PART V: ECONOMIC ANALYSIS OF INTEGRATION

CHAPTER 13: ECONOMIC EFFECTS OF INTEGRATION

13.A INTRODUCTION AND SUMMARY

This chapter presents quantitative estimates of the impact of the integration prototypes developed in the Report on the allocation of resources, corporate financial policy, portfolio allocation, and Federal tax revenues.

We examine the effects of each integration prototype using four alternative models of the economy and two assumptions about how integration would be financed. Results differ from model to model, as well as by financing assumption, but, in general, the integration prototypes reduce the tax penalty on corporate investment and encourage capital and other resources to flow into the corporate sector. Depending on the prototype, model, and financing assumption, this capital expansion ranges from a 2 to 8 percentage point increase in the capital stock used in the corporate sector. In dollar terms, this ranges approximately from $125 billion to $500 billion in additional corporate capital. CBIT generally produces the largest expansion of corporate capital, but in several of the calculations, the more traditional integration prototypes yield a similar expansion.

In addition, each of the integration prototypes generally encourages corporations to use less debt. Estimated debt to asset ratios decrease by 1 to 7 percentage points, depending upon the model, financing assumption, and prototype. CBIT is the best prototype for encouraging firms to reduce their relative use of debt.

The integration prototypes encourage corporations to increase the portion of earnings distributed as dividends. Both CBIT and the shareholder allocation prototype promote efficient corporate dividend policy by almost entirely eliminating taxes as a consideration. In contrast, the distribution-related prototypes encourage firms to pay out more of their earnings as dividends than may be optimal. Depending on the model, financing assumption, and prototype, nominal dividend payout ratios would increase by 2 to 6 percentage points.

By shifting resources into the corporate sector, reducing corporate borrowing, and encouraging dividends, the integration prototypes generate changes in economic welfare. Overall, the prototypes improve economic welfare in all calculations, and the improvement ranges from an amount equivalent to 0.07 percent of annual consumption (total consumer spending on goods and services) to an amount equivalent to 0.73 percent of consumption, or from approximately $2.5 billion to $25 billion per year. CBIT or shareholder allocation prototypes generally contribute the greatest increases in welfare, but the distribution-related prototypes also produce significant economic welfare gains. Much of the variation in results reflects differences in the models used to analyze the prototypes or differences in financing assumptions, rather than differences among prototypes. Indeed, one striking feature of the calculations is that within each model, and for a given financing assumption, structurally different prototypes often have similar overall effects on economic well-being. These results accord with the general economic equivalence of basic integration prototypes in the absence of distortions induced by rate differentials demonstrated in Appendix C.

The results summarized above are generated from models of the economy that abstract from international capital flows. While internationally mobile capital can cause tax law changes to have different effects from those predicted by closed-economy models, there is no consensus among economists regarding the sensitivity of international flows of debt and equity capital to changes in net returns, especially for a country such as the United States with a very large domestic economy. Consequently, the Report does not

present a detailed quantitative analysis of integration in an international context, although the effects of the integration prototypes on international capital flows and portfolios are discussed in Section 13.F. The distribution-related and shareholder allocation prototypes are estimated to have only a small effect on the net capital flows into the United States; the effects of CBIT are more uncertain. Each integration prototype, however, may change substantially the composition of international portfolios, even if net flows of capital are not greatly affected.

Section 13.B analyzes the principal economic issues surrounding the debate over the benefits of corporate tax integration, building on the discussion in Chapter 1. Section 13.C describes important methodological issues in modeling effects of integration on economic efficiency. Section 13.E evaluates effects of integration on the cost of capital and corporate financial decisions. A more complete analysis of economic effects of integration using a set of computable general equilibrium models is provided in Section 13.F. Issues relating to distributional implications of integration are discussed in Section 13.G. Finally, estimates of integration prototype's effects on Federal tax revenue are presented in Section 13.H.

13.B CORPORATE TAX DISTORTIONS: ECONOMIC ISSUES

Bias Against Investment in Corporate Form

The waste of economic resources from the tax-induced misallocation of capital between the noncorporate and corporate sectors was the original focus of economists' criticism of the classical corporate income tax system. Beginning with Harberger (1962), economists have argued that a classical corporate tax system increases the share of capital allocated to the noncorporate sector, thereby raising pre-tax required rates of return in the corporate sector.

Harberger's model divides the economy into two sectors, a corporate sector and a noncorporate sector. The Harberger model has four central assumptions. First, in both sectors, output is produced by combining capital and labor. Second, the total amounts of capital and labor supplied in the economy are fixed. Third, although the total amounts of capital and labor supplied are fixed, the amounts supplied to each sector can vary. Fourth, suppliers of capital and labor seek to maximize their incomes.

Taken together, the third and fourth assumptions above have an important implication: In the long run, the net return on the last dollar of capital in each sector must be the same, since suppliers of capital invest their capital where its net return is highest. As a result, capital will flow out of the sector with a low net return and into the sector with the high return. This flow continues until net rates of return are equalized between the two sectors.

Over the years, more sophisticated versions of Harberger's model have been developed to examine more carefully the costs of the economic distortions related to the corporate income tax. One important step was the development of more complex models with many sectors of the economy.[1] Most recently, researchers have noted that economic distortions from the corporate income tax are greater than earlier estimates to the extent that the tax distorts the relative importance of corporate and noncorporate producers within an industry.[2] Costs associated with this additional margin of distortion arise when corporate and noncorporate producers within an industry have different advantages, for example, greater ability to exploit scale economies by corporations or greater entrepreneurial skill in noncorporate organizations.[3]

Current U.S. tax law distorts the allocation of investment away from the economy's corporate sector and into the noncorporate sector whenever investors require equity to finance investment. The corporate cost of equity capital generally exceeds the noncorporate cost of capital because of the two-level tax on corporate equity income. Consequently, corporate investment projects require a higher pretax rate of return than projects

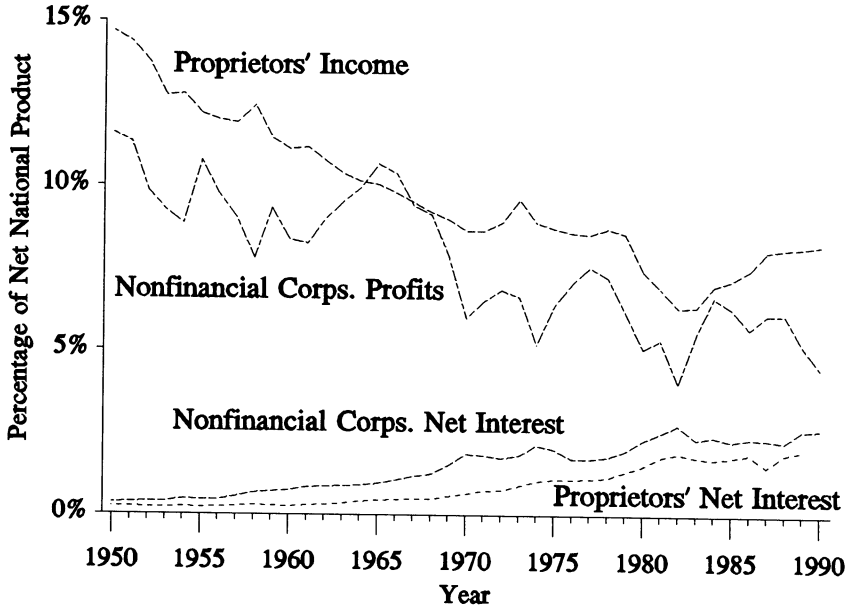
of noncorporate business enterprises. Therefore, some corporations fail to undertake investments that would be profitable if the tax burden on corporate and noncorporate investments were the same. Moreover, for some business enterprises, the added corporate taxes exceed the benefits of incorporation, and such businesses forego the advantages of incorporation and choose instead to operate as partnerships or sole proprietorships.[4]

While the classical system may encourage corporations to operate in noncorporate form, aggregate data to date do not document a long-term trend of shifting economic activity away from the corporate sector. Figure 13.1 shows that incomes of owners of noncorporate businesses have fallen as consistently as a share of net national product as have corporate profits. By contrast, the total income (profits, interest, rents, and wages) generated in the corporate sector has increased slightly, from an average of 50 percent of net national product in the 1950s to an average of 53 percent in the 1980s (Figure 13.2). Other long-term comparisons of corporate activity to the general economy also fail to present any general pattern of disincorporation.[5] However, data for the past few years (some of it preliminary) does suggest reduction in the size of the corporate sector relative to the overall economy and to the noncorporate sector.[6]

Subchapter S corporations have accounted for an increased share of corporate profits and have contributed to the declining role of the corporate income tax, particularly since 1986. The Subchapter S Revision Act of 1982 increased the attractiveness of S corporations and led to an expansion of S corporation activity. However, in the 4 years following the 1982 amendments, S corporation net income accounted for only 3 percent of total corporate net income, up only slightly from 2.1 percent in the previous decade. Data for 1987 and 1988, in contrast, indicate a substantial increase in S corporation net income to 8.6 percent of all corporate income in 1987 and 9.5 percent in 1988.[7] This increased S corporation activity seems to be a response to the 1986 Act's inversion of the top individual and corporate tax rates and repeal of the capital gains rate preference.[8]

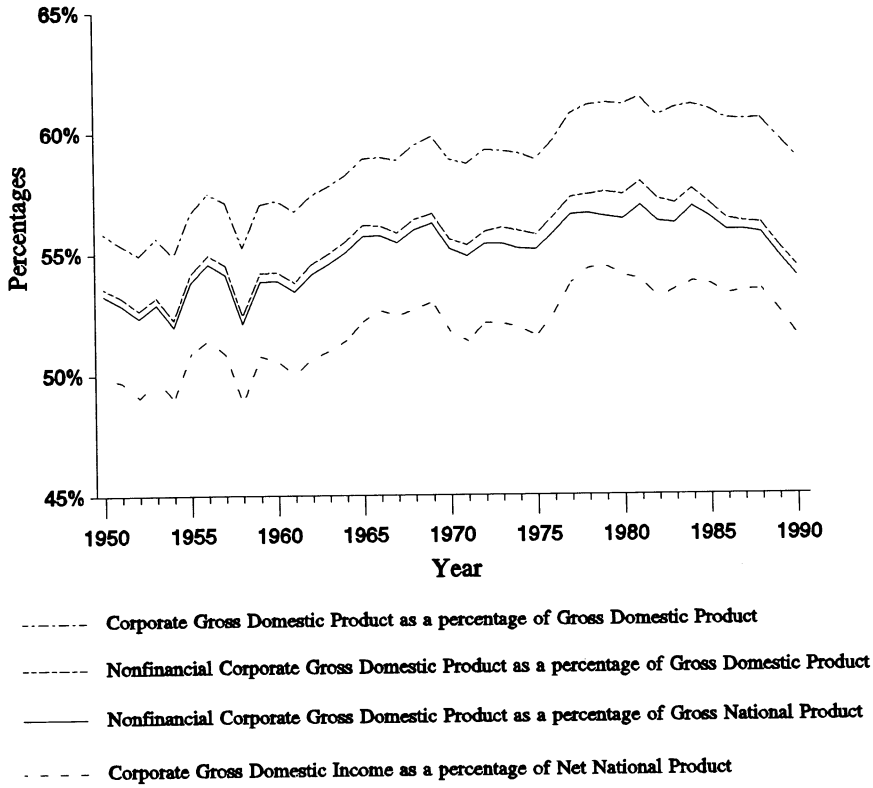
A measure of the bias against equity investment in a corporation that pays dividends is the extent to which the combination of the corporate tax rate on earnings and the individual tax rate on dividends exceeds the individual tax rate on business income. In the case of equity investments in a corporation, retained earnings are taxed ultimately at the shareholder level as capital gains. Accordingly, the measure of the bias against equity investment in the corporate sector in that case is the extent to which the combination of the corporate tax rate and the individual capital gains rate exceeds the effective individual tax rate on business income.

Figure 13.1
Profits of Nonfinancial Corporations, Proprietors' Income, and Net Interest as a Percentage of Net National Product, 1950-1990



Source: National Income and Product Accounts, Bureau of Economic Analysis, U.S. Department of Commerce.

Figure 13.2
Measures of Corporate Activity in the Economy
1950-1990



Source: National Income and Product Accounts, Bureau of Economic Analysis, U.S. Department of Commerce.

Assuming a positive effective corporate tax rate, the classical system always creates a bias against investing in equity in a corporation that distributes all current earnings relative to a noncorporate investment. If the corporate tax rate were zero, corporate earnings would be taxed only at the shareholder rate, and therefore the bias against corporate equity would be eliminated.[9] That the corporate rate currently exceeds the individual rate does not create a new bias; it merely exacerbates a bias that is present whenever all current earnings are distributed and the corporate rate exceeds zero, regardless of its relationship to the individual rate.

For equity investments in a corporation that retains earnings, differences among tax rates may reduce, eliminate, or even reverse the bias against corporate investments. The overall effect depends upon whether the combination of the corporate tax rate and the effective capital gains rate is greater than, equal to, or less than the individual tax rate on business income. Even when realized capital gains are taxed at the same rate as ordinary income, the effective capital gains rate is generally lower than the statutory rate, because the capital gains tax can be deferred until gain is realized through a sale or exchange.[10] In an extreme case, if the combination of the corporate tax rate and capital gains rate is lower than the individual rate, the classical system may actually create a bias in favor of investing in corporate equity.[11] Currently, however, even a full exclusion from tax of capital gains on corporate shares would generally not eliminate the tax system's bias against equity investment in the corporate sector because the corporate rate exceeds the top individual rate.

Two other features of the tax system currently reduce the tax bias in favor of noncorporate investments. First, the benefits of accelerated depreciation are somewhat greater for corporations, because corporate tax rates tend to exceed individual tax rates on shareholders and on noncorporate businesses. Second, to the extent that corporations finance investments through debt, the relative tax advantage afforded noncorporate firms is diminished. Considering only tax factors, corporate and noncorporate entities face the same cost of debt financed capital. Thus, to the extent corporations finance new investment with debt,

the difference in tax burden for total investment, both debt and equity financed, will be reduced.

Bias Against Equity Finance

The Tax Bias Against Equity

The source of the bias against equity financing is similar to the source of bias against corporate investment described in the preceding section.[12] An investment in corporate equity is subject to tax once at the corporate rate and again at either the individual rate or the effective rate on capital gains. In contrast, interest earned on debt, like income from an unincorporated business, is subject to tax only at the investor's rate. Consequently, equity funded projects generally require a higher pretax rate of return than projects financed with debt.[13]

Nontax Benefits and Costs of Debt Finance

Chapter 1 discussed important nontax and tax considerations in corporate borrowing decisions. Central to the argument that the tax bias against equity finance distorts corporate financing decisions is the existence of nontax costs and benefits associated with corporate debt financing. If nontax costs of debt are significant, losses in economic efficiency can accompany the greater debt levels resulting from the tax bias against equity finance.

As corporate borrowing remained high during the 1980s, many nontax arguments for high debt financing appeared. Analysts most sanguine about the rise in debt financing typically maintain that debt is desirable because it gives suppliers of capital an indirect means to monitor the activities of managers. Their reasoning is that the need for supervision results from the separation between ownership and management that is characteristic of the traditional corporate structure. A conflict between ownership and management can emerge if it is difficult for suppliers of capital to observe and evaluate the activities of entrenched managers. In this kind of environment, management's self interest may not always coincide with efficiently operating the business enterprise—with maximizing value.[14]

In practice, increased debt financing may be an ineffective way to improve managerial incentives. It works best when most of the variation in an enterprise's cash flow is specific to the firm. It works poorly when most of the variation is common across business enterprises (as with industry-wide or business cycle fluctuations).[15] Thus, even when there are incentive benefits from debt, the most efficient financial arrangement will involve both debt and equity, with equity serving as a cushion against economywide fluctuations in profitability.

Many academic and business economists have stressed the nontax costs of a declining reliance on equity finance. One concern is that the costs of financial distress and bankruptcies could be greater than in the past, more businesses with high debt financing. Firm level data illustrate the reason for this concern. Warshawsky has calculated weighted average, median, and ninetieth percentile values of (market-value) debt to asset ratios for firms in the COMPUSTAT Industrial and Full Coverage samples, over the period from 1969 to 1988.[16] As with the aggregate data discussed in Chapter 1, all statistics for the subsamples indicate a rising debt to asset ratio, though much of the increase occurred before 1980. This measure can, of course, be distorted by large swings in the value of equities (as, for example, in 1973 and 1974). The debt to asset ratio has, however, climbed since 1983 in spite of significant increases in the value of equity.[17] Warshawsky also calculated the ratio of interest payments to cash flow for the individual business enterprises. Over the 1969-1988 period, the mean and median value of the ratio virtually doubled; the value for the ninetieth percentile firms more than tripled. Much of the change occurred during the 1980s. In addition, the average quality of publicly issued debt (as measured by bond ratings) declined steadily in the 1980s.

