

Chapter 1 An Introduction to Tax

SOLUTIONS MANUAL

Discussion Questions

1. [LO 1] Jessica's friend Zachary once stated that he couldn't understand why someone would take a tax course. Why is this a rather naïve view?

Taxes are a part of everyday life and have a financial effect on many of the major personal decisions that individuals face (e.g., investment decisions, evaluating alternative job offers, saving for education expenses, gift or estate planning, etc.).

2. [LO 1] What are some aspects of business that require knowledge of taxation? What are some aspects of personal finance that require knowledge of taxation?

Taxes play an important role in fundamental business decisions such as the following:

- *What organizational form should a business use?*
- *Where should the business locate?*
- *How should business acquisitions be structured?*
- *How should the business compensate employees?*
- *What is the appropriate mix of debt and equity for the business?*
- *Should the business rent or own its equipment and property?*
- *How should the business distribute profits to its owners?*

One must consider all transaction costs (including taxes) to evaluate the merits of a transaction.

Common personal financial decisions that taxes influence include: choosing investments, retirement planning, choosing to rent or buy a home, evaluating alternative job offers, saving for education expenses, and doing gift or estate planning.

3. [LO 1] Describe some ways in which taxes affect the political process in the United States.

U.S. presidential candidates often distinguish themselves from their opponents based upon their tax rhetoric. Likewise, the major political parties generally have very diverse views of the appropriate way to tax the public. Determining who is taxed,

what is taxed, and how much is taxed are difficult questions. Voters must have a basic understanding of taxes to evaluate the merits of alternative tax proposals offered by opposing political candidates and their political parties.

4. [LO 2] Courtney recently received a speeding ticket on her way to the university. Her fine was \$200. Is this considered a tax? Why or why not?

The \$200 speeding ticket is not considered a tax. Instead, it is considered a fine or penalty. Taxes differ from fines and penalties because taxes are not intended to punish or prevent illegal behavior.

5. [LO 2] Marlon and Latoya recently started building a house. They had to pay \$300 to the county government for a building permit. Is the \$300 payment a tax? Why or why not?

The building permit is not considered a tax because \$300 payment is directly linked to a benefit that they received (i.e., the ability to build a house).

6. [LO 2] To help pay for the city's new stadium, the city of Birmingham recently enacted a 1 percent surcharge on hotel rooms. Is this a tax? Why or why not?

The 1 percent surcharge is a tax. The 1 percent surcharge is an earmarked tax – i.e., collected for a specific purpose. The surcharge is considered a tax because the tax payments made by taxpayers do not directly relate to the specific benefit received by the taxpayers.

7. [LO 2] As noted in Example 1-2, tolls, parking meter fees, and annual licensing fees are not considered taxes. Can you identify other fees that are similar?

There are several possible answers to this question. Some common examples include entrance fees to national parks, tag fees paid to local/state government for automobiles, boats, etc.

8. [LO 2] If the general objective of our tax system is to raise revenue, why does the income tax allow deductions for charitable contributions and retirement plan contributions?

In addition to the general objective of raising revenue, Congress uses the federal tax system to encourage certain behavior and discourage other behavior. The charitable contribution deduction is intended to encourage taxpayers to support the initiatives of charitable organizations, whereas deductions for retirement contributions are intended to encourage retirement savings.

9. [LO 2] One common argument for imposing so-called sin taxes is the social goal of *reducing* demand for such products. Using cigarettes as an example, is there a segment of the population that might be sensitive to price and for whom high taxes might discourage purchases?

The most obvious segment sensitive to price may be teenagers and younger adults, although price sensitivity will vary by taxpayer.

10. [LO 3] Dontae stated that he didn't want to earn any more money because it would "put him in a higher tax bracket." What is wrong with Dontae's reasoning?

Although earning additional taxable income may increase Dontae's marginal tax rate (i.e., put him in a higher tax bracket), the additional income earned does not affect the taxes that Dontae will pay on his existing income. Moving to a higher tax bracket simply means that Dontae will pay a higher tax rate on the additional income earned (not income that he already has).

11. [LO 3] Describe the three different tax rates discussed in the chapter and how taxpayers might use them.

The marginal tax rate is the tax rate that applies to the taxpayer's additional taxable income or deductions that the taxpayer is evaluating in a decision. Specifically,

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\text{NewTotalTax} - \text{OldTotalTax})}{(\text{NewTaxableIncome} - \text{OldTaxableIncome})}$$

The marginal tax rate is particularly useful in tax planning because it represents the rate of taxation or savings that would apply to additional taxable income or tax deductions.

The average tax rate represents the taxpayer's average level of taxation on each dollar of taxable income. Specifically,

$$\text{Average Tax Rate} = \frac{\text{TotalTax}}{\text{TaxableIncome}}$$

The average tax rate is often used in budgeting tax expense as a portion of income (i.e., what percent of taxable income earned is paid in tax).

