BBD Financial

BRAINS, CAPITAL AND INNOVATION

How Canada attracts foreign direct investment in biotechnology

REPORT EXTRACTS

Introduction

Background
Invest in Sweden Agency (ISA) is a government agency responsible for promoting foreign direct investments to Sweden. The mandate includes monitoring and analyzing the development of international investment flows and Sweden's significance in them.

Sweden's future economic growth and international competitiveness depends greatly on the ability of Swedish businesses to access knowledge and competence. Not least, continued development of knowledge-intensive industry sectors such as biotechnology/life science, IT/telecom and microelectronics is important to the ongoing competitiveness of Swedish industry

The inflow of capital, ideas, innovations and competence must be secured so that the competitiveness of the Swedish biotechnology sector can be maintained and strengthened over time,

In the spring 2003, ISA therefore decided to conduct a study, to identify and recommend suitable courses of action to the Swedish government, in order to increase the inflow of foreign direct investment to the biotechnology sector.

A central part of the study was to analyze and evaluate measures that had proved successful in Canada. The Canadian biotechnology sector has experienced strong development in recent years, and industry representatives cite actions taken by the Canadian government as contributing to the growth of the sector.

Method/Methodology
The study was principally based on face-to-face or telephone interviews with Swedish, Canadian and other foreign life science companies. Representatives of Swedish and international academia, industry organizations and research organizations were also consulted. More than 40 interviews were conducted throughout June, July, August, September and October 2003. A visit to Canada was made at the end of September 2003. The study also based its findings on substantial written documentation.

The investigator in charge was Björn Bergstrand, BBD Financial Communications AB. Throughout the study, the investigator collaborated with a steering committee at ISA, comprising the Head of ISA's focus area Life Science and the Senior Manager of Research. Five debriefing and working meetings were held. The steering committee was in continuous dialogue with the investigator, and assisted in the compilation of research documentation. They also participated in interviews of particular importance to the study.

Objective
The objective of the study is to propose measures to the Swedish government, that can contribute to an increase in the inflow of capital, ideas, innovation and competence to the biotechnology sector. Conclusions and recommendations are solely the investigator's own.

Biotechnology
Biotechnology can be defined as the use of living organisms and/or biological systems to create new products and processes. Traditional biotechnology has been around for a long time, for example to produce bread, yoghurt, cheese, beer and wine.

Today, biotechnology is more about the application of genetic advances across broad fields of industry: the pharmaceutical industry, food and agriculture sectors, forestry and information technology. The mapping of the human genome at the end of the 1990s has paved the way for numerous new opportunities for scientific discoveries and commercial applications.

The development of new drugs based on molecules and/or substances that already exist in humans is a very large field of application. Biotechnology enables these natural substances, most commonly proteins with clearly defined tasks in the human body, to be produced in sufficient volumes to be used as pharmaceuticals. Since the produced substances are more or less identical to the "target substances" in man, it is more likely that the drug has the desired effect. At the same time, the risk for side effects is reduced. The method offers several advantages over traditional drug development, where production uses chemical synthesis.

Most experts consider bioscience to be one of the most promising future industry sectors. The European Commission forecasts that the European biotechnology market alone can be worth over EUR 100 billion by 2005, and estimates a EUR 2,000 billion world market by 2010. This includes those industry sectors where bioscience and life science are the principal technology platforms, but excludes the agricultural sector.

The Swedish biotechnology sector primarily embraces medical biotechnology, which is also the focus for this study:

Biotech tools & supplies
Biosensors
Bioinformatics
Genetics
Proteomics
Bio nanotech
Bio molecules analysis

Pharma/medicine
Drug discovery
Drug delivery
Diagnostics
Medical technology

Summary

Invest in Sweden Agency (ISA) is a government agency responsible for promoting foreign direct investments to Sweden. In the spring of 2003, ISA decided to conduct a study, to identify and recommend courses of action to the Swedish government, in order to increase the inflow of foreign direct investment to the biotechnology sector.

A central part of the study was to analyze and evaluate measures that had proved successful in Canada. Canada was chosen for a number of reasons. It is one of the world's leading biotechnology countries, and its biotech industry has experienced rapid growth over the past decade. Furthermore, Canada has successfully attracted foreign direct investments in life sciences. Industrial, political and cultural similarities with Sweden also exist.

