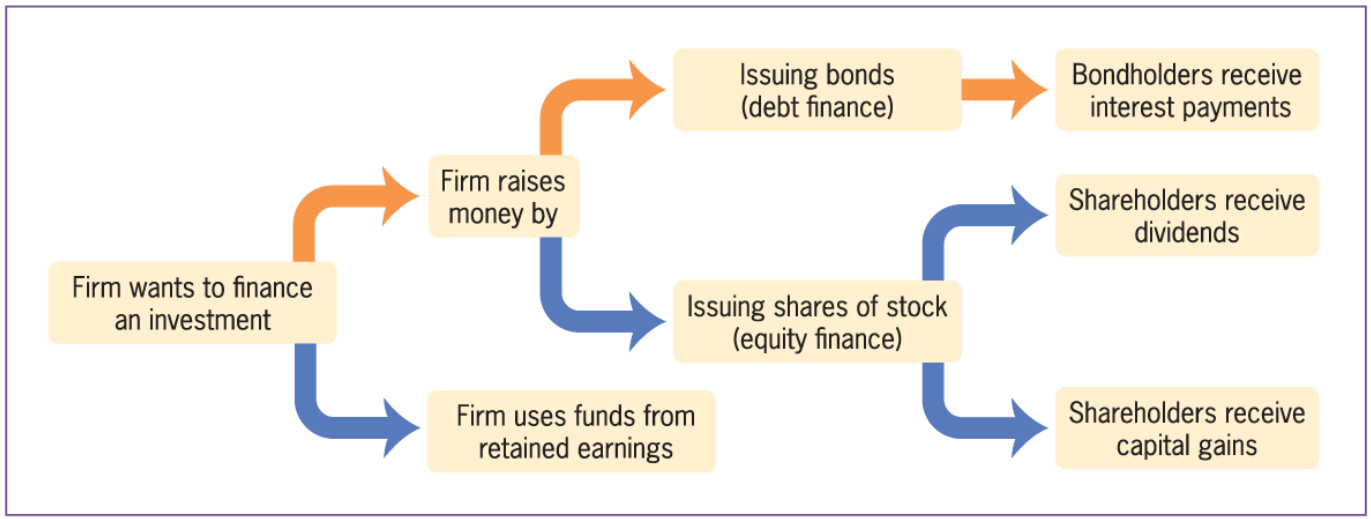
Firms can raise financial capital in three ways:

- **Debt finance:** The raising of funds by borrowing from lenders, such as banks, or by selling bonds.
    - **Bonds:** Promises by a corporation to make periodic interest payments, as well as ultimate repayment of principal, to the bondholders (the lenders).
- **Equity finance:** The raising of funds by sale of ownership shares in a firm.
- **Retained earnings:** Any net profits that are kept by the company rather than paid out to debt or equity holders .

Firm Financing

- Investors who buy shares in a company can be rewarded in two ways:
  - **Dividend:** The periodic payment that investors receive from the company, per share owned.
  - **Capital gain:** The increase in the price of a share since its purchase .

Firm Financing



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Why Do We Have a Corporate Tax? Pure Profits Taxation

- If firms have market power, they earn pure profits, and a tax on pure profits has no distortion.
- Should tax economic, not accounting, profits.
  - **Economic profits:** The difference between a firms revenues and its economic opportunity costs of production.
  - **Accounting profits** : The difference between a firms revenues and its reported costs of production .

Why Do We Have a Corporate Tax? Retained Earnings

- If corporations were not taxed on their earnings, then owners could avoid taxes by retaining earnings.
- These retained earnings would earn interest tax free, effectively subsidizing savings.
- If corporations paid out those earnings many years later, the present discounted value of the tax burden would be quite low .

The Structure of the Corporate Tax

- The taxes of any corporation are:

  Taxes = (Revenues - Expenses) $\cdot \tau$ − Tax Credits

  where τ is the tax rate on profits

- **Revenues:** What the firm earns selling to the market.
- **Expenses:** Cash flow costs of doing business, interest payments, and depreciation allowances.
- **Depreciation** : The rate at which capital investments lose their value over time.
- **Depreciation allowances:** The amount of money that firms can deduct from their taxes to account for capital investment depreciation .

