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May 27, 2009 Joint Committee on Finance Paper #366

Super Research and Development Tax Credit
(General Fund Taxes -- Income and Franchise Taxes)

[LFB 2009-11 Budget Summary: Page 268, #21]

CURRENT LAW

Under current law, a state research credit is provided under the corporate income and franchise tax equal to 5% of the increase in a corporation's qualified research expenditures. In addition, a 10% tax credit can be claimed for qualified research expenses for designing certain internal combustion engines, and designing and manufacturing certain lighting and building control systems, and automotive batteries.

GOVERNOR

Create, under the state corporate income and franchise tax, for tax years beginning on or after January 1, 2011, a super research and development tax credit. The super research and development tax credit would reduce state corporate income and franchise taxes by an estimated $5,000,000 in 2010-11 and $10,000,000 annually in 2011-12 and thereafter.

DISCUSSION POINTS

1. The state research credit is equal to 5% of the increase in a corporation's qualified research expenditures in Wisconsin over the base amount. The "base amount" is calculated by multiplying the taxpayer's average annual gross receipts for the preceding four years by a fixed-base percentage. However, the base amount does not include sales treated as throwback sales in the corporate apportionment formula. The "fixed-base" percentage is the percentage that the taxpayer's total aggregate qualified research expenditures for a specified period is of the taxpayer's total aggregate gross receipts for those years. The fixed-base percentage cannot exceed 16%. In addition,

the base amount cannot be less than 50% of research expenses in the year for which the credit is claimed. Consequently, the state research credit is 5% of the lesser of: (a) the excess of current year research expenses over the base amount; or (b) 50% of current year research expenses.

2. A 10% tax credit can also be claimed for qualified research expenses (less the base amount) for the following activities:

a. Designing internal combustion engines for vehicles, including expenses related to designing vehicles that are powered by such engines, and improving production processes for such engines and vehicles.

b. Designing and manufacturing energy efficient lighting systems, building automation and control systems, or automotive batteries for use in hybrid-electric vehicles that reduce the demand for natural gas or electricity or improve the efficiency of its use.

"Internal combustion engine" includes substitute products such as fuel cell, electric and hybrid drives. "Vehicle" means any vehicle or frame, including parts, accessories, and component technologies, in which an engine is mounted for use in mobile or stationary applications. "Vehicle" includes any truck, tractor, motorcycle, snowmobile, all-terrain vehicle, boat, personal watercraft, generator, construction equipment, lawn and garden maintenance equipment, automobile, van, sports utility vehicle, motor home, bus, or aircraft.

"Frame" includes:

a. Every part of a motorcycle, except tires.

b. In the case of a truck, the control system and the fuel and drive train, excluding any comfort features located in the cab, or the tires.

c. In the case of a generator, the control modules, fuel train, fuel scrubbing process, fuel mixers, generator, heat exchangers, exhaust train, and similar components.

Start-up companies must use a minimum fixed-base percentage of 3%. As a result, start-up companies must spend 3% of their gross receipts on research in order to qualify for the credit. For years six to ten, the percentages are an increasing portion of the percentage which qualified research expenses bear to gross receipts for certain prior years. A "start-up company" is defined as a firm that, during the five-year period used to compute the fixed-base percentage, has fewer than three taxable years in which the taxpayer had both gross receipts and qualified research expenses.

The credit applies only to research expenditures paid or incurred in connection with the trade or business of the taxpayer that are research and development costs in an experimental or laboratory sense. In general, qualifying expenses are non-capital, and thus, do not include spending for buildings and equipment. Qualified research expenses are the sum of: (a) in-house expenditures for research, wages and supplies used in research, plus certain amounts paid for research use of laboratories, equipment, computers, or other personal property; and (b) 65% of the amount paid by the taxpayer for qualified research conducted on behalf of the taxpayer. Examples of eligible costs include: (a) the costs incident to the development of an experimental or pilot model, a plant process, a product, a formula, an invention, or similar property; and (b) the cost of improving this type of property. Qualified research is research which is undertaken for the purpose of discovering information which is technological in nature and the application of which is intended to be useful in the development of a new or improved business component of the taxpayer. In addition, substantially all of the activities of the research must be elements of a process of experimentation relating to a new or improved function, performance, reliability, or quality.

Corporations may elect to determine the research credit under the federal alternative research credit rules. Under these rules, the research credit is the difference between certain percentages of average gross receipts and actual research expenses.

