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BUILDING WORLD CLASS CANADIAN HIGH TECHNOLOGY COMPANIES

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Executive Summary

Although Canada has a good infrastructure in place for creating high-tech companies and growing them to a reasonable size ($10M to $20M in annual sales), very few of them become large multinational companies (sales in excess of $100 million) with their corporate headquarters in Canada. One of the reasons is that many of them are purchased by foreign buyers (mainly U.S.) at an early stage and merged into their worldwide corporate structures. It is becoming very common for such buyers to leave only the R&D function in Canada along with an administrative support function and carry out all other functions (Selling, Marketing, Operations, etc.) elsewhere in their corporate structures.

Canada should not place impediments in the way of such takeovers but should aggressively pursue policies that would encourage Canadian buyers to play a stronger takeover role, not just in Canada but around the world, particularly in the United States. The following steps are proposed in that pursuit:

a) Larger pools of venture capital should be assembled so that larger injections of capital are made in the early stage of a company's development; this could have the effect of growing companies faster in their early years and making them less susceptible to early buyout.

b) Larger pools of "buyout" capital should be assembled; particularly those aimed at facilitating management buyouts.

c) Labour-sponsored venture capital firms should be encouraged to form syndicates that would participate in buyouts; at present, they are only allowed to buy treasury shares.

d) In their pursuit of "investment capital" governments at all three levels should understand the differences between "strategic" and "financial" buyers and focus more of their efforts on Canadian-based "financial" buyers.

e) Statistics Canada and Canadian industry (not just the high-tech industry) should agree on what constitutes a “head office” after a company is taken over so that a meaningful debate can be carried out on the so-called “hollowing out” phenomenon.

f) Statistics Canada should measure the foreign direct investment (FDI) into Canada’s high-tech industry (FDI is currently broken out by six industry sectors, none of which are high-tech). It should also measure Canada’s direct investment (CDI) abroad in the same way.

1. Introduction

Canada has developed a good infrastructure for creating high-tech companies. Most of our publicly funded laboratories have technology transfer offices that help researchers and potential investors identify exploitable technology at an early stage. The Industrial Research Assistance Program (IRAP), administered by the National Research Council of Canada (NRC) makes money available to early stage companies to bring products to market. Recent changes to the capital gains tax structure have made it easier for private investors (known as angels) to become involved in the launching of new companies. The country's Scientific Research and Experimental Development Program (SR&ED) is one of the most generous of its kind in the world. At the municipal level, a number of entrepreneurship centres have come into existence during the last decade to assist entrepreneurs with business planning and interaction with potential investors. And the network of labour-sponsored venture capital companies (LSVCCs) that has been developed in the last two decades has resulted in the availability of venture capital for the early stages of a company's growth and the creation of a critical mass of venture capital expertise.

Notwithstanding the above infrastructure, there is a concern among industry watchers about our inability to grow many companies to the point where they can be meaningful players in the global high-tech industry. One of the reasons for this is that many of our high-tech companies get purchased by foreign companies (mostly U.S. companies) at a relatively early stage and become integrated into their worldwide corporate frameworks. Because the assets of a high-tech company (mostly know-how) are transportable throughout North America (and even the world), the buyers of such companies tend to rearrange them in such a way that the Canadian companies become branch plants that carry out only one or two functions such as research and development (R&D). They will be referred to in this paper as truncated companies.

While such companies can generate significant employment and other economic benefits, it is not an overstatement to say that they are limiting Canada's chances of ever becoming a major multinational player in the high-tech industry. The reasons for this will be examined later in this paper but a major one is that the Canadian high-tech managers of such companies do not receive the same exposure to head office jobs as their U.S.

counterparts do and do not experience the challenge of corporate decision-making from a worldwide perspective. This in turn limits the effectiveness of such companies as incubators of spin-off companies. The situation would be more acceptable if Canadian high-tech firms were purchasing U.S. high-tech firms at a rate proportional to our relative populations and Canadians were given equivalent opportunities to guide the affairs of branch plants in the U.S. (and around the world) but this is not happening. It is difficult to draw any conclusions on this perceived imbalance from the Statistics Canada data because it does not refer specifically to the high-tech industry, but anyone who has even a minimal knowledge of the Canadian high-tech industry knows that there is a huge imbalance in favour of the U.S.

This paper will examine a number of issues related to foreign takeovers of Canadian high-tech companies so that the debate on the subject can be carried out with the best long-term interests of Canadians in mind. It will not call for any form of protectionism that would limit foreign takeovers but it will present ideas that could result in more Canadian participation in the financing of Canadian high-tech companies, particularly those that are reaching the level of maturity where they are takeover candidates. While this paper will make some recommendations as to how this can be achieved, its primary purpose is to elevate the quality of the debate on the subject.