Economic Depreciation and Depreciation in Practice

- Economic depreciation is the true expense.
  - **Economic depreciation:** The true deterioration in the value of capital in each period of time.
- Difficult to measure in practice.
  - **Depreciation schedules:** The timetable by which an asset may be depreciated.
  - **Expensing investments:** Deducting the entire cost of the investment from taxes in the year in which the purchase was made.
- Deductions claimed sooner are more valuable .

APPLICATION: What Is Economic Depreciation? The Case of Personal Computers

Doms et al. (2003) modeled the market value of PCs as a function of their ages.

- Depreciation takes only five years and is exponential, not linear: Computers lose half their value each year.
- Most of the depreciation is due to market revaluation, as microprocessors improve and new models, offered at similar prices, are much better.
- Even the remaining depreciation is caused primarily by software advances that are beyond the capability of older machines.
- PCs illustrate the difficulty policy makers face in setting depreciation schedules: hard to account for all these features .

Corporate Tax Rate and Tax Credits

- Corporations are taxed on their net earnings at a flat rate of 21%.
  - Previously a progressive rate with a 35% top rate.
- Tax credits are the final piece of the corporate tax code.
- Historically, investment tax credit was the most important, but it has not existed since 1986.
  - **Investment tax credit (ITC):** A credit that allows firms to deduct a percentage of their annual qualified investment expenditures from the taxes they owe.

The Incidence of the Corporate Tax

- The burden of the corporate tax is shared in some proportion by consumers, workers, corporate investors, and noncorporate investors.
- There are also general equilibrium effects through capital movement between the corporate and noncorporate sectors.
- A series of recent papers suggests that there is a large effect of corporate taxation on wages.

EMPIRICAL EVIDENCE: Corporate Taxation and Wages

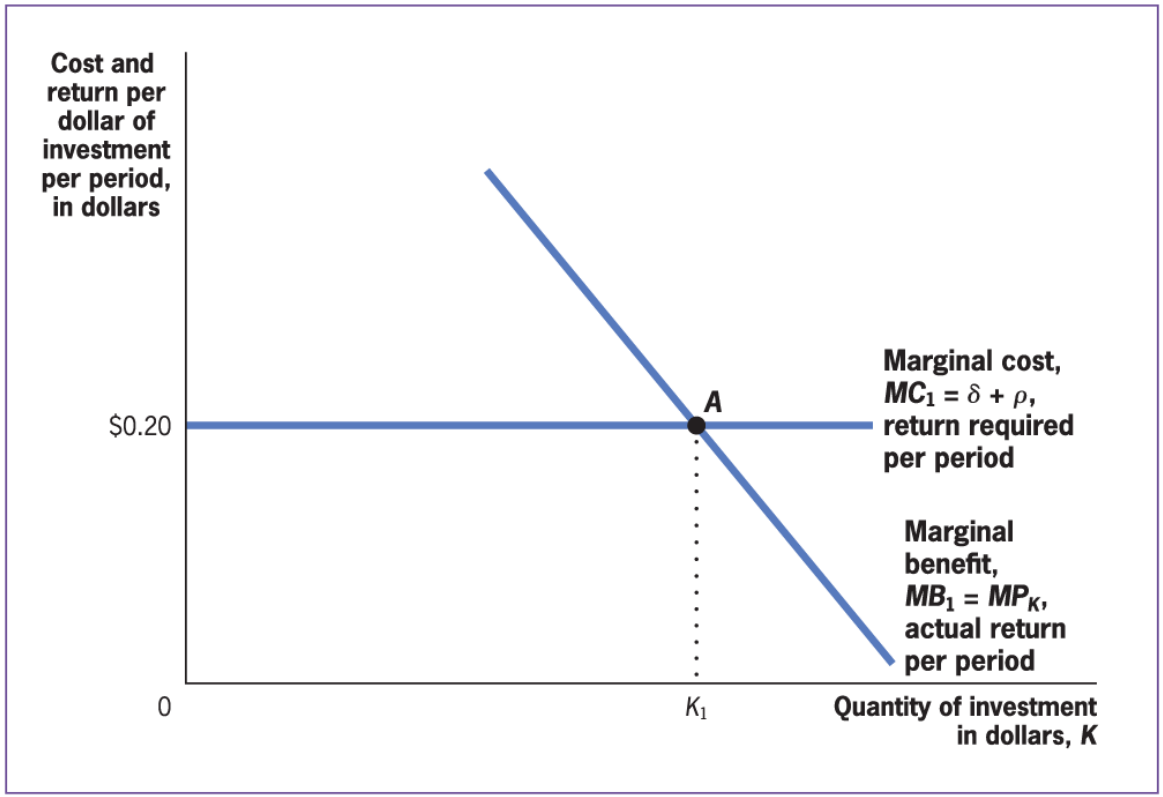
- Suarez Serrato and Zidar (2016) used structural methods (rather than reduced methods) to indirectly derive corporate tax incidence from state tax changes.
    - They estimate that 35% of corporate taxes are shifted to wages, 25% is shifted to landowners, and 40% is borne by corporate owners.
- Fuest et al. (2018) set up a difference-in-difference study among municipalities in Germany, all of which have the same tax system (set nationally) but different tax rates (set locally). In addition, a large number of these municipalities are frequently changing tax rates.
    - They estimated that about 50% of the incidence of corporate tax changes were on wages, mostly affecting low-skilled and young workers.

