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ISSUES IN THE MEASUREMENT AND INTERPRETATION OF EFFECTIVE TAX RATES

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ABSTRACT

Marginal effective tax rates on investment that are derived from the user cost of capital are nowadays widely used practically to assess the effects of capital taxation. In this paper, we examine several troublesome issues in the construction and use of marginal effective tax rates and user costs of capital. Our comments fall into two classes. In the first are concerns about the adequacy of the current generation of models of capital-market equilibrium, into which marginal effective tax rates (user costs) are incorporated. In the second are concerns about the appropriateness of the assumption, implicit and nearly universal in marginal effective tax rate calculations, that investors expect a given tax code to remain unchanged forever. We show that effects of current changes in the law on expectations about future changes may undo or even reverse the effects predicted by traditionally calculated effective tax rates.

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Marginal effect tax rates on investment that are derived from the user cost of capital are nowadays widely used practically to assess the effects of capital taxation. In this paper, we examine several troublesome issues in the construction and use of marginal effective tax rates and user costs of capital. Our purpose is primarily to stimulate discussion and thought and not to provide a comprehensive survey. Our comments fall into two classes. In the first are concerns about the adequacy of the current generation of models of capital-market equilibrium, into which marginal effective tax rates (user costs) are incorporated. In the second are concerns about the appropriateness of the assumption, implicit and nearly universal in marginal effective rate calculations, that investors expect a given tax code to remain unchanged forever. Because the actual tax code in the U.S. (and in most developed countries) has been modified repeatedly in important ways in recent years, this assumption is clearly suspect. We argue that when changes in tax policy generate large effective transfers of wealth, as is the case with nearly any important tax change, employment of marginal effective tax rates can be severely misleading. When such transfers exist, it is also necessary to consider how the tax change affects expectations about future policy. It is possible to find cases in which these expectational effects undo or even reverse the effects predicted by simple examination of traditionally calculated marginal effective tax rates.

In Section I, we review briefly just what is meant (here) by a marginal effective tax rate. Section II then treats a number of the technical issues in constructing and incorporating effective rates into economic thinking. First, the current state of knowledge does not provide a satisfactorily precise understanding of the trade-offs that firms face between debt and equity finance. Without a clear picture of what determines the mix of debt and equity, it is obviously difficult to predict the incentive effects of changes in their tax treatments. Similar difficulties arise in understanding incentive effects in an economy in which agents with different tax situations specialize in investing and holding different types of assets. A second problem is that a number of aspects of the tax code have yet to be incorporated into calculations of marginal effective rates. Third, both the construction and use of effective rates are typically conducted under the assumption that there are no capital flows between countries, which appears to be problematic.

The issue of wealth transfers induced by changes in tax rules is treated in Section III. The essential point is that if a policy change effectively causes wealth transfers then one must take account of how the change affects expectations of future policy-induced wealth transfers. This matters because expectations of future shifts in policy influence an investment's perceived pay-off and hence the incentive to undertake it. In particular, if a policy shift today reduces the value to investors of previously purchased investments, incentives for future investment may fall. Because these expectational effects are not included in traditional effective-rate calculations, a policy change that reduces calculated effective rates might in fact have little or even a negative impact on the incentive to invest.

I. What is a Marginal Effective Tax Rate?

A profit-maximizing firm will acquire capital up to the point where an additional or marginal unit of investment no longer yields any additional profit. To finance this marginal investment, the firm obtains funds from savers either by borrowing or by givinq savers equity in the investment. In order to pay savers the return they require to make funds available and also to pay the government all taxes due on the investment, the firm must earn a certain return net of actual depreciation on the asset (referred to as the "user cost of capital"). In broad terms, a marginal effective tax is then the difference between this return on the investment (the user cost) and the return that must be paid to savers. It is typically expressed as a rate by dividing it by the return to savers (or sometimes by the return to investors).

We intentionally refer to "a" marginal effective tax rate here, because there often are many ways to specify the margin for an increment of investment and saving. This means that considerable care is required to apply or interpret marginal effective tax rates.

