Foreign free riders and the high price of US medicines

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The US government, backed by the pharmaceutical industry, wants to convince Americans that they're paying more for drugs because they're contributing more than their fair share of the costs of research and development. Not so, argue two researchers who have looked at the evidence.

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The United States government is engaged in a campaign to characterise other industrialised countries as free riding on high US pharmaceutical prices and innovation in new drugs.[1] This campaign is based on the argument that lower prices imposed by price controls in other affluent countries do not pay for research and development costs, so that Americans have to pay the research costs through higher prices in order to keep supplying the world with new drugs.[1 2] Supporters of the campaign have characterised the situation as a foreign rip-off.[3] We can find no evidence to support these and related claims, and we present evidence to the contrary. Furthermore, we explain why the claims themselves contradict the economic nature of the pharmaceutical industry.

Origins of the campaign

The campaign, strongly backed by the pharmaceutical industry, seems to have started in the late 1990s as a response to a grass roots movement started by senior citizens against the high prices of essential prescription drugs.[4] This issue was the most prominent one for both parties in the 2000 elections and has since been fuelled by a series of independent reports documenting that US drug prices are much higher than those in other affluent countries.[5–7] The idea that other countries are exploiting the US has led to a hearing of the US Senate Committee on Health, Education, Labor and Pensions and was behind a Department of Commerce report that strongly advocated that other developed countries raise prices on patented medicines.[8] But are higher prices really necessary?

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Are European patients really getting a free ride?

The free rider myth

We can find no convincing evidence to support the view that the lower prices in affluent countries outside the United States do not pay for research and development costs. The latest report from the UK Pharmaceutical Price Regulation Scheme documents that drug companies in the United Kingdom invest proportionately more of their revenues from domestic sales in research and development than do companies in the US. Prices in the UK are much lower than those in the US yet profits remain robust.[9 10]

Companies in other countries also fully recover their research and development costs, maintain high profits, and sell drugs at substantially lower prices than in the US. For example, in Canada the 35 companies that are members of the brand name industry association report that income from domestic sales is, on average, about 10 times greater than research and development costs.[11] They have profits higher than makers of computer equipment and telecommunications carriers[12] despite prices being about 40% lower than in the US.[11]

Lower prices do not lead to less research

Mark McClellan, the former commissioner of the Food and Drug Administration, maintained that low prices are "slowing the process of drug development worldwide."[1] A corollary to this claim is that drug companies are shutting down their European operations because prices are too low and moving to the US. This assertion is contradicted by the industry's data. The European Federation of Pharmaceutical Industries and Associations reported that, between 1990 and 2003, its members increased their research and development investments in Europe by 2.6-fold and in the US by fourfold.[13] The federation concluded that this differential was due to multiple factors, such as the economic and regulatory framework, the science base,

the investment conditions, and societal attitudes towards new technologies.

On several measures, other developed countries spend proportionately as much as the US on research and development. The table presents the spending on research and development as a percentage of gross domestic product for eight developed countries.[14] The US is about at the median. Prices in the countries with better ratios than the US were 31-36% less than those in the US.[15] Pharmaceutical companies commit as large a percentage of sales to research and development in Europe as in the US, about 19% on average over the past seven years.[9 13] This little reported fact contradicts the widely circulated claims that European countries deliberately ignore research and development costs in calculating prices.[1]

Ratio of pharmaceutical spending on research and development to gross domestic product and ratio of drug prices to US prices, 2000[12 15]

	Country							
	Canada	France	Germany	Italy	Sweden	Switzerland	United Kingdom	United States
% of GDP	0.08	0.14	0.11	0.06	0.35	0.55	0.32	0.24
% of US price	63.6	55.2	65.3	52.9	63.6	69.2	68.6	100

GDP=gross domestic product.

Europe no less innovative than the US

Contrary to claims of American dominance, pharmaceutical research and development in the US has not produced more than its proportionate share of new molecular entities. The US accounts for just under 48% of world sales and spent 49% of the global total on research and development to discover 45% of the new molecular entities that were launched on the world market in 2003, less than its proportionate share. European countries account for 28% of world sales, 36% of total research and development spending, and 32% of new molecular entities, more than its proportionate share.[13]

Limited investment in breakthrough research

Pharmaceutical research and development is traditionally divided into three categories:

- Basic—work to discover new mechanisms and molecules for treating a disorder
- Applied—work that develops a discovery into a specific practical application, including research on manufacturing processes and preclinical or clinical studies
- Other—work that includes drug regulation submissions, bioavailability studies, and post-marketing trials.