The Consequences of the Corporate Tax for Investment: Theory

With *no* corporate taxation, the investment decision is determined by firms setting the marginal benefits and costs of investment equal on a per-period basis.

- The firm estimates the return it will get from its investment in each period (the benefit), and it compares that to the cost of the investment in each period.
- The firm invests only if the benefits are larger than the costs .

The Consequences of the Corporate Tax for Investment: Theory



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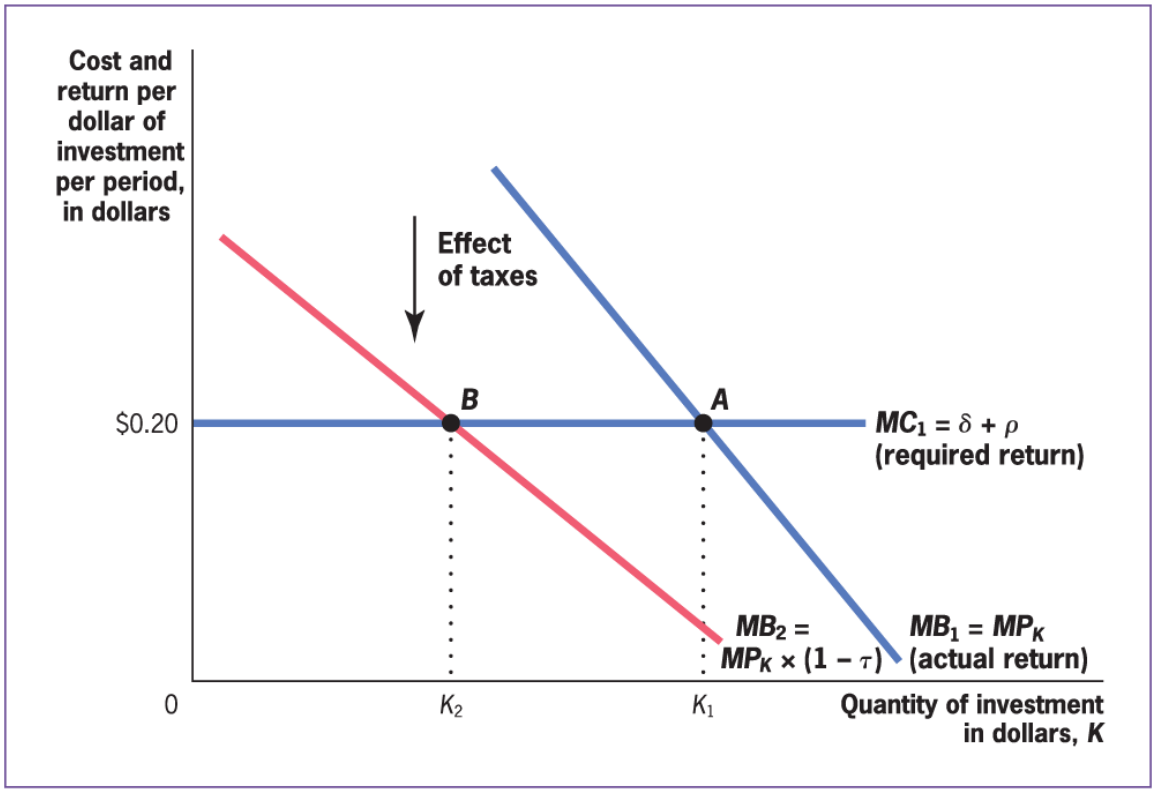
- With no corporate tax, the firm chooses its investment level by equating MB and MC. The marginal benefit (MB_1) is equal to the actual return per dollar of investment, the marginal product of capital (MP_K). The marginal cost is equal to the required return per dollar of investment, the sum of depreciation (d) and financing costs (ρ). This equality initially occurs at point A , with investment level K_1.

