Contemporary Accounting Research / Volume 21, Issue 3 / p. 639-680

A Cross-national Comparison of R&D Expenditure Decisions: Tax Incentives and Financial Constraints*

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First published: 15 January 2010
https://doi.org/10.1506/CF2E-HUVC-GAFY-5H56

* Accepted by Gordon Richardson. An earlier version of this paper was presented at the 2002 Contemporary Accounting Research Conference, generously supported by the CGA-Canada Research Foundation, the Canadian Institute of Chartered Accountants, CMA Canada — Ontario, the Certified General Accountants of Ontario, and the Institute of Chartered Accountants of Ontario. The authors are thankful for the helpful comments of Gordon Richardson (editor), Steve Fortin (discussant), Jeffrey Callen, Stephen Huddart, Donald Lien, Lillian Mills, Richard Sansing, and two anonymous referees; conference participants at the 2002 Contemporary Accounting Research Conference; and seminar participants at the Universities of Arizona, Rochester, and Waterloo. We are grateful for the research funding from the Deloitte Centre for Tax Education and Research at the University of Waterloo, and for Canadian R&D data supplied by Dean Smith.

Abstract

We provide evidence on the impact of tax incentives and financial constraints on corporate R&D expenditure decisions. We contribute to extant research by comparing R&D expenditures in the United States and Canada, thereby exploiting the differences in the two countries' R&D tax credit mechanisms and generally accepted accounting principles. The two tax incentive mechanism designs are consistent with differing views of the degree of financial constraints faced by firms in these economies. Our sample also allows us to explore the effects of capitalizing R&D on Canadian firms. Employing a matched design, we document relations between tax credit incentives and R&D spending consistent with both Canadian and U.S. public companies responding as though they are not financially constrained. We estimate that the Canadian credit system induces, on average, \$1.30 of additional R&D spending per dollar of taxes forgone while the U.S. system induces, on average, \$2.96 of additional spending. We also find that firms that capitalize R&D costs in Canada spend, on average, 18 percent more on R&D. Collectively, this evidence is important to the ongoing debates in both countries concerning the appropriate design of incentives for R&D and is consistent with the assumptions found in the U.S. tax credit system, but not those found in the Canadian system.

References

Auerbach, A. J., and J. R. Hines. 1988. Investment tax incentives and frequent tax reforms. *American Economic Review* 78 (2): 211–16.

Web of Science® Google Scholar

Baldwin, J. R. 1997. The importance of research and development for innovation in small and large Canadian manufacturing firms. Government of Canada Statistics Canada Analytical Studies Paper No. 107.

Google Scholar

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* **33** (2): 173–204.

Web of Science® | Google Scholar

Beatty, A., P. G. Berger, and J. Magliolo. 1995. Motives for forming research and development financing organizations. *Journal of Accounting and Economics* **19** (2): 411–42.

Web of Science® | Google Scholar

Berger, P. G. 1993. Explicit and implicit tax effects of the R&D tax credit. *Journal of Accounting Research* **31** (2): 131–71.

Web of Science® | Google Scholar

Bernstein, J. I. 1986. The effect of direct and indirect tax incentives on Canadian industrial R&D expenditures. *Canadian Public Policy* **12** (3): 438–48.

Google Scholar

Campbell, A. M. 2002. Inventive cash: Financing remains a crucial obstacle to innovation. *The National Post*, March 23, FP7.

Google Scholar

Canada, Department of Finance. 1983. *Research and development tax policies: A paper for consultation*. Ottawa: Department of Finance.

Google Scholar

Canada, Department of Finance. 1997a. *Report of the Technical Committee on Business Taxation*. Ottawa: Department of Finance.

Google Scholar

Canada, Department of Finance. 1997b. *The federal system of income tax incentives for scientific research and experimental development: Evaluation report*. Ottawa: Department of Finance.

Google Scholar

Canadian Institute of Chartered Accountants (CICA). *CICA handbook*. Toronto: CICA.

Google Scholar

Diamond, D. W. 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy* **99** (4): 688–721.

Web of Science® | Google Scholar

Fields, T. D., T. Z. Lys, and L. Vincent. 2001. Empirical research on accounting choice. *Journal of Accounting and Economics* **31** (1): 255–307.

Web of Science® | Google Scholar

Gambino, A. J., and M. Gartenberg. 1979. *Industrial R&D management*. New York: National Association of Accountants.

Google Scholar

Gilson, S. C. 1997. Transactions costs and capital structure choice: Evidence from financially distressed firms. *Journal of Finance* **52** (1): 161–96.

Web of Science® | Google Scholar

Graham, J. R. 1996. Proxies for the corporate marginal tax rate. *Journal of Financial Economics* **42** (2): 187–221.

Web of Science® | Google Scholar

Graham, J. R., and C. R. Harvey. 2001. The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics* **60** (2): 187–243.

Web of Science® | Google Scholar

Grigsby, M., and J. W. Westmoreland. 2001. The research tax credit: A temporary and incremental dinosaur. *Tax Notes* **93** (12): 1627–40.

Google Scholar

Hall, B. H. 1993. R&D tax policy during the 1980s: Success or failure? In *Tax Policy and the Economy*, ed. J. M. Poterba, **7**: 1–35. Cambridge, MA: MIT Press.

Google Scholar

Hall, B. H., and J. Van Reenen. 1999. *How effective are fiscal incentives for R&D*? A review of the evidence. Working paper no. W7098. Cambridge, MA: National Bureau of Economic Research.

