CAPITAL TAXATION

Martin Feldstein

Abstract

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This paper is an introductory chapter to a book that brings together
22 of my papers written between 1965 and 1981. The chapter provides a summary
of each paper and a more general discussion of the role of taxation in
influencing the process of capital accumulation.

The four sections of the book are: (1) Household and Corporate
Saving; (2) Portfolio Behavior; (3) Business Investment and (4) Tax Incidence
in a Growing Economy.

Martin Feldstein
National Bureau of Economic Research
1050 Massachusetts Avenue
Cambridge, Massachusetts   02138

(617) 868-3905

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The process of capital accumulation plays a central role in the growth
of every economy. As a consequence, capital accumulation has been a major focus
of economic theory and of empirical research throughout the history of modern
economic analysis. In recent decades, the rate and form of capital accumula-
tion has been substantially influenced by prevailing systems of taxation. The
papers in this volume[1] analyze the ways in which capital taxation alters the pro-
cess of capital accumulation and affects the rewards to capital and labor.

The emphasis in these studies is on the behavioral response of house-
holds and businesses to changes in tax rules. The first section deals with the
overall rate of saving and analyzes the separate effects of taxes on personal
saving and on corporate saving as well as the interaction between the two types
of saving. The papers in the second section examine the effect of tax rules on
the composition of household portfolios and on the process of portfolio adjust-
ment. In the third section, I turn to corporate investment in plant and equip-
ment and in inventories. The studies in these three sections focus on the indi-
vidual components of the capital accumulation process rather than on the process
as a whole. In contrast, the fourth section presents general equilibrium analy-
ses that look at the system as a whole in order to determine who bears the taxes
levied on capital and capital income. The studies in this section differ from
earlier treatments in the literature by emphasizing a growing economy and port-
folio diversification.

A common theme throughout these chapters is that tax rules have a substantial effect on economic decisions. Both the theoretical analyses and the empirical research in the present volume support this theme. In contrast, much of the writing on taxation during the period since World War II implicitly assumed or explicitly asserted that the relative price changes implied by different types of capital taxation would have little or no impact on capital formation. The view that taxes do not influence capital formation followed from a general Keynesian presumption that the responses of individuals and businesses to price changes are small and from the more specific beliefs that saving reflects income rather than the rate of return and that investment is determined by capacity utilization or anticipated sales rather than by the relation between the net-of-tax cost of funds and the net-of-tax return that firms can earn on those funds. The present studies contradict this presumption of low price elasticities and show that tax rules significantly alter economic behavior.

These behavioral responses imply that tax rules distort both the amount of capital formation and the distribution of capital and of risk bearing in the economy. Such distortions imply a loss of economic efficiency and thus a lower level of real economic income. I have, however, limited the papers in this volume to the positive analysis of the effects of capital taxation and have not included papers that discuss the efficiency costs of alternative tax rules or that prescribe systems of optimal taxation.

This volume is thus not a book about economic policy as such but an attempt to understand how an important aspect of government policy influences the functioning of a modern economy. Moreover, the individual papers do not

represent a comprehensive treatment of all aspects of capital taxation but focus on those questions that have appeared to me to be both economically important and analytically tractable. Although the empirical studies deal almost exclusively with the United States, I believe that much of the empirical work as well as the analytic papers will be of more general relevance.

The papers that are collected here were published in a variety of academic journals during a period of more than a dozen years. Not surprisingly, I would no longer agree with everything that I wrote in all of them. More important, if I were doing the studies now I would in several cases use somewhat different theoretical models or statistical methods. I have nevertheless resisted the temptation to make substantial changes because, if I once started, there would be no natural place to stop. I do moreover still believe the basic conclusions of each of the papers included here.

The present chapter summarizes these specific conclusions and indicates the structure of the overall analysis that links the individual papers.

Household and Corporate Saving

A nation's rate of capital accumulation is governed by the amount of saving that is done within its borders. Although international capital flows can supplement or reduce the funds available for investment, in practice net international capital flows have been quite small relative to domestic savings and investment. Moreover, long-run differences among industrial countries in the fraction of income that is saved are matched by approximately equal differences in the ratio of domestic investment to national income (Feldstein and Horioka, 1980). The present study therefore focuses on domestic saving by individuals and businesses.

In the simplest textbook picture of national saving, all saving is done by individuals who save during their working lives for consumption during retirement. This life cycle model has shown itself to be a powerful tool for thinking about saving and capital accumulation and provides the framework for the analysis in Chapter 1 of this volume. A more realistic picture, however, recognizes that not all individual saving is for retirement and that a very large part of saving is done by corporations. The subsequent chapters in this section therefore look beyond the simple life cycle model and consider explicitly the role of corporate saving and its interaction with personal savings.

An economy's tax rules can affect the process of saving in a variety of ways. Any tax that drives a wedge between the pretax marginal product of capital and the net-of-tax return that savers receive will distort the saving decisions. Chapter 2 shows that under existing law that tax wedge is very large, with federal, state and local taxes taking more than two-thirds of the real pretax return on nonfinancial corporate capital. The effect of changing this wedge by increasing the taxation of consumption or labor income and decreasing the taxation of capital income is the subject of Chapter 1.

The tax laws also affect the extent of corporate saving by altering the return on corporate capital and by inducing companies to reduce dividends in favor of retained earnings. Chapters 3 through 5 examine the effect of tax rules on corporate dividend behavior. The theory suggests and the evidence confirms that existing tax rules significantly distort the corporate financial decisions in favor of a higher level of retained earnings. The effect of this increase in corporate savings on total private savings depends on the extent to which shareholders "see through the corporate veil" and reduce their own savings in response to the higher level of corporate saving. The reaction of share-

holders and therefore of total saving is the subject of Chapters 6 and 7.

The final chapter of this section uses the estimates of the earlier chapters to examine the effect of alternative corporate tax integration proposals on aggregate capital accumulation. The impact of integration depends on the effect of the resulting higher net rate of return to savers and on the effect of the increase in dividends on personal savings. The evidence suggests that although corporate tax integrations could do much to reduce the distortions in corporate finance and resource allocation that currently exist, the net impact of integration on aggregate savings is likely to be small.

The first chapter, "The Rate of Return, Taxation and Personal Savings," examines how the tax wedge between the pre-tax and after-tax rates of return affects the level of saving. The results are surprising and contrary to conventional wisdom. The analysis shows that replacing a tax on capital income with a tax on labor income can actually decrease private saving. However, even when this anomalous result is true, such a tax change will raise national saving, i.e., the sum of private and public saving.

The analysis uses a simple life cycle model in which an individual works in the first period of life and saves to finance consumption in the second period when no work is done. Substituting a payroll tax or consumption tax for an income tax of equal present value lowers the price of second-period consumption relative to present consumption (because capital income is not taxed) and therefore unambiguously causes an increase in future consumption and a decrease in current consumption.

The rise in future consumption does not, however, imply that first-period saving must rise. Future consumption can rise even if current saving

falls because the change in tax rules raises the net rate of return that converts present saving into future consumption.