The Consequences of the Corporate Tax for Investment: Theory

With corporate taxation, firms invest less because the government takes some of their return.

- The firms after-tax actual rate of return on the investment must be large enough to meet the required rate of return. As a result, the pre-tax rate of return must be higher than it is without taxation, and that only occurs if the firm is investing less .

The Consequences of the Corporate Tax for Investment: Theory



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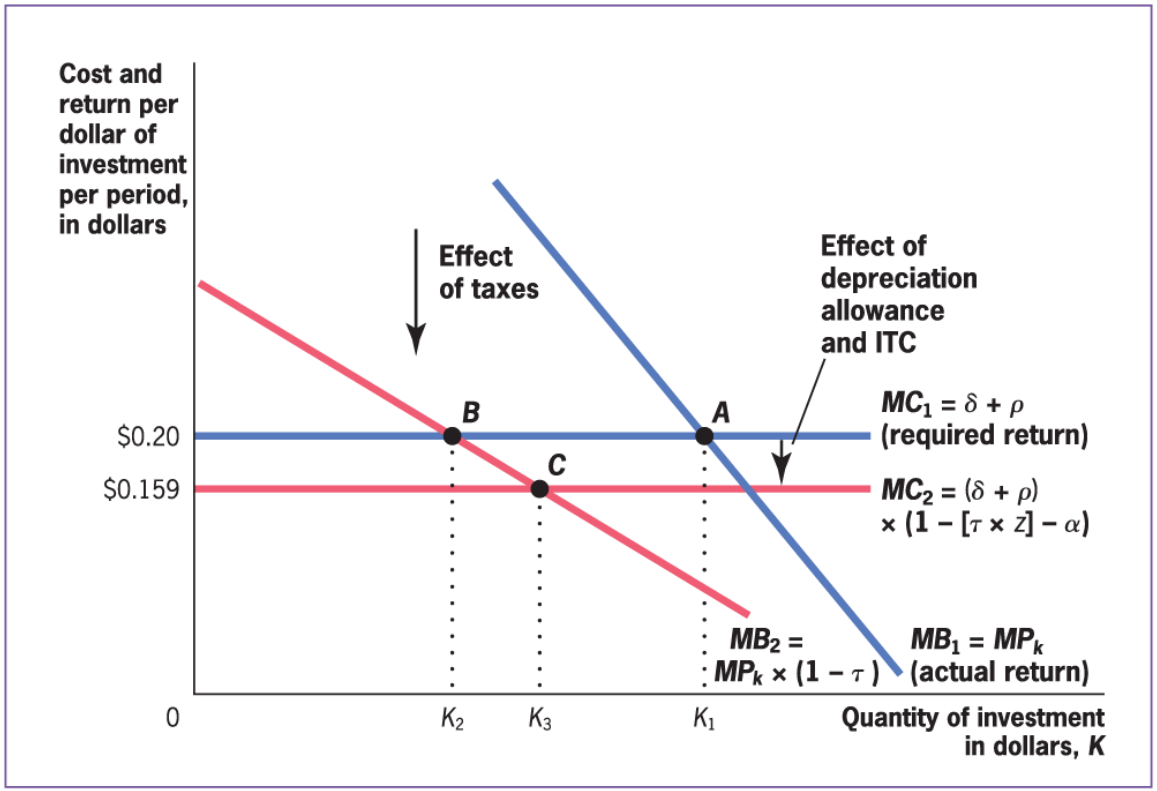
The Consequences of the Corporate Tax for Investment: Depreciation allowance