In all cases, only the expenses for eligible research activities conducted in Wisconsin qualify for the credit. If the credit amount exceeds the corporation's tax liability, it is not refundable, but unused amounts can be carried forward 15 years to offset future tax liabilities.

3. The research facilities credit is equal to 5% of the annual expenditures for constructing or equipping new facilities or expanding existing facilities in Wisconsin to conduct qualified research activities. Qualified research activities are defined as those eligible for the research expense credit. Eligible capital expenditures include only amounts paid or incurred for tangible depreciable property but do not include expenditures for replacement property. This credit also is not refundable but unused amounts can be carried forward to offset corporate income tax liability for up to 15 years.

A research facilities tax credit can also be claimed for 10% of the amount paid to equip and construct new facilities or expand existing facilities used in Wisconsin for qualified research for: (a) designing internal combustion engines; or (b) designing and manufacturing energy efficient lighting systems, building automation and control systems, or certain automotive batteries.

4. The following table, from 2006 aggregate statistics, shows the amounts of research and research facilities tax credits claimed and used for tax year 2006. For the 2006 tax year, a total of $108.3 million in research credits was claimed while approximately $19.4 million was used to offset tax liabilities for that year. In that year, 318 corporations claimed the research expenses credit. Aggregate data for 2006 indicate that the total amount of research facilities credits claimed for that year was about $25.1 million. Of that total, approximately $2.3 million was used to offset tax liabilities. A total of 55 corporations claimed the research facilities credit.

Research Tax Credits, Amounts Claimed and Used
Tax Year 2006

Research Expense Credit

Income Class	Count	Total Credits Claimed	Percent of Total	Used Credits	Total Used Credits
$0	160	$81,300,350	75.10%	0	$0
0-100,000	31	3,173,422	2.93	28	51,157
100,000-250,000	13	200,310	0.19	13	101,777
250,000-500,000	24	517,632	0.48	24	378,911
500,000-1,000,000	15	1,745,664	1.61	15	378,891
1,000,000-5,000,000	40	5,028,958	4.65	40	2,378,410
5,000,000-10,000,000	12	2,334,289	2.16	12	2,115,957
Greater than 10,000,000	23	13,958,718	12.89	23	13,958,718
Total	318	$108,259,343	100.00%	155	$19,363,821
Share of Used Credits to Total Credits					17.89%

Research Facilities Credit

Income Class	Count	Total Credits Claimed	Percent of Total	Used Credits	Total Used Credits
$0	32	$13,938,696	55.57%	0	$0
0-100,000	N.A.	49,563	0.20	0	0
100,000-250,000	N.A.	25,618	0.10	N.A.	9,006
250,000-500,000	0	0	0.00	0	0
500,000-1,000,000	N.A.	1,603	0.01	0	0
1,000,000-5,000,000	6	75,841	0.30	5	52,444
5,000,000-10,000,000	N.A.	25,196	0.10	N.A.	25,196
Greater than 10,000,000	7	10,967,953	43.72	7	2,201,403
Total	55	$25,084,470	100.00%	17	$2,288,049
Share of Used Credits to Total Credits					9.12%

Data Source: Tax Year 2006 Aggregate Statistics, Department of Revenue
N.A. = fewer than five observations

5. The super research tax credit created under the bill would equal the amount of qualified research expenses paid or incurred by the corporation in a tax year that exceeded 1.25 times the average annual amount of qualified research expenses paid or incurred in the previous three tax years. Unused credit amounts could be carried forward up to five years to offset future tax liabilities. Current law provisions related to adjustments for acquisitions and dispositions,

annualization and proration of tax credits, change of business ownership, DOR administration, and timely credit claims would apply to the super research and development tax credit.

"Qualified research expenses" would be qualified research expenses as defined under the Internal Revenue Code incurred by the claimant for research conducted in Wisconsin for the tax year. (This is the same definition used for the research credit under current law.)

6. Research and development (R&D) is creative work undertaken on a systematic basis in order to increase the stock of knowledge, and the use of this knowledge to devise new applications. This work may take the form of basic research, applied research, or experimental development. Long-run economic growth and improved living standards are driven by the accumulation of knowledge-based factors of production, such as human capital, learning-by-doing, R&D, and innovation. A number of economic studies have found that R&D contributes to economic growth (Boskin and Lau, 1996; Cameron, 1996; Bayoumi, Coe, and Helpman, 1998). However, this does not necessarily provide an economic justification for government to reallocate resources in favor of R&D.