2. The Current Debate

The problem being addressed is a subset of one that was raised about two years ago by a Conference Board of Canada report that claimed that the loss of head office jobs could be a greater threat to Canada's economy than the brain drain. The same message was delivered by senior Bay Street executives who blamed the problem on high taxes, a weak currency, and confusing securities regulations (The Ottawa Citizen, December 9th, 2003). The term "hollowing out" has emerged as the main identifier of that debate.

A report issued by Statistics Canada in December 2003[1] shows that there is no significant decrease in the number of head office jobs in Canada. The report will not convince the skeptics, particularly those in Canada's high-tech industry, primarily

[1] *Hollowing-out, Trimming Down or Scaling Up? An Analysis of Head Offices in Canada, 1999-2002.*

because their definition of a head office is dramatically different than that used by Statistics Canada.

To illustrate the distinction, the high-tech industry would argue that once a Canadian high-tech company is taken over by a U.S. buyer and its operations are completely merged into those of the parent company, its Canadian head office no longer exists. Its legal name may remain the same but there is no local decision-making of the type that one normally associates with a head office. As will be seen later in this paper, the degree to which this is true will depend on the type of buyer and other factors, but in the highly mobile and communications-intensive high-tech industry, it is not unusual for the newly acquired branch plant to be stripped of all strategic functions such as business planning and market research. While by law it must maintain a board of directors (and in fact, at least 25% of the directors must be Canadian residents) the board will not play the normal governance role of approving the company's strategic plan and taking corrective action when it is not meeting its targets. The best people to take on those duties are the senior managers in the parent company. This is a fact of multinational life.

The Statistics Canada report also shows that the number of head office jobs is not decreasing and has actually increased marginally during the 1999-2002 period. This is not surprising given the Statistics Canada definition of a head office. A certain amount of administrative work (payroll, invoicing, government compliance, etc.) will always be required to support the branch plant no matter how it has been restructured. For example, if it has been stripped of all its activities except R&D, its head office employment might actually grow faster than if it had remained a "multi-function" company (to be defined later as an integrated company) because its R&D team will probably take on additional projects for its parent company. The Canadian R&D team could then grow at the same rate as that of the parent company overall, which is likely to be higher than the growth rate of the Canadian company before takeover. The "head office" employment will have to grow accordingly. However, the composition of that employment will be very different than it would have been if the company had remained a Canadian-owned company.

It is obvious that if the "hollowing out" debate is to have a successful outcome that will help Canadian policy makers, more attention must be paid to the definition of a head

office. As has already been implied, that will depend on the degree to which the company has been merged into the parent company and on how the company is managed on a daily basis. At one extreme, it is left performing only one function such as R&D while at the other extreme it maintains all those functions that are required to bring its own proprietary products to market. The former will be referred to as a truncated company in this paper and the latter will be referred to as an integrated company.

