1 Introduction

The aim of this Element is to provide an overview of the role of the corporate tax within a country's overall tax system. While there is a large existing literature on the optimal design of the personal income tax, guidelines for the choice of tax base and tax rate for the corporate tax have been remarkably limited.

A common feature of most of the past papers that do exist on this topic is the simplifying decision to examine the corporate tax in isolation from other taxes, except perhaps for a lump-sum tax. Another common simplification is the presumption that the corporate tax base is simply the normal return to capital invested in the corporate sector. The ensuing results concerning optimal corporate tax rates have been highly diverse and very different from the patterns seen in practice.

Probably the most cited paper in this past literature is Harberger (1962). Under the above assumptions and, in addition, assuming that the overall supply of capital is inelastic, Harberger (1962) analyzed the effects of a corporate tax on market allocations in a closed economy. There are clear efficiency costs from such a tax, artificially shifting capital from the corporate to the noncorporate sector. Under these conditions, the incidence of the tax seems to fall largely on existing capital. If the tax were the only alternative to a lump-sum tax, then there would be a potential role for the tax, trading off possible equity gains with these efficiency losses.

Harberger (1982) reexamines this conclusion in an open economy that is small relative to the world capital market. Here, the optimal tariff on imports of capital is zero on efficiency grounds. However, the tax again may create some equity gains due to the resulting fall in market wage rates, with government revenue coming more from high-skilled than from low-skilled workers, unlike with a lump-sum tax.

One challenge faced in this particular literature is that the observed pretax net (of depreciation) corporate profit rate (equal on average to around 10–12 percent per year) is much higher than what the stylized models above would forecast, given observed annual real interest rates of around 1–2 percent. The past literature has explored the implications of various explanations for this high observed corporate profit rate. Mintz (1996), for example, argues that this high corporate profit rate in part represents "rents" accruing to firms. If the amount of these rents is unresponsive to taxes, then the optimal tax rate would be 100 percent, raising revenue free of efficiency costs and arguably with equity gains, while avoiding distorting capital investments through the use of expensing.[1]

[1] Even if these rents are fixed ex post, anticipations of the future imposition of such a tax can change behavior (e.g. the amount of entrepreneurial activity), leading to a "time inconsistency" problem.

Another possible explanation for these excess profits is a risk premium, compensating investors for market risk when they invest in corporate equity. As long as firms are publicly traded, and equity markets function well, then Diamond (1967) argues that a tax on these profits, with revenue returned as a lump-sum to taxpayers,[2] would have no net effects on market allocations: The government (really citizens more broadly) simply becomes an implicit shareholder in the corporate sector. Investors then can readjust their direct purchases of equity to maintain an efficient allocation of risk across investors. Now, the corporate tax rate does not matter.

Domar and Musgrave (1944) also focus on the effects of a corporate tax when profits are high owing to a risk premium but assume some firms are not publicly traded, presumably due to lemons problems.[3] Now, the corporate tax serves to reallocate risk-bearing from the owners of a closely held firm to investors more broadly, creating an efficiency gain in the risk market.[4] The higher the corporate tax rate, the higher will be this efficiency gain, in principle arguing for a 100 percent tax rate.

It is striking that these past papers generate such extreme, and disparate, forecasts for the optimal corporate tax rate.[5] What is missing from this literature that helps explain the patterns of corporate tax structures used in practice?

The objective of this Element is to focus on a major omission from the above literature: interactions between the corporate income tax and the personal income tax. Individuals and firms have substantial discretion concerning whether their income is taxable under the corporate tax or under the personal tax, e.g. at a minimum a firm can choose to incorporate or to remain noncorporate.

In section 2, we summarize the past literature, looking at the effects of these combined tax provisions on corporate behavior, and find that distortions arise when there is any difference between the combined corporate and personal tax rate on corporate income compared to the personal tax rate on noncorporate income. For example, to the extent that the tax rate on corporate income is less than that on personal income, taxes discourage debt finance, encourage operating as a corporation, favor investment in the corporate sector, and favor compensation (in closely held firms) through shares in the firm rather than through wage payments.

[2] Other assumptions are that the tax allows expensing, to avoiding distorting investment, and full loss offset.
[3] Certainly, many firms are closely held.
[4] Investment incentives can again be maintained through the use of expensing.
[5] These papers are just a small sampling from the many papers examining the role of a free-standing corporate tax. See Mintz (1996) for further discussion.

