A Study of the Prices of the

Top Selling Multiple Source Medicines in Canada

Prepared by the Patented Medicine Prices Review Board

November, 2002

HIGHLIGHTS

- On average, the prices of the top selling generic drugs in Canada were 35.5% lower than the prices of the equivalent brand name drugs in 2000. The generic-to-brand name price ratio was 64.5%.

- The spread between generic and equivalent brand name drug prices varied depending on the number of generic versions of the drug available. On average, the spread increased from about 25% when there were one to three generic versions on the market to 45% when there were four or five generic sources.

- The reimbursed prices for multiple source drugs tend to be similar across Canada.

- The prices of multiple source drugs in Canada were also compared to prices in nine other industrialized countries. For purposes of this report, the other countries include the seven countries used by the PMPRB for purposes of reviewing the prices of patented medicines – France, Germany, Italy, Sweden, Switzerland, the UK and the U.S. – along with Australia and New Zealand.

- Prices for multiple source drugs in Canada, both brand name and generic, were higher than in most of the other countries. On average, Canadian prices for the top selling brand name multiple source drugs were between 39% and 49% higher than the median of prices in the other countries depending on the source of US price information. Canadian prices for generic drugs exceeded the median of the foreign prices by 21% to 51%.

- Compared to Canada, prices for generic drugs were 26% lower in the UK, 32% lower in Australia, and 10% higher in Switzerland. A comparison based on published list prices for generic drugs in the U.S. showed those prices to be 248% higher than prices on the Ontario Drug Benefit formulary, but prices listed on the U.S. Federal Supply Schedule were 69% lower.

- This report was prepared by the PMPRB at the request of the federal/provincial/territorial Pharmaceutical Issues Committee and its Working Group on Drug Prices. This is the final of several studies prepared by the PMPRB pursuant to a request by the Minister of Health and a Memorandum of Understanding with Health Canada.

EXECUTIVE SUMMARY

Purpose

The purpose of this study is to investigate and report on the price trends for the top selling multiple source drugs in Canada. The study examines these questions in particular:

- What is the relationship between prices of generic drugs and the brand name equivalent? Does the ratio of generic-to-brand name drug prices vary depending on the number of generic suppliers and other factors?
- To what extent do the prices of multiple source drugs in Canada differ from prices in other countries?

This report is the final study prepared for federal/provincial/territorial (F/P/T) governments by the Patented Medicine Prices Review Board (PMPRB) under a Memorandum of Understanding (MOU) with the Minister of Health Canada. Pursuant to the MOU, the F/P/T Working Group on Drug Prices, a subcommittee of the Pharmaceutical Issues Committee, requested this study and its release was approved by F/P/T Deputy Ministers of Health on November 26, 2002.

Methodology

1. Definition of Multiple Source Drugs

Drug plans often categorize drugs as "single source" or "multiple source." A single source drug is one that is produced and sold by only one manufacturer; multiple source medicines are produced and sold by more than one manufacturer. Multiple source medicines are bioequivalent and have the same active chemical ingredient, dosage form, strength and route of administration. Ordinarily, the suppliers of a multiple source medicine include the originator brand name manufacturer and one or more generic manufacturers. In the case of multiple source medicines in Canada, the usual number of generic versions of a drug on the market ranges from one to five.

2. Sources of Domestic Price Information

Data from six provincial drug plans (British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Nova Scotia) were available for purposes of this study. The 100 top selling medicines were identified from the data for the six drug plans. These medicines represent 64 distinct active substances and a total of 496 presentations, i.e., including each strength, dosage form, and manufacturer of a medicine.

3. International Comparisons

For the most part, the international comparisons were based on prices prevailing in September 2000. The countries included were the seven countries that the PMPRB is required to use for price comparison purposes - France, Germany, Italy, Sweden, Switzerland, the UK and the U.S. - along with Australia and New Zealand. The ODB formulary was used as the source of price information for Canada. National formularies were used as the source of price information for other countries; in addition, reference

was made to published list price information in the U.S. The international comparisons were restricted to the oral, solid dosage forms of the top selling drugs.

Alternative approaches were included in the international comparisons and sensitivity analyses were conducted.

The Market for Generic Drugs in Canada

According to IMS Health, sales of generic drugs in Canada were about $1.3 billion in 2000, or approximately 11% of the dollar value of total sales by pharmaceutical manufacturers. According to the Canadian Generic Pharmaceutical Association (CGPA, formerly the Canadian Drug Manufacturers Association), generic market penetration increased to 13.8% of retail prescription sales in the twelve months ending June 2002.

Nonetheless, generic drugs represent a much larger share of the volume or quantity of drugs sold as measured by the number of prescriptions filled. It is estimated that they accounted for about 40% of prescriptions in 2000. The CGPA estimates that generic market penetration by volume of prescriptions ranged from 35% in Quebec to 46% in Saskatchewan in 2002. Most public drug plans in Canada require or encourage generic substitution, i.e. that a lower cost generic drug be dispensed if one is available.

Since 1993, the Ontario Drug Benefit program has limited the prices of generic drugs for purposes of the ODB formulary; currently, the price of the first generic entry on the formulary is limited to 70% of the price of the equivalent brand name drug and subsequent entries are limited to 90% of the price of the first generic (70-90 policy).

There are about 12 companies in the generic drug industry. The CGPA reports that the two largest firms account for 62% of the generic market.

Main Findings

1. Relationship of Generic to Equivalent Brand Name Drug Prices in Canada

Prices listed in the ODB formulary were used to compare the ratio of prices of generic drugs to the equivalent brand name drugs. Previous studies of the prices of patented medicines have shown that the prices listed in the ODB formulary provide good approximations of average ex-factory prices for medicines in Canada.

The analysis showed that the average ratio of generic-to-brand name prices was 64.5% in 2001, relatively unchanged since 1996. In other words, prices of the top selling generic drugs were 35.5% below prices for the comparable brand name drugs. These results are not surprising in light of the 70-90 price limit policy for generic drugs in Ontario.

The analysis showed some differences in the ratio depending on the number of generic suppliers. Despite the ODB policy, generic prices, on average, exceeded 70% of the brand name prices when there were one to three generic suppliers; in these cases, the generic-to-brand price ratio ranged from 72.2% to 78.9%. The ratio declined considerably to 54.6% when there were four generic versions available.

2. International Comparisons

The U.K., U.S., Canada and Germany are among the countries that have a significant utilization of generic medicines. In the U.K., 76% of National Health Services (NHS) prescriptions are written generically and generic medicines account for 53% of prescription times dispensed in the community, in the U.S., generics accounted for approximately 45% of all prescriptions and 40% in Canada and the Germany. In Australia and New Zealand, generics accounted for approximately 10% of the prescription market share. The generic sector is less significant in France, Italy, Sweden and Switzerland. Many of the countries used for comparison purposes in this study regulate the price of generic medicines in some manner.

On average, prices for the top selling generic drugs in Canada were higher than in most other countries. Compared to Canada, generic drug prices were 24% lower in Germany, 26% lower in the UK, 32% lower in Australia and 68% lower in New Zealand. Average generic drug prices were 10% higher in Switzerland

In the U.S., where there is no universal drug coverage, the publicly-available prices for generic drugs varied considerably. Prices listed on the Federal Supply Schedule (used by U.S. government agencies) were 69% below the ODB prices for the top selling drugs; on the other hand, prices derived from published lists were 248% higher than prices in Canada. We were not able to identify a recent study showing estimates of ex-factory generic drug prices in the U.S. net of discounts and rebates, but one recent U.S. government report concluded that the actual acquisition costs paid by retail pharmacies for many generic drugs were 72% below published wholesale prices.

Another way of comparing prices is to compare the ratio of prices to the median of foreign prices. For the top selling multiple source drugs in this study, Canadian prices for generic drugs, on average, were higher than the median of prices in the nine other countries; on average, Canadian prices for generic drugs were between 21% and 51% higher depending on the source of U.S. price information. When the U.S. is excluded, this difference was 49%.

The results also showed that the prices of brand name multiple source drugs were higher in Canada than in most other countries. On average, Canadian prices for the top selling brand name multiple source drugs were between 39% and 42% higher than the median of prices in the other countries depending on the source of US price information. When the U.S. is excluded, this difference was 54%. Limiting the analysis to those countries used by the PMPRB for patented drugs (France, Germany, Italy, Sweden, Switzerland, the UK and U.S.) prices for brand name multiple source drugs in Canada were 28% to 33% above the median foreign prices; by comparison, prices for patented drugs in Canada were 10% below median prices in 2000 and 5% below in 2001.

Conclusion

On average, prices for the top selling generic drugs in Canada in 2000 were over 35% lower than prices for the equivalent brand name drugs. Nonetheless, prices for the top selling multiple source drugs in Canada, both brand name and generic, were significantly higher than in most other countries.

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Introduction

In March 1997, the Federal/Provincial/Territorial (F/P/T) Task Force on Pharmaceutical Prices prepared an overview paper that provided a description of the pharmaceutical sector in Canada. The paper contained a summary of existing information on drug prices, spending and mechanisms used by private and public payers for regulating and/or influencing pharmaceutical prices and expenditures.[1] The Task Force has since further examined amongst other things, price and expenditure trends, price levels and cost drivers as they relate to prescription drugs reimbursed by six provincial drug plans.

As of June 1999, the F/P/T Task Force on Pharmaceutical Prices was reconstituted as a working group of the F/P/T Pharmaceutical Issues Committee (PIC), *Working Group on Drug Prices (WGDP).* PIC is responsible for joint F/P/T activities on pharmaceutical issues.

For purposes of this study, six provinces, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Nova Scotia, provided access to public drug plan data.

Background

Recent years have witnessed dramatic changes in the global pharmaceutical business. Efforts to stem the rise of healthcare costs have increased the focus on the cost and cost-effectiveness of pharmaceutical therapy. The pharmaceutical market is characterized by extensive government interventions affecting the demand and supply of pharmaceuticals. In addition to direct controls, government interventions that have implications for pricing include patent protection, trade restrictions, approval processes, subsidies and cost-containment policies.

Drug plans often categorize drugs as “single source” or “multiple source.” A single source drug is one that is produced and sold by only one manufacturer; multiple source medicines are produced and sold by more than one manufacturer. Multiple source medicines are bioequivalent and have the same active chemical ingredient, dosage form, strength and route of administration. Ordinarily, the suppliers of a multiple source medicine include the originator brand name manufacturer and one or more generic manufacturers. Generic drugs are multiple source medicines, but brand name drugs may be single source or multiple source.

In Canada, the Patented Medicine Prices Review Board (PMPRB) regulates the prices of patented drugs to ensure that they are not excessive. Since its jurisdiction applies to medicines to which a Canadian patent pertains, it classifies drugs as patented or non-patented witjout regard to whether they are single source or multiple source. Ordinarily, new medicines are protected by one or more patents and are sold as single source drugs during their patent life. When a key patent expires, (or when a compulsory licence was issued under the law in effect prior to 1991) a medicine might become multiple source if and when a generic manufacturer begins to supply it.

Generic drugs are ordinarily introduced at a lower price than the brand name equivalent and consequently their availability may introduce competition in the market for that medicine which can play an important role in helping to contain increasing healthcare costs.[2] Total sales of generic manufacturers are estimated at approximately $929 million

in 2000, an increase of 15.2% from 1999.[3] According to the Canadian Generic Pèarmaceutical Association, generic drugs have represented approximately 40% of prescriptions filled in Canada since 1996, up from 26% in 1990.[4] This increase no doubt reflects, at least in part, the policies of most public drug plans to promote and encourage the use of generic drugs wherever possible.

The WGDP has estimated that in 2000 multiple source medicines, including the originator brand name and generic versions, accounted for about 40% of total spending on prescription medicines in the six participating provincial drug plans (British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Nova Scotia.)[5] Previous studies examined multiple source drug price variations across jurisdictions using information from the six provincial drug plans. Analyses based on provincial administrative drug plan data showed some price variations across the jurisdictions. In addition, comparisons of generic-to-brand name drug price ratios across the jurisdictions revealed that generic drug prices had increased relative to their brand name competitors over time.[6]

The previous studies were based on drug plan data. As a result, previous conclusions about inter-provincial differences are confounded by several factors, including differences in data collection processes, definitions, pharmacy practices, and cost reimbursement policies. In order to gain further insight into the prices of multiple source medicines, the WGDP identified further work in this area as a priority. This report focuses on the examination of national and international prices of top selling multiple source medicines at the ex-factory gate price (or prices charged by manufacturers) in order to gain further insight into the Canadian multiple source drug market.

Purpose

The principal purpose of this study is to investigate the relationship between the prices of the brand name and generic versions of top selling multiple source medicines across the participating jurisdictions in Canada and compare average Canadian prices for these medicines to prices in other countries.[7] The analysis aims to provide information that will assist in developing future evaluation criteria of price reasonability and in addressing the question of how Canadian generic drug prices compare to other nations.

The first section of the report provides an overview of the methodological approach used in the analysis. The second section focuses on assessing the domestic prices and trends of the multiple source medicines at the ex-factory (manufacturers') price level as well as the retail level as reported by six provincial drug plans included in the analysis. The third section compares Canadian price levels of multiple source medicines relative to international prices.

Methodology

Overview

The domestic analysis and the international analysis are based on the same basket of 100 multiple source medicines that were identified as the top selling multiple source drugs in Canada.[8] Top selling status was determined using provincial drug plan data from the six participating provincial drug plans at the bioequivalency level; data from Health Canada and individual public drug plans were used to identify drugs that are considered bioequivalent for the purpose of the study.

The sample of drugs included in this analysis represents 64 unique molecules and accounts for approximately 40% of the expenditures on multiple source drugs in the six provincial drug plans. With a few exceptions, most of the drugs included in the analysis are non-patented drugs. The basket includes 496 Drug Identification Numbers (DINs), which identify drugs at the levels of manufacturer, medicine, dosage form and strength.

The prices used in the study do not attempt to account for discounts, free goods and other less transparent forms of price reductions offered to pharmacies. Except when indicated, prices do not take into account manufacturer incentives (discounts) that may be offered in some countries to large private and public sector buyers. The study does not attempt to attribute or calculate the effect of different government interventions on the observed price differences.

A comparison of generic-to-brand name prices was conducted using Ontario Drug Benefit (ODB) formulary prices over a period of 1996 to 2001. A further analysis looking at inter-provincial prices was also conducted at the retail level; defining retail pricing is based on drug plan adjudication data submitted by pharmacies. For this part of the analysis, two types of prices are used, the drug price claimed by the pharmacist to the drug plan and the price accepted by the drug plan in fiscal year 1999-2000; both of these prices include the patients' portion of the drugs cost, i.e., co-payments and deductibles and are thus relatively comparable across the different drug plans. The international analysis uses September 2000 as the period of analysis and includes a comparison of Canadian ex-factory gate prices with prices reported for nine OECD countries including: Australia, France, Germany, Italy, New Zealand, Sweden, Switzerland, the United Kingdom and the United States. The analysis is based on both brand name and generic prices. The ODB formulary prices were used to represent Canadian prices for the purpose of the international comparison.

The median unit price over all available package sizes and manufacturers in each of the countries was used as the basis for the analysis. Deriving a comparable unit price across numerous manufacturers producing varying pack sizes is a challenge for any international price comparison. Sensitivity analyses on defining the unit price were conducted to test the robustness of the approach chosen as the focus of this study and are presented in Appendix III. The sensitivity analyses used different measures of price (e.g., maximum and minimum prices), different weighting schemes, and different measures of package size in conducting international comparisons.

Two different approaches were used to address the issue of most relevant package size. One approach excludes unit prices for package sizes that may be seen as unrepresentative of the prices actually paid on average in each of the countries included in the comparison. IMS data was used to identify the smallest and largest sizes sold in Canada; for other countries package sizes smaller than 15% of the smallest Canadian package sold, or larger than 185% of the largest package sold were excluded in the sensitivity analysis. In the second approach, IMS data was used to identify the package size most frequently dispensed in Canada; this package size was used to identify the most relevant international comparisons, all other package sizes were then excluded from the analysis.

The international analysis of the top 100 multiple source medicines ranks Canadian prices for both brand and generic products relative to the nine other countries based on maximum, median and minimum prices calculated from publicly available sources (see Appendix IV). The generic market shares in each of the countries are estimated based on a survey of recent literature and the number of manufacturers producing the medicines included in the analysis is also presented.

Generally speaking, redefining the price measure or weighting scheme and/or the package size did not change the general conclusions presented in the main text; see Appendix III for the sensitivity results.

Definition of "Generics"

A generic drug product is an equivalent version of a brand name product, ordinarily marketed after patent expiry of the original product.[9] Once a drug is off-patent, other manufacturers can compete in the market with the original manufacturer.

In Canada, generics have the following characteristics:

- the drug is no longer protected by patents, or it is sold under compulsory licensing under pre-1993 legislation;
- competition among manufacturers is mainly based on price;
- promotion is aimed at pharmacists rather than doctors; and
- in some cases a brand name company may produce a generic version of a drug sometimes called an ultra-generic drug to compete with the generic manufacturer.

Multiple source products include both generics and the original brand name. The total market for multi-source products is therefore always larger than for generics.[10]

Drugs Included in the Analysis

Claims data from six provincial drug plans, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario and Nova Scotia were used to identify the top selling 100 multiple source medicines in Canada in 1999-2000. Of the sample, 96 had a match in at least one of the countries included in the international comparison. The analysis was limited to tablets and capsules in order to ensure accurate unit price measurements domestically and internationally. Oral, solid dosage forms offer the most reliable comparisons over entire markets of generic and brand products in many countries.[11]

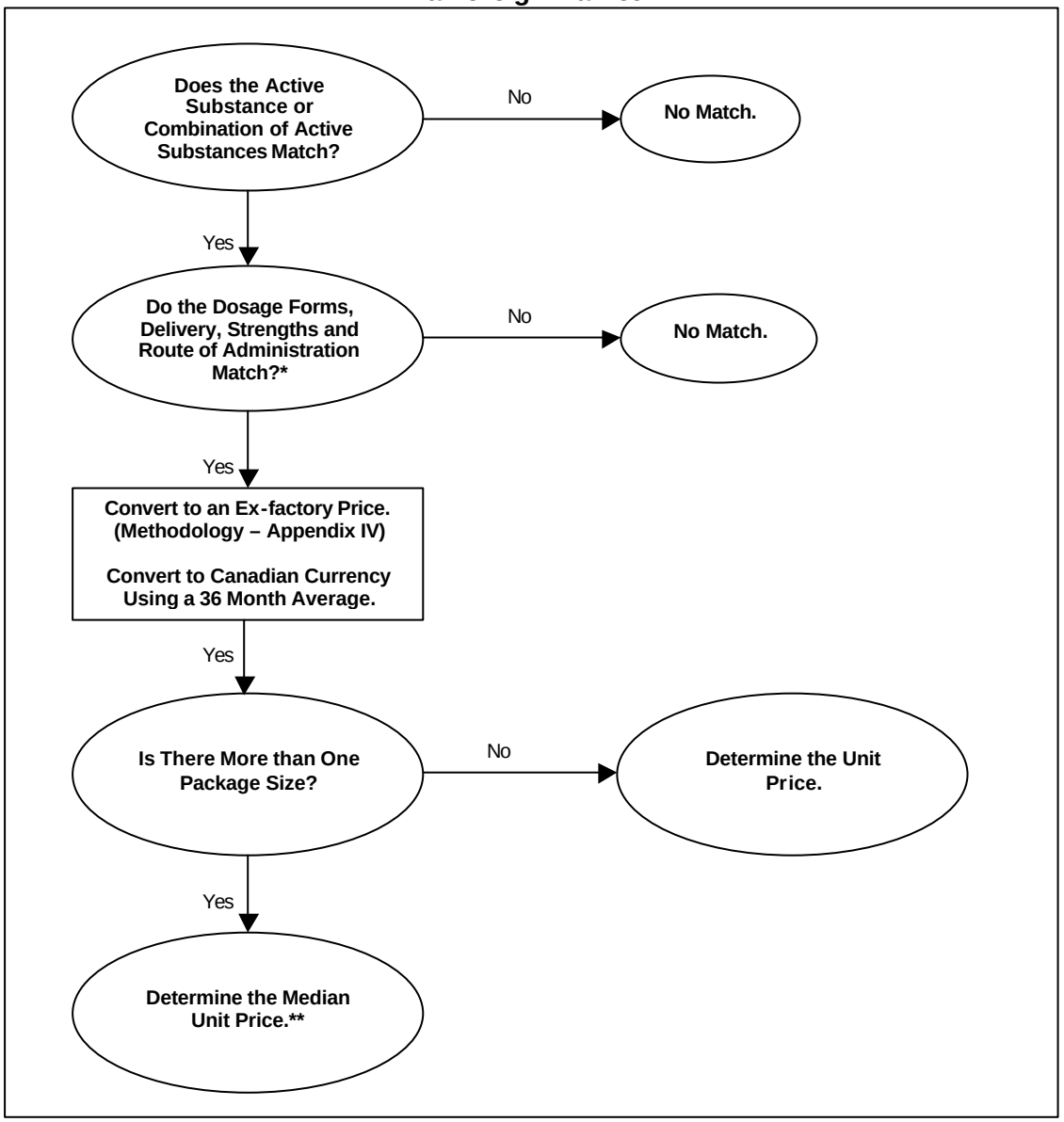
Appendix V has a complete list of the drug products included in this analysis.

International Comparison

In comparing drug prices internationally, a number of methodological issues need to be addressed in order to facilitate development and interpretation of the price comparisons such as: choosing the pharmaceutical basket; matching the pharmaceuticals; selecting countries for comparison; deriving comparable international prices; converting prices to a common currency; and weighting manufacturer prices.

Accurate measurement of cross-national price differences for drugs is an important policy and research issue. Cross-national comparisons of drug prices are often used to evaluate the performance of different regulatory systems and to guide future policy options.[12] Reliable sources of publicly available prices, differences in market structures and distribution chains, regulation and utilization patterns can make measurement of inter-jurisdictional price comparisons challenging. See Figure 1 below for a detailed flow diagram of how prices were matched internationally in this study.

Figure 1 - Determining the Equivalency and Unit Price of a Comparable Product in a Foreign Market



* The coating of a tablet or capsule is only relevant if it alters the delivery or digestion of the product.
** Sensitivity analysis was done on the package unit price which was used. The change to the results was negligible.

Several approaches were used to compare Canadian prices to international prices in this analysis. The median price of a medicine in Canada was compared to the median international price. Canadian prices were also compared in each country directly (the bilateral price comparison). In addition, the analysis includes two publicly available sources of U.S. price information to better capture the range of prices available in the U.S. market. International price comparisons were conducted with the inclusion of brand and generic manufacturers (i.e. over all products), as well as a direct brand-to-brand and generic-to-generic comparison.

Determining Ex-factory Gate Price in Canada and Internationally

Prices listed in the ODB formulary were used as ex-factory prices in Canada.[13] Claims data in the ODB database and IMS Health were used to confirm the price information. The analysis was based on ex-factory gate price comparisons. In order to derive an ex-factory gate price in other countries, relevant taxes, pharmacy mark-ups and wholesale mark-ups were removed where applicable[14] from publicly available sources – refer to Appendix IV for more detail.[15] Unit dose or individually packaged tablets and capsules were excluded from the analysis if comparable packages of the same quantity were also available.[16] All bioequivalent drug products were identified in each country and a unit price was calculated for each manufacturer.[17]

IMS Health and other country specific sources were used to determine whether a product was a generic drug or a brand name drug.[18] Products that were identified as sourced by multiple suppliers/manufacturers in Canada were not necessarily multiple source in other countries (see Table 7).

Prices were captured over all bioequivalent brand and generic products from all distributors and manufacturers listed in the public sources used to estimate international prices. Variation in pricing over package sizes was of particular concern because of the scope of this study. The median unit price over all package sizes was used as the most representative unit price. Two approaches to sensitivity analysis were also done on this issue (see discussion above). Analysis was repeated including only those packages internationally that fell within a limited range of the package sizes available in Canada and only those packages that most closely reflected the most frequently dispensed package size in the Canadian market.[19]

Price comparisons across countries require conversion of local currency prices into a common currency. For this study, official exchange rates were used to convert local currency prices into Canadian dollars. Unit prices were converted to Canadian dollars using the average exchange rate taken from the thirty-six month average.[20]

There were two sources of publicly available prices in the U.S., the Federal Supply Schedule (FSS) and the Red Book.[21] Ex-factory gate prices calculated from both sources were used throughout the analysis.[22]

Calculating Median International Prices (MIP)

The median international prices for multiple source drugs were calculated based on the prices in the countries where that drug product was available.[23] The average Canadian to MIP ratio was calculated using the geometric mean approach.[24] A sensitivity analysis was also conducted in order to investigate the impact of limited international product availability for constructing the price comparisons. An analysis was done on a smaller sample of products that were available in at least three foreign countries.[25] The average foreign to MIP ratio was also generated for each of the other nine countries. The MIP used to compare with each country was unique in that it contained the Canadian price, but not the price of the country it was being compared to. In this way each country was compared at the very least to Canada, as well as all other countries where that product was found.[26] Some analysis was also done using a subset of countries as opposed to a subset of products; specifically the analysis excluded the U.S. in the generation of a median international price due to concerns regarding accurate estimates of publicly available generic prices (see discussion in U.S. section of Appendix IV: Methodology for International Comparison).

The geometric average ratio was calculated in three ways: un-weighted; weighted by expenditure; and weighted by quantity using Canadian expenditure and utilization levels.[27] These alternative approaches were used to examine if the average price ratios changed if weighted according to Canadian utilization patterns.

In all of the analysis based on the average Canadian to MIP ratio and the average foreign to MIP ratios for other countries, those countries with a significantly different ratio were identified. This was established by pair wise t-tests at a significance level of 0.05.[28]

Cost of a Common Basket and Bilateral Price Comparisons

An analysis comparing the cost of a 'basket' of drugs at Canadian and foreign price levels was conducted. For the purpose of this analysis, the Canadian cost of a 'basket' was represented by utilization in the six provincial drug plans multiplied by the ODB formulary prices used as a proxy for Canadian prices in this analysis. The cost of the basket at a foreign price uses the same quantity multiplied by the foreign price. This gives a hypothetical expenditure and addresses the question: "What would have been the Canadian expenditure level in 2000 for these products at foreign prices and domestic utilization?"[29]

At the domestic level, the analysis includes a review of the generic-to-brand price ratio between 1996 and 2001 using ODB prices. An inter-provincial analysis of generic prices uses ODB brand name prices as a benchmark price against which generic prices are calculated for the sample of drugs for each provincial drug plan. Internationally, a generic-to-brand price ratio is also calculated. In order to assess how the Canadian price of generics compares internationally, the Canadian brand name price is kept constant and a foreign generic to Canadian brand price ratio is calculated for each country. The bilateral comparison of brand and generic prices was calculated over all

possible products, i.e. all products found in each respective country. An average weighted foreign to Canadian price ratio was also calculated using expenditures for the six provincial drug plans (an un-weighted ratio and a ratio weighted by volume are presented in Appendix III). For each average foreign to Canadian price ratio a 95% confidence interval was examined and those ratios for which the confidence interval does not include the value "1.00" are identified.[30]

Overview of Generic Medicines in Canada

This section provides a review of the generic drugs market in Canada. Specifically, overall sales, the percentage of total prescriptions and major manufacturers of generic drugs will be reviewed.

It is estimated, for 1999, that total sales of generic medicines in the major world markets were approximately $17.2 billion U.S. According to IMS Health, sales of generic drugs in Canada were about 1.3 billion in 2000, or approximately 11% of total sales by pharmaceutical manufacturers. According to the Canadian Generic Pharmaceutical Association (CGPA, formerly the Canadian Drug Manufacturers Association), generic market penetration increased to 13.8% of retail prescription sales in the twelve months ending June 2002.

Nonetheless, generic drugs represent a much larger share of the volume, or number of prescriptions filled. It is estimated that they accounted for about 40% of prescriptions in 2000. The CGPA estimates that generic market penetration by volume of prescription ranged from 35% in Quebec to 46% in Saskatchewan in 2002.

Provincial Summary

All provincial drug plans included in the analysis have a generic substitution policy aimed at encouraging the use of generic products. Automatic substitution by pharmacists is permitted unless otherwise indicated by a physician and reimbursement by the drug plans is limited to the lowest cost generic available within designated multiple source medicines. Some provinces, notably British Columbia and Nova Scotia, have reimbursement limitations beyond the bioequivalency level. British Columbia is the only province in Canada with a Reference Based Pricing Program and in Nova Scotia, some products are limited to a “Special” Maximum Allowable Cost (MAC) which limits reimbursement for products with similar therapeutic benefits.