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Example:

Suppose that the corporate tax rate is 25%, there is an investment tax credit of 10%, the depreciation rate is 5%, and dividend yield is 10%. The official depreciation schedule is such that the PDV of depreciation allowances is 40% of the purchase price of the machine.

a. Calculate the per-period marginal cost of each dollar that the firm spends on the machine.

b. If the marginal benefit per period is $MB = 40 - 0.6K$, where K is the number of dollars spent on the machine, what is the optimal amount of machinery purchased?

c. How would your answer change if the ITC increased to 20%?

Effective Corporate Tax Rate

- **Effective corporate tax rate (ETR):** The percentage increase in the rate of pre-tax return to capital that is necessitated by taxation.
- With 21% tax on earnings, no depreciation, and no ITC, the required rate of return was 20% before taxes.
- After taxes, the required rate of return is 21% higher:

$$\frac{0.2}{(1-0.21)} = 25.3\%$$

- So, the ETR is 21%, just as the tax rate in the absence of depreciation allowance and ITC.

Effective Corporate Tax Rate

- More generally, the effective corporate tax rate (ETR) is measured as:

$$ETR = \frac{MP_K(\text{after tax}) - MP_K(\text{before tax})}{MP_K(\text{after tax})}$$

- With depreciation and the ITC, the ETR is:

$$ETR = \frac{(\tau - \tau \cdot z - \alpha)}{(1 - \tau \cdot z - \alpha)}$$

- With $z = 0.5$ and $\alpha = 0$:

$$ETR = \frac{(0.21 - .21 \times 0.5)}{(1 - 0.21 \times 0.5)} = 11.73\%$$

Negative Effective Tax Rates

- With a large enough z and ITC α , the effective corporate tax rate could be negative.
- Suppose investments were fully deductible ($z = 1$)and there was a 10% investment tax credit for them $\alpha = 0.1$.
- Then ETR is:

$$ETR = \frac{(0.21 - .21 \times 1 - 0.1)}{(1 - 0.21 \times 1 - 0.1)} = -14.5\%$$

Policy Implications of the Impact of the Corporate Tax on Investment

- Differences in the corporate tax structure can have very different implications for investment.
- A tax on just revenue, with no deductions or ITCs, would reduce investment by reducing MP_k.
- Deductions and the ITC undo this effect, and big enough deductions or credits can encourage investment above the pre-tax level.
- The ETR has varied from 51% in 1980 to 12.5% between 2010 and 2013.

EMPIRICAL EVIDENCE: Accelerated Depreciation and Investment

- There is a large literature investigating the impact of corporate taxes on corporate investment decisions.
- The investment decision is sensitive to tax incentives, with an elasticity of investment with respect to the effective tax rate on the order of -0.5.
- A study by Zwick and Mahon (2017) suggests that certain types of corporate tax incentives can have a much larger effect.
    - "Bonus depreciation" was a policy put in place during recessions that allowed firms to accelerate the rate at which they depreciate their investments.

EMPIRICAL EVIDENCE: Accelerated Depreciation and Investment

- Bonus depreciation lowers costs, especially for longer-lasting capital investments.
- Firms that had their investment costs lowered the most were the ones most likely to raise investment in the wake of the bonus depreciation.
- The study found an elasticity of investment with respect to the tax price of -1.7, which is much larger than indicated in previous literature. This suggests that not all tax changes have the same effect on investment.

Learn by Doing: Practice Question 1

The statutory corporate tax rate is 21%. Suppose that there are no depreciation allowances and that there is a 10% investment tax credit.

Find the effective tax rate to one decimal place:

$$ETR = \frac{(\tau - \tau \cdot z - \alpha)}{(1 - \tau \cdot z - \alpha)}$$

a. 10.1%

b. 12.2%

c. 19.3%

d. 21.0%

Treatment of International Corporate Income

- Multinational firms are increasingly common.
  - **Multinational firms:** Firms that operate in multiple countries.
  - **Subsidiaries:** The production arms of a corporation that are located in other nations.
- International operation can provide many tax breaks.
  - GE claimed a $3.2 billion U.S. tax break on $14.2 billion of global profit, $5.1 billion in the United States, thanks to international diversification .