The effective tax rate represents the taxpayer's average rate of taxation on each dollar of total income (i.e., taxable and nontaxable income). Specifically,

$$\text{Effective Tax Rate} = \frac{\text{Total Tax}}{\text{Total Income}}$$

Relative to the average tax rate, the effective tax rate provides a better depiction of a taxpayer's tax burden because it depicts the taxpayer's total tax paid as a ratio of the sum of both taxable and nontaxable income earned.

12. [LO 3] Which is a more appropriate tax rate to use to compare taxpayers' tax burdens – the average or the effective tax rate? Why?

Relative to the average tax rate, the effective tax rate provides a better depiction of a taxpayer's tax burden because it depicts the taxpayer's total tax paid as a ratio of the sum of both taxable and nontaxable income earned.

13. [LO 3] Describe the differences between a proportional, progressive, and regressive tax rate structure.

A proportional (flat) tax rate structure imposes a constant tax rate throughout the tax base. In other words, as the tax base increases, the taxes paid increases, but the marginal tax rate remains constant. Because the marginal tax rate is constant across all levels of the tax base, the average tax rate remains constant across the tax base and always equals the marginal tax rate. Common examples of proportional taxes include sales taxes and excise taxes (i.e., taxes based on quantity such as gallons of gas purchased).

A progressive tax rate structure imposes an increasing marginal tax rate as the tax base increases. In other words, as the tax base increases, both the marginal tax rate and the taxes paid increase. Common examples of progressive tax rate structures include federal and most state income taxes and federal estate and gift taxes.

A regressive tax rate structure imposes a decreasing marginal tax rate as the tax base increases. In other words, as the tax base increases, the taxes paid increases, but the marginal tax rate decreases. Regressive tax rate structures are not common. In the United States, the Social Security tax and the federal employment tax employ a regressive tax rate structure. However, there are other regressive taxes when the tax is viewed in terms of effective tax rates. For example, a sales tax by definition is a proportional tax – i.e., as taxable purchases increase, the sales tax rate (i.e., the marginal tax rate) remains constant. Nonetheless, when you consider that the proportion of one's total income spent on taxable purchases likely decreases as total income increases, the sales tax may be considered a regressive tax.

14. [LO 3] Arnold and Lilly have recently had a heated discussion about whether a sales tax is a proportional tax or a regressive tax. Lilly argues that a sales tax is regressive.

Arnold counters that the sales tax is a flat tax. Who is correct?

Arnold and Lilly are both correct. A sales tax by definition is a proportional tax – i.e., as taxable purchases increase, the sales tax rate (i.e., the marginal tax rate) remains constant. For this reason, Arnold is correct. Nonetheless, when you consider that the proportion of one's total income spent on taxable purchases likely decreases as total income increases, the sales tax may be considered a regressive tax. For this reason, Lilly is correct.

15. [LO 4] Which is the largest tax collected by the U.S. government? What types of taxpayers are subject to this tax?

The federal income tax is the largest tax collected by the U.S. government. Currently, federal income taxes are levied on individuals, corporations, estates, and trusts.

16. [LO 4] What is the tax base for the Social Security and Medicare taxes for an employee or employer? What is the tax base for Social Security and Medicare taxes for a self-employed individual? Is the self-employment tax in addition to or in lieu of federal income tax?

Employee wages is the tax base for the Social Security and Medicare taxes. Net earnings from self-employment is the tax base for the self-employment tax. The self-employment tax is in addition to the federal income tax.

17. [LO 4] What are unemployment taxes?

Employers are required to pay federal and state unemployment taxes, which fund temporary unemployment benefits for individuals terminated from their jobs without cause. The tax base for the unemployment taxes is wages or salary.

18. [LO 4] What is the distinguishing feature of an excise tax?

Excise taxes differ from other taxes in that the tax base on excise taxes is typically based on the quantity of an item or service purchased. The federal government imposes a number of excise taxes on goods such as alcohol, diesel fuel, gasoline, tobacco products and services such as telephone services. In addition, states also often impose excise taxes on these same items.

19. [LO 4] What are some of the taxes that currently are unique to state and local governments? What are some of the taxes that the federal, state, and local governments each utilize?

The sales, use, and property (personal, real, intangible) taxes are unique to state and

local governments. Taxes that are common among the federal, state, and local governments include income taxes, excise taxes, and estate and gift taxes.

20. [LO 4] The state of Georgia recently increased its tax on a pack of cigarettes by \$2.00. What type of tax is this? Why might Georgia choose this type of tax?

The cigarette tax is both considered an excise tax (i.e., a tax based on quantity purchased) and a "sin" tax (i.e., a tax on goods that are deemed to be socially undesirable). Georgia may choose this type of tax to discourage smoking and because sin taxes are often viewed as acceptable ways of increasing tax revenues.

21. [LO 4] What is the difference between a sales tax and a use tax?

The tax base for sales taxes is retail sales of goods (and some services). The tax base for the use tax is the retail price of goods owned, possessed or consumed within a state that were not purchased within the state (e.g., goods purchased over the internet).

22. [LO 4] What is an *ad valorem* tax? Name an example of this type of tax.

