
4. The incidence of the corporate tax

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1. INTRODUCTION: WHAT IS TAX INCIDENCE?

This chapter presents a framework for thinking about who bears the burden of the US corporate income tax and offers some conclusions. The incidence of the corporate income tax has been a long-debated question among tax policy specialists. Conventional wisdom about the topic has changed considerably over time and is still evolving. Important issues remain unexamined or have not been fully resolved.

I begin with a general discussion of principles for allocating tax burdens among households. I point out how households differ in how they earn and spend their income and how the economic burden of a tax differs from the legal obligation to remit it. The next section then applies those principles to the incidence of the corporate income tax. The corporate income tax is a tax on the profits of subchapter C corporations. I note that these profits come from two sources – (1) a normal return to corporate equity assets that is required to induce individuals and institutions to purchase and retain corporate shares and (2) super-normal returns, sometimes called economic rent, which are defined as profits greater than the amount necessary to attract equity capital.

The following sections of the chapter then discuss how to allocate among individuals the burdens of the portions of the tax that fall on each of these sources of corporate profits and examine evidence on the relative shares of the tax burden that fall on the two sources. I then discuss how the division of the burden between labor and capital translates into the tax's effect on the distribution of after-tax income. A final section offers some tentative findings and discusses issues still to be resolved.

The discussion in this chapter reflects my view of the current state of professional thinking on corporate tax incidence. It draws on earlier review papers on the incidence of the corporate income tax, most notably Auerbach (2006, 2018) and Gale and Thorpe (2022). None of these authors are responsible for my conclusions.

This chapter does not discuss the incidence of state and local corporate income taxes, which raises a whole series of additional issues.

1.1 What Questions Does Tax Incidence Analysis Seek to Answer?

Tax incidence analysis seeks to determine how the economic burden of taxation is shared among households with different amounts of ability to pay. We must define therefore what is meant by ability to pay.

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1.1.1 Measuring ability to pay

The three most common ways to measure households' ability to pay are wealth, income, and consumption.

Wealth is typically defined as the sum of the market value of financial assets (such as stocks and bonds) and real assets (such as homes and consumer durables).² The use of wealth as a measure of ability to pay, however, has both practical and conceptual problems. It is very difficult to measure the value of wealth in assets not traded in organized markets, especially ownership shares in privately-owned businesses, which are a major source of the wealth of some of the wealthiest Americans. Further, the principal source of wealth of most people, the value of their human capital (conceptually, the present value of their future earnings), is also unobservable.

Income and consumption are the two other competing measures of ability to pay tax. Economists define income as the sum of consumption plus net saving (changes in net worth). Income is equal to accruals from all sources, including labor earnings, transfer payments, and returns to capital investment.³ Alternatively, income in any year can be measured as the sum of consumption plus changes in net worth, the amount households can consume while leaving their wealth unchanged. Income is the sum of accruals over a year, while wealth is a stock of assets at any point in time. Many households have earnings and transfers, but little or no wealth, so income is a broader measure of household well-being than wealth. It is also a broader measure than consumption because it includes net saving.

Analyses of the distributional effects of tax policies typically use current income as the measure of ability to pay. Government agencies, including the Office of Tax Analysis in the US Treasury Department (OTA), the Congressional Budget Office (CBO), and the Joint Committee on Taxation (JCT), and private sector organizations, including the Urban-Brookings Tax Policy Center (TPC), the Tax Foundation, and the Penn-Wharton Budget Model, use current income both to measure ability to pay and to rank households into different groups.⁴

Most analyses define income more broadly than adjusted gross income (AGI) as reported on federal income tax returns, adding such items to AGI as tax-exempt interest income, tax-free fringe benefits, income accrued within qualified retirement saving plans, and government transfer payments that are excluded from AGI. For practical reasons, however, the measures usually exclude some forms of income, such as unrealized capital gains and net imputed rent on owner-occupied housing.

Some economists argue that current consumption is a better measure of *lifetime* ability to pay than *current* income because it more closely aligns with the sum of wealth plus the present

² The view that wealth is a good measure of the ability to pay tax, especially for very wealthy individuals, motivated proposals by 2020 Presidential candidates Elizabeth Warren and Bernie Sanders to impose an annual tax on high-wealth individuals and is one rationale for increasing estate and gift taxes (or imposing an inheritance tax) on large inter-generational wealth transfers.

³ Changes in net worth include accrued, but unrealized gains, which are a major component of the income of very high income individuals that escapes tax under current law due to the deferral of tax on these gains until realization and the permanent exemption of gains transferred at death or donated to charitable organizations.

⁴ In contrast, however, studies that examine the distributional effects of reforms to the Social Security system typically rank individuals by the present value of their lifetime earnings (assigning to them half of the combined earnings of themselves and their spouses in years they are married). See, for example, Smith et al. (2003/04).

value of lifetime earnings. According to this viewpoint, income is a flawed measure of lifetime ability to pay because it overstates the lifetime well-being of those with relatively high saving rates either because they consume more later in life or have higher earnings earlier in life (for example, see Bradford and U.S. Treasury Department, 1984). Others, however, have questioned whether lifetime consumption is necessarily a better measure of ability to pay than lifetime income if tax rates are graduated (Kleinbard, 2017), if tax law and/or individuals' family circumstances change over time (Graetz, 1997), or if individuals are unable to borrow from the prospect of future earnings to smooth consumption over their lifetime.

For the remainder of this chapter, I will follow the practice of estimating agencies and most commentators and use pre-tax income as the measure of household well-being that the corporate income tax affects.

1.1.2 Differences among households: sources and uses

Households differ based on their sources and uses of income. Sources refer to how people earn their income: from labor compensation (wages and fringe benefits), returns to capital (interest, dividends, capital gains, rental income, profits of small proprietors), and transfer payments (Social Security benefits and other cash or near-cash transfers, such as benefits from the Supplemental Nutrition Assistance Program). Uses of income refer to how people spend (consume) their income on various goods and services.