3. Truncated versus Integrated Companies

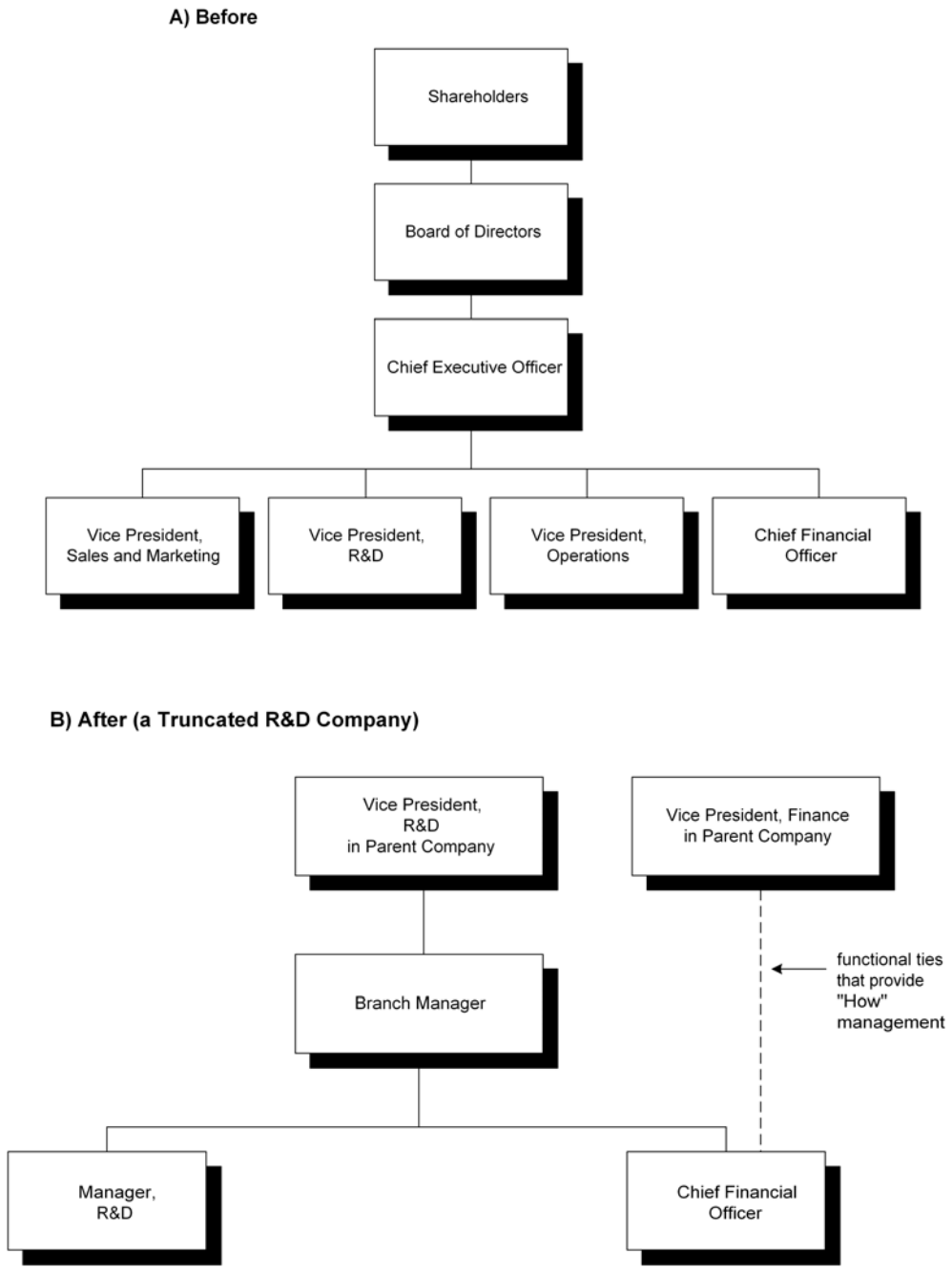
While some of the discussion which follows may appear to be critical of how multinational companies operate, it is not meant to be. Canada has benefited tremendously from foreign investment over the years. However, what our policy makers should understand is that the economic and social payback from foreign investment in a Canadian high-tech company can vary dramatically depending on the type of investment.

For example, it would be difficult to argue against inviting U.S. venture capital (VC) companies to participate in a venture capital deal that is led by a group of Canadian VC firms. However, if at some stage, that U.S. VC decides to buy out all or most of the other investors and take operational control of the company, the employees of the company should understand that it will likely be significantly restructured and if the senior managers still wish to have strategic responsibility, they will likely have to move to the United States.

Figure 1 is intended to illustrate the difference between a truncated company and an integrated company. In this case, the truncated company has been left with an R&D function only, whereas the original integrated company also had its own Sales/Marketing department and its own Operations department. The truncated company will be left with a General and Administration department but its activities will be different than they were before – as will the R&D department. The three senior managers remaining in the truncated company (branch plant) are the branch manager (the former CEO), the R&D manager (the former V.P. of R&D) and the chief financial officer (CFO). The branch manager reports to the corporate VP of R&D and the Canadian manager of R&D reports to him or her, as does the CFO. However, the CFO also has a “functional” reporting

relationship to the corporate CFO that delivers "how" management to complement the "what" management delivered by the branch manager.

Figure 1: *The Organization of a Truncated Company Before and After Takeover*



The responsibility for actually producing the product on which the R&D is based is assumed to be transferred to the parent company as is the distribution responsibility (sales and marketing). In some cases, the branch plant will be left with the responsibility for producing the product and will therefore have an Operations department as well as an R&D department. In the case of an R&D branch plant, its revenues will be derived by billing the parent company for the R&D services performed. Such billings will be at cost plus a mark-up for administrative overhead and profit.

Even though the branch plant may grow faster and larger than if it had remained an integrated company, it is not likely to produce the same economic benefits per headcount. First of all, the branch plant is not likely to share in the parent company's profit to any great extent. Its only profit will be what the parent company decides to leave in Canada and since Canada's corporate tax rate is at or near that of the U.S., that profit will be set at the minimum allowed by Canadian tax authorities.

The above discussion has concentrated on how a truncated company would interact with the parent company. As will be seen later, there are some types of investors (to be defined later as financial investors) who do not integrate the Canadian subsidiary into a parent company but allow it to carry on with its original business. It will be referred to as an integrated company and its organization chart will look like Part A of Figure 1 except that the CEO may report to a senior vice president on operational issues in the parent company instead of to a Canadian board of directors. As stated earlier, it will still have a Canadian board of directors but it will not provide strategic direction to the president. Before leaving the subject of truncated versus integrated companies, it is useful to speculate on the impact that truncated companies might be having on another topic that is attracting a lot of attention from policy makers and industry watchers, namely Canadian productivity.

