Economic Contribution of Canada's R&D-Intensive Firms: 1994-2001

Backgrounder

The recent study on the economic contribution made by Canada's R&D intensive firms sends both positive and negative signals to policy-makers concerned with the future of Canada's economy.

The belief that economic growth in the 21st century will be based on innovation is widespread. Based on this belief, the federal government set an ambitious goal in its Innovation Strategy of advancing Canada from 15th to 5th position in the OECD ranking[1] of the most innovative economies by 2010. The Martin government has reaffirmed this commitment, announcing a number of initiatives to stimulate the growth of start-up firms and commercialization of technology in order to strengthen Canada's R&D intensive private sector.

In March 2003, Dr. H. Douglas Barber, co-founder and former CEO of Gennum Corporation, posed two question related to the federal government's goal of being among the top five countries in the world by 2010 as measured by GERD/GDP: Why is this a desirable goal for Canada, and is it achievable?

In answering the first question, Barber showed that to get into the top five innovative economies by 2010, Canada would have to increase its investment in R&D from 1.9% of GDP in 2001 to over 3.1% of GDP in 2010. He calculated that Canada's R&D-intensive private sector would need to generate new revenue of about $175 billion by 2010 and invest 11% of that in R&D. A revenue increase of this size, largely in exports, would significantly increase trade (about $160 billion) and Canada's GDP (about 10%). All Canadians would benefit through increased wealth, more jobs and increased resources for a higher quality of life. This is certainly a desirable goal.

Is it achievable? The recent study by Research Infosource Inc., conducted in collaboration with Dr. Barber, has found that it is, but from a very small base of 228 R&D-intensive leaders. Using industrial data from Statistics Canada, the study identified all companies doing R&D in Canada and analyzed their revenue, R&D spending and number of employees from 1994-2001. The roughly 10,000 companies were first divided into two groups: firms spending less than 3% of revenue on R&D (Low Research Intensity) and firms spending 3% or more. The 3% figure was chosen as a demarcation between low research intensity firms and R&D-intensive firms, because the federal goal requires Canada's GERD/GDP ratio to rise to 3.1% by 2010. The R&D intensive group was divided further into three groups. First, start-up firms spending more than 50% of revenue on R&D. These require investment financing to supply their cash requirements. Second, R&D leaders spending 3-50% of revenue and $3 million or more on R&D. Third, early-stage firms spending 3-50% of revenue and less than $3 million. See Table 1 for a summary.

The study showed that the Innovation Leaders grew in revenue, R&D expenditure and number of employees from 1994-2001. The good news is that projecting revenue growth at their historical growth rate of 12.9% per year, these 228 companies alone could reach the federal target by 2011 (see Figure 1). The bad news is that the 6,000 firms in the start-up and early-stage groups are growing slowly and seem not be moving successfully into the R&D leader group, which grows at less than 20 firms per year.

[1] Gross Expenditure on R&D (GERD) as percent of Gross Domestic Product (GDP).