Section 3 then examines the optimal corporate tax structure, starting with a focus on a closed economy setting in Section 3.2.[6] One traditional recommendation is a "partnership treatment" of corporate income. Under this treatment, shareholders include in their personal tax base their share of each corporation's income accruing that tax year, with no separate corporate tax. No country has attempted this, however. Partly, shareholders would be asked to pay tax on earnings they have not yet seen. More fundamentally, though, there are no data concerning a firm's earnings accrued between the dates of any given individual's purchase and sale of a share within the year other than the one calculation over the firm's fiscal year.

Instead, every country has imposed a separate tax on corporate income. To approximate production efficiency, as advocated based on the results in Diamond and Mirrlees (1971) and Saez (2002), the overall tax on any given source of income should be the same regardless of where this income accrued. This means that the sum of the corporate and personal taxes due on any given income source should approximate the personal taxes that would have been owed had this income instead accrued within a noncorporate firm and been taxable solely under the personal tax.

The discussion then turns, in section 3.3, to the added complications that arise in a global economy, where firms can easily shift their profits across countries, e.g. through transfer pricing, the location of borrowing, or the strategic location of patents. What tax provisions would be needed to implement production efficiency in an open economy, where such income-shifting opportunities exist? A direct extension of the findings for a closed economy shows that productive efficiency would be maintained when a country imposes a corporate tax on the profits accruing on any shares owned by domestic residents, regardless of the location of the firm or where these profits were earned. Existing regulations by the Organization for Economic Cooperation and Development (OECD), though, do not give a country the right to tax foreign-source income simply based on portfolio investments by domestic investors. For foreign direct investment (FDI), the regulations allow countries either to exempt foreign-source income of domestic multinationals from domestic corporate taxation (a territorial tax treatment) or to impose domestic corporate taxes on the foreign subsidiaries of domestic firms, with a credit for taxes paid abroad on this income (worldwide taxation).

Strikingly, we show in this section that the tax provisions under "worldwide" taxation are close to those suggested by the theory under a particular set of

[6] Here, we take the provisions of an optimal personal income tax as given, where optimal rates are presumed to be positive on labor income and perhaps on capital income as well, trading off equity gains with efficiency losses.

assumptions. One key assumption is that a country imposes no tax on the return to savings (including allowing expensing for all capital investments). One way to implement this zero tax on savings for cross-border investments by multinationals is to allow a deduction from corporate income when funds are shifted abroad[7] and then to tax all repatriated funds. This type of cash-flow tax at the border implies no distortion to investment decisions as long as tax rates are constant over time[8] but still imposes a comparable tax on any income shifted abroad.[9]

However, the assumptions required for worldwide taxation to be optimal do not come close to holding in the data. With nonzero taxes on the return to savings or anticipations of a possible future drop in corporate tax rates, multinationals would gain by postponing repatriation of foreign-source income and letting this income accrue in a tax haven. The data show that multinationals have indeed built up large holdings of profits abroad, concentrated in tax havens.[10] Given this behavior, foreign-source income under worldwide taxation has, in practice, largely been exempt from domestic corporate taxes, as it would be under a territorial tax. Yet worldwide taxation still distorts behavior, by inducing firms to defer repatriations. A territorial tax may then seem second-best.

A territorial tax is very second-best, though, since it introduces a variety of large tax distortions. While purely domestic firms face full corporate taxation of their profits, multinationals can easily avoid corporate taxes by shifting their profits into tax havens. Multinationals not only can avoid tax on their foreign-source income but can also enable owners and workers to shift their income from the firm's domestic operations out of the personal tax base into the domestic corporate tax base and then to shift this income abroad into a tax haven, thereby avoiding taxes even on their domestic-source income. This ease of international income shifting seriously undermines the income tax as a whole.

It is clear that the income tax has been under substantial pressures. The average marginal corporate tax rate among OECD countries has halved since 1980.[11] This cut in corporate tax rates creates pressures to cut personal tax rates as well, to lessen the distortions favoring income shifting from the personal into the corporate tax base. There is no obvious floor on these corporate and personal tax rates, except to

[7] Note, though, that "worldwide taxes" do not allow an immediate deduction when funds are shifted abroad, only a tax-free repatriation of this initial investment when the funds are finally repatriated.
[8] This finding is analogous to the result that the rate of return earned on funds invested in a pension plan simply equals the pretax market interest rate.
[9] When the host country imposes a tax on the subsidiary, perhaps to discourage domestic income shifting between the firm and its workers, then the home country only needs to impose a tax net of a credit for taxes paid abroad to discourage international income shifting.
[10] See Tørsløv et al. (2018) for evidence.
[11] See Slemrod (2018).

the degree that there are real costs from engaging in this income shifting. Costs are likely to be low.