How to Tax International Income

- The United States uses a territorial tax system.
  - **Territorial tax system:** A tax system in which corporations earning income abroad pay tax only to the government of the country in which the income is earned.
  - **Global tax system:** A tax system in which corporations are taxed by their home countries on their income regardless of where it is earned.
- Territorial tax systems mean that firms face many different tax rates .

The Transfer-Pricing Problem

- The fundamental problem facing tax authorities in taxing foreign income is that when a good is produced using inputs from many nations, it is difficult to appropriately attribute the profits earned on that good to any particular nation.
- **Transfer prices:** The amount that one subsidiary of a corporation reimburses another subsidiary of the same corporation for goods transferred between the two.
- Firms shift profits to low-tax countries by setting high transfer prices for goods produced in those countries .

The Transfer-Pricing Problem: An Example

- Imagine that France levies a 40% tax on corporate profits, compared to the 21% corporate tax rate in the United States.
- A U.S. computer company has a French subsidiary that manufactures microchips at a cost of $100 each.
- Each microchip is transferred to the United States, where it is added to $500 worth of other computer parts to form a computer that is sold for $1,000. So the total profit on the transaction is $400.
- If the company says that all $400 in profit came from the microchip, it will pay taxes at the French rate, paying 40% of $400, or $160, to the French government.
- If the company says that none of the profit came from the microchip, it will pay taxes at the U.S. rate, paying 21% of $400, or $84, to the U.S. government, a difference of $76.

APPLICATION: The A(pple) B(urger King) C(aterpillar)s of Avoiding Corporate Taxes on International Income

- By relying on low corporate taxation in Ireland and a creative organizational structure, Apple shifts much of its profits to Ireland, a country where Apple has received a special corporate tax rate in the single digits for many years.
- Burger King undertook a corporate inversion with a Canadian firm. It is estimated that Burger King will avoid anywhere between $400 million and $1.2 billion in U.S. taxes over the next four years.
- In 1999, Caterpillar decided that it could sharply reduce the American tax on profits from the sale of parts sent from the United States to customers around the world by simply taking the name off of the invoices and replacing it with the name of a Swiss subsidiary .

Global Versus Territorial Taxation

- Under the global system, foreign tax credit was supposed to level the playing field.
  - **Foreign tax credit:** U.S.-based multinational corporations may claim a credit against their U.S. taxes for any tax payments made to foreign governments when funds are repatriated to the parent.
- In practice, this did not work because firms delayed repatriation.
- **Repatriation:** The return of income from a foreign country to a corporations home country.
  - U.S. taxes weren't paid until profits were repatriated, so PDV of profits earned abroad was much higher.
  - Profits that were never repatriated were never taxed .

Global Versus Territorial Taxation

- Given this avoidance behavior, many argued that the global system was already effectively a territorial system but was even worse in that it induced companies to hold profits abroad.
- Under a territorial system, those profits might return to the United States and create economic activity here.
- This idea motivated a 'tax holiday' as part of the American Jobs Creation Act of 2004, lowering the tax rate from 35 to 5.25% for one year.
    - This led to a large increase in repatriation, but the expected surge in hiring and job creation did not materialize.
- One suggestion was to revise the global system to tax income regardless of whether it is repatriated.