Most of the low cost alternative (LCA) type drug programs were introduced in the early 1990’s and reimbursement is usually based on the principle of Actual Acquisition Cost (AAC) to a maximum of the LCA where interchangeable products can be used. If a patient chooses to purchase a brand name product, the incremental cost is the responsibility of the patient, except in rare cases when specific exemptions are made for individuals at the physician’s request. In Saskatchewan, standing offer contracts are used to obtain quantity discounts for high volume, usually interchangeable brands of drugs. A tendering process obtains these contracts. In 1993 Ontario introduced the 75/90 pricing rule for generic products, that is, the first generic listed on the formulary must be priced at least 25% below the brand name price and subsequent generics must be at least 10% below the first generic. In 1994, Ontario introduced a price freeze for all drugs listed on the formulary. In 1999, the 75/90 pricing rule for multiple source products was changed to 70/90. Prices in Canada tend to be relatively uniform across all provinces; the policies introduced in Ontario, a very significant market in Canada, have an impact on prices seen in other Canadian jurisdictions.

Domestic Empirical Analysis Results: Ex-factory Gate Price

The domestic analysis examines the trends in the brand and generic prices for the top selling multiple source medicines. The ODB formulary is used as the ex-factory gate prices for these products.

Table 1 below is a summary of the generic-to-brand name price ratios over time. The highest brand name price and the lowest generic price were used to generate the generic-to-brand price ratio, however, there is generally one brand name price and a uniform generic price listed by the manufacturers. The generic-to-brand price ratio has not changed significantly over time for the sample of drugs analyzed. In 1996 generic prices were, on average, 36.5% below brand name prices and in 2001 they were 35.5% below. There was also no significant evidence of price competition: In 2001, the list prices were within 1% of their 1996 levels.

Table 1

Domestic Analysis of Top Selling 100 Multiple Source Medicines 1996-2001 ODB Price Formulary : Brand Price Used = Maximum Unit Price; Generic Price=Minimum Unit Price						
Geometric Mean Ratio						
	1996	1997	1998	1999	2000	2001
MEAN Ratio	0.635	0.633	0.637	0.650	0.645	0.645
Mean Ratio $B_{(N)}/B_{(N-1)}$		1.001	0.970	0.983	1.000	0.995
Mean Ratio $G_{(N)}/G_{(N-1)}$		1.001	0.957	1.003	0.991	0.998

The degree of discount provided by generic manufacturers relative to the brand name prices is dependent on the number of products competing within the market. Figure 2 and Table 2 below present the generic-to-brand price ratio for the entire sample as well as broken down by the number of competing products (1-8) for 1996 and 2001. In both 1996 and 2001 the average generic-to-brand price ratio exceeded 70% of the brand name prices when there were one to three generic suppliers. The data suggests that at least four generic manufacturers must be present in order to realize some price competition and a reduction in the relative ratios. When four manufacturers are present the generic-to-brand price ratio drops to approximately 0.55.

Figure 2

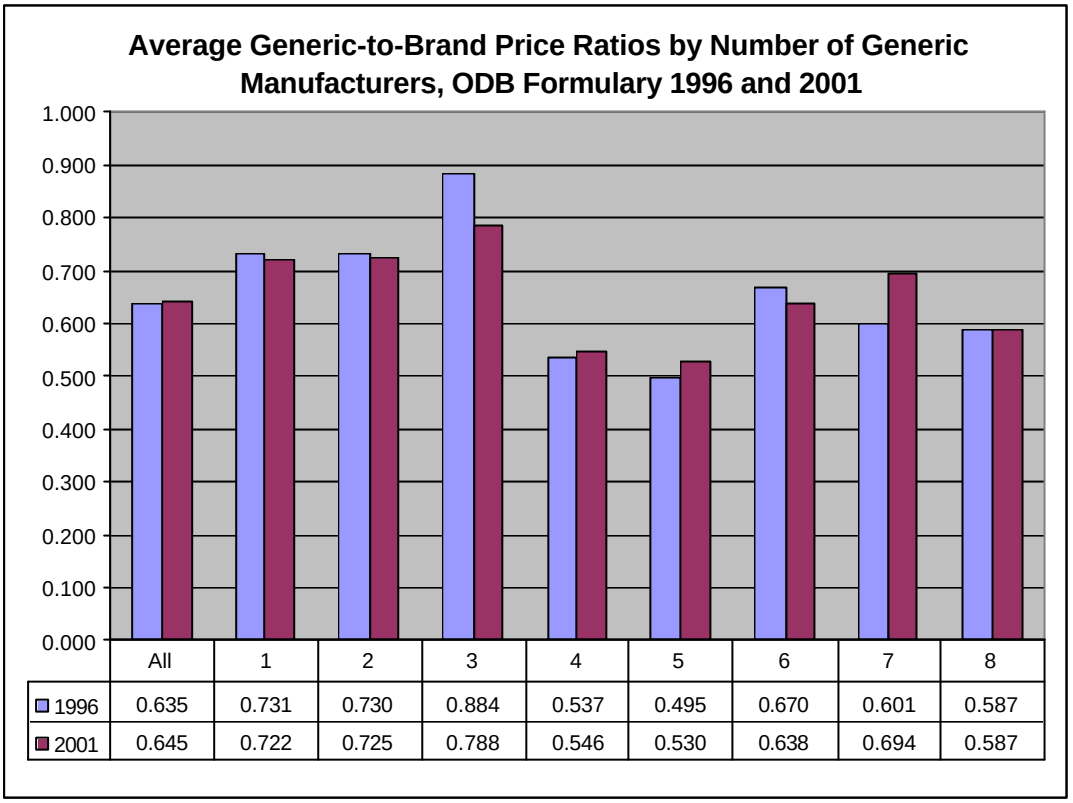


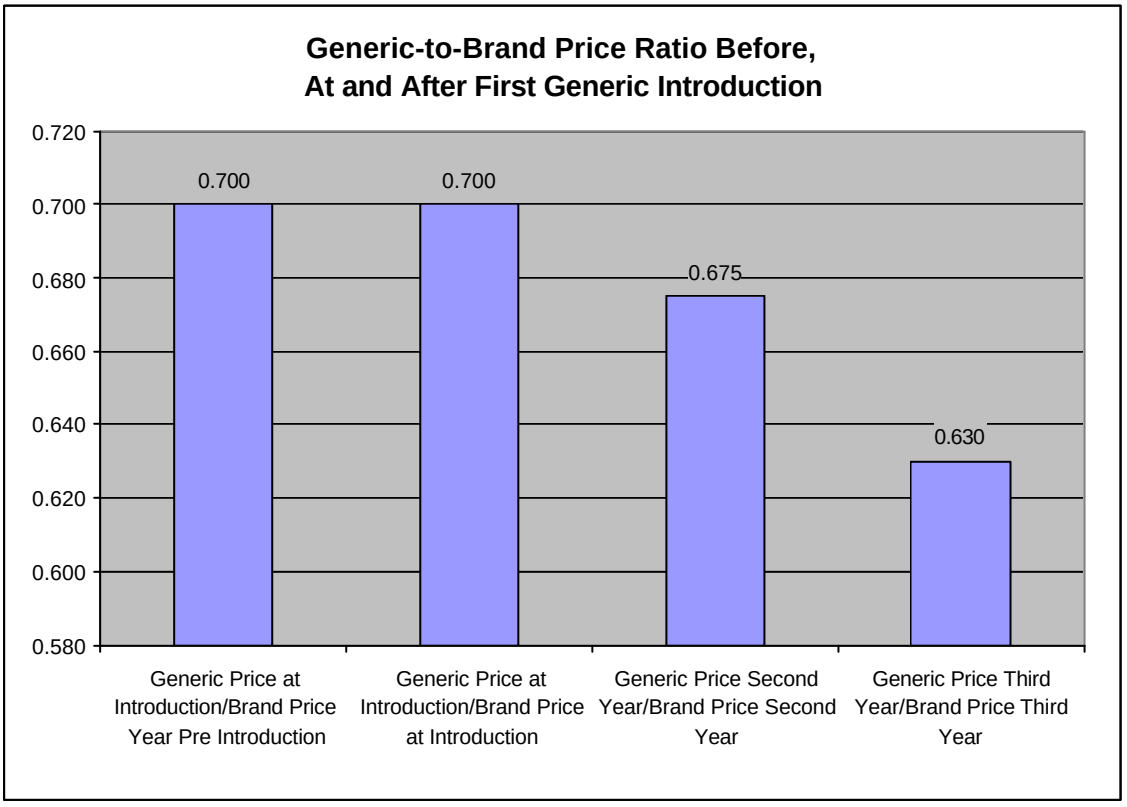
Table 2

Domestic Analysis Top Selling 100 Multiple Source Medicines 1996-2001 ODB Price Formulary: Brand Price Used = Maximum Unit; Generic Price=Minimum Unit Price							
Geometric Mean Ratios by Number of Competing Generic Firms							
		Ratio (G/B)					
Number of Generic Products	**% of the sample**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
1	10	0.731	0.735	0.748	0.731	0.728	0.722
2	16	0.730	0.714	0.667	0.748	0.730	0.725
3	19	0.884	0.839	0.779	0.800	0.788	0.788
4	22	0.537	0.526	0.568	0.553	0.546	0.546
5	16	0.495	0.531	0.530	0.530	0.530	0.530
6	13	0.670	0.667	0.638	0.638	0.638	0.638
7	2	0.601	0.601	0.551	0.551	0.551	0.694
8	2	0.587	0.587	0.587	0.587	0.587	0.587
N	100	69	80	95	97	97	97

The generic-to-brand price ratio in 2001 presented above is based on using the minimum available generic price and the highest available brand name price. In the majority of the cases the spread between the maximum and minimum generic or brand name price was zero. In 2001, the generic-to-brand price ratio increases marginally to 0.653 if the ratio is calculated based on a median brand and generic price. This suggests that there is not a significant difference between the highest generic price and the lowest generic price. In fact, a further analysis at the ex-factory price level using ODB Formulary prices revealed that in over 80% of the samples with more than one generic product available there was no price differential between all the generic products available.

In order to measure the change in price levels upon generic competition, Figure 3 below presents the generic and brand price ratio pre generic introduction, i.e. the generic price at introduction and the brand name price one year before introduction; at introduction; and two and three years after introduction. The generic-to-brand price ratio is 0.70 prior to the entry of the generics and the first year after. This suggests that brand name manufacturers do not respond with price competition prior to and after the introduction of generics. The generic-to-brand price ratio decreases to 0.68 and 0.63 respectively two and three years after the entry of the first generic, that is, three years after the entry of the first generic, generic prices are 37% below brand name levels.

Figure 3



Domestic Empirical Analysis Results: Claimed Provincial Prices

The analysis presented in the previous section was based on ex-factory gate (manufacturers') prices. The next section of the analysis is based on pharmacy retail prices as submitted to the six participating provincial drug plans included in this analysis. There are potentially two levels of prices that can be calculated from the public drug plan data, a claimed price and an accepted price.[31] The claimed price is the price that the retail pharmacy submits to the drug plan for reimbursement on behalf of the patient. This price includes both distribution margins as well as pharmacy mark-ups, but excludes dispensing and/or professional and/or compounding fees. If the provincial drug plans have maximum reimbursement rules aimed at setting low cost alternative prices and/or limiting distribution margins, there may be a difference between what the pharmacy submits to the drug plan and what is accepted by the drug plan; this is the accepted price. Similar results for accepted prices are presented in Appendix I.

Previous F/P/T analyses calculated a generic-to-brand name price ratio for each of the six provincial drug plans using pricing information submitted to the drug plans for both brand name and generic products. Based on this analysis inter-provincial differences in the generic-to-brand price ratio were detected. Since the analysis was based on prices claimed to the drug plan, issues around the accuracy of the price submitted for the "partially" reimbursed product were raised by provincial drug plans. That is, there was concern that the claimed price did not accurately reflect the retail price seen by the patient as pharmacies took into account low cost alternative and distribution margins when submitting the claim to the drug plan. As a result of this concern, the analysis presented in this section is based on a benchmark brand name price. The ODB reimbursement price (which is based on the manufacturers' price plus a 10% distribution margin) is used as the constant brand name price in generating the generic-to-brand price ratio for each participating public plan. This approach provides a more accurate picture of how generic prices compare across the provincial drug plans.

Table 3

Domestic Analysis Top Selling 100 Multiple Source Medicines Brand Price=ODB Max ; Generic Price – Minimum Claimed Price Defined at Drug Plan Level GEOMETRIC MEAN RATIO 1996-1997 to 1999-2000				
	G/B ratio 96	**G/B ratio 97**	**G/B ratio 98**	**G/B ratio 99**
British Columbia	0.632	0.619	0.637	0.623
Alberta	0.593	0.579	0.599	0.590
Saskatchewan[32]	0.684	0.630	0.633	0.588
Manitoba	0.624	0.601	0.618	0.599
Ontario	0.643	0.631	0.643	0.646
Nova Scotia	0.624	0.613	0.636	0.653

For each of the provincial drug plans included in this analysis a generic-to-brand price ratio is presented in Table 3. The generic-to-brand price ratio is based on the ODB maximum brand name price and the minimum claimed generic price specific to each drug plans. Some differences do exist between the provincial drug plans, however, they are not as large as previously estimated.[33] In 1996-1997 the generic prices in Saskatchewan were higher than in other drug plans, however, by 1999-2000 they were

the lowest. Based on claimed prices, generic prices in Nova Scotia[34] and Ontario were the highest and the prices in Saskatchewan and Alberta were the lowest.

The results presented in Table 4 are comparable to Table 3 except the generic price is defined as the average claimed price (total generic expenditures divided by total quantity) rather than the minimum available price. This distinction provides some insight into dispensing practices at the retail level. The results in Table 3 and Table 4 are relatively similar, that is the same jurisdictions are recorded as having either the highest generic claimed prices or the lowest prices. Figure 4 provides a summary of the spread between the lowest price claimed for a generic in each jurisdiction and the average price. Manitoba and Saskatchewan have the largest spread between these two measures of generic prices. For example, in Manitoba, the lowest price claimed for a generic product is on average 40% below brand name prices however, the average claimed generic price is only 36% below the brand name price – a 4 % difference.

Table 4

Domestic Analysis Top Selling 100 Multiple Source Medicines Brand Price=ODB Max ; Generic Price=Average Claimed Price Defined at Drug Plan Level GEOMETRIC MEAN RATIO 1996-1997 to 1999-2000				
	1996/97	**1997/98**	**1998/99**	**1999/00**
British Columbia	0.651	0.636	0.652	0.633
Alberta	0.604	0.591	0.611	0.606
Saskatchewan	0.712	0.659	0.658	0.619
Manitoba	0.655	0.643	0.654	0.641
Ontario	0.647	0.634	0.655	0.651
Nova Scotia	0.646	0.638	0.651	0.665

Figure 4

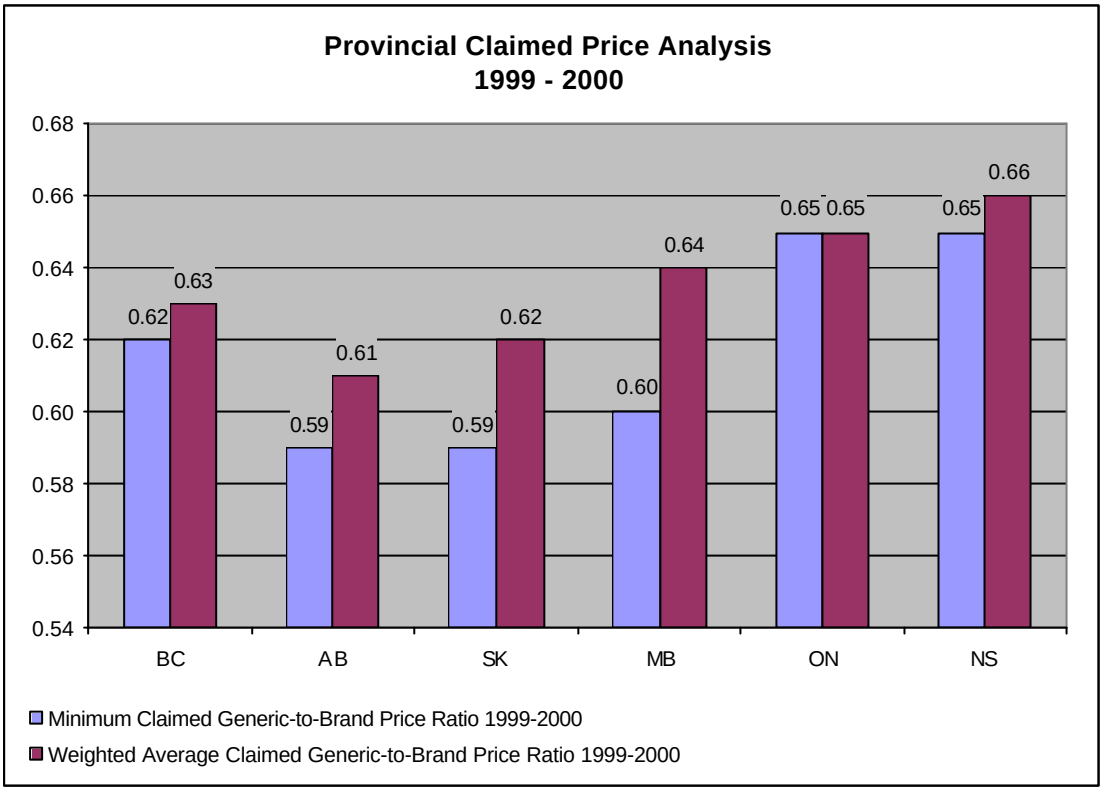


Table 5

Generic Market Share Distribution for the Sample of Top 100 Multiple Source Medicines Based on Provincial Drug Plan Expenditures; 1999-2000							
Company Name	**BC**	**AB**	**SK**	**MB**	**ON**	**NS**	**Overall**
ALTIMED PHARMA INC., DIVISION OF TECHNILAB PHARMA INC.	10%	11%	12%	5%	6%	7%	7%
APOTEX INCORPORATED	39%	42%	25%	42%	56%	33%	50%
GENPHARM INC.	17%	20%	5%	17%	9%	18%	12%
NOVOPHARM LIMITED	18%	17%	7%	27%	20%	35%	20%
NU-PHARM INC.	2%	1%	44%	0%	0%	2%	3%
PHARMASCIENCE INC.	9%	5%	4%	5%	5%	3%	6%
OTHER	5%	4%	4%	4%	3%	2%	3%

As mentioned earlier, two generic manufacturers account for most of the Canadian generic market share. In general, based on the sample of drugs included in this analysis, Apotex accounted for 50% of the market and Novopharm accounted for another 20%. There are however, inter-provincial differences. For instance, in Saskatchewan, Nu-Pharm accounted for 44% of the market and in Nova Scotia the market share of Novopharm was higher than Apotex.

Overview of Generic Medicines in the Selected OECD Countries

In principle, when a pharmaceutical patent expires, it may become subject to generic competition. However, differences in legislative and regulatory requirements may discourage generic suppliers from entering the market.

The place of generic products is relatively clear; because the active ingredients and bioavailability are the same, generic products compete with brand name products on the basis of price. Brand name manufacturers do not necessarily engage in price competition with the generics; they may seek to differentiate their product and maintain the existing price level. Most of the countries included in the analysis regulate either the price or the reimbursement level of generics.

Most countries included in the analysis actively promote the prescribing and dispensing of generic products. However, the use of generics varies widely across counties. Data limitations and lack of internationally agreed upon definitions for generic drugs make reliable comparative information difficult to attain. Using available qualitative data, a recent OECD occasional paper by Dr. S. Jacobzone[35] categorized countries into three main groups: countries with significant generic market share, countries with few generic sales and countries with almost no generic sales recorded. The United States, Canada, Germany, the United Kingdom, Australia and New Zealand fall into the first category; France and Switzerland fall into the second group; and Italy falls into the last group.

In the majority of OECD countries explicit policies aimed at fostering the use of generic drugs exist. These policies are generally of two types, policies that rely on the provision of information and policies that use economic incentives. Generally, the use of generic drugs is strongly linked with the financial incentives that have been implemented. This involves prescribing using the chemical name, substitution rights for pharmacists, and incentives for patients to buy generic drugs.[36]

Table 6 provides a summary of the generic policies and incentives that existed at the time of the study in each of the countries included in the international analysis.

Table 6 - Summary of Generic Policies[37]

Country	Explicit Policy	Type of Incentives	Comments
Australia	Yes	Consumer Education; Financial Incentives	Patient pays if a drug which is higher priced than generic drug is chosen. Generic substitution permitted. Permit the registration and limited production of generic products before patent expiry.
Canada	Yes (except Quebec)	Financial Incentives	Lowest cost alternative programs which stipulate that for drugs where generics exist, reimbursement rates will be set at the cost of the least expensive bio-equivalent. In some provinces, pharmacists are able to substitute with a generic alternative provided there aren't any explicit instructions from the physician. Permit the registration and limited production of generic products before patent expiry.
France	Yes	Global budgets on physician prescribing; physician information	Implementation of stronger incentives for generic prescribing is underway. Actively negotiate/set drug prices that reflect prices in both public and private sector transactions. Control of ex-factory gate generic prices.
Germany	Yes	Global budgets on physician prescribing; physician prescribing guidelines	Generic substitution permitted. Control of reimbursement prices. Authorities reduce the reimbursement price of an original when generics enter the market.
Italy	Yes	N/A	Introduced in Italian law in 1996. Negligible market.
New Zealand	Yes	Guidelines for prescribing; consumer education; economic incentives	Patient pays if chose a drug which is higher priced than generic drugs. Negotiate reimbursement amount. Aggressive in pursuing price competition among manufacturers, using formulary inclusion, therapeutic reference based pricing and exclusive tendering of products to bring prices down. Authorities reduce the reimbursement price of an original when generics enter the market.
Sweden	Yes	Guidelines for prescribing	Actively negotiate/set drug prices that reflect prices in both public and private sector transactions. Authorities reduce the reimbursement price of an original when generics enter the market.
Switzerland	Yes	Guidelines for prescribing; consumer education	There are legal incentives to prescribe generics which have to be 25% cheaper but there is lack of effective economic incentives for doctors and pharmacists. Pharmacists substitution rights introduced in 2000.
UK	Yes	GP fundholding and prescribing guidelines; financial incentives	From 1985, all but the generic forms of a number of widely used medicines were excluded from the NHS. Possibility to write prescription in generic format. Supply shortages have been a recent problem.
USA	Yes	Prescribing guidelines and consumer education	In private sector, most insurance plans require generics rather than brand name drugs. Permit the registration and limited production of generic products before patent expiry.

Policies Influencing Generic Medicines in the Selected Countries

This section provides information concerning the major policies that have been put in place to encourage generic medicines as well as review the policy positions of pharmaceutical regulatory authorities with respect to generic and therapeutic substitution, two major drivers of generic drug utilization.

Major Policies and Acts

Canada, until 1993, had in place a compulsory licensing policy that allowed generic manufacturers to produce generic versions of original patented drug products. Specifically, generic manufacturers could produce their drug products before the patent expiry of the original branded drug products, as long as they paid 4% royalties on sales to the patent-holder of the drug. Since 1993, and retroactive to 1991, Bill C-91 eliminated compulsory licensing in Canada. In addition, Bill C-91 links the regulatory

approval for safety of the product by Health Canada (referred to as the Notice of Compliance) to the expiry of the patent of the branded product.[38]

The UK, in light of the rising costs in the overall price of generic medicines, has put in place a statutory maximum price scheme (as of August 2000) affecting approximately 500 unbranded generic drug products supplied to the National Health Services (NHS) for use by dispensing doctors and community pharmacies. In general, the scheme targets unbranded generic drug products with an annual net ingredient cost (NIC) over £750,000 a year as well as other unbranded generics where the annual NIC is greater than £100,000 a year and there has been a material increase in price since January 1999. The scheme applies to manufacturers whether or not they are members of the voluntary Pharmaceutical Pricing Regulation Scheme (PPRS), but do not apply to products sold over-the-counter (OTC) or to hospitals. Maximum prices are based on a review of the average prices of the product in the Drug Tariff from November 1998 to January 1999.

In order to encourage the generics market in France, the government in 1998 issued a decree stating that the price of a generic product must be at least 30% less than the price of the originator brands. There were several manufacturers representing a total of 37 generic drug products that did not initially comply. The government issued a ruling on these products that forced a reduction of the prices by up to 50%. As well, the government's Economic Committee for Healthcare products (CEPS), has relaxed several rules regarding generic medicines.[39] For instance, the registration of generic drugs no longer requires the approval of the CEPS Transparency Committee thereby speeding-up the market release of the generic drug product. As well, the CEPS does not impose price controls revealed in their *Conventions* .[40] Also, there are no constraints concerning the promotional activities of generic manufacturers. Despite these efforts, generic sales only increased moderately for the year 2000.[41]

As in France, the Italian Ministry of Health intends to promote generic drugs. For example, an agreement published in Italy's Gazetta Ufficiale in 1998 gives pharmacist's broader substitution rights. Also in an effort to encourage the generic market, the Italian Ministry of Health is limiting marketing approval of generic products to 120 days after the submission by the manufacturer and does not require a bioequivalency study for registration of the product if manufactured by the originator or license.[42] As well, if the product is priced at least 20% lower than the original brand product, then it is automatically eligible for reimbursement. As of July 2001, the Italian Ministry of Health introduced a new reimbursement category for generic drug products.

Unlike Canada, the UK, France or Italy, the Swedish government is not actively promoting the use of generic drugs. In general, sales of generics in Sweden are low. The Swiss Sickfunds do encourage physicians to prescribe generics, but do not offer any financial incentives to support this initiative.

Similar to Sweden, Germany has not produced any recent policies affecting generic prescriptions other than allowing substitution rights for the pharmacist. However, unique to the European countries under review, Germany has the largest generics market. Specific regulatory mechanisms (discussed further in the document) have helped to foster Germany's generic drug market.

In the United States the key policy affecting generic medicines is the Drug Price Competition and Patent-Term Restoration Act (also known as the Hatch-Waxman Act) introduced in 1984 and its subsequent Roche-Bolar amendment. Essentially, the Hatch-Waxman Act was intended to make it easier and less costly for generic manufacturers to enter the market.[43] Specifically, generic manufacturers need only to demonstrate to the U.S. Food and Drug Administration (FDA) bioequivalence to the innovative drug product. Also, generic products were not required to demonstrate the safety and efficacy in the same manner as the innovative drug product. Finally, the Hatch-Waxman Act provides the first generic manufacturer to obtain marketing approval with 6-months exclusivity from the date it markets its generic version. However, there are also several aspects of the Hatch Waxman Act that has a negative effect on the generics market. For example, the Uruguay Round Agreements Act, an amendment to the Hatch-Waxman Act, provided patent protection of up to 20 years to the original manufacturer of the innovative drug product thus prolonging the market exclusivity of the innovator drug (Food and Drug Law Journal). Also due to the Hatch-Waxman Act, the U.S. FDA can suspend the approval process of a new generic product for up to 30 months if the originator of the product challenges the prospective generic manufacturer with patent infringement. The Roche-Bolar amendment to the Hatch-Waxman Act enabled generic manufacturers to prepare samples and apply for marketing authorizations before patent expiry without infringing on the patent. In effect, this amendment enables generics to enter the market immediately after patent expiration of the original drug product.

In order to encourage the generics industry the Australian Pharmaceutical Benefits Pricing Authority (PBPA) introduced in 1990 a policy called the Brand Pricing Policy which aims to reduce price controls by allowing suppliers to set their own prices on multi-branded and therapeutically interchangeable products listed on Australia's Pharmaceutical Benefits Scheme (PBS). The Brand Pricing Policy works by heightening both physician and consumer awareness of the price of drugs. Consequently this has had the effect of encouraging manufacturers to establish prices for their products by taking into account competition and heightened consumers' awareness of price differentials. As well, in April 1997, the Australian government announced extensions to patent life for patented drug products of up to 5 years. However, at the same time, the Australian government introduced a *springboarding* provision for generic manufacturers. Springboarding permits generic manufacturers, from the date the extension is granted, to undertake pre-marketing regulatory requirements prior to patent expiry. The Australian Pharmaceutical Manufacturers Association (APMA) argues that springboarding provisions are key to local Australian pharmaceutical manufacturers, as they are the main producers of generic drug products.

Similar to Australia and other countries under review, New Zealand does not actively promote the use of generic drug products. However it has permitted generic substitution since 1984.

Generic Substitution

Generic substitution occurs when a pharmacist is permitted to substitute one medicine with another cheaper one, using an identical or chemically similar active ingredient. Permission to substitute is usually authorized through policy by a regulatory authority. The main purpose of substitution is to reduce pharmaceutical expenditures and secondly, reduce patient co-payments. [44]

Several of the countries under review have explicit policies directed towards generic substitution of original brand drug products. Canada, France, Italy, Sweden, Germany, the U.S., Australia and New Zealand all permit generic for original brand drug substitution. However, each country imposes unique conditions for substitution. These conditions are summarized in what follows.