Section 4 then explores alternatives to the current design of existing corporate and personal income taxes. One alternative, proposed in Auerbach et al. (2010), is a cash-flow corporate tax. Such a tax shares the strengths but also many of the weaknesses described above for "worldwide taxation," since it still induces firms to retain funds abroad when there is a nonzero tax on the return to savings under the personal tax or anticipations of a future cut in the corporate tax rate.

Another option that has been under long-standing discussion within the European Union (EU) is the use of formula apportionment as a means of allocating a firm's worldwide profits among different countries, as is done by US states when allocating a firm's US profits across states. The main advantage of this approach is that worldwide profits are not affected by income shifting across locations. There are many disadvantages, though, as described in section 3.

The third option we consider is to shift to a consumption tax base under the personal tax. The need for the corporate tax arose because corporate income is treated more favorably than noncorporate income (or wages and salaries) under the existing personal tax,[12] opening up incentives to convert noncorporate income as well as wages and salaries into corporate income. Yet income held in registered accounts,[13] e.g. pension plans, is treated the same regardless of whether it accrues within corporate or noncorporate firms or from domestic of foreign-source activity. If any securities vulnerable to income shifting must be held in a registered account, then the personal tax would itself avoid any distortions to the location of economic activity and (to that extent) achieve productive efficiency. There would then be no need for a corporate tax. Indeed any such tax would introduce distortions.

Section 5 then turns to tax enforcement and other omissions from the discussion in Section 3. The prior theory assumed that the government can successfully monitor the desired tax base. In theory, the government can choose an intensity of tax audits and a level of fines due when evasion is detected that should be sufficient to deter evasion. But available data suggest a nontrivial informal economy even in the richest countries and a major understatement of taxable profits particularly by smaller firms in the formal sector. A recent literature tries to understand better how to redesign the corporate tax to lessen these evasion pressures.

Section 6 focuses on several of the market failures suggested by the past empirical literature examining corporate behavior and considers how the

[12] This is largely due to the favorable tax treatment of accruing capital gains.

[13] Under a registered account, any funds added to the account to acquire new securities are deductible from taxable income that year but all withdrawals from the registered account are fully taxable.

corporate tax might be used to lessen the efficiency costs arising from these market failures.

Finally, section 7 provides a brief summary of this Element.

2 Effects of Taxes on Corporate Behavior

2.1 Overview

Corporate behavior will ultimately depend on all of the tax implications of decisions firms might make, not only from the corporate income tax but also from the personal income tax. The focus in this section will be on how these two layers of tax combine to affect key corporate decisions.[14]

Largely, these two layers of tax have been designed so that income is taxed either under the corporate tax or under the personal tax but not both. In particular, most payouts from the corporate sector (dividends aside) are deductible from the corporate tax base but are then taxable under the personal tax, whether these payouts take the form of wages, bonuses, rents, royalties, or interest payments.

Of course, there are exceptions. Fringe benefits are a broad category of payments that are deductible under the corporate tax but not taxable under the personal tax. Here, though, there is a cap on the size of these payouts.

The main exception is dividends, where dividend payouts are not deductible under the corporate tax but taxable in some form under the personal income tax, discouraging dividend payments. Most countries, though, have added statutory provisions weakening this higher effective tax rate on dividends. One approach is through the use of dividend imputation schemes that give individuals a credit for the presumed corporate taxes paid on the income financing these dividends. Another is either a reduced corporate tax rate on income paid out as dividends or a reduced personal tax rate on dividend income.

Beyond these distortions to dividend payments, to the extent that the combined effective tax rate from both corporate taxes plus any personal taxes due on corporate income differs from the personal tax rate faced by those receiving payouts from the firm, there are distortions concerning where income is reported.[15] As seen throughout the rest of section 2, many aspects of corporate behavior are affected.

In discussing the impact of taxes on each type of corporate behavior, we start with a theoretical description of the incentives created by the tax law, assuming

[14] For an overlapping list of the economic distortions associated with the corporate tax, see Dharmapala (2016).

[15] Personal taxes due on corporate income include not only those paid on dividends but also those paid on the capital gains on corporate equity (when realized) generated from retentions.

a neoclassical setting with well-functioning markets and profit-maximizing firms. We then shift to look at some of the past empirical work that examines how firms respond to these tax incentives.