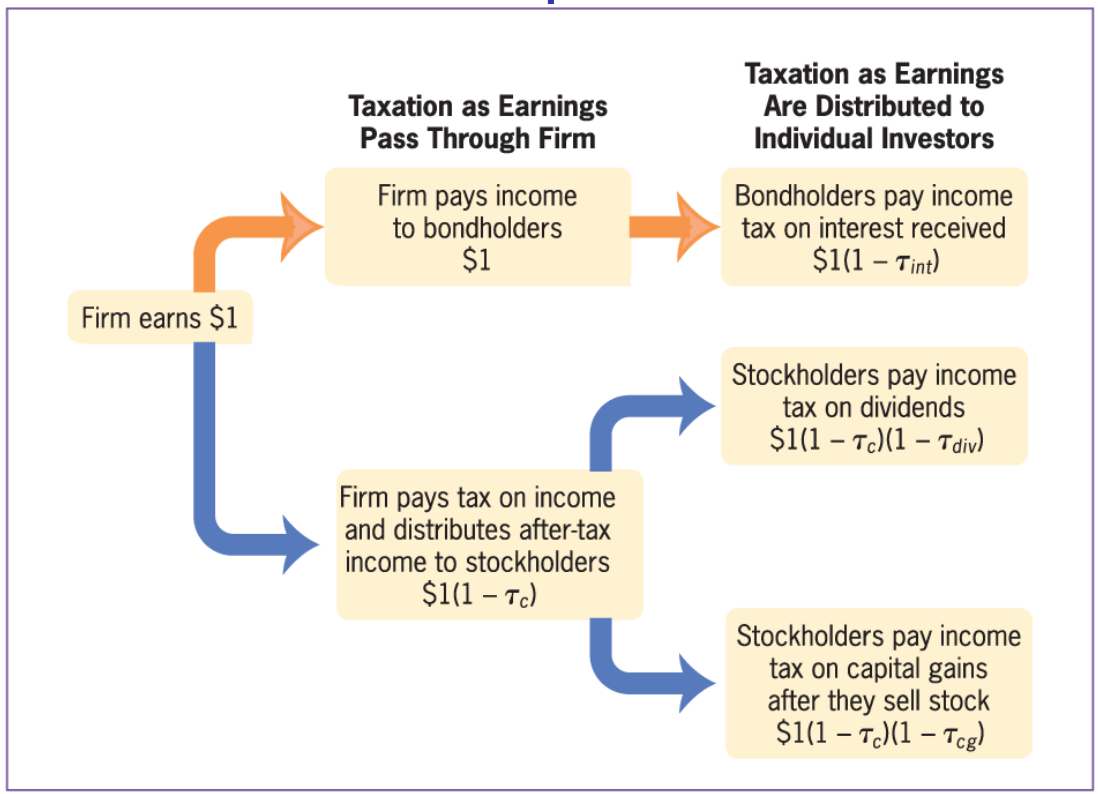
APPLICATION: The 2017 Tax Reform and Corporate Tax Wedges

- Two of the most important tax wedges in the corporate tax system are the wedge between domestic and foreign economic activity and the wedge between corporate and noncorporate form.
- The 2017 tax reform lowered the tax rate to encourage domestic activity but provided incentives to shift profits abroad.
  - Adds a minimum tax on foreign income that exceeds 10% of tangible foreign assets, but this encourages companies to shift such assets (and the jobs that go with them) abroad to avoid the tax.
  - The tax law taxes income from exports at a lower rate than income from domestic profits, but this leads companies to 'export' products to foreign distributors, which then sell the product in the United States.

APPLICATION: The 2017 Tax Reform and Corporate Tax Wedges

- In lowering the corporate tax rate, the 2017 tax reform opened up a wedge between corporations and noncorporate businesses.
- To address this, the tax reform allowed many noncorporate businesses to receive a 20% deduction for their nonwage income.
- This creates an incentive for individuals to shift their income into nonwage income, such as by creating a REIT to purchase their building, then paying rent to themselves via the REIT.
- Overall, the law has introduced a new set of tax distortions while lowering corporate tax revenues to a new low. Whether this on net results in improved economic performance in the United States remains to be seen.

The Consequences of the Corporate Tax for Financing



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- If the firm takes on debt and pays \$1 to bondholders, it subtracts the dollar from its taxable income so that bondholders get the full \$1, on which they pay interest taxes.
- If the firm issues equity, it pays that \$1 to equity holders in the form of either dividends or capital gains. The firm has to pay corporate taxes on the dollar, and individuals then pay either dividend or capital gains taxes.

Why Not All Debt?

- Since debt is tax-advantaged, why do firms use equity at all?
- Bondholders only get paid if the firm avoids bankruptcy, so a debt-only firm carries a lot of risk for bondholders.
- A firm earns $ 600,000 per year and has 10% cost of debt.
- Its considering a project with a 50-50 chance of earning $3 million or losing $6 million.
- A debt-heavy firm might like this project .