Canada and Sweden – two leading biotech countries
The number of companies is a parameter often used to measure a nation's strengths in biotechnology. A compilation by the Swedish Trade Council placed Canada in fourth place and Sweden in ninth place in a global country comparison. The dynamic nature of the industry may explain why another survey, published by the consultancy firm Ernst & Young, placed Canada second and Sweden seventh. Nevertheless, both are major biotechnology nations. As measured in relation to population, Sweden ranks even higher.

Foreign direct investment (FDI) flows
A comparison of global FDI flows in the life science sector between 2000 and 2003 shows that Canada attracts approximately twice the number of FDI projects as Sweden. The number of new and expansion investments to Canada amounted to 49 for the period, compared with 25 for Sweden. Canada is also gaining ground. Throughout 2002 and 2003 (until November 24), Canada attracted 26 FDI projects compared with Sweden's 11.

A far larger proportion of investments into Canada are expansion investments. Between 2000 and 2003, expansion investments accounted for over 40 percent of the Canadian projects, compared with 20 percent in Sweden. Foreign direct investments in the biotechnology sector accounted for 27 percent of the projects in Canada compared with 20 percent in Sweden. Canada has succeeded in attracting foreign direct investments in industry segments such as bioinformatics and nanotechnology.

Sweden's achievements may appear satisfactory, given the fact that the size of the Swedish economy and its population are only roughly one-third of Canada's. Still, it must be borne in mind that Sweden – particularly through Astra and Pharmacia (now AstraZeneca and Pfizer) – has an industrial research tradition stretching back to the 1940s, while Canada has built up its research capacity over the past two decades.

<u>Examples – foreign direct investments into Canada</u>
The examples presented below are from the province of Québec, which is a good choice for comparative analyses between Sweden and Canada. The province has 7.5 million inhabitants and is the foremost biotechnology province in Canada. The Québec biotechnology sector also presents the closest similarities with Sweden's. Furthermore, it is in the Québec province that the Canadian state's efforts to stimulate economic growth and inflow of foreign direct investment have been most comprehensive. The largest city and major metropolitan area is Montreal.

New investments 2002/2003

- Novartis Pharma (Switzerland). New HQ in Montreal. Investment CAD 15 million (SEK 87 million). 109 new jobs.
- Berlex Canada (Germany). New HQ in Montreal. Investment CAD 10 million (SEK 58 million). 30 new jobs.
- Actelion Pharmaceuticals Canada (Switzerland). New HQ in Montreal. Investment CAD 5 million (SEK 29 million). 18 new jobs.

Expansion investments 2002/2003

- DSM Biologics (The Netherlands). Phase 1 of new manufacturing plant. Investment CAD 160 million (SEK 928 million). 300 new jobs.
- Ratiopharm (Germany). Expansion of manufacturing facility. Investment CAD 80 million (SEK 464 million). 163 new jobs.
- Tyco Medical Canada (US). Expansion of manufacturing facility in Montreal. Investment CAD 28 million (SEK 162 million). 24 new jobs.
- Aventis Pharma (France). Expansion of existing premises. Investment CAD 20 million (SEK 116 million). 100 new jobs.
- Pfizer Canada (US). Expansion of HQ. Investment CAD 7,3 million (SEK 42 million). 27 new jobs.

In total, new and expansion investment for these eight companies amount to CAD 0.35 billion (SEK 2 billion), generating 821 new jobs in greater Montreal.

Why do companies choose Canada and the Québec Province?

A compilation by Investissement Québec, the regional inward investment promotion agency, shows that tax incentives for research and development have been a determining factor for stimulating FDI inflow to the province.

In a review of nearly twenty companies, the reasons for choosing Québec as a location were identified.
The five most quoted reasons for investing were: tax incentives for R&D, access to know-how, presence of and collaboration opportunities with leading universities, the quality of the labor force, and finally, quality of life. It should be noted that Sweden possess all these qualities, with the exception of the tax incentives.

