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COMMENTS

TAX INCENTIVES: A MEANS OF ENCOURAGING RESEARCH AND DEVELOPMENT FOR HOMELAND SECURITY? *

I. INTRODUCTION

Since the events on and around September 11, 2001, Americans have learned that “American soil is not immune to evil or cold-blooded enemies capable of unprecedented acts of mass murder and terror.”¹ We have recognized the need for increased homeland security, the prevention of and protection from terrorists and chemical/biological weapons, and that “[t]he Nation’s investments in innovation and discovery are . . . vital to strengthening our capabilities to combat terrorism and defend our country.”² These reasons have led to an increased need for research and development (“R&D”)³ in these areas. Although the United States government has attempted for many years to encourage private

*This Comment was the first-place winner of the 2003 McNeill Writing Competition, sponsored by the McNeill Law Society of the University of Richmond School of Law.

1. GEORGE W. BUSH, SECURING THE HOMELAND STRENGTHENING THE NATION 2 (2002), *available at* http://www.whitehouse.gov/homeland/homeland_security_book.pdf (last visited Mar. 17, 2003).

2. OFFICE OF MANAGEMENT AND BUDGET, ANALYTICAL PERSPECTIVES, BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 2003, at 159 (2002), *available at* <http://www.whitehouse.gov/omb/budget/fy2003/index.html> (last visited Mar. 17, 2003).

3. In this paper, “research and development” and “research and experimentation” are used interchangeably. Both terms are used in this paper because, although “research and development” is the more common term, many statutes refer to “research and experimentation.”

businesses to engage in R&D through tax incentives,⁴ recent events in the United States have made the need more apparent, and the current tax incentives are no longer adequate for encouraging the requisite level of R&D.

Since 1981, the United States has attempted to encourage R&D through two main provisions of the Tax Code: sections 41⁵ and 174.⁶ Until last year, these provisions were sufficient to encourage the R&D needed in the United States, but the provisions are no longer adequate for the current climate. For example, even though the tax provisions in section 174 are permanent,⁷ the current research and experimentation ("R&E") tax credit, found in section 41 of the Internal Revenue Code, will expire in 2004.⁸ As the events of September 11, 2001 remain vivid in our minds, politicians try to determine whether to extend the tax credit found in section 41 beyond 2004.

The increasing need for R&D in the area of homeland security over the last year has led politicians to the realization that some incentives are necessary to stimulate R&D. Questions exist, however, as to whether the current tax credit for R&E is the most effective method of meeting this purpose. This paper will analyze tax incentives as a means of encouraging R&D for homeland security.

Part II will explore current tax provisions related to R&D expenses, namely sections 174 and 41. Part III will examine the importance of R&D and the need for change in incentives in the United States. This part will also explain several proposals put

4. "Tax incentives are the result of special exclusions, exemptions, deductions, credits, deferrals, or tax rates in the federal tax laws. Unlike grants, tax incentives do not generally permit the same degree of federal oversight and targeting, and they are generally available by formula to all potential beneficiaries who satisfy congressionally established criteria." *Homeland Security: Effective Intergovernmental Coordination Is Key to Success: Testimony Before the House Subcomm. on Gov't Efficiency, Fin. Mgmt., and Intergovernmental Relations, Comm. on Gov't Reform*, 107th Cong. 17 (2002) (statement of Paul L. Posner, Managing Director, Fed. Budget Issues, Strategic Issues, U.S. Gen. Accounting Office), available at <http://www.gao.gov> (last visited Mar. 17, 2003).

5. I.R.C. § 41 (2000).

6. I.R.C. § 174 (2000).

7. I.R.C. section 174 is said to be "permanent," because it does not have a sunset provision, such as section 41(h).

8. *See id.* § 41(h)(1)(B). This termination date is periodically changed by Congress. The most recent change, made in 1999, changed the expiration from June 30, 1999 to June 30, 2004. Ticket to Work and Work Incentives Improvement Act of 1999, Pub. L. No. 106-170, 113 Stat. 1860, 1919 (codified at 26 I.R.C. §§ 41, 45(c)).

forth by politicians over the last few years and analyze their strengths and weaknesses. In particular, this part will discuss Senate Bill 1764, proposed by Connecticut Senator Joseph Lieberman, and President George W. Bush's tax relief plan. Part IV will focus on tax incentives as a means of encouraging R&D in the United States. This part will analyze the policy reasons for using tax incentives to encourage R&D rather than using other government incentives. Part V will conclude that tax incentives should be used, along with federal subsidy programs, in order to effectively encourage R&D.

II. THE CURRENT TAX CODE

Under the current tax code, two provisions are used as incentives for R&D. Section 174 allows for immediate deduction or amortization of R&D expenses.⁹ Section 41 allows a tax credit for qualified R&D expenses.¹⁰ This tax credit is non-refundable and incremental, and is available to companies with increased R&D expenses. These two provisions are intended to provide an incentive for companies to engage in R&D by giving companies tax benefits for related expenses.

A. Section 174

Before the enactment of section 174 in 1954, it was unclear how to treat R&D expenses. Generally, expenses were deducted for tax purposes if they were ordinary business expenses and capitalized for all other R&D expenses. In 1919, 1922, and 1924, the Internal Revenue Bureau¹¹ issued regulations allowing businesses to either deduct the R&D expenses or capitalize them.¹² Although the Internal Revenue Bureau issued regulations allowing businesses to deduct R&D expenses, the United States Tax Court "generally continued to require taxpayers to capitalize all

9. See *infra* Part II.A. See generally I.R.C. § 174.

10. See *infra* Part II.B. See generally I.R.C. § 41.

11. At that time, the Internal Revenue Service was called the Internal Revenue Bureau.

12. David S. Hudson, *The Tax Concept of Research or Experimentation*, 45 TAX LAW. 85, 86-87 (1991) (citing Revenue Act of 1918, Pub. L. No. 254, 40 Stat. 1057 (1919)).

research and development costs.”¹³ In 1954, Congress decided to “encourage new research and development activity and thus stimulate economic growth and technological development.”¹⁴ In response, Congress enacted the first R&D tax incentive in the United States in 1954 by adding section 174 to the Internal Revenue Code.¹⁵

Section 174 consists of two separate tax incentives for R&D. Section 174(a) allows for the immediate deduction of R&D expenses,¹⁶ and section 174(b) allows the taxpayer to amortize the expenses.¹⁷ Under section 174(a), the “taxpayer may treat research or experimental expenditures which are paid or incurred by him during the taxable year in connection with his trade or business as expenses which are not chargeable to [a] capital account. The expenditures so treated shall be allowed as a deduction.”¹⁸ Under section 174(b), the taxpayer may treat “research or experimental expenditures” as deferred expenses if they are “paid or incurred by the taxpayer in connection with his trade or business, . . . not treated as expenses under subsection (a), and . . . chargeable to [a] capital account but not chargeable to property of a character which is subject to the allowance under section 167 . . . or section 611.”¹⁹ These expenses may be deducted over a period greater than sixty months.²⁰

Although section 174 applies to research and experimental expenditures, this section does not apply to “the acquisition or improvement of land” or “property to be used in connection with the research or experimentation,”²¹ “exploration expenditures,”²² or

13. *Id.* at 88.

14. William Nathony, *The Tax Incentives for Research and Development: An Analysis and a Proposal*, 76 GEO. L.J. 347, 349 (1987); see S. REP. NO. 97-144 (1981), reprinted in 1981 U.S.C.C.A.N. 105, 181-82 (stating that “the decline in this country’s research and development activities has adversely affected economic growth, productivity gains, and our competitiveness in world markets”).

15. Internal Revenue Code of 1954, Pub. L. No. 83-591, 68A Stat. 66. See 1954 U.S.C.C.A.N. 4194, 4851, 5280 for legislative reports on the enactment of I.R.C. § 174.

16. I.R.C. § 174(a) (2000).

17. *Id.* § 174(b). Amortization is “[t]he act or result of apportioning the initial cost of a [usually] intangible asset, such as a patent, over the asset’s useful life.” BLACK’S LAW DICTIONARY 83 (7th ed. 1999).

18. I.R.C. § 174(a)(1).

19. *Id.* § 174(b)(1).

20. *Id.* § 174(b)(1)(C).

21. *Id.* § 174(c).

22. *Id.* § 174(d).

unreasonable expenses under certain circumstances.²³ Because there are few limitations to the applicability of section 174, it may be assumed that Congress intended broad applicability of the section.²⁴ However, after the enactment of section 174, the Internal Revenue Service narrowly interpreted the statute, allowing the deduction only when the taxpayer was actually “engaged in a trade or business,” rather than “in connection with his trade or business.”²⁵ In *Snow v. Commissioner*,²⁶ the Internal Revenue Service did not allow Edwin Snow to take a deduction for the research expenses of his partnership because Snow was a limited partner and had not actually participated in the business.²⁷ The Supreme Court of the United States held that section 174 was meant to encourage R&D and, thus, Snow should be allowed to take the deduction.²⁸ Since the Court in *Snow* overruled the Internal Revenue Service’s interpretation of “in connection with his trade or business,” section 174 has been interpreted more broadly, as Congress intended.²⁹

B. Section 41

In 1981, twenty-seven years after enacting section 174, Congress enacted section 41—another tax incentive for R&D. Section 41 attempted to provide an incentive for increased R&D, particularly for technology fields.³⁰ In order to prevent section 41 from becoming a windfall to some businesses, Congress limited the types of research that qualify for the tax credit under section 41.³¹

23. *Id.* § 174(e).