1.1.3 Sources, uses, and the distribution of income among income groups

Households' sources of income vary substantially among income groups. For example, compared with earnings, capital income is much more concentrated among upper income groups, while transfer payments are much more concentrated among lower income groups.

Consumption patterns also differ among income groups. For example, cigarette consumption represents a higher share of consumption for lower than for higher income households, while vacation travel represents a higher share of consumption for higher income households.

Almost all tax instruments affect households differently depending on their sources and uses of income. In practice, most distributional estimates reported by both governmental and private groups typically look only at how taxes affect the sources side, except that effects on uses of income are often included in analyses of sales and excise taxes.

1.2 Theory of Tax Incidence

Economic burden is not necessarily borne by the people who are legally responsible for remitting taxes to the government. Most taxes are imposed on economic transactions and either raise prices that buyers pay (thereby burdening them) or reduce prices that sellers receive (thereby burdening them) or a combination of both effects. The economic burden is therefore divided between the reduction in prices sellers receive and the increase in prices buyers pay from imposition of the tax, instead of depending on whether the seller or buyer is legally responsible for paying the tax.

In general, the price effects, and therefore the incidence of a tax, depend on whether it is relatively easier for the buyer or the seller to escape the tax by substituting other purchases or sales. It does not depend on whether the buyer or seller is legally responsible for payment. For example, most economists believe labor bears most of the burden of a general payroll tax because employers are more willing to hire fewer workers in response to the tax (perhaps by

substituting capital for labor in production) than workers are willing to forgo earnings by not working. In contrast, a payroll tax on wages in a single industry is more likely to be borne by the employer (or shifted to the consumers of the product) than by workers within that industry because employees will not accept lower net wages than they would receive for similar work in an untaxed industry. In either case, the party who bears the burden does not depend on whether the employee or the employer is legally responsible for remitting the tax.

Behavioral responses by consumers or producers can also result in changes in prices received and paid by consumers and producers not directly subject to the tax. For example, if the corporate income tax causes capital to shift out of the corporate sector, it will reduce returns to investors in non-corporate firms and, if it reduces total investment in the economy, it can reduce wages paid by both corporate and non-corporate firms because lower investment would reduce the productivity of workers in both sectors. These broader ('general equilibrium') effects need to be considered in any analysis of tax incidence.

2. HOW DOES ONE THINK ABOUT CORPORATE TAX INCIDENCE?

The corporate income tax is imposed on the profits of corporations organized under subchapter C of the Internal Revenue Code, generally referred to as C corporations. Flow-through entities such as subchapter S corporations, partnerships, limited liability companies (LLCs), and unincorporated sole proprietorships do not pay corporate income tax; instead, their income is allocated to their owners and is subject to personal income tax if the owners are individuals. C Corporations are a very small share of all business firms in the United States, but they account for a large share of business receipts because they include most of the largest firms. In 2015, C corporations accounted for about 60 percent of business receipts.⁵

2.1 Who Is Liable for the Corporate Income Tax?

As a tax on corporate profits, legal liability for payment of the corporate income tax falls on corporations and therefore indirectly on its owners: that is, the shareholders. In general, employees and bondholders are not liable to pay US corporate income tax because wages and interest payments are deductible in computing corporate profits.⁶ Owners of US businesses that are taxed as flow-through enterprises and foreign corporations without US-source income also do not pay US corporate income tax.

In a global context, the US corporate income tax is a hybrid between a territorial tax on profits earned within the United States and a worldwide tax at reduced rates on profits earned by US-resident corporations. As a territorial tax, the US corporate income tax is imposed at the same rates (currently a flat rate of 21 percent) on the profits of US and foreign-resident

⁵ See Internal Revenue Service, Statistics of Income, 'Integrated Business Data', Table 1, accessed 2 November 2022 at <https://www.irs.gov/statistics/soi-tax-stats-integrated-business-data>.

⁶ There are, however, some limits on deductibility of earnings and interest payments which make some wages and interest taxable at the corporate level. For example, corporations may not deduct executive salaries in excess of \$1 million per year and are subject to various limits on the amount of borrowing for which interest deductions are permitted.

corporations from investments in the United States and exempts normal returns (defined as 10 percent of the depreciated basis in tangible assets) that US-resident multinational corporations earn in foreign countries.⁷ As a worldwide tax, the US taxes some of the profits that US corporations earn outside the United States, generally at special rates and with the allowance of credits for income taxes paid to foreign governments. (The US international rules are described in Chapter 8.)

To the extent that the US corporate income tax is imposed either on foreign-resident corporations (through taxation of their US-source profits) or on US-resident corporations (through taxation of their domestic-source profits and some of their foreign-source profits), it affects all the corporations' shareholders, whether they are Americans or foreigners.

2.2 How Does One Think about the Economic Burden of the Tax?

To understand the incidence of the corporate income tax, it is useful to distinguish between two sources of corporate profits: normal returns to capital and economic rent.

2.2.1 Normal returns to equity capital

To attract and retain equity capital, corporations need to pay investors a high enough return, net of the corporate income tax, to induce them to hold corporate shares instead of other assets. This expected return must compensate them for forgone interest income and provide a risk-premium to reflect the fact that corporate equity returns are more variable than returns on high-grade corporate or government bonds. This 'risk-adjusted' normal return is the return corporations would earn in a competitive market with no barriers to entry or other special monopoly advantages.

2.2.2 Economic rents or 'excess returns'

These are returns on investment that exceed the amount needed to attract capital. Excess returns can go under various labels – economic profits, super-normal returns, or economic rents. I will use the term 'economic rents' in the remainder of this chapter. These rents may arise from a variety of sources including patents, unique know-how, superior organization and management, and brand name reputation, among others. They reflect unique advantages that certain corporations possess that cannot easily be replicated by their competitors.

To understand how the incidence of the corporate income tax is shared among corporate shareholders, other capital owners, workers, and consumers of corporate and non-corporate sector products, one has to answer three questions: (1) who bears the burden of the portion of the tax that applies to economic rent, (2) who bears the burden of the portion of the tax that applies to the normal return on capital, and (3) how are corporate profits divided between economic rents and normal returns? The next three sections of this chapter address these issues.