To put the macroeconomic concern in sharper perspective, Bernanke and Campbell considered the experiment of imposing a reduction in cash flows similar to those experienced during the 1974-1975 recession on a sample of firms with financial conditions corresponding to 1986 data.

The sample was drawn from Standard and Poor's COMPUSTAT file, and therefore consisted primarily of large firms. The simulations implied that a downturn like 1974-1975 would force more than 10 percent of the sampled firms into bankruptcy. Updates for later years in Bernanke, Campbell, and Whited and in Warshawsky yielded similar conclusions.[18]

What role have tax distortions played in tilting the balance between benefits and costs of different degrees of debt financing?[19] Under a tax system that treats equity finance unfavorably, firms are induced to have less equity outstanding, thereby lowering their "equity cushion" against business cycle risk, and raising the chance of incurring costs of financial distress during a future downturn.[20] The tax distortion makes this decision rational for individual corporations but socially inefficient.

Bias Against Corporate Dividend Distributions

The current system of corporate income taxation also may distort a corporation's choice between distributing or retaining earnings and, if amounts are distributed, whether they are paid in the form of a nondividend distribution, such as a share repurchase. There are two alternative explanations in contemporary corporate finance—commonly known as the "new view" and the "traditional view"—of why corporations continue to pay dividends despite the high relative taxation of dividends compared with capital gains generated by reinvested earnings or share repurchases.[21] The traditional view asserts that dividends offer special nontax benefits to shareholders that offset their tax disadvantage. For example, dividends may provide signals to investors about a corporation's relative financial strength or future prospects.[22] Alternatively, high dividend payouts may reduce managerial discretion over internal funds (see the analogous discussion above of the incentive benefits of corporate debt financing). According to the traditional view, corporations set dividend payments so that, for the last dollar of dividends paid, the extra benefit of dividends equals their extra tax cost. Thus, the amount of dividends paid out is expected to decrease as the tax burden on dividends relative to capital gains increases. Dividend taxes also raise the cost of capital (and thereby lower investment) to the extent that corporations pay out earnings as dividends. Thus, the traditional view argues that raising dividend taxes will lower the dividend payout ratio and incentives for real investment. Moreover, under the traditional view, the need to maintain dividend payments constrains the use of retained earnings as corporations' marginal source of equity financing for new investments; instead, corporations frequently must turn to new equity issues.

Under the new view, dividend payments offer no nontax benefits to shareholders relative to retentions.[23] The hypothesis further assumes that corporations have no alternative to dividends for distributing funds to shareholders. Given these assumptions, investor level taxes on dividends reduce the value of the firm, but do not affect the firm's dividend or investment policies. Since dividend taxes must eventually be paid, they are capitalized in share values, reducing share prices enough to compensate for the tax burden. In effect, a dividend tax acts as a lump-sum tax on equity existing when the tax is imposed, and on new equity contributions. Therefore, corporations prefer not to issue new shares to finance additional investment opportunities. Retained earnings and debt are preferred sources of funds. Dividends are determined as a residual after the firm undertakes all profitable investments. Consequently, a permanent change in the tax rate on dividends will not change a firm's investment policies or payout decisions.[24] Although the dividend tax does not affect investment incentives,[25] the capital gains tax affects investment incentives because retentions increase the value of a firm's shares and such appreciation is taxable as a capital gain.[26]

The tax policy implications of the traditional and new views with respect to the taxation of corporate income are quite different. The new view assumes that the investor level taxes on distributions are capitalized into share values, with the consequence that (1) existing shares are

valued below the market value of corporate assets, so eliminating or reducing taxes on existing corporate assets would produce gains to current shareholders and (2) moving to a system that is more neutral in taxing retentions and distributions would not encourage corporations to pay more dividends.[27]

In contrast, under the traditional view, where new funds rather than retained earnings provide the source of finance for additional investments by the corporation (1) shares should not sell at a price below corporate asset values despite the existence of the existing two level corporate tax system, so a major shift in the relative treatment of dividends and retentions should not create significant share price increases for current shareholders and (2) making the tax system more neutral between retentions and distributions would increase corporate dividend distributions and economic efficiency.[28]

As discussed above, these different views have different theoretical implications about whether corporations will vary payout behavior in response to changes in the tax rate on dividends relative to the tax rate on capital gains. The traditional view regards differences in the tax rate on dividends relative to the tax rate on capital gains as a determinant of payout decisions; the new view does not. One way to resolve the controversy would be to determine how dividend payout ratios vary over time with the tax rate. Poterba has calculated that the average dividend payout ratio (the ratio of dividends to inflation-adjusted after-tax profits) for U.S. corporations was 0.46 in the 1950s, 0.40 in the 1960s, and 0.45 in the 1970s, but increased to 0.61 in the period from 1980 to 1986 during which the taxation of dividends was reduced relative to the taxation of capital gains.[29] Although this pattern tends to support the traditional view, it does not provide convincing evidence, because nontax factors also affect a corporation's dividend policy. Statistical analysis of the determinants of dividend payment policy is required to determine the independent effect of dividend taxes on corporate payout behavior, and several studies have undertaken this task.[30] The studies use different data sources and methodologies, and estimates of the elasticity of the payout rate with respect to dividend taxation. Nevertheless, all of the studies conclude that dividend payout ratios do respond to changes in the tax rate on dividends.[31] Thus, this type of empirical evidence is consistent with the traditional view.[32]

Corporations also distribute significant amounts of earnings to shareholders by repurchasing shares. This is inconsistent with the assumption underlying corporate financial policy under the new view. The tax consequences of a nondividend distribution, such as through a share repurchase, are significant: The shareholder is able to recover at least a portion of the cost of the shares free of tax, and gain on the sale is taxed as capital gain, which may be taxed at a rate lower than the ordinary income tax rate on dividends.

Share repurchases have increased substantially in recent years. Shoven presents data suggesting that aggregate share repurchases increased from $1.2 billion in 1970 to $27.3 billion in 1985 (5.4 percent and 32.7 percent of dividends, respectively). Data presented by Poterba show a similar pattern. Share repurchases increased from $1.8 billion in 1976 to $43 billion in 1985 (5.0 percent of dividends and 50 percent of dividends, respectively).[33] Department of the Treasury calculations reveal that share repurchases rose from $5.5 billion in 1980 (10 percent of dividends) to $48.8 billion in 1985 (57 percent of dividends), peaking at $65.8 billion in 1989 (47 percent of dividends). In 1990, corporate share repurchases totaled $47.9 billion (34 percent of dividends).[34]

To summarize, the principal distinction between the two views of corporate dividend policy for our purposes relates to their assumptions about nontax benefits of alternative corporate financial policies. The new view assumes that dividends offer no nontax value to shareholders relative to retained earnings. Underlying the traditional view is the idea that information and incentive

problems in financial markets make particular corporate financial policies valuable for nontax purposes.[35]

The present U.S. tax system treats retained earnings more favorably than dividends. Alternatively, given the potential nontax benefits of dividend distributions, one might consider reversing this bias by imposing relatively higher taxes on retained earnings using, for example, an undistributed profits tax. However, this approach would disadvantage corporations facing high costs of external finance relative to internal finance for nontax reasons. Such financing cost differentials could arise from the transaction costs of issuing securities or from problems of asymmetric information between corporations and capital markets.[36]

Effects on Savings and Investment

The corporate tax increases the tax burden on the returns from saving and investing. Taxes on capital income generally reduce capital formation. Because of the importance of international capital flows, which reflect the possibility of investing abroad if U.S. investment opportunities are not sufficiently attractive (or, conversely, the possibility of increased investment in the United States by foreign investors if opportunities are more attractive here), the corporate tax may have a larger effect on U.S. investment than on U.S. savings.

The magnitudes of tax-induced distortions of investment and savings decisions depend on (1) the size of the wedge between pre-tax and after-tax returns and (2) the responsiveness of savers and investors to changes in after-tax returns. The more responsive savers and investors are to changes in taxes, the larger the effect of a tax wedge of a given size.[37]

In a closed economy, domestic saving equals domestic investment, and the average cost of capital summarizes tax incentives to save as well as to invest. International capital flows break the equivalence of domestic saving and investment, however. Consider the case of perfect international capital mobility. Domestic investment would be governed by the pre-tax return needed to cover taxes and the worldwide opportunity cost of funds. At the same time, domestic saving depends on the after-tax return to investor, earned from investing at the world rate of return. Domestic investment would thus depend on domestic corporate level taxes, although domestic saving would depend only on domestic individual level taxes. More broadly, in the presence of international capital flows, the U.S. corporate income tax can reduce incentives to invest in the United States, even if it has a relatively small effect on saving by U.S. citizens.

13.C METHODOLOGICAL ISSUES IN ANALYZING THE ALLOCATION EFFECTS OF INTEGRATION

The Importance of Using a General Equilibrium Model

By distorting incentives, the classical corporate tax system produces an inefficient allocation of resources. The size of the inefficiency depends in part on how the households' and corporations' decisions respond to changes in the tax system. For example, the more responsive dividend distributions are to tax considerations, the greater the financial inefficiency induced by the double tax on dividends. The analysis of the economic effects of integration is complicated by behavioral effects in one market that can affect other markets. For example, if the corporate tax tends to drive capital out of the corporate sector, prices and rates of return in the noncorporate sector are affected.

Thus, to assess the economic consequences of integration, one must analyze how the various markets in the economy operate and interact with each other. Economists have responded to this challenge by constructing computer representations of the economy and using these representations to simulate how the economy would respond to various changes in the tax system. These representations of the economy are called computable general equilibrium (CGE) models.[38]

The Advantage of Using Several Models

As with all economic models, the results generated by a CGE model depend on underlying assumptions about how the economy operates. Since there is no consensus regarding a single best set of assumptions, this Report analyzes integration proposals using four different CGE models. This procedure assures that the findings are not associated with a particular modeling strategy.[39]

The general equilibrium models used to evaluate integration are detailed representations of the U.S. economy and its actual (and proposed) tax system. Nonetheless, all the models abstract from some important details of both the economy and the tax system. For example, none of the models captures effects from changes in the degree to which corporate preferences are passed through to shareholders. In addition, all the models focus on long-run results. Various transition issues, which might have important implications for economic behavior and for tax revenues, are not considered. This focus on the long run is correct, however, because the goal of achieving an improved long-term performance of the economy is the prime factor motivating a concern with integration. Nevertheless, short-run transition effects can be substantial.

The Importance of Replacement Taxes

Given current budgetary constraints, a complete analysis of the integration prototypes requires viewing integration as a revenue neutral tax reform, including both direct tax changes and secondary changes required to maintain the same total revenue yield for the government.

We do not recommend in this Report specific changes in the tax system to finance integration. Nonetheless, to avoid confusing the results of the simulation analysis by introducing changes in government spending on goods and services, some form of replacement taxes must be specified to hold government revenue constant after the introduction of the integration prototypes. In part because of the arbitrary nature of choosing replacement taxes, we consider two types of replacement taxes: (1) lump-sum taxes and (2) adjustments to statutory tax rates on capital income. Both the size of each prototype's economic effects and the ranking of prototypes by their relative impact may depend on the form of replacement taxes chosen.

Lump-sum taxes are hypothetical, unavoidable taxes. That is, taxpayers cannot change their tax liability under such a tax by changing behavior. As a consequence, by definition lump-sum taxes do not distort economic decisions. Though they are commonly used in academic studies of economic efficiency, lump-sum replacement taxes have an important drawback for modeling integration prototypes. They can bias comparisons among prototypes in favor of the prototype that loses the most revenue, because the efficiency gain from replacing distorting taxes on capital income with nondistorting, lump-sum taxes increases with the amount of revenue that must be replaced. This effect is important in an analysis of integration because the prototypes have disparate revenue costs. Compared to the actual gains that might be realized from integration, the calculations based on lump-sum replacement taxes can both overstate the size of the gain realized from each revenue losing prototype and produce a misleading ranking of prototypes. However, because not all distortions are analyzed, e.g., the "lock in" of capital gains and distortions of intertemporal consumption decisions are ignored, the lump-sum calculations do not necessarily generate efficiency gains that exceed the true gains. In addition, since CBIT raises revenue, results from the lump-sum replacement may understate its true gain.

Because of the problems with lump-sum replacement taxes, calculations also are performed holding government revenue constant by proportionately increasing or reducing all tax rates on capital income. In these calculations, the tax rates applied to corporate income, noncorporate equity income, dividends, capital gains, interest, and home mortgages are increased or reduced by an amount sufficient to hold government revenue constant at its current law level. Calculations

using scaled tax rates offer an important advantage over those based on lump-sum replacement taxes: The scaled-tax-rate calculations raise replacement revenue (and distribute excess revenue) by raising (or lowering) taxes that distort economic decisions, and so reduce the bias in favor of revenue losing tax changes. Nonetheless, these calculations are not definitive. In particular, to the extent that the integration prototypes could be made revenue neutral by more efficient tax changes, the actual economic welfare gains may be larger than those obtained in our scaled tax rate calculations.

Because each of the CGE models provides only a limited picture of the economy, the ability of these models is to simulate the revenue consequences of each of the prototypes is somewhat restricted. In particular, none of the models provide an adequate treatment of the financial services industry, and indeed only the Portfolio Allocation model (described in Section 13.F) can account for shifts in the ownership of the various financial instruments issued by businesses and governments. Even this model, however, tends to adopt a mechanical approach to the arbitrage possibilities possible under the different integration prototypes; in contrast, the revenue estimating models recognize that non-tax factors limit actual shifts in asset holdings. Thus, requiring that any loss (or gain) in revenues be made up with a positive (or negative) replacement tax also reduces any disparities in the results of the different models that would otherwise arise from differences in anticipated revenues.

The analysis presented in this Report focuses on the scaled-tax-rate calculations, but results based on the lump-sum replacement mechanism also are presented.

13.D OVERVIEW OF THE INTEGRATION PROTOTYPES

The basic features of the integration prototypes that are incorporated in the CGE models are reviewed below. The actual prototypes are described in more detail in Chapters 2, 3, 4, and 11 of this Report. In particular, it should be noted that the CGE models generally do not capture the investor level tax imposed when distributions are made from tax preference or foreign-taxed income.

Distribution-Related Integration

Under the distribution-related prototypes, corporate earnings are taxed at the corporate level, but dividends are excluded at the shareholder level (dividend exclusion system), or shareholders receive a credit for the corporate tax paid on distributed income (imputation credit system). Under these prototypes, the bias against corporate equity investment is reduced to the extent that returns are paid out as dividends; similarly, the relative bias against equity relative to debt finance is reduced to the extent earnings are distributed as dividends. Distribution-related integration, in principle, can create a tax bias for or against dividends, depending on the values of the corporate tax rate, shareholder tax rate, and accrual-equivalent capital gains tax rate. The prototypes assume that the current corporate and individual tax rates are maintained. Thus, it is likely that distribution-related integration would increase dividend distributions.

Dividend Exclusion. The dividend exclusion prototype applies the corporate tax rate of 34 percent to both distributed and retained income, but eliminates the second shareholder level tax on dividends paid from earnings taxed at the corporate level.

Imputation Credit. Relief from the corporate income tax is provided to the extent that corporate earnings are distributed as dividends. This relief takes the form of a tax credit available to shareholders. The nonrefundable tax credit is calculated at a 31 percent rate, so that it does not offset completely the corporate income tax paid on distributed earnings.

Shareholder Allocation Integration

The shareholder allocation prototype adopts a "modified conduit" approach. Under a pure conduit approach, corporations would be treated

like partnerships, so the corporate level tax would be eliminated and all income and expenses would be imputed to shareholders, who would then include the income and expenses in their own tax liability. Shareholders would adjust their basis in shares upward by the amount of net income imputed to them, and reduce their basis in shares downward by the amount of net losses imputed to them and by the amount distributed to them by the corporation.

