Analyzing Brand-name and Generic Drug Costs in the U.S. and Eight Other Countries

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A new Wharton study comparing average prices for pharmaceuticals in nine countries – the United States, Canada, Chile, France, Germany, Italy, Japan, Mexico and the United Kingdom – shows that average prices are highest in Japan, while prices in other countries are between 6% and 33% lower than prices in the U.S. Canada's prices are the lowest.

The study also shows that the price differences are generally consistent with income differences among countries. In other words, the higher drug prices in the U.S. reflect the country's higher per capita income. The exceptions are Mexico and Chile, where prices are higher compared to average per capita income and usage is far less than in other countries.

The study has interesting ramifications for pharmaceutical manufacturers, consumers and regulators given that the U.S. Congress is currently considering the addition of prescription drug coverage to senior citizens covered by Medicare. Indeed, the media has run articles recently that describe senior citizens boarding buses for Canada to take advantage of lower prescription drug prices. Some cities and states have also acknowledged efforts to cut their budgets by buying large quantities of cheaper drugs from Canadian pharmacies.

In addition, the pharmaceutical industry has been criticized by some consumer groups for charging exorbitant prices for patented drugs and playing legal hardball in attempts to prevent other companies from offering cheaper generics.

Interestingly, the study also shows that the U.S. has one of the highest levels of generic drug use relative to total prescription volume, and that generic prices are lower in the U.S. than in all the countries except Canada, where the difference is 6%.

The study cited exchange rate fluctuations as a major contributor to drug price differences. The decline in the Canadian dollar in the 1990s, for example, accounts for 19 percentage points of the 33% Canada-U.S. price differential. In addition, when drug prices are compared using GDP purchasing power parities, which standardize for cost-of-living differences, the Japan-U.S. differential disappears and the Canada-U.S. differential shrinks from 33% to 14%.

Entitled *Prices and Availability of Pharmaceuticals: Evidence from Nine Countries,* the study was authored by Wharton health care systems professor Patricia Danzon and Michael Furukawa, a Wharton doctoral candidate. It was funded by a grant from pharmaceutical giant Merck & Co., and appeared last week in the peer-reviewed journal *Health Affairs*.

The two researchers looked at 1999 prices for 249 compounds (molecules) – including all brand (patented) and generic products with these active ingredients – making their analysis one of the most comprehensive comparisons ever undertaken of prescription drug prices.

Paying Their Fair Share

The study addresses the issue of "what can we say about the average price of drugs in the U.S. relative to other countries," says Danzon, "and also looks at the question of whether other countries are paying their fair share." On the first point, "when we look at a comprehensive market basket of products, the differences on average are smaller than many previous commentators have argued. And second, when we compare those price differences to the differences in income, we find that other countries' prices are not out of line relative to income. If we are going to measure paying our fair share in terms of prices relative to income, then most of the Europeans are paying their fair share."

The study, Danzon adds, looks at manufacturer level prices rather than retail prices, despite critics who claim that what really matters are the prices consumers have to pay for prescription drugs at their pharmacies. But that price, Danzon responds, "reflects the manufacturers' prices marked up by the wholesaler margin, pharmacy margin and maybe some sales taxes. If we are trying to sort out the manufacturers' role in this system, we can't evaluate that by looking at the retail price."

In terms of the study's relevance to policy makers, Danzon suggests that it contributes to the debate over different approaches to regulation and how regulatory policies affect the whole range of prices. "What we find is that yes, the prices for patented drugs in the U.S. are higher than in most other countries, but the generic prices are lower," she says. "The two are related. Generic prices are lower because we have a more competitive market." The U.S. does not regulate drug prices, as do most other countries.

One of the downsides of regulation, she adds, is that even though it results in lower branded prices for drugs while they are on patent, it also results in higher post-patent prices. "So a smaller share of total drug spending is allocated toward the more innovative drugs," she says.

"Our study suggests that the overall distribution of drug prices in the U.S. is more conducive to innovation," Danzon states. "Under our market system, the prices in the first years that a product is on the market are relatively high. Those first few years have the biggest effect on a drug manufacturer's incentives for research and development (R&D), because R&D decisions are based on the discounted present value of expected revenues over a drug's life cycle. What happens after the patent expires isn't very relevant. Branded drugs then lose market share to less expensive generics, and the drugs become cheaper for consumers. But that doesn't have much effect on incentives for R&D."

In regulated markets, such as those in many European countries, "there are weaker incentives for investment in R&D because revenues early in the product's life cycle are lower and more of total drug expenditure is spent on costly generics," says Danzon. "In Europe, some have argued for freeing up "budgetary headroom for innovation.' What they mean is they should spend less on older products so they can spend more on newer products in order to encourage innovation. Politically, however, this is hard for many countries to do."

Paying for R&D

One of the criticisms of the U.S. pharmaceutical industry is that drug manufacturers make too much money by charging high prices to consumers, especially to seniors, whose fixed incomes and need for a variety of medications make them especially vulnerable to drug costs. Yet according to Danzon, "anybody who has looked at Wall Street recently – specifically at returns on equity – can see that some of the pharmaceutical companies are no longer riding as high as they were in the late 1990s." A number of companies are facing patent expiration of major drugs, and despite having spent billions on R&D, don't have new products to replace them. "The contention that overall profitability is still enormously high has to be reexamined," she says.