In Canada, generic substitution is allowed in most provinces and is similar to Australia, New Zealand and the U.S. in that a pharmacist may substitute without consultation of the physician[45]. The outcome has been that generic substitution in Canada has, for the most part, been a successful cost-containment measure. Switzerland and the UK do not permit generic substitution. However, in the UK, substitution may occur when prescriptions are written using the international non-proprietary naming (INN) convention. With the purpose of increasing the development of the generic drug market in France, since June 1999, pharmacists have the right to substitute a generic for branded drug product. In Italy, substitution rights have been expanded such that a pharmacist currently has the right to freely dispense a product other than the one prescribed as long as it contains the same active ingredient, form, indications and it costs the same or is less than the drug initially prescribed. In contrast, the Swedish government requires that a physician approve the pharmacist's decision to substitute unless the manufacturer or importer is not specified on the prescription. In Germany, generic substitution is allowed as long as the pharmacist substitutes with the cheapest generic product. For the U.S., most states by 1980 had passed laws permitting generic substitution even when a prescription specifies an original brand drug product. Government programs such as Medicaid and private health insurers actively promote the use of generic substitution. It is estimated that 31% of original brand products were substituted in 1998[46]. In 1994, Australia amended its 1953 Health Act to permit pharmacists to substitute generic for original brand drug products if they are listed on Australia's Pharmaceutical Benefits Scheme (PBS). Similar to Italy, New Zealand has permitted generic substitution since 1984, provided the pharmacist is granted permission from the physician. However, 1996 reforms brought New Zealand's substitution policy in-line with Australia's by permitting a generic drug product to replace the original brand drug product at the pharmacy, by the pharmacist, even when the prescription was for the original brand drug product.

Price controls

Direct price controls of generic drug products are in place in the UK, France, Italy, Sweden and Switzerland. The UK is unique in that they have set a price ceiling for certain reimbursable generic products whereas, for example in France, the CEPS stipulates that the price of a generic drug must be at least 30% less than the net manufacturing price of the original brand equivalent to be granted reimbursement. Italy and Switzerland stipulate the same criteria, but only require that the generic drug to be priced 20% and 25% less respectively than the original version.

Incentives and Guidelines Encouraging the Use of Generic Medicines

This section discusses economic and awareness policies that encourage the use of generic medicines in the selected countries. All countries under review have explicit policies towards the prescription of generics. For example, the Canadian provinces, the

UK, Germany, Sweden, Switzerland, Australia, New Zealand and the U.S. have physician prescribing guidelines that encourage cost-effective prescribing behavior. Consumer awareness of generic drugs is promoted in the UK, Switzerland, the U.S., Australia and New Zealand. Cost-effective prescribing takes the form of the Lowest Cost Alternative Programs in Canadian provinces and global physician prescribing budgets in the UK, France, Germany, Italy, and in the U.S. (most private insurers require generic over brand name drug products.[47]

International Empirical Analysis Results

The analysis presented in this section compares Canadian prices of the same 100 multiple source medicines at the ex-factory gate prices with international levels. The international comparison is based on nine OECD countries. (See section on methodology for more information on how the results were generated). Table 7 below provides a country specific summary of the number of medicines matched, the mean number of companies for each medicine, an estimated overall generic presence, a mean number of brand and generic companies for the sample and the maximum number of companies for the sample of drugs analyzed.

The sample selected was a good match internationally. Of the 100 multiple source medicines included in the initial sample selected, 96 had at least one match internationally. For example, out of the 96 multiple source medicines in the sample, 62 were identified in Australia and 88 in the U.S.. Germany and the U.S. have the highest number of companies for each medicine. In Canada, Germany, the UK and the U.S., generics represent a significant market share.

Table 7

Top 100 Selling Multiple Source Medicines
2000

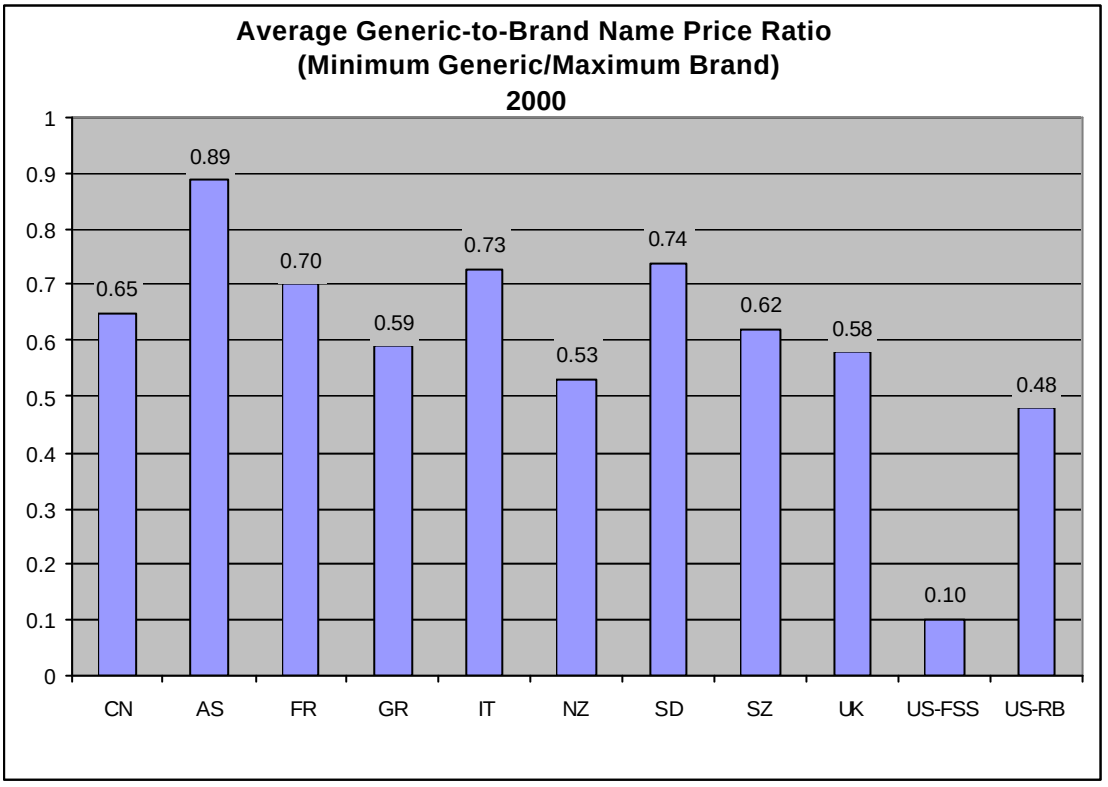
Summary

Country	Total Number of Medicines Matched: Matches	Brand Matches	Generic Matches	Mean Number of Companies for Each Medicine	Estimated Generic Market Share (by Volume)	Mean Number of Brand Name Companies for Each Medicine	Mean Number of Generic Name Companies for Each Medicine	Maximum Number of Companies for Each Medicine
Canada (CN)	96*	96	96	5	40%	1.15	3.75	10
Australia (AS)	62	61	47	5	10%	1.13	3.60	12
France (FR)	69	64	36	3	3%	0.96	2.25	11
Germany (GR)	72	62	57	9	41%	1.40	7.57	39
Italy (IT)	65	64	14	4	1%	3.12	0.43	24
New Zealand (NZ)	71	62	38	2	10%	0.99	1.06	5
Sweden (SD)	64	60	30	2	5%	1.36	0.98	9
Switzerland (SZ)	69	68	30	3	3%	1.16	1.58	12
United Kingdom (UK)	79	78	31	2	53%**	1.44	0.42	5
United States, derived from FSS (U.S.-FSS)	88	82	71	6	45%	1.18	4.82	14
United States, derived from Red Book (U.S.-RB)	86	84	66	6	45%	1.12	4.41	13

* Four drugs did not have international comparators.
** For NHS prescriptions, 76% were accounted for by generics.

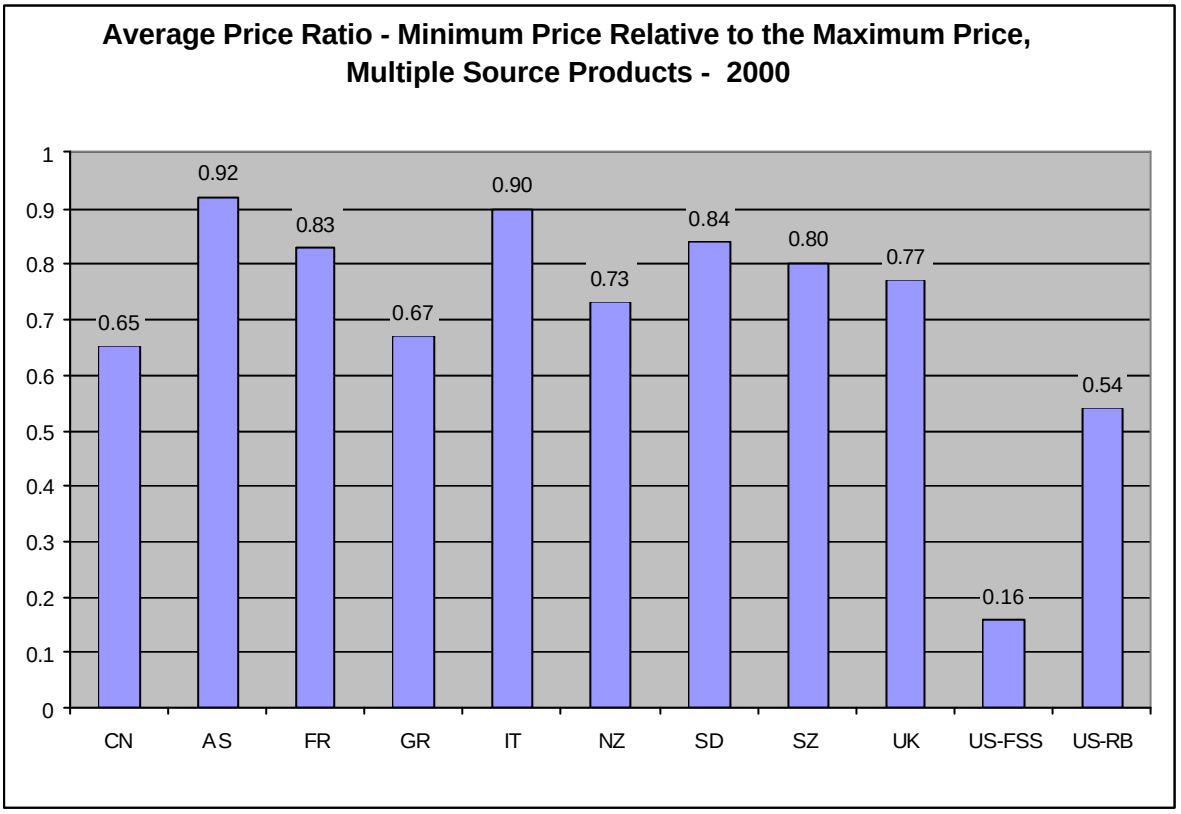
Significant international variations were detected in the generic-to-brand price ratio. As can be seen in Figure 5 below, the U.S. had the lowest generic-to-brand price ratios and Australia had the highest ratio.[48] That is, the discount provided by generics relative to brand name prices is low in Australia and high in the U.S.. (See Appendix III for results based on different measures of prices, for example, median generic price relative to a median brand price).

Figure 5



The line between generic producers and brand name companies is becoming increasingly blurred – the firms in these two industries partially overlap. Some research-based companies own generic subsidiaries and some generic companies produce brand name products. Figure 6 provides a similar measure and results presented above, however, the ratio is not based on a generic and brand price but rather on the minimum overall prices available relative to the maximum price in the market regardless of whether the drug is produced by a generic or a brand name manufacturer; the results are similar.[49]

Figure 6



The generic-to-brand price ratio measures the spread between different types of manufacturers within each country, however, as price differences exist for brand name and generic prices, the inference one can make around the relative international price levels from the generic-to-brand price ratio is limited. Figure 7 provides a bilateral price comparison which compares overall Canadian median prices for multiple source drugs (both brand and generic) to each of the countries included in the analysis. A ratio greater than one means that the price in that country exceeds Canadian prices and a ratio less than one means that the price is on average below Canadian levels. Since the basket of drugs used in the comparison differs across each country the ranking of countries are only relative to Canada, not necessarily each other. Prices in New Zealand, Australia and France were significantly below Canadian prices; 44%, 29% and 15% respectively.[50] Prices in the U.S. differ significantly depending on which price was

used to calculate the ex-factory gate price. If the Average Wholesale Price (AWP) in the Red Book was used, (presented as U.S.-RB in Figure 7 and throughout the analysis) to derive the ex-factory gate prices, then the U.S. prices were more than three times the Canadian averages. However, if the FSS price was used, (presented as U.S.-FSS in Figure 7 and throughout the analysis) then the U.S. prices were 24% below Canadian averages. Prices in Switzerland and the UK were higher than the average Canadian prices. Overall, Canadian prices were very similar to those in Germany. These results are consistent with the finding reported by the Australia Productivity Commission: *Research Report: International Pharmaceutical Price Differences, 2001*.

Figure 7

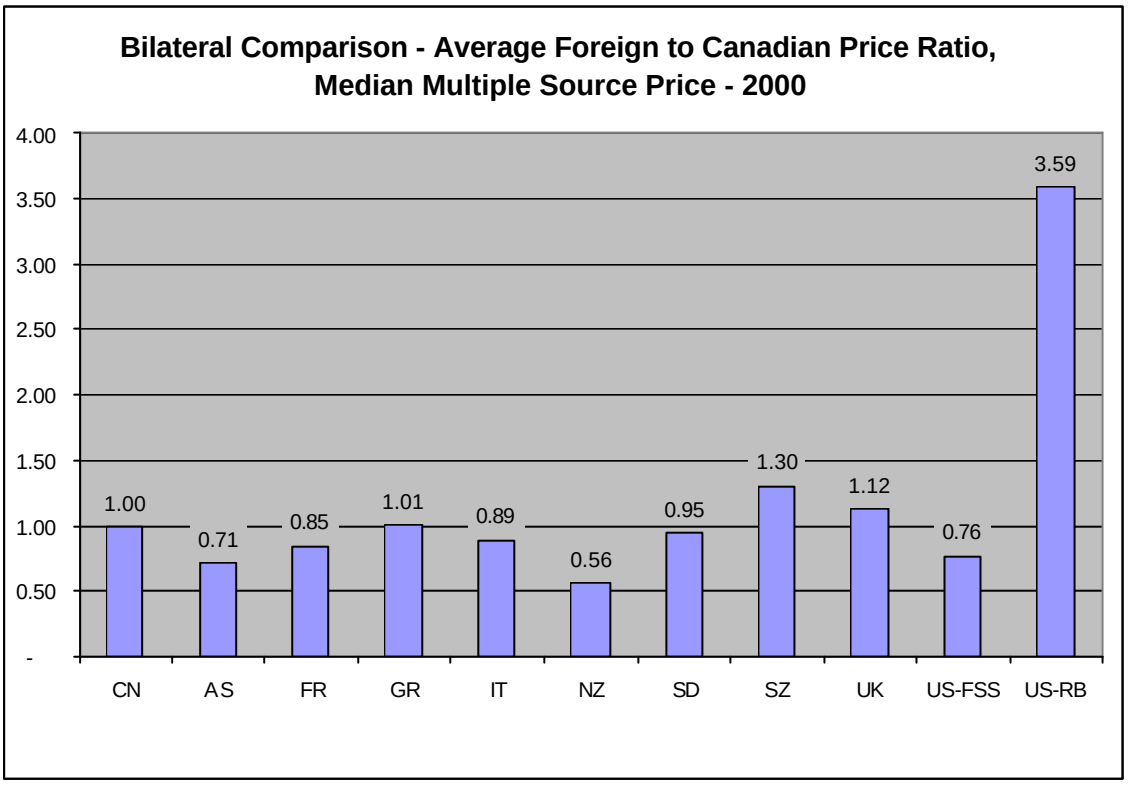
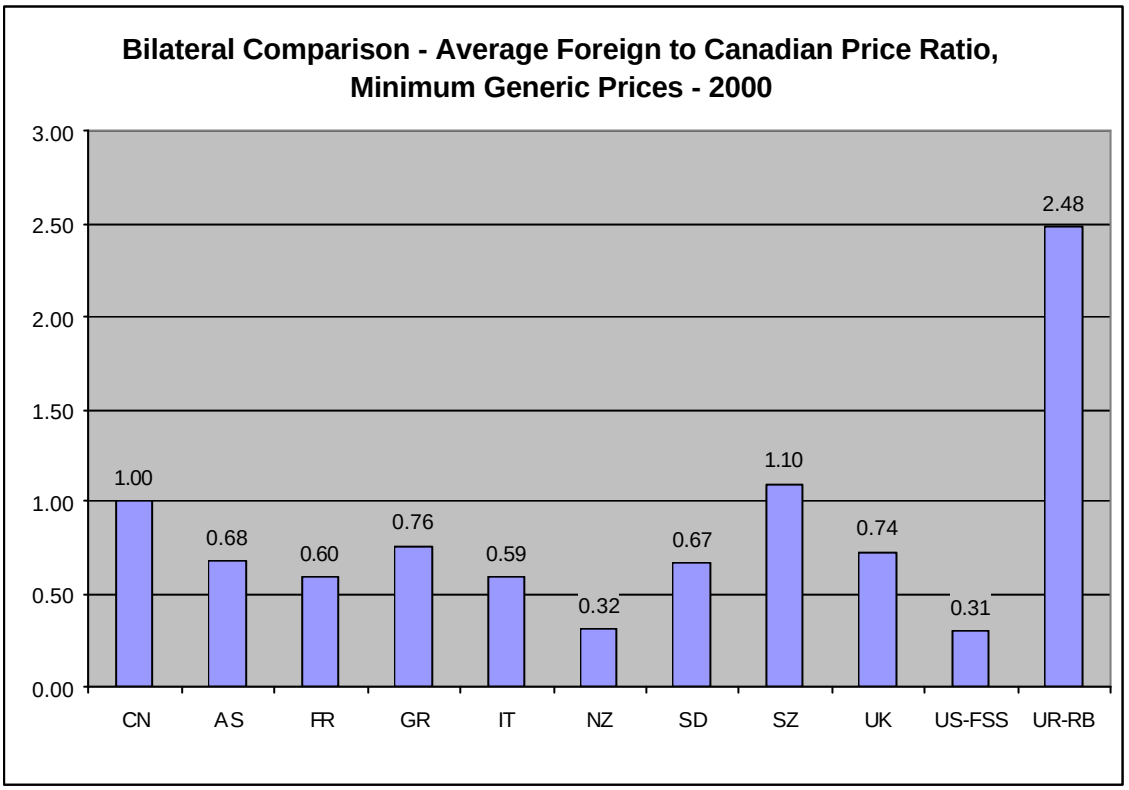


Figure 8 provides a bilateral price comparison which compares minimum generic prices available in each of the countries included in the analysis to the generic minimum Canadian prices (See Appendix III, Table 12 for bilateral comparisons using different measure of brand and generic price levels for comparison). When comparing only generic prices (rather than all multiple source drug prices seen above) Canadian generic prices are significantly higher than generic prices in most other countries.[51]

Figure 8



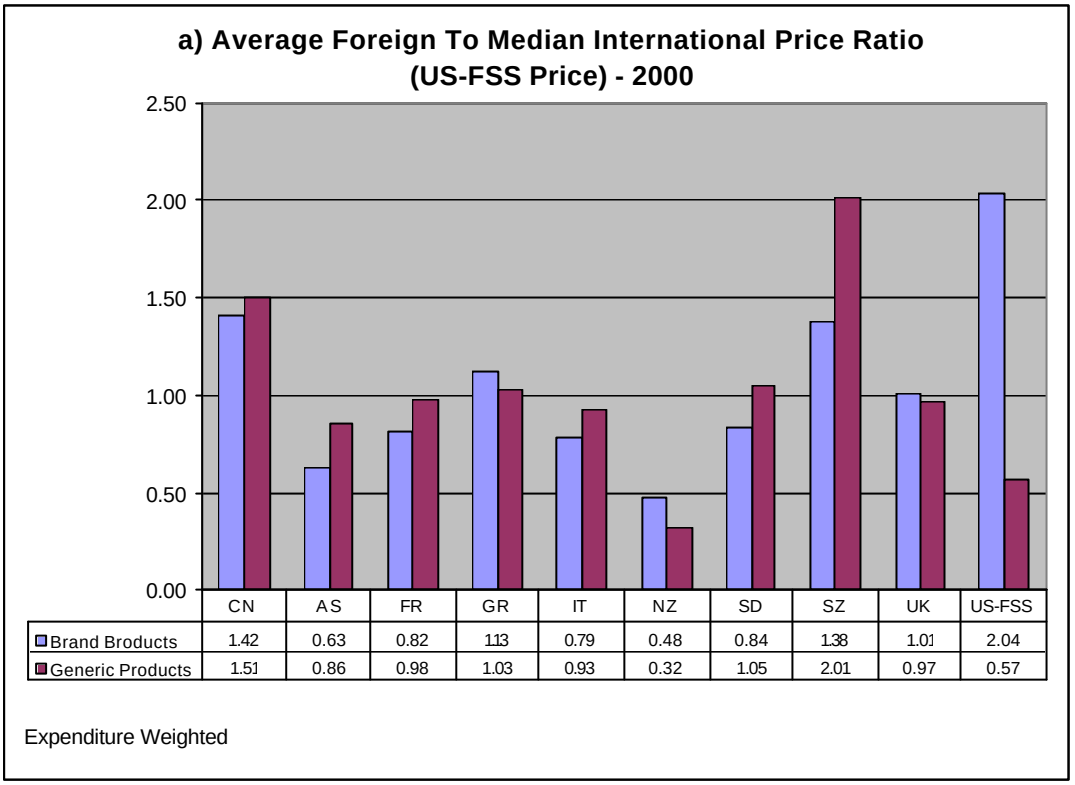
Median International Price Analysis

To gain some insight into the relative price rankings for each of the countries included in this analysis, a median international price was constructed for both brand name products and generic products. In a small number of cases (particularly in Germany and the U.S.), assessing whether a product is a brand name product or a generic product was not always clear. For some countries, only a brand name product was available for comparison. In order to increase the number of matches and countries used to construct a median international price in these cases, an additional calculation was done using the generic prices when available and the lowest brand price when there was no generic competitor. (These results are included in Appendix III.)

Figures 9a and 9b provide a comparison (ratio) of the average foreign to median international prices for brand name and generic drugs, depending on which price is used as the U.S. price. In 9a the FSS price was used in the calculation of the median international price for each medicine, and in 9b the price derived from the AWP reported in the Red Book was used.

The foreign to median international price ratios are weighted by Canadian expenditures (as such, they are comparable to information reported by the PMPRB for patented drugs; for results that are un-weighted and weighted by Canadian utilization, see Appendix III). As can be seen in Figures 9a and 9b, Canadian prices for the brand name products included in the 100 top selling multiple source drugs are on average 42% or 38% above median international levels, depending on the U.S. price used. Canadian prices for the generic products are on average either 51% or 21% above median international levels. With the exception of Switzerland and the U.S.-RB, the Canadian generic prices are the highest among the OECD countries included in the analysis. This result is consistent with the bilateral comparisons provided earlier.[52]

Figure 9


a) Average Foreign To Median International Price Ratio
(US-FSS Price) - 2000
2.50
2.00
1.50
1.00
0.50
0.00
CN AS FR GR IT NZ SD SZ UK US-FSS
Brand Broducts 1.42 0.63 0.82 1.13 0.79 0.48 0.84 1.38 1.01 2.04
Generic Products 1.51 0.86 0.98 1.03 0.93 0.32 1.05 2.01 0.97 0.57
Expenditure Weighted

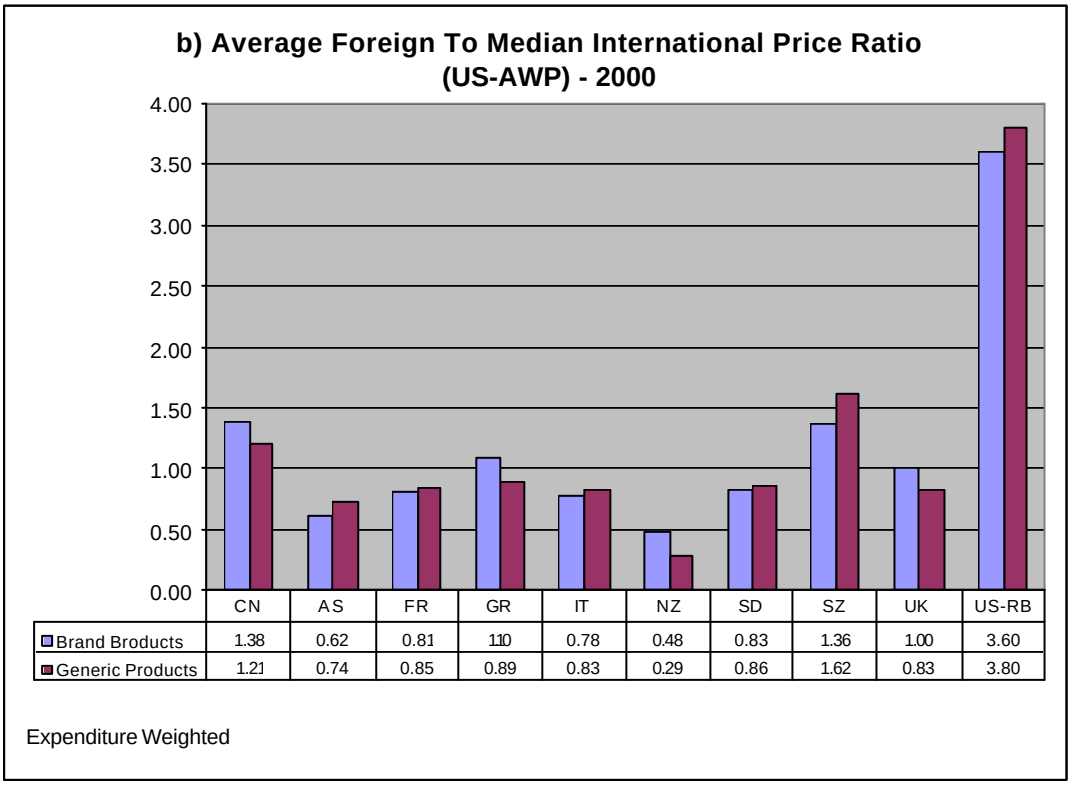

b) Average Foreign To Median International Price Ratio
(US-AWP) - 2000
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
CN AS FR GR IT NZ SD SZ UK US-RB
Brand Broducts 1.38 0.62 0.81 1.10 0.78 0.48 0.83 1.36 1.00 3.60
Generic Products 1.21 0.74 0.85 0.89 0.83 0.29 0.86 1.62 0.83 3.80
Expenditure Weighted

Table 8 below provides a summary of how Canadian prices compare internationally. For all multiple source drugs, based on a median Canadian price for the sample, Canadian prices are above the Median International Price (MIP) in 54% or 42% of the cases depending on which U.S. price is used to calculate the median price. For generic products, Canadian prices are above MIP in 69% of the cases if the FSS price is used as the U.S. price or in 46% of the cases if the Red Book price is used.