2.2 Choice of Organizational Form

The most basic distortion created by a corporate tax is to discourage firms from incorporating.[16] There are a variety of legal forms of ownership for a firm, with specific choices varying over time and across countries. To begin with, a firm can incorporate and be subject to the corporate tax, with some personal taxes then due on any dividend receipts from the firm or on any realized capital gains when shares in the firm are ultimately sold. Denote the taxable income of the firm by Y and the corporate tax rate by τ. Denote the weighted average personal tax rate on dividend receipts (weighting by shares owned) by t_d, the anticipated present value of taxes on realized capital gains due per dollar of retained earnings by g, and the fraction of after-corporate-tax profits paid out as dividends by f. A conventional measure of the resulting after-tax income then equals $Y(1-\tau)(1-t_e) \equiv Y(1-\tau^*)$, where $t_e = ft_d + (1-f)g$ and where τ^* denotes the overall combined tax rate on corporate income.

Alternatively, the firm can operate under one of a variety of "pass-through" organizational forms, where each owner's share of the firm's income is included directly in their personal taxable income.[17] Denote the weighted average personal tax rate of the shareholders in any given firm by m (weighting by share ownership). Assuming the firm's pretax income is unaffected by this choice of legal form of ownership, after-tax income if the firm chooses a "pass-through" form of ownership would instead equal $Y(1-m)$.

Forecasted behavior is then stark. Profit-maximizing firms with $Y > 0$ would choose a pass-through form whenever $\tau^* > m$, and conversely. In years when the top corporate rate exceeds a weighted average across all shareholders of their personal tax rate, this initial theory implies that any firm with diversified ownership that would be subject to the top corporate tax rate should choose instead a pass-through form. Yet, according to the data, even in years when the corporate rate was higher than the top personal tax rate, corporations still constituted a major fraction of the economy.

This puzzle is only strengthened when we include as well the choices made by firms expecting to face tax losses. Until 2018, in the United States, owners of pass-through firms could deduct any losses from their other personal income,

[16] Our summary of this literature is drawn from MacKie-Mason and Gordon (1997), and Goolsbee (1998).

[17] In the United States, pass-through forms include partnerships, proprietorships, limited-liability companies, and subchapter S corporations.

saving taxes that year in proportion to their tax rate m.[18] In contrast, owners of corporate firms accruing tax losses can only use these losses to offset that firm's taxes during the previous three years (tax-loss carrybacks) or to offset future tax payments in any of the next fifteen years (tax-loss carryforwards). When tax savings from losses are deferred, their present value falls, and disappears if the firm fails prior to making full use of these tax-loss carryforwards. Prior to 2018, firms expecting tax losses were then far more likely to save taxes by choosing a pass-through form than firms expecting to earn profits.

Clearly there is some nontax factor favoring the corporate form, at least for large firms.[19] One important attribute of a corporation is limited liability for the firm's shareholders. Individual owners of a partnership or proprietorship, in contrast, are personally liable for any losses that the firm may incur. As argued by Jensen and Meckling (1976), limited liability makes it easier to sell shares in the firm, since the worst outcome outside investors might face is a total loss of their initial investment in the firm, whereas investors in a partnership or proprietorship face no cap to the losses they might incur, forcing them to check much more extensively for possible hidden liabilities of the firm. In contrast, lenders to such a firm are better protected than lenders to a corporate firm since they can seek repayment not only from the firm's assets but also from the assets of each of the individual shareholders in the firm. The data show that small firms rely on debt finance much more heavily than larger firms, making outside finance easier for smaller firms if they choose to be noncorporate. In contrast, large firms rely much more heavily on equity finance and would therefore gain by choosing to be corporate.

The limited liability available to corporations, though, is not sufficient in itself to explain the large size of the corporate sector. Limited-liability companies and subchapter S firms also face limited liability, providing a readily available way to maintain limited liability yet avoid the corporate tax.

Another factor favoring the corporate form of ownership is the greater ease of trading corporate than noncorporate shares. When a corporate shareholder sells their shares, the only consequence is that future dividend payments are now sent to the new owner. When owners of a pass-through firm (e.g. a partner in a law firm) sell shares, the sales contract needs to specify how the firm's income for that tax year will be divided between the prior and the new owner. The firm also has to refile its ownership papers with the State, documenting its new ownership pattern. Noncorporate shares also, with rare exceptions, cannot be publicly traded. Given these heavier administrative costs for trading shares in a noncorporate firm, these

[18] As of 2018, noncorporate firms can only carry losses forward to offset any future profits.
[19] Given the progressive corporate tax schedule in the United States, small corporations can face a much lower corporate tax rate, potentially providing a net tax advantage from being corporate.

firms typically have few owners, likely imposing high risk-bearing costs on these owners from the firm's idiosyncratic risks.