24. Evan Wamsley, Note, *The Definition of Qualified Research Under the Section 41 Research Development Tax Credit: Its Impact on the Credit’s Effectiveness*, 87 VA. L. REV. 165, 167 (2001) (stating that “the range of qualified activities contained in it is quite broad”).

25. Nathony, *supra* note 14, at 349. See I.R.C. § 174(a), for the language of the Code section.

26. 416 U.S. 500 (1974).

27. *See id.* at 501.

28. *Id.* at 504.

29. *See id.* at 503.

30. Wamsley, *supra* note 24, at 166. See 1981 U.S.C.C.A.N. 105 for legislative reports on the enactment of I.R.C. § 41.

31. *See* I.R.C. § 41(b), (d) (2000); *see also infra* Part IV.A.2 (discussing windfalls briefly).

Section 41 is a non-refundable, incremental tax credit for companies with increased levels of R&D expenses.³² Under the current version, section 41 allows a tax credit of twenty percent of: (1) "qualified research expenses" that exceed "the base amount";³³ and (2) "basic research payments."³⁴ Qualified research expenses include "in-house research expenses" and "contract research expenses."³⁵ This includes wages for qualified services, supplies, and sixty-five percent of any payment to a third party for qualified research.³⁶ The base amount is calculated by multiplying the "fixed-base percentage" and the "average annual gross receipts" for the previous four years.³⁷ The fixed-base percentage is calculated as the total qualified research expenses for the years 1984 through 1988 as a percentage of the total gross receipts for those years,³⁸ with a minimum base amount as fifty percent of qualified research expenses.³⁹ However, companies that started after 1983, and companies without gross receipts and qualified research expenses for three years between 1983 and 1988, calculate their fixed-base percentage using the percentages set forth in section 41(c)(3)(B)(ii).⁴⁰ Taxpayers may also elect to use an "alternative incremental credit," found in section 41(c)(4).⁴¹

32. Increased levels of R&D expenses mean that companies are required to increase their expenses from year-to-year in order to be eligible for the credit. Companies with high amounts of R&D expenses that do not increase their expenses from year-to-year are not eligible for the credit, even though they conduct a great deal of R&D. See I.R.C. § 41; see also Wamsley, *supra* note 24, at 166.

33. I.R.C. § 41(a)(1).

34. *Id.* § 41(a)(2).

35. *Id.* § 41 (b)(1).

36. *Id.* § 41 (b)(2)–(3). "Qualified research" has a very complex definition, found in § 41(d), which has been changed and interpreted many times since the credit's beginning. For a general discussion of "qualified research," see generally Wamsley, *supra* note 24, and Hudson, *supra* note 12, at 98–102.

37. I.R.C. § 41(c)(1).

38. *Id.* § 41(c)(3). Although it is now twenty-one years after the enactment of this credit, the years used in calculating the fixed base percentage have not changed. Compare Economic Recovery Tax Act of 1981, Pub. L. No. 97-34, 95 Stat. 172, 241 (1981) (original statute language), with I.R.C. § 41(c)(3)(A) (current statute language).

39. I.R.C. § 41(c)(2); see *infra* Part III.A.4 (discussing how the minimum base amount decreases the effective rate of the section 41 credit).

40. I.R.C. § 41(c)(3)(B)(ii).

41. *Id.* § 41(c)(4). The "alternative incremental credit" has been the subject of some recent changes. See H.R. REP. NO. 106-478, at 130 (1999); Tax Relief Extension Act of 1999, S. 1792, 106th Cong. § 1 (1999); H.R. 2923, 106th Cong. § 1 (1999).

The second tax credit under section 41—the credit for “basic research payments”—is described in section 41(e).⁴² Under this subsection, a basic research payment is “any amount paid in cash . . . to any qualified organization for basic research” if it is “pursuant to a written agreement” and “is to be performed by such qualified organization.”⁴³ Under section 41(e), taxpayers may receive a tax credit of twenty percent for basic research payments exceeding the “qualified organization base period amount.”⁴⁴ Those payments that do not exceed the “qualified organization base period amount” may be incorporated into the company’s “contract research expenses” under section 41(e)(1)(B).⁴⁵

Since its original enactment in 1981, section 41 has been amended thirteen times.⁴⁶ The most recent amendment, in 1999, was part of the Ticket to Work and Work Incentives Improvement Act of 1999.⁴⁷ This amendment extended the expiration date of the section 41 tax credit from June 30, 1999 to June 30, 2004, increased the percentages of the alternative incremental tax credit, and extended the credit to Puerto Rico and other United States territories.⁴⁸ Much discussion went into the enactment of the Ticket to Work and Work Incentives Improvement Act of 1999.⁴⁹ President Clinton considered section 41 a “crucial tax credit,” hoping the amendment would “encourage[] companies to under-

42. I.R.C. § 41(e).

43. *Id.* § 41(e)(2)(A).

44. *Id.* § 41(e)(1)(A).

45. *Id.* § 41(e)(1)(B).

46. See Pub. L. No. 106-170, sec. 502, 113 Stat. 1919 (1999); Pub. L. No. 105-277, sec. 1001, 112 Stat. 2681-2888 (1998); Pub. L. No. 105-34, sec. 601, 111 Stat. 861 (1997); Pub. L. No. 104-188, secs. 1201, 1204, 110 Stat. 1772-1774 (1996); Pub. L. No. 103-66, secs. 13111, 13112, 13201, 107 Stat. 420, 421, 459 (1993); Pub. L. No. 102-227, sec. 102, 105 Stat. 1686 (1991); Pub. L. No. 101-508, secs. 11101, 11402, 104 Stat. 1388-1405, 1388-1473 (1990); Pub. L. No. 101-239, secs. 7110, 7814, 103 Stat. 2322-25, 2414 (1989); Pub. L. No. 100-647, secs. 1002, 4007, 4008, 102 Stat. 3370, 3652 (1988); Pub. L. No. 99-514, sec. 231, 100 Stat. 2173-80 (1986); Pub. L. No. 98-369, secs. 471, 474, 98 Stat. 826, 831 (1984); Pub. L. No. 97-448, 96 Stat. 2372 (1983); Pub. L. No. 97-354, sec. 5, 96 Stat. 1692 (1982).

47. Ticket to Work and Work Incentives Improvement Act of 1999, Pub. L. No. 106-170, 113 Stat. 1860 (1999). This Act was signed into law by President William J. Clinton on December 17, 1999. See Statement by President William J. Clinton Upon Signing H.R. 1180, 34 WEEKLY COMP. PRES. DOC. 2637 (Dec. 17, 1999).

48. Ticket to Work and Work Incentives Improvement Act § 502.

49. See H.R. REP. NO. 106-478 (1999).

take new multi-year research activities.”⁵⁰ Politicians are already discussing the idea of amending section 41 again.⁵¹

III. THE NEED FOR CHANGE

Although in a perfect tax system, the tax system does not affect the decisions of taxpayers and is not affected by changes in society,⁵² “most scholars believe the U.S. income tax system distorts behavior.”⁵³ Therefore, under the current system, as society changes, the tax code must also change.⁵⁴ Despite the recent amendment of the tax provisions regarding R&D expenses, more changes are needed in order to achieve the policy goals intended for the R&D tax incentives and to meet the changing needs of the United States in this area.⁵⁵

A. *The Current System Is Inefficient and Ineffective*

One of the main purposes of the current tax provisions is to provide incentives for companies to increase their investment in R&D.⁵⁶ Such an incentive is necessary because, in some cases, the societal benefits of R&D exceed any benefits that private companies would receive from conducting these activities on their own.⁵⁷

50. Statement by President William J. Clinton Upon Signing H.R. 1180, 34 WEEKLY COMP. PRES. DOC. 2637 (Dec. 17, 1999).

51. In fact, amending section 41 has been on President Bush’s tax agenda since he took office. See George W. Bush, *The President’s Agenda for Tax Relief* (Jan. 20, 2001) [hereinafter *President’s Agenda for Tax Relief*], available at <http://www.whitehouse.gov/news/reports/taxplan.html> (last visited Mar. 17, 2003); see also *infra* Part III.C.2.

52. A “perfect” tax system would attain three goals: efficiency, equity, and simplicity. MICHAEL J. GRAETZ & DEBORAH H. SCHENK, *FEDERAL INCOME TAXATION: PRINCIPLES AND POLICIES* 25–29 (4th ed. 2001). “The efficiency criterion requires that a tax interfere as little as possible with people’s economic behavior.” *Id.* at 26.