4. The Impact of Truncation on Productivity Measurement

The only market for the truncated branch plant's output is the parent company and its sales are roughly equal to the wages paid to the Canadian R&D staff and the administrative group that supports it, as well as whatever profit is left in Canada. Figure

2 shows the income statements for an integrated high-tech company doing $10 million in annual sales and an R&D branch plant (a truncated company) with the same annual sales. It should be noted that the sales per employee is $200,000 for the former and $125,000 for the latter. The major difference is in how the overall corporate profit is distributed.

Figure 2: *Income Statements for a Truncated Branch Plant and an Integrated Company*

(All Figures in $ Thousands - except employment)

		Before Takeover		*After Takeover*
Sales		10,000		10,000
Cost of Sales		5,000		9,000
Gross Profit		5,000		1,000
Operating Expenses				
Sales & Marketing	1,500		0	
R&D	1,500		0 *	
General & Admin.	800		800	
Total Operating Expenses		3,800		800
Profit before tax		1,200		200
Tax		400		60
Profit after tax		800		140
Employment		50		80
Sales per employee		200		125
Profit per employee		16		1.75

* The branch continues to do R&D but it is now in the Cost of Sales line because R&D is its only deliverable to the parent company.

Some states in the U.S. have legislation that forces parent companies to distribute their profits in such a way that branch plants in those states are as profitable as the parent company is, but Canada does not have such legislation. (This paper does not advocate such a policy because it would reduce the pressure on our governments to keep our taxes in line with those of our major trading partners.)

One of the implications of high levels of foreign ownership in Canada's manufacturing industries (particularly the ownership of truncated companies) is that it could affect productivity measurements because they are based on output divided by the cost of production and that output is measured by sales revenue. The Canadian R&D group is likely just as efficient as a U.S. counterpart doing R&D but its productivity is not

measured in terms of lines of software code written per hour (for example) but by what someone pays for those lines of code. In the high-tech industry, the productivity of an entire sector such as telecommunications will be measured and because the sales per employee is lower in a Canadian truncated plant (due mainly to transfer pricing) it will appear to be less productive than its U.S. parent or a U.S. telecommunications company. The situation is even worse if productivity is based on profit per employee.

It is beyond the scope of this paper to investigate transfer pricing as a factor in Canadian productivity measurements, but it is a subject that requires more study, particularly in an industry like high-tech.

5. Strategic Buyers versus Financial Buyers

The companies that buy Canadian high-tech companies fall into two broad categories:

- Strategic buyers – companies that are in the same line of business and are interested in acquiring new technology, products and services that can be added to their existing operations.
- Financial buyers – companies that buy and sell operating companies on a regular basis.

What happens to a Canadian company after takeover is usually very different with the two types of buyers. In the case of a strategic buyer, the company is very likely to be merged with the parent company, whereas with a financial buyer it is more likely to remain integrated, at least to a greater extent. There are variations on how various buyers operate and it is not always easy to distinguish between the two types defined above. There are strategic buyers that have financial arms and there are financial buyers that are in the business of merging several of their investee companies.

Figure 3 lists some of the factors that should be of concern to Canadian policy makers and indicates how they are likely to be impacted by the two types of buyers. It suggests that companies that are taken over by financial buyers are likely to generate more long-term economic benefits for Canada than strategic buyers. However, this assumes that the Canadian company has good technology, good products, promising markets and

good management and that all it needs to grow is capital. This is not always the case. Obviously, a strategic buyer has a greater capacity for correcting deficiencies in any of the areas than does a financial buyer.

Figure 3: *Impacts of Strategic versus Financial Buyers*

(On a scale of 1-10)

Local Impact	Strategic Buyer	Financial Buyer
Degree of Truncation	8	2
Prospect for Growth in Canada	3	7
Canadian Management Autonomy	2	5
Productivity (as currently measured)	2	7
Taxes Paid in Canada	1	6
Potential for Spin-offs	2	8
Employment Stability	3	9
Prospects for Growing World Class Companies	2	8

One general conclusion that can be drawn is that if Canada wants more R&D activity it should pursue policies that will attract strategic buyers, but if it wants to grow large world-class companies, financial buyers are a better bet. (As will be discussed later, an even better strategy for growing large world-class companies might be to encourage Canadian financial buyers to become more involved in Canadian high-tech investments.)

