

Intellectual Property Rights and the Canadian Pharmaceutical marketplace: Where Do We Go From Here?

By Joel Lexchin

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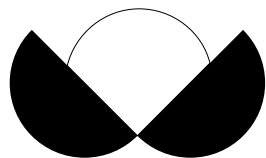
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Executive summary

Introduction

Patent protection for prescription drugs has a long and contentious history in Canada. Between 1969 and 1987 Canada had a system of compulsory licensing which meant that generic copies of brand name drugs could come onto the market within 5 to 7 years after the original drug appeared. Bills C-22 and C-91, passed as part of Canada's commitment to various trade deals first weakened and then abolished compulsory licensing. Now the issue of intellectual property rights has returned to the agenda partly as a result of the Romanow Report but also because drug companies, through their organization Canada's Research-Based Pharmaceutical Companies (Rx&D) are pushing for more patent protection. The House of Commons Industry, Science and Technology Committee is holding hearings on "evergreening," the practice whereby the brand name companies can delay the marketing of generics but there are other significant issues with respect to patent protection.

In order to decide on a future course of action that Canada should take with regard to intellectual property rights (IPRs) it is useful to review downstream effects in Canada that resulted from C-22 and C-91. This paper will examine changes to employment, Canada's balance of trade in pharmaceuticals, investment in research and development and finally drug expenditures. Second, it will review the arguments advanced by the pharmaceutical industry in favour of stronger protection for IPRs. Recently, there have been complaints made against Canada at the World Trade Organization (WTO) regarding pharmaceutical IPRs and these and other contemporary issues are the subject of the third section. The fourth sec-

tion deals with the second draft text agreement of the Free Trade Area of the Americas which will, if implemented, have significant repercussions on pharmaceutical IPRs. Patents distort the marketplace for drugs in a number of ways and the fifth section will briefly touch on half a dozen of these. Finally, the paper concludes with some alternative recommendations on the future of IPRs.

The environment since 1987

The multinational companies claim that the liberalization of the patent laws has increased employment in the industry. While employment is up compared to 1990, it is also up proportionately more in the generic industry. Although there are more people doing research and development their numbers do not match the number of salespeople the industry employs.

Before Bill C-22 was passed in 1987 Canada had a negative balance of trade in pharmaceuticals of \$491 million, but by 2000 this had ballooned to \$4059 million. Moreover, imports are becoming a larger and larger part of the Canadian market, so that by 2000 they represented over 75%.

Research and development by the multinationals increased from 1987 to 1997 but has been declining ever since as a percent of total sales. Here in Canada, basic research makes up about 16% of all R&D compared to 24.5% in the United Kingdom and 36% in the United States. Even compared to smaller European countries Canada is behind in R&D spending.

Although the Patented Medicine Prices Review Board, established in 1987 through Bill C-

22, has kept the price of individual drugs down, it has done nothing to curb increasing overall drug expenditures. Between 1975 and 1987 spending on prescription medications went from 6.3% of the health care dollar to 7.0%; since then it has risen to 12.0%.

Industry's argument for expanded IPR protection

The crux of the industry's argument for stronger intellectual property rights protection is that it needs the time to recoup its investments in order to be able to afford the costs entailed in the research and development of new drugs, drugs that may be more expensive than existing ones but are also more effective and/or more safe.

Profit levels in the pharmaceutical industry compared to other "high tech" industries in the mid 1990s was over 15% on capital employed compared to 10% for electronic products and 9% for telecommunications carriers. Despite what the industry regards as inadequate patent protection it was still highly profitable in Canada.

Most new drugs do not offer any significant improvement over existing therapies. Out of 455 new patented drugs introduced into Canada from 1996 to 2000 only 25 were major improvements or breakthroughs.

A recent study reports that it costs over US \$800 million to develop a single new drug but there are reasons to doubt that figure. It excludes drugs that are combinations of previously available medications and reformulations of existing products (e.g., new dosage forms) and drugs developed with funding from nonindustry sources such as government, hospitals, foundations or medical schools. Public Citizen Congress Watch, an American consumer group, looked at an earlier figure of US \$500 million to develop a new drug and recalculated that the amount should

actually only be US \$110 million in out-of-pocket costs.

Finally, we don't have accurate figures about how long drug companies have monopolies before generics enter the market. Rx&D claims that it is 10 years but it could be up to almost 2 years longer.

Current IPR issues

There have been two separate complaints against Canada at the World Trade Organization (WTO) in the past few years. As a result of those complaints Canada had to pass legislation that will give 30 drugs extra patent protection resulting in an extra \$40 million in drug costs and that will delay the entry of generic products.

Industry organizations in Canada and the United States are still unhappy with Canadian IPRs. They claim that we do not give adequate protection to the safety data that the multinational companies develop and let the generic companies use this data, which is contrary to the rules of the WTO. Their other major criticism is that we are not enforcing the Notice of Compliance (NOC) "Linkage" Regulations sufficiently strongly. The linkage regulations stop Canada from allowing a generic drug on the market until it can show that it has not violated any of the brand name manufacturer's patents. In the United States where a similar rule exists, President Bush has recently announced that he will limit the multinational companies' ability to use this rule because the companies have been abusing it.

The Free Trade Area of the Americas (FTAA) Agreement

The FTAA is an agreement that if negotiated will set up a free trade area covering every country in North, Central and South America and the Caribbean except Cuba. If passed in its current form

it could have serious repercussions on drug patents in Canada. It could result in longer patent terms to make up for regulatory delays in granting patents and approving new drugs, despite a WTO ruling that this is not a “legitimate interest” within the meaning of the TRIPS agreement. Rules around data protection will be hardened limiting the ability of generic companies to use this type of information. The equivalent of the NOC Linkage Regulations would be written into the agreement meaning that if Canada ever wanted to change these rules it would need to reopen the entire FTAA agreement. Finally, although Canada currently does not use compulsory licensing for drugs, the FTAA would make it much more difficult for Canada to change its mind in the future.

How IRPs distort the pharmaceutical marketplace

The large majority of drugs produced through research led by the patent incentive do not represent any significant therapeutic advances. Industry largely engages in R&D of products that are aimed at carving out a share of a lucrative market. Since most drugs offer little or no therapeutic advantage over existing remedies then it stands to reason that most of the money spent on R&D is going into products that will build market share not products that will necessarily result in significantly better health outcomes. In order to capture market share drug companies spend about \$1.7 billion on drug promotion in Canada and more than ten times that amount in the U.S. Gaining a competitive edge on rival firms leads to a restriction in sharing of research results and delays in publication of findings because of commercial concerns. Communication is the lifeblood

of science and if it is impeded so is scientific research. Without knowing what others are doing scientists may be needlessly repeating work. Drug companies spend millions in legal costs filing and protecting patents and in lobbying fees to make sure that politicians know the industry’s point of view. In Canada, industry supporters such as Deputy-Prime Minister John Manley receive tens of thousands of dollars in contributions from drug companies. Large sums are also spent supporting consumer and patient groups which then appear to speak with an independent voice in support of industry positions.

Where does Canada go from here?