An ad valorem tax is a tax based on the fair market value of property. Real and personal property taxes are examples of ad valorem taxes.

23. [LO 4] What are the differences between an explicit and an implicit tax?

An explicit tax is a tax that is directly imposed by a government unit and easily quantified. Implicit taxes are the reduced rates of pretax return that a tax-favored asset produces (e.g., the lower pretax rate of return earned by tax exempt municipal bonds). Although implicit taxes are real and equally important in understanding our tax system, they are difficult to quantify.

24. [LO 4] When we calculate average and effective tax rates, do we consider implicit taxes? What effect does this have on taxpayers' perception of equity?

Implicit taxes are very difficult to quantify and thus, are generally not considered when calculating average and effective tax rates. Since implicit taxes are ignored in these calculations, taxpayers may conclude that groups of taxpayers investing in tax advantaged assets (subject to implicit tax) do not pay their fair share of tax as represented by a low effective tax rate.

25. [LO 4] Benjamin recently bought a truck in Alabama for his business in Georgia. What different types of federal and state taxes may affect this transaction?

Benjamin will have to pay state sales tax in Alabama for the truck purchased. Assuming the vehicle will be registered in Georgia, Benjamin will have to pay use tax on the purchase at a rate representing any difference in the Alabama sales tax rate and the Georgia use tax rate. Benjamin will also have to pay personal property tax annually on the truck. Finally, since the vehicle is used in Benjamin's business, he will be able to depreciate the truck for federal income tax purposes.

26. [LO 5] Kobe strongly dislikes SUVs and is appalled that so many are on the road. He proposes to eliminate the federal income tax and replace it with a \$50,000 annual tax per SUV. Based on the number of SUVs currently owned in the United States, he estimates the tax will generate exactly the amount of tax revenue currently collected from the income tax. What is wrong with Kobe's proposal? What type of forecasting is Kobe likely using?

Kobe's forecast is based on static forecasting (i.e., he is ignoring how taxpayers may alter their activities in response to the tax law change). Given that taxpayers are likely to substitute purchases of other vehicles for SUVs (i.e., the substitution effect), Kobe's proposal is likely to result in a large discrepancy in projected and actual tax revenues.

27. [LO 5] What is the difference between the income and substitution effects? For which types of taxpayers is the income effect more likely descriptive? For which types of taxpayers is the substitution effect more likely descriptive?

The income effect predicts that when taxpayers are taxed more (e.g., tax rate increases from 25 to 28 percent), they will work harder to generate the same after-tax dollars. The substitution effect predicts that when taxpayers are taxed more, they will substitute nontaxable activities (e.g., leisure activities) for taxable activities because the marginal value of taxable activities has decreased. The income effect is likely to be more descriptive for taxpayers with insufficient income to meet their necessities, etc. for their desired standard of living. The substitution effect is likely to be more descriptive for taxpayers with sufficient income to meet their necessities and to sustain their desired standard of living.

28. [LO 5] What is the difference between horizontal and vertical equity? How do tax preferences affect people's view of horizontal equity?

Horizontal equity means that two taxpayers in similar situations pay the same tax. Vertical equity is achieved when taxpayers with greater ability to pay tax, pay more tax relative to taxpayers with a lesser ability to pay tax. One can view vertical equity in terms of tax dollars paid or in terms of tax rates. Proponents of a flat income tax or sales tax (i.e., proportional tax rate structures) are more likely to argue that vertical equity is achieved when taxpayers with a greater ability to pay tax, pay more in tax

dollars. Proponents of a progressive tax system are more likely to argue that taxpayers with a greater ability to pay should be subject to a higher tax rate.

Governmental units provide tax preferences for a variety of reasons – e.g., encourage investment, social objectives, etc. Whether one views these tax preferences as appropriate or not, greatly influences whether one considers a tax system to be fair in general and specifically, horizontally equitable. Specifically, if one views a tax preference as being inappropriate, this would adversely affect one's view of horizontal equity.

29. [LO 3, LO 5] Montel argues that a flat income tax rate system is vertically equitable. Oprah argues that a progressive tax rate structure is vertically equitable. How do their arguments differ? Who is correct?

Vertical equity is achieved when taxpayers with greater ability to pay tax, pay more tax relative to taxpayers with a lesser ability to pay tax. One can view vertical equity in terms of tax dollars paid or in terms of tax rates. Proponents of a flat income tax or sales tax (i.e., proportional tax rate structures) are more likely to argue that vertical equity is achieved when taxpayers with a greater ability to pay tax, pay more in tax dollars. Proponents of a progressive tax system are more likely to argue that taxpayers with a greater ability to pay should be subject to a higher tax rate. This view is based upon the argument that the relative burden of a flat tax rate decreases as a taxpayer's income (e.g., disposable income) increases. Which is the correct answer? There is no correct answer. Nonetheless, many feel very strongly regarding one view or the other.

30. [LO 3, LO 5] Discuss why evaluating vertical equity simply based on tax rate structure may be less than optimal.