The notion of a marginal effective tax rate derives from work by Hall and Jorgenson (1967). Technically, a marginal effective tax is the difference between the internal rates of return on two cash flows associated with an investment. The first is the cash flow before tax rules have been applied, and the second is the cash flow after taxes. To compute a marginal effective rate, the analyst must first specify an exact investment project (e.g., debt-financed construction of a building owned by a household) and must then specify the precise tax rules that the parties to the transaction anticipate.

II. Technical Problems

A. Financial Mix. Effective tax rates are often highly sensitive to the choice of underlying assumptions. For instance, table 1, from Fullerton (1985), reports effective tax rates calculated using plausible assumptions about financing, inflation, etc. under three different federal tax regimes for investments in different aggregated asset types. The table shows the consequences of varying two assumptions, one relating to the way financial markets equilibrate ("firm arbitrage" vs. "individual arbitrage") and one relating to the characteristics of the underlying hypothetical projects (do they generate a real after-tax rate of return of 5 percent or 3 percent to the representative saver, s=.05 or s=.03). One sees from the table that this range of assumptions implies marginal effective tax rates on equipment in the corporate sector ranging from -58.7 percent to +4.6 percent under 1985 tax law. Needless to say, this range is substantial.

For our purposes, the more interesting of the two sensitivity exercises in the Fullerton table is the one relating to arbitrage and financial-market equilibrium. A nagging problem confronted by the tax analyst is the lack of an adequate model of financial markets. This is most evident in the distinction, common in effective tax rate applications, between rates on "debt-financed" and "equity-financed" investments. Fullerton deals with this by making a series of fixed-proportion assumptions specifying the fraction of an incremental investment financed by debt and the fraction financed by equity. However, because firms can be presumed to choose both real investment levels <u>and</u> modes of finance to maximize profits, changes in tax law should induce changes in both real investment and financial mix. In general, then, the assumption of fixed financing proportions incorrectly characterizes the market behavior of profit-maximizing firms.

The individual arbitrage - firm arbitrage dichotomy gives a further indication of the technical difficulties involved in modeling financial markets. Firm-level arbitrage views corporations as adjusting their mix of debt and real investment so as to obtain the same after-tax return on a marginal investment. That is, the firm is seen as always making a change that would give it a net positive cash flow in every period (an arbitrage profit), if such a change is possible. On the other hand, individual arbitrage assumes that individuals capture any arbitrage profits that can be obtained by merely altering the mix of debt and equity in their financial portfolios. Both types of arbitrage have a good deal of intuitive appeal as descriptions of financial market equilibrium. The problem is that, in general, elimination of opportunities for firms to earn arbitrage profits implies the presence of opportunities for individuals to earn such profits, and vice versa. This means that calculations of marginal effective tax rates generally assume either that a household receives different net returns from different assets when it could gain by holding only highest-return assets, or that a given physical piece of capital has different before-tax rates of return depending on how it is financied! (Bradford and Fullerton, 1981; King and Fullerton, 1984; Fullerton, 1985).

This inconsistency can at least partially be reconciled by introducing costly bankruptcy or other forms of risk (Baumol and Malkiel, 1967; Gordon and Malkiel, 1981). With risk present, for instance, households could sensibly hold two assets that earn different expected returns if the asset with the greater return also is riskier. Although some research along these lines has been conducted (Galper et al, 1985), it is still unclear how changes in taxation might affect incentives to invest when one convincingly takes account of risk. Interestingly, recent analyses by Bulow and Summers (1982) and Gordon (n.d.) suggest that taxes may generate smaller distortions in a risky environment than in a riskless one. The explanation is that risk itself deters investment, and that capital taxation transfers to the government not only some of the expected return from an investment but also some of the associated risk. It is this shift of risk to the government that may offset, to some degree, the normal disincentive effects of taxation.

An important aspect of the debt-equity question is that the current tax system treats debt very favorably compared to equity. The fact that debt-financed projects have substantially lower effective rates than equity-financed ones is generally thought to be the source of significant distortions -- too much debt is issued and not enough equity (see calculations in Gravelle, 1985). This may well be the case, but there is at present little knowledge of just how these distortionary costs ultimately manifest themselves. One approach, for instance, is that the controlling equity owners in a highly leveraged firm may direct the firm to take excessive risks, with a resulting excessive probability of bankruptcy (e.g., Gordon and Malkiel, 1981; Fullerton and Gordon, 1983). However, it seems implausible that bankruptcies burn up billions of dollars per year worth of real resources in lawyers fees. Without a clearer understanding of exactly what resources are lost due to a tax system that artificially encourages debt over equity finance, it is hard to feel confident that these putative substantial losses actually exist.