Why Not All Debt?

	Share of Financing	Possible Gain from Investment	Possible Loss from Investment	Expected Return from Investment	Should the Firm Take the Risk?
Equity holders	$1 million	$3 million	$2 million	$0.5 million	Yes
Debt holders	$5 million	0	$10 million	−$5 million	No
Equity holders	$5 million	$3 million	$10 million	−$3.5 million	No
Debt holders	$1 million	0	$2 million	−$1 million	No

- Bankruptcy creates an agency problem between debt and equity holders.
- High debt-equity ratios exacerbate this problem .

EMPIRICAL EVIDENCE: How Do Corporate Taxes Affect a Firms Financial Structure?

- Corporate taxes are themselves a function of a variety of firm decisions- including financial structure! A firm with more debt will have lower tax payments, so a regression of debt levels on corporate tax payments will yield a biased estimate.
    - Heider and Ljungqvist (2012) addressed this problem by using multiple changes in state corporate taxes in the United States. Over the 1990-2011 period, they found 38 instances of states changing their corporate tax rates. They compared the effect of these tax rate changes on firms in those states to other firms in the same industry in nearby states. In this way, they could can use comparable firms to identify how tax changes impact firm financial structure.

EMPIRICAL EVIDENCE: How Do Corporate Taxes Affect a Firms Financial Structure?

- They controlled for other factors that determine firm leverage by examining firms that are right near the border of states that do and do not change taxes. These firms face similar economic conditions, but the tax cuts only impact some of the firms and not others.
- The authors found a sizeable effect of state corporate tax rates changes on how firms are financed.
  - Tax increases lead to more use of debt.
  - At the same time, they find that this effect is asymmetric: cuts in corporate taxation don't lead to reductions in firm leverage .
  - This surprising asymmetry suggests that more is at work than the simple firm optimization of financial structure with respect to taxation .

The Dividend Paradox

- Capital gains tax rate is lower than dividends rate.
- Why pay dividends instead of retaining earnings?
- Empirical evidence supports two views:
  - **Agency problems:** Investors suffer the tax inefficiency of dividends to get the money out of the hands of managers who would misuse it.
  - **Signaling:** Investors have imperfect information about how well a company is doing, so dividends signal good performance .

How Should Dividends Be Taxed?

- Why tax dividends more highly than capital gains?
- Three effects of high dividends tax rate:
  1. Reduces use of dividends to pay equity holders.
  2. Pushes firm to choose debt rather than equity.
  3. Most importantly, could reduce investment.
- But little is known about how dividend taxes affect investment .

APPLICATION: The 2003 Dividend Tax Cut

- The 2003 tax reform reduced the dividend and capital gains rates to 15%, making dividends more attractive.
- Proponents hoped the cut would stimulate the economy, and end the double taxation of corporate income.
- Opponents argued that the tax cut would worsen the fiscal balance and make the tax burden less progressive.
- Research shows that the 2003 reform increased dividend payments but did not appreciably raise investment.

Corporate Tax Integration

- **Corporate tax integration:** The removal of the corporate tax to tax corporate income at the individual (shareholder) level.
- Tax integration would remove many of the biases in the tax code and eliminate incentives to incorporate as S-class rather than C-class.
- By lowering corporate rates, this could reduce *DWL* .
- But this would also reduce tax revenues due to eliminating double taxation of firm dividends .

Learn by Doing: Practice Question 2

Which of these are TRUE concerning a firms financing decision?

I.Debt financing allows firms to avoid corporate taxation.

II.Paying earnings to equity holders via capital gains results in lower taxes than paying earning via dividends would.

III.Paying dividends is tax inefficient but is still a common practice.

a) I and II only

b) I and III only

c) II and III only

d) I, II, and III

Conclusion

- The corporate tax remains an important determinant of the behavior of corporations in the United States.
- It significantly influences firms? investment and financing decisions.
- The United States faces a difficult set of decisions about how to reform its corporate tax system.
- Little action despite repeated calls for reform.
- Corporate tax breaks have highly concentrated and powerful supporters, with only the diffuse taxpaying public to oppose them .