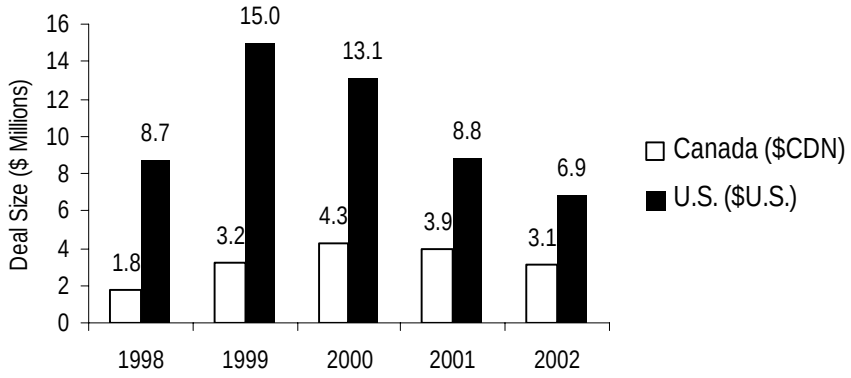
By far the majority of foreign takeovers of Canadian high-tech companies have been by strategic buyers and the level of integration (i.e. truncation) has been very high. It raises the question of how a more balanced situation can be achieved. One of the issues worth investigating is whether Canadian companies are being put up for sale too early in their development cycle and are therefore of interest mainly to strategic buyers who have the in-house expertise to turn them into profitable enterprises.

6. Are Canadian Companies Being Sold Prematurely?

While there are no statistics on the rate at which Canadian high-tech companies are being taken over relative to U.S. companies, there is a perception that Canadian companies are being put up for sale at an earlier stage of their corporate development

than is the case in the U.S. One of the reasons for this might be in the way Canadian companies are launched in the first place. It is a well-known fact that the amount of venture capital going into the launching of firms is much lower in Canada than in the U.S. Figure 4 shows that the average venture capital deal in Canada is less than half what it is in the U.S.

Figure 4: *Average Venture Capital Deal Size*



Source: Macdonald & Associates Limited and Venture Economics.

It raises the question of whether the growth of Canadian high-tech companies is limited by the amount of venture capital they attract. What is known is that investors on both sides of the border typically want to exit from their investments in five to seven years after they have made them. But unless their investee companies have reached some semblance of sustainability (e.g. positive cash flow) by this time, the market for such companies is very limited. They are likely to be of interest only to companies that are already in a similar business and have the financial and human resources to put them on a new growth trajectory. The acquired companies are more likely to be highly truncated than if they are taken over by financial investors.

There are many reasons why Canadian venture capital deals are smaller, but the main one is that the individual pools of venture capital are smaller. Another is that labour-sponsored funds (which are now a major source of venture capital in Canada) have limitations on the percentage of their funds that can go into a given investee company and on the percentage of the company that they can own.

What this might suggest is that Canada should encourage the formation of larger pools of venture capital and reduce restrictions on the percent of ownership by Canadian VCs. It is a topic that requires more research and analysis.

7. Liquidity Options for Canadian Investors

The options available to early stage investors in Canadian high-tech companies fall into the following categories:

a) *Sell controlling interest to a strategic investor.* Unfortunately, Canada has very few large high-tech companies that can play this role.

b) *Sell controlling interest to a financial buyer.* While Canada does have financial institutions that are capable of playing this role, they are more comfortable with investing in companies outside the high-tech sector.

c) *Sell controlling interest to current management and employees.* This usually requires an investment by a venture capital company whose mandate allows it to buy secondary shares. LSVCC's are only allowed to buy treasury shares.

d) *An initial public offering (IPO) of its shares.* Most investors are very cautious about IPOs because of the length of time required for them to liquidate their holdings on a Canadian stock exchange.

From a policy perspective, Canada should be pursuing policies that would encourage the Canadian version of option b) as well as options c) and d). However, the fact of the matter is that an IPO is not generally available to the early stage investors, particularly if their investee companies are being put up for sale prematurely. An intermediate stage of financing will be required and the best option for Canada if it is to build world class integrated companies is to pursue a combination of a Canadian version of b) and c). A recent report by Goodman and Carr[2] indicated that there is a growing interest on the part of private equity managers in Canada in buyout activity and that 15% of all private equity fund managers list it as their preferred focus of activity. This is at about the same level as "expansion" and "mergers and acquisition" financing. This is an activity that warrants monitoring by our policy makers.