⁷ In practice both US and foreign multinationals can exploit opportunities to shift reported income from the United States to low-tax foreign countries. For a discussion of the techniques multinational corporations use to shift profits from intangible investments to low-tax foreign countries, see Kleinbard (2011). This income shifting erodes the base of a territorial tax.

3. WHAT IS THE INCIDENCE OF A TAX ON THE ECONOMIC RENT OF CORPORATIONS?

3.1 Sources of Economic Rent

Economic rent may come from the possession of unique physical assets, such as control of natural resources, or from government-sanctioned monopolies (such as many utility companies), but it is generally a result of the return from intangible assets that are unique to the firm. These intangible assets include patents, trademarks, and brand name reputation. They may also be a result of institutional know-how that other firms cannot easily replicate or superior internal management and organization. Because these unique assets are fixed in supply in the short and medium term, any tax on the economic rents they generate is borne by the company and its stakeholders and cannot be shifted to other agents.

The portion of the US capital stock attributable to intangible assets has been rising over time, as the dominant firms in the economy have increasingly consisted of firms in research-intensive sectors, such as information technology and pharmaceuticals, instead of firms engaged in traditional heavy manufacturing, such as automobile and steel companies. But even firms in low tech activities, such as selling hamburgers (e.g., McDonalds) or coffee (e.g., Starbucks) can possess significant intangible capital in the form of brand name reputation and a large global network of retailers with access to an efficient supply chain.

In part, the economic rent earned by today's leading corporations represents a return to past entrepreneurial activities and may dissipate over time if these firms do not continue to innovate and are overtaken by new competitors. So, it is probably an overstatement to claim that the corporate income tax has no effect in the long run on the supply of assets that generate economic rent in the near and medium term.⁸ Nonetheless, this discussion will follow the usual assumption that, at least for a considerable time, the assets that generate economic rent are fixed and taxing their returns does not change behavior. The question then becomes one of determining who receives economic rents from corporate share ownership and therefore who would bear a burden if those rents were reduced.

3.2 Who Bears the Tax on Economic Rent?

The traditional approach to the incidence of a tax on economic rent follows legal liability and assumes that shareholders bear the burden of the corporate income tax in the form of lower after-tax profits. The estimating groups that explicitly allocate a portion of the corporate income tax to economic rent (OTA and TPC) therefore assume this component of the corporate income tax burden is fully borne by current shareholders. But that leaves us with three questions: (1) do other stakeholders also bear a portion of the tax on rent? and (2) can a tax on economic rent shift some burden to labor by causing corporate investment to move overseas? and (3) even if shareholders bear the tax, who are they?

⁸ Toder (2020) argues that the corporate income tax may affect the return to entrepreneurial activities by lowering the market value of the companies they create and may in that way reduce the supply of entrepreneurial activity. But there are offsetting provisions in the tax law that favor entrepreneurs, in particular preferential treatment of capital gains.

3.2.1 Do other stakeholders pay some of the tax on economic rent?

The traditional approach to the incidence of a tax on economic rent assumes that shareholders bear the burden of the corporate income tax in the form of lower after-tax profits. The estimating groups that explicitly allocate a portion of the corporate income tax to economic rent (OTA and TPC) therefore assume this component of the corporate income tax burden is fully borne by current shareholders.

A recent paper by Gale and Thorpe (2022), however, reviews a considerable body of research findings that suggest that shareholders are not the only stakeholders who may benefit when corporations earn economic rents. Notably, workers in highly profitable firms earn higher wages (Krueger and Summers, 1988) and the connection between profitability and wages is stronger in countries like Germany with high levels of unionization (Fuest et al., 2018). There is especially strong evidence that top management officials and other highly compensated employees earn more in profitable firms (Dobridge et al., 2021; Furman and Orszag, 2018; Ohrn, 2022; Stansbury and Summers, 2020), in part reflecting incentive-based compensation and the use of stock options. Firms facing imperfect competition may also share some of their profits with workers (Liu and Altshuler, 2015). In effect, there is a form of rent-sharing that goes beyond shareholders to include other stakeholders.

This evidence suggests there may be a reason to modify the assumption in distributional analyses that shareholders pay 100 percent of the portion of the tax that falls on economic rent. Gale and Thorpe consider alternative ways workers, especially those that are highly compensated, may share in the benefit of economic rent and therefore in the burden of the corporate income tax. They find that the corporate income tax remains highly progressive under the most likely alternative assumptions about rent-sharing.

3.2.2 Will some corporate investment move overseas in response to a tax on economic rent?

A tax on economic rent of US corporations will induce them to hold more intangible assets in their controlled foreign affiliates in low-tax countries. This reallocation of intangible assets and taxable profits to low-tax jurisdictions does not necessarily mean that more real assets will move overseas. US companies may, for example, book a substantial amount of profits in low-tax locations such as Bermuda and the Cayman Islands where they have very little physical investment or employment. However, to the extent there is any positive correlation between the location of intellectual property and the location of real investment, a shift of rent-generating assets overseas to reduce tax liability could also lead to less domestic investment and lower US wages. In section 4, below, we discuss at greater length the more direct effect on the location of investment and wages resulting from the portion of the tax that falls on the normal return to capital.

3.2.3 Who are corporate shareholders?

Rosenthal and Austin (2016) show that direct individual ownership by domestic individuals accounts for less than 25 percent of corporate share ownership.⁹ For these shareholders, the common practice among estimators is to allocate their burden from the corporate income tax

⁹ See also Burman et al. (2017).

in proportion to their receipt of dividends and capital gains. These forms of income are highly concentrated among upper income taxpayers.

But what about the other 75 percent of share ownership? Approximately half of these other shares are held indirectly by individual investors through qualified defined-contribution retirement plans or through the value of their future entitlement to retirement income from employer sponsored defined benefit plans. The investment income earned within these plans is not reported on individual income tax returns and must be imputed based on survey data, such as those reported in the Federal Reserve Board's Survey of Consumer Finances. Ownership of assets in retirement saving plans are also concentrated among high income individuals, but to a lesser extent than individual shares in corporate equity. The ratio of income from retirement plan assets to total income is largest in the top quintile of the income distribution, but below the top 1 percent.