A fall in both current saving and current consumption appears at first to be inconsistent with the individual's budget constraint. In fact, a fall in both only implies that the individual's current taxes have risen, i.e., that taxes have been moved forward from retirement years to working years. This obviously happens when a payroll tax is substituted for a tax on capital income since none of the payroll tax is paid during retirement years. It also happens when a consumption tax is substituted for a tax on capital income.

The crucial implication of this analysis is that the substitution of a consumption tax or a payroll tax for the tax on capital income reduces current consumer expenditure and therefore frees resources for investment even if personal savings are not increased. Since current consumption falls, the sum of private saving and tax payments must rise. This in turn implies that if government spending does not change, national saving will rise even if private saving falls. The response of the government surplus or deficit to the tax change is therefore of substantial importance. Maintaining a balanced budget when substituting a payroll tax for an equal-present-value capital income tax must imply a rise in government spending and therefore may imply a fall in national saving.

The analysis of chapter one also shows the importance of the transition from one tax regime to the next. In a simple two-period life-cycle model with overlapping generations, the older generation that already exists when the tax law changes (and has paid tax under the old regime) must be treated differently from all future generations to avoid imposing a windfall tax loss or gain and a corresponding change in national saving.

Before turning to the empirical studies in subsequent chapters, it is useful to establish what has been happening to effective tax rates on capital income. Because of the complexity of the tax rules, the statutory tax rates are a very poor indication of actual effective tax rates. Moreover, in recent years, the combination of high rates of inflation and the conventional accounting procedures have substantially exacerbated this problem.

The second chapter, "The Effective Tax Rate and the Pretax Rate of Return," (written with Louis Dicks-Mireaux and James Poterba) examines empirically the effective tax rate paid on the earnings of capital in the nonfinancial corporate sector of the United States in the quarter century ending in 1979. The total tax paid by the corporations, their shareholders and their creditors in 1979 to governments at all levels was 69 percent of the real capital income of the corporations, including both debt and equity income. This effective tax rate fluctuated between 53 percent and 85 percent during the previous quarter century. It is clear that such high tax rates deserve careful attention in any attempt to understand the process of capital accumulation.

The analysis in Chapter 2 stresses the importance of looking beyond the tax paid by the corporations themselves to include also the taxes paid by shareholders and creditors. The evidence also shows that an important share of the total tax is paid to state and local governments; these taxes exceed 17 percent of real pretax capital income.

Failure to look at all the relevant taxes gives a misleading picture of the trend as well as of the level of capital taxation. The taxes paid directly by the corporations themselves, i.e., corporate tax payments to all levels of government plus state and local property tax payments, fell from 59 percent of real capital income in the first five years of the sample period (1953 through

1957) to 47 percent in the five years ending in 1979. Much of this fall reflects the impact of inflation which raised the nominal interest expenses that companies could deduct in calculating taxable income. But this reduction in corporate tax liabilities was offset by increases in the taxes paid by creditors and shareholders. The total tax rate paid by corporations, creditors and shareholders was nearly as high in the five years from 1975 to 1979 (68 percent) as it had been from 1953 to 1957 (70 percent).

The total effective capital income tax rate remained high despite a series of reductions in the statutory tax rates paid by corporations and individuals and despite the introduction of the investment tax credit and the use of accelerated depreciation. The effective and statutory tax rates behaved so differently because the interaction of inflation with the historic cost methods of tax accounting caused an understatement of the costs of production and therefore an increasing ratio of taxable income to real income. This is particularly clear in the period since inflation began to accelerate in the mid-1960's. Between 1963 and 1967, the total effective tax rate was 55 percent; a decade later, it averaged 71 percent and ended the 1970's at 69 percent.

The analysis in chapter 2 also provides estimates of the pretax rate of return to capital in the nonfinancial corporate sector for each year since 1948. For this calculation, the usual national income account measure of profits is adjusted by adding back in the property taxes paid by these corporations. Between 1948 and 1979, the total pretax return averaged 11.5 percent. The 1960's were a decade of greater than average profitability; even after adjusting for cyclical fluctuations in profitability, profitability in the 1960s was about 1.5 percent higher than in the 1970s.

The combination of lower pretax profitability in the 1970s and a higher effective tax rate caused the net-of-tax rate of return to decline sharply between the 1960s and the 1970s. The average real net rate of return was 5.2 percent in the 1960s but only 3.1 percent in the 1970s. The statistical analysis shows no evidence that the broad fluctuations in the effective tax rate over the past 25 years induced offsetting changes in the opposite direction by the pretax rate of return. Changes in the effective tax rate were therefore associated with correspondingly large changes in the net rate of return.

These figures are indicative of the very substantial magnitude of capital income taxes as a share of real capital income. They do not, however, provide an estimate of the marginal tax rates on income from different types of capital or of the marginal tax rates that apply to individual savers in different situations. For example, to the extent that the depreciation rules for new investment are more generous than they had been at an earlier time, the effective marginal tax rate is below the average tax rate. Conversely, if the typical individual receives some capital income in an untaxed pension but does all marginal saving in forms that are taxed, the effective marginal tax rate will be above the average rate. The extent to which low tax options are and are not marginally available and attractive requires more study.

Corporate saving plays a major role in the process of capital accumulation. In 1979, for example, corporate retained earnings were $59 billion while personal saving was $86 billion; corporate saving thus accounted for 41 percent of total net private saving. Moreover, this figure substantially understates the relative size of corporate saving because it ignores the fall in the real value of the net debt of nonfinancial corporations caused by inflation.

The 10 percent inflation in 1979 (as measured by the personal consumer expenditure deflator) reduced the value of corporate debt by $ 73 billion, thereby transferring that amount from personal saving to a corrected measure of corporate saving and raising corporate saving to 91 percent of total private saving.

The nearly universal policy of paying substantial dividends is the primary puzzle of corporate finance. During the past 15 years, dividends have averaged 45 percent of real after-tax profits. Before 1982, dividends were taxed at rates varying up to 70 percent and averaging nearly 40 percent for individual shareholders. In contrast, retained earnings imply no concurrent tax liability; the rise in the share value that results from retained earnings is taxed only when the stock is sold and then at least 60 percent of the gain is untaxed. Why then do corporations not eliminate or sharply reduce their dividends and increase their retained earnings? And how do alternative tax systems influence the way in which corporations divide their income between dividends and retained earnings? These questions are the subject of chapters 3, 4, and 5.

In the third chapter, "Why Do Companies Pay Dividends?", Jerry Green and I develop a simple theoretical model in which firms choose to pay dividends in order to maximize the value of their shares. The analysis emphasizes the heterogeneity of shareholder tax rates and the desire of shareholders to diversify their investments.