Although tax rate structures can be used, in part, to assess vertical equity, focusing on the tax rate structure solely ignores the role that the tax base plays in determining vertical equity. Indeed, focusing on the tax rate structure in evaluating a tax system is appropriate only if the tax base chosen (e.g., taxable income, purchases, property owned, etc.) accurately portrays a taxpayer's ability to pay. This can be a rather strong assumption. Consider the sales tax. Although taxable purchases typically increase as taxpayers' total incomes increase, total incomes typically increase at a much faster rate than taxable purchases. Thus, the gap between taxable purchases and total income widens as total income increases. The end result is that the effective tax rates for those with a greater ability to pay are lower than those taxpayers with a lesser ability to pay. Regressive tax rate structures are generally considered not to satisfy vertical equity (unless one is a strong advocate of the belief that those with a greater ability to pay simply should be paying a higher tax, albeit at a lower rate). In sum, evaluating vertical equity in terms of effective tax rates may be much more

informative than simply an evaluation of tax rate structures.

31. [LO 4, LO 5] Compare the federal income tax to sales taxes using the “certainty” criterion.

Certainty means that taxpayers should be able to determine when to pay the tax, where to pay the tax, and how to determine the tax. It is relatively easy to determine when and where to pay the federal income tax and sales taxes. For example, individual federal income tax returns and the remaining balance of taxes owed must be filed with the Internal Revenue Service each year on or before April 15th (or the first business day following April 15th). Likewise, sales taxes are paid to retailers when items are purchased, and property taxes are typically paid annually to local governments. The ease of “how to determine the tax,” however, varies by tax system. Sales taxes are determined with relative ease – i.e., they are based on the value of taxable purchases. In contrast, income taxes are often criticized as being complex. What are taxable/nontaxable forms of income? What are deductible/nondeductible expenses? When should income or expense be reported? For many taxpayers (e.g., wage earners with few investments), the answers to these questions are straightforward. For other taxpayers (e.g., business owners, individuals with a lot of investments), the answers to these questions are nontrivial. Constant tax law changes enacted by Congress also add to the difficulty in determining the proper amount of income tax to pay. These changes can make it difficult to determine a taxpayer’s current tax liability much less plan for the future.

32. [LO 5] Many years ago a famous member of Congress proposed eliminating federal income tax withholding. What criterion for evaluating tax systems did this proposal violate? What would likely have been the result of eliminating withholding?

Eliminating withholding would violate the convenience criterion – i.e., a tax system should be designed to facilitate the collection of tax revenues without undue hardship on the taxpayer or the government (i.e., a tax system should make collection as easy as possible). Eliminating withholding would most likely have slowed collection of taxes and increased taxpayer aggressiveness (or tax evasion). Prior research suggests that taxpayers are more likely to take more aggressive tax positions when they owe additional taxes when filing their return.

33. [LO 5] “The federal income tax scores very high on the economy criterion because the current IRS budget is relatively low compared to the costs of a typical collection agency.” Explain why this statement may be considered wrong.

This statement ignores the economy criterion from the taxpayer’s perspective. The income tax is often criticized for the compliance costs imposed on the taxpayer. Indeed, for certain taxpayers, record-keeping costs, accountant fees, attorney fees,

etc. can be quite substantial. Advocates of alternative tax systems often challenge the income tax on this criterion.

Problems

34. [LO 3] Chuck, a single taxpayer, earns \$75,000 in taxable income and \$10,000 in interest from an investment in City of Heflin bonds. Using the U.S. tax rate schedule, how much federal tax will he owe? What is his average tax rate? What is his effective tax rate? What is his current marginal tax rate?

*Chuck will owe \$14,521.25 in federal income tax this year computed as follows:
\$14,521.25 = \$5,183.75 + 25%(\$75,000 – \$37,650).*

Chuck's average tax rate is 19.36.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$14,521.25}{\$75,000} = 19.36\%$$

Chuck's effective tax rate is 17.08 percent.

$$\text{Effective tax rate} = \frac{\text{Total Tax}}{\text{Total Income}} = \frac{\$14,521.25}{(\$75,000 + \$10,000)} = 17.08\%$$

Chuck is currently in the 25 percent tax rate bracket. His marginal tax rate on increases in income up to \$16,150 and deductions from income up to \$37,350 is 25 percent.

35. [LO 3] Using the facts in the previous problem, if Chuck earns an additional \$40,000 of taxable income, what is his marginal tax rate on this income? What is his marginal rate if, instead, he had \$40,000 of additional deductions?

If Chuck earns an additional \$40,000 of taxable income, his marginal tax rate on the income is 26.79 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$25,236.75 - \$14,521.25)}{(\$115,000 - \$75,000)} = 26.79\%$$

If Chuck instead had \$40,000 of additional tax deductions, his marginal tax rate on the deductions would be 24.34 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$4,786.25 - \$14,521.25)}{(\$35,000 - \$75,000)} = 24.34\%$$

36. [LO 3] In reviewing the tax rate schedule for a single taxpayer, Chuck notes that the tax on \$75,000 is \$5,183.75 plus 25 percent of the taxable income over \$37,650. What does the \$5,183.75 represent?

