

THE GENEROSITY OF STATES' R&D TAX INCENTIVES: AN INTER-STATE COMPARISON

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ABSTRACT

The majority of states have enacted tax incentives to stimulate research and development (R&D) activities. The rationale for these incentives is the premise that the states with the most favorable tax systems are best able to attract new business and generate economic growth. The objective of this research is to compare the generosity of the states' R&D tax incentives, using the B-index, a measure of the before-tax income required to break even on one dollar of R&D expenditure. The computed B-indices range from .57 (most generous) to 1 (least generous).

INTRODUCTION

The majority of states have enacted tax incentives to stimulate private sector research and development (R&D) activities. The rationale for the panoply of state R&D tax incentives is straightforward: The modern market is characterized by mobile capital and labor, and the states with the most favorable tax systems are best able to compete in attracting new businesses to generate economic growth and prosperity. The Tax Foundation (2006, 1) recently noted that although the marketplace is global, the Department of Labor concludes that most mass job relocations are from one U.S. state to another, rather than to an overseas location.¹

The objective of this article is to compare the generosity of the states' R&D tax incentives. The research applies the B-index, which has been applied extensively to compare the attractiveness of countries' innovation tax incentives, but has not been used in interstate studies of R&D incentives. The most significant contributions of this research are the following:

- Although research has been done to compare the R&D tax incentives of various countries, no such interstate comparisons exist beyond essentially descriptive comparisons of, for example, R&D tax credit rates (e.g., Billings 2007).
- The methodology used in this research (the B-index) has been shown to be more appropriate to R&D decisions than traditional cash-flow and after-tax cost of R&D analyses because the B-index (i) is a marginal analysis, that is, it examines the extent to which R&D tax incentives spur the investment of an additional dollar of R&D and (ii) isolates the effect of R&D tax incentives from the effect of the corporate income tax rate.

LITERATURE REVIEW

An extensive literature review appears in the full manuscript to be distributed at the presentation.

METHODOLOGY

The B-index, defined as the before-tax income required to break even on one dollar of R&D expenditure, is used to compare the relative generosity of the states' and District of Columbia's R&D tax incentives. Researchers have concluded that it is more relevant than, for example a cash-flow

model, to business decisions such as committing additional resources to particular types of business investments.

The B-Index

The B-index takes into account the following variables: corporate income tax rates, R&D tax credits, special R&D allowances from taxable income (e.g., exclusions and deductions), and depreciation of capital assets (machinery, equipment and buildings) used in R&D. An important feature of the model is that it facilitates benchmarking the *relative* attractiveness of R&D tax systems among jurisdictions. The lower the B-index, the more generous the R&D subsidies offered by a jurisdiction and the greater the amount of R&D that the private sector is expected to pursue.

Algebraically, the B-index is a ratio of the present value of the after-tax cost of one dollar of expenditure on R&D, divided by 1 minus the corporate income tax rate. The after-tax cost of one dollar of R&D expenditure is defined as the net cost to the firm of investing in R&D, considering all available tax incentives for R&D.

In its generic form, the B-index formula is:

$$B = (1-A)/(1-t) \quad (1)$$

Where:

A = net present discounted value of R&D tax incentives (e.g., depreciation allowances, tax credits, and other tax incentives).

(1-A) = after-tax cost of the R&D initiative

t = corporate income tax rate.

Using the after-tax cost of R&D (1-A) alone as a measure of the relative generosity of R&D tax incentives yields a distorted view because of the complicating effect of the corporate income tax rate which enters the after-tax cost of R&D equation. To isolate the impact of tax incentives from the impact of the corporate income tax rate, the methodology expresses the B-index as a before-tax ratio (i.e., divides the after-tax cost of R&D by 1 minus the tax rate), which enables inter-jurisdictional comparisons.

RESULTS

The computed B-indices for the 50 states and the District of Columbia range from .57 to 1.00. All states whose corporate income tax is computed with Federal taxable income as the starting point permit deduction of current R&D costs because of the Federal deduction of those expenditures. The majority of states also offer an R&D tax credit. The State of California offers the most generous package of R&D tax incentives (B-index = .57), attributable to its permitting a tax credit of (i) 24 percent of basic research costs *and* (ii) 15 percent of the excess of qualified research expenses over the computed base-period spending. The states of Arizona, Connecticut, Hawaii, Massachusetts, New Jersey, and Rhode Island are also relatively generous with regard to R&D tax incentives, with B-indices of .67, .71, .79, .72, .78, and .78, respectively.

A description of each jurisdiction's R&D tax incentives and the computation of each state's B-index appear in the full manuscript to be distributed at the presentation.

REFERENCES

The list of 36 references appears in the full manuscript to be distributed at the presentation.