Another possible approach for dealing with the problem of wanting to impose sensible but mutually inconsistent arbitrage assumptions is to allow households and firms to have different tax situations (Miller, 1977; Auerbach, 1983). It may then be that taxpayers specialize in holding assets that are compatible with their tax situations, so arbitrage need not drive rates of return to equality. While this approach has some appeal, it is technically very complicated because the marginal effective tax rate for a given investment would then depend on the characteritics of the specific saver financing the investment as well as on those of the firm that undertakes the investment. Little has been done to analyze investment incentives in such a setting.

B. Neglected Tax Rules. Although many of the simpler user-cost based calculations of marginal effective tax rates consider only rates on corporate investment in structures and equipment and include corporate taxes, depreciation rules, and investment tax credits, more recent analyses also treat non-corporate investment, owner-occupied housing, investment in inventories, and public utilities and include, when relevent, the effects of dividend relief, inflation-indexing of depreciation allowances and interest, capital-gains provisions, and inventory accounting rules (Fullerton, 1985; Gravelle, 1985). However, there are still many features of the tax code that have not yet been incorporated into effective rate calculations. Examples of excluded features that almost certainly affect investment incentives include

(a) for extractive and natural resources: depletion allowances, rules for intangible drilling costs, royalty (capital gains) taxation, and energy credits;

(b) for financial institutions: reserve requirements, bad-debt deductions, the treatment of tax-exempt bonds, foreign tax credits, reserve deductions and other features of the tax treatment of insurance companies;

(c) for tax shelters generally: minimum tax provisions and rules for limited partnerships.

This list, which is far from complete, also suggests that current calculations of marginal effective tax rates only imprecisely measure incentives to invest. The imprecision may be more severe for certain industries, such as extractive and natural resources, financial services, and possibly real estate.

C. International Considerations. Many calculations of effective tax rates implicitly assume that the U.S. economy is "closed", which means that changes in the taxation of capital in the U.S. do not induce capital flows to or from foreign countries. To understand how this assumption is built in, note that domestic saving and investment must be equal in a closed economy, so any taxes on saving, such as personal income taxes, are also part of the effective tax on investment. In an open economy, however, domestic saving and investment differ by the amount of capital flows with the rest of the world. Without this equality between the levels of domestic saving and investment, taxes on saving need have no effect on incentives for domestic investment. For instance, a reduction in personal taxes could stimulate domestic saving and thereby increase investment elsewhere in the world with little or no change in domestic investment. Taxes on domestic saving are thus not part of the effective tax rate on investment in an open economy. Instead, the effective rate in an open economy takes the rate of return that must be paid to attract funds as the rate required in international capital markets (and not as the rate required by domestic savers). In principle, one might still distinguish between debt and equity finance, and might assume that investors in international capital markets require different rates of return on debt and equity if this difference reflects, say, differing risks.

Because there is substantial evidence that international capital flows can equate rates of return in different countries, it might seem natural to calculate effective tax rates under the assumption that capital markets are open. Surprisingly, however, essentially no existing calculations, for the U.S. at least, explicitly view effective rates as determined in an open economy. Perhaps the calculations that are most consistent with an open-economy view are the most naive ones, which merely assume a constant opportunity cost of funds. If one interprets this cost as the return required by international lenders, the naive analyses can be interpreted as reflecting investment incentives in an open economy. However, the more sophisticated effective rate calculations, which explicitly include taxes paid by domestic savers, appear to be inconsistent with the idea that international capital markets channel investment into the countries that yield the greatest returns.

Whether one views the economy as open or closed also determines assumption of choice concerning relationship between inflation and interest rates. In a closed economy, one might expect interest rates to rise by more than one point per additional point of inflation, in order to maintain a constant after-tax real interest rate (Darby, 1975; Feldstein, 1976; Tanzi, 1976). In an open economy facing a constant world interest rate, however, international arbitrage of interest ("net-interest parity") implies that a constant before-tax real interest rate is more plausible (Hansson and Stuart, 1985). These two scenarios have very different implications about the sensitivity of effective tax rates to changes in inflation.