The \$5,183.75 represents the income tax on \$37,650 – i.e., \$927.50 + 15% (\$37,650 – \$9,275).

37. [LO 3] Campbell, a single taxpayer, earns \$400,000 in taxable income and \$2,000 in interest from an investment in State of New York bonds. Using the U.S. tax rate schedule, how much federal tax will she owe? What is her average tax rate? What is her effective tax rate? What is her current marginal tax rate?

Campbell will owe \$115,529.25 in federal income tax this year computed as follows: \$115,529.25 = \$46,278.75 + 33% × (\$400,000 – \$190,150).

Campbell's average tax rate is 28.88 percent.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$115,529.25}{\$400,000} = 28.88$$

Campbell's effective tax rate is 28.74 percent.

$$\text{Effective tax rate} = \frac{\text{Total Tax}}{\text{Total Income}} = \frac{\$115,529.25}{(\$400,000 + \$2,000)} = 28.74$$

Campbell is currently in the 33 percent tax rate bracket. Her marginal tax rate on deductions up to \$209,850 will be 33 percent. However, her marginal tax rate on the next \$13,350 of income will be 33%, and income earned over \$413,350 will be 35 percent. Income earned in excess of \$415,050 will be taxed at 39.6%.

38. [LO 3] Using the facts in the previous problem, if Campbell earns an additional \$15,000 of taxable income, what is her marginal tax rate on this income? What is her marginal rate if, instead, she had \$15,000 of additional deductions?

If Campbell earns an additional \$15,000 of taxable income, her marginal tax rate on the income is 33.22 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$120,512.95 - \$115,529.25)}{(\$415,000 - \$400,000)} = 33.22\%$$

If Campbell instead had \$15,000 of additional tax deductions, her marginal tax rate on the deductions would be 33.00 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$110,579.25 - \$115,529.25)}{(\$385,000 - \$400,000)} = 33.00\%$$

39. [LO 3] Jorge and Anita, married taxpayers, earn \$150,000 in taxable income and \$40,000 in interest from an investment in City of Heflin bonds. Using the U.S. tax rate schedule for married filing jointly, how much federal tax will they owe? What is their average tax rate? What is their effective tax rate? What is their current marginal tax rate?

Jorge and Anita will owe \$29,042.50 in federal income tax this year computed as follows:

$$\$29,042.50 = \$10,367.50 + 25\% (\$150,000 - \$75,300).$$

Jorge and Anita's average tax rate is 19.36 percent.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$29,042.50}{\$150,000} = 19.36\%$$

Jorge and Anita's effective tax rate is 15.29 percent.

$$\text{Effective tax rate} = \frac{\text{Total Tax}}{\text{Total Income}} = \frac{\$29,042.50}{(\$150,000 + \$40,000)} = 15.29\%$$

Jorge and Anita are currently in the 25 percent tax rate bracket. Their marginal tax rate on increases of income up to \$1,900 and deductions up to \$74,700 is 25 percent.

40. [LO 3] Using the facts in the previous problem, if Jorge and Anita earn an additional \$100,000 of taxable income, what is their marginal tax rate on this income? What is their marginal rate if, instead, they reported an additional \$100,000 in deductions?

If Jorge and Anita earn an additional \$100,000 of taxable income, their marginal tax rate on the income is 28.87 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$57,913 - \$29,042.50)}{(\$250,000 - \$150,000)} = 28.87\%$$

If Jorge and Anita instead had \$100,000 of additional tax deductions, their marginal tax rate on the deductions would be 22.47 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$6,572.50 - \$29,042.50)}{(\$50,000 - \$150,000)} = 22.47\%$$

41. [LO 3] In reviewing the tax rate schedule for married filing jointly, Jorge and Anita note that the tax on \$155,000 is \$29,517.50 plus 28 percent of the taxable income over \$151,900. What does the \$29,517.50 represent?

The \$29,517.50 represents the income tax on \$151,900 – i.e., \$10,367.50 + 25% (\$151,900 – 75,300).

42. [LO 3] Scot and Vidia, married taxpayers, earn \$240,000 in taxable income and \$5,000 in interest from an investment in City of Tampa bonds. Using the U.S. tax rate schedule for married filing jointly, how much federal tax will they owe? What is their average tax rate? What is their effective tax rate? What is their current marginal tax rate?

Scot and Vidia will owe \$54,613 in federal income tax this year computed as follows:

$$\$54,613 = \$51,791.50 + 33\% (\$240,000 - \$231,450).$$

Scot and Vidia's average tax rate is 22.76 percent.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$54,613}{\$240,000} = 22.76\%$$

Scot and Vidia's effective tax rate is 22.29 percent.

$$\text{Effective tax rate} = \frac{\text{Total Tax}}{\text{Total Income}} = \frac{\$54,613}{(\$240,000 + \$5,000)} = 22.29\%$$

Scot and Vidia are currently in the 33 percent tax rate bracket. Their marginal tax rate on increases in income up to \$173,350 and deductions up to \$8,550 is 33 percent.