We consider an economy with two kinds of investors: taxable individuals and untaxed institutions (like pension funds and nonprofit organizations). Firms can distribute profits currently or retain them and thereby raise the value of the firm's capital stock. Shareholders can sell their shares and realize this increased value in the form of capital gains. In the absence of

uncertainty, these assumptions would lead to a segmentation of the market and specialization of share ownership, with the share price per dollar of retained earnings less than one. In the equilibrium, the taxable individuals would invest only in firms that pay no dividends even though, ceteris paribus, they would prefer an immediate payment while untaxed investors would buy only the shares of firms that paid all profits out immediately as dividends. If untaxed investors did otherwise, they would reduce the income they earned per dollar spent on purchasing shares. The taxable individuals, in contrast, willingly accept the lower pretax income because it corresponds to greater after-tax income. This type of segmented equilibrium is not observed because of uncertainty. Because investors regard each firm's return as both unique and uncertain, they wish to diversify their investments. Chapter 3 shows that each firm can, in general, maximize its share price by attracting both types of investors and that this requires a dividend policy of distributing some unique fraction of earnings as dividends. Only in the special cases of little or no uncertainty or of a limited ability to diversify risks (because of a high enough correlation among the returns of different companies) can the equilibrium be of the segmented form.

The simple model of section 3 cannot be applied directly to an economy with a large number of firms. Since the riskiness of a portfolio decreases as the number of securities increases, a segmented equilibrium could be established with two groups of securities, one of which pays out all earnings and the other of which retains all of its earnings. We believe, however, that the simple model could be extended to prevent such segmentation and preserve the optimal dividend result by introducing some diversity of expectations among the two groups of shareholders with respect to the prospects for each firm.

Within the simple framework, the model of chapter 3 can be used to examine the comparative statics of how the dividend payment rate would respond to changes in tax rules. The analysis shows that a rise in the tax rate on dividends unambiguously raises total retained earnings although the dividends of any particular company may actually be decreased. This model thus provides an explicit rationale for the earlier empirical research for the United Kingdom that is reported in Chapters 4 and 5.

Between 1950 and 1958, the British government operated a corporate income tax system that taxed dividends more heavily than retained earnings. The relative rates of tax within this framework were changed several times. Beginning in 1959, the differential taxation was ended and a pound of retained earnings had an opportunity cost of a pound of dividends. Chapter 4, "Corporate Taxation and Dividend Behavior," uses quarterly financial data to estimate the effect of the changing tax rules on the dividend payout rate. Chapter 5 extends this analysis by considering more general functional specifications.

The evidence in these chapters indicates that increasing the opportunity cost of retained earnings (measured in terms of the foregone net dividend income to an individual shareholder who paid the 'standard rate' of British personal income tax) raised dividends substantially. The elasticity of the equilibrium dividend-income ratio with respect to tax-induced changes in the opportunity cost of retained earnings is approximately 0.9 and the first year impact elasticity is approximately 0.4. The abolition of the differential tax in 1958 raised the opportunity cost of retained earnings by nearly 50 percent and therefore raised the equilibrium dividend payout rate by some 40 percent.

Although the parameter estimates are quite robust with respect to a

variety of different specifications and estimation methods, the constant elasti-
city specification should be regarded as only an approximation. As the analysis
of chapter 3 implies, a tax system that penalized retained earnings for
investors in all tax situations would lead to a 100 percent payout and not to
the behavior implied by a constant elasticity relation. It is clear however
that, in the range of tax rates in which a 100 percent payout is preferred by
some investors but not by others, the actual payment rate is quite sensitive to
the structure of taxation.

The sensitivity of the dividend payout rate to relative tax rates
implies that the current U.S. system of corporate income taxation substantially
increases the retained earnings of existing corporations. The higher level of
corporate saving does not, of course, imply an equal net increase in the total
private saving of individuals and corporations. To the extent that shareholders
"see through the corporate veil" and take the corporate saving into account in
making their own saving decisions, the higher level of corporate saving need not
change total private saving at all. Similarly, the greater retained earnings of
existing corporations does not necessarily mean that they invest more or that
new businesses have a harder time raising capital. The established corporations
that retain more earnings may as a result borrow less and issue less equity,
thereby leaving more external funds for new businesses and for other firms with
a greater net demand for capital. Under an appropriate set of simplifying
assumptions, the greater retained earnings would be exactly offset by reduced
personal saving and a lower level of external finance, leaving all significant
aspects of capital formation unchanged.

The economy may not, however, correspond to those simplifying assump-

tions. Individuals may not "see through the corporate veil" or may feel
constrained by capital gains tax rules and estate taxes not to offset increased
retained earnings by selling shares. Corporations may treat retained earnings
differently from external funds. New business may have a harder (or easier)
time raising money when other and more established firms are not raising equity
capital. Moreover, to the extent that the greater retained earnings raise the
total saving rate, those firms that are seeking external capital may find it
easier to obtain. The impact of increased retained earnings on total capital
accumulation and on its distribution among sectors and firms is thus an empiri-
cal issue.

Chapters 6 and 7 address one aspect of this issue, the effect of
retained earnings on total private saving. Chapter 6 deals with the U.S.
experience from 1929 through 1965 while Chapter 7 deals with the British postwar
experience. Both studies examine the effect of corporate retained earnings on
household consumer expenditure. The conventional Keynesian consumption function
that relates consumer expenditure to disposable income implicitly assumes that
reducing dividends by a dollar and increasing retained earnings by an equal
amount will lower consumer expenditure by nearly one dollar, i.e., by the margi-
nal propensity to consume. In this common specification of behavior, households
do not see through the corporate veil at all and a tax-induced rise in retained
earnings raises private saving nearly dollar for dollar. In contrast, the less
common specifications of consumer expenditure behavior associated with Irving
Fisher that relates consumer spending to labor income and the real rate of
interest implies that shifts of funds between retained earnings and dividends
have no effect on consumer spending.

The analysis of chapters 6 and 7 considers a more general specifica-
tion of the consumer expenditure function that includes retained earnings as a
separate variable and therefore within which the impact of the dividend payment
decision can be estimated. The specification extends the permanent income
hypothesis by emphasizing that consumer spending responds to different com-
ponents of observed income according to the relation between current observed
income of that type and expected future income. Thus, an increase in dividends
has a substantial impact on consumer expenditures because shareholders believe
that such changes are relatively permanent, a view that correctly corresponds to
the distributed lag relation between dividends and corporate profits. In
contrast, an increase in retained earnings that is caused by a transitory rise
in profits does not induce a substantial rise in consumer spending. It would be
wrong, however, to conclude (as the Keynesian specification implicitly does)
that every increase in retained earnings would have a small impact on consumer
spending. A rise in retained earnings that represents a tax-induced switch from
dividends should be regarded as "permanent" and should therefore have a positive
impact on consumer spending that is comparable to the negative impact of the
reduced dividends. The implication is that, since observed changes in retained
earnings reflect both temporary and permanent changes, the estimated effect of
retained earnings on consumer spending will understate the effect of the relati-
vely permanent changes in retained earnings that result from tax-induced changes
in the dividend payout ratio.

The statistical evidence in both chapters shows that an extra dollar
of retained earnings raises consumer spending substantially, although by less
than an extra dollar of disposable income. For the United States in the period

from 1929 through 1965,[1] the estimates indicate that an extra dollar of retained earnings raises consumer spending by 50 cents while an extra dollar of disposable income raises consumer spending by 75 cents. This difference can well be due to the future tax that must be paid when the retained earnings are eventually converted to spendable dividends and to the transitory component of variations in retained earnings. This evidence thus implies that households see through the corporate veil and adjust their personal savings to changes in corporate savings. The current system of corporate income taxation, although inducing corporations to retain a higher fraction of earnings than otherwise, therefore appears to have little if any effect on the total volume of private saving.