III. Policy-induced Wealth Transfers

Effective rate calculations typically examine investment incentives under a given tax code and assume that tax code will be in effect forever. This assumption is certainly useful as a simplifying device but the fact that past policy changes have occurred relatively frequently suggests it may be misleading. In particular, the incentive to undertake an investment depends on any up-front taxes or subsidies that the investment may attract as well as on the stream of future tax liabilities the investor expects will be levied over the lifetime of the asset. To the extent that changes in the tax system create an expectation of future tax changes, investment incentives will be affected in a way not captured in traditional effective rate calculations.

A hypothetical example illustrates the basic ideas. To keep things very simple, consider a world that initially has no taxes on capital. In a given year, say year one, the government announces a policy of allowing an investment tax credit. To finance the first year of this credit, the government imposes a once-only "windfall" profits tax. The government also announces that in the future, the investment tax credit will be financed by an increase in the tax on labor income. Economists then set out to calculate marginal effective tax rates on new investment. They first note that the windfall profits tax is a tax on old and not new capital, and that the labor tax is a tax on labor and not capital. This leaves the effects of the investment tax credit. Suppose the economists correctly apply the Hall-Jorgenson formula and come to the conclusion that the marginal effective tax rate under the new tax code is - 10%; that is, that investment income receives a 10% subsidy.

A year later, it is time to raise the tax on labor. Because taxes on labor are already high, the government decides to postpone the increase in these taxes for one year. As a stopgap measure, the windfall profits tax is extended for an additional year and is imposed on all capital existing as of year one, so as just to pay for the investment tax credit. Economists review their marginal effective rate calculations and note that nothing has changed -- the marginal effective rate on new investment still equals -10%. In year three and in all succeeding years, the government again postpones the labor tax increase and extends the windfall profits tax "for only one more year", just as in year two.

Although investors may have trouble reading the tea leaves in years one and two, at some point they are likely to figure out what is going on. The pattern of taxation in this example is that the government subsidizes investment up front but then fully recaptures the subsidy in future years via the windfall profits tax. Thus while economists using the traditional methodology continually issue statements that the marginal effective tax rate is -10%, the "true" effective rate that determines the incentive to invest is zero because capital was initially untaxed and because subsidies and (so-called) windfall taxes net to zero.

Investors do not necessarily have to analyze the pattern of taxation here logically and rationally for this to be the case. For instance, suppose there are two types of investors in the market: (i) those who listen to economists and make investments that would be profitable if and only if a 10% subsidy were paid on each investment; and (ii) those who follow the simple rule of thumb of only making investments that would pay off with a zero subsidy (tax) on new investment. Clearly, the former investors will eventually end up going bankrupt, while the latter will survive. More generally, one expects a tendency toward positive natural selection of investors whose behavior reflects a zero effective tax rate. Thus, even though nobody here need to be behaving rationally, actual long-run investment incentives in the market would be correctly represented by thinking of investors as rationally expecting that future governments will recapture investment subsidies, so the expected effective tax rate on new investment (in this particular example) is zero.

Although this example is obviously contrived, it does illustrate an important point. In an environment in which tax policy is continually being adjusted, a correct evaluation of the incentive effects of a change in policy requires consideration of the impact of the change on expectations of future policy. We now consider several less contrived examples.

First, it is generally believed that the introduction of the investment tax credit in 1962 and accelerations of depreciation in recent years have caused marginal effective rates to decline over the post-war period. For instance, King and Fullerton (1984) calculate effective overall corporate marginal rates of 48% in 1960, 37% in 1980, and 31% in 1982 after ERTA and TEFRA (see also Hulten and Robertson, 1981). This suggests that tax policy has become more favorable to investment over time. However, if "true" (actually realized) marginal effective rates really have fallen, this should show up in the form of lower actual tax payments. King and Fullerton cite fragmentary evidence on average tax rates, which essentially reflect actual tax payments. One measure of the average tax rate was 47% in 1953-59 and 49% in 1972-74 (when the investment tax credit was in effect). A slightly different measure, calculated for 1978-80, suggested an average tax rate of 59%. Somewhat less sophisticated but more continuous data are in figure 1, which details the behavior of the ratio of receipts from corporate profits taxes to corporate profits. These data suggest essentially no trend in the realized tax rate on corporate profits over the post-war period.