43. [LO 3] Using the facts in the previous problem, if Scot and Vidia earn an additional \$70,000 of taxable income, what is their marginal tax rate on this income? How would your answer differ if they, instead, had \$70,000 of additional deductions?

If Scot and Vidia earn an additional \$70,000 of taxable income, their marginal tax rate on the income is 33 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$77,713 - \$54,613)}{(\$310,000 - \$240,000)} = 33\%$$

If Scot and Vidia instead had \$70,000 of additional tax deductions, their marginal tax rate on the deductions would be 28.61 percent.

$$\text{Marginal Tax Rate} = \frac{\Delta \text{Tax}}{\Delta \text{Taxable Income}} = \frac{(\$34,585.50 - \$54,613)}{(\$170,000 - \$240,000)} = 28.61\%$$

44. [LO 3, LO 4] Melinda invests \$200,000 in a City of Heflin bond that pays 6 percent interest. Alternatively, Melinda could have invested the \$200,000 in a bond recently issued by Surething, Inc. that pays 8 percent interest with similar risk and other nontax characteristics to the City of Heflin bond. Assume Melinda's marginal tax rate is 25 percent.

- a. What is her after-tax rate of return for the City of Heflin bond?

Since the City of Heflin bond is a tax exempt bond, Melinda's after tax rate of return on the bond is equal to its pretax rate of return (6 percent).

- b. How much explicit tax does Melinda pay on the City of Heflin bond?

Since the City of Heflin bond is a tax exempt bond, Melinda pays no explicit tax on the interest earned from the City of Heflin bond.

- c. How much implicit tax does she pay on the City of Heflin bond?

Melinda earns \$12,000 of interest on the City of Heflin bond (i.e., 6% × \$200,000). A similar priced taxable bond (i.e., the Surething, Inc. bond) would pay \$16,000 of taxable interest (i.e., 8% × \$200,000). Melinda pays \$4,000 of implicit tax on the City of Heflin bond (i.e., the difference between the pretax interest earned from a similar taxable bond (\$16,000) and the pretax interest earned from the City of Heflin bond (\$12,000)).

- d. How much explicit tax would she have paid on the Surething, Inc. bond?

Since Melinda's marginal tax rate is 25 percent, she would have paid \$4,000 of

explicit tax (i.e., $25\% \times \$16,000$) on the interest earned from the Surething, Inc. bond.

e. What is her after-tax rate of return on the Surething, Inc. bond?

Her after-tax income from the Surething, Inc. bond would be \$12,000 (\$16,000 interest income – \$4,000 tax). Thus, her after-tax return from the Surething, Inc. bond would be 6 percent (after-tax income of \$12,000 divided by her \$200,000 investment).

45. [LO 3, LO 4] {Planning} Hugh has the choice between investing in a City of Heflin bond at 6 percent or a Surething bond at 9 percent. Assuming that both bonds have the same nontax characteristics and that Hugh has a 40 percent marginal tax rate, in which bond should he invest?

Hugh's after tax rate of return on the tax exempt City of Heflin bond is 6 percent. The Surething bond pays taxable interest of 9 percent. Hugh's after tax rate of return on the Surething bond is 5.4 percent (i.e., 9% interest income – $(9\% \times 40\%)$ tax = 5.4%). Hugh should invest in the City of Heflin bond.

46. [LO 3, LO 4] {Planning} Using the facts in the previous problem, what interest rate does Surething, Inc. need to offer to make Hugh indifferent between investing in the two bonds?

*To be indifferent between investing in the two bonds, the Surething, Inc. bond should provide Hugh the same after-tax rate of return as the City of Heflin bond (6 percent). To solve for the required pretax rate of return we can use the following formula:
After-tax return = Pretax return $\times (1 - \text{Marginal Tax Rate})$.*

Surething, Inc. needs to offer a 10 percent interest rate to generate a 6 percent after-tax return and make Hugh indifferent between investing in the two bonds – i.e.,

$$6\% = \text{Pretax return} \times (1 - 40\%);$$
$$\text{Pretax return} = 6\% / (1 - 40\%) = 10\%$$

47. [LO 3, LO 4] {Planning} Fergie has the choice between investing in a State of New York bond at 5 percent and a Surething bond at 8 percent. Assuming that both bonds have the same nontax characteristics and that Fergie has a 30 percent marginal tax rate, in which bond should she invest?

Fergie's after tax rate of return on the tax exempt State of New York bond is 5 percent. The Surething bond pays taxable interest of 8 percent. Fergie's after tax rate of return on the Surething bond is 5.6 percent (i.e., 8% interest income – $(8\% \times 30\%)$

tax = 5.6%). Fergie should invest in the Surething bond.

48. [LO 3, LO 4] {Planning} Using the facts in the previous problem, what interest rate does the state of New York need to offer to make Fergie indifferent between investing in the two bonds?