How Canadian Median Price Levels Compared Internationally

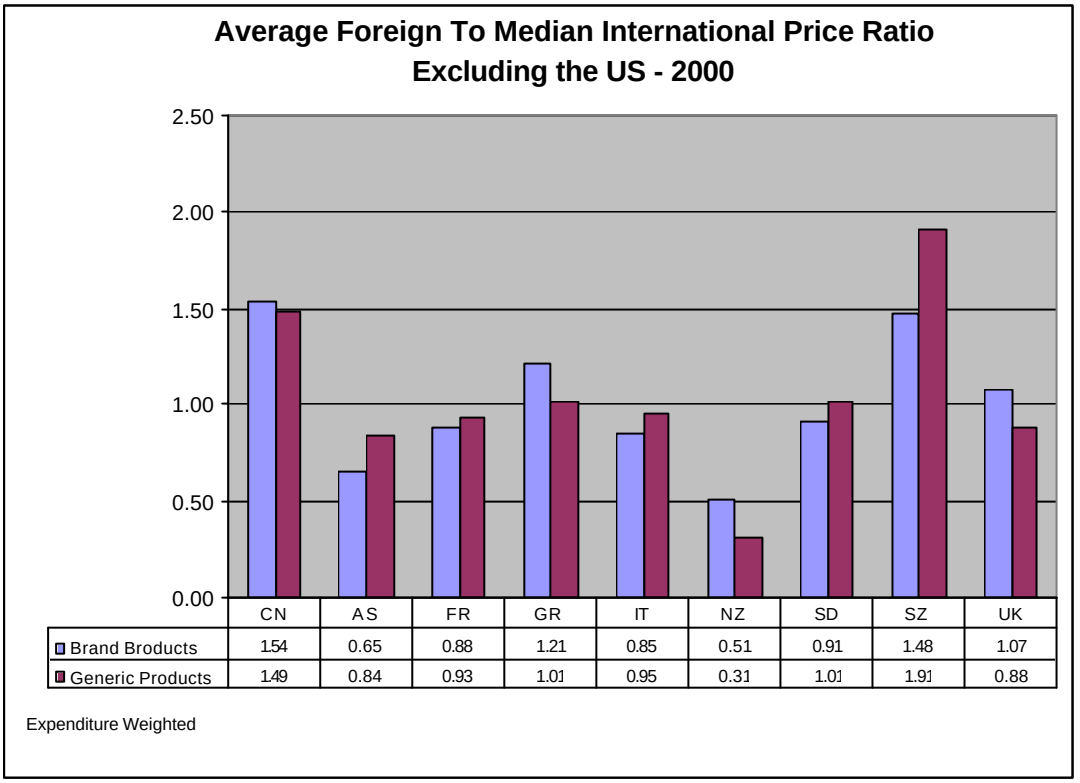
Top 100 Selling Multiple Source Medicines How Canadian Median Price Levels Compared Internationally						
2000	Total Products in Each Market		Brand Name Products		Generic Products	
(U.S. - FSS)	#	%	#	%	#	%
Median Canadian Price Above MIP	52	54%	63	66%	63	69%
Median Canadian Price Below MIP	44	46%	33	34%	28	31%
Canadian Price the Highest	24	25%	17	18%	43	47%
Canadian Price the lowest	12	13%	16	17%	15	16%
(U.S. - RB)	#	%	#	%	#	%
Median Canadian Price Above MIP	40	42%	58	60%	42	46%
Median Canadian Price Below MIP	56	58%	38	40%	45	49%
Canadian Price the Highest	1	1%	3	3%	10	11%
Canadian Price the lowest	20	21%	18	19%	24	26%

The above shows that Canadian generic prices were lower than all of the products used to generate the MIP for 15 of 91 products (if U.S.-FSS is used) or 24 of 91 products (if U.S.-RB is used). In 10 of those 15 cases, the drug was sold in only one country other than Canada, 7 of which were the U.S.. (Generally, 17 of the 96 multiple source drugs included in the analysis were only sold in one other country, the U.S.)

In order to get a better measure of how Canada compares relative to countries other than the U.S., a median international price comparison was also conducted excluding

the U.S. from the basket. As seen in Figure 10, when the U.S. is excluded from the basket, Canadian brand name prices were on average 54% above the median international price, and Canadian generic prices were 49% above.[53]

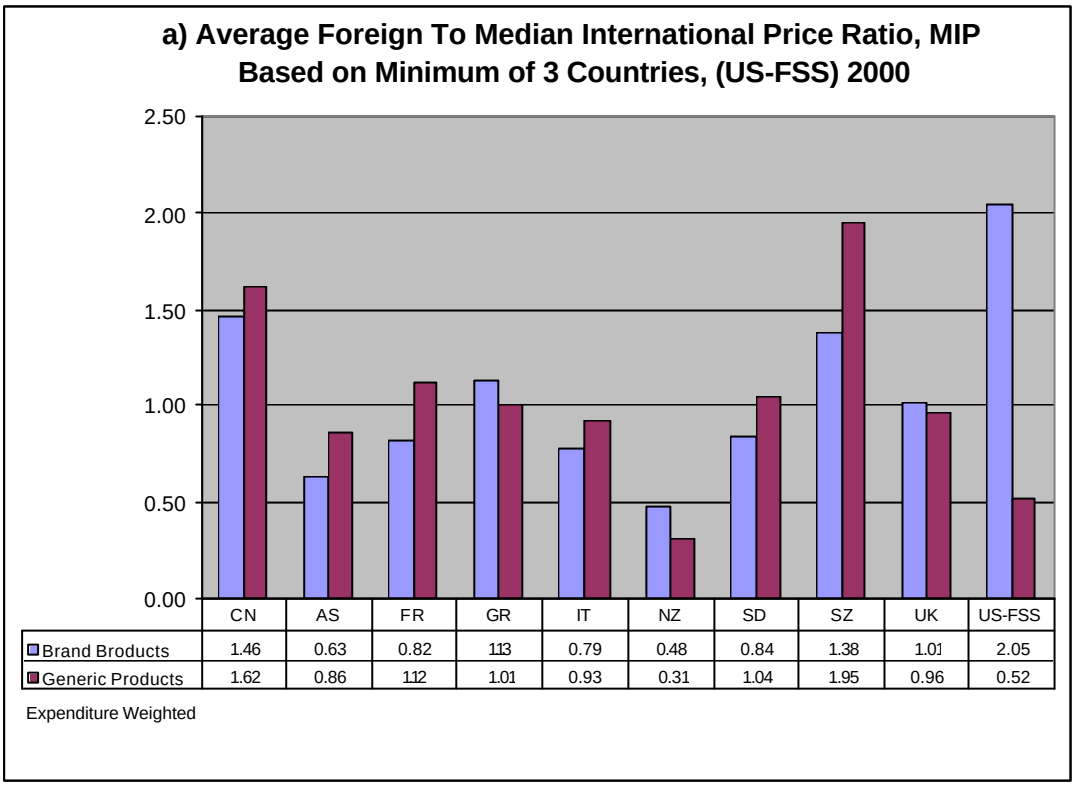
Figure 10

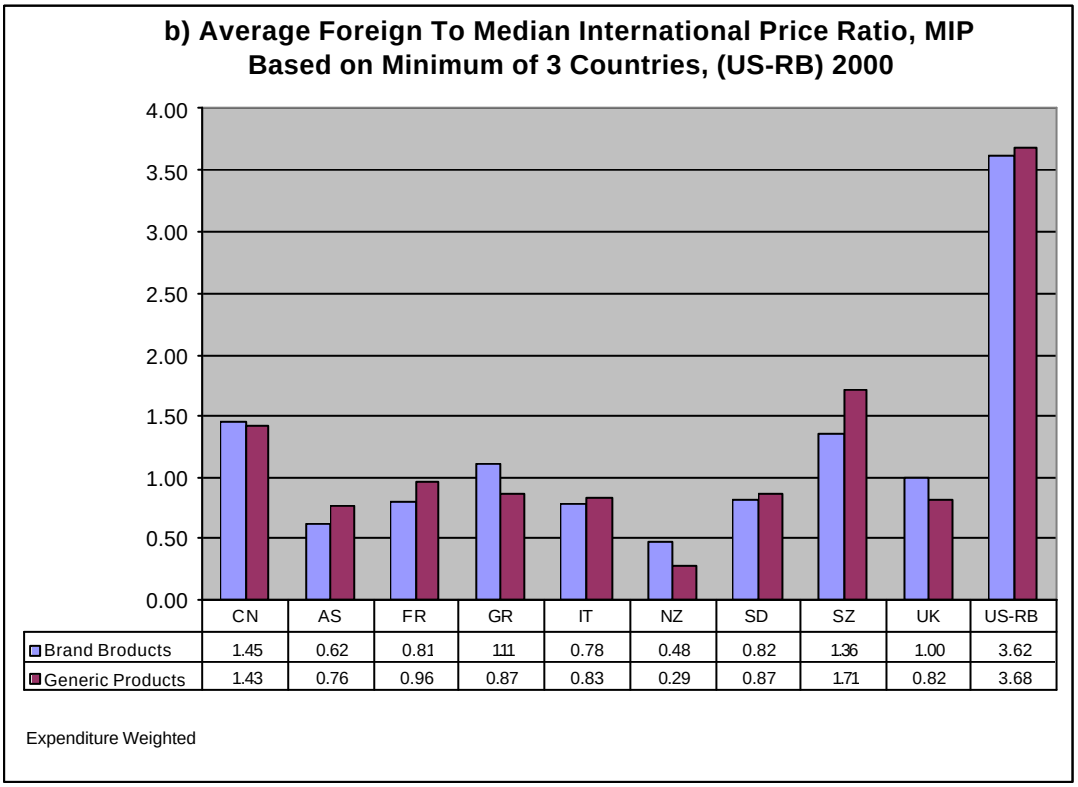


Figures 11a and 11b show the average foreign to MIP ratio for only those medicines available in at least three countries. (N=85 for brand medicines and N= 55 for generics) When the MIP represents the median of at least three countries, results are generally similar, but Canadian generic prices are on average 62% or 43% above the median international levels, (depending on the U.S. price used).[54]

The prices of generic products in New Zealand are substantially lower than international levels; this is particularly interesting since the average number of companies competing in each multiple source market is lower than in most of the other countries.

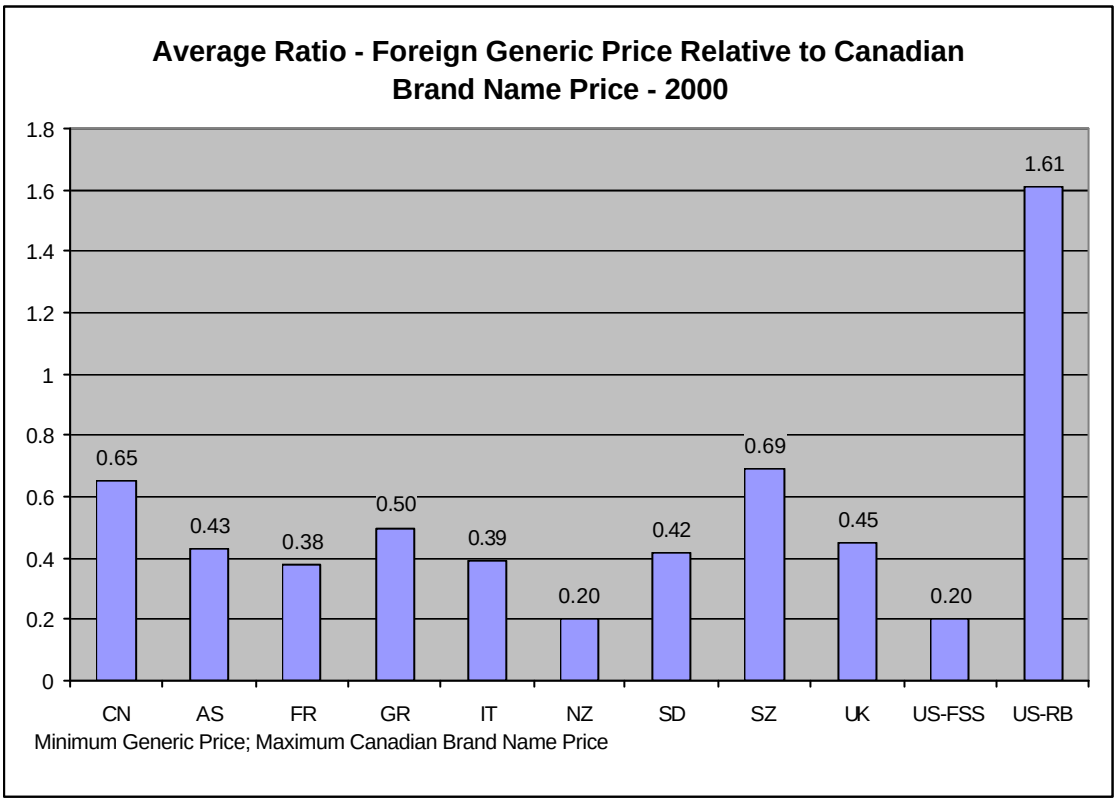
Figure 11


a) Average Foreign To Median International Price Ratio, MIP
Based on Minimum of 3 Countries, (US-FSS) 2000
2.50
2.00
1.50
1.00
0.50
0.00
CN AS FR GR IT NZ SD SZ UK US-FSS
Brand Broducts 1.46 0.63 0.82 1.13 0.79 0.48 0.84 1.38 1.01 2.05
Generic Products 1.62 0.86 1.12 1.01 0.93 0.31 1.04 1.95 0.96 0.52
Expenditure Weighted


b) Average Foreign To Median International Price Ratio, MIP
Based on Minimum of 3 Countries, (US-RB) 2000
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
CN AS FR GR IT NZ SD SZ UK US-RB
Brand Broducts 1.45 0.62 0.81 1.11 0.78 0.48 0.82 1.36 1.00 3.62
Generic Products 1.43 0.76 0.96 0.87 0.83 0.29 0.87 1.71 0.82 3.68
Expenditure Weighted

In an earlier section of the report a generic-to-brand price ratio was calculated for each country. In Figure 12, a generic-to-brand price ratio is constructed using each country's generic prices as a ratio of Canadian brand name prices. Again, only in Switzerland and the U.S. Red Book were generic prices higher than prices in Canada. It is interesting to note that if the U.S.-FSS price is used, Canadian generic prices are the second highest in the sample of countries included in the analysis.[55]

Figure 12



Conclusion

The market for generic medicines tends to be most developed in the presence of policies which encourage the pharmacist to substitute generic drug products; price controls; financial incentives (e.g. prescribing budgets); and consumer awareness that fosters the use of less costly generic medicines.

At the ex-factory gate price, the domestic generic-to-brand price ratio for top selling multiple source drugs was .645 in 2001. There was also no evidence that brand name manufacturers change their pricing strategy prior to or upon generic entry.

An analysis of provincial drug plans retail data revealed that Saskatchewan and Alberta had the lowest claimed generic-to-brand price ratio (0.59) and Ontario and Nova Scotia had the highest generic-to-brand price ratio (0.65) for the same sample of drugs (keeping the brand price constant for the purpose of the comparison).

Internationally, Canadian generic prices are relatively high. Relative to Canada, generic prices were lower in all countries except Switzerland; in the U.S., FSS prices were lower than Canada, but the Red Book prices were comparably higher. The Canadian generic price was greater than the median international generic price (MIGP) by at least 21% and up to 51%, depending on which price is used to represent the U.S. price. If the U.S. is excluded from the basket of countries used to generate the MIGP, the Canadian generic price exceeds the MIGP by 49%.

Appendix I: Provincial Drug Plan Analysis Using Accepted Prices

Accepted Price (Price Recognized by the Provincial Drug Plan and Includes the Patients Portion of the Drug Cost)

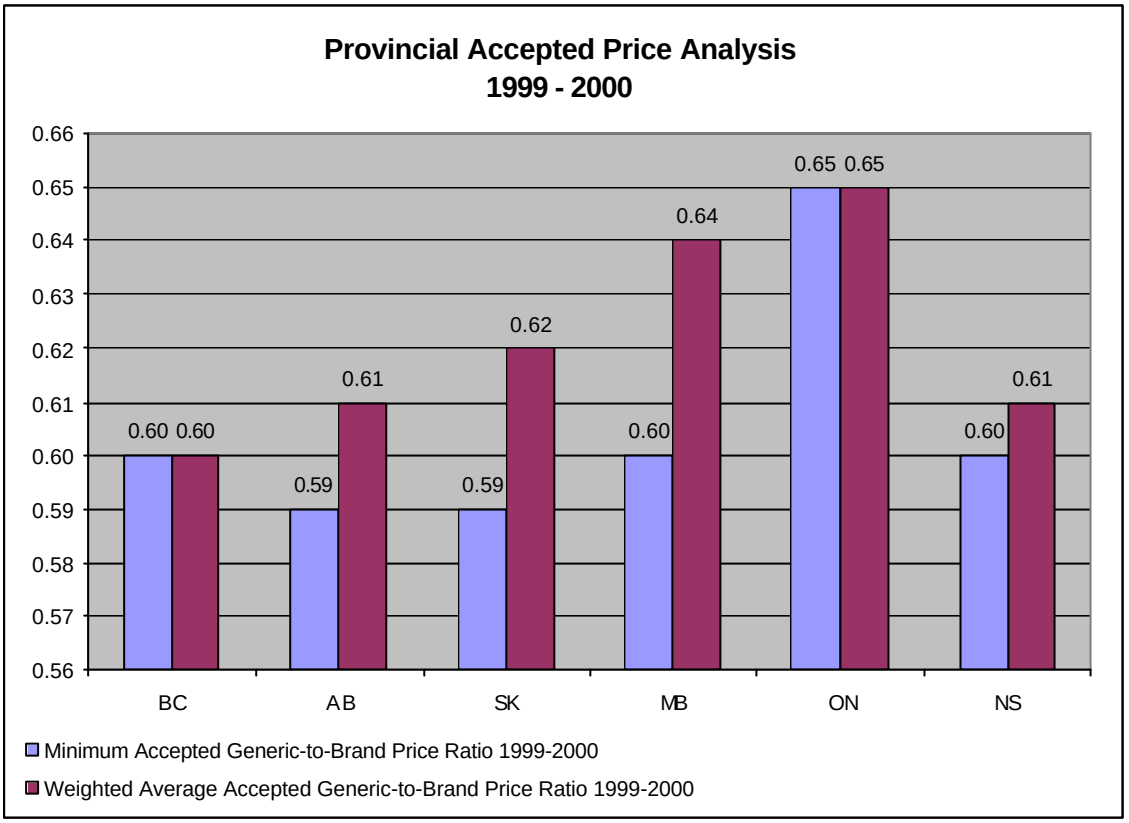
Table 8

Brand Price=ODB Max ; Generic Price - Defined at Drug Plan Level (Minimum) GEOMETRIC MEAN RATIO 1996-1999				
	1996	**1997**	**1998**	**1999**
British Columbia	0.606	0.595	0.607	0.597
Alberta	0.593	0.579	0.599	0.590
Saskatchewan	0.678	0.618	0.617	0.587
Manitoba	0.624	0.601	0.618	0.599
Ontario	0.643	0.631	0.643	0.646
Nova Scotia	0.606	0.585	0.593	0.595

Table 9

Brand Price=ODB Max ; Generic Price - Defined at Drug Plan Level (Weighted Average) GEOMETRIC MEAN RATIO 1996-1999				
	1996	**1997**	**1998**	**1999**
British Columbia	0.622	0.608	0.620	0.604
Alberta	0.604	0.591	0.611	0.606
Saskatchewan	0.709	0.647	0.639	0.619
Manitoba	0.655	0.643	0.654	0.641
Ontario	0.647	0.634	0.655	0.651
Nova Scotia	0.624	0.598	0.610	0.608

Figure 13


Provincial Accepted Price Analysis
1999 - 2000
0.66
0.65
0.64
0.63
0.62
0.61
0.60
0.59
0.58
0.57
0.56
0.60 0.60
0.59
0.61
0.59
0.62
0.60
0.64
0.65 0.65
0.60
0.61
BC
AB
SK
MB
ON
NS
Minimum Accepted Generic-to-Brand Price Ratio 1999-2000
Weighted Average Accepted Generic-to-Brand Price Ratio 1999-2000

Appendix II: Generic Market Share in Selected OECD Countries

In the United Kingdom generic drug prescriptions have been steadily increasing over the years (NHS Discussion Paper, p.3). They are significantly higher than in Canada and, for 2001, represent approximately 70% of all prescriptions. The sales of generics accounts for approximately 50% of all dispensed items in the UK's community pharmacies but account for approximately a quarter of pharmaceutical expenditure (NHS Discussion Paper, p.3, Scrip Reports, p.188). The UK market of generic drug manufacturers has changed significantly in the last 10 years (OXERA, p.2). Generic manufacturers used to be offshoots of the major research based companies in the UK but have been gradually sold off from the branded-sector, remained independent for some time and now most have been purchased by large international generic manufacturers. The major suppliers of generic drugs in the UK consist of Ivax (Norton in the U.S.), Teva (APS in Israel), Alphapharm (Cox in the U.S.) and Generics UK (Merck in Germany). In 1999, the overall price of generics increased by about 45% during the course of the year due to supply shortages in the generics market (NHS Discussion Paper, p.3). These shortages were caused by a sequential series of supply shocks that included the 1998 closure of Regent (a major UK generics manufacturer), the relocation overseas of manufacturing facilities by Norton and APS as well as the introduction of patient packs (Ibid., p.7). These events led to a decision on July 6, 2p00 by Lord Hunt, the Parliamentary Secretary of State for Health, to proceed with a statutory maximum price scheme for generic medicines sold to community pharmacies and dispensing doctors.

In France, the generic drugs market is growing, though it is significantly less than Canada and the UK, representing 2.7% of reimbursable drug products (CEPS Ann. Report 2000, Section 1-D). For the year 2000, the volume of multi-source drug products (original off-patent drugs and generic versions) accounted for 15.9% of the total French prescription market and generic versions represented 5.6% (EGA-France). The EGA argues that generic drugs in France account for a low volume share because older drugs have low prices and prescriptions are generically written using brand names (EGA-France). France's generic market is represented by a larger number of generic suppliers than Canada or the UK. The 10 major suppliers represent 20% of the generic drugs market and are represented by: Biogalenique (RPR) (7%), Dakota Pharm (Sanofi) (6%), GNR-Pharma (Knoll BASF) (2%), Jurner (2%), Pharmafarm (1%) and Irex (1%) (NERA, p.97). In efforts to reduce pharmaceutical expenditures, France's Government has been actively encouraging the use of generic drugs. Despite their efforts, generic sales only increased moderately for the year 2000 (CEPS Annual Report Section-D).

Smaller than France, Italy's generic market represents less than 1% of the market in terms of value ($15 million U.S., 1999) (EGA-Italy). The 5 major generic manufacturers in Italy include DOC.DOROM (a U.S. based company), EG (Stade, Germany), RatioPharm (Italy), Hexan and GNR (Ibid.). Several factors have influenced the market for generic drugs in Italy. For example, the term *generic* was first introduced into the Italian pharmaceutical market 1996 and, according to the EMEA, has affected the introduction and acceptance of generic drugs (EGA-Italy). Also affecting the market for generics is the fact that copy products exist in the pharmaceutical environment (PPR, p.89). As well, original brand products have low average prices; there is a strong preference for branded products among doctors and patients and finally, there is a lack

of widespread substitution incentives for pharmacists (PPR, p.89, EGA-Italy). Due to the fact that a large number of brand name drugs will be losing patent protection over the coming years, the Government intends to promote the use of generics in the Italian pharmaceutical market (PPR, p.89).

The generics market in Sweden is higher than France and Italy, but significantly less than Canada or the UK with an estimated share of approximately 5% of the total pharmaceutical market. The 5 major generic manufacturers, in terms of market share, consist of Tika (Astra) (57%), NM Pharma (23%), Dumex (16%), Selena (GEA) and Nordic Drugs (Phoenix) (NERA, p.97). Over the past few years, there has been no evidence of growth of the generic market and their use is not particularly promoted by the Government (Kanavos, p.252, PPR, p.150). Specifically, Nillsson et al. (in Productivity Commission, p.B.26) suggest that the Swedish reference pricing system has had the effect of reducing market opportunities for new generic drug products by reducing price competition between branded originator drugs and generic copies.

In Switzerland, sales of all prescription medicines accounted for 76% of the out-of-hospital market (PPR, p.157). The generic drugs market is considered small, although definitive information concerning the Swiss generic market is very difficult to obtain. All generic drugs in Switzerland are branded and marketed in the same way as originator brand name drug products. Policies to induce generic use are encouraged by the Swiss Government and include regulating the maximum reimbursement price of a generic drug product, best practices for prescribing physicians and the future possibility of allowing pharmacists to substitute brand for generic drug products (Kanavos, p.115).

Germany is considered to have one of the largest European generic markets. Specifically, 69% of all prescriptions were written for generic products (PPR, p.61). Approximately 40% of 1998 total volume sales of pharmaceuticals were represented by generic products and 32% of 1998 sales of the total prescription market by value (PPR, p.61, EGA-Germany). For 2000, sales of generic drugs grew by 21% in the first quarter compared to a 3% rate of growth in the overall pharmaceutical market. The major generic manufacturers in Germany include, Azupharm (Novartis) (2%), Jenapharm (Schering AG) (1%), Heumann (Searle) (1%), Sanorania (Upjohn), RatioPharm (Phoenix) (7%), Hexal (5%), Stada (2%), Arzneimittelwerk Dresden (Asta) (2%), Isis Puren (2%), Berlin Chemie (1%), Wolff (1%), CT-Arzneimittel (Phoenix) (1%), Durachemie (Phoenix) (1%), Worwag, Betapharm, Lichtenstein and Woelm (NERA, p.98). In total, these 17 major generic manufacturers are greater in number than any of the selected countries, and represent a total market share of 28% (EGA-Germany). A major factor that has helped to create such a flourishing generics industry in Germany is the fact the physicians are liable and subject to financial penalties if they overspend their allocated budgets towards the expenditure on pharmaceuticals (Ibid.). The EGA argues that this has created an attractive environment for prescribing less expensive generic medicines (Ibid.).

The U.S. has the largest pharmaceutical market in the world (PPR, p.170). It is estimated that the generic drug market was worth $7.7 billion U.S. or 7% of the prescription out-of-hospital drug market at retail prices in 1999 (Ibid.) and sales by volume are estimated to be much higher than 7%. The major generic manufacturers in the SU include Apothecon, Lemmon, DuPont Pharm, Rugby, Warner-Chilcott, Mylan, Schein, Zenith, Goldine and Bar. Together, these 10 companies represent approximately 61% of the generics industry (NERA, p.98). Several factors that explain

the widespread use of generic drugs include the notion that the pressure of generic drug consumers is the most efficient mechanism to speed-up the diffusion of generic drugs (Jacobzone, p.22). Also, most private insurance plans in the U.S. require generics rather than original brand name drugs (Ibid, p.82). Finally, there is the Hatch-Waxman Act and the Roche-Bolar amendments to the Hatch Waxman Act that have allowed generic manufacturers to apply for marketing authorizations and prepare samples before patent expiration of the original brand name product (NERA, p.89).

In Australia the generics market in terms of sales is almost half of Canada's, but larger than France and Italy's, and close to Sweden's. Specifically, approximately 75% of pharmaceuticals prescribed outside of hospitals are eligible for subsidization under their government's public subsidy scheme for pharmaceuticals called the Pharmaceutical Benefits Scheme (PBS) (Productivity Commission, p.XVIII). For the year 2000, generic medicines prescribed under the PBS represented 8% of total prescriptions (PBPA, p.31).

In New Zeland, the growth of total pharmaceutical expenditures since 1993 has been low. New Zealand's Pharmaceutical Management Agency Limited (Pharmac) notes that a downward trend in pharmaceutical prices over the past decade is the main factor explaining the recent decline in pharmaceutical expenditures (Ibid, p.B.16). Specifically, from 1993 to 2000, prices of pharmaceuticals have declined by 35% (Ibid, p. B.15). New Zealand's pharmaceutical supply is provided by a majority of multinational companies and approximately 80% are imported (Mutlib, p.905). However, there are a few local generic manufacturers. The generic drug market in New Zealand is larger than in France, Italy and Sweden but smaller than in Canada, UK, Germany and the U.S.. It is comparable to Australia's representing approximately 10% of the total pharmaceutical market (Ibid.).