[2] *Private Equity in Canada 2002, Volume 1 – Goodman and Carr.*

8. The Availability of Buyout Capital in Canada

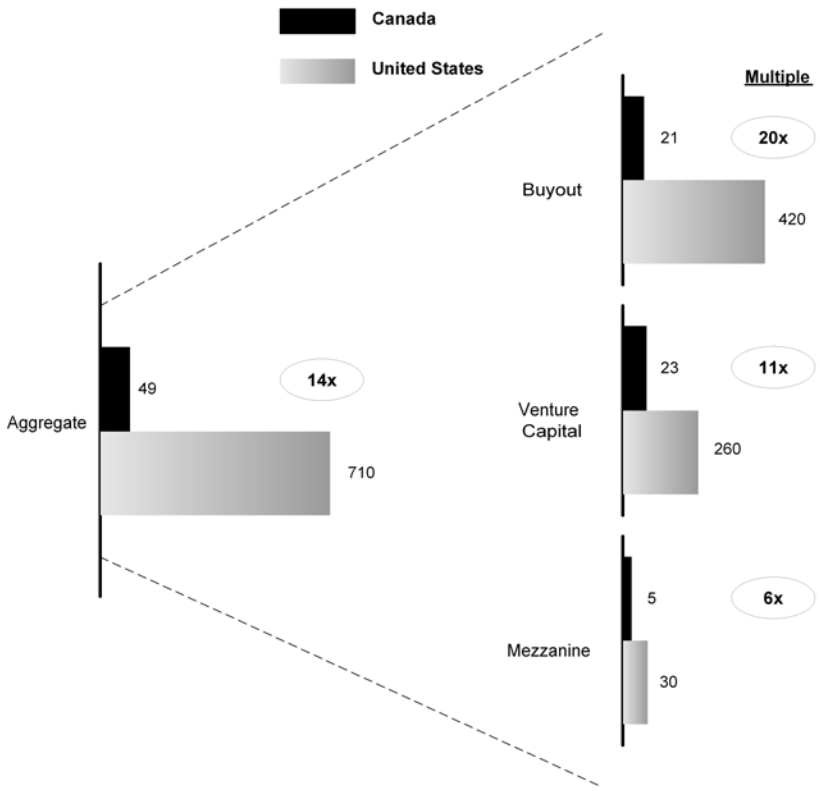
Statistics are available from Macdonald and Associates in Canada and Venture Economics in the U.S. on the breakdown of the pool of private equity capital under management in the two countries by the following categories:

- *Buyout* – money available for buying a controlling interest in companies.
- *Venture capital* – money available for buying equity in companies at all stages of their development.
- *Mezzanine* – money available for strengthening the balance sheets of companies prior to an IPO.

Figure 5[3] shows a comparison of the sizes of the three pools in Canada and the U.S. in 2002. The U.S. had 20 times as much buyout capital as Canada under management, eleven times as much venture capital and six times as much mezzanine capital. This would suggest that there could be a shortage of buyout capital in Canada. Figure 6 conveys the same message in a slightly different way. It shows that the venture capital industry in many other industrialized countries is much more active in buyouts than it is in Canada. Whatever the reason for the shortfall, it should be investigated by policy makers and industry watchers who become involved in the hollowing out discussion, particularly in view of the high level of investor interest in buyout activity referred to in the last section.

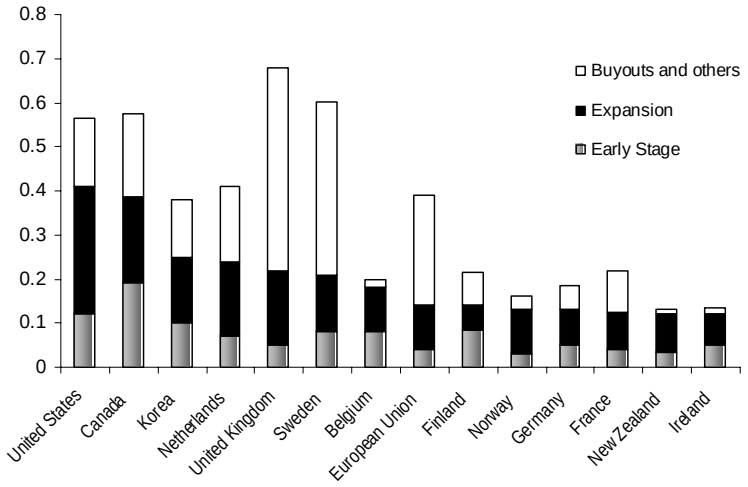
[3] *Private Equity in Canada 2002 – McKinsey and Company.*

Figure 5: *Total Private Equity Capital under Management (2002)*
(Local Currency, $ Billions)



Source: Macdonald & Associates Limited, Venture Economics, McKinsey & Company.

Figure 6: *OECD Venture Capital Investment by Stage as a Percentage of GDP (1998-2001)*



Source: OECD Venture Capital Database, 2002.