To be indifferent between investing in the two bonds, the State of New York bond should provide Fergie the same after-tax rate of return as the Surething bond. Fergie's after tax rate of return on the Surething bond is 5.6 percent (i.e., 8% interest income – (8% × 30%) tax = 5.6%). The state of New York needs to offer a 5.6 percent interest rate to generate a 5.6 percent after-tax return to make Fergie indifferent between investing in the two bonds.

49. [LO 3] Given the following tax structure, what minimum tax would need to be assessed on Shameika to make the tax progressive with respect to average tax rates?

<u>Taxpayer</u>	<u>Salary</u>	<u>Muni-Bond Interest</u>	<u>Total Tax</u>
Mihwah	\$10,000	\$10,000	\$600
Shameika	50,000	30,000	???

Mihwah's average tax rate is 6 percent.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$600}{\$10,000} = 6\%$$

A 6 percent average tax rate on Shameika's \$50,000 taxable income would result in \$3,000 of tax (i.e., 6% × \$50,000 = \$3,000). Thus, Shameika must pay more than \$3,000 tax (e.g., \$3,001) for the tax structure to be progressive with respect to average tax rates.

50. [LO 3] Using the facts in the previous problem, what minimum tax would need to be assessed on Shameika to make the tax progressive with respect to effective tax rates?

Mihwah's effective tax rate is 3 percent.

$$\text{Effective tax rate} = \frac{\text{Total Tax}}{\text{Total Income}} = \frac{\$600}{(\$10,000 + \$10,000)} = 3\%$$

A 3 percent effective tax rate on Shameika's \$80,000 total income would result in \$2,400 of tax (i.e., 3% × \$80,000 = \$2,400). Thus, Shameika must pay more than \$2,400 tax (e.g., \$2,401) for the tax structure to be progressive with respect to effective tax rates.

51. [LO 3, LO 5] Song earns \$100,000 taxable income as an interior designer and is taxed at an average rate of 20 percent (i.e., \$20,000 of tax). If Congress increases the income tax rate such that Song's average tax rate increases from 20 percent to 25 percent, how much more income tax will she pay assuming that the income effect is descriptive? What effect will this tax rate change have on the tax base and tax collected?

Under the current income tax, Song has \$80,000 of income after tax. If the income effect is descriptive and Congress increases tax rates so that Song's average tax rate is 25 percent, Song will need to earn to \$106,666.67 to continue to have \$80,000 of income after tax.

$$\text{After-tax income} = \text{Pretax income} (1 - \text{tax rate})$$

$$\$80,000 = \text{Pretax income} (1 - .25)$$

$$\text{Pretax income} = \$106,666.67$$

Song will pay \$26,666.67 in tax (\$106,666.67 $\times$.25). Accordingly, if the income effect is descriptive, the tax base and the tax collected will increase.

52. [LO 3, LO 5] Using the facts from the previous problem, what will happen to the government's tax revenues if Song chooses to spend more time pursuing her other passions besides work in response to the tax rate change and earns only \$75,000 in taxable income? What is the term that describes this type of reaction to a tax rate increase? What types of taxpayers are likely to respond in this manner?

If Song only earns \$75,000 of taxable income, she would pay only \$18,750 of tax under the new tax structure (i.e., \$75,000 $\times$.25). Thus, the government's tax revenues would decrease by \$1,250 (i.e., \$18,750 – \$20,000). This is an example of the substitution effect, which may be descriptive for taxpayers with more disposable income.

53. [LO 5] Given the following tax structure, what tax would need to be assessed on Venita to make the tax horizontally equitable?

<u>Taxpayer</u>	<u>Salary</u>	<u>Total Tax</u>
Mae	\$10,000	\$ 600
Pedro	20,000	1,500
Venita	10,000	???

Horizontal equity means that two taxpayers in similar situations pay the same tax. Thus, to make the tax structure horizontally equitable, Venita should pay \$600 in tax.

54. [LO 5] Using the facts in the previous problem, what is the minimum tax that Pedro should pay to make the tax structure vertically equitable based on the tax rate paid? This would result in what type of tax rate structure?

Mae's average tax rate is 6 percent.

$$\text{Average Tax Rate} = \frac{\text{Total Tax}}{\text{Taxable Income}} = \frac{\$600}{\$10,000} = 6\%$$

To be vertically equitable with respect to tax rates, Pedro should pay a tax rate higher than 6 percent. A 6 percent tax rate on Pedro's \$20,000 taxable income would result in \$1,200 of tax (i.e., $6\% \times \$20,000 = \$1,200$). Thus, Pedro must pay more than \$1,200 tax (e.g., \$1,201) for the tax structure to be vertically equitable (i.e., to generate a tax rate more than 6 percent).

55. [LO 5] Using the facts in the previous problem, what is the minimum tax that Pedro should pay to make the tax structure vertically equitable with respect to the amount of tax paid? This would result in what type of tax rate structure?