The estimates based on the British experience in the postwar period ("Taxes, Corporate Dividend Policy and Personal Savings: The British Postwar Experience," done jointly with George Fane) is also contrary to the extreme Keynesian specification but does imply that the that the dividend payout rate may influence consumption. The long-run propensity to consume out of disposable income is estimated to be 0.77 while the long run propensity to consume retained earnings is only 0.23. The British evidence thus suggests that a tax policy that reduces dividends by one pound and increases retained earnings by an equal amount may raise total private saving by as much as 0.5 pounds. It is not clear whether the difference between the U.S. and British estimates are the result of real differences in behavior or only reflect problems of measurement and estimation of such things as the foreign ownership of British shares. Subsequent studies with more recent U.S. data confirm the result for the United States. Additional studies for the United Kingdom remain to be done.

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[1] "Tax Incentives, Corporate Saving and Capital Accumulation," presented in Chapter 6 .

The estimated effectes of corporate tax rules on dividend behavior and of dividend behavior on aggregate private saving can be used to evaluate the effect of corporate tax integration proposals on capital formation. In Chapter 8, "Corporate Tax Integration: The Estimated Effects on Capital Accumulation and Tax Distribution of Two Integration Proposals," Daniel Frisch and I conclude that corporate tax integration could eliminate or reduce some of the distortions in the allocation of capital without significantly reducing overall private saving.

The two alternative corporate tax integration proposals that we consider are: complete integration by the partnership method and a partial integration method that keeps the tax burden on corporate income unchanged. The chapter discusses how integration would reduce distortions in the allocation of resources between the corporate and noncorporate sector, between present and future consumption and between different types of corporate finance. The analysis then examines the claim of integration advocates that it would raise the aggregate rate of capital accumulation.

The evidence of Chapters 4 through 7 is used to assess the decrease in corporate saving that would be likely to result from integration and the extent of the offsetting increase in personal saving. Since the complete integration scheme represents a net reduction in the taxation of capital income, we also consider the implication of the increased net rate of return on aggregate saving. As the analysis of chapter one emphasized, this effect is ambiguous. If other taxes are not increased, there is a positive income effect that may induce an increase in current private consumption as well as in future consumption. If other taxes are increased, the effect on national saving depends on the responses of both individual and government spending. In particular, if the present value of tax revenue is unchanged and government spending does not

rise, the rate of return effect implies an increase in national saving. On

balance, it seems best to give little weight to any possible change in aggregate

saving in assessing the effect of corporate tax integration.

Portfolio Investment Behavior

The tax system affects not only the flow of saving and the size of the

capital stock but also the allocation of capital among alternative activities.

Several previous studies have examined how tax rules influence the demand for

housing and the share of housing in the total capital stock.[1] The research pre-

sented in the current section focuses on the non-housing portion of individual

portfolio investment behavior.

The analysis here shows that tax considerations substantially distort

the portfolio investment decisions that individuals make under existing tax

rules. Differences in the tax treatment of different kinds of capital income

influence the composition of portfolios and the realization method of taxing

capital gains reduces investors' willingness to revise portfolios in response to

new information.

These distortions in portfolio behavior imply that capital is misallo-

cated among industries and firms. The result is that the wrong products are

produced and that production occurs with inefficient ratios of capital to labor.

In addition, distorting the demand for portfolio assets also alters the mix of

financial assets that firms supply (e.g., the ratio of debt to equity) and the

allocation of risk-bearing in the economy. A full evaluation of the welfare

costs of taxes on portfolio income should evaluate the welfare losses that

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[1]See, for example, Laidler (1969), Aaron (1971) and Feldstein (1981).

result from the misallocation of risk as well as from the distortion of produc-
tion decisions.

Economists first became interested in the effects of taxes on port-
folio behavior when individual income tax rates began rising in World War II.
The very sharp increase in tax rates caused a widespread concern that the tax
system would reduce the willingness of individual portfolio investors to take
risks and that this in turn would raise the market price of risk and induce
firms to make investments with lower risk and therefore lower expected return.
In an important early article, Evsey Domar and Richard Musgrave (1944) argued
that the opposite was more likely to be true: because a tax implies that the
government shares the risk as well as the return on investments, the tax need
not change the net return per unit of net risk but does reduce both risk and
income. In their particular parameterization, this implied that individuals
would unambiguously increase their demand for the risky asset. Subsequent ana-
lysis by Tobin (1958) showed that the same conclusion could be obtained in a
model with expected utility maximization.

By the mid-1960s (when I wrote the paper that appears as chapter 9,
"The Effects of Taxation on Risk-Taking"), professional economists generally
accepted the proposition that a proportional tax with full loss offset increases
personal risk-taking. My paper showed that previous demonstrations relied on
a variety of restrictive and implausible assumptions and that, when these
assumptions are relaxed, the previous conclusion is no longer true. The key
point of the analysis is that even in a restricted world in which a mean-
variance analysis is appropriate, the proportional tax can be shown to increase
risk taking only when there is a riskless asset with zero yield. When all assets
are risky, or even when the safe asset has a non-zero yield, the effect of a

proportional tax on the demand for risky assets is ambiguous and can only be
resolved by further restrictions on the utility function. Subsequent papers by
Mossin (1968), Stiglitz (1969) and others identified the restrictions on
utility functions and asset structures that could produce different results
but confirmed that no general theoretical conclusion about portfolio choice
could be obtained.

The theory of portfolio choice thus identifies the basic ways in which
taxation affects portfolio composition without providing any clear answer about
its net effect. Moreover, the actual tax rules that affect portfolio investment
in the United States are quite different from the simple proportional tax with
full loss offset that has been the subject of the theoretical analyses. The
United States taxes nominal capital gains but only on realization and at a
lower rate than other types of capital income. The law also exempts from taxa-
tion the income of state and local government bonds and the implicit income on
owner-occupied housing. Because of the theoretical and institutional complexi-
ties, evaluating the likely effect of the actual progressive tax requires direct
empirical research.

The study presented in chapter 10, "Personal Taxation and Portfolio
Composition: An Econometric Analysis", uses household survey data (the
Federal Reserve Board's survey of income and assets) to study the effects of
taxes on portfolio composition. The first stage of the analysis relates the
composition of each individual's financial wealth to the individual's tax
bracket, wealth, and other relevant variables. The parameter estimates from
these equations are then used to assess the impact of tax rates on asset demand.

The evidence indicates that tax effects are quite important. The
estimates imply that, with the special features of the U.S. tax system (like

the method of taxing capital gains), higher marginal tax rates increase the demand for common stock and municipal bonds and decrease the demand for other types of financial assets. A simple model relating asset demand to the relative net-of-tax asset yields is capable of explaining why different income classes hold different fractions of their portfolios in each type of asset. The relative net yield differences can also account for much of the variation among asset proportions for each income classes. By construction, the differences in relative net yields reflect only the tax rules and tax rates. The analysis thus provides strong evidence of the importance of taxes in determining portfolio composition and asset demand.