In their study, Danzon and Furukawa acknowledge that patented drugs are priced substantially above their marginal costs, but suggest that this is appropriate given the nature of drug research. "Research-based pharmaceuticals entail sizable fixed costs of R&D, which must be recouped if R&D is to continue," they write. "This pharmaceutical R&D is a 'global joint' cost – that is, once incurred, it can benefit consumers worldwide, with only relatively modest marginal costs of production.

"The dilemma is, how should the joint costs of R&D be allocated across countries? The economic answer … is that if the objective is to maximize social welfare, then the global joint costs should be recouped through price markups over marginal cost that differ based on income levels, assuming that income is a major determinant of 'true' price elasticity. Thus, price differentials that are related to income would be consistent with both economic efficiency and equity," the authors write. As their study shows, this is indeed what is happening: Manufacturers' drug prices generally correspond to differences in countries' income levels, with the exception of Mexico and Chile.

The concern over high drug prices in the U.S., Danzon adds, "is really focused on the people who don't have insurance coverage, especially uninsured seniors. But that is an insurance problem. It should be addressed by providing a drug benefit that protects against very high out-of-pocket expenditures, yet with some co-payment. Once seniors are enrolled in a managed drug plan, similar to the coverage of the under-65 population, then they will get the benefit of discounts on drug prices and pharmacy dispensing fees. The whole cost of drugs is lower for people in managed drug plans. Yes, the affordability issue for seniors needs to be addressed, but it should be addressed by insurance coverage, not by regulating prices."

As to the question of whether we should import drugs from abroad, "our study looks at overall averages and can't be used to estimate how much can be saved by importation," says Danzon. "But suppose we did allow cheaper drugs to be imported into the U.S. Then wholesalers would look at each drug, country by country, trying to find the best deal. The best deal would always be a greater differential than the overall average. If we find that the average difference with Canada is 33%, there are some drugs where the price differential would be larger than 33%. But that doesn't mean that U.S. consumers could save huge amounts by importing. It is uncertain how much of any savings would be passed on to the consumer and how much would be captured by middlemen. Even if there were some short-run savings, it's not good policy for prices to be the same in all countries because if we ask the question, 'What is the right way to share the burden for R&D?' the answer in terms of economic efficiency and equity is, as we noted above, that higher income countries should pay more than lower income countries."

This raises the question of why drug prices in Mexico and Chile are higher compared to their average per capital income, when for the other countries in the study, price differences are generally consistent with income differences. "Prices are high, for two reasons," says Danzon. One is that U.S. policy makers tend to look at Mexican prices as one of their comparisons. This makes drug companies reluctant to charge

lower prices in Mexico, because if they do, some people in Washington may ask why U.S. consumers can't also get those low prices. Also, it would encourage consumers to buy drugs in Mexico.

"Second, Mexico has a fairly affluent upper- and middle-income class and a much larger lower-income class. But insurance arrangements do not make it easy for manufacturers to offer drugs at two prices – a discounted, lower price for lower-income people and a higher price for higher-income people. This is true in other middle income countries as well, including South Africa. Because the policy is not to allow different prices, drug companies are more reluctant to set their prices at levels that would be affordable to the lower classes." What tends to happen as a result, she says, is that lower-income people are frequently unable to buy the drugs, especially the new, higher-priced ones.

Generics: High Volume, Low Prices

In their analysis of the generics market, Danzon and Furukawa found that the level of generic drug use relative to total prescription volume is low in the price-regulated markets of France (28%) and Italy (34%), and higher in countries with freer pricing such as the U.S. (58%), Germany (61%) and the UK (49%). Canada's high generic share (59%) reflects, among other things, policies that encourage use of generics, such as incentives for pharmacists to substitute generics for branded drugs.

"Within the generic sector," the authors write, "branded generics compete partly on brand image, whereas unbranded generics compete primarily on price. Thus, in the U.S., where the generic sector is dominated by unbranded products, total generic share is 58% of units but only 18% of sales, reflecting relatively low generic prices. By contrast, in Germany, where most generics are branded, generic share is 61% of units but 34% of sales, reflecting relatively higher generic prices."

Danzon doesn't expect the prices of generics to rise in the U.S. "It's a very competitive market here, partly because of the way pharmacies in the U.S. can capture the spread between the amount they are reimbursed for generics and the price they pay. That gives generics manufacturers a very strong incentive to lower the price they charge the pharmacy, because the pharmacy tends to buy from the company where it gets the biggest spread … As long as pharmacies are paid that way," the prices of generics will tend to stay low.

Note on Sponsorship

At a time when some universities are being criticized for allowing too much industry-supported research, Danzon notes that in the case of research on pharmaceutical prices in different countries, there is only one source of data – IMS Health, a market research company based in Plymouth Meeting, Pa. The company reports on pharmaceutical sales in more than 70 countries based on audits of retail pharmacies and other channels. "Because these data are expensive, a pharmaceutical company has to sponsor the study," Danzon says, noting that the methods used in her research were based primarily on calculating standard price indices, similar to those used by the Bureau of Labor Statistics. The terms of the research grant, she adds, give the researchers the right to publish results, regardless of the findings.