The easiest way to proceed in empirical work has been to assume that the pretax certainty-equivalent income of a corporate firm differs from the pretax income of a noncorporate firm by some amount G, with G varying by firm. The presumption is that G is positive (favoring the corporate form) to the extent that the firm is larger or riskier but potentially negative when the firm is small. The corporate form is then favored for profitable firms to the extent that $(Y+G)(1-\tau^*) > Y(1-m)$, or equivalently to the extent that:

$$\frac{G}{Y} > \frac{\tau^* - m}{1-\tau^*} \tag{1}$$

Note that the tax law creates no distortion to this decision when $\tau^* = m$, a result we will see repeatedly throughout the rest of section 2.

Given some distribution for G/Y among firms in an industry, this equation forecasts the fraction of firms that will choose to be corporate as a function of the tax expression on the right-hand side of equation (1). In principle, these tax rates vary by firm, given a progressive corporate tax schedule and idiosyncratic ownership patterns across firms. Past empirical work, though, has largely used time series variation.[20] While tax rate changes do lead to some variation in ownership patterns in the direction expected, estimated behavioral responses in the past literature are small, suggesting that nontax factors dominate this particular decision.

2.2.1 Notes on the Determinants of the Effective Capital Gains Tax Rate

The statutory capital gains tax rate g has always been no higher than t_d. But taxes due on accruing gains are deferred until the stock is ultimately sold and the gains are realized. In addition, investors have an incentive to realize any capital losses quickly, in order to get immediate tax savings on these capital losses.[21] In the United States, the capital gains on shares still unsold at death escape capital gains tax entirely due to a write-up of basis at death, giving individuals an incentive to include assets with large unrealized capital gains as part of their estate. Given the tax savings from capital losses and the deferral of taxes on

[20] One important issue here is that marginal tax rates depend on the reported level of taxable income, while reported income can also depend on the tax rate the firm faces, raising endogeneity concerns in measuring the tax expression in equation (1). Papers vary in the types of instrumentation used. The easiest approach is to use the top statutory tax rates as instruments.

[21] If capital losses are realized quickly enough to represent short-term losses, then the tax savings are larger as well as quicker.

capital gains (or avoidance entirely through a write-up of basis), there is no assurance that the effective tax rate is even positive. While a rule of thumb, dating to a paper by Feldstein et al. (1983), is that the effective capital gains rate is roughly a quarter of the statutory tax rate on long-term gains, halved due to deferral and halved again due to a write-up of basis at death, there have been no careful studies looking at actual patterns of realizations and their implications for the effective capital gains tax rate.

2.2.2 Notes on the Determinants of t_e

In section 2.2 we set $t_e = ft_d + (1-f)g$. According to the data, publicly traded firms have, in the past, paid out roughly half of their profits in dividends. Note, though, that a firm maximizing after-tax profits would set $f = 0$, since $g < t_d$, and then use any excess cash flow to repurchase shares rather than pay dividends. This conflict between theory and data has been a long-standing puzzle in the corporate finance literature, as emphasized in Black (1976). Various theories have been proposed to explain why firms pay dividends in spite of the tax disadvantage of doing so.[22] These include "the new view," signaling models in which dividends convey information to outside shareholders, and agency models in which shareholders use dividends to constrain the budget of the firm's manager.

The "new view" was proposed in King (1977), Auerbach (1979), and Bradford (1981). An implicit assumption in the above discussion was that the increase in share values in response to a dollar of extra retained earnings is a dollar. In a commonly used notation, the assumption is that $q = 1$ where (Tobin's) q is the ratio of the market value of the firm to its book value. The market equilibrium would indeed be $q = 1$ if the firm could sell or repurchase shares whenever this equality did not hold. The "new view," though, assumes that firms cannot repurchase shares. Without this option of repurchasing shares, q can well fall below 1.

Tobin's q cannot fall too far, though, because the firm would choose to pay dividends rather than invest whenever $1 - m \geq q(1-g)$. Let $q^* = (1-m)/(1-q)$ represent the value of q where the firm is just indifferent to paying dividends. Firms can then be in one of three different regimes: (1) $q = 1$, where they sell shares to maintain this equality but never pay dividends; (2) $1 > q > q^*$, where firms neither issue shares nor pay dividends; and (3) $q = q^*$, where this equality is maintained through the choice of a dividend payout rate.

[22] The discussion in this section draws heavily on the analysis in Gordon and Dietz (2008).