53. Mitchell B. Weiss, *International Tax Competition: An Efficient or Inefficient Phenomenon?*, 16 AKRON TAX J. 99, 102 (2001).

54. See generally *id.* (explaining the economic implications that globalization has had on the tax system).

55. R&D tax incentives were originally intended to encourage R&D in order to stimulate the economy and encourage innovation. Natbony, *supra* note 14, at 349. Although the economy still needs to be stimulated, R&D is now needed for other reasons as well, such as to protect the United States from future terrorist attacks. See *infra* Part III.B.

56. See, e.g., Wamsley, *supra* note 24, at 166 (referring to the § 41 tax credit enacted in 1981).

57. See, e.g., *id.* at 186; CONGRESSIONAL RESEARCH SERVICE, CRS REPORT FOR

Although companies often conduct R&D without tax incentives, they generally only do so when they know it will be profitable. Companies are reluctant to conduct other R&D that might be more beneficial to society but would be less profitable; for example, in the area of homeland security. Although Congress attempts to encourage some of the less profitable R&D through sections 41 and 174 of the tax code, the current tax incentives are inefficient and ineffective at accomplishing this goal for several reasons:⁵⁸ (1) the current tax provisions discriminate against some types of R&D; (2) not everyone qualifies for the tax incentives; (3) the provisions require periodic updating; and (4) the provisions have a reduced effective rate.

1. Current Tax Provisions Discriminate

The current tax provisions are inefficient because of their discriminatory nature. Section 174, the broader of the two tax provisions, does not apply to all R&D expenses. Rather, some expenses for land and property are excluded from section 174.⁵⁹ Section 41, on the other hand, is very narrow in its applicability.⁶⁰ As stated, it only applies to “qualified research expenses” and “basic research payments,” both of which are narrowly defined.⁶¹ For example, section 41 does not apply to “research conducted after the beginning of commercial production of the business component”; “research related to the adaptation of an existing business component to a particular customer’s requirement or need”; “research related to the reproduction of an existing business component . . . from a physical examination”; “[s]urveys, studies, etc.”; or “research with respect to computer software.”⁶²

CONGRESS: TAX PREFERENCES FOR RESEARCH AND EXPERIMENTATION; ARE CHANGES NEEDED? *1 (1995), available at 1995 WL 582410.

58. “[T]heir combined effect on after-tax rates of return to R & E investments probably falls short of bridging the documented gap between social and private returns on R & E investment.” CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *7. See Natbony, *supra* note 14, at 348 (concluding that “the present system of current deduction and incremental credit provides a significant subsidy, but a very questionable incentive, for research and development activity”).

59. See I.R.C. § 174(c) (2000); see also *supra* Part II.A.

60. See I.R.C. § 41 (2000).

61. See *id.* § 41(a)(1), (2); see also *supra* Part II.B.

62. I.R.C. § 41(d)(4).

Although sections 174 and 41 may have met their intended purpose at the time they were enacted, by discriminating against some types of R&D the current tax provisions are an inefficient means of providing a tax incentive for the general R&D that is now needed.⁶³

2. Not Everyone Qualifies

Secondly, the current tax provisions are inefficient because many companies do not qualify for their benefits. In particular, many companies are not able to take the credits available under section 41 of the tax code. For example, fast growing companies usually cannot claim the section 41 credit because their R&D expenses have not grown as fast as their sales; therefore, their qualified research expenses do not exceed their base amount.⁶⁴ In addition, recently merged companies may not qualify for the tax credit because, when the companies merge, some R&D expenses could be eliminated as a result of the merger.⁶⁵ In a slowing economy, declining businesses also may not qualify because they may lower R&D expenses in order to maintain profitability. Although these businesses may still conduct R&D operations, because these expenses do not exceed their base amount, the company would not be eligible for the section 41 credit.⁶⁶ Therefore, the current provisions fail to encourage all R&D because many companies are not eligible for the tax incentives. In order to create a more efficient tax incentive for R&D, all companies engaging in R&D—no matter how new, wealthy, or big—should be able to qualify for the incentives.

3. Requires Periodic Updating

The third problem with the current system is that, due to its incremental nature, it must be updated regularly. Section 41(c)(3) defines fixed-base percentage using the years 1984 through 1988.⁶⁷ By calculating the section 41 credit based on certain tax

63. See CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *1, *8, *13.

64. *Id.* at *1, *14; see also I.R.C. § 41(a)(1).

65. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *14.

66. *Id.* at *15.

67. I.R.C. § 41(c)(3).

years, the provision must change periodically in order to stay current and continue to be an effective incentive for R&D. Since the provision will require periodic updating, section 41 cannot become a permanent provision of the tax code without changing the statutory language to exclude the specific reference dates.⁶⁸

Although the tax code should not theoretically alter behavior,⁶⁹ the short-term nature of the R&D tax provisions does, in fact, alter the behavior of companies relying on the R&D credit. Knowing that the tax credit provision of section 41 could be eliminated in future years because it is not permanent, many companies refrain from entering into long-term R&D projects that they would otherwise consider exploring.⁷⁰ For example, a company considering a long-term research project that would rely heavily on the tax incentives for financial reasons may decide not to start or invest in the project due to the possibility of Congress eliminating the tax incentives for R&D. For these reasons, the non-permanent nature of the section 41 tax credit makes the provision an inefficient incentive.

4. Reduced Effective Rate

The last inefficiency with the current provision has to do with the effective rate of the tax credit found in section 41. Although section 41 purports to allow a credit of "20 percent of the excess,"⁷¹ the effective rate of the credit is actually much less than twenty percent for many reasons.

First, the "recapture provision"⁷² has the effect of lowering the overall effective rate of the credit because any R&D credit received under section 41 must be deducted from the section 174 immediate deduction.⁷³ Therefore, companies lose deductions by claiming the section 41 R&D credit. Although companies should not necessarily be able to claim both tax incentives, the recapture provision decreases the effective rate of the section 41 credit.

68. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *1.

69. GRAETZ & SCHENK, *supra* note 52, at 26.

70. President's Agenda for Tax Relief, *supra* note 51.

71. I.R.C. § 41(a)(1).

72. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *9.

73. Wamsley, *supra* note 24, at 187.

Second, because the base amount cannot "be less than 50 percent of the qualified research expenses for the credit year,"⁷⁴ the effective rate of the credit is cut in half for many companies.⁷⁵ These companies include those "whose R & E-to-sales ratios have more than doubled since the base period of the mid-1980s,"⁷⁶ those "with ratios more than twice the 16-percent maximum fixed base percentage . . . , [and] start-up firms with ratios above 6 percent or more than double their transition ratios."⁷⁷ Due to the limitations that section 41 places on the R&D credit, these types of companies are not able to receive the full twenty percent credit that section 41 claims to offer for R&D.

Lastly, the effective rate is "reduced to the extent that R & E spending boosts future sales substantially."⁷⁸ As companies engage in research resulting in successful development, sales for these companies will increase. As sales increase these companies are required to raise their base amounts, as figured in section 41(c). As the companies' base amounts increase, their amount of credit is reduced. This reduction in the effective rate of the credit has the tendency to punish companies that engage in R&D and are successful in their sales.

Although Congress intended for a R&D credit of twenty percent,⁷⁹ due to the limitations on the credit, very few, if any, companies actually receive a credit of twenty percent. As years go by and companies grow as a result of their R&D, the effective rate of the credit decreases. If Congress wants to continue to encourage R&D, the effective rate of the credit cannot continue to decrease.

74. I.R.C. § 41(c)(2).

75. "One effect is that despite its 20% label, the actual value of the credit can never exceed 10% of the taxpayer's R&D expenditures over time, because when R&D exceeds twice the taxpayer's normally defined base, the base is redefined by the creditable expenditures." Natbony, *supra* note 14, at 402; see also CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *9.

76. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *9. "R&E-to-sales ratio" is the ratio of the companies R&D (research and experimentation) expenses for the year to their sales for the year. For example, a company with \$100,000 in R&D expenses for the year and \$1,000,000 in sales for the year, would have an R&E-to-sales ratio of 10%. See *id.*

Over several years, if the companies' R&D drastically increases when compared to their sales, the R&E-to-sales ratio will more than double. By doubling their R&E-to-sales ratio, the company will not be able to claim a credit for their entire R&D increase, because section 41 limits the credit to fifty percent. I.R.C. § 41(c)(2).

77. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *9.

78. *Id.* at *10.