Five large pharmaceutical companies have global research centers in Québec: AstraZeneca (UK), Boehringher Ingelheim (Germany), Bristol-Myers Squibb (US), Merck Frosst (US) and Wyeth-Ayerst (US). All of the centers are located in or near Montreal. Some twenty foreign-owned biotechnology companies are established in the province. In total, foreign subsidiaries employ approximately 60 percent of the life science workforce in greater Montreal. 22 percent of the life science companies are foreign-owned.

Industry growth

The study compared industry growth for Canadian (i.e. Québec-based) and Swedish biotechnology firms, focused on medical applications for biotechnology and with less than 500 employees. For the period 1997-2001, the study found that the number of biotech firms grew three times faster in Québec than in Sweden and twice as fast in terms of people employed.

Comparing revenue and revenue growth for Canadian and Swedish biotechnology companies is not easy, since available data differ in terms of methodology and selection. However, an analysis of fairly comparable companies shows a significantly higher rate of revenue growth among the Canadian firms.

Research funding

The Canadian government has made very significant investments in research. One example is Genome Canada, the major national funding resource relating to genomics and proteomics, disciplines that are fundamental to fully capitalize on the promises of biotechnology. Since 2000, Genome Canada has received a total of CAD 375 million (SEK 2.2 billion) from the Government of Canada.

So far, the organization has established five regional Genome Centers and has invested CAD 294 million (SEK 1.7 billion) in nearly 60 genomics and proteomics research projects and science and technology platforms. With funding from other partners, both public and private, a total of CAD 588 million (SEK 3.4 billion) has been invested as a result of Genome Canada.

Funds made available to the field of bioscience and biotechnology by the Swedish government in 2000, and for the years 2001-2003, amounted to a total of SEK 120 million (CAD 20 million). Private sponsors have been the primary source of funding for research in functional genomics and proteomics. The Knut and Alice Wallenberg Foundation supported projects in functional genomics with some SEK 800 million over a five-year period and is supporting the Human Proteome Resource Program with close to SEK 240 million (CAD 41 million) over four years.

Canada: examples of federal and provincial tax incentives

Tax credits for Scientific Research and Experimental Development (SR&ED)

Comparative studies indicate that Canada offers extensive tax incentives for research and development activities. The Scientific Research and Experimental Development (SR&ED) program is a tax incentive program to encourage Canadian businesses of all sizes and in all sectors to conduct research and development in Canada that will lead to new, improved, or technologically advanced products or processes. The SR&ED program is the largest single source of federal government support for industrial research and development.

The system is well developed and tax credits are granted on both the federal and provincial level. The benefits apply to all types of costs and expenditures, such as salaries, operating expenses and capital investments.

Tax relief for foreign experts

The province of Québec offers foreign experts a maximum 5-year tax relief on Quebec provincial tax, based on 75 percent of the eligible income. The Swedish system consists of a 3-year tax relief, whereby tax exemption is applied to 25 percent of the eligible income.

Tax exemption for newly founded enterprises

The province of Québec offers newly founded enterprises some tax relief during the first five taxable income years. Eligible companies' equity must not exceed CAD 15 million (SEK 87 million).

Tax incentives to promote investment in small, fast growing companies

- New tax legislation was introduced in 2000 to stimulate investments in smaller companies and to increase access to capital for small companies with high growth potential. The system allows deferral of capital gains tax related to the sale of shares in qualified companies, provided the capital is reinvested within a defined time period after the sale.
- Labor Sponsored Investment Funds

To stimulate investments in small and medium-sized companies, Canada has established a system whereby private individuals may get a tax credit on investments made in a "Labor Sponsored Investment Fund", a fund sponsored or "endorsed" by a Labor group. A tax credit of up to 35 percent of invested capital is attainable, provided that the investment is locked in for 8 years.

Other incentives/support

Loan guarantees to allow biotechnology companies faster access to money related to refundable tax credits. A company eligible for refundable tax credits can expect payment from the tax authorities by the third quarter year 2 for expenses incurred year 1. In order to facilitate companies' funding needs, Investissement Québec offers loan guarantees up to 80 percent of a company's future refundable tax credits. With this guarantee, companies can more easily obtain bank financing.