If we accept the argument that intellectual property rights are necessary for the development of new pharmaceuticals then the question becomes how much patent time is required to ensure that companies continue to invest in new drug R&D. The only attempt to have an independent look at the drug industry’s books to determine this figure was thwarted in the U.S. Supreme Court. Therefore, we are forced to rely on self-reported numbers from the industry.

A more fundamental question is whether or not the patent system is even necessary. A recent American study argued that at a certain point it becomes less expensive to fund R&D from public sources rather than continuing to rely on the patent system and private enterprise. The extra public funds that would be required would be more than made up for in savings on drug costs. These numbers come from the American context and may or may not apply equally well in Canada but they should serve to start a debate about whether or not the patent system is the best way to fund pharmaceutical R&D.

Abbreviations

BMS	Bristol-Myers Squibb
CCOHTA	Canadian Coordinating Office for Health Technology Assessment
CGPA	Canadian Generic Pharmaceutical Association
EU	European Union
FTA	Free Trade Agreement
FTAA	Free Trade Area of the Americas
IPR	Intellectual property rights
NAFTA	North American Free Trade Agreement
NOA	Notice of Allegation
NOC	Notice of Compliance
PhRMA	Pharmaceutical Research and Manufacturers of America
PMPRB	Patented Medicine Prices Review Board
R&D	Research and development
Rx&D	Canada's Research-Based Pharmaceutical Companies
TRIPS	Trade Related Aspects of Intellectual Property Rights
USTR	United States Trade Representative
WTO	World Trade Organization

Introduction

Intellectual property rights (IPR) and patent issues are key factors in determining how much individual drugs cost and the overall level of expenditure on drugs. In the 1980s and 1990s Canada first limited compulsory licensing for pharmaceuticals (Bill C-22) and then abolished it (Bill C-91). Since Bill C-91 was passed there has been a review of the patent legislation in 1997. That review reaffirmed Canada's commitment to a 20 year patent period but made no concrete recommendations for any reforms or changes in the patent system.¹

The recently released report of the Commission on the Future of Health Care in Canada (Romanow Report) once again raised the issue of pharmaceutical patents.² Romanow was critical of the practice of "evergreening," "where manufacturers of brand name drugs make variations to existing drugs in order to extend their patent coverage. This delays the ability of generic manufacturers to develop cheaper products for the marketplace and it is a questionable outcome of Canada's patent law. Furthermore, regulations under the patent law require generic drug manufacturers to demonstrate that their product is not infringing on a patent held by another drug manufacturer rather than putting the onus on the patent drug manufacturer to show that their patent has been infringed – what is referred to as the notice of compliance regulations. Suggestions have been made that this leads to "pre-emptory" lawsuits from patented drug manufacturers as a way of delaying the approval of generic drugs." Romanow recommended that the federal government examine the issue of the "what constitutes a legitimate extension of patent protection."

The Liberal government is extremely reluctant to tackle the issue of drug patents. More than a dozen Liberal cabinet minister staffers and Liberal campaign strategists are working on behalf of multinational pharmaceutical companies.³ In October 2001, Brian Tobin, then Industry Minister, wrote in a letter to the Canadian Drug Manufacturers Association (now the Canadian Generic Pharmaceutical Association), the generics lobby group, that the government was committed to keeping patent laws "among the most modern and progressive in the world." He did not repeat a past promise to revisit the regulations, and instead offered only a noncommittal reassurance: "Departmental officials will continue to monitor them on an ongoing basis to ensure they are working as intended." After September 11 2001, while Alan Rock was Health Minister he defended officials in his Ministry who threatened to use compulsory licensing to acquire sufficient stocks of the antibiotic ciprofloxacin should there be a threat of the release of anthrax by terrorists. However after his first cabinet meeting as Industry Minister, Rock affirmed his commitment to Canada's patent law, saying it was "there to protect and encourage innovation and to reward those with new ideas. That's how civilized societies do that, by granting a period of market protection, so people who have innovated can be rewarded." Appearing before the House of Commons Standing Committee on Industry, Science and Technology in May 2002, Rock repeated his defense of the current patent system.⁴

In June 2002, the Industry, Science and Technology Committee voted to review the use of "evergreening" tactics by the pharmaceutical industry. Initially the review was to begin following

the summer 2002 parliamentary recess.⁵ Opponents of the review pushed the item down the committee's agenda and finally in April 2003, two Liberal members of parliament were allegedly brought in as alternate committee members and voted to postpone the review to late June 2003 by which time the House of Commons was likely to have recessed for the summer.⁶ This decision was later reversed, likely as a result of adverse publicity. The committee has decided to only hear testimony from government officials and representatives of the brand name and generic drug industries. The Clerk of the committee explained, in a letter, that this decision to restrict the hearings was the result of the "narrow scope of the inquiry" and the "committee's very full schedule." (Jean François Pagé, personal communication, May 20, 2003). Others believe that the reason that other people are not being heard is a desire on the Liberal government's part to make sure that wider issues around pharmaceutical patents are not brought up.

Romanow's report and the committee hearings are only addressing one of the many contemporary debates in Canada around intellectual property rights and patent protection. Canada's Research-Based Pharmaceutical Companies (Rx&D), the organization representing the multinational companies with subsidiaries in Canada (along with some Canadian owned biotechnology companies), is currently arguing for better data protection on research, better enforcement of IPRs and patent term restoration. It makes the point that the United States, the European Union and Japan offer patent term restoration of up

to five years, in recognition of the time needed for clinical development, and the delays in getting the regulatory approvals.⁷ In return for movement on these and other issues the industry is promising to substantially increase investment in research and development (R&D) with the ultimate goal, of achieving a pharmaceutical innovation ranking of fifth or higher among Organization for Economic Cooperation and Development members.⁸ (Interestingly, there is no firm time commitment put on this promise.)

In order to decide on a future course of action that Canada should take with regard to IPRs as they apply to pharmaceuticals it is useful to review downstream effects in Canada that resulted from C-22 and C-91. This paper will examine changes to employment, Canada's balance of trade in pharmaceuticals, investment in research and development and finally drug expenditures. Second, it will review the arguments advanced by the pharmaceutical industry in favour of stronger protection for IPRs. Recently, there have been complaints made against Canada at the World Trade Organization (WTO) regarding pharmaceutical IPRs and these and other contemporary issues are the subject of the third section. The fourth section deals with the second draft text agreement of the Free Trade Area of the Americas which will, if implemented, have significant repercussions on pharmaceutical IPRs. Patents distort the marketplace for drugs in a number of ways and the fifth section will briefly touch on half a dozen of these. Finally, the paper concludes with some alternative recommendations on the future of IPRs.

I. The environment since 1987

1. Changes to employment

Increases in employment are often cited by the multinational industry as one benefit of liberalizing the Canadian patent laws. According to figures in the latest publication from Rx&D, the multinational association, employment by member companies went from 14,521 in 1987 to 20,990 in 1999.⁹ However as the Table 1 shows overall employment has increased relatively little in the pharmaceutical industry since 1990.