The modified conduit approach taken in the shareholder allocation prototype differs from the pure conduit approach. For example, the prototype imputes net income to shareholders, but not net losses. In addition, the prototype retains the corporate tax at a rate of 34 percent, but credits the shareholder with the payment. This tax is creditable against shareholder tax liability at a rate of 31 percent, but it is not refundable. The shareholder allocation prototype reduces but does not eliminate the distortions of organizational form and corporate financial policy under current law.

CBIT

The CBIT prototype imposes a uniform tax rate of 31 percent on returns to both debt and equity generated by all business. Because the tax would be collected at the business entity level, interest and dividends would be untaxed to the recipient. Under CBIT, interest on U.S. Government debt would remain taxable. Home mortgage interest would remain deductible by the borrower and taxable to the lender.

Investments in corporate equity paying current dividends would not be penalized under CBIT because, as modeled, all business entities other than very small entities, regardless of form, would be subject to the same tax rate. Under CBIT, neither interest nor dividends would be deductible at the business level or taxable in the hands of the recipient. Thus, the CBIT prototype would equalize the tax burden on interest and dividends. The efficiency calculations do not take into account any compensatory tax (see Chapter 4) on distributions from preference income.[40] Hence, CBIT would replace the combined corporate-individual tax rate on distributed earnings with a single tax levied at the CBIT rate. The same rate would apply to corporate retentions, and since, as modeled, capital gains on CBIT assets are exempt from taxation, CBIT would not distort corporate dividend policy.

13.E INTEGRATION, CORPORATE FINANCIAL POLICY, AND THE COST OF CAPITAL

Table 13.1 illustrates how successful each prototype is in reducing the three biases in current law that integration is meant to reduce: the bias against investment in corporate form, the bias against equity finance, and the bias against corporate dividend distributions. For individuals, all prototypes would reduce the tax rate on distributions of corporate equity nonpreference, U.S. source income. This reduction would address, at least in part, the current law biases against the corporate form and equity finance. The distribution-related and CBIT prototypes would result in a lower overall tax rate on distributed than on undistributed corporate equity income, reversing the current law bias against corporate dividend distributions. However, this bias could be removed from the CBIT and dividend exclusion prototypes by allowing shareholders to adjust basis of stock for retained earnings through a Dividend Reinvestment Plan (DRIP). Only the shareholder allocation prototype, as designed, would completely remove the bias against corporate dividend distributions.

Absent a special provision such as the investment income tax discussed in Chaper 6, the CBIT prototype alone reduces the current law differentials across business income sources for tax exempt entities and foreign investors. For both classes of income recipient, CBIT equalizes the tax rate on all forms of business income—corporate equity income (whether or not distributed), noncorporate equity income, and interest. The only exception is rent and royalty income, which would be taxed as under current law. Thus, CBIT would address all three of the current law biases.

Table 13.1
Total U.S. Tax Rate on a Dollar of NonPreference, U.S. Source Income from a U.S. Business Under Current Law and the Integration Prototypes

Type of Income	Current Law	Shareholder Allocation Integration	Distribution-Related Integration		CBIT
			Credit	Exclusion	
I. Individual Investor is Income Recipient					
Corporate Equity:					
Distributed	$t_c+(1-t_c)t_i$	t_i	$[(1-t_i)t_c+t_i-t_i^m]/(1-t_i^m)$	t_c	t_i^m
Undistributed	$t_c+(1-t_c)t_g$	t_i	$t_c+(1-t_c)t_g$	$t_c+(1-t_c)t_g$	$t_i^m+(1-t_i^m)t_g$
Noncorporate Equity	t_i	t_i	t_i	t_i	t_i^m
Interest	t_i	t_i	t_i	t_i	t_i^m
Rents and Royalties	t_i	t_i	t_i	t_i	t_i
II. Tax Exempt Entity is Income Recipient					
Corporate Equity:					
Distributed	t_c	t_c	t_c	t_c	t_i^m
Undistributed	t_c	t_c	t_c	t_c	t_i^m
Noncorporate Equity	t_c	t_c	t_c	t_c	t_i^m
Interest	0	0	0	0	t_i^m
Rents and Royalties	0	0	0	0	0
III. Foreign Investor is Income Recipient					
Corporate Equity:					
Distributed	$t_c+(1-t_c)t_{WD}$	$t_c+(1-t_c)t_{WD}$	$t_c+(1-t_c)t_{WD}$	$t_c+(1-t_c)t_{WD}$	t_i^m
Undistributed	t_c	t_c	t_c	t_c	t_i^m
Noncorporate Equity	t_{WN}	t_{WN}	t_{WN}	t_{WN}	t_i^m
Interest	t_{WI}	t_{WI}	t_{WI}	t_{WI}	t_i^m
Rents and Royalties	t_{WR}	t_{WR}	t_{WR}	t_{WR}	t_{WR}

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t_c = U.S. corporate income tax rate.
t_i = U.S. individual income tax rate.
t_i^m = Maximum U.S. individual income tax rate.
t_g = U.S. effective individual tax rate on capital gains.
t_{WD}, t_{WN}, t_{WI}, t_{WR} = U.S. withholding rates on payments to foreigners of dividends, noncorporate equity income, business interest, and rents and royalties, respectively. Generally varies by recipient and may be zero.

Tax Distortions in Real and Financial Investment Decisions

Although the most succinct measure of the economic benefits possible under each of the integration prototypes is the estimated welfare gain resulting from reduction or elimination of the tax distortions affecting real and financial investments, this is not the most descriptive or intuitive characterization of the effects of integration. In this section, we thus focus more directly on the extent of these distortions, relying on a more commonly used measure of the impact of the tax system on investment decisions—the cost of capital. Although the specific results noted are based on a specific CGE model (the augmented Harberger model described in Section 13.F), these results are less sensitive to the model used than the estimates of the welfare gains, which will be discussed in the following sections. We therefore also defer discussion of the various CGE models used to the following sections.

An important effect of integration is that it would change the tax cost of real investment in the corporate sector. We measure the effects of taxes on investment decisions using the cost of capital concept described in Chapter 1. Taxes on capital income generally raise the cost of capital above investors' required rate of return. All other things equal, a higher cost of capital reduces incentives to invest. The cost of capital includes

the effects of tax rates, depreciation allowances, tax credits and inflation. The cost of capital also can depend on the method of financing. Our calculations are designed to be representative, and therefore reflect a mix of debt and equity financing.

As Section 13.B discusses, the size of the distortions created by the classical corporate tax system depends in part on whether one believes that there are nontax benefits and costs to alternative corporate financial policies so that differential taxation of financial arrangements can distort financing decisions.

Under current law, corporations can reduce the tax costs of investment by financing with debt rather than with equity and by retaining rather than distributing profits. Altering financial behavior to reduce tax liability may itself cause distortions, and raise the cost of capital. For example, as a corporation becomes more highly leveraged, it increases the chances that it will experience costs associated with financial distress. Investors in the corporation would require compensation for the expected value of these costs, thereby raising the return the corporation must earn on its investments. To capture such costs, the model augments the traditional corporate sector cost of capital to reflect compensation to investors for the efficiency costs of tax-induced distortions in corporate debt and dividend policy. Tax distortions in corporate financial policy raise the cost of capital for corporate investment, and thereby act as a disincentive to investment in the corporate sector. Because economists differ on the appropriate way to model costs of financial distortion, the Report also presents effects of integration prototypes on the cost of capital that ignore the efficiency costs of tax distortions in corporate financial behavior.

Corporate Financial Behavior

Description of the Model

Corporate financial policy—which affects the debt to asset (leverage) ratio and the dividend payout ratio—is determined within the model rather than assuming leverage and distribution patterns at the outset. More specifically, the corporation chooses its financial policy to minimize its cost of capital. Consider first debt policy. Under current law a corporation may deduct its interest expense from its taxable income, so interest is taxed only to the lender. In contrast, corporate profits are taxed twice, because they are (in general) subject to both the corporate income tax and the individual income tax when distributed as dividends or recognized as a capital gain on corporate shares. Consequently, equity financed corporate investment is tax disadvantaged relative to debt financed corporate investment. This difference induces corporations to increase their use of debt. Increased use of debt, however, also carries with it the increased possibility that the corporation will incur costs associated with financial distress. In determining their leverage ratio, corporations trade off the lower tax cost of financing with debt against the nontax costs of debt, e.g., costs of financial distress. In contrast to some earlier treatments, however, debt is assumed to offer nontax benefits relative to equity (see the discussion in Section 13.B). That is, if debt and equity were taxed equally, we assume that corporations would continue to finance part of their capital stock using debt.[41]

Consider now corporate dividend policy. Under current law, the shareholder level taxes on dividends and retained earnings differ. Dividends are taxed as ordinary income, while retained earnings raise share values and are taxed on a realization basis as a capital gain. Because retained earnings benefit from the deferral of the second level of tax, they enjoy a tax advantage over dividends. On the other hand, corporate distributions may be valued differently by shareholders than retentions. As a result, the determination of optimal dividend distributions reflects a tradeoff of tax costs and nontax benefits. [42]

For modeling purposes, the corporate dividend payout ratio divides real corporate earnings into dividends and retentions; all purely inflationary earnings values are assumed to come in the form of asset appreciation and to be taxed as a capital gain upon the sale of corporate shares. Corporations choose the real dividend payout ratio (ratio

of real dividends to real earnings) that minimizes the cost of equity financed investment. Because the inflationary component of nominal income is excluded, real payout ratios are higher than conventional nominal payout ratios. Although real dividends are the choice variable in the formal models, nominal dividend payout ratios also are presented in the results. Taxes are assumed not to affect financial choices in the noncorporate business and the owner-occupied housing sectors of the augmented Harberger model used in obtaining the results presented in this section.[43]

Corporate Financial Policy Under Current Law and the Integration Prototypes

Table 13.2 shows a measure of the size of the tax incentive for a corporation to finance with debt rather than with equity and to retain rather than distribute profits. Results are presented for a neutral tax system that does not distort these decisions, for current law, and for each of the integration prototypes. The table also shows estimates of the effects of these tax incentives on corporate borrowing and dividend distribution policy.

Consider first corporate borrowing policy. Under a neutral tax system, neither debt nor equity would be tax favored, so there would be no tax advantage to debt. The behavioral model predicts that under such a tax system, corporations on average would finance 30 percent of their investments using debt. In contrast to the neutral tax system, current law discriminates against equity finance. To cover its higher tax cost and still offer the ultimate investor a 4 percent real after-tax rate of return, an equity financed investment must earn a real pre-tax rate of return that is 3.7 percentage points higher than would be required were the same investment instead financed with debt. Given the assumptions used in the calculation, this is equivalent to a 90 percent higher real after-tax required rate of return. The extra 3.7 percentage point return reflects debt's tax advantage over equity and is the amount needed to pay the higher taxes on the double-taxed equity investment. Because of this tax advantage to debt, or penalty to equity, corporations are induced to use more debt than under the neutral tax system and choose a 37 percent leverage ratio, 7 percentage points greater than its value under a neutral tax regime.[44]

Compared to current law, all the integration prototypes would reduce debt's tax advantage over equity. Consequently, all of the prototypes would promote more efficient corporate borrowing decisions by moving the corporate leverage ratio closer to its undistorted value. As modeled, CBIT eliminates differences in the taxation of debt and equity by taxing all corporate income once at the entity level at a 31 percent statutory rate. Under CBIT, corporate borrowing decisions would be undistorted by taxes. The other prototypes reduce debt's current tax advantage over equity less significantly.

Consider now corporate dividend policy. Under a neutral tax system, neither dividends nor retained earnings are tax-favored, so there is no tax advantage to retentions, nor penalty on dividends. The behavioral model predicts that under such a tax system, corporations would distribute as dividends 80 percent of their real after-corporate tax profits, while retaining and reinvesting the remaining 20 percent of real after-tax profits.

In contrast to the neutral tax system, current law favors retained earnings over dividends. Given the assumptions underlying Table 13.2, this tax advantage is 1.1 percentage points. That is, under current law, to provide an equity investor with a real after-tax rate of return of 4 percent, a corporation distributing all of its earnings as dividends must earn a real pre-tax rate of return that is 1.1 percentage points greater than that required were the company instead to retain its earnings. As a result of this tax distortion, corporations pay out roughly 73 percent of their after-tax real profits as dividends instead of the fully efficient 80 percent. Including inflation in the measure of after-tax corporate profits yields a corresponding nominal dividend payout ratio under current law of about 43 percent.

All the integration prototypes reduce the tax on dividends relative to that on retained earnings.

Table 13.2
Effect of Integration on Corporate Financial Policy[1]

	Undistorted	Current Law	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Scaled Tax Rate Replacement						
Corporate borrowing policy						
Tax incentive to borrow[2]	.000	.037	.035	.036	.035	.000
Leverage ratio[3]	30.0%	36.6%	36.5%	36.5%	36.5%	30.0%
Corporate dividend policy						
Tax penalty on dividends[4]	.000	.011	.000	-.010	-.005	.000
Dividend payout ratio						
Real[5]	80.0%	72.8%	80.0%	85.9%	82.9%	80.0%
Nominal[6]	-	42.8%	42.8%	46.4%	45.9%	42.7%
B. Lump Sum Replacement						
Corporate borrowing policy						
Tax incentive to borrow[2]	.000	.037	.022	.023	.026	.000
Leverage ratio[3]	30.0%	36.6%	34.6%	34.7%	35.1%	30.0%
Corporate dividend policy						
Tax penalty on dividends[4]	.000	.011	.000	-.006	-.003	.000
Dividend payout ratio						
Real[5]	80.0%	72.8%	80.0%	84.4%	82.4%	80.0%
Nominal[6]	-	42.8%	42.8%	45.5%	45.2%	42.7%

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[1]Calculations are based on the augmented Hargerber Model described in section 13.F. All calculations assume a 3.5 percent inflation rate and a 4 percent real after-tax rate of return.

[2]Calculated as the difference between the cost of capital for an equity financed investment and that for a debt financed investment. The calculations assume that tax depreciation equals economic depreciation and that the corporate tax rate is the maximum statutory rate. Debtholder and shareholder tax rates are estimates of average effective marginal rates based on calculations from the Office of Tax Policy Individual Tax Model, adjusted for the taxation of banks, insurance companies and tax exempt institutions.

[3]The ratio of debt to total assets.

[4]Calculated as the difference between the cost of capital for an investment whose return is subject to the dividend tax and one whose return is subject to tax as a capital gain.

[5]The ratio of (cash) dividends to after-tax real profits.

[6]The ratio of (cash) dividends to after-tax nominal profits.

Therefore, all of the prototypes encourage corporations to raise their dividend payout ratio. Both the shareholder allocation prototype and CBIT achieve uniformity in the taxation of real dividends and real capital gains. Under either prototype there is no tax penalty (nor tax advantage) to dividends, so corporations would choose the efficient 80 percent real dividend payout ratio defined by the model. Even when the taxation of distributions out of tax preference or foreign-taxed income is considered (this feature is ignored in the model results), both of these prototypes are found to come very close to eliminating tax distortions relating to payout decisions.

The distribution-related prototypes reverse the bias under current law. They tax retentions less favorably than dividends because they provide relief from the double tax on corporate equity only to the extent that earnings are distributed. This is illustrated in Table 13.2 by a negative tax penalty, i.e., a tax advantage to dividends relative to retentions for the distribution-related prototypes. Because of this favorable tax treatment, this prototype encourages corporations to pay about 83 percent of real after-tax profits (or about 46 percent of nominal after-tax profits) as dividends, as opposed to the 72 percent payout ratio (43 percent of nominal after-tax profits) under current law.[45]

Table 13.2 also presents calculations based on lump-sum replacement taxes. In these calculations, all the integration prototypes encourage (1) more efficient corporate borrowing decisions by reducing the tax advantage to debt and the leverage ratio and (2) higher, generally more efficient, dividend distributions.

Cost of Capital Under Integration Prototypes

Tables 13.3, 13.4, and 13.5 summarize the cost of capital calculations. Current law imposes

a tax penalty on investment in the corporate sector and financial distortions can raise this penalty. Thus, current law can create important distortions in the allocation of the U.S. capital stock. To assess effects of the integration prototypes on the current tax penalty on corporate investment, effects on the cost of capital must be calculated. Table 13.3 presents the effect of the current tax system on the cost of capital among sectors calculated both with and without the inclusion of the costs of the financial distortions. Table 13.4 reports calculations of the cost of capital which include the efficiency cost of tax distortions in corporate financial policy, while the calculations in Table 13.5 ignore such costs. The estimated reductions in the costs of capital suggest that the integration prototypes enhance economic efficiency relative to current law. All of the prototypes reduce the tax bias against investment in the corporate sector under current law, thereby improving the allocation of capital among sectors in the economy.