Apparently, then, those who viewed the investment incentives built into the tax code in recent decades as a signal that new capital would end up being taxed relatively favorably were mistaken. To the extent that investors' long-run behavior eventually adjusts to reflect the actual long-run pattern of taxation, one would conclude that the incentive effect of past and possibly future schemes to encourage investment may be diluted. Unfortunately, little analysis has been directed at evaluating the extent to which investors' behavior does reflect an expectation of changes in future policy. However, work by Auerbach and Hines (n.d.) suggests that investors at least partially behave as if they understand the direction of future policy changes.

The notion of commitment by the government to a given policy is important here. This is illustrated nicely by proposals to index depreciation allowances for inflation. In effect, indexing is an implicit promise by today's government to allow investors to deduct larger amounts in the future to compensate for erosion of real depreciation allowances due to inflation. Clearly, the indexation of depreciation increases the expected net return to an investment if investors believe that (i) the promise of greater future deductions will be honored and (ii) the government will not later undertake some tax change that recaptures the future revenue lost to it by indexing. If the government can make such a commitment and investors come to know this then marginal effective tax rates, as they are traditionally calculated, will correctly reflect investment incentives. However, if the government continually changes policy to recapture tax preferences that investors counted on when they made their investments, then not only will traditionally calculated marginal effective rates be misleading (and generally too optimistic), but actual incentives for investment can be quite low. Obviously, these points apply to tax policy toward investment generally and not just to proposals to index depreciation deductions.

This desirability of maintaining a commitment may explain why policy-makers do not eliminate the deductibility of mortgage interest payments. If one were to design a tax system from scratch, it might well be optimal not to encourage artifically the consumption of owner-occupied housing by allowing interest-deductibility. However, the tax code currently allows such deductibility and many individuals have purchased homes at prices that reflect the capitalized value of the deductions. Starting from such a situation, the elimination of deductibility, even if existing mortgages were grandfathered, would cause large capital losses to homeowners. In effect, these losses would result from an unanticipated confiscation of private wealth by the government. One possible outcome would be that agents might fear similar confiscation of saved and invested wealth in the future. This could reduce incentives for saving and investment.

Finally, not all expected future tax changes involve losses for investors. For instance, suppose the government commonly uses the investment tax credit to stimulate the economy, allowing the credit when business activity is weak and removing it when overall activity is strong. Suppose as well that investors come to learn this pattern. Rational investors will then try to time their investments to coincide with periods when the investment tax credit is in place (Lucas, 1976). This may cause investment to vary more over time than it would if the investment credit never were used. In fact, the rough data on investment in equipment in the U.S., which are displayed in figure 2, suggest just such a tendency. The investment tax credit was first allowed in 1962, and was repealed in 1969, reinstated in 1971, and temporarily increased in 1975. This temporary increase was made permanent in 1978 and a small additional increase was permitted under ERTA in 1981. One sees from the figure that investment in equipment has exhibited substantially greater swings after 1962 than before, possibly reflecting the on-off use of the investment tax credit as a macroeconomic stabilization tool. Expectational effects of this sort, which obviously affect investment incentives, are not captured in traditional calculations of marginal effective tax rates.

REFERENCES

Auerbach, A., "Taxation, Corporate Financial Policy, and the Cost of Capital", Journal of Economic Literature 21 (1983): 905-40.

Auerbach, A. and J. Hines, "Tax Reform, Investment, and the Value of the Firm", NBER Working Paper No 1803, no date.

Baumol, W. and B. Malkiel, "The Firm's Optimal Debt-Equity Ratio and the Cost of Capital", Quarterly Journal of Economics 81 (1967): 547-78.

Bradford, D. and D. Fullerton, "Pitfalls in the Construction and Use of Effective Tax Rates", in C. Hulten (ed.) Depreciation, Inflation and the Taxation of Income from Capital. Washington, D.C.: The Urban Institute, 1981.

Bulow, J. and L. Summers, "The Taxation of Risky Assets", NBER Working Paper No. 897, 1982.