Table 1: Level of employment in pharmaceutical industry 1990-1999¹⁰

Year	Total number of employees
1990	20,426
1991	21,450
1992	21,720
1993	21,046
1994	19,611
1995	19,663
1996	20,701
1997	20,854
1998	21,840
1999	22,306

Some of that change in employment levels has probably come from the generic industry. Up-to-date figures for the generic industry are not available but from 1990-1995, employment in this sector rose from 1531 to 3631 for an annual increase of just over 27%.¹¹ In the same time period, the number of people employed in the multinational sector went up by 1971,¹² less than the increase for the generic companies and on an annual basis the rate of rise in employment was just 2.5%.

The number of people employed in research and development in the pharmaceutical industry has definitely increased following the restriction and then elimination of compulsory licensing (see Table 2) but the 3580 people employed in this area in 2000 is still considerably short of the 4000 sales representatives working for the multinational pharmaceutical companies in 1995.¹³

2. Changes in Balance of Trade

From 1983 to 1987 the Canadian deficit in the trade of pharmaceuticals grew from \$366 million to \$491 million. After Canada became a party to the Free Trade Agreement (FTA) in 1987 the trade

Table 2: Changes in R&D employment, 1987-2002¹⁴

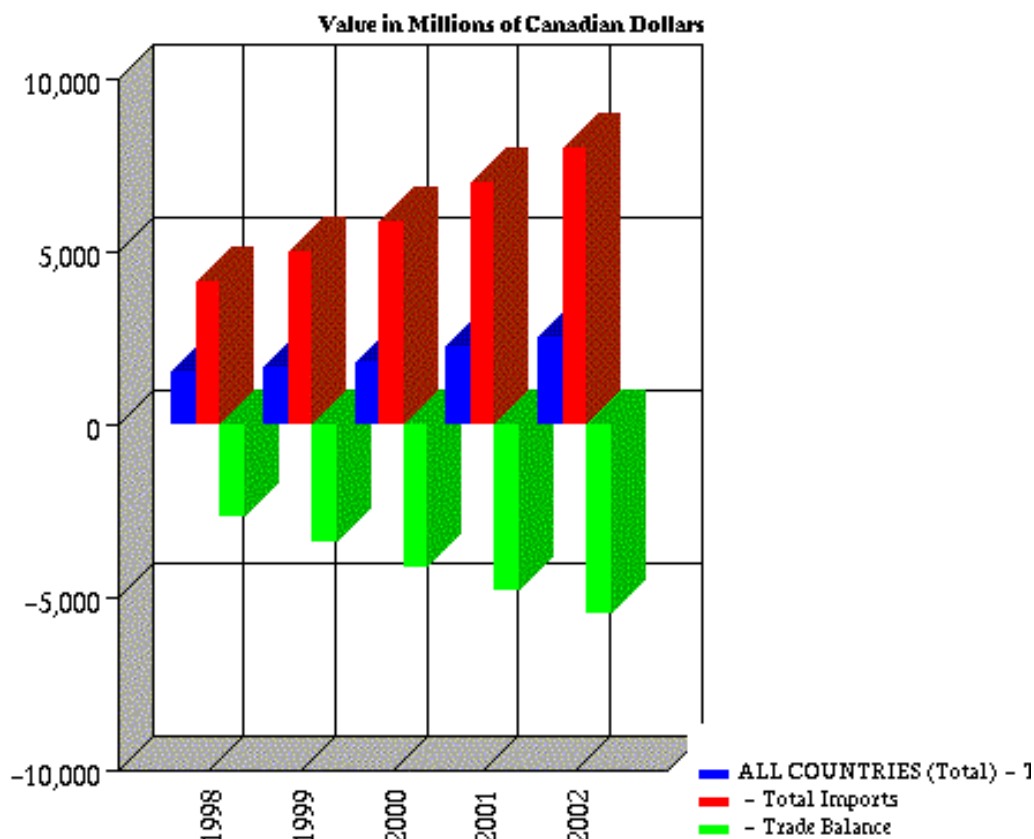
Year	Professionals	Technicians	Other	Total
1987	515	235	240	990
1989	835	320	250	1405
1991	1106	415	314	1835
1993	1299	591	341	2231
1995	1392	725	509	2626
1997	1516	715	508	2739
1999	1907	762	502	3171
2000	2115	799	666	3580

deficit went from \$624 million to \$1464 million in 1993. By 1996, Canada had the second largest trade deficit out of the 29 countries in the Organization for Economic Cooperation and Development¹⁵ and since inception of the North American Free Trade Agreement (NAFTA) (1994) and the WTO (1995) the deficit has gone from \$1612 million in 1994 to \$4059 million in 2000.^{16 17} Figure 1 gives a pictorial presentation of what has happened to the trade deficit in the last five years.

Dramatic as these figures are, they do not give a true picture of how much Canada has come to depend on imports to supply our pharmaceutical

needs. Table 3 shows the import penetration of the Canadian domestic market for the three time periods 1983-87, 1988-1993, 1994-2000. In 1983, imports were 18% of the Canadian market, in 1993 they were over 34% and by 2000 over three-quarters of the market were made up of imports. Most imports are fine chemicals that form the active ingredients in the medications that we use. Therefore, coincident with the change in the Canadian patent laws, there has been a failure to develop a fine chemical industry and pharmaceutical manufacturing has taken on more of an assembly line nature whereby ingredients are combined into their final form.

Figure 1: Balance of trade in pharmaceuticals, 1998-2002

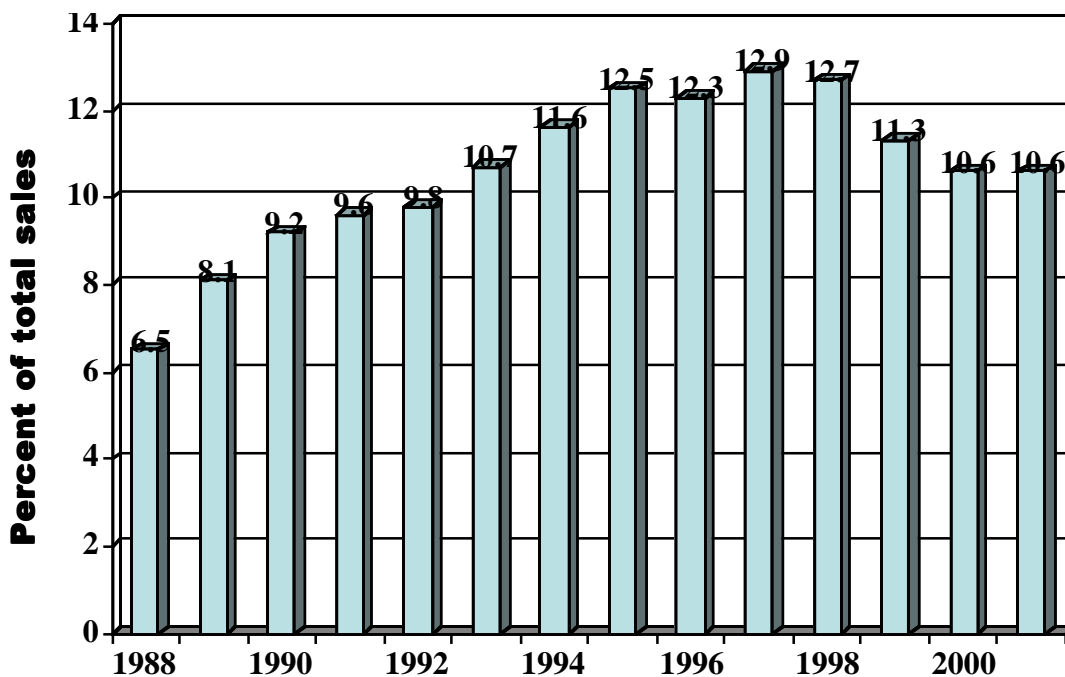


KavaChart Servlets from VE.com

Table 3: Import penetration of domestic market ¹⁸

Year	Imports as a percent of domestic market	Percent annual change
1983	18.0	0.55
1987	20.2	
1988	23.9	2.1
1993	34.4	
1994	39.2	6.1
2000	75.5	