Google Scholar

Hines, J. R. 1993. On the sensitivity of R&D to delicate tax changes: The behavior of U.S. multinationals in the 1980s. In *Studies in International Taxation*, eds. A. Giovannini, R. G. Hubbard, and J. Slemrod, 149–93. Chicago: University of Chicago Press.

Google Scholar

Hoshi, T., A. Kashyap, and D. Scharfstein. 1991. Corporate structure, liquidity, and investment: Evidence from Japanese industrial groups. *Quarterly Journal of Economics* **106** (1): 33–60.

Web of Science® | Google Scholar

Im, K. S., M. H. Pesaran, and Y. Shin. 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics* **115** (1): 53–74.

Web of Science® | Google Scholar

Income Tax Act. 1985. RSC 1985, c. 1 (5th Supp.), as amended.

Google Scholar

Internal Revenue Code. 1986. As amended.

Google Scholar

Johnson, J., J. Baldwin, and C. Hinchley. 1997. *Successful entrants: Creating the capacity for survival and growth*. Ottawa: Statistics Canada.

Google Scholar

Kahle, K., and R. A. Walkling. 1996. The impact of industry classification on financial research. *Journal of Financial and Quantitative Analysis* **31** (3): 309–35.

Web of Science® | Google Scholar

Klassen, K. J., and A. Mawani. 2000. The impact of financial and tax reporting incentives on option grants to Canadian CEOs. *Contemporary Accounting Research* **17** (2): 227–62.

Google Scholar

Krishnaswami, S., P. A. Spindt, and V. Subramaniam. 1999. Information asymmetry, monitoring, and the placement structure of corporate debt. *Journal of Financial Economics* **51** (3): 407–34.

Web of Science® | Google Scholar

Matsunaga, S., and C. W. Park. 2001. The effect of missing a quarterly earnings benchmark on the CEO's annual bonus. *The Accounting Review* **76** (3): 313–32.

Web of Science® Google Scholar

Mauer, D. C., and S. H. Ott. 1995. Investment under uncertainty: The case of replacement investment decisions. *Journal of Financial and Quantitative Analysis* **30** (4): 581–605.

Web of Science® Google Scholar

Maydew, E. L., K. Schipper, and L. Vincent. 1999 The impact of taxes on the choice of divestiture method. *Journal of Accounting and Economics* **28** (2): 117–50.

Web of Science® Google Scholar

Moore, J. S., and A. K. Reichert. 1983. An analysis of the financial management techniques currently employed by large U.S. corporations. *Journal of Business Finance and Accounting* **10** (4): 623–65.

Google Scholar

Myers, S. C., and N. S. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* **13** (2): 187–221.

PubMed Web of Science® Google Scholar

Petersen, M. A., and R. G. Rajan. 1997. Trade credit: Theories and evidence. *Review of Financial Studies* **10** (3): 661–91.

Web of Science® Google Scholar

Pittman, J. A. 2002. The influence of firm maturation on tax-induced financing and investment decisions. *Journal of the American Taxation Association* **24** (2): 35–59.

Google Scholar

Rajan, R., and L. Zingales. 1998. Financial dependence and growth. *American Economic Review* **88** (3): 559–86.

Web of Science® Google Scholar

Scherer, F. M. 1991. Changing perspectives on the firm size problem. In *Innovation and Technological Change: An Internal Comparison*, eds. Z. Acs and D. Audretsch, 24–38. New York: Harvester, Wheatsheaf.

Google Scholar

Schmookler, J. 1959. Bigness, fewness and research. *Journal of Political Economy* **67** (3): 628–32.

Google Scholar

Shackelford, D. A., and T. J. Shevlin. 2001. Empirical tax research in accounting. *Journal of Accounting and Economics* **31** (1): 321–87.

Web of Science® Google Scholar

Shevlin, T. J. 1987. Taxes and off-balance-sheet financing: Research and development limited partnerships. *The Accounting Review* **62** (3): 480–509.

Web of Science® Google Scholar

Shevlin, T. J. 1990. Estimating corporate marginal tax rates with asymmetric tax treatment of gains and losses. *Journal of the American Taxation Association* **11** (2): 51–67.

Google Scholar

Stiglitz, J. E., and A. Weiss. 1981. Credit rationing in markets with imperfect information. *American Economic Review* **71** (3): 393–410.

Web of Science® Google Scholar

Swenson, C. W. 1992. Some tests of the incentive effects of the research and experimentation tax credit. *Journal of Public Economics* **49** (2): 203–18.

Web of Science® Google Scholar

Tillinger, J. W. 1991. An analysis of the effectiveness of the research and experimentation tax credit in a q model of valuation. *Journal of the American Taxation Association* **12** (2): 1–29.

Google Scholar

Trahan, E. A., and L. J. Gitman. 1995. Bridging the theory-practice gap in corporate finance: A survey of chief financial officers. *Quarterly Review of Economics and Finance* **35** (1): 73–87.

Web of Science® Google Scholar

U.S. Congress, General Accounting Office (GAO). 1989. *Tax policy and administration: The research tax credit has stimulated some additional research spending (GA1.13: 89-114)*. Washington, DC: GAO.

Google Scholar

U.S. Congress, General Accounting Office (GAO). 1996. *Tax policy and administration: Review of studies of the effectiveness of the research credit (GAO/GGD-96-43)*. Washington, DC: GAO.

Google Scholar

U.S. Congress, Office of Technology Assessment. 1995. *The effectiveness of research and experimentation tax credits (OTA-BP-ITC-174)*. Washington, DC: Government Printing Office.

Google Scholar

Whited, T. W. 1992. Debt, liquidity constraints, and corporate investment: Evidence from panel data. *Journal of Finance* **47** (4): 1425–60.

Web of Science® | Google Scholar

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