The basic question that originally motivated research on the effect of taxation on risk-taking was whether the tax law discouraged high income individuals from making investments with high pretax yields and high risks. To answer this question directly, I calculated an estimated mean pretax yield for the portfolio of each individual in the sample and a corresponding variance based on the historic covariance matrix of the individual asset yields. I then related these measures to the individuals' tax classes, wealth and demographic characteristics. The results indicate that both pretax yield and risk rise with taxable income. The basic reason for this is the increasing share of equities in the portfolios of higher income individuals. This in turn was the result of very progressive tax rates on ordinary income (reaching a maximum rate of more than 90 percent in the 1962 survey year) and a maximum capital gains tax rate of 25 percent. Thus, the combination of very progressive tax rates on other income and low tax rates on capital gains encourage an allocation of portfolio wealth into investments with higher pretax yield than would otherwise have occurred.

Capital gains are not only taxed at a lower rate than ordinary income but are subject to tax only when an asset is sold. Moreover, the capital gains tax is avoided completely when an asset is bequeathed, since the recipient takes the asset's value at the time of transfer as a new basis for calculating subsequent taxable gains. The likely result of this method of taxing capital gains is to discourage the sale of assets and the realization of taxable gains. To the extent that investors are "locked into" previous investments in this way, the asset markets are less efficient at allocating risks and resources. The demand for share of companies whose prices have risen in the past are artificially inflated while new companies and those whose share prices recently declined have a harder time attracting buyers.

This potential lock-in problem assumed growing importance in the 1970s as changes in tax rules raised the maximum tax rate on capital gains. The so-called "alternative tax" rule that limited the capital gains rate to 25 percent was modified to restrict its application to the first $50,000 of capital gains. Other rules governing the "minimum tax" and the "maximum tax" raised the total marginal rate on capital gains to more than 40 percent for many individuals before the 1978 reduction in the tax rates on capital gains.

Chapters 11, 12 and 13 report three studies that were designed to evaluate the effect of capital gains taxation on the selling of corporate stock and the realization of capital gains. All three studies indicate that investors are quite sensitive to tax consideration in their decisions to sell common stock.

An important feature of the first of these studies, "The Effect of the Capital Gains Tax on the Selling and Switching of Common Stock", which was done jointly with Shlomo Yitzhaki, was the use of survey data that permitted

separating "switches" of stock (i.e., stock sales followed by purchases of different stock or other financial assets) from "net sales" in which proceeds are not reinvested. The distinction is useful because the lock-in effect applies only to switch sellers. Although higher capital gains tax rates should unambiguously reduce switch-selling, the effect of high tax rates on net selling is ambiguous. A higher tax rate may discourage an individual from selling stock in order to buy a consumer durable or to make some other large purchase, but an individual who wishes to sell in order to obtain some given net amount of after-tax cash will have to sell more if he is in a higher tax bracket than if he is in a lower tax bracket. The net balance of these two factors determines whether net selling is an increasing or decreasing function of the capital gains tax rate.

The survey data examined in Chapter 11 implies that 56 percent of those who sold stock during the year also purchased other stock and that 58 percent of the pretax value of common stock sale proceeds were reinvested in common stock by the end of the calendar year. The parameter estimates conform to the theoretical prediction and indicate that the portfolio reallocation decisions ("switches") are particularly sensitive to tax considerations while net selling does not appear to be influenced by the tax rate on capital gains.

The second study, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains", done jointly with Joel Slemrod and Shlomo Yitzhaki and reported in Chapter 12, extends the first analysis by examining a large sample of individual tax returns that report sales of corporate stock. With the tax return data, we were able to estimate the effect of taxation on the realization of gains as well as on the sale of stock. The evidence

supports the earlier finding that corporate stock sales are quite sensitive to
tax rates and then shows that the effect on the value of the net capital gains
that are realized is even stronger. As an indication of the strength of these
effects, the study reports a simulation of lowering the 1973 maximum tax rate on
capital gains to 25 percent. The simulation indicates that, on the basis of the
cross-section differences in realization at different tax rates, this change
would cause nearly a doubling of stock sales and would increase realized gains
by enough to increase tax revenue despite the lower tax rate. In practice, the
actual effect of a lower capital gains tax rate would depend on the extent to
which individuals had realizable gains. Since only a small fraction of accrued
nominal capital gains are actually realized, a very substantial increase in
stock sales and tax revenue is quite possible.

The analyses of Chapters 11 and 12 use cross-section data to estimate
the likely effect of a change in tax rates. These samples permit studying large
numbers of individual taxpayers and making quite precise estimates of their
capital gains tax rates and their sales of corporate stock. Although cross-
section data can in principle provide valid estimates of how individuals would
respond to a change in rules, it is reassuring to have evidence based on a com-
parison of behavior under different tax regimes.

Chapter 13, "The Lock-In Effect of the Capital Gains Tax: Some Time
Series Evidence", written with Joel Slemrod, presents such a "before and after"
comparison. Before 1969, all taxpayers were subject to a maximum capital gain
rate of 25 percent. During the 1970s the capital gains tax rate remained essen-
tially unchanged for moderate income taxpayers but rose substantially for those
with very high incomes and large potential gains. The evidence on capital gains

by income class presented in Chapter 13 shows that the ratio of net capital gains to other income was actually higher in 1975-76 than in 1967-68 among taxpayers with incomes under $100,000, but fell substantially among higher income groups. Although it is not possible to make precise parameter estimates on the basis of these data, they clearly support the sensitivity of capital gains to tax rules that is implied by the cross-section data.

Consideration of individual portfolio behavior suggests a significant modification of the conventional analysis of the corporate income tax and of other partial factor taxes. The conventional analysis follows Harberger (1962) and assumes that capital is allocated among alternative uses in a way that equalizes the after-tax rate of return on capital in all of its uses. The portfolio perspective implies that this conventional analysis should be modified to recognize that the net rates of return on capital in different uses are not generally equal but reflect the risk-return preferences of investors and their equilibrium portfolio compositions.

The portfolio approach explains why different types of taxpayers ranging from high tax rate individuals to untaxed pension funds all hold mixed portfolios despite the differences among taxpayer groups in the relative net rates of return on different types of assets. If risk considerations were irrelevant to these investors, each type of investor would specialize in the particular type of investment which had the highest net yield for his tax situation.

The lack of specialization is significant because it implies that different groups of portfolio investors may respond differently to tax-induced changes in the net rates of return. In contrast, the conventional analysis

assumes that there are no differences in response but that all capital owners respond with an "infinite" asset adjustment to any divergences of net rates of return.

Chapter 14, "Personal Taxation, Portfolio Choice and the Effect of the Corporation Income Tax" (written with Joel Slemrod), shows that the portfolio approach can radically change the implied effect of the corporate income tax on the sectoral allocation of capital. Corporate income is subject to tax at a corporate rate of 46 percent; when some fraction of that income is paid as dividends, it is subject to an additional tax at the shareholder's rate of individual income tax. Before 1982, investment income on noncorporate activities was taxed at individual rates of up to 70 percent and this same rate was applied to dividend income; since 1982, the maximum individual rate has been reduced to 50 percent.