Table 1. Summary of Key Data*, 2001+
by Research Intensity Groups**

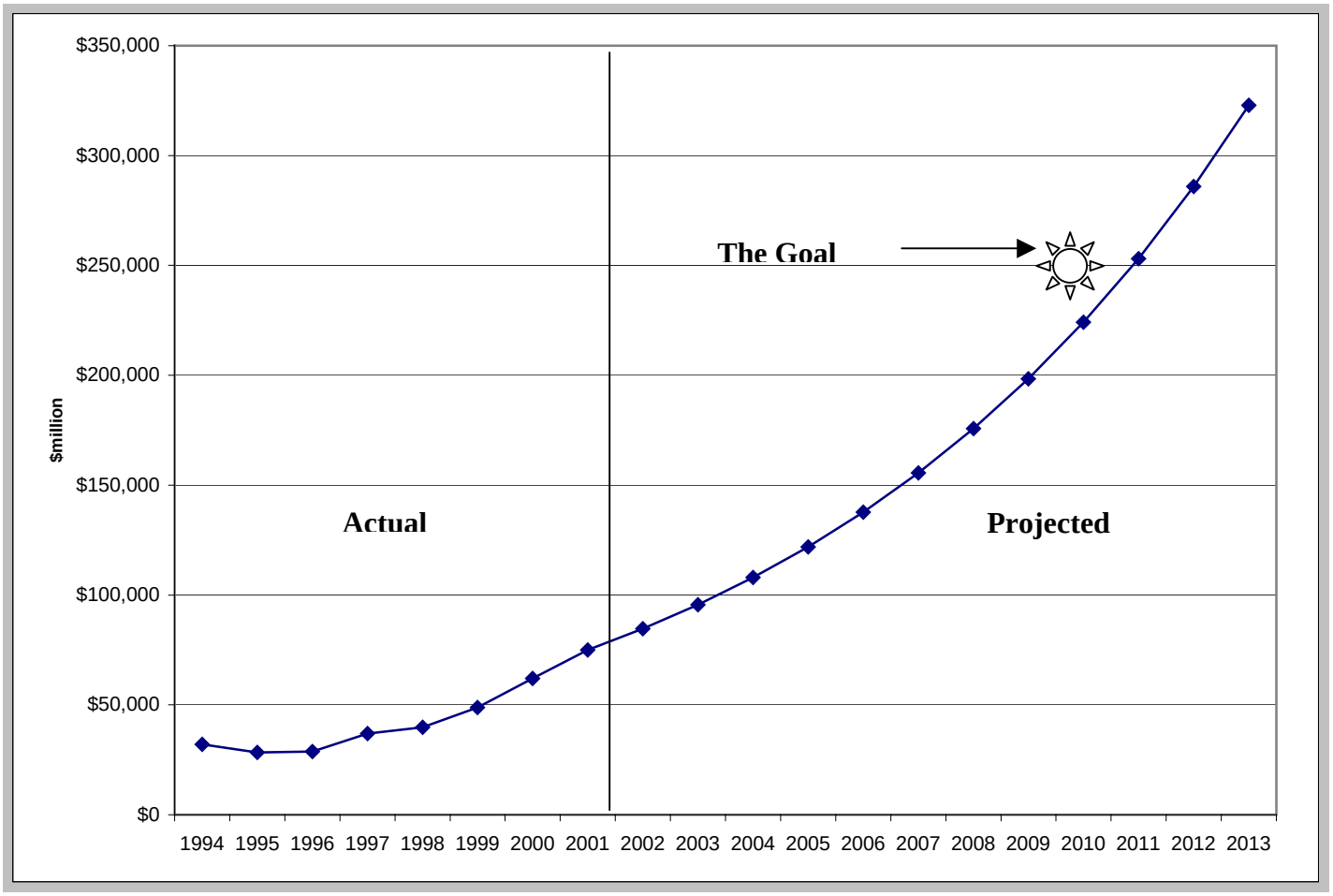
Low Research Intensity **Research Intensity <3%**	**R&D Leaders** **Research Intensity 3-50%** **R&D spending of $3 million or more**	**Start-up** **Research Intensity >50%**
➢ Number of companies: 2,564 Declining 4.9%/yr ➢ Revenue: $441.4B Growing 1.0%/yr ➢ R&D spending: $1.9B Declining 0.4%/yr ➢ Average research intensity*: 0.4% ➢ Employees: 1,009,690 Declining 3.7%/yr	➢ **Number of companies: 228 Growing 8.2%/yr** ➢ **Revenue: $75.0B Growing 12.9%/yr** ➢ **R&D spending: $7.8B Growing 13.2%/yr** ➢ **Average research intensity*: 11.7%** ➢ **Employees: 208,081 Growing 5.8%/yr**	➢ Number of companies: 1,992 Growing 2.0%/yr ➢ Revenue: $2.8B Growing 13.2%/yr ➢ R&D spending: $2.3B Growing 8.0%/yr ➢ Average research intensity*: 104.2% ➢ Employees: 58,782 Growing 13.9%/yr
	Early Stage **Research Intensity 3-50%** **R&D spending less than $3 million**	
	➢ Companies: 4,109 Declining 2.3%/yr ➢ Revenue: $11.2B Growing 0.5%/yr ➢ R&D spending: $1.2B Growing 2.1%/yr ➢ Average research intensity*: 9.6% ➢ Employees: 99,912 Growing 0.2%/yr	

Total Companies

- Companies: 8,893 Declining 2.7%/yr
- Revenue: $530.4B Growing 2.1%/yr
- R&D spending: $13.2B Growing 8.2%/yr
- Average research intensity*: 1.9%
- Employees: 1,376,465 Declining 2.5%/yr

*Average research intensity and yearly growth rates based on 1994-2001 numbers
**R&D spending as percent of revenue
+Preliminary numbers
Note: may not add due to rounding

Figure 1. Actual and Projected Revenue*, 1994-2013
R&D Leaders Group: Research Intensity 3-50% and R&D Spending $3 million or more



*Assumes a 12.9% average annual compounded growth rate between 2001-2013