To be vertically equitable with respect to the amount of tax paid, Pedro should pay more in tax dollars than Mae because he earns more taxable income than her. A strict interpretation of this definition would suggest that the tax is vertically equitable if Pedro pays 1 more dollar in tax than Mae (i.e., \$601). However, this would result in a regressive tax structure (which most people would argue are not vertically equitable). A less strict interpretation of vertical equity (based on dollar amounts) is that Pedro should pay more tax than Mae but at the same tax rate (i.e., a proportional or flat tax rate structure).

56. [LO 5] Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

<u>Taxpayer</u>	<u>Salary</u>	<u>Total Tax</u>
Rajiv	\$10,000	\$600
LaMarcus	20,000	600
Dory	10,000	600

The tax rate schedule is horizontally equitable because those taxpayers in the same situation (Rajiv and Dory) pay the same tax (\$600). The tax is not vertically equitable because the taxpayer with a greater ability to pay (LaMarcus) does not pay more tax,

nor does he pay a higher tax rate.

57. [LO 5] Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

<u>Taxpayer</u>	<u>Salary</u>	<u>Total Tax</u>
Marilyn	\$10,000	\$ 600
Kobe	20,000	3,000
Alfonso	30,000	6,000

We cannot evaluate whether the tax rate structure is horizontally equitable because we are unable to determine if taxpayers in similar situations pay the same tax (i.e., the problem does not give data for two taxpayers with the same income). The tax rate structure would be considered vertically equitable because taxpayers with higher income pay more tax and at a higher rate. Specifically, Marilyn's, Kobe's, and Alfonso's average tax rates are 6 percent, 15 percent, and 20 percent, respectively.

58. [LO 5] Consider the following tax rate structure. Is it horizontally equitable? Why or why not? Is it vertically equitable? Why or why not?

<u>Taxpayer</u>	<u>Salary</u>	<u>Total Tax</u>
Rodney	\$10,000	\$600
Keisha	10,000	600

The tax rate structure is horizontally equitable because taxpayers in similar situations (Rodney and Keisha) pay the same tax. We cannot evaluate whether the tax is vertically equitable because we are unable to determine if taxpayers with a greater ability to pay (higher income) pay more tax.

59. [LO 1, LO 4] {Planning} Lorenzo is considering starting a trucking company either in Texas or Oklahoma. He will relocate his family, which includes his wife, children, and parents, to reside in the same state as his business. What types of taxes may influence his decision of where to locate his business?

Taxes will affect several aspects of Lorenzo's decision. Lorenzo should consider differences in Texas and Oklahoma for (1) business taxes (e.g., corporate taxes), (2) individual income taxes, (3) excise taxes on gasoline, (4) real estate taxes (business and personal), (5) estate taxes (e.g., for wealth transfers from his parents), and (6) sales taxes.

60. [LO 3, LO 5] {Planning} Congress would like to increase tax revenues by 10 percent. Assume that the average taxpayer in the United States earns \$65,000 and pays an average tax rate of 15 percent. If the income effect is in effect for all taxpayers, what

average tax rate will result in a 10 percent increase in tax revenues? This is an example of what type of forecasting?

This analysis is an example of dynamic forecasting. Based on the information above, the average taxpayer pays \$9,750 of tax (i.e., $\$65,000 \times 15\%$), leaving \$55,250 of income after tax. A 10 percent increase in revenues would mean that the average taxpayer pays \$10,725 in tax ($\$9,750 \times 1.10$). With this new tax amount, we can solve for the tax rate that would generate this tax amount.

$$\text{After-tax income} = \text{Pretax income} \times (1 - \text{tax rate})$$

$$\text{After-tax income} = \text{Pretax income} - (\text{Pretax income} \times \text{tax rate})$$

$$\text{After-tax income} = \text{Pretax income} - \text{Tax}$$

Substituting information from the problem results in:

$$\$55,250 = \text{Pretax income} - \$10,725$$

$$\text{Pretax income} = \$65,975$$

We can use the above formula to solve for the new tax rate.

$$\text{After-tax income} = \text{Pretax income} \times (1 - \text{tax rate})$$

$$\$55,250 = \$65,975 \times (1 - \text{tax rate})$$

$$\text{Tax rate} = \$10,725/\$65,975 = 16.26\%$$

61. [LO 5] {Research} Locate the IRS Web site at <http://www.irs.gov/>. For every \$100 the IRS collected, how much was spent on the IRS collection efforts? What tax system criterion does this information help you to evaluate with respect to the current U.S. tax system?

The IRS' budget for exam and collections as a percentage of revenue collected is about .48 percent. Currently, the IRS collects over \$2.5 trillion annually with a budget of \$12.0 billion. Thus, for every \$100 collected, about .48 cents is spent on collection efforts. This data is useful in evaluating "economy."

62. [LO 4] {Research} Using the Internet, find a comparison of income tax rates across states. What state currently has the highest income tax rate? In considering individual tax burdens across states, what other taxes should you consider?

Hawaii and California currently have the highest individual income tax rate. To compare tax burdens across states, one should also consider real estate and other property taxes, excise taxes (gasoline taxes), and sales taxes.