The two remaining groups of corporate shareholders are tax-exempt investors, such as endowments of non-profit universities, and foreign investors. The question of how to treat the burden of the corporate income tax borne by these two groups is challenging.

In principle, the corporate tax burden borne by non-profits should be allocated to the beneficiaries of their activities. In practice, estimating agencies allocate this proportion of the benefits received by non-profits among individual taxpayers in the same proportion on average that they allocate other benefits of corporate share ownership among individuals. This is clearly unsatisfying, but no research exists to date that would inform how to allocate this benefit in a different manner.

The treatment of foreign investors (who account for slightly over 25 percent of US corporate share holdings) is a problem of a different nature. Except for the Joint Committee on Taxation (JCT), government agencies and private estimators also allocate foreign investors' shares of the corporate tax burden in proportion to their allocation of the burden to other investors.

The JCT, in contrast, simply exempts the portion borne by foreign investors from the overall burden US individuals bear from the US corporate income tax. While the JCT assumption seems intuitively correct, it may lead to an understatement of the total tax burden American shareholders bear because neither JCT nor any other estimating group counts the burden these shareholders may bear from foreign corporate income taxes. As of now, however, the question of how to treat cross-border shareholdings in incidence analysis is one that has not been carefully examined.¹⁰

The use of portfolio share ownership of US companies by foreign investors may substantially understate the share of US corporate income tax that foreign owners bear. Recall that the US corporate income tax is imposed on US profits of both US-resident corporations and US affiliates of foreign-resident corporations. It is likely that foreign individuals own a much larger share of foreign-resident corporations than their ownership share of US-resident corporations suggests. Making this correction, Rosenthal (2017) suggests that foreign shareholders

¹⁰ Some reviewers of this chapter pointed out that incidence analysis typically only looks at the effects of US taxes, holding foreign taxes fixed, because the US government only controls US tax laws. While that point is correct, it is also true that there are substantial interdependencies among corporate tax laws in different countries, and other countries for competitive reasons are likely to react to any substantial changes in US tax laws. For this reason, this author believes more thought should be given to analysis of the effects of corporate taxation as a global system, in which the US rules play a significant, but not wholly determining, part.

could own up to 35 percent of the shares of corporations subject to the US corporate income tax.

3.3 Concluding Remarks on the Tax on Economic Rent of Corporations

Determining the incidence of the portion of the corporate income tax that falls on economic rent is easier than determining the incidence of the portion that falls on normal returns because corporate stakeholders bear the entire burden of the tax on economic rent. But it is still not a simple question. In addition to shareholders, top management or, in unionized firms, a broader share of employees, may capture part of the economic rent and bear part of the burden of the tax on rent. And even if shareholders receive all the benefit, determining which individuals benefit from share ownership is challenging because individuals hold directly less than 25 percent of shares issued by US corporations. And determining how to assign the burden from share ownership by non-profit institutions and foreign investors is especially challenging.

4. WHAT IS THE INCIDENCE OF A TAX ON NORMAL RETURNS OF CORPORATIONS?

The harder question is who bears the burden of the portion of the corporate income tax that falls on the risk-adjusted normal returns to corporate equity.

The starting point for this analysis is that investors will not accept a lower return on corporate equity than on other financial and real assets. Therefore, a tax that lowers corporate equity returns will induce investors to shift out of corporate equity and into other assets, thereby affecting the after-tax income of other investors and workers. I first discuss these effects in the context of a closed economy and then examine the effects of international capital movements.

4.1 What Is the Incidence of the Corporate Income Tax in a Closed Economy?

Much of the early analysis of the incidence of the corporate income tax was based on an article by Harberger (1962) on the incidence of the corporate income tax in a closed economy. It is a great tribute to Professor Harberger that after 60 years his paper is still cited in discussions of the incidence of the corporate income tax, even though his conclusions have long since been substantially modified, even by himself.

Harberger's model assumed two industries in a competitive economy – one composed of corporate firms and the other of non-corporate firms. He assumed that total supplies of labor and capital in the economy were fixed, but also assumed perfect mobility of labor and capital between the two sectors that led after-tax wages and capital returns to be the same in both. He also assumed no international movement of either labor or capital.

Harberger then estimated the incidence of the corporate income tax, using alternative assumptions about the degree of substitutability to consumers between corporate and non-corporate sector products and the degree of substitutability to firms between labor and capital as productive inputs in each sector. Using reasonable assumptions about these parameters, he found that between 90 and 120 percent of the corporate income tax was paid by capital owners generally. Based on this finding, future modelers for many years assumed

that 100 percent of the corporate income tax was paid by capital owners generally, not just shareholders.¹¹

Harberger's analysis also implies that the corporate income tax raises the cost of capital in the corporate sector and reduces it in the non-corporate sector. As a result, capital shifts from the corporate to the non-corporate sector, raising per-unit production costs, and therefore prices to consumers, in the corporate sector and reducing per-unit costs and consumer prices in the non-corporate sector. This change hurts individuals who consume a relatively large share of corporate sector products and benefits individuals who consume a relatively large share of non-corporate products. These potential 'uses side' effects have not been addressed in estimates of corporate tax incidence in distributional analyses of tax bills, probably because analysts have little data on relative consumption shares as between corporate and non-corporate products by households in different income groups.

4.2 How Does Assuming an Open Economy Change the Analysis?

Harberger's closed-economy assumption became increasingly counter-factual over time with the growth of globalization and multinational enterprises. Recent analyses have therefore assumed an open economy.

We can represent the portion of the corporate income tax that falls on normal returns as largely a territorial tax on profits earned from capital in the United States because the US tax law currently exempts the normal return on physical assets in foreign countries (assuming the normal yield is 10 percent). In this case, the US corporate income tax would cause investors to shift funds to capital overseas, which does not bear US corporate income tax.