These calculations again assume that investors require a 4 percent real, financing distortion adjusted, after-tax rate of return on all investments, and that the expected inflation rate is 3.5 percent. The summary measures reported in the table are weighted averages of more detailed calculations of the cost of capital for each of 38 real assets, including 20 types of equipment, 14 types of nonresidential structures, residential structures, residential and nonresidential land, and inventories.

Cost of Capital Under Current Law

As noted above, there is no universally agreed upon model of effects of financial distortions on the cost of capital. The calculations in the first column of Table 13.3 therefore ignore such distortions. In these calculations, no premium is imposed to compensate investors for the deviation of the leverage and dividend payout ratios from their undistorted values.

To illustrate the effects of the corporate income tax on the cost of capital, Panel A shows both the corporate and noncorporate cost of capital for three particular investments: engines and turbines, industrial buildings, and business (nonresidential) land. The cost of capital for each asset is higher if the investment is undertaken by a corporation, because of the extra tax, than if the investment is undertaken by a noncorporate business. An investment in an industrial building, for example, must earn a real return of 6.5 percent if the investment is made by a corporation, but only 5.1 percent if the investment is made by a noncorporate business. These estimates reflect a significant disincentive for corporate investment; to cover extra taxes, the corporate investment must earn 27.5 percent more than the comparable noncorporate investment.

The summary measures in Panel B of Table 13.3 also illustrate the current tax bias against investment in the corporate sector. On average, the cost of capital for corporate sector investment (5.9 percent) exceeds the cost of capital for investment in the noncorporate sector (4.9 percent). Some of this difference, however, results from a different mix of capital assets in the corporate and noncorporate sector, hence only part of the difference is due to intersectoral tax distortions.

Table 13.3
Cost of Capital Under Current Law

	No Financial Distortions	With Financial Distortions
A. Representative Assets		
Engines and turbines		
Corporate	.051	.052
Noncorporate	.044	.044
Industrial buildings		
Corporate	.065	.066
Noncorporate	.051	.051
Business land		
Corporate	.061	.063
Noncorporate	.049	.049
B. Summary Measures		
Average Cost of Capital		
Corporate	.059	.060
Noncorporate	.049	.049
Owner-occupied housing	.040	.040
Economy wide	.050	.051
Coefficient of Variation	.155	.165

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Owner-occupied housing has the lowest cost of capital (4.0 percent). The return on owner-occupied housing is virtually free of tax because (1) the imputed rental value of the housing is not taxed to the owner, and (2) interest on debt financing is includable by the lender and deductible by the owner. Unless the lender's tax bracket is higher than the borrower's, the tax system as a whole does not collect tax on the return on the investment. Thus, current law discourages investment in the corporate sector in favor of investment in noncorporate enterprises, and discourages investment in business enterprises in favor of investment in owner-occupied housing. Overall, capital income taxes increase the average cost of capital for the economy as a whole (5.03 percent) to a level greater than the investor's required after-tax real return (4 percent). Current law may reduce the level of resources devoted to investment and capital formation and distort the allocation of capital across sectors of the economy.

The last line in Panel B shows the coefficient of variation for the cost of capital. The coefficient of variation is a summary measure of the degree of dispersion in the cost of capital. If all investments were taxed equally, all would have the same cost of capital and the coefficient of variation would be zero. Taxes that distort investment decisions create dispersion in the cost of capital and raise the coefficient of variation. Under current law, the coefficient of variation is 0.155.

The second column of Table 13.3 includes in the corporate cost of capital a premium for tax distortions in corporate borrowing and dividend policies. Tax distortions in corporate financial policies raise the cost of capital for corporate sector investments by approximately 0.1 percentage point, compared to the prior calculations which ignore financial distortions, while leaving unchanged the cost of capital for investments in the noncorporate sector and in owner-occupied housing. Including financial distortions, therefore, increases the tax-induced disparity in the cost of capital between corporate and other investments. With financial distortions, current law's coefficient of variation in the cost of capital is 0.165, greater than the 0.155 coefficient of variation obtained when financial distortions are ignored. By raising the cost of investing in the corporate sector, financial distortions also raise slightly the overall cost of investing in the economy.

Cost of Capital Under the Integration Prototypes

Tables 13.4 and 13.5 present summary measures of the cost of capital under current law and each of the integration prototypes, with and without financial distortions, respectively. Table 13.4 presents calculations assuming scaled tax rates for replacement revenue (Panel A), and lump-sum replacement taxes (Panel B). All the calculations in Table 13.4 assume that corporations vary their borrowing and dividend distributions in response to changes in tax rates, and include a premium for tax-induced distortions in corporate borrowing policy.

Table 13.4 presents results from calculations that include the efficiency cost of tax distortions in corporate financial policy. In these calculations the integration prototypes change both the corporate leverage ratio and dividend payout ratio from their values under current law, but also change the magnitude of the associated financial distortions. In the scaled-tax-rate calculations, statutory tax rates on capital income are increased or decreased proportionately to hold the overall tax burden on investment at its current level. Each prototype reduces the corporate cost of capital toward the lower average for the rest of the economy, thereby reducing the coefficient of variation below its current law level. CBIT reduces the coefficient of variation in the cost of capital most significantly. Compared to current law, CBIT reduces the coefficient of variation in the cost of capital by more than one-third, from 0.165 to 0.104. The other prototypes produce a smaller reduction in the coefficient of variation, a reduction that is nearly the same for each prototype. Thus, in these calculations, CBIT provides the greatest incentive for an efficient allocation of physical capital.[46]

Table 13.4
The Cost of Capital
Under Current Law and the Integration Prototypes:
With Financial Distortions

	Current Law	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Scaled tax rate replacement					
Average cost of capital					
Corporate sector	.060	.057	.057	.058	.053
Noncorporate sector	.049	.052	.052	.051	.054
Owner-occupied housing sector	.040	.040	.040	.040	.042
Economy wide	.051	.051	.051	.051	.050
Coefficient of variation	.165	.143	.144	.148	.104
B. Lump sum replacement					
Average cost of capital					
Corporate sector	.060	.052	.052	.054	.056
Noncorporate sector	.049	.049	.049	.049	.057
Owner-occupied housing sector	.040	.040	.040	.040	.043
Economy wide	.051	.048	.048	.049	.053
Coefficient of variation	.165	.107	.111	.120	.123

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The results based on lump-sum replacement taxes presented in Panel B are similar to those in Panel A. All prototypes reduce current tax distortions in the allocation of capital, particularly by reducing taxes on corporate investment relative to investment elsewhere in the economy. Thus, all prototypes lower the coefficient of variation in the cost of capital. The lump-sum replacement mechanism, however, allows all of the prototypes except CBIT to benefit from lower taxes on capital income. Consequently, the shareholder allocation prototype most significantly reduces the coefficient of variation, and provides the greatest incentive for an efficient allocation of physical capital.

Table 13.5 presents cost of capital calculations that abstract from the costs of tax distortions in corporate financial policy. In those calculations, financing is unaffected by tax policy changes, so corporations have a 73 percent real dividend payout ratio and a 37 percent leverage ratio under current law as well as under the integration prototypes.

In the scaled tax rate calculations, benefits from CBIT still exceed those of other prototypes, but because CBIT reduces financial distortions more than other prototypes, there is less difference between CBIT and the other prototypes in Table 13.5 than in Table 13.4. Nonetheless, the results in the two tables are similar. In both tables, each prototype reduces the extra tax cost of investing in the corporate sector, therefore encouraging a more efficient allocation of capital. Additionally, in both tables, shareholder allocation leads to the greatest reduction in the coefficient of variation in the calculations based on lump-sum replacement, while CBIT reduces the coefficient of variation most in the calculations based on the scaled tax rate replacement mechanism.

13.F INTEGRATION AND THE ALLOCATION OF RESOURCES

This section reviews the simulated effects of each integration prototype on the allocation of resources and economic efficiency. Results from three models are presented. The first is a Harberger-type CGE model modified to account for tax distortions in corporate financial policies. The two alternative CGE models respond to important limitations of the Harberger-type model. Overall, the cost of capital calculations provided in the preceding section are reinforced by the results from the more comprehensive CGE calculations.

Table 13.5
The Cost of Capital
Under Current Law and The Integration Prototypes:
No Financial Distortions

	Current Law	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Scaled tax rate replacement					
Average cost of capital					
Corporate sector	.059	.055	.056	.057	.053
Noncorporate sector	.049	.052	.052	.051	.054
Owner-occupied housing sector	.040	.040	.040	.040	.042
Economy wide	.050	.050	.050	.051	.050
Coefficient of variation	.155	.137	.138	.143	.103
B. Lump sum replacement					
Average cost of capital					
Corporate sector	.059	.051	.052	.053	.056
Noncorporate sector	.049	.049	.049	.049	.057
Owner-occupied housing sector	.040	.040	.040	.040	.043
Economy wide	.050	.047	.048	.048	.053
Coefficient of variation	.155	.103	.108	.115	.123

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The Augmented Harberger Model

Model Description

In Harberger's original model, the corporate tax induces capital to leave the corporate sector, a migration that continues until after-tax returns are equalized in the corporate and noncorporate sectors. Through this adjustment process the burden of the corporate tax is spread to owners of noncorporate capital and possibly to labor.[47] The corporate tax thus causes too much capital to be allocated to the noncorporate sector and not enough to the corporate sector, so that an inefficient allocation of resources results.

The first model used to study the integration prototypes is an augmented version of Harberger's original contribution.[48] While the original Harberger model had only two sectors, the augmented model embodies a richer depiction of the economy. It has 18 industries and 35 different types of assets, and includes both intermediate and final goods. In the original model, the total supplies of capital and labor were fixed. In the augmented model, the supplies of labor and capital can vary depending on their rates of return, but in the simulations the supply of capital is held constant. Investment decisions are based on the cost of capital described in the preceding section.

Harberger's approach implicitly assumed that corporate financial policy was unaffected by the tax system. In contrast, the augmented model incorporates the model of financial behavior discussed above, and so allows the tax system to influence corporate borrowing and dividend policies. Allowing financial decisions to be influenced by the tax system is particularly important in the present context, because previous research has suggested that ignoring tax-induced distortions in financial behavior can lead to substantial underestimates of the efficiency costs of the classical income tax system.[49]

As emphasized earlier, the simulation of each integration prototype holds constant real government spending. As in the discussion of the cost of capital, we emphasize calculations using scaled tax rates, though calculations based on lump-sum replacement taxes are presented for comparison.

The method of estimation proceeds by comparing a single equilibrium representing current law with a corresponding equilibrium under each integration prototype. The simulations are static, in the sense that they abstract from savings and growth issues by holding constant the economy's capital stock in the face of each prototype's tax changes. Thus, the model captures effects from

the prototype's shifts in the allocation of real resources across sectors and industries and from changes in corporate financial decisions, but abstracts from any tax-induced changes in saving and capital formation. Since integration generally is perceived as a way to improve the static allocation of real resources and to improve corporate financial policy, this is appropriate.[50]

Simulation Results

Table 13.6 presents the results of simulations that include the costs of tax distortions in corporate financial policy, and Table 13.7 presents results of calculations excluding such costs. The results in Table 13.6 that include the costs of financial distortions illustrate most broadly the costs of tax distortions under current law.

The first three rows of Panel A show each prototype's effect on the allocation of capital, based upon the scaled-tax-rate replacement mechanism. In these calculations, CBIT generates the largest changes in capital allocation. CBIT increases the corporate share of capital by almost 5 percentage points, and decreases the share of

Table 13.6
General Equilibrium Results, Augmented Harberger Model: With Financial Distortions

	Shareholder Allocation Integration	Distribution-Related Integration		CBIT
		Credit	Exclusion	
A. Scaled tax rate replacement				
Percentage change in capital allocation[1]				
Corporate sector	2.6	2.3	1.7	4.6
Noncorporate sector	-2.7	-2.4	-1.8	-3.8
Owner-occupied housing	0.1	0.1	0.1	-0.8
Annual change in welfare[2], by source of change, as a percentage of consumption (and as a percentage of tax revenue from corporate capital)				
Consumption	0.10 (2.38)	0.10 (2.38)	0.08 (1.90)	0.20 (4.76)
Corporate debt policy	-0.00 (-0.00)	-0.00 (-0.00)	-0.00 (-0.00)	0.17 (4.05)
Corporate dividend policy	0.03 (0.71)	0.01 (0.24)	0.03 (0.71)	0.03 (0.71)
Total	0.13 (3.09)	0.11 (2.62)	0.11 (2.62)	0.40 (9.52)
B. Lump sum replacement				
Percentage change in capital allocation[1]				
Corporate sector	3.4	3.2	2.6	4.3
Noncorporate sector	-2.5	-2.4	-1.9	-4.2
Owner-occupied housing	-0.9	-0.8	-0.6	-0.1
Annual change in welfare[2], by source of gain, as a percentage of consumption (and as a percentage of tax revenue from corporate capital)				
Consumption[2]	0.24 (5.71)	0.23 (5.47)	0.20 (4.76)	0.10 (2.38)
Corporate debt policy[3]	0.08 (1.90)	0.07 (1.67)	0.06 (1.43)	0.16 (3.81)
Corporate dividend policy[3]	0.03 (0.71)	0.02 (0.48)	0.03 (0.71)	0.03 (0.71)
Total	0.35 (8.33)	0.32 (7.62)	0.29 (6.90)	0.29 (6.90)

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[1]These represent changes in each sector's share of total private capital.

[2]Welfare changes from improvements in real resource allocation are measured as changes in "expanded" national income, i.e., changes in national income plus changes in the value of leisure.

[3]Welfare changes from changes in financial policies are measured using an excess burden function derived from investors' preferences for debt and for equity.

Table 13.7
General Equilibrium Results, Augmented Harberger Model: No Financial Distortions

	Shareholder Allocation Integration		Distribution-Related Integration: Credit		Distribution-Related Integration: Exclusion		CBIT	
A. Scaled tax rate replacement								
Percentage change in capital allocation[1]								
Corporate sector	2.5		2.1		1.6		4.1	
Noncorporate sector	-2.6		-2.2		-1.7		-3.5	
Owner-occupied housing	0.1		0.1		0.1		-0.6	
Annual change in welfare[2] as a percentage of consumption (and as a percentage of tax revenue from corporate capital)	0.08	(1.95)	0.08	(1.71)	0.07	(1.71)	0.17	(4.15)
B. Lump sum replacement								
Percentage change in capital allocation[1]								
Corporate sector	3.3		2.9		2.4		3.8	
Noncorporate sector	-2.4		-2.2		-1.8		-3.9	
Owner-occupied housing	-0.8		-0.7		-0.6		0.1	
Annual change in welfare[2] as a percentage of consumption (and as a percentage of tax revenue from corporate capital)	0.21	(5.12)	0.20	(4.88)	0.17	(4.15)	0.07	(1.71)

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[1]These represent changes in each sector's share of total private capital.

[2]Welfare changes are measured as changes in "expanded" national income, i.e., changes in national income plus changes in the value of leisure.

capital allocated to other sectors by an equivalent amount. The other prototypes stimulate somewhat smaller changes in the allocation of capital across sectors.

The next set of calculations in Panel A represents effects on economic well-being resulting from adoption of each prototype. Economic welfare effects are shown separately for (1) the gain caused by the improved consumption choices made possible by integration's improvement in the allocation of real resources, and (2) the gain due to improved corporate financial policy. These welfare gains do not reflect gains (or losses) arising from changes in savings and economic growth attributable to the prototypes. Two welfare measures are presented. The first measure expresses the welfare gain as a percentage of consumption under current law, and can be interpreted as the percentage gain in annual consumption possible under each prototype once the economy fully adjusts to the change in law and reaches its new equilibrium. The second measure (in parentheses) expresses the welfare gains as a percentage of the annual tax revenue from corporate capital income.

In this model, the annual economic welfare gains from the improved allocation of resources range from 0.08 to 0.20 percent of current consumption or 1.9 to 4.8 percent of tax revenue from corporate capital income (equivalent to a range of about $2.3 to $5.7 billion per year). CBIT produces welfare gains at least twice as large as that generated by the other prototypes.