Appendix III: Additional International Empirical Results

Additional Results General

Table 10 - The Average Generic-to-Brand Price Ratio

Country	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price) to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.90	0.90	0.90	0.92	1.00	0.89	0.89
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.75	0.77	0.71	0.86	0.92	0.75	0.77
Germany	0.69	0.89	0.61	0.75	0.70	0.67	0.86
Italy	0.78	0.80	0.76	0.94	0.96	0.74	0.76
New Zealand	0.64	0.74	0.54	0.81	0.75	0.62	0.73
Sweden	0.83	0.87	0.76	0.91	0.89	0.81	0.85
Switzerland	0.67	0.74	0.63	0.84	0.85	0.66	0.73
U.S. - FSS	0.19	0.40	0.11	0.26	0.27	0.17	0.37
United Kingdom	0.61	0.62	0.61	0.81	0.98	0.59	0.59
U.S. - RB	0.66	0.82	0.49	0.72	0.60	0.65	0.80

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.89	0.90	0.90	0.90	0.94	0.98	0.92
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.70	0.75	0.77	0.71	0.88	0.94	0.83
Germany	0.59	0.77	0.99	0.68	0.76	0.88	0.67
Italy	0.73	0.93	0.95	0.91	0.97	0.93	0.90
New Zealand	0.53	0.66	0.78	0.57	0.83	0.88	0.73
Sweden	0.74	0.84	0.89	0.78	0.91	0.92	0.84
Switzerland	0.62	0.68	0.75	0.64	0.85	0.93	0.80
U.S. - FSS	0.10	0.22	0.47	0.13	0.27	0.57	0.16
United Kingdom	0.58	0.64	0.65	0.64	0.91	0.85	0.77
U.S. - RB	0.48	0.67	0.83	0.50	0.71	0.76	0.54

Table 11 - The Average Generic-to-Brand Price Ratio Using Canadian Brand Price Levels as a Benchmark

Country	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price) to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.43	0.43	0.43	0.46	1.00	0.43	0.43
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.41	0.42	0.39	0.54	0.92	0.40	0.42
Germany	0.56	0.71	0.50	0.66	0.70	0.56	0.71
Italy	0.40	0.41	0.40	0.56	0.96	0.40	0.41
New Zealand	0.23	0.26	0.20	0.37	0.75	0.23	0.26
Sweden	0.46	0.48	0.42	0.61	0.89	0.46	0.48
Switzerland	0.75	0.83	0.70	0.83	0.85	0.74	0.82
U.S. - FSS	0.33	0.75	0.20	0.45	0.27	0.33	0.74
United Kingdom	0.46	0.46	0.45	0.64	0.98	0.46	0.46
U.S. - RB	2.16	2.70	1.62	2.28	0.60	2.15	2.68

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.43	0.43	0.43	0.43	0.46	0.70	0.45
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.38	0.42	0.44	0.40	0.54	0.80	0.51
Germany	0.50	0.57	0.73	0.51	0.68	0.89	0.60
Italy	0.39	0.40	0.41	0.40	0.59	0.82	0.54
New Zealand	0.20	0.23	0.26	0.20	0.38	0.49	0.33
Sweden	0.42	0.46	0.48	0.42	0.63	0.88	0.58
Switzerland	0.69	0.79	0.87	0.73	0.85	1.22	0.79
U.S. - FSS	0.20	0.35	0.77	0.21	0.50	0.44	0.29
United Kingdom	0.45	0.46	0.46	0.45	0.74	0.96	0.63
U.S. - RB	1.61	2.22	2.77	1.66	2.36	2.73	1.79

Table 12 – Bilateral Comparison - The Average Foreign to Canadian Price Ratio

Country	Median Foreign Price to Median Canadian Price (Over All Products)	Median Foreign Brand Price to Median Canadian Brand Price	Median Foreign Generic Price to Median Canadian Generic Price	Median Foreign Generic (or Lowest Brand) Price to Median Canadian Generic Price	Maximum Foreign Brand Price to Maximum Canadian Brand Price
Australia	0.71	0.51	0.68	0.71	0.50
Canada	1.00	1.00	1.00	1.00	1.00
France	0.85	0.64	0.63	0.84	0.64
Germany	1.01	0.92	0.85	0.99	0.95
Italy	0.89	0.61	0.60	0.85	0.62
New Zealand	0.56	0.48	0.37	0.55	0.48
Sweden	0.95	0.67	0.72	0.93	0.69
Switzerland	1.30	0.99	1.17	1.27	0.99
U.S. - FSS	0.76	1.77	0.51	0.69	1.87
United Kingdom	1.12	0.79	0.74	0.98	0.82
U.S. - RB	3.59	3.22	3.31	3.49	3.24

Country	Minimum Foreign Brand Price to Minimum Canadian Brand Price	Minimum Generic Foreign Price to Median Canadian Generic Price	Minimum Generic Foreign Price to Minimum Canadian Generic Price	Minimum Foreign Price to Minimum Canadian Price (Over All Products)	Minimum Foreign Price to Median Canadian Price (Over All Products)
Australia	0.51	0.68	0.68	0.71	0.70
Canada	1.00	1.00	1.00	1.00	0.98
France	0.67	0.60	0.60	0.81	0.80
Germany	0.85	0.76	0.76	0.90	0.89
Italy	0.59	0.59	0.59	0.84	0.82
New Zealand	0.47	0.32	0.32	0.50	0.49
Sweden	0.67	0.67	0.67	0.89	0.88
Switzerland	1.02	1.09	1.10	1.23	1.22
U.S. - FSS	1.58	0.31	0.31	0.45	0.44
United Kingdom	0.78	0.74	0.74	0.97	0.96
U.S. - RB	3.24	2.48	2.48	2.79	2.73

Table 13 a) - The Average Canadian to Median International Price Ratio (U.S. - FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.76	0.76	0.74	61	0.66	0.63	0.60
Canada	96	1.08	1.19	0.91	96	1.17	1.42	1.08
France	69	0.86	0.90	0.89	64	0.80	0.82	0.80
Germany	72	1.15	0.95	1.15	62	1.19	1.13	1.27
Italy	65	0.99	1.04	1.12	64	0.79	0.79	0.88
New Zealand	71	0.59	0.47	0.49	62	0.57	0.48	0.52
Sweden	64	1.03	1.01	0.98	60	0.85	0.84	0.82
Switzerland	69	1.50	1.51	1.77	68	1.35	1.38	1.52
United Kingdom	79	1.24	1.23	1.11	78	1.02	1.01	0.85
U.S. - FSS	88	0.80	0.84	0.95	82	2.28	2.04	2.64

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.89	0.86	0.85	62	0.78	0.79	0.76
Canada	91	1.30	1.51	1.07	96	1.13	1.31	0.95
France	36	0.86	0.98	0.93	69	0.89	0.96	0.93
Germany	57	1.21	1.03	1.26	72	1.18	1.00	1.18
Italy	14	0.95	0.93	1.36	65	0.99	1.07	1.13
New Zealand	38	0.44	0.32	0.35	71	0.60	0.46	0.48
Sweden	30	1.06	1.05	0.93	64	1.05	1.05	0.95
Switzerland	30	1.81	2.01	2.50	69	1.54	1.61	1.82
United Kingdom	31	1.01	0.97	0.84	79	1.10	1.02	0.99
U.S. - FSS	71	0.62	0.57	0.67	88	0.73	0.82	0.86

*N is the number of bioequivalent markets where products were found for comparison.

Table 13 b) - The Average Canadian to Median International Price Ratio (U.S. - RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.70	0.71	0.68	61	0.64	0.62	0.58
Canada	96	0.85	1.07	0.76	96	1.10	1.38	1.04
France	69	0.79	0.84	0.80	64	0.78	0.81	0.79
Germany	72	1.06	0.89	1.07	62	1.16	1.10	1.24
Italy	65	0.92	0.99	1.05	64	0.78	0.78	0.86
New Zealand	71	0.53	0.43	0.45	62	0.57	0.48	0.51
Sweden	64	0.94	0.94	0.90	60	0.83	0.83	0.81
Switzerland	69	1.36	1.42	1.60	68	1.34	1.36	1.51
United Kingdom	79	1.15	1.16	1.01	78	1.00	1.00	0.84
U.S. - RB	86	3.72	3.71	4.72	84	4.12	3.60	4.76

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.74	0.74	0.70	62	0.72	0.75	0.71
Canada	87	0.81	1.21	0.67	96	0.88	1.15	0.79
France	36	0.74	0.85	0.82	69	0.81	0.87	0.82
Germany	57	1.05	0.89	1.12	72	1.07	0.94	1.10
Italy	14	0.83	0.83	1.26	65	0.90	0.99	1.04
New Zealand	38	0.35	0.29	0.30	71	0.54	0.43	0.45
Sweden	30	0.85	0.86	0.77	64	0.96	0.98	0.87
Switzerland	30	1.52	1.62	1.57	69	1.36	1.45	1.57
United Kingdom	31	0.84	0.83	0.70	79	1.01	0.96	0.88
U.S. - RB	66	4.07	3.80	5.12	86	3.70	3.76	4.75

*N is the number of bioequivalent markets where products were found for comparison.

Table 14 - The Average Canadian to Median International Price Ratio, Without United States in the Median International Price

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.74	0.75	0.73	61	0.69	0.65	0.62
Canada	90	1.02	1.17	0.87	89	1.35	1.54	1.23
France	69	0.85	0.90	0.87	64	0.84	0.88	0.87
Germany	72	1.16	0.95	1.18	62	1.31	1.21	1.41
Italy	65	0.99	1.06	1.14	64	0.84	0.85	0.94
New Zealand	71	0.57	0.46	0.48	62	0.61	0.50	0.56
Sweden	64	1.03	1.02	1.01	60	0.92	0.91	0.92
Switzerland	69	1.47	1.52	1.78	68	1.45	1.48	1.64
United Kingdom	79	1.23	1.23	1.12	78	1.10	1.07	0.93

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.85	0.84	0.80	62	0.76	0.79	0.75
Canada	74	1.28	1.49	1.05	90	1.05	1.26	0.89
France	36	0.82	0.93	0.89	69	0.86	0.94	0.89
Germany	57	1.16	1.01	1.22	72	1.18	0.99	1.21
Italy	14	0.94	0.95	1.41	65	0.98	1.07	1.14
New Zealand	38	0.43	0.31	0.36	71	0.58	0.45	0.48
Sweden	30	1.01	1.01	0.87	64	1.05	1.05	0.97
Switzerland	30	1.73	1.91	2.40	69	1.48	1.57	1.77
United Kingdom	31	0.93	0.88	0.78	79	1.08	1.02	0.97

*N is the number of bioequivalent markets where products were found for comparison

Table 15 a)- The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price (U.S. - FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.76	0.76	0.74	61	0.66	0.63	0.60
Canada	88	1.05	1.19	0.90	85	1.30	1.46	1.13
France	69	0.86	0.90	0.89	64	0.80	0.82	0.80
Germany	71	1.15	0.95	1.16	60	1.20	1.13	1.28
Italy	65	0.99	1.04	1.12	64	0.79	0.79	0.88
New Zealand	70	0.59	0.47	0.49	62	0.57	0.48	0.52
Sweden	64	1.03	1.01	0.98	59	0.84	0.84	0.82
Switzerland	69	1.50	1.51	1.77	68	1.35	1.38	1.52
United Kingdom	79	1.24	1.23	1.11	76	1.03	1.01	0.85
U.S. - FSS	80	0.80	0.85	0.96	72	2.34	2.05	2.66

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.89	0.86	0.85	62	0.78	0.79	0.76
Canada	55	1.41	1.62	1.32	88	1.10	1.30	0.94
France	33	0.91	1.12	0.95	69	0.89	0.96	0.93
Germany	50	1.21	1.01	1.26	71	1.18	1.00	1.18
Italy	14	0.95	0.93	1.36	65	0.99	1.07	1.13
New Zealand	32	0.42	0.31	0.33	70	0.60	0.46	0.48
Sweden	29	1.04	1.04	0.92	64	1.05	1.05	0.95
Switzerland	29	1.77	1.95	2.30	69	1.54	1.61	1.82
United Kingdom	30	0.98	0.96	0.83	79	1.10	1.02	0.99
U.S. - FSS	44	0.52	0.52	0.57	80	0.74	0.82	0.87

*N is the number of bioequivalent markets where products were found for comparison

Table 16 b)- The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price (U.S. - RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.70	0.71	0.68	61	0.64	0.62	0.58
Canada	88	0.95	1.10	0.80	85	1.28	1.45	1.12
France	69	0.79	0.84	0.80	64	0.78	0.81	0.79
Germany	71	1.07	0.89	1.08	60	1.19	1.11	1.26
Italy	65	0.92	0.99	1.05	64	0.78	0.78	0.86
New Zealand	70	0.54	0.43	0.45	62	0.57	0.48	0.51
Sweden	64	0.94	0.94	0.90	59	0.83	0.82	0.81
Switzerland	69	1.36	1.42	1.60	68	1.34	1.36	1.51
United Kingdom	79	1.15	1.16	1.01	76	1.02	1.00	0.85
U.S. - RB	78	3.67	3.72	4.69	74	4.25	3.62	4.79
	Generic Products				**Generic Products (or Lowest Brand Product)**			
Country	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.78	0.76	0.76	62	0.72	0.75	0.71
Canada	55	1.22	1.43	1.14	88	0.99	1.19	0.83
France	33	0.76	0.96	0.83	69	0.81	0.87	0.82
Germany	50	1.05	0.87	1.11	71	1.09	0.94	1.11
Italy	14	0.83	0.83	1.26	65	0.90	0.99	1.04
New Zealand	32	0.38	0.29	0.30	70	0.54	0.43	0.45
Sweden	29	0.87	0.87	0.78	64	0.96	0.98	0.87
Switzerland	29	1.57	1.71	2.00	69	1.36	1.45	1.57
United Kingdom	30	0.81	0.82	0.70	79	1.01	0.96	0.88
U.S. - RB	43	3.81	3.68	4.80	78	3.65	3.76	4.72

*N is the number of bioequivalent markets where products were found for comparison

Table 16 - Comparing the Cost of Common Drug Products at Foreign and Canadian Price Levels

Country	Over All Products				Brand Products			
	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	213.2	284.2	0.75	62	228.3	477.5	0.48	61
Canada	369.3	369.3	1.00	96	608.9	608.9	1.00	96
France	294.9	296.8	0.99	69	334.1	489.8	0.68	64
Germany	289.0	317.9	0.91	72	385.6	449.4	0.86	62
Italy	318.0	301.6	1.05	65	314.5	477.9	0.66	64
New Zealand	151.3	301.0	0.50	71	180.9	464.5	0.39	62
Sweden	302.5	317.4	0.95	64	317.9	481.2	0.66	60
Switzerland	468.0	302.6	1.55	69	586.6	513.4	1.14	68
U.S. - FSS	457.8	356.3	1.28	88	948.5	546.3	1.74	82
United Kingdom	407.6	345.8	1.18	79	446.9	572.8	0.78	78
U.S. - RB	1337.3	349.9	3.82	86	1615.7	575.6	2.81	84
	Generic Products				Generic Products (or Lowest Brand Product)			
Country	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	168.9	248.1	0.68	47	210.6	282.5	0.75	62
Canada	365.7	365.7	1.00	96	365.7	365.7	1.00	96
France	153.3	187.3	0.82	36	289.6	293.3	0.99	69
Germany	229.4	287.7	0.80	57	279.2	316.5	0.88	72
Italy	54.0	76.3	0.71	14	304.1	298.6	1.02	65
New Zealand	53.8	183.2	0.29	38	142.2	298.2	0.48	71
Sweden	144.0	198.3	0.73	30	290.5	314.7	0.92	64
Switzerland	281.5	171.3	1.64	30	453.5	299.5	1.51	69
U.S. - FSS	182.6	264.8	0.69	71	421.9	352.7	1.20	88
United Kingdom	118.5	152.8	0.78	31	347.3	343.1	1.01	79
U.S. Redbook	857.1	246.5	3.48	66	1296.0	346.2	3.74	86

*N is the number of bioequivalent markets where products were found for com parison.

Table 17 - Average Generic-to-Brand Price Ratio by Level of Competition and the Number of Occurrences of that Level of Competition

Australia							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	20	0.89	0.89	0.89	0.89	0.89	0.89
2	2	0.95	0.95	0.95	0.95	0.95	0.95
3	2	0.95	0.95	0.95	0.94	0.94	0.94
4	3	0.98	0.98	0.98	0.97	0.98	0.97
6	1	1.00	1.00	1.00	1.00	1.00	1.00
7	1	0.96	0.96	0.96	0.96	0.96	0.96
8	7	0.85	0.85	0.85	0.84	0.84	0.84
9	1	0.92	0.92	0.92	0.92	0.92	0.92
10	7	0.86	0.86	0.86	0.86	0.86	0.86
11	3	0.89	0.89	0.89	0.89	0.89	0.89
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	20	0.90	0.90	0.90	0.95	0.94	0.90
2	2	0.95	0.95	0.95	0.97	0.98	0.95
3	2	0.95	0.95	0.95	0.94	1.00	0.94
4	3	0.98	0.99	0.98	0.97	1.00	0.97
6	1	1.00	1.00	1.00	1.00	1.00	1.00
7	1	0.96	0.96	0.96	0.96	1.00	0.96
8	7	0.85	0.85	0.85	0.84	1.00	0.84
9	1	0.92	0.92	0.92	0.92	1.00	0.92
10	7	0.86	0.86	0.86	0.86	1.00	0.86
11	3	0.89	0.89	0.89	0.89	1.00	0.89

Canada							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	10	0.73	0.73	0.73	0.73	0.73	0.73
2	16	0.75	0.75	0.75	0.75	0.75	0.75
3	19	0.76	0.76	0.76	0.75	0.75	0.74
4	18	0.57	0.57	0.57	0.57	0.57	0.57
5	16	0.57	0.58	0.57	0.56	0.57	0.56
6	12	0.61	0.61	0.61	0.61	0.61	0.61
7	3	0.73	0.73	0.73	0.73	0.73	0.73
8	2	0.54	0.54	0.54	0.52	0.52	0.52
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	10	0.73	0.73	0.73	0.88	0.83	0.73
2	16	0.75	0.75	0.75	0.74	0.99	0.73
3	19	0.78	0.78	0.77	0.74	1.00	0.74
4	18	0.58	0.58	0.58	0.57	1.00	0.57
5	16	0.61	0.62	0.61	0.56	1.00	0.56
6	12	0.67	0.67	0.67	0.61	1.00	0.61
7	3	0.74	0.74	0.74	0.73	1.00	0.73
8	2	0.55	0.55	0.55	0.52	1.00	0.52
France							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	10	0.85	0.85	0.85	0.84	0.84	0.84
2	5	0.69	0.69	0.69	0.69	0.69	0.69
3	4	0.68	0.74	0.67	0.68	0.74	0.67
4	1	0.76	0.77	0.76	0.76	0.77	0.76
5	3	0.78	0.79	0.75	0.78	0.79	0.75
6	2	0.71	0.71	0.61	0.71	0.71	0.61
7	3	0.69	0.72	0.67	0.69	0.72	0.67
8	3	0.74	0.81	0.66	0.74	0.81	0.66
9	3	0.64	0.70	0.45	0.64	0.70	0.45
10	2	1.00	1.01	0.99	1.00	1.01	0.99

France							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	10	0.86	0.86	0.86	0.90	0.89	0.80
2	5	0.69	0.69	0.69	0.69	1.00	0.69
3	4	0.68	0.74	0.67	0.77	0.92	0.71
4	1	0.76	0.77	0.76	0.77	0.99	0.76
5	3	0.78	0.79	0.75	0.78	0.96	0.75
6	2	0.71	0.71	0.61	0.71	0.86	0.61
7	3	0.69	0.72	0.67	0.69	0.97	0.67
8	3	0.74	0.81	0.66	0.77	0.91	0.70
9	3	0.64	0.70	0.45	0.65	0.70	0.45
10	2	1.00	1.01	0.99	0.99	0.99	0.98
Germany							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	8	0.89	0.89	0.89	0.89	0.89	0.89
2	9	0.77	0.82	0.73	0.77	0.81	0.73
3	7	0.88	0.95	0.82	0.86	0.93	0.81
4	3	0.88	0.95	0.72	0.88	0.95	0.72
5	4	0.75	0.86	0.69	0.73	0.84	0.67
7	2	0.87	1.00	0.81	0.87	1.00	0.81
8	1						
10	1	0.73	0.99	0.66	0.73	0.99	0.66
11	2	0.55	0.74	0.43	0.53	0.72	0.42
12	4	0.53	0.82	0.52	0.53	0.82	0.52
14	1						
15	2	0.88	1.00	0.62	0.65	0.74	0.46
17	1	0.68	0.80	0.62	0.59	0.69	0.54
18	1						
19	1	0.73	0.84	0.60	0.73	0.83	0.59
21	1	0.77	0.95	0.65	0.77	0.95	0.65
22	4	0.50	0.79	0.40	0.50	0.79	0.40
26	2	0.57	1.00	0.42	0.57	1.00	0.42
35	3	0.29	1.07	0.23	0.22	0.81	0.17

Germany							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.89	0.89	0.89	0.99	0.92	0.91
2	9	0.78	0.82	0.74	0.88	0.90	0.79
3	7	0.89	0.96	0.84	0.85	0.93	0.78
4	3	0.88	0.95	0.72	0.90	0.80	0.72
5	4	0.76	0.88	0.70	0.76	0.86	0.66
7	2	0.87	1.00	0.81	0.88	0.92	0.81
8	1				0.73	0.77	0.57
10	1	0.73	0.99	0.66	0.73	0.90	0.66
11	2	0.56	0.76	0.45	0.53	0.79	0.42
12	4	0.53	0.82	0.52	0.53	0.97	0.52
14	1				0.72	0.86	0.62
15	2	0.88	1.01	0.63	0.69	0.67	0.46
17	1	0.69	0.80	0.63	0.59	0.91	0.54
18	1				0.77	0.94	0.72
19	1	0.74	0.85	0.61	0.73	0.82	0.59
21	1	0.81	1.00	0.68	0.80	0.81	0.65
22	4	0.87	1.37	0.70	0.50	0.80	0.40
26	2	0.57	1.00	0.42	0.57	0.74	0.42
35	3	0.61	2.24	0.47	0.23	0.75	0.17

Italy							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	7	0.77	0.77	0.77	0.70	0.70	0.70
2	3	0.82	0.84	0.80	0.80	0.82	0.79
3	3	0.79	0.80	0.76	0.79	0.80	0.76
6	1	0.71	0.84	0.63	0.71	0.84	0.63
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	7	0.81	0.81	0.81	0.88	0.84	0.74
2	3	1.25	1.28	1.22	0.98	0.55	0.54
3	3	0.87	0.88	0.84	0.94	0.81	0.76
6	1	1.11	1.32	0.98	0.99	0.63	0.63

New Zealand							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	14	0.80	0.80	0.80	0.80	0.80	0.80
2	13	0.80	0.88	0.69	0.79	0.87	0.68
3	9	0.44	0.56	0.30	0.41	0.52	0.28
4	2	0.24	0.52	0.24	0.24	0.52	0.24
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	14	0.80	0.80	0.80	0.96	0.93	0.89
2	13	0.82	0.90	0.71	0.75	0.78	0.58
3	9	0.50	0.64	0.34	0.54	0.56	0.30
4	2	0.24	0.52	0.24	0.24	1.00	0.24
Sweden							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	15	0.89	0.89	0.89	0.89	0.89	0.89
2	5	0.93	1.07	0.69	0.93	1.07	0.69
3	8	0.72	0.76	0.68	0.67	0.71	0.63
6	1	0.73	0.81	0.72	0.73	0.81	0.72
8	1	0.74	0.79	0.60	0.74	0.79	0.60
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	15	0.89	0.89	0.89	0.96	0.95	0.91
2	5	0.93	1.07	0.69	0.87	0.59	0.52
3	8	0.76	0.81	0.72	0.69	0.90	0.62
6	1	0.73	0.81	0.72	0.73	0.99	0.72
8	1	0.74	0.79	0.60	0.76	0.79	0.60

Switzerland							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	8	0.70	0.70	0.70	0.69	0.69	0.69
2	9	0.66	0.69	0.63	0.64	0.66	0.61
4	2	0.63	0.65	0.55	0.63	0.65	0.55
5	6	0.65	0.66	0.55	0.64	0.66	0.55
8	3	0.79	1.27	0.72	0.78	1.26	0.71
10	1	0.80	1.02	0.76	0.80	1.02	0.76
11	1	0.36	0.71	0.35	0.36	0.71	0.35
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.71	0.71	0.71	0.85	0.81	0.69
2	9	0.70	0.72	0.67	0.70	0.90	0.63
4	2	0.63	0.65	0.55	0.65	0.86	0.55
5	6	0.65	0.66	0.55	0.65	0.85	0.55
8	3	0.80	1.29	0.73	0.64	0.88	0.57
10	1	0.80	1.02	0.76	0.79	0.94	0.75
11	1	0.36	0.71	0.35	0.38	0.93	0.35
United Kingdom							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	29	0.61	0.61	0.61	0.58	0.58	0.58
2	2	0.73	0.83	0.63	0.69	0.78	0.59

United Kingdom							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	29	0.63	0.63	0.63	0.83	0.70	0.58
2	2	0.79	0.89	0.68	0.82	0.72	0.59
U.S. - FSS							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.60	0.60	0.60	0.53	0.53	0.53
2	3	0.45	0.66	0.13	0.45	0.66	0.13
3	5	0.20	0.31	0.11	0.18	0.28	0.10
4	6	0.40	0.64	0.30	0.39	0.62	0.29
5	6	0.35	0.66	0.20	0.32	0.59	0.18
6	17	0.16	0.43	0.09	0.15	0.40	0.09
7	6	0.17	0.37	0.06	0.17	0.36	0.06
8	5	0.07	0.30	0.05	0.06	0.25	0.04
9	4	0.07	0.21	0.04	0.07	0.21	0.04
10	5	0.08	0.19	0.06	0.07	0.17	0.05
11	2	0.07	0.13	0.05	0.07	0.13	0.05
12	3	0.06	0.15	0.04	0.06	0.15	0.04
13	1	0.26	1.70	0.15	0.26	1.70	0.15
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.74	0.74	0.74	0.74	0.71	0.53
2	3	0.45	0.67	0.14	0.63	0.21	0.13
3	5	0.23	0.36	0.13	0.22	0.46	0.10
4	6	0.43	0.68	0.32	0.41	0.60	0.25
5	6	0.47	0.89	0.27	0.34	0.49	0.17
6	17	0.19	0.49	0.11	0.20	0.48	0.09
7	6	0.18	0.37	0.07	0.24	0.35	0.08
8	5	0.12	0.47	0.07	0.06	0.57	0.03
9	4	0.07	0.21	0.04	0.07	0.48	0.04
10	5	0.13	0.32	0.10	0.07	0.70	0.05
11	2	0.07	0.13	0.05	0.07	0.72	0.05
12	3	0.06	0.15	0.04	0.06	0.56	0.03
13	1	0.26	1.70	0.15	0.15	0.59	0.09

U.S. - Red Book							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	6	0.74	0.74	0.74	0.72	0.72	0.72
2	3	0.41	0.47	0.33	0.41	0.47	0.33
3	5	0.57	0.75	0.51	0.55	0.73	0.50
4	8	0.71	0.78	0.50	0.70	0.76	0.49
5	8	0.77	1.12	0.66	0.75	1.08	0.64
6	14	0.67	0.78	0.49	0.66	0.77	0.48
7	5	0.81	1.44	0.43	0.81	1.44	0.43
8	7	0.66	0.74	0.41	0.65	0.72	0.41
9	2	0.37	0.67	0.22	0.37	0.67	0.22
10	2	0.39	0.76	0.27	0.39	0.76	0.27
11	5	0.69	0.81	0.49	0.69	0.81	0.49
12	1	0.83	0.95	0.72	0.83	0.95	0.72
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	6	0.76	0.76	0.76	0.86	0.81	0.70
2	3	0.41	0.47	0.33	0.49	0.67	0.33
3	5	0.58	0.77	0.53	0.61	0.78	0.48
4	8	0.73	0.80	0.51	0.73	0.67	0.49
5	8	0.82	1.19	0.70	0.59	0.81	0.48
6	14	0.68	0.79	0.49	0.70	0.71	0.50
7	5	0.81	1.44	0.43	0.56	0.56	0.31
8	7	0.67	0.75	0.42	0.65	0.62	0.41
9	2	0.37	0.67	0.22	0.38	0.58	0.22
10	2	0.39	0.76	0.27	0.39	0.70	0.27
11	5	0.69	0.81	0.49	0.70	0.70	0.49
12	1	0.83	0.95	0.72	0.83	0.87	0.72

Table 18 - Average Generic to Brand Price Ratio by Level of Competition with Brand Prices at Canadian Price Levels and the Number of Occurrences of that Level of Competition.