If the United States were a small open economy whose investors' behavior did not affect global returns to capital, the corporate income tax would raise the required pre-tax return to corporate investment in the United States, instead of reducing the after-tax yield received by US savers. This would occur because both US and foreign savers would be unwilling to accept a lower after-tax return on US than on foreign assets and therefore would shift their savings overseas until the return in the US increased enough to restore parity between US and foreign assets. The resulting increase in the cost of capital in the United States would reduce domestic investment, thereby shifting the tax burden to less mobile factors, such as labor and land. But, as the US is better represented as a large open economy, taxes that reduce returns

¹¹ Harberger's analysis had numerous limitations, aside from the assumptions of perfect competition and no economic rents. He assumed the total supplies of labor and capital in the economy were totally unresponsive to changes in after-tax wages and after-tax returns on investment, so the tax had no effect on total investment, economy-wide work effort, or economic growth. He assumed perfect mobility between sectors, even though different categories of employment and assets are not perfect substitutes and therefore after-tax wages and capital returns do differ among firms and industries and capital returns differ among types of financial assets. He assumed that industries are either all corporate or all non-corporate, although many industries have a mix of both C corporations and other firms (see J.G. Gravelle and Kotlikoff, 1989). And he had a simplistic view of the taxation of corporate sector income, ignoring preferences for capital gains (and later, dividends), the different tax rules for corporate debt and equity income, and the effects of the combination of graduated rates and selective preferences on portfolio choices by individual investors. Finally, Harberger's 1962 paper assumed no international capital flows, the effects of which we discuss in the next section below.

on US capital will also reduce the worldwide rate of return, so US capital owners would still bear some portion of the tax.¹²

4.2.1 General equilibrium analyses of the incidence of the US corporate income tax in an open economy

Starting with the assumption of perfect competition and no economic rents, research using general equilibrium analysis has examined the incidence of the US corporate income tax in a global economy. An early study by Randolph (2006) found that with perfect mobility of capital, no international mobility of labor, and perfect substitution in consumption between domestic and foreign-made goods, US capital bore 30 percent of the US corporate income tax and US labor 70 percent. This reflected the fact that the United States accounted for about 30 percent of the global capital stock. By inducing a shift in capital from the US to foreign countries, the corporate income tax reduced labor productivity and wages in the United States, but increased labor productivity and wages overseas. As a result, the US corporate income tax benefited foreign workers (and in a similar manner, reduced returns to foreign capital owners).

In response, J.G. Gravelle and Smetters (2006) adopted more realistic assumptions about the substitutability between foreign and domestic investment and the substitutability in consumption between foreign and domestically produced goods. They concluded that capital still bore most of the burden of the corporate income tax. Reviewing these and subsequent general equilibrium analyses, J.C. Gravelle (2013) examined the effects of alternative behavioral assumptions and concluded that the evidence from simulation models suggested that capital bore about 60 percent and labor about 40 percent of the tax.

Several other factors (see Clausing, 2013) may increase the share of the tax borne by US owners of capital, including debt-equity substitutability, global residence aspects of the US corporate income tax, and long-term versus transitional analysis.

- If investors regard debt instruments of different companies as closer substitutes than corporate equity issued by different firms, then the US corporate income tax, by raising the cost of corporate equity in the United States, may cause firms to substitute debt for equity finance. This would lead to an inflow of debt finance to the United States, offsetting some of the adverse effects on US corporate investment of a higher US corporate income tax.
- If the US corporate income tax is in part based on the residence or the corporation, and most equity issued by US-resident corporations is held by US investors, then the tax will cause a smaller shift of capital overseas than if the tax were totally source-based. US investors would then bear more of the burden.
- In the short run, before capital stocks can change, the portion of the tax borne by US capital owners will be larger than in the long run and could approach 100 percent.

Cross-border ownership of corporate equity investments can also complicate the incidence story. If the tax causes after-tax returns on corporate equity investments in the US to decline, foreign investors who own shares in US investments will bear some of that cost. By a similar logic, US investors will bear some share of the burden of US corporate income taxes in the form of lower after-tax yields on foreign investments.

¹² This line of thinking led Harberger (2008) to alter his previous view and conclude instead that the US corporate income tax was mostly paid by labor, not capital.

Based on these considerations and acknowledging the wide range of estimates and uncertainty about findings, both OTA and TPC assume that 50 percent of the burden of the corporate income tax on normal returns is borne by capital income and 50 percent by labor income.

5. HOW MUCH OF THE CORPORATE TAX FALLS ON ECONOMIC RENT?

In the previous sections, we have discussed the incidence of the taxation of economic rent and the taxation of normal returns to corporations. The general results suggest that capital bears a larger share of the portion of the tax that falls on rents than of the portion that falls on normal returns. But what shares of corporate income tax fall on each source of corporate profits?

If capital expenditures can be deducted immediately (expensing) and if the corporate income tax rate is unchanged over time, there is no tax at the margin on the normal return to investment. Assume, for example, a corporate investment of K dollars yields a profit, net of the annual decline in the value of the asset, of R dollars per year. The pre-tax rate of return is R/K . If the investment can be expensed, its net cost is $K(1-t)$, where t is the corporate tax rate. The profits tax will reduce the annual return to $R(1-t)$. The after-tax return is then equal to $R(1-t)/K(1-t)$, or simply R/K , the same as the pre-tax return. This relationship holds even if the firms earn a very high profit rate, such that $R > i$, where i is the normal yield on investment.

In effect, with expensing the government becomes a silent partner in the investment, putting up a share of the capital and then capturing the same share of the return. If the investment earns a normal return, the present value of government revenue is zero.

If investment opportunities that yield a return equal to R are unlimited, the firm suffers no harm from a tax with expensing because it can simply scale up its investment to earn the same total profit. But if the firm can earn a large return of R on only a finite quantity of investments, then the government becomes an unwanted partner in the firm, capturing some of the scarce excess returns that the firm's investors would otherwise receive. And because the yield on those investments exceeds the discount rate (the return on alternative investments), the present value of government revenue would be positive.