Figure 2: R&D as a percent of sales, 1988-2001¹⁹



3. Changes in investment in research and development

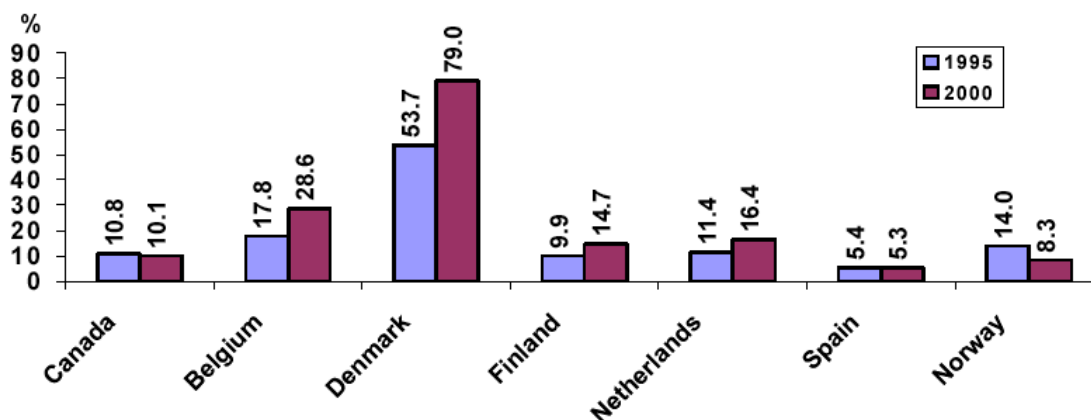
The pharmaceutical industry made significant investments in R&D since the changes in Canadian patent laws, but these advances, as measured by the R&D to sales ratio, have been eroding over the past four years. (Figure 2)

Since 1995, Canadian investment in R&D, as a percent of sales, has remained significantly below the levels in six of the seven countries that

the Patented Medicine Prices Review Board uses for price comparison purposes (France, Germany, Italy, Sweden, Switzerland, United Kingdom, United States).²⁰ Not only are we behind these major industrial countries but Canadian R&D is also lower than most smaller European countries (See Figure 3).

It is not just overall R&D spending that is of concern. More significantly, basic research and development in Canada has been dropping as a percent of total R&D. In 1990 basic R&D was 27.2% of the total; by 2001 it was just 16.1%. At

Figure 3: Canadian and European R&D as a percent of sales



that level Canada remains substantially behind countries such as the U.K. (24.5%) and the United States (36%).

4. Changes in prescription costs and drug spending

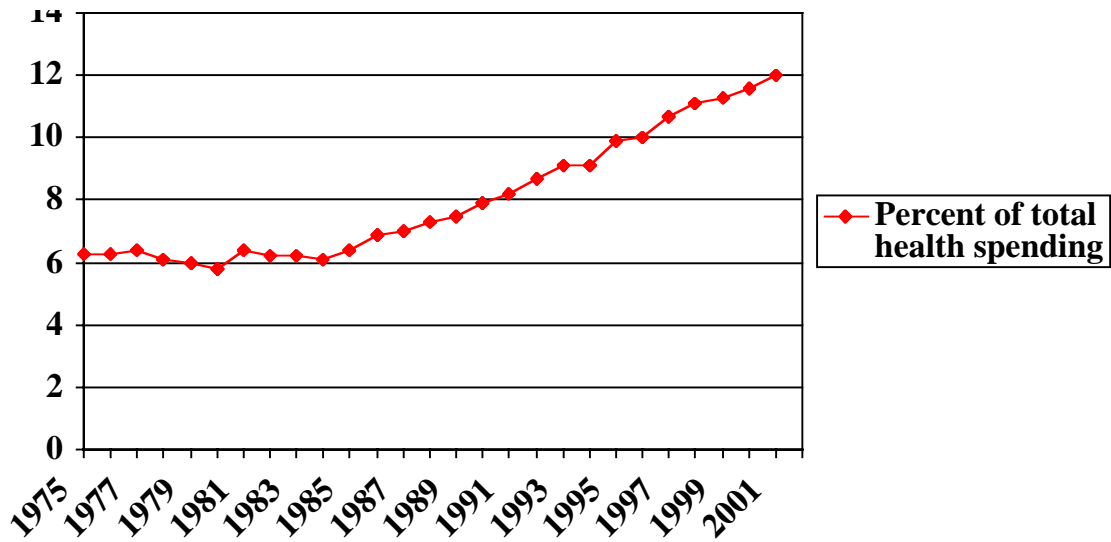
The Patented Medicine Prices Review Board (PMPRB) was established as part of Bill C-22 to protect consumer interests with powers to limit the introductory prices for new patented drugs and prevent prices for existing patented drugs from rising by more than the rate of inflation. Within this context the PMPRB has been a success. Its 2001 report demonstrates that between 1988 to 2000 the rate of inflation for the price of patented medications has risen by just 0.8% per year; when Canadian prices are compared to the average of those in seven other countries (France, Germany, Italy, Sweden, Switzerland, the United Kingdom, United States) the ratio has dropped from 1.23 in 1987 to just 0.95 in 2001. However, these figures hide a basic failure in the ability of the PMPRB to protect consumers from high prices when it comes to the price they pay for a prescription.

The price of a prescription for non-patented medications increased 2.3% annually from 1997 to 2001 to a level of \$22.94 in 2001. On-the-

other hand, during the same period patented medications went up at 6.2% annually to a value of \$84.36 in 2001.²¹ Physicians have been substituting these newer, more expensive drugs for older, less costly ones leading to the rise in the cost of the average prescription as shown by the fact that between 1997 and 2001 sales of patented medications as a proportion of total sales went from 52.3% to 65.0%.

The prescribing of newer more expensive drugs in place of older, less expensive, but not necessarily less effective, ones was not something that started in 1987. The practice was well entrenched when Canada had compulsory licensing. What is different is that after Bill C-91, the prolonged delay in the introduction of generic competitors for these new patented medications. Prior to 1987 generics were coming on the market within five to seven years after the appearance of the originator product. The first generic would typically be priced about 25% lower than the brand name product and when there were three or four generics then the price differential would be 50%.²² In the absence of compulsory licensing the originator product typically is in a monopoly situation for about 10-12 years. (The first 8 to 10 years of patent life are used up in clinical trials and the drug approval process.) Not only has Bill C-91 delayed the entry of generic products by about seven years but also by the time they ap-

Figure 4: Spending on prescription drugs as a percent of total health spending



pear sales of the brand name drug are usually starting to decline and therefore savings that result from the substitution of generic for brand name products is less.