The other integration prototypes generate a smaller improvement from a more efficient allocation of real resources, equivalent to about 0.10 percent of current consumption for each. Thus, although these prototypes appear structurally different, from an economic perspective they may

be quite similar. Indeed, this result can be anticipated from the above discussion of the cost of capital, which showed that these prototypes had nearly identical effects on the coefficient of variation in the cost of capital.

The next simulated economic welfare gain represents welfare effects of changes in corporate debt policy. All the integration prototypes lower the corporate leverage ratio. CBIT, however, completely eliminates the tax bias against equity, thereby producing the largest gain, equivalent to 0.17 percent of consumption, or more than 4 percent of tax revenue from corporate capital (about $4.8 billion). The dividend exclusion and shareholder allocation integration prototypes produce only negligible gains from this source.

Table 13.6 also shows the simulated economic welfare effects of changes in corporate dividend policy. With the exception of the imputation credit prototype, the prototypes yield welfare gains in this respect that are equivalent to an annual increase in consumption of 0.03 percent (or 0.71 percent of tax revenue from corporate capital). Welfare gains accompanying the imputation credit prototype are smaller at this margin.

Combining the economic welfare effects from changes in debt policy and changes in dividend policy, shows that all three prototypes improve overall corporate financial policy. These gains are largest for CBIT. By eliminating distortions in corporate financial policy, CBIT produces a welfare gain equivalent to 0.20 percent of consumption, or 4.76 percent of tax revenue from corporate capital. The shareholder allocation prototype and the dividend exclusion prototype produce much smaller welfare gains from improvements in corporate financial policy, roughly equivalent to 0.03 percent of consumption, (0.71 percent of tax revenue from corporate capital). Perhaps the most striking feature of these results is that the CBIT prototype's welfare gains from improved corporate financial policy are as large as the welfare gains from improved real resource allocation.

The total improvement in economic welfare ranges from a high under CBIT of 0.40 percent of consumption to a low for the imputation credit and dividend exclusion prototypes of 0.11 percent of consumption. By contributing most significantly to the efficient allocation of real resources and to the promotion of efficient corporate financial choices, CBIT stimulates the largest gains in economic welfare.

Panel B presents results based on lump-sum replacement taxes. In some respects these calculations are similar to those in Panel A. For example, in both set of calculations, the integration prototypes expand modestly the size of the corporate sector relative to the rest of the economy. In addition, in both sets of calculations, all prototypes generate modest economic welfare gains. In the calculations based on lump-sum replacement taxes, however, all prototypes except CBIT show welfare gains from reducing taxes on capital income (and replacing them with more efficient lump-sum taxes). In contrast, as modeled, CBIT raises distorting taxes on corporate capital income and distributes the excess revenue to consumers through lump-sum rebates. Consequently, CBIT compares less favorably with the other prototypes in the lump-sum calculations than in the scaled tax rate calculations, although this result is largely an artifact of the revenue estimate for CBIT obtained from this model. In the lump-sum calculations, the shareholder allocation prototype produces the largest improvement in economic well being, roughly equivalent to an annual gain of 0.35 percent of consumption.

Table 13.7 presents results of calculations that do not include the cost of tax-induced distortions in corporate financial policy. In those calculations, the prototypes do not change financial variables from current law values, and financial distortions do not create welfare costs.

The calculations in Table 13.7 are similar in several respects to those reported in Table 13.6. All prototypes continue to shift capital into the corporate sector and produce overall gains in

welfare, measured relative to annual consumption or annual tax revenue from corporate capital. The shareholder allocation prototype increases economic welfare the most under the lump-sum replacement taxes, while CBIT increases economic welfare the most under the scaled-tax replacement approach.

The Mutual Production Model

Model Description

An important problem with models based on the original Harberger approach is the implicit assumption that if a commodity is produced in the corporate sector, it also cannot be produced in the noncorporate sector, and vice versa. This conflicts with empirical evidence of such coexistence. To address this issue, we use a Mutual Production Model (MPM), in which corporate and noncorporate businesses coexist in industries because each has certain advantages: corporate businesses, which are relatively large, have the advantage of economies of scale, and noncorporate businesses, which are smaller, have the advantage of more effective managerial skill.[51]

This approach has been incorporated in a large-scale model that contains twelve sectors and allows for the production of capital goods as well as intermediate goods (goods used in other businesses). Each industry produces with managerial input, labor input, and a fixed capital composite of 31 different assets. The model is a closed economy model characterized by a representative consumer, a fixed labor supply, and a fixed capital stock. Financial decisions about corporate debt to equity and dividend payout ratios are affected by the tax system.

In many ways, the analysis of resource allocation in the modified MPM is structurally similar to the augmented Harberger model discussed above.[52] For example, both are disaggregated, competitive models, which base decisions about capital allocations on the user cost of capital. In addition, both are closed economy models that abstract from international capital flows. The models differ, however, in at least two key respects. First, greater substitution exists between corporate and noncorporate activity in the MPM than in the augmented Harberger model. Second, the MPM assumes a fixed labor supply, while the augmented Harberger model allows labor supply decisions to vary depending upon the after-tax wage rate. Consequently, one would expect similar, but not necessarily identical, results from the two models. Results from the MPM are presented in Table 13.8.

Simulation Results

Panel A of Table 13.8 presents the results of calculations based on the scaled-tax-rate adjustment approach. The first rows of panel A show the percentage change in the share of total capital used in each of the corporate, noncorporate business, and owner-occupied housing sectors, respectively. All of the prototypes shift capital (and other resources) into the corporate sector. CBIT's 7.1 percentage point increase in the corporate sector's share of total capital would be the largest shift, while the dividend exclusion prototype's 2.9 percentage point increase would be the smallest. For all prototypes, the resource flow into the corporate sector come primarily from a contraction of the noncorporate business sector, but owner-occupied housing also would decline slightly in the CBIT and imputation credit prototypes.

The next two rows of panel A illustrate the change in corporate financial policy attributable to each prototype. As a point of reference, a 5 percentage point reduction in the corporate leverage ratio would eliminate current law's distortion in this model. In these calculations, CBIT eliminates the tax incentive to borrow, and thus reduces the corporate leverage ratio to its undistorted level. The shareholder allocation prototype achieves only a slight reduction. In contrast, the distribution-related prototypes do not improve corporate borrowing policy in this model.[53]

Both the shareholder allocation and CBIT prototypes eliminate the tax penalty on dividends. Consequently, under both prototypes, corporations increase their real dividend payout ratio by 9

Table 13.8
General Equilibrium Results, Mutual Production Model: With Financial Distortions

	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Scaled tax rate replacement				
Percentage change in capital allocation[1]				
Corporate sector	4.3	5.5	2.9	7.1
Noncorporate sector	-4.5	-5.3	-3.0	-6.7
Owner-occupied housing	0.2	-0.2	0.1	-0.4
Percentage change in financial policy relative to current law				
Corporate debt to asset ratio	-1.0	2.0	1.0	-5.0
Real dividend payout ratio	9.0	16.0	10.0	9.0
Annual change in welfare[2], by source of change, as a percentage of consumption (and as a percentage of tax revenue from corporate capital)				
Consumption	0.27 (3.57)	0.37 (4.90)	0.22 (2.91)	0.43 (5.69)
Corporate debt policy	0.06 (0.79)	-0.22 (-2.91)	-0.10 (-1.32)	0.23 (3.05)
Corporate dividend policy	0.07 (0.94)	0.01 (0.13)	0.07 (0.93)	0.07 (0.93)
Total	0.40 (5.30)	0.16 (2.12)	0.19 (2.52)	0.73 (9.67)
B. Lump sum replacement				
Percentage change in capital allocation[3]				
Corporate sector	6.1	6.2	4.2	7.2
Noncorporate sector	-5.0	-5.0	-3.5	-6.7
Owner-occupied housing	-1.1	-1.2	-0.7	-0.5
Percentage change in financial policy relative to current law				
Corporate debt to asset ratio	-3.0	-1.0	-1.0	-5.0
Real dividend payout ratio	9.0	14.0	10.0	9.0
Annual change in welfare[2], by source of gain, as a percentage of consumption (and as a percentage of tax revenue from corporate capital)				
Consumption[2]	0.54 (7.15)	0.50 (6.62)	0.39 (5.16)	0.44 (5.83)
Corporate debt policy[3]	0.11 (1.46)	0.11 (1.46)	0.07 (0.93)	0.23 (3.04)
Corporate dividend policy[3]	0.07 (0.93)	0.04 (0.53)	0.07 (0.93)	0.07 (0.93)
Total	0.72 (9.54)	0.65 (8.61)	0.53 (7.02)	0.74 (9.80)

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[1]These represent changes in each sector's share of total private capital.

[2]The model measures the welfare change from an improved allocation of real resources as the compensating variation of the change from current law to integration. Compensating variation is a measure of the dollar value of the change in consumer's utility as a result of integration.

[3]Welfare changes from changes in financial policies are measured using an excess burden function derived from investor's preferences for debt and for equity.

percentage points to the undistorted value calibrated in the model. Corporations also increase their dividend payout ratio under the two distribution-related prototypes. Because distribution-related prototypes relieve the corporate level tax on corporate equity only to the extent profits are distributed, corporations actually pay an inefficiently large fraction of their earnings as dividends under these prototypes. Nonetheless, compared to current law, both prototypes encourage corporations to reduce the difference between their actual payout ratio and the undistorted payout ratio.

The final four rows of Panel A present each prototype's welfare changes in total, and a decomposition by the source of change. Annual welfare gains are expressed as a percentage of consumption under current law and as a percentage of current revenue from corporate capital income (in parentheses). By improving the allocation of resources, all of the prototypes generate improved consumption choices, but CBIT has the largest improvement, equivalent to 0.43 percent of consumption. The dividend exclusion prototype yields the smallest improvement, equivalent to 0.22 percent of consumption.

The shareholder allocation and CBIT prototypes improve corporate borrowing policy. CBIT generates an economic welfare gain equivalent to 0.23 percent of consumption. While the welfare gain accompanying the shareholder allocation prototype is smaller in this dimension, the distribution-related prototypes encourage corporations to increase borrowing slightly above levels under current law and thereby generate a small welfare loss.

The shareholder allocation and CBIT prototypes both eliminate the tax distortion in corporate dividend policy, and in so doing generate a small welfare gain equivalent to 0.07 percent of consumption. Although the distribution-related prototypes encourage firms to distribute an inefficiently large fraction of their profits as dividends, by inducing firms to move the payout ratio closer to its undistorted level, both generate welfare gains at this margin.

In total, in the scaled-tax-rate calculations the prototypes produce annual economic welfare gains ranging from a low of under 0.2 percent of consumption for distribution-related integration to a high of 0.73 percent of consumption for CBIT. In these calculations, CBIT generates as large or larger welfare gains than the other prototypes in every category.

Panel B shows calculations based on lump-sum replacement. In these calculations, all of the prototypes promote more efficient consumption, corporate borrowing, and corporate dividend policies. The other prototypes compare more favorably to CBIT than in panel A because, as modeled, CBIT would raise taxes on capital income, while the other prototypes would lower capital income taxes. Consequently, although in part an artifact of the modeling, the shareholder allocation prototype would generate an annual welfare gain equivalent to 0.72, almost as large as that under CBIT (0.74 percent of consumption). Annual welfare gains for the imputation credit and dividend exclusion prototypes would be 0.65 and 0.53 percent of consumption, respectively.

Portfolio Allocation Model

Model Description

Both the augmented Harberger model and the MPM capture tax distortions in the allocation of physical capital among the corporate, noncorporate, and owner-occupied housing sectors. Both also capture tax distortions in the supply of corporate debt and dividends. Neither model, however, is designed to capture tax distortions in the allocation of financial assets across households. The portfolio allocation (PA) model addresses this shortcoming by focusing on tax distortions in household portfolio decisions.[54] The PA model combines an allocation of capital across sectors reflecting production characteristics and consumer preferences with an allocation of capital across investors and forms of investment through a portfolio mechanism. In the PA model, real and financial variables are determined simultaneously, and taxes can distort both real and financial decisions.

The PA model explicitly links individual financial decisions with real variables in the economy. Households and pension funds acquire securities in a manner consistent with their risk-return preferences, while businesses and the government sector issue securities to meet their demands for capital. Individuals allocate their wealth among corporate equity, noncorporate equity, rental housing, owner-occupied housing equity, durable goods, tax-exempt bonds, and taxable debt according to the riskiness as well as the after-tax rate of return on these assets. Individual households are distinguished by income and wealth levels, tax filing status, and whether they rent or own their homes.

Simulation Results

Results from the PA model are displayed in Tables 13.9 and 13.10. As with the other models, two sets of calculations are performed. In the first set of calculations, presented in Table 13.9, statutory tax rates on capital income are increased or decreased proportionately to satisfy the constraint that revenues remain constant. In an alternative set of calculations, presented in Table 13.10, lump-sum taxes or rebates are used to satisfy the equal yield constraint.

Scaled Tax Replacement. Table 13.9 presents integration's aggregate effects on the allocation of real and financial capital and on corporate financial policy. The top panel shows changes in the allocation of real capital. In the portfolio allocation model, all of the prototypes shift capital into the corporate sector. The CBIT prototype produces the largest increase in corporate capital, equivalent to 2.5 percent of total U.S. real capital, followed by shareholder allocation integration (1.7 percent expansion) and then by distribution-related integration (1.6 percent expansion for the dividend exclusion prototype). In all prototypes, the flow of capital into the corporate sector comes from a contraction of other sectors. The prototypes improve the allocation of capital within the business sector as well as between the business and nonbusiness sectors.

The middle panel of Table 13.9 presents changes in holdings of financial assets, divided into changes in households' holdings and changes in pension funds' holdings.[55] In the PA model, households can make financial investments in corporate stock, noncorporate equity interests, and debt. All of the prototypes induce households to raise their holdings of corporate stock. CBIT produces the largest such shift, equivalent to 6.5 percent of total wealth, compared to about 3 to 4 percent for the other prototypes. In addition, all prototypes reduce households' holdings of taxable bonds. The shareholder allocation and distribution-related prototypes produce a reduction equivalent to between 2.0 percent and 2.5 percent of total wealth. CBIT generates a larger reduction, and the household sector becomes a net borrower in the taxable debt market. Traditional tax-exempt debt holdings are largely unaffected by integration (except under CBIT). CBIT debt, which is tax-exempt to the lender, accounts for 11.6 percent of total wealth. To a large extent, CBIT debt substitutes for taxable debt under current law. Thus, it is useful to compare the sum of taxable and CBIT debt holdings under CBIT and current law. Combining CBIT's 14.8 percent reduction in taxable debt with the 11.6 percent of total wealth that corresponds to CBIT debt shows that CBIT reduces households' direct holdings of formerly taxable debt by 3.2 percent of total wealth. The other prototypes reduce direct household holdings of currently taxable debt by an amount equivalent to 2.0 to 2.5 percent of private wealth. Combining all types of debt shows that CBIT generates a larger reduction in direct debt holdings by households, equivalent to 4.3 percent of total wealth while the other prototypes generate a smaller reduction, equivalent to between 2.0 and 2.6 percent of wealth. Finally, note that holdings of noncorporate capital decline under all the integration prototypes.[56]

Pension funds' portfolio shifts are the reverse of household portfolio shifts. In the PA model, pension funds allocate assets between debt and corporate equity. By lowering the tax burden households face on corporate equity, but not extending the tax reduction to pension funds, all prototypes induce pension funds to reduce

Table 13.9
The Effect of Integration on the Allocation of Physical Capital, Wealth, and Corporate Financial Policy Results from the Portfolio Allocation Model
(Scaled Tax Rate Replacement)

Prototype	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Change in the Allocation of Physical Capital (as a percent of total physical capital)				
Corporate Business	1.7%	1.3%	1.6%	2.5%
Noncorporate Business	-0.1%	-0.1%	-0.1%	-0.1%
Noncorporate Rental Housing	-0.3%	-0.3%	-0.4%	-0.4%
Total Noncorporate Capital	-0.4%	-0.4%	-0.5%	-0.5%
State and Local Government	-0.1%	-0.1%	-0.1%	0.0%
Owner-occupied Housing	-0.7%	-0.4%	-0.5%	-0.8%
Consumer Durables	-0.5%	-0.5%	-0.5%	-1.2%
Total Household Capital	-1.3%	-0.9%	-1.0%	-2.0%
B. Change in The Allocation Of the Household Sector's Portfolio (as a percent of total wealth)				
Corporate Stock	3.9%	3.2%	4.0%	6.5%
Debt				
Taxable to Investors	-2.3%	-2.0%	-2.5%	-14.8%[1]
Not Taxable to Investors				
Traditional Tax-Exempt	-0.1%	-0.1%	-0.1%	-1.2%
CBIT	0.0%	0.0%	0.0%	11.6%
Total Tax-Exempt	-0.1%	-0.1%	-0.1%	10.5%
Total	-2.4%	-2.0%	-2.6%	-4.3%
Noncorporate Business	-0.1%	-0.1%	-0.1%	0.0%
Noncorporate Rental Housing	-0.2%	-0.2%	-0.4%	-0.4%
Noncorporate Total Capital	-0.3%	-0.3%	-0.5%	-0.4%
Owner-occupied Housing	-0.6%	-0.4%	-0.4%	-0.7%
Consumer Durables	-0.5%	-0.4%	-0.5%	-1.1%
Total Household Capital	-1.1%	-0.8%	-0.9%	-1.8%
Pensions				
Corporate stock	-2.0%	-1.7%	-2.5%	-0.3%
Debt	2.0%	1.7%	2.5%	0.3%
C. Change in Corporate Financial Policy (in percentage points)				
Leverage Ratio	-3.2%	-2.7%	-2.3%	-14.7%
(Nominal) Dividend Payout Ratio	3.2%	3.3%	3.8%	3.0%

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[1]The household sector goes from a net lender in the market for taxable bonds under current law to a net borrower under CBIT.

corporate equity holdings and increase debt holdings. Consequently, for the economy as a whole, the shift out of debt and into equity is less pronounced than the change for the household sector alone. Overall, in their effects on households' direct holdings plus pension fund holdings, the distribution-related and shareholder allocation prototypes stimulate a move into corporate equity equivalent to between 1.5 and 1.9 percent of total wealth. CBIT generates a much larger net increase in holdings of corporate shares, equivalent to 6.2 percent of total wealth. The total shift from debt is equivalent to -4.0 percent of total wealth under CBIT, and to between -0.1 and -0.4 percent of total wealth for the other prototypes.[57]

The bottom panel of Table 13.9 presents each prototype's effect on corporate borrowing and dividend policy. All prototypes encourage corporations to use less debt, but CBIT generates a 14.7 percentage point reduction in the corporate leverage ratio, much larger than the reduction generated by the other integration prototypes. Dividend payout ratios increase in all cases (by between 3.0 and 3.8 percentage points); not surprisingly, the largest such increase accompanies the dividend exclusion prototype.