79. I.R.C. § 41(a)(1).

B. *Recent Events Increase Need for Research and Development*

1. Homeland Security

On September 11, 2001, two planes crashed into the World Trade Center in New York City, one plane crashed into the Pentagon in Arlington, Virginia, and a fourth plane crashed in Pennsylvania. As the story unfolded, Americans discovered that the hijackings were the actions of terrorists. Since the terrorist attacks on America, politicians and the American public have realized the need for change and increased security measures in the United States in order to protect this country from future terrorist attacks.⁸⁰ As President George W. Bush stated: "Americans will never forget the murderous events of September 11, 2001. They are for us what Pearl Harbor was to an earlier generation of Americans: a terrible wrong and a call to action."⁸¹

Immediately following the attacks, President Bush recognized the need for changes in the government to promote homeland security: "This effort will involve major new programs and significant reforms by the Federal government. But it will also involve new or expanded efforts by State and local governments, private industry, non-governmental organizations, and citizens. By working together we will make our homeland more secure."⁸² To accomplish this, President Bush established the Office of Homeland Security on October 8, 2001.⁸³ The functions of the Office of Homeland Security, headed by Secretary Tom Ridge, former Pennsylvania Governor, are "to detect, prepare for, prevent, protect against, respond to, and recover from terrorist attacks within the United States."⁸⁴

80. Since September 11, 2001, Americans have responded with many changes. Congress enacted the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001, Pub. L. No. 107-56, 115 Stat. 272 (also called the "USA Patriot Act of 2001"), which "authorize[s] new powers for the federal government to prevent future terrorism." Michael T. McCarthy, *Recent Developments: USA Patriot Act*, 39 HARV. J. ON LEGIS. 435 (2002).

81. George W. Bush, *The Budget Message of the President* (Feb. 4, 2002), in A CITIZEN'S GUIDE TO THE FEDERAL BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 2003.

82. BUSH, *supra* note 1, at 3.

83. Exec. Order No. 13,228, 3 C.F.R. 796 (2001).

84. *Id.* § 3, at 796.

To help accomplish these functions, the Office of Homeland Security is to “identify programs that contribute to the Administration’s strategy for homeland security and, in the development of the President’s annual budget submission, . . . review and provide advice to the heads of departments and agencies for such programs.”⁸⁵ Over the last year, many new programs have been established and existing programs increased for the protection of homeland security. In fact, in President Bush’s fiscal year 2003 budget request to Congress, it was proposed to increase the budget for homeland security by \$18.2 billion—from \$19.5 billion in 2002 to \$37.7 billion in 2003.⁸⁶ Although many federal programs already exist to aid in the protection of homeland security, many politicians, including Secretary Ridge and President Bush, argue that additional programs are needed.⁸⁷

One area that needs to be expanded drastically is the area of R&D.⁸⁸ Although politicians have recognized the need for increased R&D in the area of homeland security, there are few economic incentives for such work. Since much of the R&D that needs to be done for homeland security has a greater benefit to society as a whole than to any one individual company, companies are and will continue to be reluctant to engage in these activities without greater government incentives. For this reason, incentives need to be changed to encourage companies to engage in homeland security R&D.⁸⁹

85. *Id.* § 3(l), at 799–800.

86. BUSH, *supra* note 1, at 8.

87. “Numerous federal grant programs and grant-making corporations already exist that give money for research related to homeland security.” Thomas Cmar, *Recent Developments: Office of Homeland Security*, 39 HARV. J. ON LEGIS. 455, 465 (2002).

88. “Science and engineering have critical roles to play in the war on terrorism. We need improved tools with which to prevent, detect, protect, and treat victims of chemical, biological, radiological, nuclear, and conventional terrorist attacks. Additionally, we will need new and improved tools to recover facilities from those same types of attacks, should they ever occur.” John Marburger, Speech at the American Association for the Advancement of Science Symposium, *The War on Terrorism: What Does it Mean for Science?* (Dec. 18, 2001), available at http://www.ostp.gov/html/02_1_09_2.html (last visited Mar. 17, 2003).

89. See *infra* Part III.C for two proposals for changing R&D tax incentives.

2. Biological and Chemical Weapons

In his commencement address at the United States Military Academy at West Point, President Bush described one of the many needs for R&D in the United States:

The gravest danger to freedom lies at the crossroads of radicalism and technology. When the spread of chemical and biological and nuclear weapons, along with ballistic missile technology—when that occurs, even weak states and small groups could attain a catastrophic power to strike great nations. Our enemies have declared this very intention, and have been caught seeking these terrible weapons. They want the capability to blackmail us, or to harm us, or to harm our friends—and we will oppose them with all our power.⁹⁰

As President Bush recognized, biological and chemical weapons have become one of the biggest threats to the security of the United States, and more R&D is necessary in order to alleviate that threat.

From the use of chemical and biological agents during World Wars I and II⁹¹ to the Sarin gas attacks in the subway system in Japan,⁹² the threat of biological and chemical weapons has become apparent many times in the last few decades.⁹³ After the Japanese use of chemical and biological weapons during the

90. George W. Bush, Commencement Address at the United States Military Academy at West Point (June 1, 2002), in *THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA 13* (2002), available at <http://www.whitehouse.gov/nsc/nss.pdf> (last visited Mar. 17, 2003).

91. Sharon Begley, *Tracking Anthrax*, NEWSWEEK, Oct. 29, 2001, at 36, 36 (describing how “Japan’s Air Force scattered millions of bubonic-plague-carrying fleas and other pathogens from planes over 11 Chinese cities” killing over 700 people).

92. Members of the cult Aum Shinrikyo dispersed a deadly nerve agent, Sarin gas, in the subway system in Tokyo, Japan on March 20, 1995. The attack killed twelve and injured over 5,500 people. Nicholas D. Kristof, *Hundreds in Japan Hunt Gas Attackers After 8 Die*, N.Y. TIMES, Mar. 21, 1995, at A1; see also Nicholas D. Kristof, *Japanese Police Raid the Offices of a Sect Linked to Poison Gas*, N.Y. TIMES, Mar. 22, 1995, at A1; Sheryl WuDunn, *Sect Says Government Staged the Gas Attack*, N.Y. TIMES, Mar. 22, 1995, at A10.

93. See generally Robert Stevens, Thomas Morris Jr., Joseph Curseen, Kathy Nguyen, Otilie Lundgren, and Lisa J. Raines Biological and Chemical Weapons Research Act, S. 1764, 107th Cong. § 2(C) (2001) [hereinafter Biological and Chemical Weapons Research Act] (stating that “[t]here is a long and sordid history of chemical and biological weapons, including use during the First and Second World Wars, an accidental release of anthrax spores in 1979 from a Soviet military microbiological facility, use of mustard gas, tabun, and hydrogen cyanide by Iraq in the Iran-Iraq War and against the Kurds, and development by Iraq of an offensive biological weapons capability including anthrax and botulium toxin”).

World Wars, the United States began studying chemical and biological weapons.⁹⁴ Despite the Geneva Convention's ban on chemical and biological weapons after World War I, the weapons continued to be used worldwide.⁹⁵ In 1979, anthrax was released in the Soviet city of Sverdlosk, killing several people.⁹⁶ The first use of biological weapons in the United States occurred in 1984 when salad bars in Oregon were infected with salmonella by followers of Bhagwan Shree Rajneesh.⁹⁷ Although no one died, 751 people were affected by the poisoning.⁹⁸ Biological and chemical weapons were used during the wars and conflicts in and around Iraq. In 1987, Iraq dropped mustard gas on Kurd villages, killing at least thirty-three and injuring over 450.⁹⁹ Since that time, Iraq has produced and maintained "a stockpile of biological weapons."¹⁰⁰ More recently, the Aum Shinrikyo cult has obtained and used chemical and biological agents in Japan several times over the last decade.¹⁰¹ The cult dispersed strains of anthrax and botulinum in Tokyo several times from 1990 to 1995.¹⁰² Its most prominent attack occurred on March 20, 1995, when the cult released a nerve agent, Sarin gas, in the subway system in Tokyo killing twelve and injuring over 5,500 people.¹⁰³

Although chemical and biological weapons have been used numerous times, the threat did not significantly affect the lives of Americans until the United States was attacked with anthrax in October 2001. As America was recovering from the terrorist attacks, an anthrax-contaminated letter killed a man in Florida in late September 2001. Over the next month, fourteen cases of an-

94. See Begley, *supra* note 91, at 37.

95. Loren Jenkins, *Iranians Detail Charges of Gas Warfare*, WASH. POST, May 11, 1987, at A1.

96. Kevin Coughlin, *Researchers Leading Attack on Anthrax: Promising Therapies, Drugs Are in the Pipeline*, SEATTLE TIMES, Oct. 14, 2002, at A3.

97. Sharon Begley, *Unmasking Bioterror*, NEWSWEEK, Oct. 8, 2001, at 24.

98. *Id.*

99. Jenkins, *supra* note 95, at A1.

100. Molly Moore, *Iraq Said to Have Supply of Biological Weapons: Arsenal Adds to Peril of Forces in Gulf Region*, WASH. POST, Sept. 29, 1990, at A1; see also *U.S. Report Cites Iraqi Threat: Intelligence Survey Projects a Nuclear Weapon in a Decade*, WASH. POST, Oct. 5, 2002, at A17.