The delay in the entry of generics is associated with a continual climb in spending on pre-

scription drugs. Between 1975 and 1987, prescription drugs went from taking up 6.3% of the health care dollar to 7.0% for an annual increase of 11.5%; in comparison the change between 1987 and 2001 was from 7.0% to 12.0%, a rise of 71% per year.²³ (See Figure 4).

II. Industry's argument for expanded IPR protection

The crux of the industry's argument for stronger intellectual property rights protection is that it needs the time to recoup its investments in order to be able to afford the costs entailed in the research and development of new drugs, drugs that may be more expensive than existing ones but are also more effective and/or more safe.

1. Profit levels

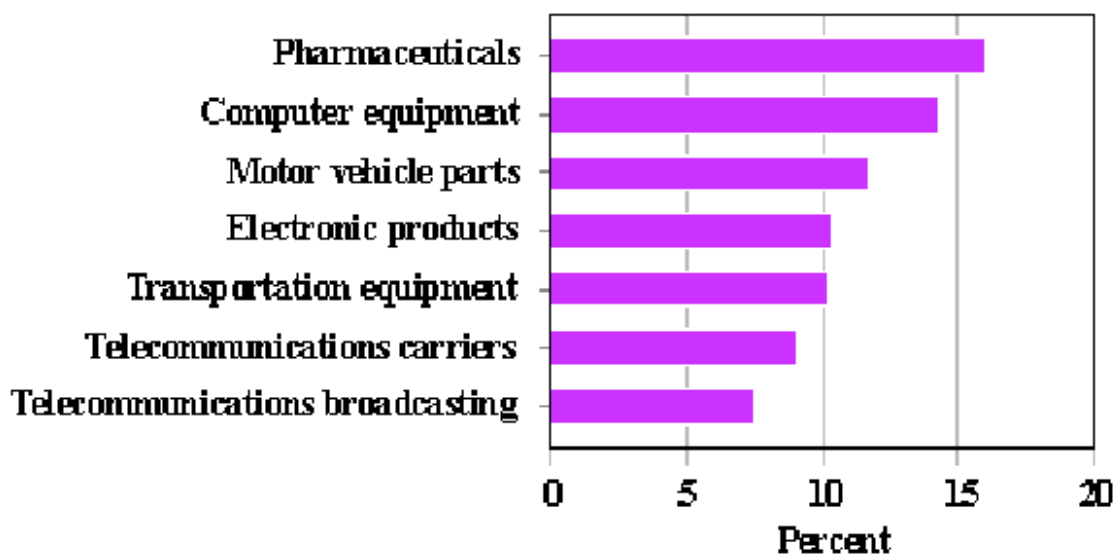
If the industry's message is that it needs a longer period of time to recover its investment then a natural starting place is to look at how profitable or unprofitable it has been. Figure 5 shows that at least until the mid 1990s the profit levels in Canada in the pharmaceutical industry were robust compared to those in other "high tech" industries.

There are often arguments that accounting profits are poor measures of the real rate of return on investment in the pharmaceutical industry. This question was investigated in the early 1990s by the Office of Technology Assessment in the United States which concluded that while other methods of calculating profits do lower the differential between the drug makers and other industries, levels are still high enough to have made the industry a relatively lucrative investment.²⁵ Despite what the industry regards as inadequate patent protection it was still highly profitable in Canada.

2. The value of new drugs

The PMPRB puts drugs into one of three categories in order to decide on the highest allowable

Figure 5: Comparative profit levels: return on capital employed, 1996²⁴



price. Category 1 is a line extension (usually a new strength of an existing medication), category 2 is a substantial therapeutic improvement or a breakthrough product (the first medication to treat an illness) and category 3 is a new product or a new dosage form of an existing medicine that provides moderate, little or no improvement over existing medicines. From 1996 to 2000 there were 455 new patented drugs introduced into Canada. Out of that total 204 were line extensions, 226 fell into category 3 and 25 or just over 5% of the total were major improvements or breakthroughs.²⁶

The Canadian pharmaceutical industry argues that PMPRB categorizations are merely for determining prices and are not a reflection of actual therapeutic value. But the same critique cannot be leveled against the evaluations made by the French drug bulletin, *La revue Prescrire*. Ever since 1981 *Prescrire* has been assessing the value of new drugs and new indications for older drugs on the French market. Over a 21 year period it has looked at 2693 drugs. A mere 7 have been rated a major therapeutic innovation in an area where previously no treatment was available and another 73 were considered products that were important therapeutic innovations but with certain limitations. By far, the majority (1780) were categorized as a superfluous new product that did not add to the clinical possibilities offered by previously available products.²⁷

Should Canada be giving the industry extra patent time to develop “me-too” drugs?

3. The cost of developing new drugs

The most recent study to look at this question reports that for drugs first tested in humans between 1983 and 1994, the mean cost to bring them to market was US \$802 million.²⁸ It should be noted that these are not costs that need to be recovered solely through Canadian sales. Canada

represents about 2% of the world pharmaceutical market and therefore a reasonable expectation is that about US \$16 million should be recouped in Canada.

Beyond the question of how much Canadians should contribute to R&D costs, there are also fundamental points of dispute around the DiMasi figure. To begin with, the data that DiMasi used were derived from information self-reported by drug companies and there is no independent way to verify this information. Second, the \$802 million amount represents the costs for only one type of drug—new chemical entities (drugs containing ingredients never marketed before) and excludes drugs that are combinations of previously available medications and reformulations of existing products (e.g., new dosage forms). About 30% of R&D expenditures go towards bringing this latter type of drug to market.²⁹ Also any drugs developed with funding from nonindustry sources such as government, hospitals, foundations or medical schools, are excluded. In computing the cost of developing new drugs, it is important to incorporate expenses for products that fail in the development stage. While many drugs are withdrawn because of safety reasons or because of lack of effectiveness, at least 20% of drugs in the development stage are terminated for commercial reasons, that is, because they are not deemed profitable enough. As Frank points out, changes in revenue expectations would lead to different decisions about drug terminations and would thus change the average cost figure. Finally, over half of the amount that DiMasi calculates is opportunity costs. The estimated out-of-pocket cash expenses by the drug companies are \$403 million.

Before DiMasi's latest study, the pharmaceutical industry was estimating the cost of developing a new drug at about \$500 million. Public Citizen Congress Watch in the United States looked at the assumptions behind that amount and came up with its own figure of an after-tax

cash outlay of just \$110 million.³⁰ Public Citizen's calculations have in turn been attacked by the pharmaceutical industry.³¹ The vigorous debate on what the true figure really is, shows that the \$802 million amount cannot be blindly accepted.