9. The Intelligent Pursuit of Foreign Investment

Officials from all three levels of government dedicate a lot of their economic development efforts to “attracting investment”. At the federal level, they are concentrated on venture capital of all types. At the provincial and municipal levels they are concentrated more on attracting branch plants. None of them make a distinction between the establishment of a new branch plant and the takeover of an existing Canadian company nor between a strategic buyer and a financial buyer.

Because of the economic advantages of financial buyers over strategic buyers, the federal and provincial governments should identify the Canadian financial institutions that could fill the role of financial buyers and make similar representations to them. They should also focus more of their external efforts on financial buyers.

10. The Ottawa-Gatineau Region – A Case Study

If data exists on CDI and FDI as it applies to Canada’s high-tech industry, we were not able to locate it. One of the recommendations that will be made in the next section is that such data be accumulated. In fact, the term “information” is used because the data will obviously have to be subjected to further analysis so that it can be turned into information that will be useful in the hollowing out debate. A closer look at the Ottawa-Gatineau high-tech cluster will illustrate this point.

On a per-capita basis, the Ottawa-Gatineau and Kitchener-Waterloo areas are the most prolific in Canada in terms of new high-tech company formation. While both areas have had a reasonable number of companies that went on to become world-class companies with strategic head offices in Canada (e.g. Cognos in Ottawa-Gatineau, Open Text in Kitchener-Waterloo) they have each had a high percentage of foreign takeovers.

It was beyond the scope of this project to carry out a comprehensive analysis of takeovers in either area, but the work done by Doyletech Corporation in the 2002 updating of its Ottawa-Gatineau “Family Tree” of high-tech companies provides rough approximations for both new company formation and takeovers. We estimate that

between the period from 1993 through 2003, between 100 and 125 were taken over by foreign buyers. A list of the major takeovers is included as Appendix A. Further analysis would be required to determine the timing of the new company formations and the takeovers.

It would be interesting to determine how many Ottawa-Gatineau companies have taken over foreign companies during this same period. Doyletech's database does not specifically track this information but we are aware of less than twenty such takeovers. In one case it was a foreign-owned Canadian company purchasing another foreign-owned company at the direction of its parent company.

11. Recommendations

As stated in the introduction to this paper, the primary purpose of this paper is to elevate the quality of the "hollowing out" discussion and to give it a high-tech perspective. The following are some recommendations that are aimed at both objectives.

a) Define a head office more precisely. If "head offices" are to be used as a basis of measurement, there should be an agreement between Statistics Canada and the industry as to what they are. If a suitable definition cannot be found, some other parameter should be used to reflect the "hollowing out" concerns that were raised by the Conference Board and Bay Street executives a few years ago.

b) Canada should encourage the formation of larger pools of venture capital and allow LSVCCs to take controlling positions in their investee companies.

c) LSVCCs should be allowed to invest in secondary offerings of shares and not just treasury shares.

d) Canada should encourage the formation of pools of capital that would facilitate management buyouts.

e) The federal and provincial governments should find ways of making the Canadian stock exchanges a more viable exit option for early stage investors in

high-tech companies. At the present time, the major brokerage firms do not provide coverage on high-tech companies until after their shares have had an extended trading history.

f) Better information should be made available on CDI and FDI as it applies to the high-tech industry.

12. Conclusion

This paper has been written on the assumption that Canadian policy makers want to position Canada as a global player in the worldwide high-tech industry. In order to achieve that goal it will not only have to create a favourable environment for foreign-owned branch plants but it will have to grow several world class companies with the majority of corporate decision-making carried out in Canada. Examples of such companies are Nortel Networks, Cognos, ATI Technologies, OpenText, McDonald Detweiller Associates, and Research In Motion.

While Canadians can be proud of their R&D skills and achievements in nearly every field of technology, more attention should be paid to ways and means of commercializing more of the resultant technology in Canada. This will require the development of a financing industry that is capable of launching companies properly and of taking financial control of them when the original investors decide to exit their investments.

Disclaimer

Denzil Doyle, a co-author of this report, is Chairman of Capital Alliance Ventures Inc. and a partner in Fullarton Capital Corporation. The views expressed in this report are not necessarily those of either of these firms or any others with which he is affiliated.