7. Government intervention in a market economy is usually justified by the market's failure to provide efficient or socially desirable allocation of resources. In the case of R&D investment, market failure is evidenced by imperfect appropriability, externalities and asymmetric information.

8. A firm will not invest in a project if it knows that it cannot appropriate the potential revenues from that investment. Investment in R&D, and knowledge in general, are not fully appropriable, because once produced, at least part of the research can be obtained at no cost. Once invented an idea can be imitated by others, although patent protection and delays in the dissemination of new ideas enable the innovator to appropriate a share of revenues from the new idea. If some portion of revenues from the investment is appropriable the firm will invest only to the level where revenues are sufficient to make the investment profitable. In this case, the firm's investment is based on its private rate of return, which is lower than the social rate of return (United Nations, 1999; Lenjosek and Mansour, 1999). Research and development produces external benefits, benefits that accrue to those that are not a party to transactions involving the research. Positive externalities or spillovers include reducing the costs of other firms' innovative activities by creating technological knowledge and showing where the dead ends in research are. In addition, an important part of innovative output is creating new and improved products and services at lower prices (Griffiths, 1998; Hall and Wosinka; 1999). There is a large economic literature, both theoretical and empirical, that emphasizes the likelihood of positive spillovers and externalities from industrial R&D (Griliches, 1992; Hall, 1996; Mohne, 1996).

9. Even if issues associated with incomplete appropriability of returns to investment in R&D are solved using intellectual property protection, subsidies, or tax incentives, it may still be difficult or costly to finance R&D using capital from external sources. R&D has a number of characteristics that make it different from an ordinary investment. In evaluating R&D projects there is typically asymmetric information between the inventor and investor. The inventor frequently has

better information about the likelihood of success and the nature of the contemplated innovation project than potential investors. Moreover, firms are reluctant to reveal innovative ideas to the marketplace, and the fact that there could be a substantial cost to revealing information to their competitors reduces the quality of the signal they can make about a potential project. R&D projects tend to have a longer pay-back period than other projects. Applying discount rates lowers the present value of returns that are farther in the future. R&D projects are also riskier and require a risk premium for investments. These factors make it more difficult for R&D projects to obtain financing through private capital markets. This is especially detrimental new and small firms, that already face financing constraints. (UN, 1999, Hall, 2002)

10. Hall and Van Reenan (2000) surveyed econometric studies conducted during the 1990s that attempted to measure the effectiveness of tax incentives for R&D. The authors found that those studies using data through 1983 tended to have low or non-reported tax price elasticities of R&D (Collins, 1983; Eisner et al., 1983, Mansfield, 1986). (Price elasticity measures percent increase in R&D spending for each 1% decrease in the cost of R&D provided by the tax incentive.) However, Hall reestimated tax price elasticity for this earlier period and found that it was significant (-0.6). Later studies, using more recent data, found that the tax price elasticity of total R&D spending was 1:1 (Berger, 1993; Hall 1993; Hines, 1993). The authors conclude that the R&D tax credit produces roughly a dollar-for-dollar increase in R&D spending on the margin. The lower elasticities for the earlier period reflected a period of adjustment by firms, and a poorly designed earlier tax credit. A review of five microeconmetric studies of government sponsored R&D (Irwin and Klenow, 1996; Lerner, 1998; Branstetter and Sakakibara, 1998; Griliches and Regev, 1998; and Klette and Moen, 1999) to evaluate the social returns from subsidies to commercial R&D activities (Klette, Moen, and Griliches, 2000) found that four of the five studies suggested that the subsidies had a positive effect on performance in the targeted firms.

11. Although studies have found statistically significant R&D cost elasticity at or above unity, it is not clear that inferences based on firms, industries, or countries can be extended to the state level (Wilson, 2005). The possibility of technological spillovers suggests that the R&D cost elasticity may be higher at higher levels of aggregation. In the U.S. economy, where barriers to the free flow of information across state borders is essentially nonexistent, encouraging firms to locate R&D in a particular state might not result in economic benefits that are easily confined to the state (Hall and Wosinska, 1999). Also, R&D may be mobile across states, so that the cost of R&D in other states can affect how much R&D is performed in any one state. Thus, the true aggregate R&D elasticity for the cost of performing R&D within the state is determined by the difference between in-state costs and out-of-state costs.