Darby, M., "The Financial and Tax Effects of Monetary Policy on Interest Rates", Economic Inquiry 13 (1975): 266-76.

Feldstein, M., "Inflation, Income Taxes, and the Rate of Interest: A Theoretical Analysis", American Economic Review 66 (1976): 809-20.

Fullerton, D., "The Indexation of Interest, Depreciation, and Capital Gains: A Model of Investment Incentives", AEI Working Paper No. 5, 1985.

Fullerton, D., "Which Effective Tax Rate", National Tax Journal 37 (1984): 23-41.

Fullerton, D. and R. Gordon, "A Reexamination of Tax Distortions in General Equilibrium Models" in M. Feldstein (ed.) Behavioral Simulation Methods in Tax Policy Analysis. Chicago: University of Chicago Press, 1983.

Galper, H., R. Lucke, and E. Toder, "Taxation, Portfolio Choice, and the Allocation of Capital", Working Paper, 1985.

Gordon, R., "Taxation of Corporate Capital Income: Tax Revenues versus Tax Distortions", Working Paper, no date.

Gordon, R. and B. Malkiel, "Corporate Finance", in H. Aaron and J. Pechman (eds.) How Taxes Affect Economic Behavior. Washington, D.C.: The Brookings Institution, 1981.

Gravelle, J., "Effects of Business Tax Provisions in the Administration's Tax Proposal: Updated Tables", Congressional Research Service Working Paper No. 85-783E, 1985.

Hall, R. and D. Jorgenson, "Tax Policy and Investment Behavior", American Economic Review 57 (1967): 391-414.

Hansson I. and C. Stuart, "The Fisher Hypothesis and International Capital Markets", Journal of Political Economy, forthcoming, 1985.

Hulten, C. and J. Robertson, "Corporate Tax Policy and Economic Growth: An Analysis of the 1981 and 1982 Tax Acts", Urban Institute Discussion Paper, 1981.

King, M. and D. Fullerton (eds.), The Taxation of Income from Capital. Chicago: University of Chicago Press, 1984.

Lucas, R., "Econometric Policy Evaluation: A Critique", in K. Brunner and A. Meltzer (eds.) the Phillips Curve and Labor Markets. Amsterdam: North-Holland Publishing Company, 1976.

Miller, M., "Debt and Taxes", Journal of Finance 32 (1977): 261-75.

Tanzi, V., "Inflation, Indexation, and Interest Income Taxation", Banca Nazionale del Lavoro Quarterly Review 29 (1976): 54-76.