Appendix A – Major Foreign Takeovers of Ottawa-Gatineau High-Tech Companies (1993-2003)

Ottawa Technology Firm	Acquiring Company	From	New Name	Still in Ottawa?
ASI	NCR	USA	//	no
Computing Devices Canada	General Dynamics	USA	General Dynamics Canada	yes
ProMIRA	Manugistics	USA	//	no
Innovative Fibres	Alcatel	France	//	no
MessageWise	Quest Software	USA	Quest Software	yes
Canshop.com	LuxurySquare.com	USA	//	no
Sylvain Faust International	BMC Software	USA	//	no
Instantel Inc.	InterAir LP	USA	Instantel Inc.	yes
Ait Ltd.	3M	USA	3M-AiT, Ltd.	yes
Ankari (American Biometric Company)	ActivCard	USA	ActivCard Canada	yes
Senstar	Magal Group of Companies	Israel	Senstar-Stellar Corporation	yes
DY 4 Systems Inc. (Business Unit of Force Computers, a Solectron Co.)	Curtiss-Wright Corporation	USA	DY 4	yes
Interactive Circuits & Systems Ltd.	Radstone	UK	Interactive Circuits	yes
Targa Systems	L-3 Communications	USA	Targa Systems Division L-3 Communications Canada Inc.	yes
Magardi	Subex Systems	INDIA	Subex Systems	yes
Loran International	Peregrine	USA	//	no
Saraide	InfoSpace	USA	//	no
Hovey Industries Ltd.	Railworks	USA	Hovey	yes
Akara Canada Inc.	Ciena	USA	Ciena	yes
Optenia	LNL Technologies	USA	LNL Optenia	no
Object Technology International Inc.	IBM	USA	Object Technology International Inc.	yes
Filtran Ltd.	API Electronics Group Inc.	USA	Filtran	yes
Lumonics Inc.	GSI	USA	GSI Lumonics	yes
Capulum Cable	Volex	UK	Volex Canada	yes
VISION* Solutions division of Systemhouse)	Autodesk	USA	Autodesk Canada	yes
Signal9 Solutions	McAfee.com	USA	McAfee (Network Associates)	yes
Northeastern Solutions	Entuition	USA	Entuition Canada	yes
Precise Software	ARC International	UK	ARC International	no
Simware	NetActive	USA	NetActive	yes
OLAP@WORK	Business Objects	France	Business Objects Canada	yes
Corel	Vector Capital	USA	Corel Corp.	yes
FastLane Technologies	Quest Software	USA	Quest Software	yes
G&A Imaging	ImageWare Systems	USA	ImageWare Systems (ID Group)	yes
JetForm	Adobe Systems	USA	Adobe	yes
Killdara Corporation	enLeague Systems	USA	enLeague Systems Canada.	yes
ObjecTime	Rational Software	USA	Rational Software Canada Co.	yes
Nitidus	Parametric (PTC)	USA	Parametric Technology (Canada) Ltd.	yes
The Puffin Group	Linuxcare	USA	Linuxcare Canada	yes
Tarian Software Inc.	IBM	USA	IBM	yes
The Object People/consulting&education division	BEA Systems	USA	BEA Systems	yes
The Object People/products division	WebGain	USA	WebGain Canada, Inc.	yes
ATMOS Corporation	MoSys	USA	MoSys Inc. Canada	yes
Philsar	Conexant Systems	USA	Conexant Systems Inc.	yes

Skystone Systems	Cisco	USA	Cisco	yes
SOLIDUM Systems Corp.	IDT	USA	IDT Canada	yes
Cadabra	Numerical Technologies	USA	Synopsys, Inc.	yes
Sybarus	Lucent	USA	Agere	yes
DesignPRO	Altera	USA	Altera Ottawa Technology Center (Intellectual Property Business Unit)	yes
SpeechFront	Nuance	USA	//	no
Nortel inhouse PDI Lab	SCI Systems	USA	//	no
Nortel inhouse semiconductor production operation	STMicroelectronics	Switerzland	//	no
Prism Printed Circuits	UPE	USA	UPE Canada	yes
Beduin	Sun Microsystems	USA	Sun Microsystems	yes
IDS/Scintrex Trace Division	Control Screening	USA	Control Screening	yes
MicroLegend Telecom	Performance Technologies	USA	Performance Technologies	yes
Consultronics	Spirent Communications	UK	Spirent	yes
Newbridge Networks	Alcatel	France	Alcatel Canada	yes
CrossKeys Systems	Orchestream	UK	Metasolv	yes
Northwood Geoscience	Marconi	UK	Marconi Canada	yes
Vienna Systems	Nokia	Finland	Nokia	yes
Fleet Technology	BMT	UK	BMT Fleet Technology Ltd.	yes
Chrysalis ITS	Rainbow Technologies	USA	Rainbow-Chrysalis	yes
YOUtopia.com	800America.com	USA		
CivicLife.com Inc.	800America.com	USA		
cs-live.com	800America.com	USA		
Ebiz4biz	800America.com	USA		
Systemhouse	EDS	USA	EDS Canada	yes
GeoTrain	Global Knowledge	USA	Global Knowledge Canada	yes
Taima	Convergys	USA	Convergys Canada	yes
TrueArc Corporation	Documentum	USA	Documentum	yes
CAL Corporation	EMS Technologies	USA	EMS Satcom	yes

Source: compiled from Doyletech Corporation databases (not a complete list).