Impressions from Canada

The lasting impressions of Canada, the conditions for the Canadian biotechnology sector and the involvement from public entities are the following:

- National unity in biotechnology issues.
- Political awareness.
- Focus on economic growth – commercialization.
- Strong incentives for research-based enterprises.
- Coordination among government departments and bodies in issues related to biotechnology.
- Fruitful interaction between public officials and industry representatives.
- Public officials possess considerable biotechnology expertise and industry know-how.
- Major public ownership.
- Matching funds – focus performance.
- Decisions by foreign companies to locate in Canada clearly linked to government programs.
- Investment promotion agencies have a strong focus on "after-care".

Conclusions

For more than 20 years, Canada has engaged in a deliberate product development of its biotechnology sector. Through extensive tax incentives mechanisms, at both federal and provincial levels, strong ownership commitment, and increased resources for investment in research, the Canadian government has contributed to building an internationally significant biotechnology sector. A positive momentum has been established, and Canada now breeds own talents in addition to those that are attracted from abroad.

The biotechnology companies in the province of Québec, which in number and focus are similar to those in Sweden, have grown considerably faster than their Swedish counterparts, both in number and in people employed. Average company size in Québec, measured in number of employees, also surpasses Swedish firms. In 2001, and measured in relation to population, Sweden's and Québec's biotechnology sectors were similar in size.

Considering Canada's short pharmaceutical industry tradition, this development is impressive. There is reason to believe that federal and provincial efforts have had a positive impact on both inflow of foreign direct investment and industry growth, in terms of number of companies, employees and revenues.

The case of Canada shows that success in attracting FDI is the result of numerous combined and coordinated efforts. These efforts have been focused on improving the national competence cluster in biotechnology, while providing strong financial incentives. The level of public commitment to industry development is strong.

It is difficult to assess the quality and viability of the Canadian biotechnology firms. The fact that four Canadian firms successfully concluded their IPOs (initial public offerings) during the third quarter of 2003 – a total of SEK 928 million (CAD 158 million) was raised – is possibly one indicator. In Sweden during the same period, no public offerings were made by biotechnology firms. However, four companies raised SEK 250 million (CAD 43 million) in private equity financing.

Further, the case of Canada shows that few efforts have targeted foreign investors directly. In many cases, the incentives are more favorable to small, Canadian-controlled enterprises. It is the development of the Canadian product in biotechnology that has made the country attractive to international capital and competence.

It is the investigator's view that the Swedish biotechnology sector risks losing ground relative to Canada's, unless action is taken. Sweden's competitiveness in biotechnology is further threatened by other countries, that have not been the focus of this study but where public investments in biotechnology are made.

A country's ability to attract foreign capital, competence and ideas is closely related to its international competitiveness in terms of research results, research environments, public investments, incentive programs, etc.

Recommendations

On the basis of interviews conducted with representatives of the Swedish biotechnology sector, both within academia and the private sector, and on the basis of experiences from Canada, the investigator makes the following recommendations:

MEASURES TO PROMOTE THE INFLOW OF FOREIGN DIRECT INVESTMENT

A number of steps are suggested to improve Sweden's attractiveness as a base for global R&D and innovations-based enterprising.

Promote R&D-intensive business activities

Sweden should consider the creation of specific incentives to promote more rapid growth of R&D-intensive business activities. It is vital that research discoveries reach patients and that public investments in research also lead to the creation of companies and economic growth.

Canada has chosen to promote its R&D-intensive industry with extensive tax incentives. The feasibility of such a model in Sweden may be questioned. However, one cannot ignore the fact that Canadian biotechnology firms grow faster than their Swedish counterparts. It is likely that efforts by the Canadian government have contributed to this development.

Incentive programs for R&D-intensive companies should be investigated. Such incentives may comprise:

- Tax credits for R&D-related expenditures, including capital expenditures.
- Tax deductions for R&D-related expenditures, including capital expenditures.
- "Cash system" that enables loss carry-forwards to be realized in "real time".
- Reduced levels of payroll tax during phases when companies are loss-making.

Facilitate competence inflow

Access to cutting-edge know-how is fundamental to competitiveness in all types of knowledge intensive business. This is particularly true for biotechnology, which is also a highly international and globalized industry. In general, Sweden should ensure that it is able to welcome foreign competence, by means of systems that are straight-forward and uncomplicated. This increases the human resource base and Sweden's ability to acquire the best competence.

