



Policy Note 1999/7

Capital Income Taxes and Economic Performance

Steven M. Fazzari

Tax reform that reduces tax rates on capital income, no matter how successful it is in reducing the user cost of capital, will have at best minimal effects on capital formation and output and therefore on the growth of the U.S. economy.

Those who believe that Americans should save and invest more often call for lower taxes on various forms of capital income to boost capital formation and growth. This belief lies at the foundation of supply-side economics. It is common, for example, to see strong claims about the effect of capital gains tax rates on the economy. Steve Forbes (1993) argued that the high-tech "boom of the 1980s" can be attributed to late 1970s capital gains tax cuts. In denouncing the increase in capital income taxes in the Tax Reform Act of 1986, Connie Mack (1995) complained that "we threw away the key to investment and economic growth in 1987 when the capital gains tax rate was increased." This kind of logic is used to justify tax cuts on capital income even though such tax reform is regressive, in almost all practical cases, because capital income is earned disproportionately by the wealthy.

In this note, I point out some simple, but largely ignored, problems that can greatly limit the impact of lower capital income taxes on investment and growth. I work through some simple numerical exercises about the effects one might expect from a variety of widely touted cuts in capital income taxes. My argument boils down to the simple truth that when three numbers substantially less than one are multiplied together, the result is a *really* small number. I conclude, in contrast to much of the conventional wisdom, that tax reform that substantially reduces tax rates on capital income will likely have minimal effects on capital formation and growth.

Problem 1. The Impact of Taxes on the User Cost of Capital

The analysis of the effect of tax reform on capital investment and growth typically begins with the theoretical concept of the user cost of capital. This cost has several parts, but in its simplest form, it has two components: the depreciation rate of tangible capital assets and the financial cost or "opportunity cost" of capital, that is, the financial returns forgone by sinking funds into fixed capital rather than financial assets, adjusted for inflation.¹ We can approximate the magnitudes of these two components. Depreciation rates vary substantially by asset. An average rate of 10 percent is commonly used in applied work, although one must recognize that this rate may be substantially higher for some assets, particularly high-technology assets. Most applied work assumes a real interest rate of approximately 3 to 5 percent.

In virtually all analyses of the effect of tax reform on investment and capital formation, policy operates by changing the user cost of capital.² Tax policies to boost investment typically are not designed to affect the rate of capital depreciation, but operate on the rate of interest, or, more accurately, the interest rate adjusted for expected inflation and taxes, which I define as the real financial cost of capital.³ The impact of these policies is limited by the share of the financial cost of capital in the overall cost of capital. For example, suppose, in the extreme, that a tax policy could *entirely eliminate* the financial cost of capital component of the user cost. This would be the most favorable case for investment possible from tax reform, but, because of the depreciation component, such a policy would not eliminate the cost of capital. For typical depreciation rates, it could reduce the overall cost of capital only by a quarter to a third on average.

In practice, tax reform would likely have a much smaller impact on the cost of capital than this extreme case.

Chirinko, Fazzari, and Meyer (1999) estimate, using detailed firm-level data, that a "flat tax" reform would reduce the cost of capital by only about 14 percent.⁴ Fazzari and Herzon (1996) predict a decline in the overall cost of capital of an almost negligible 2 percent as a result of the 1997 cut in the maximum capital gains tax rate from 28 percent to 20 percent. Because the relative importance of the financial cost varies from asset to asset, tax changes that reduce the financial cost component have a different proportionate effect across assets. For example, depreciation charges are much more significant than financial costs for assets with high rates of obsolescence, such as high-technology assets, while the reverse is true for longer-lived assets, such as commercial construction. Because high-technology assets are likely to be more important for economic growth than other assets, it is not clear that a reduction in financial costs will have any appreciable effect on the accumulation of such assets and therefore on economic growth.

To summarize, even if tax reform could be spectacularly successful in lowering the real financial cost component of the user cost of capital, these changes translate into much less dramatic declines in the overall cost of capital. (In technical terms, the elasticity of the overall cost of capital with respect to changes in the financial cost of capital induced by tax reform is substantially less than unity.) This point is relevant not only for tax reforms that directly affect firms' cost of capital. It also applies to any policy change that is designed to spur capital formation by changing real interest rates. Such policies include initiatives to reduce government deficits and to raise private saving. If these policies are to stimulate capital formation, they must reduce the overall cost of capital, an effect likely to be small, especially for assets with high depreciation rates.