Figure 1

RATIO OF CORPORATE TAX PAYMENTS TO PROFITS

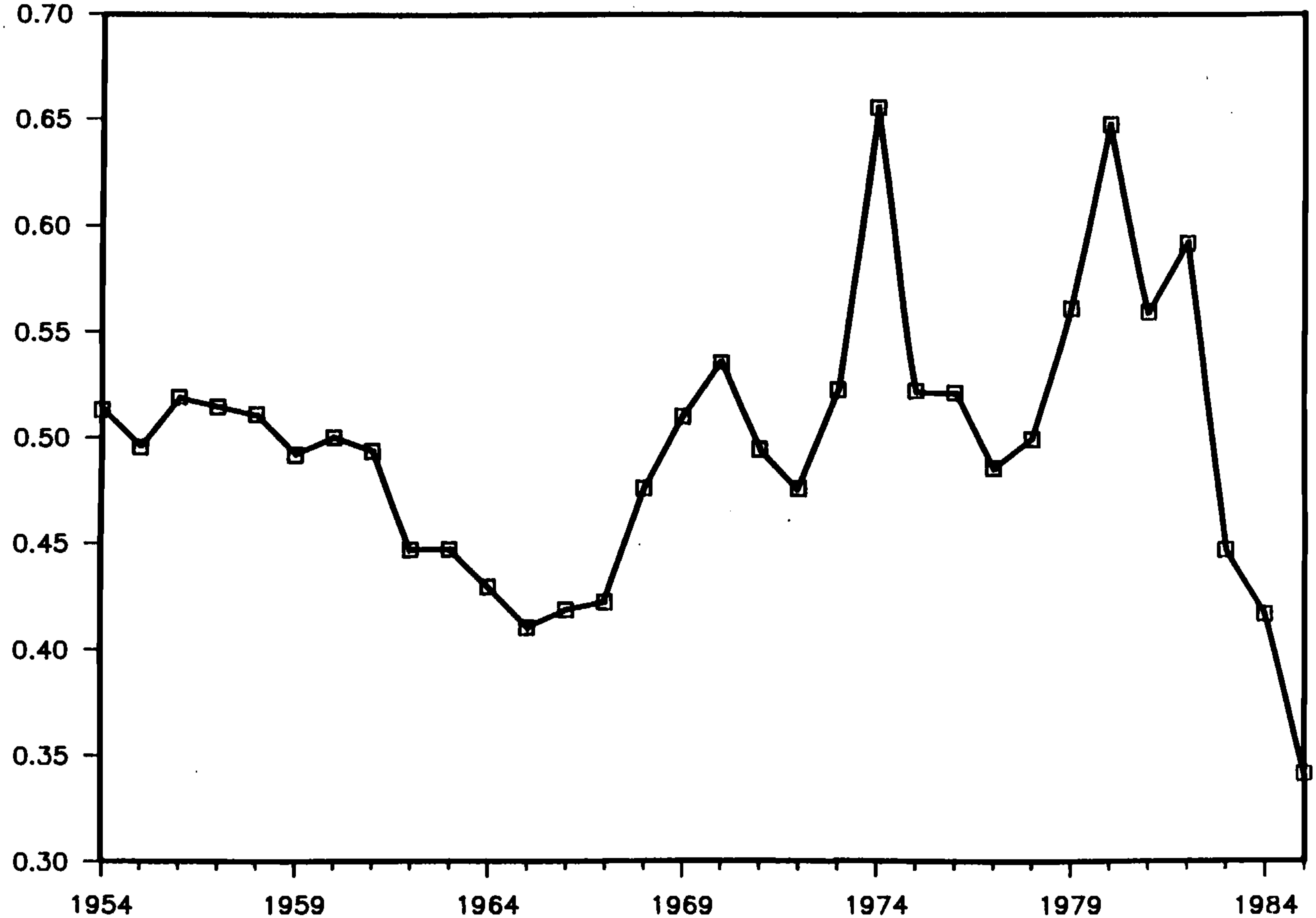

Figure 2

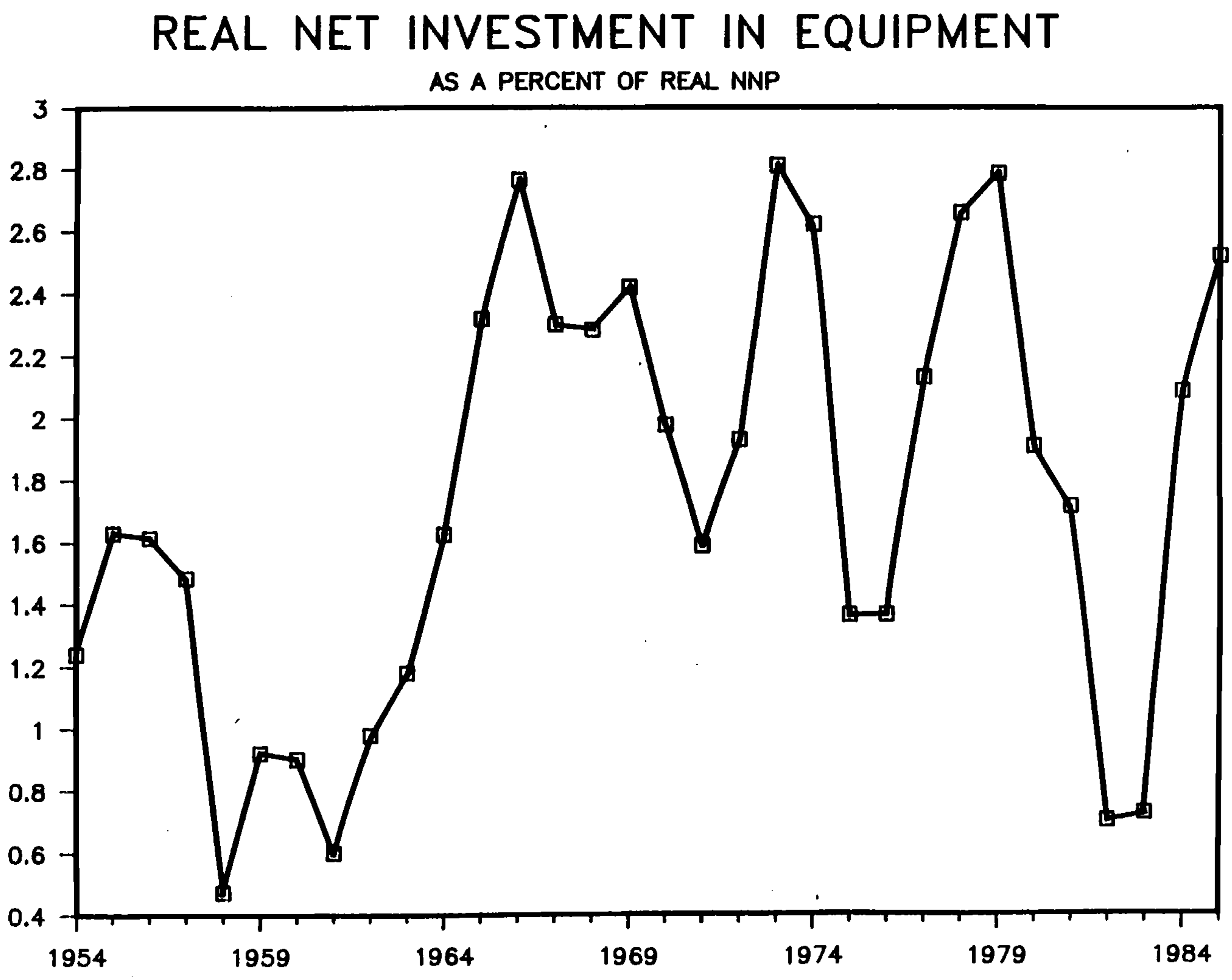
REAL NET INVESTMENT IN EQUIPMENT
AS A PERCENT OF REAL NNP
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
1954
1959
1964
1969
1974
1979
1984

TABLE 1

Marginal Effective Total Tax Rates Under Different Assumptions[1]

	Firm Arbitrage (s=.05)			Individual Arbitrage (s=.05)			Firm Arbitrage (s=.03)		
	1985 Law	Treasury	White House	1985 Law	Treasury	White House	1985 Law	Treasury	White House
Corporate Sector Tax Rates									
Equipment	-.183	.402	.245	.046	.410	.269	-.587	.421	.273
Structures	.379	.456	.363	.409	.460	.383	.468	.489	.392
Public Utilities	.295	.435	.297	.327	.439	.302	.403	.478	.380
Inventories	.416	.424	.388	.478	.431	.406	.403	.446	.405
Land	.449	.448	.419	.496	.453	.431	.465	.483	.455
Overall Corporate Rate	.311	.431	.344	.376	.437	.360	.333	.461	.380
Noncorporate Sector Tax Rates									
Equipment	-.101	.273	.202	-.133	.282	.212	-.199	.311	.246
Structures	.281	.314	.280	.299	.325	.289	.333	.363	.325
Public Utilities	.210	.328	.259	.233	.343	.276	.276	.390	.333
Residential Structures	.326	.353	.327	.351	.369	.343	.395	.421	.395
Inventories	.305	.289	.287	.317	.299	.296	.338	.329	.326
Land	.333	.320	.317	.349	.332	.329	.377	.372	.369
Residential Land	.382	.373	.371	.404	.390	.388	.443	.443	.441
Overall Noncorporate Rate	.307	.327	.310	.325	.340	.323	.357	.382	.366
Owner-Occupied Housing Tax Rate	.172	.217	.230	.191	.210	.241	.263	.342	.339
Overall Tax Rate	.263	.335	.294	.304	.341	.311	.318	.398	.360
Standard Deviation	.0171	.0117	.0093	.0137	.0108	.0071	.0146	.0070	.0078
Interest Rate	.1316	.1111	.1230	.1170	.1026	.1132	.1024	.0861	.0954

1. For the case of 4 percent inflation.

Source: Fullerton (1985)