101. Begley, *supra* note 97, at 24–25.

102. *Id.*

103. *Id.*

thrax were discovered,¹⁰⁴ resulting in three deaths, and over 14,000 people were treated for possible anthrax exposure.¹⁰⁵

These attacks, and the continued existence and threat of chemical and biological weapons,¹⁰⁶ have shown the “need [for] improved tools with which to prevent, detect, protect, and treat victims of chemical, biological, radiological, nuclear, and conventional terrorist attacks. Additionally, we will need new and improved tools to recover facilities from those same types of attacks, should they ever occur.”¹⁰⁷

Since the anthrax attacks, the federal government has responded by proposing an increase of \$4.5 billion to the federal budget for defending against biological terrorism, for a total of \$5.9 billion in 2003.¹⁰⁸ Although this funding includes “\$2.4 billion to [jump-start] the research and development process needed to provide America with the medical tools needed to support an effective response to bioterrorism,”¹⁰⁹ federal funding alone is not enough to fully respond to the problem of biological and chemical weapons, particularly the need for R&D.

For years, the federal government has invested in research aimed at defending our military from chemical and biological attack. However, as we have seen recently, the nature of chemical and biological weapons means everyone, not just military personnel, is at risk. For this reason, R&D for the prevention of and protection from chemical and biological weapons will be of great benefit to all of society.¹¹⁰

104. Begley, *supra* note 91, at 36 (detailing how anthrax was discovered at American Media Inc. (Florida), NBC (New York), and Senator Tom Daschle’s office (Washington, D.C.)); Howard Fineman, *I Need Scientists!*, NEWSWEEK, Nov. 5, 2001, at 42 (stating that “[t]races of contamination were found in three U.S. House offices, a local post-office sub-station and the off-site mailrooms of the White House, the State Department, the CIA and the Supreme Court”).

105. Fineman, *supra* note 104, at 42.

106. Countries suspected to have (or to have had in the past) chemical and biological weapons include: Algeria, Czechoslovakia, China, Cuba, Egypt, Great Britain, India, Iraq, Iran, Israel, Japan, Libya, North Korea, Pakistan, Russia, and Sudan. Begley, *supra* note 91, at 36; Begley, *supra* note 97, at 20.

107. Marburger, *supra* note 88.

108. BUSH, *supra* note 1, at 12.

109. Press Release, The White House, Defending Against Biological Terrorism (Feb. 5, 2002), available at <http://www.whitehouse.gov/news/releases/2002/02/20020205-1.html> (last visited Mar. 17, 2003).

110. See generally *id.*; Memorandum from the Office of Management and Budget, Pro-

C. *Proposals for Change*

1. S. 1764: Robert Stevens, Thomas Morris Jr., Joseph Cursen, Kathy Nguyen, Otilie Lundgren, and Lisa J. Raines Biological and Chemical Weapons Research Act¹¹¹

On December 4, 2001, Connecticut Senator Joseph Lieberman introduced Senate Bill 1764 entitled: "Robert Stevens, Thomas Morris Jr., Joseph Curseen, Kathy Nguyen, Otilie Lundgren, and Lisa J. Raines Biological and Chemical Weapons Research Act."¹¹² The bill intends to prepare the United States "with diagnostic and medical countermeasures in the event of the use of biological and chemical weapons by terrorists and others against both military personnel and civilians."¹¹³ As discussed previously, incentives for R&D, particularly for biological and chemical weapons research, are necessary because companies are not likely to pursue such research without incentives. By providing incentives to biotechnology and pharmaceutical companies, this bill helps give companies assurance that their research will be profitable.¹¹⁴

Senate Bill 1764 would provide two incentives to biotechnology and pharmaceutical companies. First, the legislation would provide three possible tax incentives to companies that are registered with the Office of Homeland Security and conduct research for priority countermeasures.¹¹⁵ Second, after a company successfully develops a countermeasure, the legislation would provide procurement, patent, and liability provisions.¹¹⁶

Companies would be able to choose from among three different tax incentives. Under the first option, companies "may establish a limited partnership for the certified countermeasures research."¹¹⁷ As a partnership, the partners would be able to take deductions and credits, rather than being subject to corporate

tecting the Homeland (Jan. 20, 2001).

111. Biological and Chemical Weapons Research Act, S. 1764, 107th Cong. (2001).

112. See 147 CONG. REC. S12376 (daily ed. Dec. 4, 2001) (statement of Sen. Joseph Lieberman).

113. S. 1764 § 12(1).

114. *Id.* § 1(12)–(13).

115. *Id.* § 6.

116. *Id.* §§ 7–9.

117. *Id.* § 6(1).

taxation rules. The second option would allow companies to issue stock to fund research; investors in such stock would be subject to a special capital gains tax rate of zero.¹¹⁸ The third option would allow companies to get tax credits based on countermeasure research.¹¹⁹ Although Senate Bill 1764 provides three alternative incentives for countermeasure research, the incentives would not be available to companies with over \$750 million in paid-in capital.¹²⁰ In addition, companies claiming the benefits of this bill would not be eligible for other benefits, such as those available under the Orphan Drug Act.¹²¹

After a company develops a countermeasure, several other incentives are available under this bill. Companies have the option to sell the product to the federal government at a pre-established price and in a pre-determined amount.¹²² The company is also able to benefit from patent options not available for other products. Under current law, the term of a patent does not change, regardless of the amount of time that it takes for the FDA to approve the product.¹²³ However, under this legislation, the patent for countermeasure priorities would not be affected by the FDA approval process. Rather, the term of the patent would not begin until after the product had been approved.¹²⁴ In addition, companies that develop priority countermeasures will have the option under this legislation to extend their patent for up to two years.¹²⁵

118. *Id.* § 6(2).

119. *Id.* § 6(3).

120. *Id.* § 6(2)(B).

121. Orphan Drug Act, 21 U.S.C. §§ 360cc, 360ee (2000). The Orphan Drug Act “allows drug companies to take tax deductions for about three-quarters of the cost of their clinical studies” for “drugs and other products for treating rare diseases.” U.S. FOOD AND DRUG ADMIN. CENTER FOR DRUG EVALUATION AND RESEARCH, FROM TEST TUBE TO PATIENT: IMPROVING HEALTH THROUGH HUMAN DRUGS 37 (1999) [hereinafter IMPROVING HEALTH THROUGH HUMAN DRUGS], available at <http://www.fda.gov/cder/about/whatwedo/testtube-full.pdf> (last visited Mar. 17, 2003).

122. S. 1764 § 7(e)(2).

123. The FDA review process can take anywhere from six months (for priority drugs) to one year (for standard drugs) or more. The review process has been substantially changed and improved over the last few years as a result of The Prescription Drug User Fee Act of 1992. IMPROVING HEALTH THROUGH HUMAN DRUGS, *supra* note 121, at 7; see also Prescription Drug User Fee Act of 1992, Pub. L. No. 102-571, 106 Stat. 4491 (codified in scattered sections of 21 U.S.C.).

124. S. 1764 § 8.

125. *Id.*

Lastly, the legislation addresses another problem with biotechnology and pharmaceutical research: failure to conduct research for fear that the company may be subject to liability, should the countermeasure not work correctly. This legislation would mitigate that fear by providing liability protection to companies that develop priority countermeasures.¹²⁶ Liability protection under this bill would protect companies through indemnification and provide a defense against claims that the R&D caused damages or losses.¹²⁷

2. President Bush's Tax Relief Plan: The Research and Experimentation Tax Credit

Another proposal, made by President George W. Bush, consists of several different parts, all aimed at improving national security in light of the events over the last year. He "believes that we must harness the power of current technologies, and invest in the next generation of technologies, to achieve his three main goals for America: winning the war on terrorism, providing for greater homeland security, and strengthening the economy."¹²⁸

As part of President Bush's tax relief plan, he would encourage R&D by making the R&E tax credit permanent.¹²⁹ The current R&E tax credit, set to expire in 2004, has been a "temporary" tax incentive since it was enacted in 1981.¹³⁰ Although intended to encourage R&D, "[t]he on-again, off-again nature of the tax credit impedes long-term research in the U.S."¹³¹ By making the R&E tax credit a permanent part of the tax code, President Bush hopes to create an incentive for long-term R&D.¹³²

Although proposals to make the R&E credit permanent have been made many times since its enactment in 1981, President Bush has made more serious attempts at enacting his proposal.

126. *Id.* § 9.

127. *Id.*

128. U.S. Office of Science & Technology Policy, An Unprecedented Commitment to Innovation and New Technology, at <http://www.ostp.gov/html/techbudget.pdf> (last visited Mar. 17, 2003).