Australia							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	20	0.37	0.37	0.37	0.37	0.37	0.37
2	2	0.81	0.81	0.81	0.81	0.81	0.81
3	2	0.63	0.63	0.63	0.63	0.63	0.63
4	3	0.94	0.94	0.94	0.94	0.94	0.94
6	1	1.70	1.70	1.70	1.25	1.25	1.25
7	1	0.36	0.36	0.36	0.36	0.36	0.36
8	7	0.28	0.28	0.28	0.28	0.28	0.28
9	1	0.53	0.53	0.53	0.53	0.53	0.53
10	7	0.36	0.36	0.36	0.36	0.36	0.36
11	3	0.72	0.72	0.72	0.72	0.72	0.72
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	20	0.37	0.37	0.37	0.95	0.94	0.90
2	2	0.81	0.81	0.81	0.97	0.98	0.95
3	2	0.63	0.63	0.63	0.94	1.00	0.94
4	3	0.94	0.94	0.94	0.97	1.00	0.97
6	1	2.66	2.66	2.66	1.00	1.00	1.00
7	1	0.36	0.36	0.36	0.96	1.00	0.96
8	7	0.28	0.28	0.28	0.84	1.00	0.84
9	1	0.53	0.53	0.53	0.92	1.00	0.92
10	7	0.36	0.36	0.36	0.86	1.00	0.86
11	3	0.72	0.72	0.72	0.89	1.00	0.89

Canada							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	10	0.73	0.73	0.73	0.73	0.73	0.73
2	16	0.75	0.75	0.75	0.75	0.75	0.75
3	19	0.76	0.76	0.76	0.75	0.75	0.74
4	18	0.57	0.57	0.57	0.57	0.57	0.57
5	16	0.57	0.58	0.57	0.56	0.57	0.56
6	12	0.61	0.61	0.61	0.61	0.61	0.61
7	3	0.73	0.73	0.73	0.73	0.73	0.73
8	2	0.54	0.54	0.54	0.52	0.52	0.52
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	10	0.73	0.73	0.73	0.73	0.73	0.73
2	16	0.75	0.75	0.75	0.75	0.75	0.75
3	19	0.76	0.76	0.76	0.75	0.75	0.74
4	18	0.57	0.57	0.57	0.57	0.57	0.57
5	16	0.57	0.58	0.57	0.56	0.57	0.56
6	12	0.61	0.61	0.61	0.61	0.61	0.61
7	3	0.73	0.73	0.73	0.73	0.73	0.73
8	2	0.54	0.54	0.54	0.52	0.52	0.52
France							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	10	0.53	0.53	0.53	0.51	0.51	0.51
2	5	0.32	0.32	0.32	0.31	0.31	0.31
3	4	0.31	0.33	0.29	0.31	0.33	0.29
4	1	0.37	0.37	0.36	0.37	0.37	0.36
5	3	0.32	0.33	0.31	0.32	0.33	0.31
6	2	0.33	0.33	0.28	0.33	0.33	0.28
7	3	0.41	0.43	0.40	0.41	0.43	0.40
8	3	0.37	0.42	0.34	0.37	0.42	0.34
9	3	0.43	0.47	0.31	0.43	0.47	0.31
10	2	0.75	0.76	0.74	0.75	0.76	0.74

France							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	10	0.56	0.56	0.56	0.90	0.89	0.80
2	5	0.32	0.32	0.32	0.69	1.00	0.69
3	4	0.31	0.33	0.29	0.77	0.92	0.71
4	1	0.37	0.37	0.36	0.77	0.99	0.76
5	3	0.32	0.33	0.31	0.78	0.96	0.75
6	2	0.33	0.33	0.28	0.71	0.86	0.61
7	3	0.56	0.59	0.55	0.69	0.97	0.67
8	3	0.37	0.42	0.34	0.77	0.91	0.70
9	3	0.43	0.47	0.31	0.65	0.70	0.45
10	2	0.75	0.76	0.74	0.99	0.99	0.98
Germany							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	8	0.64	0.64	0.64	0.64	0.64	0.64
2	9	0.75	0.79	0.70	0.75	0.79	0.70
3	7	0.77	0.82	0.73	0.77	0.82	0.73
4	3	0.51	0.55	0.42	0.51	0.55	0.42
5	4	0.91	1.08	0.81	0.91	1.08	0.81
7	2	0.42	0.48	0.39	0.42	0.48	0.39
8	1	0.49	0.67	0.38	0.49	0.67	0.38
10	1	0.27	0.37	0.24	0.27	0.37	0.24
11	2	0.27	0.36	0.21	0.27	0.36	0.21
12	4	0.75	1.16	0.73	0.75	1.16	0.73
14	1	0.43	0.60	0.37	0.43	0.60	0.37
15	2	0.94	1.08	0.67	0.94	1.08	0.67
17	1	0.52	0.61	0.48	0.52	0.61	0.48
18	1	0.40	0.52	0.38	0.40	0.52	0.38
19	1	0.31	0.36	0.25	0.31	0.36	0.25
21	1	0.27	0.34	0.23	0.27	0.34	0.23
22	4	0.26	0.40	0.21	0.26	0.40	0.21
26	2	0.66	1.16	0.49	0.64	1.12	0.47
35	3	0.33	1.19	0.25	0.33	1.19	0.25

Germany							
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.72	0.72	0.72	0.99	0.92	0.91
2	9	0.75	0.79	0.70	0.88	0.90	0.79
3	7	0.77	0.82	0.73	0.85	0.93	0.78
4	3	0.51	0.55	0.42	0.90	0.80	0.72
5	4	0.91	1.08	0.81	0.76	0.86	0.66
7	2	0.42	0.48	0.39	0.88	0.92	0.81
8	1	0.49	0.67	0.38	0.73	0.77	0.57
10	1	0.27	0.37	0.24	0.73	0.90	0.66
11	2	0.27	0.36	0.21	0.53	0.79	0.42
12	4	0.75	1.16	0.73	0.53	0.97	0.52
14	1	0.43	0.60	0.37	0.72	0.86	0.62
15	2	0.94	1.08	0.67	0.69	0.67	0.46
17	1	0.52	0.61	0.48	0.59	0.91	0.54
18	1	0.40	0.52	0.38	0.77	0.94	0.72
19	1	0.31	0.36	0.25	0.73	0.82	0.59
21	1	0.27	0.34	0.23	0.80	0.81	0.65
22	4	0.26	0.40	0.21	0.50	0.80	0.40
26	2	0.69	1.21	0.51	0.57	0.74	0.42
35	3	0.33	1.19	0.25	0.23	0.75	0.17
Italy							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	7	0.49	0.49	0.49	0.49	0.49	0.49
2	3	0.41	0.42	0.40	0.41	0.42	0.40
3	3	0.23	0.23	0.22	0.23	0.23	0.22
6	1	0.54	0.64	0.48	0.54	0.64	0.48
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	7	0.49	0.49	0.49	0.88	0.84	0.74
2	3	0.41	0.42	0.40	0.98	0.55	0.54
3	3	0.23	0.23	0.22	0.94	0.81	0.76
6	1	0.54	0.64	0.48	0.99	0.63	0.63

New Zealand							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	14	0.39	0.39	0.39	0.39	0.39	0.39
2	13	0.16	0.18	0.14	0.16	0.18	0.14
3	9	0.20	0.25	0.13	0.20	0.25	0.13
4	2	0.12	0.26	0.12	0.12	0.26	0.12
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	14	0.40	0.40	0.40	0.96	0.93	0.89
2	13	0.16	0.18	0.14	0.75	0.78	0.58
3	9	0.20	0.25	0.13	0.54	0.56	0.30
4	2	0.12	0.26	0.12	0.24	1.00	0.24
Sweden							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	15	0.52	0.52	0.52	0.52	0.52	0.52
2	5	0.25	0.28	0.18	0.25	0.28	0.18
3	8	0.55	0.58	0.52	0.55	0.58	0.52
6	1	0.41	0.46	0.41	0.41	0.46	0.41
8	1	0.39	0.41	0.31	0.39	0.41	0.31
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	15	0.52	0.52	0.52	0.96	0.95	0.91
2	5	0.25	0.28	0.18	0.87	0.59	0.52
3	8	0.55	0.58	0.52	0.69	0.90	0.62
6	1	0.41	0.46	0.41	0.73	0.99	0.72
8	1	0.39	0.41	0.31	0.76	0.79	0.60

Switzerland							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	8	1.17	1.17	1.17	1.16	1.16	1.16
2	9	0.60	0.63	0.57	0.60	0.63	0.57
4	2	0.38	0.39	0.33	0.38	0.39	0.33
5	6	0.93	0.95	0.79	0.93	0.95	0.79
8	3	0.71	1.14	0.64	0.64	1.03	0.58
10	1	0.42	0.53	0.40	0.42	0.53	0.40
11	1	0.37	0.72	0.35	0.37	0.72	0.35
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	1.18	1.18	1.18	0.85	0.81	0.69
2	9	0.66	0.70	0.63	0.70	0.90	0.63
4	2	0.38	0.39	0.33	0.65	0.86	0.55
5	6	0.93	0.95	0.79	0.65	0.85	0.55
8	3	0.82	1.32	0.75	0.64	0.88	0.57
10	1	0.42	0.53	0.40	0.79	0.94	0.75
11	1	0.37	0.72	0.35	0.38	0.93	0.35
United Kingdom							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	29	0.47	0.47	0.47	0.47	0.47	0.47
2	2	0.34	0.39	0.30	0.34	0.39	0.30
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	29	0.47	0.47	0.47	0.83	0.70	0.58
2	2	0.34	0.39	0.30	0.82	0.72	0.59

U.S. - FSS							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	8	0.96	0.96	0.96	0.96	0.96	0.96
2	3	1.00	1.47	0.30	1.00	1.47	0.30
3	5	0.32	0.50	0.18	0.32	0.50	0.18
4	6	0.28	0.46	0.19	0.28	0.46	0.19
5	6	0.43	0.81	0.24	0.43	0.81	0.24
6	17	0.43	1.11	0.25	0.42	1.09	0.24
7	6	0.35	0.70	0.14	0.35	0.70	0.14
8	5	0.18	0.73	0.11	0.17	0.69	0.10
9	4	0.12	0.36	0.06	0.12	0.36	0.06
10	5	0.13	0.49	0.10	0.13	0.49	0.10
11	2	0.18	0.35	0.14	0.18	0.35	0.14
12	3	0.13	0.71	0.08	0.13	0.69	0.08
13	1	0.19	1.26	0.11	0.19	1.26	0.11
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	8	0.96	0.96	0.96	0.74	0.71	0.53
2	3	1.00	1.47	0.30	0.63	0.21	0.13
3	5	0.32	0.50	0.18	0.22	0.46	0.10
4	6	0.28	0.46	0.19	0.41	0.60	0.25
5	6	0.43	0.81	0.24	0.34	0.49	0.17
6	17	0.45	1.16	0.25	0.20	0.48	0.09
7	6	0.42	0.83	0.17	0.24	0.35	0.08
8	5	0.20	0.80	0.12	0.06	0.57	0.03
9	4	0.12	0.36	0.06	0.07	0.48	0.04
10	5	0.13	0.49	0.10	0.07	0.70	0.05
11	2	0.18	0.35	0.14	0.07	0.72	0.05
12	3	0.13	0.73	0.08	0.06	0.56	0.03
13	1	0.19	1.26	0.11	0.15	0.59	0.09

U.S. - Red Book							
Number of Competing Firms in the Market	N	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Brand Median Price	Median Generic Price to Brand Maximum Price	Maximum Generic Price to Brand Maximum Price	Minimum Generic Price to Brand Maximum Price
1	6	2.92	2.92	2.92	2.92	2.92	2.92
2	3	1.08	1.24	0.88	1.08	1.24	0.88
3	5	1.48	1.96	1.35	1.48	1.96	1.35
4	8	2.42	2.64	1.70	2.42	2.64	1.70
5	8	4.36	6.31	3.71	4.18	6.05	3.55
6	14	1.84	2.14	1.37	1.84	2.14	1.37
7	5	2.17	3.77	1.21	2.17	3.77	1.21
8	7	1.61	1.80	1.01	1.61	1.80	1.01
9	2	2.81	5.09	1.67	2.81	5.09	1.67
10	2	2.07	4.08	1.46	2.07	4.08	1.46
11	5	1.89	2.22	1.34	1.86	2.19	1.32
12	1	2.71	3.09	2.35	2.71	3.09	2.35
Number of Competing Firms in the Market	N	Median Generic Price to Brand Minimum Price	Maximum Generic Price to Brand Minimum Price	Minimum Generic Price to Brand Minimum Price	Median Price to Maximum Price	Minimum Price to Median Price	Minimum Price to Maximum Price
1	6	2.92	2.92	2.92	0.86	0.81	0.70
2	3	1.08	1.24	0.88	0.49	0.67	0.33
3	5	1.48	1.96	1.35	0.61	0.78	0.48
4	8	2.42	2.64	1.70	0.73	0.67	0.49
5	8	4.73	6.84	4.02	0.59	0.81	0.48
6	14	1.97	2.29	1.46	0.70	0.71	0.50
7	5	2.17	3.77	1.21	0.56	0.56	0.31
8	7	1.61	1.80	1.01	0.65	0.62	0.41
9	2	2.81	5.09	1.67	0.38	0.58	0.22
10	2	2.07	4.08	1.46	0.39	0.70	0.27
11	5	1.92	2.26	1.36	0.70	0.70	0.49
12	1	2.71	3.09	2.35	0.83	0.87	0.72

Sensitivity Analysis on Package Size –Excluding Outlying Package Sizes with a Range Based on Canadian Generic Market[56]

Table 19 - The Average Generic-to-Brand Price Ratio, With the Exclusion of Outlying Package Sizes in Foreign Countries

Country	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price) to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.90	0.90	0.90	0.92	1.00	0.89	0.89
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.75	0.77	0.71	0.86	0.92	0.75	0.77
Germany	0.69	0.89	0.61	0.75	0.70	0.66	0.85
Italy	0.78	0.80	0.76	0.94	0.96	0.74	0.76
New Zealand	0.64	0.74	0.56	0.81	0.77	0.63	0.73
Sweden	0.84	0.89	0.78	0.92	0.89	0.82	0.87
Switzerland	0.66	0.73	0.62	0.84	0.85	0.65	0.72
U.S. - FSS	0.19	0.41	0.12	0.27	0.27	0.18	0.38
United Kingdom	0.61	0.62	0.61	0.81	0.98	0.59	0.59
U.S. - RB	0.66	0.81	0.50	0.73	0.60	0.65	0.80

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.89	0.90	0.90	0.90	0.94	0.98	0.92
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.70	0.75	0.77	0.71	0.88	0.94	0.83
Germany	0.59	0.76	0.99	0.68	0.76	0.88	0.67
Italy	0.73	0.93	0.95	0.91	0.97	0.93	0.90
New Zealand	0.55	0.67	0.78	0.58	0.84	0.88	0.74
Sweden	0.76	0.86	0.91	0.79	0.92	0.92	0.85
Switzerland	0.61	0.68	0.75	0.63	0.86	0.93	0.80
U.S. - FSS	0.11	0.23	0.48	0.14	0.28	0.58	0.16
United Kingdom	0.58	0.64	0.65	0.64	0.91	0.85	0.77
U.S. - RB	0.49	0.67	0.83	0.51	0.72	0.77	0.55

Table 20 - The Average Generic-to-Brand Price Ratio Using Canadian Brand Price Levels, With the Exclusion of Outlying Package Sizes in Foreign Countries

Country	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price) to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.43	0.43	0.43	0.46	1.00	0.43	0.43
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.41	0.42	0.39	0.54	0.92	0.40	0.42
Germany	0.57	0.73	0.51	0.67	0.70	0.57	0.72
Italy	0.40	0.41	0.40	0.56	0.96	0.40	0.41
New Zealand	0.23	0.26	0.20	0.37	0.77	0.23	0.26
Sweden	0.47	0.49	0.43	0.62	0.89	0.47	0.49
Switzerland	0.74	0.82	0.69	0.83	0.85	0.73	0.81
U.S. - FSS	0.34	0.75	0.20	0.46	0.27	0.33	0.75
United Kingdom	0.46	0.46	0.45	0.64	0.98	0.46	0.46
U.S. - RB	2.17	2.71	1.64	2.32	0.60	2.15	2.69

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.43	0.43	0.43	0.43	0.46	0.70	0.45
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.38	0.42	0.44	0.40	0.54	0.80	0.51
Germany	0.51	0.58	0.74	0.52	0.69	0.90	0.61
Italy	0.39	0.40	0.41	0.40	0.59	0.82	0.54
New Zealand	0.20	0.24	0.26	0.20	0.38	0.49	0.34
Sweden	0.43	0.47	0.49	0.43	0.64	0.89	0.59
Switzerland	0.68	0.78	0.86	0.73	0.85	1.22	0.79
U.S. - FSS	0.20	0.35	0.78	0.21	0.52	0.46	0.30
United Kingdom	0.45	0.46	0.46	0.45	0.74	0.96	0.63
U.S. - RB	1.63	2.22	2.78	1.68	2.40	2.81	1.85

Table 21 – Bilateral Comparisons - The Average Foreign to Canadian Price Ratio, With the Exclusion of Outlying Package Sizes in Foreign Countries

Country	Median Foreign Price to Median Canadian Price (Over All Products)	Median Foreign Brand Price to Median Canadian Brand Price	Median Foreign Generic Price to Median Canadian Generic Price	Median Foreign Generic (or Lowest Brand) Price to Median Canadian Generic Price	Maximum Foreign Brand Price to Maximum Canadian Brand Price
Australia	0.71	0.51	0.68	0.71	0.50
Canada	1.00	1.00	1.00	1.00	1.00
France	0.85	0.64	0.63	0.84	0.64
Germany	1.03	0.94	0.87	1.01	0.97
Italy	0.89	0.61	0.60	0.85	0.62
New Zealand	0.56	0.48	0.37	0.55	0.48
Sweden	0.96	0.68	0.73	0.95	0.69
Switzerland	1.30	0.99	1.17	1.27	0.99
U.S. - FSS	0.79	1.77	0.52	0.71	1.87
United Kingdom	1.12	0.79	0.74	0.98	0.82
U.S. - RB	3.65	3.23	3.35	3.56	3.25

Country	Minimum Foreign Brand Price to Minimum Canadian Brand Price	Minimum Generic Foreign Price to Median Canadian Generic Price	Minimum Generic Foreign Price to Minimum Canadian Generic Price	Minimum Foreign Price to Minimum Canadian Price (Over All Products)	Minimum Foreign Price to Median Canadian Price (Over All Products)
Australia	0.51	0.68	0.68	0.71	0.70
Canada	1.00	1.00	1.00	1.00	0.98
France	0.67	0.60	0.60	0.81	0.80
Germany	0.87	0.77	0.77	0.92	0.90
Italy	0.59	0.59	0.59	0.84	0.82
New Zealand	0.47	0.32	0.32	0.50	0.49
Sweden	0.67	0.68	0.68	0.91	0.89
Switzerland	1.02	1.09	1.10	1.24	1.22
U.S. - FSS	1.58	0.31	0.31	0.47	0.46
United Kingdom	0.78	0.74	0.74	0.97	0.96
U.S. - RB	3.26	2.53	2.53	2.88	2.81

Table 22a) - The Average Canadian to Median International Price Ratio, With the Exclusion of Outlying Package Sizes in Foreign Countries (U.S. – FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.76	0.76	0.74	61	0.66	0.63	0.60
Canada	96	1.07	1.19	0.91	96	1.18	1.42	1.08
France	69	0.86	0.90	0.89	64	0.80	0.82	0.80
Germany	70	1.16	0.95	1.17	60	1.21	1.13	1.28
Italy	65	0.99	1.03	1.11	64	0.79	0.79	0.88
New Zealand	71	0.59	0.47	0.49	62	0.57	0.48	0.52
Sweden	62	1.03	1.01	0.99	58	0.84	0.84	0.81
Switzerland	67	1.48	1.50	1.77	66	1.33	1.37	1.51
United Kingdom	79	1.23	1.22	1.11	78	1.03	1.01	0.85
U.S. - FSS	88	0.83	0.86	0.97	82	2.29	2.05	2.65

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.88	0.86	0.85	62	0.78	0.79	0.75
Canada	91	1.31	1.51	1.08	96	1.13	1.31	0.95
France	36	0.87	0.98	0.94	69	0.89	0.96	0.93
Germany	55	1.22	1.02	1.27	70	1.20	1.00	1.20
Italy	14	0.95	0.93	1.36	65	0.98	1.06	1.12
New Zealand	38	0.44	0.32	0.35	71	0.60	0.46	0.48
Sweden	29	1.06	1.04	0.93	62	1.06	1.05	0.96
Switzerland	28	1.77	2.00	2.50	67	1.52	1.61	1.81
United Kingdom	31	1.00	0.97	0.84	79	1.10	1.02	0.99
U.S. - FSS	70	0.62	0.58	0.67	88	0.76	0.83	0.88

*N is the number of bioequivalent markets where products were found for comparison.

Table 24 b) - The Average Canadian to Median International Price Ratio, With the Exclusion of Outlying Package Sizes in Foreign Countries (U.S. – RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.70	0.71	0.68	61	0.64	0.62	0.58
Canada	96	0.86	1.07	0.76	96	1.10	1.39	1.04
France	69	0.79	0.84	0.80	64	0.79	0.81	0.79
Germany	70	1.07	0.89	1.08	60	1.17	1.11	1.26
Italy	65	0.92	0.98	1.05	64	0.78	0.78	0.87
New Zealand	71	0.53	0.43	0.45	62	0.57	0.48	0.51
Sweden	62	0.94	0.94	0.90	58	0.82	0.82	0.80
Switzerland	67	1.35	1.42	1.60	66	1.32	1.36	1.51
United Kingdom	79	1.14	1.16	1.01	78	1.00	1.00	0.84
U.S. - RB	86	3.79	3.76	4.80	84	4.16	3.63	4.81

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.74	0.74	0.70	62	0.72	0.75	0.71
Canada	87	0.81	1.21	0.67	96	0.88	1.15	0.79
France	36	0.73	0.85	0.81	69	0.81	0.87	0.82
Germany	55	1.08	0.90	1.14	70	1.09	0.94	1.11
Italy	14	0.83	0.83	1.26	65	0.90	0.99	1.04
New Zealand	38	0.35	0.29	0.30	71	0.54	0.43	0.45
Sweden	29	0.86	0.87	0.78	62	0.96	0.98	0.88
Switzerland	28	1.49	1.62	1.54	67	1.35	1.46	1.57
United Kingdom	31	0.85	0.83	0.71	79	1.01	0.96	0.88
U.S. - RB	65	4.10	3.82	5.18	86	3.77	3.78	4.81

*N is the number of bioequivalent markets where products were found for comparison.

Table 23 - The Average Canadian to Median International Price Ratio, Without United States in the Median International Price, With the Exclusion of Outlying Package Sizes in Foreign Countries

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.74	0.75	0.73	61	0.69	0.65	0.62
Canada	90	1.02	1.17	0.87	89	1.35	1.55	1.23
France	69	0.85	0.90	0.87	64	0.84	0.88	0.87
Germany	72	1.16	0.95	1.20	62	1.31	1.22	1.43
Italy	65	0.99	1.05	1.14	64	0.84	0.85	0.95
New Zealand	71	0.57	0.46	0.48	62	0.61	0.51	0.56
Sweden	64	1.03	1.02	1.01	60	0.92	0.91	0.91
Switzerland	69	1.47	1.52	1.78	68	1.45	1.47	1.64
United Kingdom	79	1.23	1.23	1.11	78	1.10	1.07	0.93

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.85	0.83	0.80	62	0.76	0.79	0.75
Canada	74	1.28	1.49	1.06	90	1.05	1.26	0.89
France	36	0.82	0.94	0.90	69	0.86	0.94	0.88
Germany	57	1.16	1.02	1.24	72	1.18	1.00	1.23
Italy	14	0.94	0.95	1.41	65	0.98	1.07	1.14
New Zealand	38	0.43	0.31	0.36	71	0.58	0.45	0.48
Sweden	30	1.01	1.02	0.87	64	1.05	1.06	0.98
Switzerland	30	1.73	1.90	2.42	69	1.48	1.57	1.77
United Kingdom	31	0.93	0.88	0.78	79	1.08	1.02	0.97

*N is the number of bioequivalent markets where products were found for comparison

Table 24 a) - The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price, With the Exclusion of Outlying Package Sizes in Foreign Countries (U.S. – FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.76	0.76	0.74	61	0.66	0.63	0.60
Canada	88	1.05	1.18	0.89	85	1.30	1.47	1.13
France	69	0.86	0.90	0.89	64	0.80	0.82	0.80
Germany	69	1.17	0.95	1.17	58	1.22	1.14	1.29
Italy	65	0.99	1.03	1.11	64	0.79	0.79	0.88
New Zealand	70	0.59	0.47	0.49	62	0.57	0.48	0.52
Sweden	62	1.03	1.01	0.99	57	0.84	0.84	0.81
Switzerland	67	1.48	1.50	1.77	66	1.33	1.37	1.51
United Kingdom	79	1.23	1.22	1.11	76	1.03	1.01	0.86
U.S. - FSS	80	0.84	0.87	0.98	72	2.34	2.06	2.67

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.89	0.86	0.85	62	0.78	0.79	0.75
Canada	54	1.41	1.62	1.33	88	1.10	1.30	0.94
France	33	0.92	1.13	0.96	69	0.89	0.96	0.93
Germany	48	1.22	1.00	1.27	69	1.20	1.00	1.20
Italy	14	0.95	0.93	1.36	65	0.98	1.06	1.12
New Zealand	32	0.42	0.31	0.33	70	0.60	0.46	0.48
Sweden	28	1.03	1.03	0.91	62	1.06	1.05	0.96
Switzerland	27	1.73	1.95	2.31	67	1.52	1.61	1.81
United Kingdom	29	1.02	0.96	0.84	79	1.10	1.02	0.99
U.S. - FSS	43	0.53	0.53	0.58	80	0.77	0.84	0.89

*N is the number of bioequivalent markets where products were found for comparison

Table 27 b) - The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price, With the Exclusion of Outlying Package Sizes in Foreign Countries (U.S. – RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.70	0.71	0.68	61	0.64	0.62	0.58
Canada	88	0.95	1.10	0.80	85	1.28	1.45	1.12
France	69	0.79	0.84	0.80	64	0.79	0.81	0.79
Germany	69	1.09	0.89	1.09	58	1.21	1.11	1.28
Italy	65	0.92	0.98	1.05	64	0.78	0.78	0.87
New Zealand	70	0.54	0.43	0.45	62	0.57	0.48	0.51
Sweden	62	0.94	0.94	0.90	57	0.82	0.82	0.80
Switzerland	67	1.35	1.42	1.60	66	1.32	1.36	1.51
United Kingdom	79	1.14	1.16	1.01	76	1.02	1.00	0.85
U.S. - RB	78	3.75	3.77	4.76	74	4.29	3.65	4.84

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.78	0.76	0.75	62	0.72	0.75	0.71
Canada	54	1.22	1.42	1.14	88	0.99	1.19	0.83
France	33	0.75	0.95	0.82	69	0.81	0.87	0.82
Germany	48	1.08	0.88	1.13	69	1.11	0.94	1.12
Italy	14	0.83	0.83	1.26	65	0.90	0.99	1.04
New Zealand	32	0.38	0.29	0.31	70	0.55	0.43	0.45
Sweden	28	0.89	0.87	0.79	62	0.96	0.98	0.88
Switzerland	27	1.55	1.71	2.01	67	1.35	1.46	1.57
United Kingdom	29	0.85	0.83	0.70	79	1.01	0.96	0.88
U.S. - RB	42	3.81	3.69	4.80	78	3.72	3.79	4.79

*N is the number of bioequivalent markets where products were found for comparison

Table 25 - Comparing the Cost of Common Drug Products at Foreign and Canadian Price Levels, With the Exclusion of Outlying Package Sizes in Foreign Countries

	Over All Products				Brand Products			
Country	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	213	284	0.75	62	228	478	0.48	61
Canada	369	369	1.00	96	609	609	1.00	96
France	295	297	0.99	69	334	490	0.68	64
Germany	287	314	0.91	72	383	443	0.86	62
Italy	318	302	1.05	65	315	478	0.66	64
New Zealand	151	301	0.50	71	181	464	0.39	62
Sweden	300	314	0.96	64	315	475	0.66	60
Switzerland	464	299	1.55	69	582	507	1.15	68
U.S. - FSS	464	356	1.30	88	959	546	1.75	82
United Kingdom	407	346	1.18	79	447	573	0.78	78
U.S. - RB	1353	350	3.87	86	1626	576	2.83	84
	Generic Products				Generic Products (or Lowest Brand Product)			
Country	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	169	248	0.68	47	211	283	0.75	62
Canada	366	366	1.00	96	366	366	1.00	96
France	153	187	0.82	36	290	293	0.99	69
Germany	228	284	0.80	57	278	313	0.89	72
Italy	54	76	0.71	14	304	299	1.02	65
New Zealand	54	183	0.29	38	142	298	0.48	71
Sweden	142	195	0.73	30	288	311	0.93	64
Switzerland	278	168	1.66	30	450	296	1.52	69
U.S. - FSS	184	264	0.70	71	428	353	1.21	88
United Kingdom	119	153	0.78	31	347	343	1.01	79
U.S. - RB	864	246	3.52	66	1310	346	3.78	86

*N is the number of bioequivalent markets where products were found for comparison.