Recognizing the differences in personal income tax rates significantly changes the appropriate analysis of the effect of the corporate income tax. Although the corporate income tax represents an additional tax for lower income individuals and untaxed institutions, the corporate tax system can also shelter retained earnings from high rate of personal taxation. When personal tax rates were as high as 70 percent and the corporate rate was 48 percent, the total taxation of corporate income could easily be below the tax rate applicable to the income of unincorporated businesses. In this situation, the corporate income tax induces investors with low individual tax rates to shift investments from the corporate to noncorporate sector but induces investors with high marginal tax rates to shift resources into the corporate sector.

The net effect of the corporate tax system therefore depends on the

distribution of wealth among investors in different tax classes and on the rela-
tive sensitivity of their adjustments to changes in yields. If the portfolios
of high income individuals are more responsive to yield differences than
the portfolios of low income individuals, the corporate tax system can actually
result in a net flow of capital from the unincorporated sector to the corporate
sector. Chapter 14 presents a two-sector model calibrated to U.S. data for 1973
and shows that the corporate tax system could increase the size of the cor-
porate capital stock with feasible differences in the portfolio balance elasti-
cities. More generally, with portfolio balance elasticities that are more
realistic, the disaggregated portfolio analysis of the U.S. corporate tax system
implies a very substantial reduction in the extent to which the corporate tax
system shifts the capital stock.

The reduction of the maximum individual income tax rate to 50 percent
as of 1982 makes it virtually impossible for anyone to pay a lower tax on cor-
porate income (subject to a 46 percent rate plus a tax on dividends) than on
unincorporated business income.[1] This implies that the corporate tax system un-
equivocally reduces the flow of capital to the corporate sector. The lower rate
of individual income tax does not, however, change the general analytic point
that only a disaggregated portfolio analysis can explain the absence of complete
specialization and indicate the likely quantitative response of asset allocation
to changes in tax rules.

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[1] Very small corporations do pay tax rates below 46 percent but these firms
account for a minute fraction of all corporate capital and income.
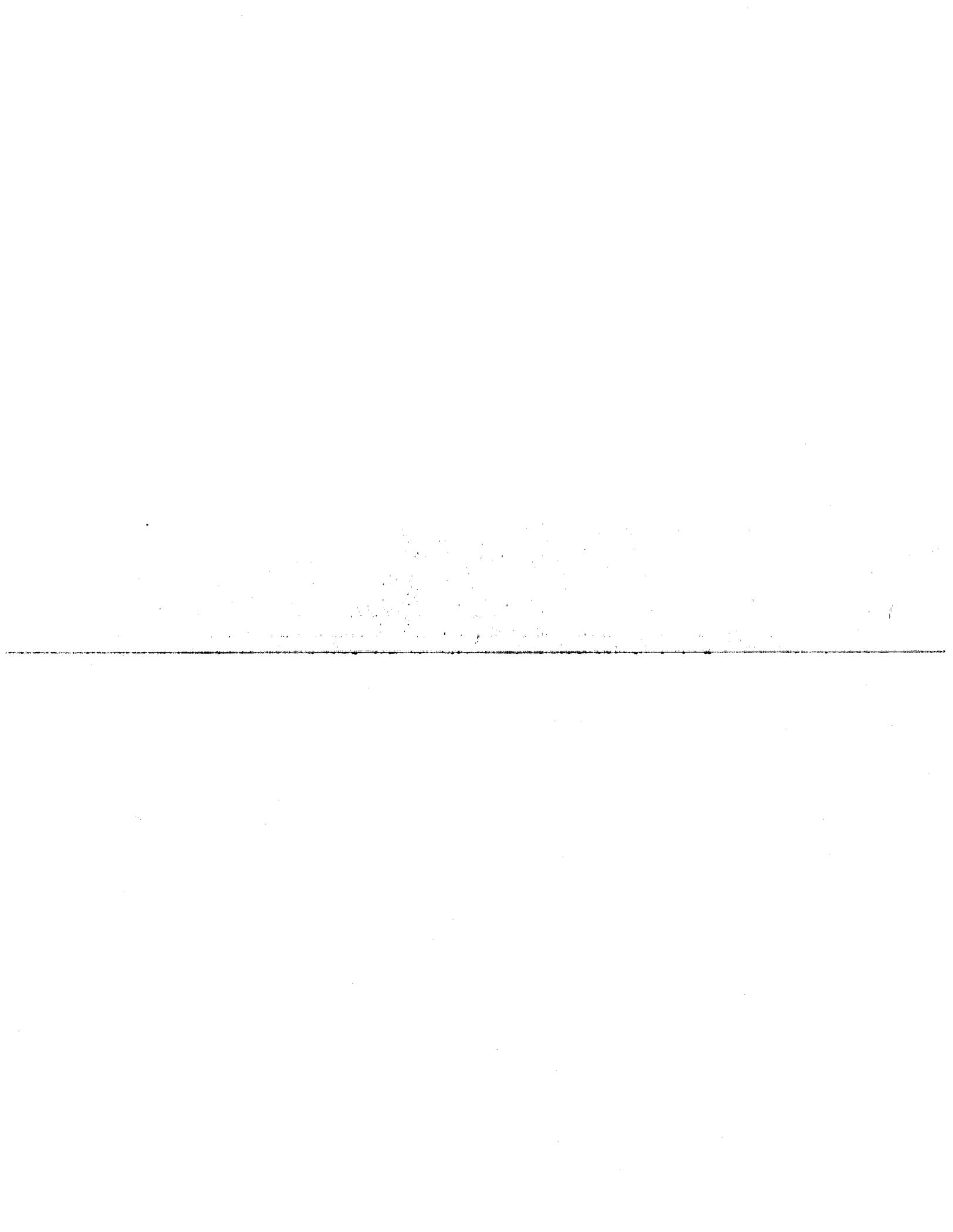
of investment to tax-induced changes in the cost of capital, this sensitivity was not estimated independently but was the result of the Cobb-Douglas specification that constrained the elasticity of the desired capital stock with respect to the cost of capital to be minus one. The statistical estimation only indicated the time path of the adjustment of investment to changes in the composite variable that reflected both output and the user cost of capital. Even after Jorgenson's pioneering work, skeptics could still easily believe that all of the explanatory power in his statistical model came from changes in sales and that tax policies have no effect on investment.

Only by relaxing the constraint implied by the Cobb-Douglas specification can the effect of the tax rules be estimated explicitly. In chapter 15, "Tax Policy, Corporate Saving and Investment Behavior in Britain," John Flemming and I estimated a more general specification in which the effect of tax policy can be examined directly. The natural generalization of the Cobb-Douglas specification is a constant elasticity of substitution technology in which the elasticity of substitution is not constrained to be one; this in turn implies that the elasticity of the desired capital stock with respect to the cost of capital may also be greater or less than minus one. We adopt this constant elasticity of substitution specification and then go even further and allow different responses to the different components of the cost of capital: the depreciation rules, the corporate tax rate, and the net rate of return. In principle, such response differences might be the result of differences in the extent to which firms understand these factors and take them into account or of differences between permanent and transitory effects.