Lump-Sum Tax Replacement. Table 13.10 summarizes PA model results illustrating integration's aggregate effects on the allocation of real and financial capital and on corporate financial policy assuming lump-sum taxes are used to maintain revenue neutrality. The allocational impacts of integration are qualitatively similar to those based on scaled tax rate

Table 13.10
Summary of the Effects of Integration on Real and Financial Decisions: Results from the Portfolio Allocation Model
(Lump Sum Replacement)

Prototype	Shareholder Allocation Integration	Distribution-Related Integration: Credit	Distribution-Related Integration: Exclusion	CBIT
A. Change in the Allocation of Physical Capital (as a percent of total physical capital)				
Corporate Business	2.8%	2.6%	2.6%	2.8%
Total Noncorporate Capital	-0.3%	-0.3%	-0.3%	-0.4%
State and Local Government	-0.1%	-0.1%	-0.1%	0.0%
Total Household Capital	-2.3%	-2.2%	-2.2%	-2.3%
B. Change in the Allocation of the Household Sector's Portfolio (as a percent of total wealth)				
Corporate Stock	6.2%	5.5%	5.3%	6.5%
Debt	-3.8%	-3.3%	-3.1%	-4.1%
Total Noncorporate Capital	-0.3%	-0.2%	-0.2%	-0.4%
Total Household Capital	-2.0%	-1.9%	-1.9%	-2.1%
Pensions				
Corporate Stock	-2.3%	-2.0%	-1.9%	-0.2%
Debt	2.3%	2.0%	1.9%	0.2%
C. Change in Corporate Financial Policy (in percentage points)				
Leverage Ratio	-8.3%	-7.3%	-6.9%	-16.6%
Nominal Dividend Payout Ratio	3.25	3.4%	3.8%	3.0%

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replacement: (1) the share of physical capital allocated to the corporate sector rises while that allocated to the noncorporate and household sectors declines, (2) households shift toward corporate equity and away from debt, while pension portfolios are reallocated in the opposite direction, (3) corporations reduce their leverage ratio and increase their dividend payout ratio, and (4) CBIT generates shifts in the allocation of physical capital and financial assets that are at least as large as those generated by the other prototypes.

Summary of Results

There is no universal agreement about the most appropriate way to model the effects of the corporate income tax (and the effects of reforms of that tax) on real and financial decisions. This Report examined three different models of the domestic economy to assess the likely effects of integration. The models are in general agreement with respect to the major effects of integration on capital allocation, corporate financial policy, portfolio allocation, and the overall effect on economic welfare.

The results of all the models indicate that integration will encourage capital to shift into the corporate sector. Most of this shift comes from the noncorporate business sector,[58] but in some cases owner-occupied housing also is reduced.

With only one exception, the models that allow for tax-induced distortions in corporate borrowing behavior agree that the integration prototypes will improve efficiency by reducing corporate borrowing. In general, the models suggest that because shareholder allocation and CBIT reduce most significantly the tax penalty on corporate equity, they similarly reduce most significantly tax-motivated corporate borrowing.

The models also agree that the integration prototypes will increase corporate dividend payments relative to current law. Shareholder allocation integration and CBIT promote fully efficient corporate dividend policy, while the distribution-related prototypes can encourage corporations to make inefficiently large dividend payouts. Nonetheless, in some calculations even the distribution-related prototypes improve corporate dividend policy relative to current law.

All the models show that the integration proposals stimulate improvements in overall

economic well-being. The exact magnitude of the improvements can vary from model to model and from prototype to prototype, so integration's improvement in welfare ranges between 0.07 percent and 0.73 percent of current consumption. Importantly, these gains take into account that, for some of the prototypes, taxes would have to be raised to finance integration. Shareholder allocation integration and CBIT tend to produce the largest welfare gains. In addition to the traditional welfare improvement from the reallocation of physical capital (and other real resources) from the rest of the economy into the corporate sector, the models also show that, under reasonable assumptions, integration may stimulate important welfare gains from improvements in corporate financial policy.

Comparison of Welfare Gain Among Models

The welfare gains from integration are generally larger in the MPM than in the augmented Harberger model. This is especially true for the gain from improved resource allocation, and in some cases for the gain from changes in corporate financial policy as well. An important explanation for this difference is the MPM's greater substitutability between corporate and noncorporate businesses within an industry. Thus, in the MPM, current law reduces economic efficiency more than in the augmented Harberger model. Both models predict a similar range of welfare changes from changes in corporate debt, ranging from roughly zero to about 0.20 percent of consumption. Additional reasons for this variation include (1) slight differences in the underlying behavioral models in the measurement of the tax advantage of equity and (2) differences in the tax rates required for the scaled-tax-rate calculations.[59]

The size of the simulated gains are comparable to, or can be reconciled with, results from simulations of similar tax law changes published in economic literature.[60] Consider first the gains from an improved allocation of real resources. Using a simple two sector model, Harberger originally estimated that the corporate income tax's distortion in the allocation of real resources produced a welfare gain roughly equivalent to between 0.5 percent and 1.0 percent of GNP, corresponding to between 0.75 percent and 1.5 percent of consumption. Shoven corrected two errors in Harberger's original analysis, dramatically reducing the size of the corporate tax's welfare cost. He then expanded the model from two to twelve industries, increasing the welfare cost of the tax. On balance, Shoven's estimates of the welfare costs of the corporate tax ranged between 0.75 percent and 1.5 percent of consumption. Fullerton, et al. obtained a similar estimate of the welfare cost of the distortion in the allocation of real resources under the corporate tax.[61]

These studies differ in several respects, but share a common feature. They all use average effective tax rates to measure the distortions of the corporate income tax. Average effective tax rates are measured for existing assets by taking the ratio of the observed tax payments from the existing stock of capital to the income generated by that stock. While such rates may be useful for many purposes, they can be crude representations of the effect of taxes on investment incentives. For example, they can include tax revenue from lump-sum features of the tax system, from investments made under tax systems no longer in existence, from unexpectedly profitable investments, or from pure monopoly profits. In addition, as an empirical matter, they bear little resemblance to the theoretically preferable concept of marginal effective tax rates.[62]

A better measure of the effect of taxes on investment incentives is the marginal effective tax rate (or, equivalently, the cost of capital), which relates to incentives for incremental uses of capital. The marginal effective tax rate is calculated using information on expected financing sources, economic depreciation rates, inflation rates, required rates of return, statutory tax rates, depreciation allowances, and credits. It represents taxes that business enterprises would expect to pay on an additional unit of new investment that is just profitable at the margin. Thus, in contrast to the average effective tax rate, it relates closely to the forward-looking nature of a business

enterprise's investment decisions. Although such calculation cannot include every detail of the tax code, marginal effective tax rates dominate average effective tax rates as a measure of the incentive to invest.

Studies using marginal effective tax rates have found smaller welfare costs for tax distortions in the allocation of real capital than those using average effective tax rates. For example, Fullerton and Henderson adopt this approach and find that eliminating all differences in the taxation of corporate and noncorporate investments would produce a very small annual economic welfare gain, equivalent to about 0.007 percent of expanded national income (national income plus labor), or roughly 0.014 percent of consumption.[63] They find that eliminating all intersectoral tax distortions, including those between corporate and noncorporate capital and between business and housing capital, would produce larger gains. Depending on the assumed ease with which capital can migrate across sectors, these annual gains range from 0.039 percent of consumption when such migration is relatively difficult to 0.35 percent of consumption when such migration is relatively easy. For a unitary elasticity of substitution between corporate and noncorporate capital (as assumed in the augmented Harberger calculations above), the annual gain is roughly equivalent to 0.11 percent of consumption.

Fullerton and Henderson obtain these relatively small gains in part because, at the margin, debt finance and favorable individual level taxation of capital gains on corporate stock eliminate much of the tax disadvantage to investment in the corporate sector.[64] In addition, Fullerton and Henderson's calculations are based on the new view of dividend taxes, which magnifies the benefit of the favorable taxation of capital gains on corporate share appreciation, thereby reducing the welfare cost of the current tax system. Even under the traditional view adopted in this Report, the Fullerton-Henderson estimates of the welfare costs of the corporate tax based on marginal effective tax rates are likely to remain small compared to earlier estimates. Finally, in all calculations, Fullerton and Henderson hold constant the overall average effective tax rate for the economy as a whole. Since the tax changes they consider would otherwise reduce revenue, their estimated welfare gains are smaller than those resulting from lump-sum replacement taxes.

In both the augmented Harberger model and the MPM used in this Report, we have adopted a marginal approach to measuring investment incentives, and so obtain results that are more comparable to those of Fullerton and Henderson than to the early results of Harberger and Shoven. For a variety of reasons, however, one would not expect identical results in the two models. For one thing, in several key respects, the modeling assumptions used in the augmented Harberger model differ from those in Fullerton and Henderson.[65] In addition, Fullerton and Henderson analyze tax policy changes starting from 1985 law, while this Report analyzes tax policy changes starting from current law. Fullerton and Henderson also hold constant the revenue from capital income taxes by directly adjusting the cost of capital, while we maintain revenue neutrality by using lump-sum taxes or by adjusting statutory tax rates. Finally, this Report studies integration prototypes that differ substantially from the hypothetical effective tax rate equalization policies considered by Fullerton and Henderson. Thus, one might expect that the results presented in this Report should be similar, though not equivalent, to those presented in Fullerton and Henderson, if financing distortions are ignored.

That is indeed the case, especially for the calculations based on the scaled tax replacement mechanism. For the integration prototypes studied in this Report, the augmented Harberger model simulates annual welfare gains from improved consumption choices ranging from 0.07 to 0.17 percent of consumption when financial distortions are ignored, and from 0.08 to 0.20 percent of consumption when financial distortions are captured. The most similar calculation in Fullerton and Henderson yields a 0.11 percent gain for complete elimination of intersectoral tax distortions, the same order of magnitude as results presented in this Report. In part because they

adopt the new view of dividends, however, they estimate smaller welfare gains from eliminating the corporate-noncorporate tax differential.

The allocational gains in the MPM used in this Report are substantially larger than most of those obtained by Fullerton and Henderson; in the scaled-tax-rate calculations, the annual gains range from 0.22 percent to 0.43 percent of consumption. Despite the use of marginal effective tax rates, these gains are almost as large as those obtained by Harberger and Shoven. The primary reason for the MPM's relatively large welfare gain is the greater substitutability of capital and other resources between the corporate and noncorporate sector of each industry. As a result, even small tax differences can reduce economic efficiency. Thus, the MPM calculations can be compared most fruitfully to the upper range of the Fullerton-Henderson calculations. Both sets of calculations assume significant substitutability of resources across sectors, thereby yielding large welfare gains associated with reforms at this margin.

Consider now the size of the gains from improved corporate debt policy. In the scaled-tax-rate calculations, the augmented Harberger model used in this Report produces annual gains ranging from negligible improvements under some prototypes to 0.17 percent of consumption for CBIT, while the modified MPM yields annual gains ranging from -0.22 percent of consumption for the distribution-related prototypes to 0.23 percent of consumption for CBIT. These gains from improved corporate borrowing decisions appear smaller than those estimated by others.[66] Several factors account for this Report's somewhat smaller gain. One is that not all the integration prototypes eliminate debt's tax advantage over equity, while earlier studies considered complete elimination of debt's tax advantage. Second, our scaled-tax-rate calculations significantly reduce gains from improved financial choices by raising the difference between the statutory corporate tax rate and the tax rate on interest income for nonCBIT prototypes. No such effect would be found in earlier studies that implicitly used lump-sum replacement taxes or that assumed that integration would eliminate debt's tax advantage. Third, earlier studies assumed that corporate debt would decline to zero, absent a tax advantage, while this Report recognizes potential nontax benefits of debt so even without a tax advantage corporations would continue to finance a substantial portion (30 percent) of their capital investments with debt. Thus, there is a much larger scope for improvement from eliminating or reducing the tax advantage of debt in the earlier studies than in the models used in this Report.

Finally, increases in economic well-being accompanying integration are similar to those estimated using CGE models for the Tax Reform Act of 1986. For example, using lump-sum replacement taxes, Gravelle (1989) estimated that the 1986 Act would generate annual welfare gains ranging from 0.08 to 2.00 percent of consumption. Also using lump-sum replacement taxes, Fullerton, Henderson, and Mackie (1987) estimated that annual welfare changes attributed to the 1986 Act would range from -0.30 to 0.89 percent of consumption. In their calculations most similar to those in this Report, they estimated an annual welfare gain equivalent to 0.37 percent of consumption. The annual welfare gains presented in this Report are therefore on the same order of magnitude as estimates for the 1986 Act.[67]

Integration in an International Context

Although the models described in the preceding sections differ in many respects, they all ignore international trade and capital flows and treat the United States as if it were a closed economy. Closed economy effects of tax policies may be modified in important ways in an open economy. For example, in a closed economy, a successful saving incentive might be expected to lower the cost of capital and increase domestic investment. In contrast, in a small, open economy much of the incremental saving might flow abroad, leaving the domestic capital stock largely unaffected. It is desirable in principle, therefore, to analyze the integration prototypes using a model incorporating international capital mobility. Such a model, which is presented in the next section, permits analysis of effects of tax changes

on holdings of debt and equity by U.S. and non-U.S. investors.

Economists have analyzed the degree to which capital is internationally mobile, but there is no consensus.[68] Also important in the study of integration is the relative mobility of debt and equity capital, since the integration prototypes examined in this Report affect returns from debt and equity investments differently.[69] While there is controversy over the extent of mobility of debt and equity capital, this Report analyzes some possible consequences of the integration prototypes on capital flows. The effects of integration proposals on foreign investment in the United States, U.S. investment abroad, the components of the balance of payments, and the U.S. domestic capital stock are examined using an open economy model. While the Report offers some tentative conclusions based on the model results regarding possible net effects of integration-related changes in incentives in an open economy setting, more research is needed before reaching firm conclusions.