129. President's Agenda for Tax Relief, *supra* note 51.

130. See Economic Tax Recovery Act of 1981, Pub. L. No. 97-34, § 221(a), 95 Stat. 241 (1981).

131. President's Agenda for Tax Relief, *supra* note 51.

132. *Id.*

On February 4, 2002, President Bush submitted his federal budget of \$2.1 trillion to Congress.¹³³ Included in his budget was a decrease in receipts due to making the R&E credit permanent. This changed provision is estimated to decrease receipts by \$1.05 billion in 2004 and \$49.5 billion over the period 2002 to 2011.¹³⁴

President Bush's budget included other provisions for R&D, such as increased funding for federal R&D,¹³⁵ basic research,¹³⁶ R&D for homeland security,¹³⁷ and for the Patent and Trademark Office.¹³⁸ In addition to making the R&E tax credit permanent, President Bush would also like to "broaden[] access to the research and experimentation tax credit to make it easier for companies to deduct many costs associated with developing new technologies and drugs."¹³⁹

IV. POLICY ARGUMENTS

As the need for R&D increases and proposals are made for R&D incentives, it is necessary to explore whether tax incentives are, in fact, an effective method of encouraging R&D. Several scholars argue that tax incentives are "an ineffective means of providing a federal subsidy."¹⁴⁰ These scholars—including Stanley S. Surrey,¹⁴¹ Paul R. McDaniel,¹⁴² Boris I. Bittker,¹⁴³ Victor

133. *Bush Urges Congress To Make EGTRRA Permanent and Proposes \$591 Billion in Tax Cuts*, [2002] 89 Stan. Fed. Tax Rep. (CCH) (Feb. 7, 2002), available at 2002 WL 9410788.

134. OFFICE OF MGMT. AND BUDGET, A BLUEPRINT FOR NEW BEGINNINGS: A RESPONSIBLE BUDGET FOR AMERICA'S PRIORITIES 194 tbl. S-9 (2001), available at <http://www.whitehouse.gov/news/usbudget/blueprint/blueprint.pdf> (last visited Mar. 17, 2003).

135. \$111.8 billion in 2003. U.S. Office of Science & Technology Policy, Research and Development Highlights, at <http://www.ostp.gov/html/R&Dhighlights.pdf> (last visited Mar. 17, 2003).

136. U.S. Office of Science & Technology Policy, *supra* note 128. Basic research is university-based research. President Bush proposed an increase of nine percent in university-based research for next year. *Id.*

137. *Id.* President Bush's budget included \$3 billion for homeland security R&D. This is an increase from \$1 billion in 2002. *Id.*

138. *Id.* An increase of \$212 million is proposed to encourage R&D by improving the Patent and Trademark Office. *Id.*

139. *Economic Outlook, Statement to the Senate Joint Econ. Comm.*, 107th Cong. (2002) (statement of R. Glenn Hubbard, Chairman, Council of Economic Advisers).

140. Victor Thuronyi, *Tax Expenditures: A Reassessment*, 1988 DUKE L.J. 1155, 1155 (1988).

141. Stanley S. Surrey was a Professor of Law at Harvard Law School. In addition,

Thuronyi,¹⁴⁴ and others—believe that direct subsidies would be more effective at providing assistance to those in need.

Although many scholars argue that tax incentives are ineffective, others argue that tax incentives are and can be effective.¹⁴⁵ Many legal and economic scholars believe, for example, that tax incentives are necessary to encourage R&D. In fact, many of the scholars that disagree with tax incentives in general believe that, for R&D purposes, tax incentives are effective.¹⁴⁶

A. Policy Arguments Against Tax Incentives

Many scholars argue that tax incentives are “actually government spending programs disguised in tax language.”¹⁴⁷ Under this theory, scholars believe that the incentives would be more effective as direct federal subsidy programs for several reasons: complexity, costs and windfalls, evasion of review, government supervision and control, and behavior distortion.¹⁴⁸ In addition, they believe that tax incentives take away from the three policy goals of a well designed tax system: equity, efficiency, and simplicity.¹⁴⁹

from 1961 to 1969, Surrey was Assistant Secretary of the Treasury for Tax Policy .

142. Paul R. McDaniel is a Harvard Law School graduate and Professor of Law at New York University.

143. Boris I. Bittker is a Professor Emeritus of Law at Yale University and is the author of several popular treatises. See, e.g., BORIS I. BITTKER & LAWRENCE LOKKEN, FEDERAL TAXATION OF INCOME, ESTATES, AND GIFTS (2d ed. 1989); BORIS I. BITTKER & MARTIN J. MCMAHON, JR., FEDERAL INCOME TAXATION OF INDIVIDUALS (2d ed. 1995).

144. Victor Thuronyi, a 1980 graduate from Harvard Law School, served as Special Legal Advisor for Fundamental Tax Reform at the Treasury Department from 1984 to 1986. He is also an Associate Professor of Law at SUNY-Buffalo.

145. For example, Edward A. Zelinsky argues that “tax incentives may be more efficient for the implementation of government policies than direct expenditure programs because of lower transactions costs.” Edward A. Zelinsky, *Efficiency and Income Taxes: The Rehabilitation of Tax Incentives*, 64 TEX. L. REV. 973, 975–76 (1986).

146. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *2.

147. Thuronyi, *supra* note 140, at 1155.

148. See generally *id.* at 1205 (proposing a category of substitutable tax provisions that would “replac[e] certain tax provisions with nontax programs”); Stanley S. Surrey, *Tax Incentives as a Device for Implementing Government Policy: A Comparison with Direct Government Expenditures*, 83 HARV. L. REV. 705, 734 (1970) (stating that “as a generalization, I think it unlikely that clear advantages in the tax incentive method will be found”).

149. GRAETZ & SCHENK, *supra* note 52, at 25.

1. Complexity

First, it is argued that the United States tax system is too complex. Adding tax expenditures/incentives to the tax system creates unnecessary additional complexity because direct subsidies can fulfill the same purposes as tax expenditures.¹⁵⁰ By eliminating tax expenditures, the tax system will come closer to meeting the policy goal of simplicity.

2. Cost and Windfalls

Second, scholars argue that tax incentives cost more than direct spending programs¹⁵¹ and create windfalls.¹⁵² A windfall is created because the tax expenditures provide benefit to taxpayers even though they would have done the activity without the benefit.¹⁵³ Although it might be true that in some cases a windfall is created, the same situation occurs with direct subsidies. Any government subsidy program will create some windfalls due to the inherent nature of subsidies.¹⁵⁴ However, a well-drafted subsidy or tax expenditure will minimize the amount of windfalls created.

3. Evades Review

Next, many scholars argue that tax expenditures evade review because they are “hidden” in the tax code, rather than being under the public eye as in a direct subsidy program.¹⁵⁵ Direct subsidy programs are reviewed numerous times by Congress, the President, agencies, and the public.¹⁵⁶ Because of the abundant

150. See Stanley S. Surrey & Paul R. McDaniel, *The Tax Expenditure Concept: Current Developments and Emerging Issues*, in FEDERAL INCOME TAX ANTHOLOGY 299–302 (Paul L. Caron et al. eds., 1979); Surrey, *supra* note 148, at 728–29, 732; Thuronyi, *supra* note 140, at 1157; William G. Gale, *Tax Credits: Social Policy in Bad Disguise*, CHRISTIAN SCI. MONITOR, Feb. 16, 1999, at 11.

151. “[T]he subsidies [tax expenditures] provide cost the federal government more than direct spending programs would.” Thuronyi, *supra* note 140, at 1161.

152. Surrey, *supra* note 148, at 719.

153. *Id.*

154. *Id.* (“A direct expenditure program similarly structured would be equally open to the charge.”).

155. Thuronyi, *supra* note 140, at 1161, 1163 (stating that tax expenditures “evade periodic budgetary review” and it is “difficult to detect spending programs in disguise”).

156. Boris I. Bittker, *Accounting for Federal “Tax Subsidies” in the National Budget*, in

review and scrutiny, direct subsidy programs are likely to be more efficient than tax incentives.

In addition, tax expenditures evade review by the appropriate congressional committees and agencies. Since all tax legislation is reviewed in the House of Representatives by the House Ways and Means Committee,¹⁵⁷ and in the Senate by the Senate Finance Committee,¹⁵⁸ tax expenditure legislation avoids review by other committees and agencies that know more about the particular subject or subsidy.¹⁵⁹ These committees have more expertise on the particular subject matter of the subsidies and are better able to scrutinize it.¹⁶⁰ The House Ways and Means Committee and the Senate Finance Committee, on the other hand, have expertise in taxes. By creating tax expenditures rather than direct subsidies, the program is not subject to the same scrutiny and review. After passing through Congress, tax expenditures are then “administered by the Internal Revenue Service (“IRS”), an agency

FEDERAL INCOME TAX ANTHOLOGY 303 (Paul L. Caron et al. eds., 1979) (noting that tax expenditures “escape the public and congressional scrutiny that accompanies the appropriation of governmental funds”).