Problem 2. The Small Impact of the User Cost on Capital Formation

Popular discussions of the effect of tax policy on saving and investment suggest an automatic link between the capital income tax rates and the level of capital formation. It is almost as if the economy is viewed as an automatic capital-producing machine with tax rates as the controls that determine the speed at which the machine operates. But how big is the effect? Economists often *assume* that if tax policy can reduce the cost of capital by a substantial amount, the effect on capital formation will also be substantial. In fact, it is quite common to assume an elasticity of unity between the user cost and the capital stock in applied research on the effects of tax policy (for example, Auerbach and Kotlikoff 1987; Imrohorglu, Imrohorglu, and Joines 1998; and Razin and Yuen 1996).

Is this assumption consistent with empirical evidence from the U.S. economy? Despite decades of study it has been difficult to establish any credible empirical link between the cost of capital and investment.⁵ In a recent paper Chirinko, Fazzari, and Meyer (1999) have successfully estimated a robust and negative effect of the user cost of capital on capital formation. Specifically, we estimate that a 1 percent increase in the cost of capital will reduce capital formation by 0.25 percent. If this estimate is correct, it implies that *three-quarters* of the conventionally assumed impact of tax changes on capital formation will disappear. An advantage of our estimates relative to most other studies is the use of extensive firm data. We find that the use of these data greatly improves the precision of the estimates (Chirinko, Fazzari, and Meyer 1999).

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Problem 3. "Multiplied Elasticities"

The two problems discussed so far reinforce each other. Consider, for example, a tax reform that would be considered successful, one that reduces the real financial cost of capital from 4 percent to 2 percent. If the depreciation rate is 10 percent, the user cost of capital (simply defined) falls from 14 to 12 percent, a reduction of 2 percentage points, or 14.3 percent.⁶ If the depreciation rate is 20 percent, as may be appropriate for many high-technology assets, the tax reform would cause the user cost of capital to decline from 24 percent to 22 percent, a reduction of only 8.3 percent.

To estimate the impact of these changes in the cost of capital on the capital stock, these percentage changes must be multiplied by the elasticity of capital formation with respect to the cost of capital, which Chirinko, Fazzari, and Meyer (1999) estimate to be 0.25. With this estimate, the predicted increases in the capital stock for our two examples are 3.6 percent for assets with a 10 percent depreciation rate and 2.1 percent for assets with a 20 percent depreciation rate.

These calculations do not tell the whole story, however. A higher capital stock is not the ultimate goal of policy

changes. Rather, higher capital is a "means to an end" of higher output. This fact introduces another "multiplied elasticity" into our calculations. Most quantitative analyses assume that a 1 percent increase in the capital stock, holding the supply of labor constant, will increase output by approximately 0.3 percent. If this is the case, our successful tax reform that raises the capital stock by 3.6 percent will result in only a 1.1 percent increase in output. The 2.1 percent increase in capital stock would be predicted to raise output by only about 0.6 percent. The problem of multiplied elasticities implies that even what would be viewed as a successful policy from the point of view of lowering the financial cost of capital, nonetheless has a small quantitative effect on output. The problem of multiplied elasticities comes down to the fact that when three numbers much less

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than one are multiplied together, the resulting number is quite small. These three numbers are (1) the elasticity of the cost of capital with respect to changes in taxes (usually quite small, between 0.08 and 0.14 in the examples above, due to the dominant effect of depreciation rates in the cost of capital), (2) the elasticity of the capital stock with respect to its cost (estimated by Chirinko, Fazzari, and Meyer, 1999, to be 0.25), and (3) the elasticity of output with respect to the capital stock (conventionally set at approximately 0.3).

It is true that even small initial effects of economic policies might add up to a substantial result if the policies permanently affected long-term growth rates. Indeed, much rhetoric on the effect of lower capital income taxes on economic performance is cast in terms of growth rates. But, in conventional dynamic economic models, a one-time reduction of capital income taxes raises the *level* of the capital stock and the *level* of output; it does *not* permanently affect the rate of growth of output. Of course, for the level of output to rise, its growth rate must increase. This effect on growth, however, is transitory and, given the results discussed above, quite small. It is important

to note that a *permanent* reduction in tax rates is necessary to obtain just a small, *temporary* increase in growth rates.⁷

Conclusions

The theoretical framework and empirical results summarized here imply that tax cuts on capital income will not have much of an effect on either capital formation or output. In Chirinko, Fazzari, and Meyer (1999), we provide some simple estimates based on this framework. We estimate the effect of a "flat-tax" proposal that would make the tax system neutral with respect to capital formation.⁸ With the empirical parameters we estimate, this tax reform raises long-run output by just over 1 percentage point. We obtain almost identical results when we estimate the effect of a newly instituted 10 percent investment tax credit.