During part of the sample period that we examined (1954 through 1967), the British government had used tax policy to encourage greater corporate

saving. The evidence presented in Chapters 4 and 5 indicates that these policies were successful in achieving this particular aim. The purpose of encouraging increased retained earnings was of course to raise the rate of investment. Chapter 15 also examines the extent to which tax-induced changes in retention affect the rate of investment.

The statistical evidence implies that both the accelerated depreciation provisions and the differential taxation of dividends and retained earnings had substantial and significant effects on investment. The data imply that the responses to the other components of the user cost of capital (the tax rate and the net cost of funds) are weaker and may not have existed at all. The evidence that tax inducements to increase retained earnings raised investment is consistent with the finding for Britain (Chapter 7) that higher retained earnings raised total national savings. In short, both types of policies appeared to be successful in raising capital formation before the differential taxation of dividends and retained earnings was abandoned in 1958 and the value of accelerated depreciation was eroded by inflation in the late 1960s and 1970s.

A defect of the Feldstein-Flemming study, as well as of the work of Jorgenson and his collaborators, is the assumption that replacement investment is a fixed fraction of the capital stock. In chapter 16, "Toward an Economic Theory of Replacement Investment", Michael Rothschild and I show that replacement investment is likely to be quite sensitive to changes in tax laws in both the short run and the long run. Since replacement investment is approximately the same magnitude as net expansion investment, this influence of tax rules is potentially quite important.

A tax change that alters the optimal ratio of capital services to

labor is also likely to alter the optimal planned durability of capital and therefore the initial amount of capital stock per unit of capital service. If a particular depreciation change both raises the optimal capital-labor ratio and favors more durable investment, it will raise investment outlays for both reasons. Econometric models that ignore changes in durability will attribute all of the increased investment to the higher capital-labor ratio and will therefore overestimate both the sensitivity of the optimal capital stock to the user cost of capital and the long-run effect of the tax change on investment.

In addition, a tax change may induce firms to accelerate or delay the scrapping and replacement of existing equipment by changing the optimal age of replacement. Chapter 16 shows that under certain conditions, the introduction of accelerated depreciation increases the optimal replacement age. In principle, all replacement investment would then be postponed until the oldest equipment reached the new optimal age. Investment would eventually rise because of the increase in the optimal capital-labor ratio but would fall temporarily because of postponed replacement. An econometric analysis that ignores the delay in replacement would therefore underestimate the response of the optimal capital intensity to the tax change.

These examples illustrate that the simplified specification of replacement investment that still characterizes econometric studies of investment may be an important source of bias in estimating the way in which tax rules affect investment. More generally, the analysis of chapter 16 implies that the impact of tax rules on replacement investment may be very significant and deserves more careful econometric analysis than it has received.

As I noted in discussing the effective tax rate calculations of Chapter 2, the increasing rate of inflation that began in the mid-1960s has had a major effect on the taxation of capital. This occurs because the taxable income of businesses and individuals is calculated by conventional accounting methods that evaluate nominal rather than real capital income. The use of historic cost depreciation and first-in/first-out inventory accounting cause an understatement of the costs of production and therefore an overstatement of taxable income. The use of nominal interest rather than real interest causes an overstatement of the borrowers' costs and an overstatement of the lenders' income. And the taxation of nominal capital gains causes a rise with inflation in the effective tax rate on individual equity investors. The net result of all three forms of capital income mismeasurement is to raise the effective tax rate on the income from business investment as inflation rises.

This interaction between inflation and tax rules implies a substantial non-neutrality of inflation and shows the importance of an economy's fiscal structure as a determinant of its macroeconomic equilibrium. Chapter 17, "Inflation, Tax Rules and Investment: Some Econometric Evidence," focuses on the primary effect of the tax-inflation interaction: its impact on non-residential fixed business investment.

There are a number of complex channels by which the inflation-tax interaction affects business investment. The higher effective tax rate on capital income changes the incentive to save and directs more of aggregate saving into owner-occupied housing. The incentive for business investment is depressed by the lower real net-of-tax return that can be earned on any given investment but is encouraged to the extent that firms use debt finance and face a lower real net-of-tax cost of debt.

Chapter 17 begins by acknowledging that the effect of the tax-
inflation interaction on investment is too complex to be described accurately by
any single econometric model. Although models like that of Chapter 15 can be useful,
they represent a substantial simplification in their specification of tech-
nology, of the market environment of firms, of financial behavior, etc. Because
any econometric specification is therefore a "false model", it is useful to
estimate alternative specifications in which the potential biases are likely to
be different. Because all inference is necessarily based on false models, the
robustness of results is the best indication of economic reality.

Three quite different models are presented in Chapter 17. The most
explicit specification is an extension of the generalized C.E.S. capital stock
adjustment specification of Chapter 15 in which substantial care is given to the
measurement of the effects of inflation. An alternative model of investment
behavior that avoids some of the restrictions of the capital stock adjustment
process relates investment to the difference between the net return on invest-
ment and the net cost of funds. Finally, there is a model that is more of a
reduced form, relating nonresidential investment to the real net return that is
earned by those who provide the capital.

All three models indicate that net nonresidential fixed investment is
quite sensitive to tax rules and that the interaction of inflation and the U.S.
tax rules that prevailed in the 1960s and 1970s can account for much of the
nearly 40 percent decline in the net investment share in GNP that occurred
between the second half of the 1960s and the 1970s. Although the chapter does
not deal explicitly with the 1981 tax legislation that significantly shortened

the depreciation lives of plant and equipment, the analysis implies that this change should raise investment substantially and should reduce the sensitivity of effective tax rates and of investment to changes in inflation.

Tax Incidence in a Growing Economy

The five final chapters in this volume look at capital taxation in a general equilibrium framework. The analyses are theoretical and examine econo- mies in steady state equilibrium growth. A principal focus of each chapter is the impact of some tax on the returns to capital and labor but the analyses go beyond the issue of tax incidence to examine the more general effects of the tax on the behavior of economic agents.

The first of these studies, "Tax Incidence in a Growing Economy with Variable Factor Supply" (Chapter 18), shows that the long-run incidence of a tax depends only on its effect on the share of national income that is saved. The effect of the tax on the supply of labor is irrelevant in the long-run because changes in the supply of labor induce corresponding changes in the supply of capital that make the capital-labor ratio (and therefore the factor returns) independent of the labor supply. The irrelevance of the labor supply response very clearly distinguishes the implications of long-run growth incidence from the implications of static analyses of tax incidence.

The specific analysis of Chapter 18 deals with the effect of a general "payroll tax" on labor income. If the tax does not alter the fraction of national income that is saved, the entire burden of the tax is borne by labor and the return to capital remains unchanged. If, however, some fraction of the taxed income would have been saved while the government saves none of the tax

revenue, the effect of the tax is to lower the national saving rate and there-
fore to reduce the economy's equilibrium capital-labor ratio. This in turn
raises the rate of return to capital and lowers the pretax return to labor.
In this case, labor bears more than 100 percent of the payroll tax. More
generally, the effect of the tax depends on the redistribution of income among
groups with different saving rates and the sensitivity of saving to the rate of
return.