157. The House Ways and Means Committee has jurisdiction over:

- (1) Customs, collection districts, and ports of entry and delivery.
- (2) Reciprocal trade agreements.
- (3) Revenue measures generally.
- (4) Revenue measures relating to the insular possessions.
- (5) Bonded debt of the United States, subject to the last sentence of clause 4(f).
- (6) Deposit of public monies.
- (7) Transportation of dutiable goods.
- (8) Tax exempt foundations and charitable trusts.
- (9) National social security (except health care and facilities programs that are supported from general revenues as opposed to payroll deductions and except work incentive programs).

RULES OF THE HOUSE OF REPRESENTATIVES X(1)(s), H.R. DOC. NO. 106-320, 106th Cong., 2d Sess. (2001), available at <http://waysandmeans.house.gov/about.asp>? (last visited Mar. 17, 2003).

158. The Senate Finance Committee has jurisdiction over:

1. Bonded debt of the United States, except as provided in the Congressional Budget Act of 1974.
2. Customs, collection districts, and ports of entry and delivery.
3. Deposit of public moneys.
4. General revenue sharing.
5. Health programs under the Social Security Act and health programs financed by a specific tax or trust fund.
6. National social security.
7. Reciprocal trade agreements.
8. Revenue measures generally, except as provided in the Congressional Budget Act of 1974.
9. Revenue measures relating to the insular possessions.
10. Tariffs and import quotas, and matters related thereto.
11. Transportation of dutiable goods.

STANDING RULES OF THE SENATE XXV, S. DOC. NO. 106-15, 106th Cong., 2d Sess. (2000), available at <http://www.senate.gov/~finance/sitepages/jurisdiction.htm> (last visited Mar. 17, 2003).

159. Surrey, *supra* note 148, at 705 (stating that tax expenditures are “handled by tax committees and administrative agencies which have little expertise in non-tax social policy”); see also Surrey & McDaniel, *supra* note 150, at 301–02.

160. Surrey, *supra* note 148, at 705.

unfamiliar with the substantive problems addressed by subsidies and unable to coordinate tax expenditures with subsidy programs administered by other agencies.”¹⁶¹

Although many argue that tax expenditures evade review, since 1974 the Treasury Department has prepared an annual tax expenditure budget that is submitted to Congress with the annual budget.¹⁶² By including the tax expenditure budget in the annual budget, tax expenditures are subject to public and Congressional scrutiny.¹⁶³ In addition, some tax expenditures, including the section 41 R&D tax credit, have “sunset” provisions.¹⁶⁴ A sunset law is “[a] statute under which a governmental agency or program automatically terminates at the end of a fixed period unless it is formally renewed.”¹⁶⁵ By adding a sunset provision to tax expenditures, the expenditure becomes subject to the periodic review that scholars argue is missing from tax expenditures.

4. Government Supervision and Coordination

Yet another argument deals with the amount of government supervision and coordination in direct subsidies versus tax expenditures.¹⁶⁶ Tax incentives, unlike direct subsidies, receive very little government supervision after being incorporated into the tax code.¹⁶⁷ However, it is much easier for the government to coordinate all direct subsidies to accomplish policy goals.¹⁶⁸ Tax expenditures, on the other hand, are more difficult to coordinate with the direct subsidies in order to ensure that policy goals are met and government assistance is granted where needed.¹⁶⁹

161. Thuronyi, *supra* note 140, at 1161.

162. See Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, 88 Stat. 297, 313 (1974); Thuronyi, *supra* note 140, at 1170; see also JIM SAXTON, TAX EXPENDITURES: A REVIEW AND ANALYSIS, JOINT ECONOMIC COMMITTEE STUDY (1999), available at <http://www.house.gov/jec/fiscal/tax/expend.htm> (last visited Mar. 17, 2003).

163. See Thuronyi, *supra* note 140, at 1170.

164. I.R.C. § 41(h) (2000).

165. BLACK'S LAW DICTIONARY 1450 (7th ed. 1999).

166. See, e.g., Surrey, *supra* note 148, at 706–17.

167. *Id.* at 714 (stating that tax incentives “involve[] no government supervision over the details of the action to be induced, whereas a direct expenditure involves detailed supervision”).

168. See *id.* at 728.

169. Surrey, *supra* note 148, at 730, 731 (noting the “difficulty of coordinating the treatment of tax incentives with the overall handling of direct expenditures” and that tax

5. Distorts Behavior

Finally, it is a widely-held view that the United States tax system is inefficient¹⁷⁰ because it distorts behavior.¹⁷¹ Since the tax system, and particularly tax incentives, encourage taxpayers to engage in certain activities, the current tax system interferes with behavior and thus is not efficient.¹⁷² Under this belief, using tax incentives to carry out federal subsidies is an inefficient method of federal spending. Because of the nature of the tax system, tax incentives tend to benefit people in higher tax brackets more than lower income taxpayers.¹⁷³ This distortion is due to the fact that higher income taxpayers generally have more knowledge of the incentives and have the resources that enable them to take advantage of such incentives—i.e., accountants, lawyers, etc.¹⁷⁴ Therefore, it is argued that using the tax system to carryout federal subsidy programs takes away from the original purpose of the subsidies—to benefit those in need.¹⁷⁵

Although it may be true that, under the traditional definition of efficiency,¹⁷⁶ it is inefficient to use the tax system for federal subsidies, the tax system is not necessarily inefficient under other definitions of the “efficiency” goal. For example, if a tax system is said to be efficient “when it promotes economic growth and inefficient when it inhibits such growth,”¹⁷⁷ it could be argued that the current tax system is “efficient” in many respects. In addition, even if some tax expenditures cause the tax system to be ineffi-

expenditures “greatly decrease[] the ability of the Government to maintain control over the management of its priorities”); Thuronyi, *supra* note 140, at 1172 (stating that “[t]he variance in treatment between tax expenditures and direct spending programs makes it difficult, if not impossible, to coordinate tax expenditure and spending policy”).

170. GRAETZ & SCHENK, *supra* note 52, at 26. “The efficiency criterion requires that a tax interfere as little as possible with people’s economic behavior.” *Id.*

171. Weiss, *supra* note 53, at 102 (stating that the tax system is “economically inefficient” because it distorts behavior).

172. *See id.* at 101.

173. Surrey, *supra* note 148, at 705 (arguing that “incentives are usually less equitable, since they benefit persons in high tax brackets most”).

174. *Cf. id.* at 720 (stating that low income taxpayers do not benefit from tax deductions because they pay no income tax).

175. *See id.*

176. For purposes of this paper, the “traditional” definition of efficiency is the meaning discussed in the previous paragraph; that is, an efficient tax system does not interfere with “people’s economic behavior.” GRAETZ & SCHENK, *supra* note 52, at 26.

177. *Id.* at 27.

cient, this does not mean that all tax expenditures should be eliminated from the tax system.¹⁷⁸

Finally, although some tax expenditures do, in fact, benefit higher bracket taxpayers more than others, this is not true overall. In fact, some tax expenditures are not intended to benefit the lower income taxpayers. In those situations, benefits to higher income taxpayers may be the goal and may therefore meet the purpose of those particular tax expenditures. The R&D tax incentives currently found in the tax code are examples of such provisions.¹⁷⁹

B. *Tax Incentives As a Means of Encouraging Research and Development*

Although many scholars argue that tax incentives are an inefficient method of carrying out federal programs, other scholars argue that tax incentives are efficient and should not be eliminated from the tax code.¹⁸⁰ Some of the reasons for this belief include:¹⁸¹ (1) tax incentives avoid the bureaucracy of other federal programs;¹⁸² (2) tax expenditures can take effect immediately upon enactment of the legislation by avoiding the bureaucratic “red tape”,¹⁸³ and (3) tax expenditures have lower transaction costs than other subsidy programs.¹⁸⁴

Although arguments exist showing that tax expenditures, in general, are not inefficient, the scope of this paper is focused on

178. See *infra* Part IV.B.

179. See *infra* Part IV.B for further discussion on R&D tax incentives.

180. See, e.g., Douglas A. Kahn & Jeffrey S. Lehman, *Tax Expenditure Budget: A Critical View*, 54 TAX NOTES 1661, 1663 (1992) (“[T]ax expenditure budgets have the unfortunate tendency to confuse by inviting an easy equation of ‘tax expenditures’ with direct expenditures of federal dollars. Tax expenditures automatically become ‘subsidies.’ And central questions about the appropriate goals for our American income tax get lost in the transition.”).

181. These points are only being briefly discussed because they go beyond the scope of this paper, which focuses on the R&D tax incentives, rather than tax incentives in general. Although many arguments against tax expenditures in general were discussed in Part IV.A, those arguments are applicable because many scholars argue that all tax expenditures, including those associated with R&D, should be eliminated. Therefore, these arguments were discussed in order to show some of the arguments that scholars have against R&D tax expenditures.

182. See Surrey, *supra* note 148, at 716.

183. See *id.* at 716–18.

184. Zelinsky, *supra* note 145, at 975 (providing a “dissent from the prevailing consensus that condemns tax incentives as invariably inefficient”).

the R&D tax incentives, rather than tax incentives in general. Therefore, this section will discuss the policy reasons for using tax incentives to encourage R&D.