In the current policy environment, it is more relevant to explore the effects of a cut in the capital gains tax rate. Following the approach in Fazzari and Herzon (1996) and using the empirical results in Chirinko, Fazzari, and Meyer (1999), we find that the 1997 cut in the maximum capital gains tax rate from 28 to 20 percent has an almost negligible effect on output, an increase of only 0.14 percent. Further cuts in capital gains rates are unlikely to have any larger effects. This prediction is so much smaller than those arising from the more fundamental tax reforms mentioned in the previous paragraph because a lower capital gains tax rate has a much smaller effect on the cost of capital. Fazzari and Herzon (1996) analyze this policy change in detail, explaining why the predicted impact is so small.⁹

Are these effects large or small? No matter how one answers this question, the estimated effect of the capital gains tax cut is negligible.¹⁰ It corresponds to only a couple of weeks of normal economic growth. Some might argue that the 1 percentage point rise in output generated by the flat tax and the investment credit is substantial, because this effect would be permanent, that is, output would be higher by 1 percentage point indefinitely (although the long-run growth rate of output would not change). But if such tax cuts have social costs, the costs are also permanent. These costs may arise from the loss in government revenue, which raises the deficit or forces cuts in government services. They may also arise from perceived inequities in the tax system, given that lower taxes on capital income almost certainly disproportionately benefit the wealthy.

These cost-benefit calculations are far from straightforward. But regardless of how one estimates the costs and benefits, the analysis presented here suggests that even the most radical of capital income tax reforms is not likely to have a revolutionary effect on the productivity and growth of the U.S. economy. If the costs are small, perhaps a reform like the flat tax is worth pursuing. But we should not expect much of a change in standards of

living as a result. These policies are about tinkering at the margins of people's economic lives, not about dramatic changes. Moreover, if regressive tax policy has important social costs, the research summarized here suggests that there is little gain, in terms of higher output, to offset these costs.

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Notes

1. The intuition behind this definition of the user cost of capital can be easily understood. What do firms' owners sacrifice by sinking funds into capital for a year? They incur a cost due to the depreciation in the value of the capital asset over the year and they give up a real rate of return on an interest-bearing financial asset.
2. An exception can be found in Fazzari, Hubbard, and Petersen (1988).
3. Some tax policies operate on the entire cost of capital, which includes factors other than depreciation charges and financial costs. Most policies under current consideration, however, including cuts in the capital gains tax rate and policies aimed at stimulating private saving, will work through the tax-adjusted financial cost of capital. See the appendix of Fazzari and Herzon (1996) for more information.
4. The version of the flat tax considered sets the tax multiplier on the user cost to unity, so that corporate taxes and depreciation allowances have no effect on the user cost. See Chirinko, Fazzari, and Meyer (1999) for further details.
5. Blanchard (1986, 153) writes, "[I]t is well known that to get the user cost to appear at all in the investment equation, one has to display more than the usual amount of econometric ingenuity." I support this point with empirical evidence in Fazzari (1993, 1995). Part of the difficulty, as argued in Chirinko, Fazzari, and Meyer (1999), may be that most previous research has been undertaken with aggregate data that do not provide enough information to identify the effect of the user cost on investment statistically.
6. As noted in note 3, the full user cost of capital is more complicated than just the sum of the depreciation rate and the real financial cost of capital component. Some numerical examples below use this full definition. The general point about "multiplied elasticities" illustrated in the text with the simple user cost definition, however, also applies to a more complicated definition of user cost.
7. Recently developed "endogenous growth models" suggest that the type of tax policies considered here could permanently raise the long-run growth rate of output. While it is too early to assess the empirical importance of these new models for evaluating tax policy, I believe that the mechanisms that produce endogenous growth in these models, such as spillover effects, are quite limited in their quantitative impact when it comes to the types of marginal investments that are stimulated by taxation policy. These projects are the least likely to generate spillovers.
8. Neutrality in this context means a tax reform that makes the cost of capital the same as would prevail in the absence of taxation. Given that the investment tax credit is now zero, one way to achieve this tax neutrality would be to allow firms to fully expense investment expenditures for corporate tax purposes in the year of purchase.
9. The predicted effects of the tax cuts in Fazzari and Herzon (1996) are somewhat larger than those mentioned here because we assumed a larger elasticity of capital formation with respect to the cost of capital. In light of the results from Chirinko, Fazzari, and Meyer (1999), however, this elasticity should be adjusted downward to

0.25. When this change is made, the approach in Fazzari and Herzon leads to the figures mentioned here.

10. Some arguments in favor of further cuts in the capital gains tax rates emphasize other benefits besides a higher capital stock, such as an increase in "entrepreneurship." See Fazzari and Herzon (1996) for a further discussion of these issues. In that paper we argue that many of the alternative justifications for lower capital gains tax rates have weak logical foundations.

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For additional Levy Institute research on this subject, see:

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---, "What Happened to the Corporate Profit Tax?" Working Paper no. 37, May 1990

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