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INSIGHT

Effective Marginal Tax Rates on Energy-Related Capital Investments: Effects of the Investment Tax Credit and Accelerated Depreciation

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Energy-related investments are supported by various tax credits as well as accelerated cost recovery for tax purposes. This Insight uses an effective marginal tax rate approach to evaluate the relative magnitude of investment tax credits and bonus or accelerated depreciation on renewable energy investments. Effective marginal tax rates under current law are compared to various policy alternatives, as well as policies proposed in the Build Back Better Act (BBBA; H.R. 5376).

What are effective marginal tax rates?

An *effective marginal tax rate* measures the tax burdens on an investment's return. As a single measure, it combines the statutory tax rate with other features of the tax code (e.g., tax credits and the timing of depreciation deductions). The effective marginal tax rate (EMTR) is a forward-looking measure that summarizes tax-based incentives to invest in certain types of assets. A lower effective tax rate means there is a greater incentive for capital investment in an asset.

Computationally, the EMTR is $(\rho - r)/\rho$, where ρ is the real before-tax return on a marginal investment and r is the real return paid to investors (the after-tax return). A negative effective tax rate occurs when ρ (earnings required to cover depreciation, taxes, and payments to investors) is less than r (the real return paid to investors). For example, if ρ=3% and r=6%, the EMTR is -100%.

Note that the EMTR is not the same as the effective tax rate reported on financial statements, which is computed as the tax expense divided by taxable income. This latter measure is a summary of taxes paid, and does not provide the same information as the EMTR on investment incentives created by the tax code.

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Effective marginal tax rates on certain energy-related investments

Effective marginal tax rates can be used to summarize the tax code's incentives for investment in energy-related capital. In 2021, the statutory corporate tax rate is 21%. There is a 26% investment tax credit (ITC) for investments in solar (and other qualifying) energy property, and 100% bonus depreciation. With 100% bonus depreciation, the cost of qualifying investments is expensed, or deducted immediately. Both of these provisions are temporary. The ITC for solar energy property beginning construction after 2023 is 10% under current law. The amount allowed as bonus depreciation is scheduled to phase down after 2022, to 0% in 2027. Solar energy property is treated as five-year property under the Modified Accelerated Cost Recovery System (MACRS), which allows cost recovery for tax purposes to be faster than economic depreciation. With economic depreciation, depreciation deductions are taken over the asset's lifetime, as opposed to being accelerated. (EMTRs in this Insight are discussed in the context of solar for simplicity, but the general conclusions apply to other technologies eligible for similar tax incentives.)

An equity-financed project, if there were no ITC and economic depreciation, would have an EMTR equal to the statutory rate (21%). Projects financed with debt face a lower effective tax rate, since interest paid can be deducted (subject to certain limitations). Thus, the EMTR for a 50% debt-financed project would be 8% without any additional tax benefits.

Figure 1. Effective Marginal Tax Rates on Hypothetical Renewable Energy Investment

Policy	EMTR (100% equity)	EMTR (50% debt / 50% equity)
Current Law		
26% ITC; 100% bonus depreciation	-73%	-114%
10% ITC; 5-year cost recovery	-12%	-33%
Policy Alternatives		
No ITC; economic depreciation	21%	8%
No ITC; 5-year cost recovery	5%	-10%
No ITC; 100% bonus depreciation	0%	-16%
30% ITC; economic depreciation	-35%	-66%
BBBA		
30% ITC; 100% bonus depreciation	-95%	-145%
30% ITC; 5-year cost recovery	-79%	-125%
6% ITC; 100% bonus depreciation	-11%	-30%
6% ITC; 5-year cost recovery	-5%	-23%

Source: CRS calculations.

Notes: Effective tax rates for energy-related investments are calculated following the methods described in Metcalf (2010), incorporating a basis adjustment for the investment tax credit as described in this CRS report. Inflation is assumed to be 2.6% (the five-year 2021-2025 average from the Congressional Budget Office's July 2021 economic projections). The corporate borrowing rate is assumed to be 8.3%, the 50-year average of Moody's Baa corporate bond yield. The real return on equity is assumed to be 7%, reflecting the real interest rate plus a risk premium. A 2018 study found that high-cost solar projects tended to have a debt share around 45%; a 50% debt share is used here for illustrative purposes.

Current-law tax policies that support renewable energy investment lead to reduced EMTRs. A solar project beginning construction in 2021 could qualify for a 26% ITC and 100% bonus depreciation. If this project were 50% debt financed, the EMTR would be -114% (or -73% for a fully equity-financed project). After 2026, when solar would be eligible for a 10% ITC and five-year cost recovery, with no bonus depreciation, the EMTR for a 50% debt-financed project would be -33% (or -12% for a fully equity-financed project).

Policy alternatives presented here illustrate how a 30% ITC has a larger impact on EMTRs than does bonus depreciation or five-year cost recovery under MACRS. With 100% bonus depreciation and no ITC, a 50% debt-financed project has an EMTR of -16% (or 0% if fully equity financed). With economic depreciation and a 30% ITC, the EMTR for a half-debt-financed project is -66% (or -35% for a fully equity-financed project).

BBBA proposes a number of tax incentives designed to support clean and renewable energy investments and resources. For projects that meet certain wage and workforce requirements, the energy ITC would be 30%, with the credit rate set at 6% otherwise. The bonus depreciation provisions enacted in 2017 as part of P.L. 115-97 (commonly called the "Tax Cuts and Jobs Act") would remain in effect, phasing down starting after 2022. Five-year cost recovery would be allowed longer term.

The EMTRs computed here capture many of the key features of the income tax system, but there are limitations. For example, limits on interest deductibility can make debt financing relatively less attractive, something that is not captured in the EMTR calculations above. Additionally, the EMTRs here reflect the regular federal corporate income tax, and do not include taxes on payments to shareholders, state-level taxes, or any alternative taxes (such as the proposed minimum tax on corporate financial statement income).

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