Exploiting this principle, economists have tried to estimate how much of the corporate income tax base would remain if corporate investments were expensed. With expensing, only the economic rent is taxable. So, the ratio of hypothetical revenue with expensing to revenue with current law capital recovery rules can serve as a measure of the share of corporate tax receipts that represent a tax on economic rent.

Earlier studies using variants of this methodology and other approaches that compare corporate yields with a hypothetical normal return estimated that economic rent accounted for between 60 and 70 percent of taxable profits (Gentry and Hubbard, 1997; Gordon et al., 2004; Toder and Rueben, 2007). Based on their interpretation of this research, OTA has assumed that 63 percent of corporate income tax receipts fall on economic rents, while TPC has used a 60 percent figure. More recent research by Power and Frerick (2016) and Fox (2020), however, suggests that the share of profits attributable to economic rent may be even higher – perhaps in the 80 to 85 percent range.

Four factors account for the increase over time in the share of corporate income tax receipts attributable to economic rent. First, the share of intangible assets in the US capital stock has increased. Second, the enactment of more generous rules of capital recovery over time – the

modified accelerated cost recovery system (MACRS) for machinery and equipment and, in many years, full or partial immediate expensing (bonus depreciation) has reduced the share of the normal return to investment that is taxable. Third, the shift of ownership of structures (especially commercial real estate) from C corporations to partnerships and LLCs has reduced the share of corporate capital with long tax depreciation lives and therefore a high ratio of taxable normal returns to taxable profits. Finally, low real interest rates and inflation rates in recent years have also reduced the (nominal) normal return to investment.

Two major developments in the economy in the past few decades – globalization and the increased importance of intangible capital – have altered views on the incidence of the corporate income tax in opposite directions. Recognition of increases in capital mobility led analysts to assign more of the burden of the corporate income tax to labor instead of capital, compared to earlier views. But recognition of the increased importance of economic rent as a share of capital returns has caused views to shift in the opposite direction, with more of the burden assigned to capital income and, within capital income, to corporate shareholders.

6. WHAT ARE THE IMPLICATIONS FOR THE DISTRIBUTION OF THE TAX BURDEN AMONG INCOME GROUPS?

Previous sections have discussed how the burden of the corporate income tax is shared among corporate shareholders, other recipients of investment income, and workers. There is considerable uncertainty about details and views on corporate tax incidence continue to evolve. Nonetheless, most professional opinion now leans to the view that capital owners bear most of the burden from the tax.¹³

6.1 Practices of Estimating Agencies

Both government and private sector estimators assign large shares of the corporate income tax burden to recipients of capital income. Although their methodologies and assumptions differ to some degree, CBO, JCT, OTA, and TPC all assign between 75 and 81 percent of the burden of the corporate income tax to recipients of capital income and between 18 and 25 percent to recipients of labor income (Table 4.1).

¹³ A dissenting view that the corporate income tax significantly reduces wages is based on a statistical analysis of cross-country and time series data by Hassett and Mathur (2006). Their findings had the seemingly implausible implication that workers bore more than 200 percent of the corporate tax burden and was used to justify a prediction that the corporate tax reforms in the Tax Cuts and Jobs Act of 2017 would increase wages for the average household by \$4,000 (Council of Economic Advisers, 2017). Clausing (2013), however, performs statistical analysis using a variety of alternative specifications and finds that most specifications fail to find any effect of corporate tax rate cuts on wages. The evidence also suggests that the Tax Cuts and Jobs Act did not increase average wages by anything close to \$4,000.

Table 4.1 How do estimating agencies distribute the burden of the corporate income tax among factors of production

Share of Total Corporate Tax Burden	Congressional Budget Office (CBO)	Joint Committee on Taxation (JCT)	Office of Tax Analysis, US Treasury (OTA)	Urban-Brookings Tax Policy Center (TPC)
Burden on Labor Income from Taxation of Normal Return	(1)	(1)	18%	20%
Burden on Capital Income from Taxation of Normal Return	(1)	(1)	18%	20%
Burden on Capital Income from Taxation of Economic Rent	(1)	(1)	63% (2)	60% (2)
Total Burden on Labor Income	25%	25%	18%	20%
Total Burden on Capital Income	75%	75% (3)	81%	80%
Other	0	0	1% (4)	0

Notes:

(1) CBO and JCT do not divide burdens between those attributable to normal returns and those attributable to economic rent.

(2) OTA and TPC attribute all of the burden on economic rent to current corporate shareholders.

(3) JCT attributes 20.6 percent of the burden of the corporate tax on owners of US capital assets to foreign shareholders and therefore does not distribute that portion to US households.

(4) OTA attributes 1 percent of corporate receipts as a return from previously expensed investments, which it does not treat as a burden to any households.

Sources: Congressional Budget Office (2019), 'Projected Changes in the Distribution of Household Income, 2016 to 2021', Report, Congressional Budget Office, Washington, DC.; Cronin, Julie-Anne (2022), 'U.S. Treasury Distributional Analysis Methodology', Technical Paper 8, Office of Tax Analysis, U.S. Department of the Treasury, May; Joint Committee on Taxation (2013), 'Modeling the Distribution of Taxes on Business Income', JCX-14-13, 16 October; Nunns, James R. (2012), 'How TPC Distributes the Corporate Income Tax', Urban-Brookings Tax Policy Center, accessed 2 November 2022 at <https://www.taxpolicycenter.org/publications/how-tpc-distributes-corporate-income-tax>.

OTA and TPC explicitly distinguish between the portions of the tax attributable to normal returns and economic rent, but CBO and JCT do not. As a result, OTA and TPC, but not CBO and JCT, estimate different distributional effects for changes that affect tax burdens on normal returns alone (such as a change in depreciation rules) than for changes that affect both normal returns and economic rents (tax rate changes). For example, OTA and TPC would allocate 50 percent of the benefit of bonus depreciation to capital owners and 50 percent to workers – a much larger share to workers than their share of the total burden of the tax (18–20 percent).