1. An "Exception to the Rule"

While some scholars argue that tax incentives are an inefficient method of carrying out federal programs, most of these same scholars agree that R&D is an "exception to the general rule."¹⁸⁵ In fact, some note that "[w]hen it comes to research, government intervention may actually improve economic efficiency."¹⁸⁶

First, without incentives the amount of R&D undertaken by private businesses would be insufficient to fulfill the needs of the United States.¹⁸⁷ Since companies generally only undertake R&D that will result in large profits for the company, many R&D projects are ignored or avoided by private businesses.¹⁸⁸

In particular, private businesses are not likely to undertake R&D in the area of homeland security, because the research is not likely to result in high profits for the company.¹⁸⁹ For example, a company is not likely to conduct R&D on a counterterrorism measure, such as a gas-mask, because the mask would be primarily used for government purposes. Products that are primarily used for government purposes are not as profitable to companies because, when the government controls the demand for the product, the government is able to fix the price based on what they are willing to pay. Therefore, it is necessary for the government to give private companies the incentive to undertake such research.¹⁹⁰

To economists, the phenomenon of needing R&D that is not profitable to businesses is called "spillover."¹⁹¹ Under this theory,

185. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *3.

186. *Id.*

187. *See id.* at *2.

188. *See id.*

189. *Id.*

190. *See supra* Part III.B.

191. A "spillover," also called an "externality," is "[a] social or monetary consequence or side effect of one's economic activity, causing another to benefit without paying or to suffer without compensation." BLACK'S LAW DICTIONARY 604 (7th ed. 1999); *see also*

the benefits of R&D spillover to society, and, therefore, even though it may not be that profitable for private businesses, R&D is important for society.¹⁹² Some of the benefits to society include: “lower prices and/or improved products for purchasers, rais[ed] living standards of all who consume them, and making the innovating nation’s products more attractive in international competition.”¹⁹³ In the area of homeland security, spillovers are prevalent; that is, the R&D is more beneficial to society than it is to the private businesses who actually conduct it.

Since benefits from R&D spillover to society, tax expenditures and incentives are necessary to encourage private businesses to conduct such activities that may not be that profitable to the company.¹⁹⁴

Second, tax expenditures for R&D are effective under a cost-benefit analysis. Under a traditional cost-benefit analysis, a decision, project, etc. is ineffective if the costs outweigh the benefits.¹⁹⁵ In the case of tax expenditures, a tax expenditure is “only socially desirable if the targeted activity produces an uncompensated benefit or harm on society.”¹⁹⁶ In most cases, economists and scholars believe that tax expenditures do not benefit society, but rather, harm society by distorting behavior.¹⁹⁷ As discussed previously, R&D creates spillovers that outweigh the harms that R&D tax incentives cause by distorting behavior. Therefore, under a cost-benefit analysis, the benefits of R&D tax incentives outweigh the costs.

For these reasons, tax expenditures for R&D are generally accepted as an efficient use of the tax system to accomplish federal subsidy goals.

CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *2.

192. See CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *1–2.

193. *Id.*

194. See *id.*

195. In general terms, cost-benefit analysis is “[a]n analytical technique that weighs the costs of a proposed decision, holding, or project against the expected advantages, economic or otherwise.” BLACK’S LAW DICTIONARY 350 (7th ed. 1999).

196. Weiss, *supra* note 53, at 101.

197. Walmsley, *supra* note 24, at 183.

2. Tax Incentives Versus Other Federal Subsidies

Although R&D tax incentives are an “exception to the general rule” and are not as inefficient as other tax incentives,¹⁹⁸ are tax incentives the most effective means of fulfilling the government’s intention? Would R&D incentives be more effective in the form of government grants, interest free loans, etc.? This subpart will address those questions and show that R&D tax incentives are a necessary part of the federal government’s efforts to encourage R&D.

In any federal issue, the government has several options for creating a subsidy. The government can create tax expenditures,¹⁹⁹ give government grants,²⁰⁰ allow interest-free or reduced-interest loans,²⁰¹ create federal insurance programs, or guarantee private loans.²⁰² The same options apply to R&D. The government encourages R&D through tax incentives such as sections 41 and 174 of the Internal Revenue Code, grants for R&D which will benefit society,²⁰³ loans for companies engaged in R&D, and special tax rules for R&D.²⁰⁴

Some people argue that, rather than using tax incentives, the government should use other methods to fulfill the need for R&D,

198. CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *3.

199. Tax expenditures are “revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability.” Congressional Budget and Impoundment Control Act of 1974, Pub. L. No. 93-344, 88 Stat. 297, 299 (1974); *see also* FEDERAL INCOME TAX ANTHOLOGY 296-312 (Paul L. Caron et al. eds., 1997) (including selections from Stanley S. Surrey, Paul R. McDaniel, Boris I. Bittker, Victor Thuronyi, Douglas A. Kahn, and Jeffrey S. Lehman); GRAETZ & SCHENK, *supra* note 52, at 38-53. Currently, tax expenditures for R&D are found in I.R.C. sections 41 and 174. *See infra* Part II.

200. Grants are given to individuals or organizations which meet certain requirements, for the purpose of carrying out some government policy. *See* UNITED STATES DEP’T OF EDUC., FUNDING YOUR EDUCATION 2003-2004 3 (2003), *available at* http://studentaid.ed.gov/students/attachments/siteresources/FundingYourEducationEnglish2003_04.pdf (last visited Mar. 19, 2003).

201. One clear example of this is education loans. The government provides reduced interest rate loans for educational expenses through the Federal Family Education Loan Program (FFEL). *See id.* at 10.

202. *See id.*

203. R&D grants, called “academic earmarks,” are given to colleges and universities for specific projects. In 2001, \$1.67 billion was given in academic earmarks. *See* OFFICE OF MANAGEMENT AND BUDGET, *supra* note 2, at 175.

204. For example, businesses can treat R&D expenses differently for tax purposes. *See infra* Part III.C (discussing Sen. Joseph Lieberman’s proposal).

particularly in the area of homeland security. In general, however, there is a “policy consensus that it would be allocatively efficient and desirable overall to use tax . . . law to increase the amount of resources devoted to investment in general and to [R&D] in particular.”²⁰⁵ However, there are several reasons why tax incentives should be used for R&D.

First, the federal government cannot be responsible for all R&D that is important for the needs of the nation.²⁰⁶ It does not have sufficient resources to fully fund every project in which R&D is necessary. However, by providing a tax credit for such enterprises, the government is able to fulfill R&D needs without taking on the financial burden of the entire project. Eliminating R&D tax incentives and fulfilling the R&D needs through other subsidies alone would not only be financially impossible in a capitalist market, but would also lead to bigger government, as well as to the stifling of R&D through government bureaucracy.

Second, even if the government uses other methods to encourage R&D by private entities, those methods will not be as effective as tax incentives. Businesses are very sensitive to taxes, and therefore are more likely to respond to a tax incentive than to a different type of incentive.²⁰⁷ Thus, by including tax incentives in a plan to encourage R&D, the government will be more successful in encouraging businesses to engage in R&D without further government assistance. In addition, other incentives would likely involve “political or bureaucratic decisions,” which the private sector seeks to avoid if at all possible.²⁰⁸ Therefore, tax incentives would be more effective at encouraging the private sector to conduct R&D than other incentives.

205. Richard S. Markovits, *On the Economic Efficiency of Using Law To Increase Research and Development: A Critique of Various Tax, Antitrust, Intellectual Property, and Tort Law Rules and Policy Proposals*, 39 HARV. J. ON LEGIS. 63, 63, 66 (2002).

206. This concept of government funded projects relates to fundamental economic principles and arguments that are beyond the scope of this paper. However, most scholars agree that the federal government should not be responsible for all R&D. Natbony, *supra* note 14, at 399 (noting that “few would argue that the federal government itself should undertake all [R&D]”).

207. *Contra* Surrey, *supra* note 148, at 733 (arguing against the common belief that businesses respond better to tax incentives than direct subsidies).

208. “The credit encourages [R&E] by private businesses without political or bureaucratic decisions.” CONGRESSIONAL RESEARCH SERVICE, *supra* note 57, at *1.

V. CONCLUSION

There is a definite need for R&D incentives in the United States. The events of the last year have created an even more pressing need for homeland security R&D. Accordingly, the federal government needs to encourage these activities. Although the tax code currently has two provisions to encourage R&D, these provisions are insufficient to fulfill America's need.

Even though some scholars argue that tax expenditures are inefficient, tax incentives for R&D are efficient and necessary. However, tax incentives should not be the only means that the government uses to encourage R&D. Rather, the federal government should use tax incentives in conjunction with other federal subsidy programs. By using tax incentives *and* other federal subsidy programs, the government will create the most effective means of encouraging R&D, particularly in the next few years when it is a crucial part of homeland security.

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