4. How long is the actual monopoly period?

The patent term in Canada is 20 years from the date of filing but the effective monopoly time for brand name drugs is shorter than that owing to the time it takes for a product to proceed through the development and regulatory approval stages. One of the arguments that Rx&D advances for increases in the patent protection period is that the effective patent life in Canada is 10 years compared to about 14 in the U.S. and 15 in the EU and Japan.³² How Rx&D arrives at the 10 year figure is unclear. Back in 1993 it was also claiming that there was 10 years of effective patent protection³³ In 1993, drug approval times were 1044

days compared to 717 days in 2001 or almost a year longer.³⁴ Somehow the decrease of a year did not get reflected in the patent life that Rx&D presented. It might be postulated that the one year gain in approval time was taken up by longer clinical testing times but that does not seem to be the case. At most, times from the start of clinical testing to the filing of a submission for approval have increased by 3.5 months during the 1990s. In the U.S. effective patent life for selected drugs is between 13.9-15.4 years.³⁵ Some of that time is accounted for by provisions not available in Canada (patent term restoration = 2.3 years, pediatric exclusivity = 0.5 years) and approval times are about 0.8 years faster in the U.S. Using these figures, Canadian effective patent times should be 10.3-11.8 years, a number roughly consistent with the calculation based on shorter approval times. The Canadian government does not independently collect information on this subject and so in the absence of reliable numbers the industry's argument for longer patent protection becomes much less compelling.

III. Current IPR issues

1. Recent rulings by the World Trade Organization (WTO)

One of the key elements that went into forming the WTO was the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement. The impact of the TRIPS agreement is still being felt in Canada. Two separate challenges were launched against Canada in the WTO in recent years. The European Union (EU) complained about a provision in the Canadian patent law that allowed generic drug companies to begin testing, manufacturing and stockpiling drugs for sale before patents expired. When Canada changed from a 17 to a 20 year patent term for drugs approved after Oct. 1, 1989, the change was not made retroactive. The United States charged that there a group of about 30 drugs which were patented before Oct. 1989 should receive an additional 3 years of patent life. (The complaint by the U.S. did not just cover drugs but patents on all products that were granted before Oct. 1989 and that were still valid.)

Canada lost the case filed by the U.S.³⁶ and the WTO also ruled that generic companies could not stockpile drugs for sale before the patent expired.³⁷ As a result of these decisions, in mid 2001 Canadian patent laws were amended once more with the passage of Bill S-17. The extension of the patent term on the 30 drugs is expected to add an estimated \$40 million to Canada's prescription drug costs according to the Canadian Drug Manufacturers Association the lobbying arm of the generic industry.³⁸ Prohibiting generic com-

panies from stockpiling drugs until the patent expires will delay the marketing of generic products for weeks.

2. Further IPR disputes

Despite the passage of S-17, and other changes that Canada has made to its patent laws in the wake of the FTA, NAFTA and TRIPS, the Pharmaceutical Research and Manufacturers of America (PhRMA), the peak organization of the U.S. pharmaceutical industry continues to complain that a variety of problems represent significant commercial barriers for its membership. Although PhRMA is concerned about price controls, regulatory delays and restrictions on provincial formulary listings, its main objection remains Canadian protection of IPR. In this regard PhRMA highlights what it sees as inadequate protection of registration data (data submitted to show that a drug is safe and effective) and the Notice of Compliance (NOC) "Linkage" Regulations.³⁹

Not only does PhRMA object to these practices because of their economic implications in Canada but it notes that if "a major developed country such as Canada is failing and continues to fail to comply with the spirit and letter of TRIPS, this will set a negative example for developing countries. Canadian practices that create a dangerous precedent should be addressed before they are adopted in other jurisdictions." A cynical interpretation of this phrase could be that the industry should make Canada "knuckle under" before other countries get "uppity."

i. Registration data

To gain marketing approval, generic companies typically demonstrate that their product is bioequivalent to a patented product (that is, that the generic is chemically similar and works the same in the human body) and then rely on the patented product's safety data to earn approval.

Rx&D notes that Canada protects registration data for 5 years compared to 6 to 10 years in Europe depending on the particular regulatory agency. Moreover, according to Rx&D, Canada has a "practice of accepting drug submission from generic manufacturers that rely upon the innovator's data within the allotted five year period." Rx&D contends that policy "effectively undermines the intent of the current data protection provision." (Data protection will be discussed further in Part IV.)

Rx&D's criticisms are echoed by its sister organization in the U.S. Based on PhRMA's reading of Article 39.3 Canada does not offer enough protection for the registration data. PhRMA argues that "Canadian authorities allow parties other than the right holder to effectively gain marketing approval in direct reliance of protected confidential data. This violates TRIPS Article 39.3 as it eliminates the TRIPS requirement to prevent "unfair commercial use" of protected data. We urge the United States to move data protection to the top of the bilateral commercial agenda with Canada." PhRMA's view on data protection was echoed in the 2003 U.S. Trade Representative's (USTR) Special 301 report: "The problems that originally caused Canada to be placed on the Watch List in 1995 remain largely unresolved. . . Canada does not provide effective data exclusivity protections . . ." ⁴⁰

What Rx&D and PhRMA do not point out, is that prolonged data protection periods mean that generic companies have to redo certain clinical tests to generate information that is already known. Not only does this delay the appearance of the generic product but it also wastes resources

and subjects patients or volunteers to unnecessary risks in duplicating the safety data.

ii. Notice of compliance "linkage" regulations

The other major area of IPR where both Rx&D and PhRMA are aggressively trying to change Canadian policy is with respect to what are termed the Notice of Compliance (NOC) "Linkage" Regulations. Under these regulations, passed in 1993 in the dying days of the Conservative government of Brian Mulroney and strengthened in 1998 and 1999, this time under a Liberal government, Health Canada cannot issue a NOC until the all of the relevant patents on a brand name product have expired. As a result when the generic company submits its application to get a product approved it also sends a Notice of Allegation (NOA) to the patent holder claiming that no patents are being infringed. If the patent holder challenges the NOA then that automatically triggers a 24 month regulatory stay which prevents the Minister of Health from granting approval to the generic and the matter then may proceed to a court hearing. The stay expires either at the end of the 24 months, when the patent expires or when the court case is decided whichever comes first.