Other estimating groups (not shown in the table) use similar assumptions. For example, PWBM (Penn-Wharton Budget model, 2020) also assumes that 75 percent of the burden falls on capital income and 25 percent on labor income.¹⁴ The Tax Foundation assumes the

¹⁴ See footnote to Table 2 in Penn-Wharton Budget Model, 'The Biden Platform', 14 September 2020 ('When distributing the corporate income tax to households, we assume that 75 percent of the tax falls on capital owners and 25 percent falls on workers in the form of lower wages over time. These lower wages and lower investment returns are included in the "effective tax rate" measure shown above')

long-run burden of the corporate income tax is divided equally between capital income and labor income (Li and Pomerleau, 2018).

6.2 Distributional Burden of the Corporate Income Tax by Income Group (Tax Policy Center)

Based on simulations using the Tax Policy Center Microsimulation Model, the incidence of the corporate income is progressive under a broad range of assumptions, but the incidence is more progressive if a larger share of the burden is assigned to shareholders (Table 4.2).

Table 4.2 Distribution of corporate income tax: Tax Policy Center

Expanded Cash Income Group (1)	Share of Income	Economic Rent (100% Shareholders)	Normal Returns (50% Labor; 50% all Capital)	Baseline Burden (60% Shareholders, 20% all Capital, 20% Labor)
Bottom Quintile	4.0%	1.1%	2.2%	1.6%
Second Quintile	8.2%	3.4%	5.9%	4.4%
Third Quintile	14.2%	7.1%	11.3%	8.7%
Fourth quintile	20.3%	12.7%	17.8%	14.7%
80–90th Percentiles	13.9%	10.4%	13.3%	11.6%
90–95th Percentiles	9.8%	8.8%	9.9%	9.3%
95–99th Percentiles	13.0%	14.4%	14.4%	14.4%
Top 1 Percent	16.7%	41.4%	24.3%	34.5%
TOP QUINTILE	53.4%	75.0%	61.9%	69.8%

Notes:

(1) For a description of expanded cash income, see <http://www.taxpolicycenter.org/TaxModel/income.cfm> (accessed 2 November 2022).

(2) Tax units with negative AGI are excluded from their respective income classes, but are included in the totals. Tax units include both filing and non-filing units, but exclude those which are dependents of other tax units.

Source: Simulations using Urban-Brookings Tax Policy Center Microsimulation Model (Version 0722-1). Jeffrey Rohaly of TPC provided the estimates used for this table.

If the entire burden is assigned to shareholders (either because 100 percent of returns are attributable to economic rent or because the burden is based on the immediate impact of changing corporate tax rules before any adjustments), then the top quintile of tax units with 53 percent of expanded cash income bears 75 percent of the burden of the corporate income tax. The top 1 percent of tax units with 17 percent of income bears 41 percent of the burden. If 50 percent of the burden is borne by labor and 50 percent by capital (the assumptions of long-run burden by TPC and OTA if 100 percent of the tax is on normal returns), then the top quintile bears about 62 percent of the burden and the top 1 percent about 24 percent. Under the TPC assumption for the baseline corporate income tax, with 60 percent of profits attributable to economic rent and 40 percent to normal returns, the top quintile bears about 70 percent and the top 1 percent about 35 percent of the corporate tax burden.

accessed 2 November 2022 at <https://budgetmodel.wharton.upenn.edu/estimates/2020/9/14/the-biden-platform>.

7. CONCLUSIONS

Corporate tax incidence is a complicated subject and views on who bears the burden of corporate income taxes have evolved over the past decades. There is universal agreement among tax scholars that individual households ultimately bear the burden of the tax, but how that burden varies among households with different sources of income, different patterns of spending, and different levels of income are still not fully settled.

Changes in viewpoints among tax scholars reflect both new analytical approaches and changes in the domestic and global economy over the past few decades. The increased international mobility of capital over the past few decades has increased the share of the burden analysts assign to labor income. But the growth in the share of corporate investment in the form of intangible capital has increased the share of profits analysts attribute to economic rent, thereby increasing the share of the tax burden assigned to corporate shareholders and perhaps to other influential stakeholders, such as top corporate management.

Some questions that affect relative shares of incidence among groups remain unresolved. There is little understanding on how the portion of the tax paid by non-profit institutions holding corporate shares should be allocated among households at different income levels or on how changes in relative prices among industries resulting from the tax may affect household income groups with different patterns of spending. There has also been insufficient analysis of the potential international spillover effects of global corporate income taxes, with foreign owners of US investments bearing some of the burden of the US corporate income tax and US holders of foreign assets arguably bearing some of the burden of other countries' responses to changes in US corporate income taxes.

Notwithstanding all these qualifications, we can still conclude that the corporate income tax is a highly progressive source of revenue. The exact degree of progressivity matters for how one estimates the net effects of wide-ranging tax bills with many offsetting provisions. And the specific way corporate revenues are increased affects how progressive the change may be, with raising revenues through an increase in rates likely to be more progressive than raising revenues through making capital recovery provisions less generous. Even so, it is reasonably clear that corporate income tax increases will burden upper income households more as a share of their income than other households and corporate income tax reductions will disproportionately benefit upper income households.

REFERENCES

- Auerbach, A.J. (2006), 'Who Bears the Corporate Tax? A Review of What We Know' 20 *Tax Policy and the Economy*: 1–40.
- Auerbach, A.J. (2018), 'Measuring the Effects of Corporate Tax Cuts' 32(4) *Journal of Economic Perspectives*: 97–120.
- Bradford, D.F. and the U.S. Treasury Tax Policy Staff (1984), *Blueprints for Basic Tax Reform*, Arlington, VA: Tax Analysts.
- Burman, L.E., K.A. Clausing, and L. Austin (2017), 'Is U.S. Corporate Income Double-Taxed' 70(3) *National Tax Journal*: 675–706.
- Clausing, K.A. (2013), 'Who Pays the Corporate Tax in a Global Economy?' 66(1) *National Tax Journal*: 151–84.
- Congressional Budget Office (2019), 'Projected Changes in the Distribution of Household Income, 2016 to 2021', Report, Congressional Budget Office, Washington, DC.