A Model of Taxation and International Capital Mobility

Introducing trade and capital flows complicates significantly the analysis of corporate taxation. As a consequence, economic models of international corporate flows typically embody a much simpler representation of the domestic economy than the closed economy models described above. This Report uses a model of trade and capital flows between the United States and an aggregate of all other countries, viewed as a single foreign country.[70] While such a representation is stylized, it offers an indication of the likely importance of internationally mobile debt and equity capital for assessing economic effects of integration.

In the model, each country has four production sectors: import-competing goods (from the U.S. perspective), equipment (producers' durables, such as machines and airplanes), non-equipment export goods, and nontraded goods and services. Consumers in each country can choose between the consumption of domestic and imported traded goods depending on relative prices.

Residents of each country allocate wealth among four assets: domestic debt, foreign debt, domestic equity, and foreign equity. The allocation depends on real after-tax rates of return. Foreign and domestic debt are assumed to be closer substitutes than foreign and domestic equity, and, thus, international holdings of debt are much more responsive to changes in relative returns. Business enterprises in each country choose the mix of debt and equity to supply depending on market interest rates and equity returns, and on the tax treatment of these payments at the corporate level. The international model thus has features in common with the portfolio allocation model presented above.

The model takes into account the relationship among the three major components of the U.S. balance of payments: the balance of merchandise and services trade, the balance of capital inflows and outflows, and the balance of receipts and payments of investment income on cross-border holdings. One possibility is an increase in imports relative to exports in the long run, and a resulting fall in the output of the import-competing sector.

The different tax treatment of resident and nonresident investors also plays an important role in the model. For example, under current law, foreign investors in U.S. equity are subject to the U.S. corporate level tax but not to the investor level taxes imposed on a U.S. resident. They pay only withholding taxes on dividends and these are very low on average because of treaty relief. Similarly, portfolio interest paid to foreigners is exempt from U.S. tax under current law. To the extent that integration prototypes alter the relative tax treatment of foreign and resident investors, they can lead to a reallocation of internationally mobile capital among countries.

Three integration prototypes are modeled explicitly: the shareholder allocation prototype and the two distribution-related prototypes. While potential effects of CBIT are discussed, there is no explicit modeling of the prototype due to the

significant uncertainty surrounding the relative substitutability of U.S. exempt and taxable debt in the portfolios of U.S. and non-U.S. investors. As before, two means of financing revenue costs of integration are presented: lump-sum taxes and scaled-rate replacement taxes on capital income. Table 13.11 presents the percentage change in the U.S. and foreign capital stock, cross-border holdings of debt and equity, and after-tax returns. In addition, the three rows at the bottom of the table present the absolute (constant) dollar changes (constrained to sum to zero) in trade, capital flows, and net international investment income. As with the closed economy models, simulation results refer to effects of integration prototypes on economic variables in the long run.

Foreign Holdings of U.S. Capital

The shareholder allocation prototype encourages foreign investors to reduce holdings of U.S. equity and increase holdings of U.S. debt. Pre-tax returns for foreign investors in U.S. equity, who concentrate their holdings in the U.S. corporate sector, decline as a result of the shift of capital into the corporate sector by U.S. residents. Because they would be denied the credit for the corporate level withholding tax, their after-tax returns decline as well. Accordingly, there is a decline in foreign investment in U.S. equity. The magnitude of the decline, of course, depends more generally on how responsive foreigners are to such price changes. With respect to debt, the shareholder allocation prototype raises slightly the U.S. interest rate because of the competition from newly desirable equity. Foreign holdings of U.S. debt increase as a result. The overall effect on foreign holdings of U.S. capital depends on the relative mobility of debt and equity capital. In the simulations reported here, equity holdings fall, while debt holdings increase. Nonetheless, since debt is assumed to be more internationally mobile than equity,[71] total foreign investment in the U.S. increases.

The distribution-related prototypes have a similar effect on incentives for foreign investment in the United States. Foreign holdings of U.S. equity decline, while holdings of U.S. debt increase. Because the separate corporate tax is maintained, however, corporations deduct interest at a higher rate than under the shareholder allocation prototype. Thus, the U.S. interest rate is higher and incentives for foreigners to shift into U.S. debt are larger. The calculations presented in Table 13.11 suggest that distribution-related prototypes increase (slightly) foreign investment in the United States. As with the shareholder allocation prototype, the change in the composition of foreign investment is more significant than the change in its total amount.

We do not model CBIT's effect on foreign investment in the United States. CBIT would shift the tax on business interest from the lender to the borrower. As a consequence, the market interest rate on business debt would fall below its current level. Since non-U.S. investors receive no credit for the tax that the borrower has paid on interest, their net return from U.S. lending would fall, giving them an incentive to shift out of business debt. To the extent that domestic investors shift capital into the corporate sector and, thereby, lower the pre-tax rate of return in that sector, foreign investors would have an incentive to reduce their holdings of U.S. equity. However, under CBIT, substantial amounts of government and home mortgage debt are taxed identically as under current law, offering pre-tax interest rates. Foreign investors may shift out of corporate bonds (and equity) and into these nonCBIT debt instruments, thereby mitigating any outflow of capital that might otherwise occur.

U.S. Holdings of Foreign Capital

The shareholder allocation prototype reduces incentives for U.S. taxpayers to hold foreign debt, and increases the incentive to hold foreign equity. For U.S. taxpayers, the shareholder allocation prototype raises the after-tax return to domestic investment. The after-tax return on domestic equity rises because of relief from the corporate tax, and the after-tax return on domestic debt rises because of the likely increase in U.S. interest rates. Consequently, foreign debt is less attractive relative to both domestic debt and domestic equity. Foreign equity is more attractive for U.S.

Table 13.11
General Equilibrium Results: International Model
Projected Long-Run Effects of Tax Integration Alternatives

	Shareholder Allocation Financed by		Dividend Credit Financed by		Dividend Exclusion Financed by	
	Lump Sum Tax	Tax on All Capital	Lump Sum Tax	Tax on All Capital	Lump Sum Tax	Tax on All Capital
Percentage Changes						
U.S. Capital Stock	.6	1.9	1.2	2.7	.9	1.5
Rest of the World Capital Stock	-.3	-1.2	-.6	-1.3	-.4	-.9
U.S. Holdings of Foreign Debt	-10.9	-26.0	-11.9	-24.6	-9.2	-17.6
U.S. Holdings of Foreign Equity	10.6	43.7	10.7	30.2	8.6	24.8
Foreign Holdings of U.S. Debt	7.5	31.8	10.4	28.4	7.7	17.9
Foreign Holdings of U.S. Equity	-24.1	-46.3	-17.1	-30.3	-12.9	-24.6
After-tax Return to U.S. Equity (U.S. Residents)	20.1	1.8	13.7	7.7	10.1	2.6
After-tax Return to U.S. Equity (Rest of the World Residents)	-13.8	-28.3	-8.2	-15.2	-6.1	-12.4
U.S. Interest Rate	.8	3.3	1.6	3.8	1.2	2.5
After-tax Real U.S. Interest Rate (U.S. Residents)	2.0	-18.0	3.8	-6.9	2.8	-6.5
Return to Foreign Equity (Rest of the World Residents)	.3	.1	.3	.4	.2	.2
Return to Foreign Debt (Rest of the World Residents)	.4	1.1	.6	1.2	.4	.8
Absolute Changes (in $ billions, 1988 base)						
Change in Annual Net Capital Flows	-1.5	-.8	1.4	4.5	1.0	1.4
Change in Net Trade Balance	-20.7	-48.8	-12.8	-25.6	-9.6	-21.7
Change in Net Receipts of Investment Income	22.2	49.6	11.4	21.1	81.6	20.3

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Note: Simulations assume all U.S. debt is exempt under CBIT. See discussion in text.

investors because foreign tax credits are passed through to U.S. shareholders.

Distribution-related integration also reduces incentives for U.S. investors to hold foreign debt. In contrast to the shareholder allocation prototype, however, distribution-related integration has an uncertain effect on incentives for U.S. investors to hold foreign equity. Under an imputation credit system, the dividends earned from equity investments overseas are not entitled to a credit to offset corporate level taxes, while dividends from domestic equity investments do receive such a credit. To the extent that this constraint limits the typical U.S. multinational's ability to attach credits to dividends from foreign source income, there is a tax incentive for U.S. investors to switch out of foreign equity and into U.S. equity (and possibly debt). On the other hand, in practice, the typical U.S. multinational is likely to have a pool of available credits sufficiently large to attach a credit to dividends ultimately attributable to marginal investment income from abroad. As a result, U.S. investors might enjoy the benefits of integration on their foreign equity holdings, so an increase in these investments might occur. An imputation credit system, thus, would have an ambiguous effect on total U.S. holdings of foreign assets. Debt holdings decline and equity holdings rise. Because of the greater international mobility of debt assumed in the simulations and the greater weight of debt in holdings of foreign assets, however, total U.S. investment overseas declines slightly.

The projected effects of the dividend exclusion prototypes are similar in character to the imputation credit, but somewhat smaller in magnitude because dividend exclusion provides a smaller benefit to U.S. equity investors. Under the dividend exclusion prototype, dividends originating form overseas investments are not eligible for exemption at the shareholder level. As in the case of the imputation credit system, the simulations in Table 13.11 assume that this limitation does not seriously restrict the typical U.S. multinational company's ability to pay excludable dividends. As a result, U.S. holdings of foreign equity are projected to increase. U.S. investment in foreign debt declines because of the rise in U.S. interest rates.

CBIT would be unlikely to change substantially the incentives for U.S. investors to hold foreign equity, but might reduce substantially incentives for them to hold foreign debt. In part because foreigners might shift out of U.S. debt, an increase in the after-tax return available to U.S. investors on U.S. debt could accompany CBIT. The higher return available domestically would offer an incentive for U.S. investors to shift out of foreign debt and into U.S. debt. The extent of the rise in the after-tax interest rate available to U.S. residents, however, is uncertain because the extent to which foreign investors would switch out of U.S. debt is uncertain.

Components of the Balance of Payments

This section discusses each prototype's effects on the three major components of the balance of payments: net capital flows, net trade balance, and net receipt of investment income. These three components must balance (sum to zero) so a tax law change cannot affect just one; the other components must show an offsetting adjustment.

Shareholder allocation and distribution-related prototypes have similar effects on the balance of payments in the model. Both would leave net capital flows largely unchanged. As the discussion above suggests, there is uncertainty about the size of the portfolio shifts that the prototypes would cause. Nonetheless, our results suggest that offsetting changes in incentives produce a small net effect on capital flows. The calculations indicate that on balance these prototypes lead to a very small change in the flow of capital into the United States. Both prototypes reduce net payments of investment income to foreigners. This effect arises primarily because of the decline in the pre-tax return on U.S. equity. Both prototypes reduce the net trade balance. With capital flows largely unchanged and reduced net investment income paid to foreigners, the trade balance must fall, so the overall balance sums to zero.

Ascertaining effects of CBIT are again difficult. By reducing incentives for foreigners to hold CBIT debt, CBIT could encourage some flow of capital out of CBIT debt. Foreigners would likely shift their U.S. investment out of corporate bonds into nonCBIT government and home mortgage debt, however. The combination of a possible capital outflow under CBIT and the lower pre-tax returns available to foreigners on some of their U.S. investments implies that net payments of investment income to foreigners would fall, or U.S. net receipts rise. To the extent that CBIT shifts capital out of the United States, but raises U.S. net receipts of investment income, CBIT would have an ambiguous effect on the trade balance.

Domestic U.S. Capital Stock

Each prototype's effect on the domestic capital stock depends on its effect on net capital flows, combined with its effect on saving out of changes in real income. Both shareholder allocation and distribution-related integration have a small, positive effect on the flow of capital into the United States in the model. These prototypes also increase U.S. real income as a result of efficiency gains from reduced net payments of investment income to foreigners. Consequently, these prototypes increase very modestly the U.S. capital stock. We have not attempted to model formally effects of CBIT on the size of the U.S. domestic capital stock.

13.G DISTRIBUTIONAL EFFECTS OF INTEGRATION

Incidence of the Corporate Tax: Theoretical Predictions

Like most taxes, the corporate income tax alters the distribution of real income of individuals. This section discusses the evidence relating to who bears the burden of the corporate tax and issues to be resolved in analyzing distributional effects of integration.

Issues

A basic principle underlying proposals for integration is that because corporations are owned by shareholders, corporations have no taxpaying ability independent of their shareholders. Corporations pay taxes out of the incomes of their shareholders.[72] The economic burden of a tax, however, frequently does not rest with the person or business who has the statutory liability for paying the tax to the government. This burden, or incidence, of a tax refers to the change in real incomes that results from the imposition of a change in a tax. Importantly, the burden of the corporate tax may not fall on shareholders. A corporate tax change could induce responses that would alter other forms of income as well. For example, some of the burden may be shifted to workers through lower wages, to consumers of corporate products through higher prices, to owners of noncorporate capital through lower rates of return on their investments, or to landowners through lower rents. This shifting might not happen quickly, so the short-run incidence could well differ from the long-run incidence.

Tax policy analysts have long been concerned with the incidence of the corporate tax.[73] Although there is no unanimous view, the most frequent finding is that, while shareholders are likely to bear the burden of the tax in the short run, much of the tax is probably shifted to owners of all capital in the long run. Some further shifting onto labor or consumers also may be possible, however, under certain circumstances.

The Basic Harberger Model

An early incidence analysis was offered by Harberger.[74]

Suppose that investors always allocate capital so as to equalize its net return at the margin across sectors. Consider the imposition of an extra tax on corporate capital, starting from an equilibrium in which net rates of return are equalized. The immediate effect is to lower the net rate of return in the corporate sector by the amount of the tax. In the short run, therefore, the tax is borne by corporate shareholders. Over time, however, capital begins to shift out of the corporate sector as investors seek the higher (after-tax) rates of return available in the noncorporate sector. As capital moves into the noncorporate sector, its pre-tax rate of return in that sector falls, while the pre-tax return in the corporate sector rises. The migration of capital stops only when the pre-tax returns change enough that the after-tax rate of return in the corporate sector equals the rate of return in the noncorporate sector. Although the tax is levied only on corporate capital, noncorporate capital also suffers from the tax in the long run; owners of noncorporate capital receive a lower net rate of return. Indeed, Harberger found that under reasonable assumptions, the burden of the corporate income tax is borne equally by owners of all capital.

As in any model, the outcome depends on initial assumptions. Much attention in the academic literature has been given to the consequences of changing various assumptions.[75] For example, if the marginal investment is financed by debt, the burden of the tax may fall on corporate shareholders.[76]

Incidence in a Dynamic Economy

In principle, the incidence of the corporate tax in a dynamic economy can be quite different from the Harberger approach, in which the supply of capital is fixed. Intuitively, to the extent that the corporate tax (and taxes on capital income generally) reduces saving, the capital stock can

diminish, thereby decreasing wage rates and shifting the burden to labor.

Analyzing this point is difficult, however. In addition to addressing the controversy over the size of the sensitivity of saving to changes in the net return, one must specify an increase in some other tax to compensate for eliminating the corporate tax. For example, in a life-cycle context, financing the elimination of the corporate tax by increasing taxes on individual income could increase or decrease the capital stock and income. (There are offsetting effects here, since the redistribution of income from younger high-savers to older low-savers would reduce the incentive effects of the tax.)

While the response of savings to the elimination of the corporate tax (holding total income taxes constant) is likely to be relatively small, there are important distributional effects across individuals within a generation with different mixes of labor and capital income and across generations.

Incidence in an Open Economy

Many authors have suggested that the incidence of the corporate tax can be dramatically different from Harberger's early closed economy analysis.[77] With frictionless international capital markets for securities and real investment, a small, open economy is a price-taker in international capital markets. Imposing a corporate tax in such an economy would cause capital to flow abroad until net rates of return are once again equalized internationally. To the extent that labor cannot emigrate, the incidence of the tax falls on domestic labor.