Consider the following measures:

- Make it easy for foreign students to apply for and obtain jobs in Sweden upon the completion of studies.
- Adjust the regulatory system for workforce immigration to enable foreign students with a degree from a Swedish university or university college to receive a permanent residence permit if they obtain a job in Sweden, i.e. exempt these individuals from the labor force shortage requirement currently in place for workforce immigration.
- Increase the supply of places in the higher education system available to foreign students, by allowing universities to charge for courses. A payment system can be implemented in various ways.
- Simplify the system for tax relief for foreign experts through increased "automation", transparency and shorter handling times.

MEASURES TO FURTHER DEVELOP THE SWEDISH BIOTECHNOLOGY "PRODUCT"

Increase research funding of biotechnology – within the framework of an industrial policy program

Many countries are substantially increasing their national funding of biotechnology research. Sweden has still to present increases of a similar magnitude. Measures taken outside of Sweden have one thing in common; investments are made from an industrial policy standpoint – the ambition being to establish biotechnology as a future industry sector.

The image of Sweden as a country that invests heavily in biotechnology would greatly expand the scope to attract and retain the best researchers, both Swedish and foreign. It would reduce the risk of brain drain and encourage the best researchers to move to Sweden.

An industrial policy program for biotechnology needs to take into consideration the following:

- Research funds must be focused to the foremost universities and university colleges.
- Investments in product and technology platforms should be prioritized.
- Build on Sweden's traditional knowledge base in technology and industry.

Promote investments in R&D-intensive companies

Highly developed countries such as Sweden must improve its industry and business structure so that it is focused on high value-added activities. The route from innovation in a research environment to profitable company is long. Particularly in biotechnology, where it is estimated that such a process can take 10-15 years.

Considering the importance of research and development to Sweden's competitiveness, the long-term commitment required from investors, and the state of developments outside of Sweden, arguments for special incentives can be put forward. A system that allows deferral of tax payable on capital gains, providing funds are reinvested, or making private individuals' investments in R&D-intensive companies tax deductible are examples of stimulus that can be provided.

Increase coordination among national and regional players

The product development of Sweden will have the greatest effect if it is achieved through national unity and coordination among representatives of the Swedish biotechnology cluster, i.e. with representatives from the research community, the business sector, the Ministry for Industry, Employment and Communications, the Ministry for Education & Science, the Swedish Agency for Innovation Systems, etc.

At present, Sweden lacks a national strategy for biotechnology, although a commitment to that effect was made in the Lisbon strategy. At the Lisbon Summit in March 2000, heads of State and governments set the European Union the goal of "becoming the most competitive and dynamic knowledge-based economy in the world". Biotechnology was identified as a key sector to achieve this goal. Several of the proposals above could be integrated with such a future national strategy.

The investigator further recommends Invest in Sweden Agency to review working procedures and its organization with respect to "after-care" activities, i.e. the handling of relations with foreign-owned companies once they are established in Sweden. The case of Canada and Québec clearly illustrates differences in investment promotion agencies' abilities to create new jobs. Analyzing the reasons for these performance differences should be a priority.

Re. commercialization of academic research results

If Sweden in the long-term is to attract foreign investments, it is absolutely critical to have a continuous supply of new, innovations and research-based companies. This issue is frequently debated. The Swedish Agency for Innovation Systems (Vinnova) has also allocated specific funds for this.

This study agrees with "warning signals" from public authorities and in the public debate. There is an urgent need to create better mechanisms for commercialization of research results. The university environments and competence clusters that have functioning mechanisms to take innovation into enterprises will be highly attractive to foreign investors, financial and industrial investors alike.

Moving forward includes:

- Increase public resources available for seed financing.
- Evaluate the performance and competence of university incubators against peers in the US and Europe.
- Work to increase the number of technology audits at university-based incubators.
- Give universities and university colleges a clear mandate, along with incentives, to commercialize academic research discoveries. The "teacher's exemption system" should be reassessed.

Closer ties between the Ministry for Industry, Employment and Communications and the Ministry for Education & Science on issues of commercialization are also desirable.

During the course of this study a few measures have been initiated. In October 2003, the Government proposed to increase the funds available for seed financing. A reorganization of the Swedish Industrial Development was also suggested.