Sensitivity Analysis on Package Size – Limiting the Package Closest to the Most Frequently Dispensed in Canada

Table 26 - The Average Generic-to-Brand Price Ratio, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size

Country	Median Generic Price to Median Brand Price	Maximum Generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price) to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.89	0.90	0.89	0.92	1.00	0.89	0.89
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.75	0.77	0.70	0.86	0.91	0.75	0.77
Germany	0.70	0.90	0.60	0.75	0.69	0.66	0.86
Italy	0.78	0.80	0.76	0.94	0.96	0.74	0.76
New Zealand	0.64	0.75	0.55	0.81	0.76	0.61	0.72
Sweden	0.85	0.87	0.82	0.92	0.95	0.83	0.84
Switzerland	0.66	0.73	0.62	0.84	0.85	0.65	0.72
U.S. - FSS	0.18	0.37	0.09	0.26	0.24	0.17	0.35
United Kingdom	0.62	0.62	0.61	0.81	0.98	0.59	0.60
U.S. - RB	0.65	0.82	0.49	0.72	0.59	0.65	0.81

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.89	0.90	0.90	0.90	0.94	0.98	0.92
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.70	0.75	0.77	0.70	0.88	0.94	0.82
Germany	0.58	0.79	1.02	0.68	0.76	0.86	0.66
Italy	0.73	0.93	0.95	0.91	0.97	0.93	0.90
New Zealand	0.53	0.68	0.80	0.59	0.83	0.88	0.73
Sweden	0.80	0.88	0.90	0.85	0.92	0.94	0.86
Switzerland	0.61	0.67	0.74	0.63	0.85	0.94	0.80
U.S. - FSS	0.09	0.21	0.42	0.11	0.27	0.52	0.14
United Kingdom	0.59	0.65	0.66	0.65	0.90	0.86	0.78
U.S. - RB	0.48	0.67	0.84	0.50	0.71	0.76	0.53

Table 27 - The Average Generic-to-Brand Price Ratio Using Canadian Brand Price Levels, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size

Country	Median Generic Price to Median Brand Price	Maximum generic Price to Median Brand Price	Minimum Generic Price to Median Brand Price	Median Generic Price (or Lowest Brand Price)to Median Brand Price	Minimum Generic Price to Maximum Generic Price	Median Generic Price to Maximum Brand Price	Maximum Generic Price to Maximum Brand Price
Australia	0.43	0.43	0.43	0.46	1.00	0.43	0.43
Canada	0.66	0.66	0.66	0.66	0.99	0.65	0.65
France	0.41	0.42	0.38	0.54	0.91	0.40	0.42
Germany	0.54	0.68	0.47	0.63	0.69	0.54	0.68
Italy	0.40	0.41	0.40	0.56	0.96	0.40	0.41
New Zealand	0.23	0.26	0.20	0.36	0.76	0.23	0.26
Sweden	0.45	0.46	0.44	0.63	0.95	0.45	0.46
Switzerland	0.69	0.76	0.65	0.80	0.85	0.68	0.75
U.S. - FSS	0.32	0.69	0.17	0.43	0.24	0.32	0.68
United Kingdom	0.46	0.46	0.45	0.64	0.98	0.46	0.46
U.S. - RB	2.13	2.69	1.58	2.25	0.59	2.12	2.68

Country	Minimum Generic Price to Maximum Brand Price	Median Generic Price to Minimum Brand Price	Maximum Generic Price to Minimum Brand Price	Minimum Generic Price to Minimum Brand Price	Median Price to Maximum Price (Over All Prices)	Minimum Price to Median Price (Over All Prices)	Minimum Price to Maximum Price (Over All Prices)
Australia	0.43	0.43	0.43	0.43	0.46	0.70	0.45
Canada	0.65	0.68	0.68	0.68	0.66	0.98	0.65
France	0.38	0.42	0.44	0.40	0.54	0.80	0.51
Germany	0.47	0.55	0.69	0.48	0.65	0.83	0.56
Italy	0.39	0.40	0.41	0.40	0.59	0.82	0.54
New Zealand	0.20	0.23	0.26	0.20	0.37	0.48	0.33
Sweden	0.44	0.45	0.46	0.44	0.64	0.91	0.60
Switzerland	0.64	0.73	0.80	0.68	0.82	1.17	0.76
U.S. - FSS	0.17	0.33	0.71	0.17	0.49	0.38	0.25
United Kingdom	0.45	0.46	0.46	0.45	0.73	0.96	0.63
U.S. - RB	1.57	2.19	2.76	1.62	2.32	2.68	1.76

Table 28 – Bilateral Comparisons - The Average Foreign to Canadian Price Ratio, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size

Country	Median Foreign Price to Median Canadian Price (Over All Products)	Median Foreign Brand Price to Median Canadian Brand Price	Median Foreign Generic Price to Median Canadian Generic Price	Median Foreign Generic (or Lowest Brand) Price to Median Canadian Generic Price	Maximum Foreign Brand Price to Maximum Canadian Brand Price
Australia	0.71	0.51	0.68	0.71	0.50
Canada	1.00	1.00	1.00	1.00	1.00
France	0.85	0.64	0.63	0.84	0.64
Germany	0.96	0.87	0.81	0.94	0.91
Italy	0.89	0.61	0.60	0.85	0.62
New Zealand	0.55	0.46	0.37	0.54	0.47
Sweden	0.97	0.69	0.71	0.96	0.70
Switzerland	1.25	0.95	1.10	1.22	0.95
U.S. - FSS	0.74	1.75	0.49	0.66	1.83
United Kingdom	1.12	0.79	0.74	0.98	0.82
U.S. - RB	3.54	3.18	3.27	3.45	3.20

Country	Minimum Foreign Brand Price to Minimum Canadian Brand Price	Minimum Generic Foreign Price to Median Canadian Generic Price	Minimum Generic Foreign Price to Minimum Canadian Generic Price	Minimum Foreign Price to Minimum Canadian Price (Over All Products)	Minimum Foreign Price to Median Canadian Price (Over All Products)
Australia	0.51	0.68	0.68	0.71	0.70
Canada	1.00	1.00	1.00	1.00	0.98
France	0.67	0.60	0.60	0.81	0.80
Germany	0.80	0.71	0.71	0.84	0.83
Italy	0.59	0.59	0.59	0.84	0.82
New Zealand	0.45	0.32	0.32	0.49	0.48
Sweden	0.67	0.68	0.69	0.93	0.91
Switzerland	0.98	1.03	1.03	1.19	1.17
U.S. - FSS	1.60	0.26	0.26	0.39	0.38
United Kingdom	0.78	0.74	0.74	0.97	0.96
U.S. - RB	3.20	2.43	2.43	2.74	2.68

Table 29 a) - The Average Canadian to Median International Price Ratio, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size (U.S. – FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.78	0.77	0.75	61	0.67	0.64	0.61
Canada	96	1.10	1.21	0.92	96	1.21	1.45	1.11
France	69	0.88	0.92	0.91	64	0.81	0.83	0.82
Germany	72	1.11	0.92	1.11	62	1.14	1.08	1.21
Italy	65	1.02	1.06	1.14	64	0.81	0.80	0.90
New Zealand	71	0.58	0.46	0.46	62	0.57	0.48	0.49
Sweden	64	1.06	1.05	1.07	60	0.88	0.86	0.87
Switzerland	69	1.46	1.47	1.73	68	1.32	1.34	1.47
United Kingdom	79	1.26	1.24	1.11	78	1.04	1.02	0.86
U.S. - FSS	88	0.78	0.83	0.94	82	2.28	2.08	2.71

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.91	0.87	0.86	62	0.80	0.80	0.77
Canada	91	1.34	1.53	1.10	96	1.15	1.32	0.97
France	36	0.88	0.99	0.94	69	0.91	0.96	0.95
Germany	57	1.17	1.00	1.21	72	1.14	0.96	1.14
Italy	14	0.97	0.94	1.37	65	1.01	1.08	1.14
New Zealand	38	0.44	0.32	0.35	71	0.59	0.45	0.46
Sweden	30	1.06	1.12	1.09	64	1.09	1.11	1.07
Switzerland	29	1.78	1.95	2.47	69	1.49	1.56	1.77
United Kingdom	31	1.03	0.98	0.86	79	1.12	1.04	1.01
U.S. - FSS	71	0.59	0.55	0.64	88	0.71	0.80	0.84

*N is the number of bioequivalent markets where products were found for comparison.

Table 33 b) - The Average Canadian to Median International Price Ratio, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size (U.S. – RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.71	0.72	0.69	61	0.65	0.62	0.59
Canada	96	0.87	1.08	0.77	96	1.12	1.41	1.07
France	69	0.80	0.85	0.82	64	0.80	0.82	0.81
Germany	72	1.02	0.86	1.03	62	1.11	1.05	1.19
Italy	65	0.94	1.00	1.07	64	0.80	0.79	0.88
New Zealand	71	0.53	0.43	0.43	62	0.56	0.47	0.49
Sweden	64	0.97	0.97	0.98	60	0.86	0.84	0.86
Switzerland	69	1.32	1.37	1.56	68	1.30	1.33	1.46
United Kingdom	79	1.15	1.16	1.00	78	1.01	1.01	0.85
U.S. - RB	86	3.72	3.68	4.71	84	4.13	3.57	4.72

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.75	0.74	0.71	62	0.73	0.75	0.71
Canada	87	0.82	1.22	0.68	96	0.89	1.15	0.80
France	36	0.75	0.87	0.83	69	0.82	0.88	0.84
Germany	57	1.01	0.86	1.07	72	1.03	0.90	1.05
Italy	14	0.85	0.85	1.28	65	0.92	1.01	1.06
New Zealand	38	0.35	0.29	0.30	71	0.53	0.42	0.42
Sweden	30	0.85	0.92	0.91	64	0.99	1.03	0.99
Switzerland	29	1.48	1.58	1.53	69	1.32	1.41	1.53
United Kingdom	31	0.86	0.84	0.72	79	1.02	0.97	0.89
U.S. - RB	66	4.04	3.78	5.09	86	3.69	3.76	4.74

*N is the number of bioequivalent markets where products were found for comparison.

Table 30 - The Average Canadian to Median International Price Ratio, Without United States in the Median International Price, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.75	0.76	0.73	61	0.70	0.66	0.63
Canada	90	1.04	1.19	0.88	89	1.37	1.57	1.25
France	69	0.86	0.91	0.88	64	0.85	0.89	0.88
Germany	72	1.12	0.91	1.13	62	1.25	1.15	1.34
Italy	65	1.01	1.07	1.16	64	0.86	0.87	0.96
New Zealand	71	0.57	0.45	0.46	62	0.61	0.50	0.53
Sweden	64	1.06	1.06	1.09	60	0.95	0.93	0.97
Switzerland	69	1.42	1.47	1.72	68	1.41	1.43	1.59
United Kingdom	79	1.24	1.24	1.11	78	1.10	1.08	0.93

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	47	0.86	0.84	0.81	62	0.77	0.80	0.76
Canada	74	1.30	1.50	1.07	90	1.07	1.27	0.91
France	36	0.83	0.94	0.91	69	0.88	0.95	0.90
Germany	57	1.12	0.98	1.17	72	1.13	0.95	1.16
Italy	14	0.96	0.96	1.43	65	0.99	1.08	1.15
New Zealand	38	0.43	0.31	0.36	71	0.57	0.44	0.45
Sweden	30	1.00	1.07	1.02	64	1.08	1.11	1.09
Switzerland	30	1.69	1.85	2.35	69	1.43	1.53	1.71
United Kingdom	31	0.94	0.89	0.79	79	1.09	1.03	0.98

*N is the number of bioequivalent markets where products were found for comparison

Table 31 a) - The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size (U.S. – FSS)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.78	0.77	0.75	61	0.67	0.64	0.61
Canada	88	1.07	1.20	0.91	85	1.32	1.49	1.16
France	69	0.88	0.92	0.91	64	0.81	0.83	0.82
Germany	71	1.11	0.92	1.12	60	1.16	1.08	1.22
Italy	65	1.02	1.06	1.14	64	0.81	0.80	0.90
New Zealand	70	0.58	0.46	0.46	62	0.57	0.48	0.49
Sweden	64	1.06	1.05	1.07	59	0.88	0.86	0.87
Switzerland	69	1.46	1.47	1.73	68	1.32	1.34	1.47
United Kingdom	79	1.26	1.24	1.11	76	1.04	1.02	0.86
U.S. - FSS	80	0.79	0.84	0.95	72	2.37	2.10	2.76

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.87	0.87	0.91	62	0.77	0.80	0.80
Canada	55	1.34	1.63	1.44	88	0.95	1.31	1.12
France	33	0.96	1.13	0.92	69	0.95	0.96	0.91
Germany	50	1.22	0.98	1.18	71	1.14	0.96	1.14
Italy	14	1.37	0.94	0.97	65	1.14	1.08	1.01
New Zealand	32	0.33	0.31	0.42	70	0.46	0.45	0.59
Sweden	29	1.08	1.11	1.04	64	1.07	1.11	1.09
Switzerland	28	2.27	1.89	1.74	69	1.77	1.56	1.49
United Kingdom	30	0.85	0.97	1.01	79	1.01	1.04	1.12
U.S. - FSS	44	0.55	0.51	0.50	80	0.85	0.81	0.72

*N is the number of bioequivalent markets where products were found for comparison

Table 36 b) - The Average Canadian to Median International Price Ratio, a Minimum of Three Countries Was Required to Calculate the Median International Price, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size (U.S. – RB)

Country	Over All Products				Brand Products			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	62	0.71	0.72	0.69	61	0.65	0.62	0.59
Canada	88	0.97	1.12	0.82	85	1.30	1.48	1.15
France	69	0.80	0.85	0.82	64	0.80	0.82	0.81
Germany	71	1.03	0.86	1.04	60	1.13	1.06	1.20
Italy	65	0.94	1.00	1.07	64	0.80	0.79	0.88
New Zealand	70	0.53	0.43	0.43	62	0.56	0.47	0.49
Sweden	64	0.97	0.97	0.98	59	0.86	0.84	0.86
Switzerland	69	1.32	1.37	1.56	68	1.30	1.33	1.46
United Kingdom	79	1.15	1.16	1.00	76	1.03	1.01	0.86
U.S. - RB	78	3.67	3.68	4.68	74	4.25	3.59	4.75

Country	Generic Products				Generic Products (or Lowest Brand Product)			
	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity	N	Un-weighted Average Ratio	Weighted by Expenditure	Weighted by Quantity
Australia	43	0.79	0.76	0.76	62	0.73	0.75	0.71
Canada	55	1.23	1.44	1.16	88	1.00	1.19	0.84
France	33	0.78	0.97	0.85	69	0.82	0.88	0.84
Germany	50	1.01	0.84	1.06	71	1.05	0.90	1.06
Italy	14	0.85	0.85	1.28	65	0.92	1.01	1.06
New Zealand	32	0.37	0.29	0.31	70	0.54	0.42	0.42
Sweden	29	0.87	0.92	0.92	64	0.99	1.03	0.99
Switzerland	28	1.53	1.66	1.96	69	1.32	1.41	1.53
United Kingdom	30	0.83	0.83	0.71	79	1.02	0.97	0.89
U.S. - FSS	43	3.79	3.67	4.76	78	3.65	3.77	4.71

*N is the number of bioequivalent markets where products were found for comparison

Table 32 - Comparing the Cost of Common Drug Products at Foreign and Canadian Price Levels, Using Only the Package Size Closest to the Most Dispensed Canadian Package Size

Country	Over All Products				Brand Products			
	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	213	284	0.75	62	228	478	0.48	61
Canada	369	369	1.00	96	609	609	1.00	96
France	295	297	0.99	69	334	490	0.68	64
Germany	279	318	0.88	72	368	449	0.82	62
Italy	318	302	1.05	65	315	478	0.66	64
New Zealand	146	301	0.48	71	175	464	0.38	62
Sweden	303	317	0.95	64	314	481	0.65	60
Switzerland	450	303	1.49	69	558	513	1.09	68
U.S. - FSS	455	356	1.28	88	966	546	1.77	82
United Kingdom	405	346	1.17	79	445	573	0.78	78
U.S. - RB	1320	350	3.77	86	1587	576	2.76	84
	Generic Products				Generic Products (or Lowest Brand Product)			
Country	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N	Cost at Median Foreign Price (Millions)	Cost at Median Canadian Price (Millions)	Ratio Between Foreign to Canadian Cost	N
Australia	169	248	0.68	47	211	283	0.75	62
Canada	366	366	1.00	96	366	366	1.00	96
France	153	187	0.82	36	290	293	0.99	69
Germany	221	288	0.77	57	270	317	0.85	72
Italy	54	76	0.71	14	304	299	1.02	65
New Zealand	53	183	0.29	38	137	298	0.46	71
Sweden	148	198	0.75	30	291	315	0.93	64
Switzerland	268	170	1.58	30	437	300	1.46	69
U.S. - FSS	177	265	0.67	71	421	353	1.19	88
United Kingdom	119	153	0.78	31	347	343	1.01	79
U.S. - RB	846	246	3.43	66	1283	346	3.70	86

*N is the number of bioequivalent markets where products were found for comparison.

Appendix IV: Methodology for International Comparison

Price comparisons across countries require conversion of local currency prices into a common currency. For this study, official exchange rates were used to convert local currency prices into Canadian dollars. The exchange rates used were the average of 36 months, ending in September 2000, as provided by the Bank of Canada. This is consistent with the PMPRB's methodology for patented drugs. See Table 33 below.

Table 33

The Exchange Rates Used to Convert to Canadian Dollars	
Country	Exchange Rate Used
Australia	0.98440000
France	0.24609722
Germany	0.82682222
Italy	0.00083789
New Zealand	0.84980000
Sweden	0.18473611
Switzerland	0.99843056
United Kingdom	2.36146944
United States	1.44106944

An alternative conversion procedure is to use purchasing power parities (PPP's). (See PMPRB study S-9813: Purchasing Power Parities and International Comparisons of Patented Medicine Prices). These conversion factors are designed to reflect the purchasing power of a currency within its national market. Because the focus of this study is to compare prices at the ex-factory gate level, the PPP approach was not used. The use of the PPP approach may be more appropriate in an analysis focusing on broader welfare implications of price differences.

Australia

Australia has a federally run Pharmaceutical Benefits Scheme (PBS), available to Australian residents and selected visitors. The PBS formulary lists the drug prices covered under the program, their retail prices and the price at which they are subsidized. This information is regularly updated on the web, along with the information required to breakdown retail prices into their components and thus determines ex-factory price levels.

Retail prices used for this study included a flat dispensing fee of $4.68, although higher fees are included in the price of products requiring extensive preparation. Even without the dispensing fee, the retail price includes a markup added by the pharmacy as follows:

- A 10% added for a product up to $180
- A flat $18 markup on the price to the pharmacist above $180 but below $450.
- A 4% markup the cost of the product above $450.

Removing these markups calculates the price paid by the pharmacy. Of the price paid by pharmacists, 10% of the cost went to wholesalers and 90% to the manufactureS for the drug prices used in this study.

France

In France the national government publishes a list of approved drug products and prices for which it reimburses a portion of the prescription cost. Each year the government negotiates with drug manufacturers the ex-factory price and quantity of each drug product sold. The list of reimbursed drug products, along with their prices to pharmacies, are made available in SEMPEX published by the Medical-Pharmaceutical Publishing Company (SEMP) annually.

Retail and wholesale mark-ups are controlled by the Ministry of Solidarity, Health, and Social Welfare. The wholesale mark-up for the prices used in this study were as follows:
For drug products priced below 150.00F, there is a 10.74% wholesale markup.
For the drugs priced over 150.00F, there is a 10.74% mark-up on first 150.00F and a 6% mark-up on the cost above 150.00F. SEMPEX also identifies those products which are generic drug products.

Germany

In Germany, individuals are either covered by state health insurance or a private health insurer. The public and private drug plans reimburse pharmacies for the drugs dispensed to their beneficiaries at the prices published in the Rote Liste annually.

Rote Liste prices include a retail tax and regulated pharmacy and wholesaler mark-ups. To calculate the ex-factory price level for the Rote Liste Prices used in this study, a 15% tax was removed, and the graduated pharmacy and wholesale markups were removed using the calculations found in Table 34 and Table 35 below.

Table 34 - How to Derive the Price to Pharmacies given the Retail Price

Retail price in DM (RP)	Calculations used to Get Pharmacy price
RP 4.03	RP/1.68
4.04 RP 4.26	RP-1.63
4.27 RP 12.31	RP/1.62
12.32 RP 12.97	RP-4.71
12.98 RP 22.42	RP/1.57
22.43 RP 25.10	RP-8.14
25.11 RP 35.15	RP/1.48
35.16 RP 37.91	RP-11.40
37.92 RP 54.34	RP/1.43
54.35 RP 60.50	RP-16.34
60.51 RP 78.09	RP/1.37
78.10 RP 91.39	RP-21.09
91.40 RP1,382.95	RP/1.30
1,382.96 RP	(RP231.25)/1.08263

Table 35 - How to Derive Ex-Factory Price to Wholesalers given a Pharmacy Purchase Price

Wholesale Price (WP) in DM	Calculation Used to Get Wholesale Price
WP 2.00	WP/1.21
2.01 WP 2.08	WP-0.35
2.09 WP 4.00	WP/1.20
4.01 WP4.09	WP-0.67
4.10 WP 6.00	WP/1.195
6.01 WP 6.13	WP-0.98
6.14 WP 8.50	WP/1.19
8.51 WP 8.70	WP-1.36
8.71 WP 14.00	WP/1.185
14.01 WP 14.33	WP-2.19
14.34 WP 21.00	WP/1.18
21.01 WP 24.56	WP-3.20
24.57 WP 100.00	WP/1.15
100.01 WP121.75	WP-13.04
121.75WP1,500.00	WP/1.12
1,500.00 WP	(WP-120.53)/1.03

Italy

In Italy, the national government reimburses consumers for all or some of the cost of drugs depending upon the nature of the drug product. The price charged by pharmacists is regulated by the government as the combined wholesale and retail mark-ups. In retail prices are publicly available and are published in “L’Informatore Farmaceutico”, the Italian directory of medicines and manufacturers. To calculate the ex-factory price from the listed prices used for this study, a 10% retail tax was removed, followed by a 6.65% pharmacy markup and a 26.7% wholesale markup.

The generics market is not large in Italy, where competition is often between competing brands. Generics products listed in L’informatore Farmaceutico are generally identified as being labeled generic in the product description.

New Zealand

In New Zealand a crown entity called the Pharmaceutical Management Agency (PHARMAC) administers a national formulary of subsidized drugs called the New Zealand Pharmaceutical Schedule. The schedule is published three times a year with cumulative updates published every month. The schedule lists both the manufactures or suppliers price and the subsidy level. Prices in the schedule are exclusive and any wholesale or pharmacy mark-up and exclusive of retail taxes.

Sweden

In Sweden, manufacturers must negotiate a mutually acceptable price with the National Social Insurance Board to be included in the government's reimbursement system. Each year The National Corporation of Swedish Pharmacies (Apoteksbolaget) publishes a price list called the "Prisslista", which contains both retail prices and the regulated pharmacy mark-ups. These prices are exclusive of retail taxes and the prices used in this study where converted to wholesale prices using the calculations outlined in Table 36. Wholesale mark-ups are unregulated, but an estimated wholesale mark-up of 3.2% was used to derive Swedish ex-factory prices.[57]

Table 36 - Derivation of Wholesale Prices in Sweden given at Retail prices

Retail Price (RP)	Calculations Used to Get Wholesale Price
RP 59.925	(RP-15.40)/1.30
60.015 RP 108.10	(RP-19.60)/1.18
108.10 RP 351.10	(RP-27.10)/1.08
351.10 RP2170.10	(RP-30.10)/1.07
2170.10 RP	(RP-150.10)/1.01

Switzerland

In Switzerland, all residents are required to purchase medical insurance. Insurance companies reimburse patients for all of the costs of drugs approved by the Federal Office for Special Insurance (FOSI). These retail prices for the year 2000 where available in the "Compendium Price List". In order to derive the ex-factory price from the Compendium Price, first the 2.3% retail tax had to be removed, and then the Manufactures portion of the public price had to be calculated. The calculations used for this analysis are in found in Table 37.

Publicly available formula lists are also available on the internet, but prices are updated continuously. The internet does, however, provide useful formularies that distinguish clearly between products identified as brand or generic.[58]

Table 37 - Derivation Ex-Factory prices in Switzerland

Public Price	Manufacture's Portion of the Public Price in Fr
0-19.95	53.13%
20-21.25	10.63-11.88
21.30-99.95	55.85%
100-113.70	55.85-69.55
113.75-199.95	60.72%
200-229.60	121.44-151.04
229.65-299.95	64.97%
300-352.15	194.91-247.06
352.20-399.95	68.92%
400-484.20	275.66-359.86
484.25-499.95	72.90%
500-633.35	364.50-497.85
>633.4	>76.925%

United Kingdom

In the United Kingdom, all citizens have free and full access to drugs through the National Health Service (NHS). The national government does not regulate product prices directly, but rather regulates the overall profitability of each brand name drug manufacturer. So long as the manufacturer's profit does not exceed the limit the manufacturer is free to price brand name drugs at their discretion. The NHS accepts these prices and brand wholesale prices are listed monthly in the "Monthly Index of Medical Specialties ", (MIMS). For generic products, the accepted reimbursed price is found in the "Drug Tariff" list.

Wholesale prices can include a maximum regulated 12.5% of the ex-factory price. Therefore, ex-factory prices in the United Kingdom can be estimated if the maximum allowed markup is assumed.[59]

The United States of America

The U.S. has by far the largest pharmaceutical market in the world. There is no universal health care system in the U.S.. Private firms offer insurance and there are public insurance funds covering specific sectors of society. Price setting by the manufactures to the wholesaler is free and there are generally no regulated mark-ups. This study uses two prices to calculate an estimated U.S. ex-factory price.

The Red Book is published annually and is frequently supplemented with updates. The Red Book lists an "Average Wholesale Prices", AWP.[60] A study commissioned by former President Clinton estimated that actual wholesale prices in the U.S.A. were 18% below the AWP, and that average ex-factory prices where 20% below AWP prices.[61]

The U.S. Federal Supply Schedule (FSS) prices were also used for this study. These prices are publicly available on the Department of Veterans Affairs Website. FSS prices are at the manufacturer (ex-factory) price level and generally can not exceed the best price offered by the drug company to non-federal purchasers under similar terms and conditions.

Analysis was done with both the ex-factory gate prices represented by the FSS and an ex-factory gate price calculated from the AWP.[62]

Further Issues for Consideration: U.S. Generic Prices

Estimating a manufacturer price for the U.S. pharmaceuticals market is a challenge. Varying purchasing power among buyers results in many different price levels within the country. Although the Red Book AWP was used as a basis to calculate the ex-factory gate price as described above, the right level of discount that should be applied is not clear. Some literature suggests that in order to make their products attractive to pharmacists and managed care buyers, generic company's in particular undercut prices known as maximum allowable cost. For generic drugs, about three-fourths are reimbursed using limits know as the maximum allowable cost (MAC). These limits are established by pharmacy benefit managers, based on the lowest estimated acquisition cost for any of the generic equivalents of a given drug. The MAC tends to be 50 to 60 percent below AWP. The remaining one fourth of generics are reportedly reimbursed, like brand-name drugs, at AWP minus 13 to 15 percent[63]. MAC is set at 150% of the lowest generally available price for generics[64].

Although many purchasers are able to attain considerable discounts off the Red Book prices for a large portion of generics, cash paying customers, often the working poor and the elderly, pay some of the highest prices. Based on IMS data the differences in the average price paid for by cash paying customers is a lot lower for brand name products than for generic drugs. A large majority of brand name drugs have a percent difference paid between 10 and 20 percent, where as for generics the majority of cash customers paid from 40 percent to nearly double that paid by customers with third-party coverage. In general, people without drug coverage and other cash customers generally pay more than insures for the same drugs at the point of sale. The share of purchasers who pay in full at the time of the transaction (referred to as cash customers) has been steadily decreasing in recent years. In 1990, 63 percent of retail prescriptions involved cash customers, by 1998, only 25 percent of prescriptions were paid for by cash customers[65].

Prices paid to manufacturers by Veterans Affairs (VA), other federal agencies, and certain other entities, such as Indian tribal governments, are set by the Federal Supply Schedule (FSS). Under the Veterans Health Care Act of 1992, manufacturers must make drugs available to covered entities at the FSS price as a condition of eligibility for Medicaid reimbursement. According to the GAO, average FSS prices are more than 50% below the non-federal average manufacturer's price. The Department of Veteran Affairs (VA) has been able to obtain prices even lower than FSS prices through national contracts with manufacturers for select drugs. During fiscal year 1999, VA purchases under national contracts totaled about 23 percent of its drug expenditures. For those products that had both a national contract price and an FSS price, the national contract price was, on average, 33 percent lower than the FSS price. In some cases, the national contract prices for commonly prescribed drugs can be between 70 and 88 percent below the average wholesale price (AWP)[66].

The difficulty of measuring the U.S price for generics was the reason the analysis is based on ex-factory gate prices derived using AWP as a basis as well as the FSS price. Nonetheless, the estimated prices derived for the U.S. are most likely a higher estimate of actual prices, particularly to purchasers able to exercise some purchasing power. Also some of the analysis excludes the U.S. market completely to measure how Canadian prices compare to the remainder of the international basket.