While correct, this argument is likely to have limited applicability to an analysis of the incidence of the corporate tax in the United States. First, the United States is not a small, open economy; it owns approximately 30 percent of the worldwide capital stock. Second, world capital-market integration, in practice, is substantially less than complete, particularly for equity capital.[78] As a result, even if capital is mobile internationally, owners of domestic capital could be expected to bear a significant portion of the long-run burden of the tax.[79]

Summary

While there is no firm agreement on the incidence of the corporate income tax, the literature suggests the following assumptions on which distributional analyses are conventionally based: (1) the short-run incidence falls on owners of corporate stock in proportion to their corporate income or (2) the long-run burden falls either completely on owners of all capital, or partly on owners of capital and partly on workers.[80]

Assessing Distributional Impacts of Integration Prototypes

Distribution of Effective Tax Rates

The preceding discussion highlights the importance of assumptions about incidence for analyzing long-run distributional effects of corporate tax integration. Effects of integration on the distribution of the tax burden also depend on how integration would be financed (discussed below). Tables 13.12 and 13.13 summarize the distributional consequences of the dividend exclusion, imputation credit, shareholder allocation, and CBIT integration prototypes, consistent with our revenue estimates (see Section 13.H) and the incidence assumptions discussed above. The tables describe the long-run distribution of tax burdens as measured by effective tax rates relative to current law, after taxpayers have adjusted their behavior in response to the new regimes. The calculations represent the combined effects of changes in individual and corporate taxes, as well as changes in fiduciary, employment, and excise taxes.[81]

For each prototype, the estimated effective tax rates in Table 13.12 reflect our preferred assumption about the long-run incidence of the corporate tax, that the tax burden is borne by the owners of all capital. Table 13.13 shows for each prototype the estimated effective tax rates under the alternative assumption that the corporate income tax is

Table 13.12
Effective Tax Rates on Individuals: Current Law and Integration Prototypes
Standard Incidence Assumption[1]

Family Economic Income ($1000s)	Current Law: (1991)		Dividend Exclusion		Imputation Credit		Shareholder Allocation		CBIT: No Tax on CBIT Capital Gains		CBIT: with Tax on CBIT Capital Gains	
	Share of Total Taxes Paid	Effective Tax Rate	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]
	(Taxes as Percentages of Income)											
0- 10	0.009	10.1	10.0	10.2	10.0	10.2	10.0	10.4	10.5	10.4	10.6	10.1
10- 20	0.037	13.0	12.9	13.1	12.8	13.0	12.8	13.3	13.5	13.5	13.8	13.1
20- 30	0.061	16.3	16.2	16.3	16.0	16.2	16.0	16.5	16.8	16.7	17.1	16.4
30- 50	0.155	19.1	18.9	19.1	18.8	19.0	18.7	19.2	19.5	19.4	19.8	19.2
50- 75	0.202	20.8	20.6	20.7	20.6	20.8	20.4	20.9	21.3	21.2	21.6	21.1
75-100	0.162	22.3	22.0	22.1	22.0	22.2	21.8	22.2	22.8	22.8	23.1	22.6
100-200	0.191	23.8	23.2	23.5	23.4	23.7	22.6	23.3	23.9	23.8	24.6	23.8
over 200	0.183	24.1	23.9	24.4	23.8	24.3	22.1	23.5	22.9	22.8	26.0	24.5
Total Individual	1.000	20.9	20.6	20.8	20.5	20.8	20.1	20.7	20.9	20.9	21.8	21.0

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[1]Corporate income tax assumed to be borne 100% by capital income.

[2]Capital tax change imposed to offset change in revenue from prototype. Capital tax assumed to be distributed uniformly across all capital income.

Table 13.13
Effective Tax Rates on Individuals: Current Law and Integration Prototypes
Alternative Incidence Assumption[1]

Family Economic Income ($1000s)	Current Law: (1991)		Dividend Exclusion		Imputation Credit		Shareholder Allocation		CBIT: No Tax on CBIT Capital Gains		CBIT: with Tax on CBIT Capital Gains	
	Share of Total Taxes Paid	Effective Tax Rate	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]	Prototype Alone	With Capital Tax[2]
	(Taxes as Percentages of Income)											
0- 10	0.009	10.6	10.6	10.8	10.6	10.9	10.6	11.2	11.3	11.2	11.5	10.8
10- 20	0.038	13.3	13.3	13.5	13.2	13.4	13.2	13.9	14.0	14.0	14.3	13.5
20- 30	0.062	16.6	16.5	16.7	16.3	16.6	16.3	17.0	17.3	17.2	17.6	16.8
30- 50	0.156	19.5	19.3	19.5	19.1	19.4	19.1	19.7	20.0	20.0	20.3	19.6
50- 75	0.205	21.3	21.1	21.3	21.1	21.3	20.9	21.5	22.0	21.9	22.3	21.6
75-100	0.164	22.7	22.4	22.6	22.4	22.7	22.2	22.8	23.4	23.4	23.8	23.1
100-200	0.190	23.8	23.3	23.6	23.5	23.8	22.7	23.5	23.9	23.9	24.7	23.9
over 200	0.176	23.4	23.1	23.4	23.0	23.4	21.3	22.4	21.5	21.4	24.5	23.3
Total Individual	1.000	21.0	20.7	21.0	20.7	21.0	20.2	21.0	21.1	21.0	22.0	21.1

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[1]Corporate income taxes assumed to be borne 50% by labor, 50% by capital income.

[2]Capital tax change imposed to offset change in revenue from prototype. Capital tax assumed to be distributed uniformly across all capital income.

borne half by capital income and half by labor income.

The tables classify individuals according to their Family Economic Income (FEI). FEI is a broad concept of income that attempts to capture family income from all sources, taxed and untaxed, in the current year. The concept is designed to place families into income classes with others about equally well off, with those in higher income groups considered consistently better off than those in lower income groups.[82]

When we presented estimates of integration on economic efficiency earlier in the chapter, we incorporated explicitly the requirement that revenues lost as a result of integration be compensated by offsetting tax increases. These we considered as replacement taxes lump-sum taxes and uniform increases in taxes on capital income. Since lump-sum taxes are not available to policymakers, we present distributional information in Tables 13.12 and 13.13 assuming that tax rates on capital income are increased to finance integration.

Dividend Exclusion

The dividend exclusion prototype would reduce total revenues when fully phased in (see Section 13.H). All FEI groups would receive a slight reduction in effective tax rates. With the capital tax replacement, there would be very small differences in the effective tax rates under current law and the dividend exclusion prototype (including a slight increase in the effective tax rate for the highest income group). Hence, the efficiency gains made possible by this integration prototype (see Section 13.F) could be obtained with no loss in revenue and with only slight changes in the distribution of tax burdens across income groups. This conclusion holds irrespective of underlying assumptions regarding the long-run incidence of the corporate tax (compare Tables 13.12 and 13.13).

Imputation Credit

The distributional consequences of the imputation credit prototype are qualitatively similar to those for dividend exclusion under both incidence assumptions. The imputation credit prototype, described in Chapter 11, would lose revenue when fully phased in. The revenue neutral version of the prototype decreases the reduction in effective tax rates for upper income groups, with a tax increase for the highest FEI group (with FEI exceeding $200,000 per year).

Shareholder Allocation

The third column of calculations in Tables 13.12 and 13.13 presents the distribution of effective tax rates under the shareholder allocation prototype. There would be a significant annual revenue loss under shareholder allocation when fully phased in (see Section 13.H), leading to reductions in effective tax rates larger than under the distribution-related integration proposals, particularly for the top two income groups (with FEI of at least $100,000 per year). With an offsetting uniform increase in tax rates on capital income to finance the revenue loss, tax reductions for upper-income taxpayers are attenuated, with slight overall increases in tax burdens for middle-income groups.

CBIT

Unlike the other integration prototypes considered in this Report, CBIT would not lose revenue. When fully phased in, the CBIT prototype would raise a small amount of revenue with no taxation of capital gains from the sale of CBIT assets, and a substantial amount of revenue with current law treatment of capital gains (see Section 13.H). In the former case, the revenue neutral version amounts to a very small tax increase for lower- and middle-income groups and a reduction in the effective tax rate for the highest income group. The reduction for the highest FEI group more reflects the distributional implications of the elimination of the capital gains tax on the sale of CBIT assets than the characteristics of CBIT as an integration prototype. To see this, note that the revenue neutral version of CBIT with current law treatment of capital gains has only very small impacts on effective tax rates relative to current law. These patterns of effective tax rates are

qualitatively similar under the two incidence assumptions we considered.

13.H REVENUE ESTIMATES FOR INTEGRATION PROTOTYPES

This section presents revenue estimates for integration prototypes. Below we discuss: the revenue estimating procedures and the assumptions behind the revenue estimates, long-run revenue estimates for each prototype, and revenue estimates for a 5 year budget period under the assumption that the proposals would be adopted effective January 1, 1992, and phased in over a 5 year period. While the prototypes are not legislative proposals and we do not contemplate that any would be proposed with so early an effective date, 5 year estimates based on the economic assumptions used to estimate other items in the Fiscal Year 1992 Federal budget are useful to permit comparison with other proposals.

Procedures and Assumptions

We prepared revenue estimates for the integration prototypes using the Individual Income Tax Model and the Corporate Income Tax Model of the Office of Tax Policy. These models are based on large samples of individual and corporate tax returns. Detailed computer programs are used to calculate tax liabilities and simulate changes in tax law provisions.

Earlier in this chapter, we examined economic effects of the adoption of the prototype integration proposals. The revenue estimates presented in this section are dynamic. That is, the revenue estimates use the changes in economic variables predicted by a computable general equilibrium model to adjust the levels of various components of income and deductions on the tax models. Among the important economic changes incorporated in the estimates for corporations are changes in dividend payout rates, debt to equity ratios, the share of capital in the corporate sector, and rates of return to capital in the corporate sector. Among the important changes in individual taxpayer behavior taken into account are those in levels of interest and dividend income, income from non-corporate businesses (sole proprietorships, partnerships, farms, and small business corporations), capital gains realizations, and interest deductions. Changes in interest rates affect the income and deductions of both corporations and individuals. The effects of the proposals on the incentives of foreigners and tax-exempt institutions to hold different types of assets in their portfolios are taken into account.

Following the standard convention of revenue estimates produced by the Office of Tax Policy, Gross National Product (GNP) and the overall inflation rate are assumed to be unchanged as a result of the adoption of the prototypes.[83] Interest rates, relative prices, and the allocation of resources among sectors of the economy do change depending on the expected economic effects of the prototype. The allowance for changes in interest rates is not strictly in accord with conventional revenue estimating procedures because of the nature of the proposals estimated. The integration proposals are more likely to affect relative interest rates paid on different types of assets than tax changes commonly estimated. In particular, the significant changes introduced by some of the prototypes make it important to consider changes in interest rates.

An important additional assumption for the revenue estimates is that tax provisions other than those included in the proposal remain the same as under current law. An actual legislative proposal would include other changes which could affect the estimates presented here.

Effects of Integration on Federal Tax Revenue

We estimated fully phased-in revenue effects for each of the prototypes (at the 1991 level of real GNP) incorporating behavioral changes that would occur in the long run. These behavioral changes are those which would be expected to occur after the economy has fully adjusted to the new tax regime. While these estimates are not necessarily correct for the short run or the 5 year

budget period, they are important for understanding the long-run effects of the integration prototypes.

Dividend Exclusion

The dividend exclusion prototype taxes corporate income (defined as under current law) at a rate of 34 percent. Dividends paid out of taxed corporate income, i.e., those qualified by an Excludable Distributions Account (EDA) as described in Section 2.B, are not taxed at the individual level.[84] The amount added to the EDA is based on U.S. corporate taxes paid.[85] This excludes foreign taxes paid to the extent that they offset domestic taxes through the foreign tax credit.[86] Capital gains from the sale of corporate shares are treated the same as under current law. Outbound foreign investment is basically treated the same as under current law. For inbound investment, the withholding tax on dividends paid to foreigners is maintained.

The basic principle of the dividend exclusion prototype is to reduce the double tax on distributed corporate income. We estimate that when fully phased in, integration through dividend exclusion loses $13.1 billion annually at 1991 levels of income.

Dynamic changes in the economy would increase corporate income tax receipts under the dividend exclusion prototype. Increases in corporate tax receipts would result from the incentive to shift corporate financing from debt to equity. The reduction in corporate borrowing would decrease corporate interest deductions. Induced changes in interest rates also would affect corporate interest deductions and therefore affect corporate tax revenues. The increases in corporate tax revenues would be slightly more than offset by the decrease in individual income tax receipts from the dividend exclusion. The dividend exclusion, thus, provides incentives for corporations to increase excluded dividends. In closely-held corporations, the incentive under current law to pay out profits as managerial wages or interest would be largely eliminated, and there would therefore be some substitution of dividends for wages and interest payments to owners.

CBIT

The CBIT prototype for integration extends the logic of the dividend exclusion prototype to debt. Neither interest nor dividend payments would be deductible at the corporate level, but both interest and dividend payments from CBIT entities generally would be excludable at the investor level. The entity level CBIT tax rate of 31 percent would apply to both corporate and noncorporate businesses (except for small businesses, which would be taxed as under current law). Unlike interest on CBIT debt, home mortgage interest would continue to be deductible by the borrower and taxable to the lender, as under current law. Interest on U.S. Government debt would be taxable to the recipient. Interest tax-exempt under current law would remain tax-exempt to recipients under CBIT. We considered two alternative assumptions for the taxation of capital gains on CBIT assets: (1) no taxation of capital gains on CBIT assets and (2) current law treatment of capital gains on CBIT assets.

In contrast to the other integration prototypes, the CBIT prototype would increase tax receipts relative to those under current law. Once the behavioral changes are fully accounted for, the annual increase in revenues would be $3.2 billion with no taxation of capital gains on CBIT assets and $41.5 billion with current law treatment of capital gains. While overall tax receipts would be increased under the CBIT prototype, individual tax payments would be substantially reduced because dividends, noncorporate business income, most interest and some capital gains would no longer be taxable to individual recipients. The reduction in individual income tax receipts reflects the taxation of capital income at the entity level. Noncorporate entities subject to CBIT would now be taxed at the 31 percent CBIT rate. Much of this income is currently taxed under the individual income tax.

Shareholder Allocation

The shareholder allocation prototype approximates passthrough integration more closely than the dividend exclusion or CBIT prototypes. The prototype would retain a corporate tax rate of 34 percent. Taxable shareholders would receive a 31 percent credit for corporate level taxes paid, while tax-exempt and foreign shareholders would receive no credit. The credit would accompany the allocation of corporate income to the shareholder. Intercorporate dividends would be granted a full dividends-received deduction in lieu of a credit. Under this prototype, corporate income tax is taxed at the individual level as part of corporate income rather than as a separate income item. Capital gains on corporate stock due to retained earnings would not be taxed, since undistributed corporate income would increase shareholders' basis. Increases in corporate stock values from other sources would be taxed as under current law. For outbound investment, the foreign tax credit would be passed through at the taxable investor's rate. For inbound investment, the withholding tax on dividends paid to foreign investors would be retained.

Because shareholder allocation integration would extend distribution-related integration to retained earnings and shareholders would not be taxed on untaxed corporate preference income, it would lose significantly more revenue than would the dividend exclusion prototype. We estimate that when fully phased in, shareholder allocation integration would lose $36.8 billion annually at 1991 levels of income.

Most of the revenue loss would be in the individual income tax. While taxable income of individuals would be increased substantially by including all corporate income (rather than just dividends received), this would be more than offset by the revenue loss from the credit for corporate taxes paid. For taxpayers in the 31 percent tax bracket, the tax on the additional income and the credit for corporate taxes paid would offset each other and leave taxes approximately unchanged. For taxpayers in lower tax brackets, however, the additional corporate income subject to tax would be taxed at a lower rate than the credit. For example, taxpayers in the 15 percent bracket would be taxed at 15 percent on the additional income but receive a credit at a 31 percent rate. For lower tax bracket taxpayers, the corporate credit can be used to offset taxes against wages and other income.

The other major factor in the large revenue loss from the shareholder allocation prototype is the basis adjustment for corporate stock. Shareholders' basis would rise to reflect income already taxed at the corporate level, and so revenues from the taxation of capital gains on sales of stock would be reduced.

Corporate tax receipts would increase, since dynamic behavioral changes (including the expansion of the corporate sector) are taken into account. As with distribution-related integration, the increase in corporate tax receipts results primarily from the reduction in corporate debt and therefore in interest deductions.

Imputation Credit System

The final prototype we considered is distribution-related integration through an imputation credit system. Under this prototype, corporate taxes paid are credited to a shareholder credit account (SCA). Individual shareholders report dividends grossed-up (by one divided by one minus 0.31) to reflect corporate taxes paid and receive a credit for corporate taxes paid. The prototype calculates the credit and gross-up factor at the top individual 31 percent tax rate rather than the top 34 percent corporate tax rate to limit the credit to no more than the individual income tax paid by individuals in the highest tax bracket. We estimate that accomplishing distribution-related integration through an imputation credit system would generate a fully phased-in revenue loss of $14.6 billion per year.