Chapter 19, "Incidence of a Capital Income Tax in a Growing Economy
with Variable Savings Rates," extends the analysis of tax incidence in a growing
economy to the case of a tax on capital income. The results of this analysis
are again very different from the implications of a static general equilibrium
model. In a static general equilibrium model with a fixed capital stock, owners
of capital would bear the entire burden of a general tax on capital income.
When the capital stock is instead made endogenous, a substantial fraction of the
burden of a general tax on capital income may be borne by labor. The precise
incidence depends on the elasticity of the saving rates of different types of
taxpayers with respect to the net rate of return.

The contrast between the irrelevance of the labor supply elasticity
and the sensitivity of the results to the savings elasticities is striking.
This difference reflects the fact that capital is a derived factor of production
and is thus a function of the labor supply and labor income while the opposity
is not true. It implies that the providers of capital may ultimately avoid some
of the burden of any tax in a way that is not available to the providers of
labor services.

Although the analysis of chapter 19 refers to a general tax on capital

income rather than a partial tax like the corporate income tax, it suggests that the implications of the traditional static analysis of the corporate income tax would not remain valid if the very long-run incidence were examined explicitly.

In an economy with more than one type of capital asset, changes in the taxation of a particular type of capital income cause an immediate change in the price of the corresponding asset and may cause changes in other asset prices as well. These asset price changes capitalize the changes in future net incomes. Such capitalization effects are an important aspect of the distributional effect of a tax change and can also play a key role in the reallocation of assets.

Chapter 20 extends the traditional theory of capitalization and of tax incidence by using a model of a growing economy with overlapping generations. The analysis is applied to a tax on pure land rent, the classic case of a tax that has been assumed to be unshiftable and therefore to be fully capitalized in the price of land. This study, "The Surprising Incidence of a Tax on Pure Rent: A New Answer to an Old Question," shows that even a tax on pure rent can be shifted to other forms of capital.

This surprising conclusion comes from recognizing that land is a store of value as well as a factor of production. When a tax on rent destroys some of the market value of land, savers must hold more reproducible capital as part of their life cycle saving. The tax on rent thus increases the stock of reproducible capital, thereby raising the capital-land ratio and the capital-labor ratio. The result of this is a higher pretax rent and higher wages. Chapter 20 presents an explicit model of this process and shows how the value of land might even be raised by a tax on rental income.

Although this analysis is limited to the case of pure land rents, it has obvious implications for the corporate income tax, for taxes on natural

resources and for all other partial taxes on particular types of capital income.
It shows the importance of describing explictly the way in which any tax change
alters existing capital values and the accumulation of capital.

In Chapter 21, "Corporate Financial Policy and Taxation in a Growing
Economy." Jerry Green, Eytan Sheshinski and I use the framework of an economy
in equilibrium growth to examine how a system of profits taxation affects cor-
porate financial decisions and the net returns to individual investors in debt
and equity. The framework of equilibrium growth is important in this context
because it constrains the debt-equity ratio and the dividend-payment rate to
combinations that are consistent with the exogenously given growth of each
firm's capital stock. The corporate-type tax system that we study favors both
borrowing and retained earnings but a firm cannot maintain both a high debt-
equity ratio and a low dividend payment rate without generating an excessive
growth rate for its capital stock.

The effect of the corporate-type tax system on the debt-equity ratio
depends on the portfolio balance behavior of individual investors. If an
increase in the net yield on debt relative to equity causes a rise in the
desired debt-equity ratio, the corporate tax system raises the equilibrium debt-
equity ratio.

Changes in the ratio of debt to equity complicate the analysis of the
effect of tax rules on asset yields because part of any change in asset yields
is their compensation for the change in risk. To clarify the analysis, we
assume that the individual portfolio equilibrium requires a constant debt-equity
ratio. In this context, we obtain the rather surprising result that an increase
in the corporate tax rate reduces the net yield to debt even though interest

payments are deductible by the corporation. Similarly, a higher tax rate lowers

the net yield on equity and reduces the dividend payment rate.

The analysis shows that the current structure of corporate and per

sonal taxes is significantly non-neutral and can significantly distort the

financial behavior of firms and the returns to the provider of capital.

Extending our analysis to a two-sector model with an endogenous stock of capital

would indicate further aspects of non-neutrality.

The final chapter, "Inflation, Income Taxes, and the Rate of Interest:

A Theoretical Analysis," returns to the interaction of inflation and tax rules

that provided the basis for the econometric study in Chapter 17. In an economy

without income taxes and in which money demand is not a function of the interest

rate, a change in the equilibrium rate of inflation has no effect on the real

economy. This is the "superneutrality" implied by Irving Fisher's original ana-

lysis of inflation. More recently, James Tobin (1965) has emphasized that the

observed inverse relation between inflation and money demand implies that an

increase in the rate of inflation causes a portfolio substitution that raises

the equilibrium capital intensity of the economy.

In reality, this portfolio substitution effect must be very small.

Even a relatively broad definition of the relevant monetary balances implies

that the maximum effect is less than two percent of total wealth. An economy's

tax rules are therefore likely to have a much more substantial effect by

influencing the total supply of saving and its allocation among alternative

uses.

The analysis of Chapter 22 considers a particularly simple tax struc-

ture that illustrates how fully anticipated inflation can change the real return

to savers and therefore the rate of saving. The model focuses exclusively on

the difference between the tax rate of corporate borrowers and the tax rate of

the individual savers who lend to the corporation. The effects of inflation on

depreciation, on inventory profits and on capital gains are all ignored and all

investment is assumed to be financed by debt. In this context, an increase in

the rate of inflation raises the net return to savers if the corporate tax rate

at which interest payments are deducted exceeds the personal tax rate that is

paid on interest receipts. Moreover, since savers in high tax brackets will

generally see their rate of return depressed by inflation (because their per-

sonal tax rates exceed the corporate rate) while savers in low brackets receive

higher rates of return, the net effect on aggregate saving will depend on the

relative sensitivity of saving in the different groups.

Although the analysis of Chapter 22 shows the importance of the

interaction between taxes and inflation, the model is too simple to give even a

qualitative picture of the likely effect of changes in inflation. In a series

of subsequent papers, I have examined the effects of depreciation and capital

gains taxation, the roles of government debt and of owner occupied housing, and

other aspects of the way in which an economy's fiscal structure affects its

macroeconomic equilibrium. These papers and related empirical research appear

in a separate volume, Inflation, Tax Rules and Capital Formation (University of

Chicago Press, 1983).

The studies included in the current volume have dealt with only some

aspects of the broad subject of capital taxation. These analyses are suf-

ficient, however, to show that the tax system does have substantial and varied

effects on the process of capital accumulation. They are an indication also of
the need for continuing research, both theoretical and empirical, on the ever-
changing system of actual tax rules and on the possibilities for better alter-
natives.

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Appendix

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