PhRMA's position is that while these linkage regulations could provide the "basis for effective protection of pharmaceutical patent owners' rights as required under TRIPS and NAFTA. . . experience suggests that Health Canada is taking steps to avoid the necessary application of the regulations." Among other things, PhRMA claims that Health Canada has been inconsistent in its policies and practices relating to the listing and delisting of brand name companies' patents and in requiring generic companies to send a NOA; that Health Canada is continually and systematically limiting further the types of patents that can be listed on the Patent Register; that Canadian courts fail to provide effective recourse in cases

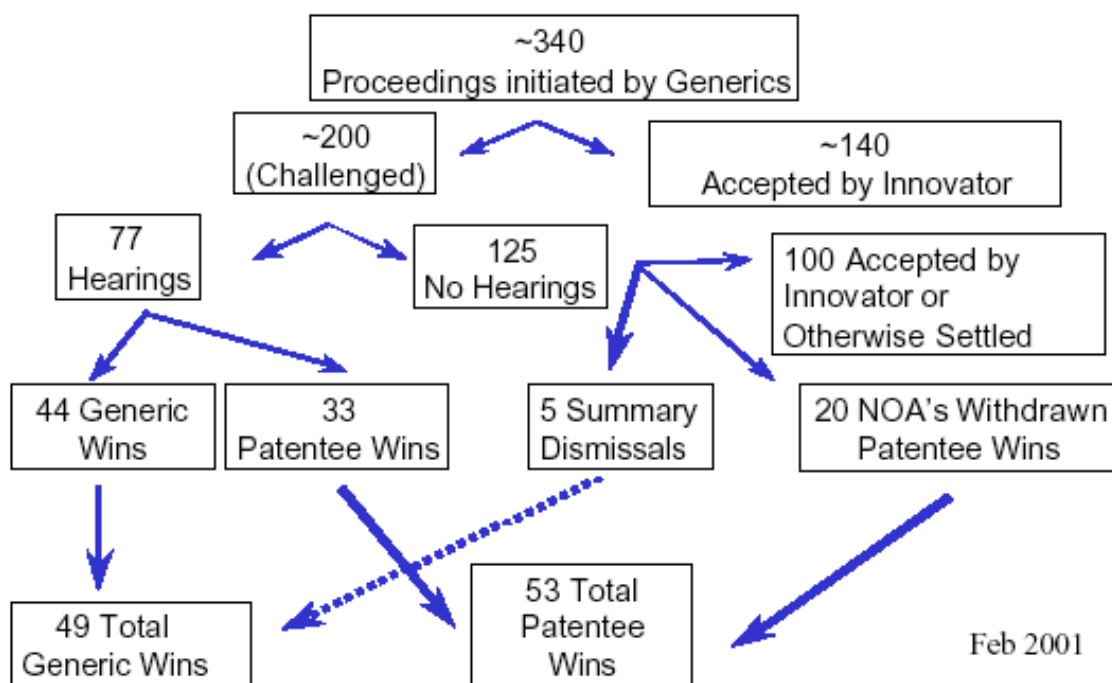
where an NOC is issued for an infringing generic medicine; and that ultimately Canadian courts are not applying standards required of them under NAFTA and TRIPS. PhRMA's ultimate conclusion is that the "USTR should attach high priority to remedying this situation."

The effects of these linkage regulations are is a subject of intense disagreement between the generic and brand name companies. The Canadian Generic Pharmaceutical Association (CGPA) claims that "not only is this abuse of Canada's patent regime extremely harmful to Canada's generic pharmaceutical industry, the Canadian public loses out on millions of dollars in savings by having to pay for the higher-priced brand-name version for an extended period of time. The delays caused by these needless court battles have cost Canadians, their governments and private insurers hundreds of millions of dollars."⁴¹ It also says that since the regulations were changed in 1998, the generic companies have won 80% of the court cases.

Rx&D counters that these regulations are necessary because "generics do not have to concern themselves with a possible interlocutory injunction to prevent infringing sales once an infringing generic product is on the market. Statistics show that this remedy is available in pharmaceutical cases approximately half as often as in other industry patent cases. Indeed, as a result of the inability of pharmaceutical patentees to obtain interlocutory injunctions to prevent the complete destruction of their intellectual property rights and market share, the "linkage" regulations are the only means for Canada to meet its international obligations to provide an effective enforcement mechanism for patents."

Rx&D also points out that the 80% success rate for the generic companies translates into 4 out of 5 cases won and presents its own figure showing that generic and patentee "wins" about balance each other out (see Figure 6). The way that Rx&D calculates the outcomes appears to show a roughly equal split in wins. However, an

Figure 6: Outcome of linkage disputes since 1993



examination of this figure shows that the brand name companies are also not above playing around with numbers. There are 125 cases where there was no hearing, in 20 cases where the NOA was withdrawn this is counted as a win for the patentee but the 100 cases where the innovator either accepted the NOA or the case was otherwise settled are not counted as wins for the generic.

A second area of contention is the use of multiple patents to delay the appearance of a generic product. The CGPA maintains that the brand name companies continually list new patents on a product, each of which can trigger a new NOA and an additional stay on the appearance of a generic. In this way, competition is delayed.

Naturally, the brand name companies dispute this interpretation. Their position is that there is always ongoing research into drugs and that it is natural that new patents will be filed, reflecting improvements such as moving from a three pill a day regimen to a once a day regimen. The multinationals say that 95% of cases all subsequent patents will be issued within 10 years of the initial patent and therefore all of the patents may be addressed in the same linkage proceeding. But if

the effective patent life is only 10 years, as Rx&D claims it is, then new patents are being filed as old ones expire. Even if patents are a couple of years longer then there can still be overlapping 24 month stays depending on when the generic company files for a NOC. According to Rx&D in that situation all the generic companies have to do is market the older version of the product on expiry of the original patent. All of this is true but it ignores the fact that the main reason for launching a new formulation of a drug is to switch doctors to that version before a generic is available to undercut the market for the generic; something that brand name companies spend millions of advertising dollars doing.

Finally, the only other country where there is a stay in the marketing of generics until patent issues are settled is the U.S. There drug makers can receive an automatic injunction of up to 30 months. In October 2002, reacting to allegations of abuse of these injunctions, President George Bush announced that he would rewrite patent regulations to limit the brand name companies to a single 30 month injunction on any single drug ending the practice of filing multiple overlapping claims of patent infringement.⁴²

IV. The Free Trade Area of the Americas (FTAA) Agreement

Negotiations are ongoing for a free trade agreement that would include all 34 of the countries of North, Central and South American and the Caribbean, except for Cuba. Although most of the draft text is still bracketed, meaning that it is still subject to negotiations there are elements in the text that, if enacted, would markedly affect IPRs in Canada.

1. Extension of patent term

Under Section 5, Article 8.2 (Part II) patent owners would be able to receive additional patent life if it took longer than 4 years to grant a patent.⁴³ However, in the case at the WTO against Canada filed by the EU, the panel ruled that this type of claim for an extension of the patent term is not a “legitimate interest” within the meaning of the TRIPS agreement.⁴⁴ Although the draft FTAA agreement does not mention extending patents to take into account the regulatory approval time, it is clear from this interpretation that this is also something that is not required by the TRIPS agreement.

2. Data protection

Section 10, Article 1.2 establishes a minimum of 5 years of data protection. NAFTA already mandates a 5 year period of registration data protection so on the surface what is being proposed in the FTAA does not appear to be any more onerous than the current requirements. However, the Federal Court of Appeal has put a specific inter-

pretation on NAFTA Article 1711 on “Trade Secrets.” The court held that “When a generic manufacturer files an Abbreviated New Drug Submission (ANDS), the safety and effectiveness of the generic product may be demonstrated by showing that the product is the pharmaceutical and bioequivalent of the innovator’s product. If the generic manufacturer is able to do so solely by comparing its product with the innovator’s product which is being publicly marketed, the Minister will not have to examine or rely upon confidential information filed as part of the innovator’s New Drug Submission (NDS). In such case, the minimum five year market protection referred to in the regulation will not apply.”⁴⁵ It is not clear that the same interpretation would be applied to the FTAA agreement article and therefore its adoption could lead to a restriction in the use of registration data with the consequences discussed above.