- Council of Economic Advisers (2017), 'The Growth Effects of Corporate Tax Reform and Implications for Wages', October.
- Cronin, J.-A. (2022), 'U.S. Treasury Distributional Analysis Methodology', Technical Paper 8, Office of Tax Analysis, U.S. Department of the Treasury, May.
- Dobridge, C., P. Landefeld, and J. Mortenson (2021), 'Corporate Taxes and the Earnings Distribution: Effects of the Domestic Production Activities Deduction', Finance and Economics Discussion Series 2021-081, Board of Governors of the Federal Reserve System.
- Fox, E. (2020), 'Does Capital Bear the U.S. Corporate Tax after All? New Evidence from Corporate Tax Returns' 17(1) *Journal of Empirical Legal Studies*: 71–115.
- Fuest, C., A. Peichl, and S. Siegloch (2018), 'Do Higher Corporate Taxes Reduce Wages? Micro Evidence from Germany' 108(2) *American Economic Review*: 393–418.
- Furman, J. and P. Orszag (2018), 'A Firm Level Perspective on the Role of Rents in the Rise in Inequality' in M. Guzman, ed., *Towards a Just Society: Joseph Stiglitz and Twenty-First Century Economics*, New York: Columbia University Press: 19–47.
- Gale, W.G. and S.I. Thorpe (2022), 'Rethinking the Corporate Income Tax: The Role of Rent Sharing', Urban-Brookings Tax Policy Center, 10 May.
- Gentry, W.M. and R.G. Hubbard (1997), 'Distributional Implications of Introducing a Broad-Based Consumption Tax' 11 *Tax Policy and the Economy*: 1–47.
- Gordon, R., L. Kalambokidis, and J. Slemrod (2004), 'Do We Now Collect Any Revenue from Taxing Capital Income?' 88(5) *Journal of Public Economics*: 981–1009.
- Graetz, M.J. (1997), *The Decline (and Fall?) of the Income Tax: How to Make Sense of the American Tax Mess and the Flat Tax Cures that are Supposed to Fix It*, New York: W.W. Norton and Company.
- Gravelle, J.C. (2013), 'Corporate Tax Incidence: Review of General Equilibrium Estimates and Analysis' 66(1) *National Tax Journal*: 185–214.
- Gravelle, J.G. and L.J. Kotlikoff (1989), 'The Incidence and Efficiency Costs of Corporate Taxation When Corporate and Noncorporate Firms Produce the Same Good' 97(4) *Journal of Political Economy*: 749–80.
- Gravelle, J.G. and K.A. Smetters (2006), 'Does the Open Economy Assumption Really Mean that Labor Bears the Burden of a Capital Income Tax?' 6(1) *Advances in Economic Policy and Analysis*.
- Harberger, A.C. (1962), 'The Incidence of the Corporate Income Tax' 70(3) *Journal of Political Economy*: 215–40.
- Harberger, A.C. (2008), 'Corporate Tax Incidence: Reflections on What Is Known, Unknown, and Unknowable' in J.W. Diamond and G.R. Zodrow, eds, *Fundamental Tax Reform: Issues, Choices, and Implications*, Cambridge, MA: MIT Press: 283–307.
- Hassett, K. and A. Mathur (2006), 'Taxes and Wages', AEI Working Paper #128, American Enterprise Institute, June.
- Joint Committee on Taxation (2013), 'Modeling the Distribution of Taxes on Business Income', JCX-14-13, 16 October.
- Kleinbard, E.D. (2011), 'The Lessons of Stateless Income' 65 *Tax Law Review*: 99–172.
- Kleinbard, E.D. (2017), 'Capital Taxation in an Age of Inequality' 90 *Southern California Law Review*: 593–682.
- Krueger, A.B. and L.H. Summers (1988), 'Efficiency Wages and the Inter-Industry Wage Structure' 59(2) *Econometrica*: 259–93.
- Li, H. and K. Pomerleau (2018), 'The Distributional Impact of the Tax Cuts and Jobs Act over the Next Decade', Tax Foundation, Washington, DC.
- Liu, L. and R. Altshuler (2015), 'Measuring the Burden of the Corporate Income Tax under Imperfect Competition' 66(1) *National Tax Journal* 215–238.
- Nunns, J.R. (2012), 'How TPC Distributes the Corporate Income Tax', Urban-Brookings Tax Policy Center, 13 September.
- Ohrn, E. (2022), 'Corporate Tax Breaks and Executive Compensation', Working Paper, Grinnell College.
- Penn-Wharton Budget Model (2020), 'The Biden Platform' (14 September): footnote to Table 2, accessed 2 November 2022 at <https://budgetmodel.wharton.upenn.edu/estimates/2020/9/14/the-biden-platform>.
- Power, L. and A. Frerick (2016), 'Have Excess Returns to Corporations been Increasing over Time?' 69(4) *National Tax Journal*: 831–845.

- Randolph, W.C. (2006), 'International Burdens of the Corporate Income Tax', Congressional Budget Office, Washington, DC.
- Rosenthal, S.M. (2017), 'Slashing Corporate Taxes: Foreign Investors Are Surprise Winners' 157(4) *Tax Notes*: 559–64.
- Rosenthal, S.M. and L.S. Austin (2016), 'The Dwindling Taxable Share of U.S. Corporate Stock' 151(May) *Tax Notes*: 923–34.
- Smith, K.E., E.J. Toder, and H.M. Iams (2003), 'Lifetime Distributional Effects of Social Security Retirement Benefits' 65(1) *Social Security Bulletin*: 33–61.
- Stansbury, A. and L.H. Summers (2020), 'The Declining Worker Power Hypothesis: An Explanation for the Recent Evolution of the American Economy', *Brookings Papers on Economic Activity*: 1–96.
- Toder, E. (2020), 'Does the Federal Income Tax Law Favor Entrepreneurs?' 73(4) *National Tax Journal*: 1219–32.
- Toder, E. and K. Rueben (2007), 'Should We Eliminate Taxation of Capital Income?' in H.J. Aaron, L.E. Burman, and C.E. Steuerle, eds, *Taxing Capital Income*, Washington, DC: Urban Institute Press: 89–141.