12. However, there is evidence for localization of some of the spillovers (Jaffe, Trajtenberg, and Henderson, 1993). Areas like Silcon Valley in California suggest that high technology firms in the same industry like to locate near each other, in part to share information. Encouraging firms to move to a state early in the development of a new industry can attract other firms in the future, those firms can benefit from knowledge spillovers from the new industry because of the geographical proximity (Hall and Wosinska, 1999). In addition, states provide R&D tax incentives to avoid being at a competitive disadvantage to other states that offer the tax credits.

R&D jobs tend to be high-wage, high-quality jobs, which through a multiplier effect based on in-state consumption by R&D job holders, may increase economic growth in other sectors of the state economy (Wilson, 2005).

13. There are relatively few state level R&D studies. Wu (2005) conducted a regression study of 13 states, including Wisconsin, that measured how state tax credits affected private R&D spending behavior within the state. Wu concluded that the establishment of state R&D tax credit programs was effective in stimulating industrial R&D expenditures.

Paff (2005) used difference-difference (comparison of investment before and after a credit rate increase) and tax price elasticity estimates to estimate the effect of changes in California R&D tax credit rates on biopharmaceutical and software firms' research investments during 1994-1996 and 1997-1999. Paff concluded that both methods suggest that state level increases in R&D tax credit rates are only slightly associated with firms' investment behavior. There was a small, positive relationship for in-house research, and no statistically significant evidence of increased contract research (with Universities and on-profit organizations), despite a dramatic increase in the R&D tax credit rate in California. Instead, significant industry- and time-specific factors influenced research spending during 1994-1999. In addition, R&D incentives did not appear to have equal incentives across industries. Paff concludes that, depending on a state's industrial composition, more targeted use of public resources, such as direct funding or public-private collaborative arrangements may be more appropriate public policy.

Ernst & Young conducted a dynamic analysis of the economic and fiscal effects of the Massachusetts research credit for the Associated Industries of Massachusetts Foundation (AIM) in 2003. The study found that the state R&D tax credit increased employment by 2,050 and state personal income by $96.7 million. However, the net tax cost was $61.3 million.

Wilson (2005) analyzed the impact of R&D tax credits on company-funded R&D within a state by modeling the demand for R&D capital by a representative firm in the economy. Wilson found that lowering of the lowest available out-of-state user cost caused a decline in the R&D spending in other states, presumably as firms shifted R&D spending to the state or states with cheaper user costs. Wilson also found that in-state and out-of-state R&D cost elasticities were of opposite signs and roughly equal magnitudes, which suggested near-perfect geographical mobility. It also suggests that the aggregate R&D cost elasticity that is relevant for social welfare cost-benefit analyses of R&D tax credits is quite small, indicating that the setting of R&D tax credits by states, as opposed to the federal government, is essentially a zero-sum game. If all states were to lower their R&D user costs, by raising tax credit rates by the same percentage, aggregate R&D in the nation would rise very little, if at all. This implies that any increase in a state's level of R&D is drawn from some other state.

14. Some studies have raised questions about the actual level of social benefits generated by national R&D activities. Wilson indicates that his study would imply that private response in R&D expenditures to changes in the federal effective R&D tax credit rate should also be small. Based on his study, it seems likely that the social benefits generated by R&D tax credits are

not greater than the social cost in terms of forgone tax revenues, which implies that the aggregate response of R&D investment to R&D tax credits, is not large enough to justify their use. Wilson also found that federal R&D funding crowded out private funding, a finding consistent with industry-level studies (Mamuneas and Nadiri, 1996). The estimate implied that a 9% increase in federal funding of industrial R&D in a given state would cause a 1% decline in private funding of industrial R&D in that state.

Similarly, Goolsbee (1998) conducted a regression analysis of the impact of R&D funding on the wages and salaries of R&D workers. Goolsbee notes that the majority of R&D spending is actually salary payments to R&D workers, and the supply of such scientific and engineering talent is quite inelastic. As a result, when government increases R&D spending through subsidies or direct spending, a significant fraction of the increased spending goes directly into higher wages, which is an increase in the price, rather than the quantity of inventive activity. He indicates that conventional literature may overstate the effects of government R&D spending by 30% to 50%. The results also imply that by altering the wages and salaries of scientists and engineers for firms not receiving government support, government funding crowds out private inventive activity.

ALTERNATIVES

1. Approve the Governor's recommendation to create, under the state corporate income and franchise tax, for tax years beginning on or after January 1, 2011, a super research and development tax credit.

2. Delete the Governor's recommendation.

ALT 2	**Change to Bill** Revenue
GPR	$5,000,000

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