3. Linkage requirements

Section 10, Article 1.5(a) (Part II) would effectively impose the equivalent of NOC Linkage Regulations on all signatories to the FTAA. Right now, the linkage regulations are a Canadian requirement and can be altered by the federal government. Imbedding them in the FTAA would mean that any move by Canada to unilaterally weaken or abolish them could be challenged in a trade tribunal under the FTAA. Once part of the FTAA linkage provisions could only be changed by unanimous agreement by all parties, something that the U.S. is unlikely to ever accede to.

4. Compulsory licensing

Finally, Section 5, Article 5.1(a) (Part II) would impose more stringent conditions than the TRIPS Agreement requires for the granting of compulsory licenses. The WTO Ministerial Declaration (Doha Declaration) on the TRIPS Agreement and Public Health states “Each member has the right to grant compulsory licenses and the freedom to determine the grounds upon which such licenses

are granted.”⁴⁶ At present, the Canadian government has decided to forgo the option of using compulsory licensing but should it want to reverse that decision at some point in the future it would find its options severely limited by the proposed FTAA agreement. Under the current text, compulsory licenses would be restricted to three situations: “for public non-commercial purposes or in situations of a declared national emergency or other situations of extreme urgency.”

V. How IPRs distort the pharmaceutical marketplace

There are significant economic costs to Canada associated with using the IPR system be they in higher drug spending, more reliance on imports or a divergence of the R&D budget away from basic research. This section takes a closer look at other ways in which the patent system warps the pharmaceutical marketplace.

As we saw earlier, the large majority of drugs produced through research lead by the patent incentive do not represent any significant therapeutic advances. Industry largely engages in R&D of products that are aimed at carving out a share of a lucrative market. The result is drugs that are essentially minor variations on existing medications, for example, additions to the statin group of drugs for lowering cholesterol. Since most drugs offer little or no therapeutic advantage over existing remedies then it stands to reason that most of the money spent on R&D is going into products that will build market share not products that will necessarily result in significantly better health outcomes.

Baker and Chatani itemize an additional five ways that patent protection leads to wasteful rent seeking behaviour by pharmaceutical companies.⁴⁷ In order to capture market share for their copycat drugs companies spend about \$1.7 billion in promotion in Canada and more than 10 times that amount in the U.S.⁴⁸ In 2000 in Canada Merck spent over \$6.25 million promoting just one drug, Vioxx. Over 1 million samples were left behind in doctors' offices and there were over 1000 pages of journal ads.⁴⁹

Gaining a competitive edge on rival firms leads to a restriction in sharing of research results and delays in publication of findings because of commercial concerns. Twenty-seven per cent of

faculty in university life science academic departments who received industry support delayed publication of their results for more than 6 months compared to 17% without such support.⁵⁰ Eighty-one percent of life science companies with relationships with academic institutions reported keeping results secret for longer than was necessary to obtain a patent.⁵¹ Communication is the lifeblood of science and if it is impeded so is scientific research. Without knowing what others are doing scientists may be needlessly repeating work.

There are the direct legal costs associated with filing and protecting patents and the indirect costs that result from successful efforts such as "evergreening" that stall the marketing of generic drugs. When the Canadian Coordinating Office for Health Technology Assessment (CCOHTA) was about to release a report saying that all of the different drugs in the statin group were equivalent, Bristol-Myers Squibb (BMS), makers of one of these drugs, objected to the release of the report and went to court to block its publication. The case was eventually thrown out but not before CCOHTA spent 13% of its annual budget defending itself.⁵² Lawyers' fees for BMS are not known but must also have been substantial. A report prepared for the Canadian Generic Pharmaceutical Association looked at a group of 34 generic products estimated that each day of delay in reaching the market was associated with a cost of almost \$5500 per product.⁵³

In the United States the pharmaceutical industry employs over 600 lobbyists and spent US \$78.1 million in 2001 partly to ensure that its view about IPRs was heard by politicians.⁵⁴ Industry in Canada is also into heavy political lobbying. Deputy-Prime Minister John Manley in

his run for the leadership of the Liberal party has received tens of thousands of dollars in donations from a group of 6 pharmaceutical companies plus Rx&D. According to another Liberal parliamentarian, Manley is a key backer of the brand-name pharmaceutical industry's interests in cabinet discussions and is "part of the Praetorian Guard of status quo on high drug prices."⁵⁵

In the United States, pharmaceutical companies fund a variety of consumers' and patients'

groups which then appear to independently support positions favourable to the industry. During the 2002 U.S. elections the United Seniors Association received over US \$10 million from the drug companies to spend on television advertisements. In the 2000 American elections Citizens for Better Medicare, at its peak, was spending more than US \$1 million a week on advertisements all of it paid for by PhRMA, the industry trade association.⁵⁶

VI. Where does Canada go from here?

If we accept the argument that intellectual property rights are necessary for the development of new pharmaceuticals, and for the moment we will, then the question becomes how much patent time is required to ensure that companies continue to invest in new drug R&D. In order to estimate the appropriate period of patent protection we need to know the actual cost of bringing a new drug to market. Recall that the DiMasi figure comes from self-reported industry data. The only attempt to engage in an independent examination of industry information came during the 1970s and early 1980s when the General Accounting Office (GAO), the investigative arm of the U.S. Congress, sought financial data that would allow it to estimate research, development, marketing, promotion, and distribution costs for individual products. The drug companies objected on the grounds that the confidentiality of their cost and other data could not be protected. Ultimately the dispute went to the U.S. Supreme Court which ruled that the GAO was not authorized to collect this type of information. The end result is that we have to rely on the drug companies to accurately report their R&D costs. Both the former editor-in-chief of the *New England Journal of Medicine* and a staff report from the U.S. Senate Special Committee on Aging believe that some of the research and development budget is for marketing research;^{57 58} moreover the Senate report charges that postmarketing studies aimed at promoting unapproved uses of drugs are disguised as research. How is the Canadian government going to make decisions without having the proper information?

A more fundamental question is whether or not the patent system is even necessary. A 2002 report from the Center for Economic and Policy Research argues that as research costs rise, they will reach a point where public/not-for-profit funding will be more efficient than patent supported research. “The reason for this is that patents effectively allow private firms to charge an excise tax—the mark-up allowed by the patent monopoly—on prescription drugs. The economic distortions associated with such a tax are proportional to the square of the mark-up. Therefore, if drug companies have to charge twice as high a mark-up in order to cover their research costs, then the size of the economic distortions will be multiplied fourfold. This means that even if patent supported research is somewhat more efficient than public/ non-profit supported research on a dollar for dollar basis, at some point the distortions created by the patent mark-up must eventually offset this greater efficiency.”

Baker and Chatani go on to show that the amount of money that would be needed were all of pharmaceutical R&D to be funded through the public system would be more than offset by the lower drugs prices that would result from the absence of the patent system. Their numbers come from the American context and may or may not apply equally well in Canada but they should serve to start a debate about whether or not the patent system is the best way to fund pharmaceutical R&D.

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