Appendix V: List of Medicines Included in the Analysis

Table 38

Multiple Source Medicines Included in the Analysis (Detail Including Dosage Form and Strength)		
Medicine	**DOSAGE FORM**	**STRENGHT IN MG**
ACEBUTOLOL HYDROCHLORIDE	TAB	100
ACEBUTOLOL HYDROCHLORIDE	TAB	200
ACEBUTOLOL HYDROCHLORIDE	TAB	400
ACETAMINOPHEN / CAFFEINE / CODEINE PHOSPHATE	TAB	300 / 15 / 15
ACETAMINOPHEN / CAFFEINE / CODEINE PHOSPHATE	TAB	300 / 15 / 30
ACYCLOVIR	TAB	800
ALPRAZOLAM	TAB	0.25
ALPRAZOLAM	TAB	0.5
AMANTADINE HYDROCHLORIDE	CAP	100
AMILORIDE HCL / HYDROCHLOROTHIAZIDE	TAB	5
AMOXICILLIN	CAP	287
AMOXICILLIN	CAP	500
ATENOLOL	TAB	50
ATENOLOL	TAB	100
AZATHIOPRINE	TAB	50
BACLOFEN	TAB	10
BROMOCRIPTINE MESYLATE	TAB	2.5
CAPTOPRIL	TAB	12.5
CAPTOPRIL	TAB	25
CAPTOPRIL	TAB	50
CARBAMAZEPINE	TAB	200
	CONTROLED RELEASE	
CARBAMAZEPINE	TAB	200
	CONTROLED RELEASE	
CARBAMAZEPINE	TAB	400
CARBIDOPA / LEVODOPA	TAB	25 / 100
CEFACLOR	CAP	250
CEPHALEXIN	TAB	500
CIMETIDINE	TAB	300
CIMETIDINE	TAB	600
CLOBAZAM	TAB	10
CLONAZEPAM	TAB	0.5
CLONAZEPAM	TAB	2

Multiple Source Medicines Included in the Analysis (Detail Including Dosage Form and Strength)		
Medicine	**DOSAGE FORM**	**STRENGHT IN MG**
CLONIDINE HYDROCHLORIDE	TAB	0.1
CONJUGATED ESTROGENIC HORMONES	TAB	0.625
CONJUGATED ESTROGENIC HORMONES	TAB	1.25
CYPROTERONE ACETATE	TAB	50
DEXAMETHASONE	TAB	4
DICLOFENAC SODIUM	TAB	50
DILTIAZEM HYDROCHLORIDE	TAB	30
DILTIAZEM HYDROCHLORIDE	TAB	60
DILTIAZEM HYDROCHLORIDE	CONTROLED DELIVERY CAP	120
DILTIAZEM HYDROCHLORIDE	CONTROLED DELIVERY CAP	180
DILTIAZEM HYDROCHLORIDE	CONTROLED DELIVERY CAP	240
DILTIAZEM HYDROCHLORIDE	CONTROLED DELIVERY CAP	300
DOMPERIDONE MALEATE	TAB	10
FAMOTIDINE	TAB	20
FAMOTIDINE	TAB	40
FENOFIBRATE	CAP	200
FLUCONAZOLE	TAB	100
FLUOXETINE HYDROCHLORIDE	CAP	20
FLUVOXAMINE MALEATE	TAB	50
FLUVOXAMINE MALEATE	TAB	100
GEMFIBROZIL	CAP	300
GLYBURIDE	TAB	2.5
GLYBURIDE	TAB	5
HYDROCHLOROTHIAZIDE / TRIAMTERENE	TAB	25 / 50
INDAPAMIDE	TAB	1.25
INDAPAMIDE	TAB	2.5
INDOMETHACIN	CAP	50
ISOSORBIDE DINITRATE	TAB	30

Multiple Source Medicines Included in the Analysis (Detail Including Dosage Form and Strength)		
Medicine	**DOSAGE FORM**	**STRENGHT IN MG**
LISINOPRIL	TAB	5
LORAZEPAM	TAB	0.5
LORAZEPAM	TAB	1
LORAZEPAM	TAB	2
MEDROXYPROGESTERONE ACETATE	TAB	2.5
METFORMIN HYDROCHLORIDE	TAB	500
METHYLPHENIDATE HYDROCHLORIDE	TAB	10
METOPROLOL TARTRATE	TAB	50
METOPROLOL TARTRATE	TAB	100
MOCLOBEMIDE	TAB	150
NADOLOL	TAB	80
NAPROXEN	TAB	250
NAPROXEN	TAB	375
NAPROXEN	TAB	500
NIZATIDINE	CAP	150
NIZATIDINE	CAP	300
NORFLOXACIN	TAB	400
NORTRIPTYLINE HYDROCHLORIDE	CAP	25
OXYBUTYNIN CHLORIDE	TAB	5
PENTOXIFYLLINE	SUSTAINED RELEASE TAB	400
PIROXICAM	CAP	20
RANITIDINE HYDROCHLORIDE	TAB	150
RANITIDINE HYDROCHLORIDE	TAB	300
SELEGILINE HYDROCHLORIDE	TAB	5
SOTALOL HYDROCHLORIDE	TAB	160
SPIRONOLACTONE	TAB	25
SUCRALFATE	TAB	1000
SULFAMETHOXAZOLE / TRIMETHOPRIM	TAB	800 / 160
TEMAZEPAM	CAP	15
TEMAZEPAM	CAP	30
TERAZOSIN HYDROCHLORIDE	TAB	1
TERAZOSIN HYDROCHLORIDE	TAB	2
TERAZOSIN HYDROCHLORIDE	TAB	5
TIAPROFENIC ACID	TAB	300
TICLOPIDINE HYDROCHLORIDE	TAB	250
TRAZODONE HYDROCHLORIDE	TAB	50
TRAZODONE HYDROCHLORIDE	TAB	100

Multiple Source Medicines Included in the Analysis (Detail Including Dosage Form and Strength)		
Medicine	**DOSAGE FORM**	**STRENGHT IN MG**
VALPROIC ACID	CAP	250
VERAPAMIL HYDROCHLORIDE	TAB	80
VERAPAMIL HYDROCHLORIDE	SUSTAINED RELEASE TAB	180
VERAPAMIL HYDROCHLORIDE	SUSTAINED RELEASE TAB	240

Appendix VI: Sources of Publicly Available Price Information

Australia : SCHEDULE OF PHARMACEUTICAL BENEFITS 2001
Web Site http://www1.health.gov.au/pbs/contents/contents.htm

France: SEMPEX, 2000
Société d' éditions médico-pharmaceutiques
2, rue Bélanger
75140 Paris, CEDEX 03
Tel: 33 1 49 96 22 46 Fax: 33 1 49 96 22 40

Germany: RÖTE LISTE, 2000
Rote-Liste-Sekertariat in der BPI Service GmbH
Karlstr. 21, 60329 Frankfurt a.M.
Tel: 0 69 25 56 12 91 Fax: 0 69 23 17 89

Italy: L'INFORMATORE FARMACEUTICO, September 2000
Organizzazione Editoriale Medico Farmaceutica
20157 Milan- Via Palizzi, 88
Cas. Post 10434- C.C.P. 33882200
Tel: 02 33 210 1 Fax: 02 33 210 200

New Zealand: PHARMAC, September 2000
New Zealand Pharmaceutical Schedule
Web Site http://www.pharmac.govt.nz

Sweden: PRISLISTA, September 2000
Apoteket AB
Förlagsorder
131 88 Stockholm
Tel: 08-466 1070 Fax: 08-466 1064

Switzerland: COMPENDIUM SUISSE DES MÉDICAMENTS,2000
Documed SA, Case Postale 217, 4020 Bâle
Tel: 061 315 111 1 Fax: 061 315 111 5

U.K: MONTHLY INDEX OF MEDICAL SPECIALITIES (MIMS),
September 2000
Haymarket Medical Ltd.
174, Hammersmith Road,
London W6 7JP
Tel: (020) 8943 5000

DRUG TARIFF, September 2000

U.S.: RED BOOK, September 2000
Five Paragon Drive
Montvale, N.J 07645-1742
Tel: (201) 358-7500, 1-800-222-3045

FSS PRICES, June 2000
Department of Veteran Affairs (DVA)
Web Site: http://www.vapbm.org/PBM/prices.htm

Ontario: ONTARIO DRUG BENEFIT FORMULARY, September 2000
880, Bay Street
Toronto, ON
Tel: (416) 326-5300, 1-800-668-9938
Fax: (416) 326-5317

Québec: Liste de médicaments, April 2000
Tel: (418) 528-7763, 1-800-463-7763

References

Anis A.H. Pharmaceutical Policies in Canada: another Example of Federal-Provincial Discord, Canadian Medical Association Journal (CMAJ) Vol. 162 (4), 2000.

Anderson, M., Parent K., "Timely Access to Generic Drugs: Issues for Health Policy in Canada", Queen's University, August 2001.

Andersson, F., "Methodological Aspects of International Drug Price Comparisons", PharmacoEconomics, vol. 4, no. 4, 247-256, 1993.

Andersson, F., "The GAO Comparison of Pharmaceutical Prices in the United States and Canada: Are the Prices Really That Much Higher in the United States", Journal of Research in Pharmaceutical Economics, vol. 6, no. 2, 3-20, 1995.

Australian pharmaceutical Manufacturers Association (APMA):
-1 Generic Medicines:http://www.apma.com.au/generic.pdf (Accessed October 2001)
-2 Pharmaceuticals and Australia's Knowledge Economy:(Accessed October 2001)
http://www.apma.com.au//assets/images/vol-1chapter4.pdf

Brogan, The Delta Report, http:/www.broganinc.com/reports/delta.html., 1999.

Caves, Richard E., Whinston, Michael D. and Hurwitz, Mark A., "Patent Expiration, Entry, and Competition in the U.S. Pharmaceutical Industry", Brooking Papers on Economic Activity: Microeconomics, 1-66, 1991.

Cockburn and Griliches, "Generics and New Goods in Pharmaceutical Price Indexes", American Economic Review, Volume 84, No. 5, 1994, pp. 1213-1232.

Danzon, Patricia, "Differential Pricing of Pharmaceuical: Reconciling Access, R&D and Patents." Report for Working Group 2 of the WHO Commission on MacroEconomics and Health. Dec. 2001.

Danzon, Patricia, "Making Sense of Drug Prices." 2000, Regulation 23(1).

Danzon, Patricia, University of Pennsylvania (with Li-Wei Chao) "Cross-National Price Differences for Pharmaceuticals: How Large and Why" J. Health Economics 2000.

Danzon, Patricia, "Competition in the Off-Patent Sector: The U.S. Experience." 1998. Pharma Pricing Review 3(3).

Danzon, Patricia, (with Jeong Kim), "International Price Comparisons for Pharmaceuticals: Measurement and Policy Issues." 1998, PharmacoEconomics.

Danzon, Patricia, "Price Differentials for Medicines Between and Within Countries." European Pharmaceutical Law Notebooks. III(8) 1997.

Danzon, Patricia, "Price Discrimination for Pharmaceuticals: Welfare Effects in the U.S. and the EU." International J. of the Economics of Business. 4(3) 1997.

Danzon, Patricia, "The Uses and Abuses of International Price Comparisons," in R. B. Helms, ed., Competitive Strategies in the Pharmaceutical Industry (Washington, D.C.: AEI Press, 1996).

Dong-Churl Suh, “Effect of Multiple Source Entry on Price Competition After Patent Expiration in the Pharmaceutical Industry”, Health Services Research, 2000.

Economic Committee for Healthcare Products (CEPS. Annual Report 2000, Economic Committee for Healthcare Products (CEPS), 2001.

European Generic Medicines Association – France: http://www.egagenerics.com/facts_figures/healthcare_markets/countries/france.html (Accessed October 2001)

European Generic Medicines Association – Italy: http://www.egagenerics.com/facts_figures/healthcare_markets/countries/Italy.html (Accessed October 2001)

European Generic Medicines Association – Germany: http://www.egagenerics.com/facts_figures/healthcare_markets/countries/Germany.html (Accessed October 2001)

Frank, Richard G. and Salkever, David S., “Pricing, Patent Loss and the Market for Pharmaceuticals”, Southern Economic Journal, 165-179, 1992.

Garattini, L. and Tediosi, F., “A Comparative Analysis of Generic Markets in Five European Countries”, 51 Health Policy, 149-162, 2000.

Grabowski, Henry G. and Vernon, John M., “Brand Loyalty, Entry and Price Competition in Pharmaceuticals After the 1984 Act”, 35 Journal of Law and Economics, 331-350, 1992.

Griliches, Zvi and Cockburn, Iain, “Generics and New Goods in Pharmaceutical Price Indexes”, 84 American Economic Review, 1213-1232, 1994.

Gregory G. Kelly "Improving the PPI Sample for Prescription Pharmaceuticals", Bureau of Labor Statistics, 1999.

The Health Transition Fund of Health Canada. National Conference on Pharmacare – 1998 Proceedings, Health Canada, 1998.

Hodges, Christopher J.S., “Pricing and Reimbursement Issues in The European Economic Area”, Drug Information Journal, Vol 21, p 251-258, 1997.

IMS International Pharma Strategy Group, Generics Canada: Understanding the Threats and Opportunities, IMS, 1995.

IMS Health, 2000 Canadian Pharmaceutical Industry Review, Canada 2001.

Jacobs, P. and Bachynsky J., “Summary of Public Policies Related to Drug Formularies in Canada: Economic Issues”, Institute of Health Economics Working Paper 00-2, 2000.

Jacobzone, S. OECD Labor Market and Social Policy Occasional Paper #40: Pharmaceutical Policies in OECD Countries: Reconciling Social and Industrial Goals, OECD, 2000.

Kanavos, Dr.P. Scrip Reports: Pharmaceutical Pricing and Reimbursement in Europe - 1999 Edition, PJB Publications Ltd., 1999.

Last E. Neil T. (Editors). Pharmaceutical Pricing & Reimbursement 2000, PPR Communications Ltd, 2000.

Lewis, G. IMS Presentation for the European Generics Association (EGA), Prospects for Generics Pharmaceuticals in the USA and Europe, EGA, 2000.

Lexchin, Joel, "Effects of Generic Drug Competition on the Price of Drugs in Ontario", Canadian Medical Association Journal, 148(1): 35-38, 1993.

Manning, R., "Products Liability and Prescription Drug Prices in Canada and the United States", The Journal of Law and Economics, vol XL, no. 1, 203-243, 1997.

Masson, Alison and Steiner, Robert L., Generic Substitution and Prescription Drug Prices: Economic Effects of State Drug Product Selection Laws, Washington, DC, Bureau of Economics, Federal Trade Commission, 1985.

Morton, F.M.S., "Entry Decisions in the Generic Pharmaceutical Industry", National Bureau of Economic Research, Working Paper Series, September, 1997.

Mossinghoft, G.J. Overview of the Hatch-Waxman Act and its Impact on the Drug Development Process, Food and Drug Law Journal (Vol. 54-2), 1999.

Mutlib A.F. The Regulatory Approach to Medicines in New Zealand, Drug Information Journal Vol.30, 1996.

National Health Policy Forum: Issue Brief: Pharmaceutical Market Place Dynamics, The George Washington University, Washington, DC, May, 2000.

Office of Inspector General, "The Impact of High-Priced Generic Drugs on Medicare and Medicaid", Office of Evaluation and Inspections, July 1998.

OXERA, Fundamental Review of the Generic Drugs Market, OXERA, 2001.

Palmer, W.N. (and Associates), "Study of Demand Outlook for Pharmaceuticals in Canada: Final Report", Health Industries Branch of Industry Canada, March 1996.

Pharmaceutical Benefits Pricing Authority (PBPA) - Australia. Annual Report 2000, Department of Health and Aged Care, 2000.

Productivity Commission 2001, International Pharmaceutical Price Differences, Research Report, AusInfo, Canberra.

Public Health Institute – Pharmaceuticals and Indigent Care Program: *Pharmaceutical Discounts Under Federal Law: State Program Opportunities*, William H. von Oehsen, III, May 2001.

Researched Medicines Industry (RMIANZ). Briefing Papers-Generics: (Accessed October 2001) http://www.rmianz.co.nz/Briefing%20Papers/briefingpapers.html

Schacht W. and Thomas J., "Patent Law and its Application to the Pharmaceutical Industry: An Examination of the Drug Price Competition and Patent Term Restoration Act of 1984", Congressional Research Services, December 2000.

Senior I, Whitaker D, Cameron J, Ribbert J. Policy Relating to Generic Medicines in the OECD, National Economic Research Associates (NERA), 1998.

UK Department of Health (DoH). Discussion Paper on the Options for the Future Supply and Reimbursement of Generic Medicines for the NHS, UK Department of Health, 2001.

UK Department of Health (DoH). Measures to Control the Price of Generic Medicines Sold to Community Pharmacies and Dispensing Doctors, Department of Health, 2000: http://www.doh.gov.uk/generics/genericres.htm (Accessed October 2001)

U.S. Congressional Budget Office, How Increased Competition from Generic Drugs Has Affected Prices and Returns in the Pharmaceutical Industry, Washington, July 1998.

U.S. General Accounting Office, Drug Prices: Effects of Opening Federal Supply Schedule for Pharmaceuticals Are Uncertain, Washington, June 1997.

U.S. General Accounting Office, "Prescription Drugs: Expanding Access to Federal Prices Could Cause Other Price Changes", August 2000.

U.S. General Accounting Office, Country Profile: United States Prescription Drug Pricing and Reimbursement Policies, John Hansen, 2000.

U.S. International Trade Commission, Pricing Prescription Drugs, Investigation No. 332-419, Publication 3333, December 2000.

Willison, D. et al, International Experience with Pharmaceutical Policy: Common Challenges and Lessons for Canada, 2001, Projected funded by the Health Transition Fund, Health Canada.

Yacker, H., "Outpatient Prescription Drugs: Acquisition and Reimbursement Policies Under Selected Federal Programs", Congressional Research Services, August 1999.

Endnotes

[1] The Task Force has representatives from British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Nova Scotia, Health Canada and the Patented Medicine Prices Review Board (PMPRB). It was established to examine one of six pharmaceutical issues identified at the April 1996 meeting of federal/provincial/territorial Ministers of Health. The other issues included utilization, marketing, wastage, consumer education and research and development. The work is overseen by the Pharmaceutical Issues Committee (PIC) of the Advisory Committee on Health Services (ACHS), which reports to the Conference of Deputy Ministers of Health.

[2] The Canadian Generic Pharmaceutical Association (CGPA) formerly the Canadian Drug Manufacturers Association argues that the main reasons for lower costs in generic products are due to less investment in R&D, the fact that no clinical trials are required and that sophisticated manufacturing techniques are applied to the production of generics.

[3] *Canadian Pharmaceutical Market: Drug Store and Hospital Purchases, December 2000, IMS Health.* Sales of generic manufacturers are estimated by adding the total sales as reported by IMS Health for those manufacturers that belong to the Canadian Drug Manufacturers Association (CDMA).

[4] Canadian Drug Manufacturers Association (CDMA), "Market Trends", *http://www.cdma-acfpp.org/en/resource_trends.html*

[5] This estimate was calculated by the WGDP directly from the provincial drug plan data. Similar breakdown in expenditure share by drug market category can be found in the F/P/T Working Group on Drug Prices Studies: *Provincial Drug Plans Overview Report: Pharmaceutical Trends 1995/96-1999/00 and Individual Provincial Pharmaceutical Trends (Technical Documents).* These documents include a break down by patented vs. non-patented drugs and by non-patented single source vs. non-patented multiple source drugs.

[6] For further details of this analysis refer to other F/P/T Working Group on Drug Prices Studies: *Provincial Drug Plans Overview Report: Pharmaceutical Trends 1995/96-1999/00 and Inter-provincial Prescription Drug Price Comparison: 1995/96-1999/00.*

[7] A full explanation of international differences in brand-to-generic price ratios would need to consider factors such as time since generic entry, age of product, and differences in market structure. Such an analysis would require the use of multivariate statistical methods, and is beyond the scope of the present study.

[8] Information from provincial drug plans and IMS Canada was used to determine whether a drug was a brand name drug or a generic drug. Aside from a few exceptions, a drug was classified as being either brand or generic based on the manufacturer producing the drug.

[9] CGPA

[10] NERA

[11] The packaging or form of drug products that are not in tablet or capsule form could have a great deal of influence on the price. For example, a multi-use vial of one injectable drug product can be reasonably expected to have a different price from the single use ampoule of another product. This is also a problem for dosage forms such as sprays, foams and lotions. There may be particularly insufficient information on generic products listed to insure some forms and applicators are compatible.

[12] Patricia M. Danzon, et al, "Cross-national price differences for pharmaceuticals: how large and why?", Journal of Health Economics 19 (2000) 159-195; Australian Productivity Commission, International Pharmaceutical Price Differences: Research Report: July 2001.

[13] Inter-provincial price comparisons support the conclusion that no significant price differences exist between provinces at the ex-factory gate level and thus it is assumed that the ODB price is a good estimate of the Canadian price.

[14] Ex-factory prices were calculated after adjusting for retail and wholesale mark-ups, as well as, value added taxes, when applicable. These mark-ups are legislated in most countries. See the PMPRB's "Verification of Foreign Patented Drug Prices" (1998) for a description of how ex-factory prices were derived in six of the seven countries (excluding the United States).

[15] Market research companies, such as IMS, provide survey-based information on product sales and quantities. Some analysts believe these data offer more reliable transaction price estimates than those that can be gleaned from compilations of list prices. The PMPRB will examine IMS-type price information in a future extension of the present study.

[16] For example, there may be two packages of 100 tablets. There would be a typical bottle or box of tablets for a given price and then there would be a box of 100 individually packaged tablets in unit doses for as much as twice the price. These unit dose packages were excluded from the analysis.

[17] Bioequivalent drug products, for the purposes of this study, are products for which the combination of active ingredient(s), strength(s), dosage form, and route of administration are the same.

[18] A sensitivity analysis which included a minimum priced brand name product in the generic comparison was conducted to see the robustness of the international comparison. The main conclusions and international and bilateral rankings were not effected.

[19] If a manufacture offered more then one package sizes, then 'outlier' packages sizes were identified. These were defined as less then 15% of the smallest package size available in Canada and larger then 185% of the largest packages size available in Canada. These outlying package sizes were ex excluded from the analysis.

[20] The 36 month average over September 1997 to September 2000 was used to convert prices to a common currency. This methodology is consistent with the way the PMPRB determines exchange rates for the International Price Comparison on patented products.

[21] This study treats FSS prices as lower-bound estimates of transaction prices. Not all analysts agree with this assumption. For example, an external reviewer of the present paper contends that "there is good reason to believe that prices obtained by many government agencies and large private sector purchasers are effectively well below the FSS."

[22] The Red Book price is an average wholesale price, but was converted to a manufacturers' list price before being averaged with the FSS price. The *Patented Medicines Regulations* require that patentees file all publicly available prices for their products in the seven comparator countries, including the U.S. In November of 1997 the Department of Veteran Affairs started publishing the Federal Supply Schedule (FSS) prices that it negotiated for itself and some other federal agencies. In 1998 the PMPRB began requiring patentees to file the FSS price. As of January 1st, 2000 the FSS price was incorporated into the International Price Comparison test used in implementing the Board's guidelines.

[23] For the purpose of this analysis, availability in a country is equated with the presence/absence of the product from the public source used in that country.

[24] The geometric mean is a more appropriate measure of the mean of ratios. Due to the distribution of the ratio values, the arithmetic mean tended to bias the average towards high valued outliers. The Geometric mean is the equivalent to the arithmetic mean of the log-transformed data.

[25] The number three was chosen because it made the MIP the least susceptible to outliers. In this way, the price recognized as the international price must have foreign prices both above and below it.

[26] For example, for each product found in Italy, the Italian product was compared to a MIP that included Canada, but did not include the Italian price. The geometric mean of the Italian price to this MIP was then presented.

[27] Just as the ODB price was used as a proxy for the 'Canadian' price, expenditures and quantities found in the ODB database for 1998-1999 were used as a proxy for the Canadian expenditure and utilization levels.

[28] Since the geometric mean was used for the analysis, the pair wise t-tests were done on the log-transformed data.

[29] Again the cost is expressed in Canadian dollars using an exchange rate averaged over 36 months.

[30] The inclusion of a value in the 95% confidence interval means that there is insufficient evidence (at significance level 0.05), to reject the hypothesis that this value is the actual mean for the population of which the sample is meant to represent. Conversely, the exclusion of the value "1.00" suggests there is sufficient evidence to reject this hypothesis.

[31] Not all provinces make this distinction, particularly if the claimed price is generally accepted. A third level of prices that may be used at the drug plan level are price reimbursed, which would include co-payments and deductibles. Since the scope of the study is to compare prices across provinces, it was only feasible to include claimed and accepted prices in order to ensure an "apples to apples" comparison.

[32] Saskatchewan has the highest retail markup recognized by a provincial drug plan included in the analysis. In Saskatchewan, a pharmacist may bill the plan for both the distribution cost associated with purchasing pharmaceuticals from a wholesaler as well as an additional retail margin. See F/P/T WGDP *Inter-Provincial Prescription Drug Price Comparison: 1995/96-1999/00* report for a more lengthy discussion.

[33] See the following WGDP reports for further details: *Individual Provincial Pharmaceutical Trends (Technical Documents); Inter-provincial Prescription Drug Price Comparison: 1995/96 – 1999/00; Provincial Drug Plans Overview Report: Pharmaceutical Trends: 1995/96-1999/00.*

[34] For drug categories where the utilization for the Pharmacare Programs is less than 500,000 units per year, the MAC is determined by adding a 5% mark up to the lowest available price. For drug categories where the utilization for the Pharmacare Programs is 500,000 units or more per year, the MAC is determined by adding a 3% mark up to the lowest available price.

[35] Labour Market and Social Policy – Occasional Papers No. 4, "Pharmaceutical Policies in OECD countries: Reconciling Social and Industrial Goals", S. Jacobzone, 2000.

[36] Labour Market and Social Policy – Occasional Papers No. 4, "Pharmaceutical Policies in OECD countries: Reconciling Social and Industrial Goals", S. Jacobzone, 2000.

[37] This table has been adapted from: Labour Market and Social Policy – Occasional Papers No. 4, "Pharmaceutical Policies in OECD countries: Reconciling Social and Industrial Goals", S. Jacobzone, 2000, p 82.

[38] The link between the NOC and patent expiry is in place to protect the patent holder of the product by requiring proof that the generics manufacturer is not infringing on the patent rights of the branded manufacturer prior to the entry of the generic product in market (CDMA, p 10).

[39] The Economic Committee for Healthcare Products (CEPS) is the governmental regulatory authority that determines the prices of reimbursable pharmaceuticals (CEPS Annual Report, p 1).

[40] CEPS Annual Report : Section-B.

[41] CEPS Annual Report: Section-D.

[42] Kanavos, pp.131-33.

[43] Productivity Commission, p B. 38.

[44] NERA, p 28.

[45] Anis, p 525, NERA, p 29.

[46] PPR, p 175.

[47] Labour Market and Social Policy – Occasional Papers No. 4, "Pharmaceutical Policies in OECD countries: Reconciling Social and Industrial Goals", S. Jacobzone, 2000.

[48] A 95% confidence interval was calculated for each average in Figure 5 and none contained the value one.

[49] As in Figure 5, a 95% confidence interval was calculated for each average in Figure 6 and none contained the value one.

[50] A 95% confidence interval was generated for each average in Figure 7. 'Significantly' lower here refers to those averages who are lower and whose 95% confidence interval of the average is also lower. The average ratio comparing Australia, France and New Zealand and the U.S.-FSS price to Canada's price were all significantly lower then one; Similarly, the average U.S.-RB to Canada price ratio was significantly higher then one. The confidence intervals for Germany, Italy, Sweden, Switzerland and the U.K. all contained the value one.

[51] The 95% confidence intervals for all of the averages presented in Figure 8 exclude the value one except Switzerland.

[52] T-tests were done to test the difference between the average foreign-to-MIP ratio for each other country against the average Canadian-to-MIP ratio at a 0.05 significance level. Regardless of which U.S. price is used, all other averages are significantly different from the Canadian average except the average Switzerland brand product to MIP ratios.

[53] T-tests at a 0.05 significance level show that all averages except the average Switzerland brand product to MIP ratios are significantly different from the average Canadian-to-MIP ratio.

[54] T-tests at a 0.05 significance level show that all average except the average Switzerland brand and generic product to MIP ratios are significantly different from the average Canadian-to-MIP ratio.

[55] None of the 95% confidence intervals for the averages presented in Figure 12 include the value one.

[56] See endnote 18 from methodology.

[57] The 3.2% wholesaler markup described in literature and was confirmed as the best estimate by the National Social Insurance Board, Division for Drug Affairs in Stockholm, Sweden.

[58] The Federal Office of the Social Security (OFAS), provides links to formularies which clearly categorize products as brand or generic. http://www.bsv.admin.ch/kv/aktuell/f/index_medi.htm.

[59] Price verification efforts by the board in the past have shown that assuming the maximum markup on listed prices is a reasonable assumption.

[60] In some cases the Red Book publishes a "Direct Price", usually from a brand name drug manufacturer. In these cases, this is meant to represent the ex-factory gate price and can be used directly as such.

[61] Department of Health and Human Services, "Presidential Report - Prescription Drug Coverage, Spending, Utilization and Prices", April 2000.

[62] The Red Book generally contains numerous suppliers and distributors, including some which are specialized for certain markets, (ex. hospital sales in one area of the country.) For this reason, the Red Book suppliers for each drug products bioequivalent market where limited to the list of suppliers also found on the FSS formulary. The FSS formulary is generally a subset of suppliers found in the Red Book.

[63] Report to the President (Clinton), "Prescription Drug Coverage, Spending, Utilization, and Prices", From the Department of Health & Human Services, April 2000, p 102.

[64] National Health Policy Forum: Issue Brief; Pharmaceutical Market Place Dynamics, May, 2000, p-14.

[65] Report to the President (Clinton), "Prescription Drug Coverage, Spending, Utilization, and Prices", From the Department of Health & Human Services, April 2000, p 102.

[66] US General Accounting Office, Country Profile: United States Prescription Drug Pricing and Reimbursement Policies, John Hansen, 2000, p 4.