Although all types of research are valuable, it is basic research that leads to important therapeutic breakthroughs. Only a fraction of overall industry expenditure is on basic research, and it does not require the high prices currently seen in the US to support it.

The Pharmaceutical Research and Manufacturers of America reports that companies invest on average about 18-19% of domestic sales into research.[9] This figure is considerably higher than that produced by the US National Science Foundation.[16] Its 1999 data show that drug companies invest 12.4% of gross domestic sales on research and development (10.5% in-house and 1.9% contracted out), but only 18% of the amount spent in-house went on basic research. Assuming that 18% of contracted out research is also spent on basic research (the actual figure is not reported) then only 2.2% (18%×12.4%) of revenue goes to basic research. The after tax cost of $1 of research and development expenditures in the US seems to be $0.53 to $0.61, owing to tax incentives to do research.[17] Thus US pharmaceutical companies devote a net of only about 1.3 cents (2.4%×(0.53+0.61)/2) of every dollar from sales to innovation.

Only 10-15% of newly approved drugs provide important benefits over existing drugs.[18 19] From a drug company's point of view, investing principally in research to produce new variations of existing drugs makes sense. Government protections from normal price competition do not distinguish between the lower risk, less costly derivative kind of research and high risk basic research needed to discover new molecules.

Misusing economic theory

The industry's principal claims, as well as being contradicted, are based on false premises. Firstly, counting which country discovers the most new molecular entities is irrelevant in a global market. Companies know that where a good drug is discovered does not matter, and often a discovery comes from research in several countries. Whether domestic revenues recover a given country's research and development costs is also irrelevant. If this were not the case the industry would have shut down operations in Switzerland long ago because of its small market size.

If revenues are inadequate, it would make more sense to conclude they do not cover all marketing costs rather than research costs. Research is central to the industry, and costs associated with it should be deducted first. Pharmaceutical companies report that they invest around three times more in the combination of marketing, advertising, and administration than in research, leaving ample room to cut costs.[20]

Secondly, every student in introductory economics learns that fixed costs like research do not determine prices.[21] The market sets prices, implying they are open to free trading like stock prices. Patents, and especially patent clusters, turn the market into a monopoly, and only a monopoly can claim that fixed costs determine prices because it can make that a self fulfilling prophecy. The claim by companies that they have to set prices at 50-100 times production costs to recover research and development costs has never been substantiated, because they have never opened their books to independent public inspection to prove it. What we do know is that all research and development costs are fully recovered each year from domestic sales in the UK and Canada at prices that are far lower than those in the US.

Thirdly, free rider is both a vivid public image of someone jumping on for a free ride and a highly misleading economic term. Technically it refers to a method for allocating fixed costs in proportion to the prices that different groups pay. For example, if Group A (call it Europe) pays $1 per pill and Group B (call it

Summary points

Prices of patented drugs are substantially higher in the US than in other affluent countries

Published reports indicate that pharmaceutical companies in affluent countries recover research and development costs from domestic sales with substantial profits

Discovery of innovative new drugs in Europe is proportionately equal to that in the US

US pharmaceutical companies invest just 1.3% of net sales in basic research

The idea that the US is subsidising other rich countries contradicts basic economics and the global nature of pharmaceutical markets

the US) pays $2 a pill and each buys a million pills, then this accounting method would assign half as much of the fixed cost to Group A as to Group B. If, however, the fixed costs are only $300 000 (a tenth of the total revenue) for the two million pills, the fixed costs could be allocated by volume rather than by price ($150 000 for each group) and conclude that Group A more than pays the fixed costs and Group B pays much more than it has to. In short, the free riding argument economically is the artefact of an accounting convention and can be eliminated by Group B cutting its prices in half, rather than forcing Group A to double its prices.

Conclusions

The pharmaceutical industry has provided invaluable medicines to cure and relieve millions of patients throughout the world. As an industry, it drives economic growth and employs thousands of skilled people. But it also uses false economics and makes up stories to justify higher prices. Higher prices strain budgets, causing millions of US patients not to take the drugs their doctors think necessary. The pharmaceutical industry and the US government want to blame other developed countries for these higher prices rather than make drugs more affordable.

Contributors and sources: This article is based on all the major documents we could locate, a careful search of the websites of the European Federation of Pharmaceutical Industry Associations and Pharmaceutical Research and Manufacturers of America, and a Medline search. DWL is a professor of comparative health care policy, a contributor to the WHO Observatory volume on European pharmaceutical policy, and a member of the taskforce for the Gates Foundation on how best to make vaccines for global diseases economically viable. JL has been conducting research into pharmaceutical policy for over 20 years and has acted as a consultant to various national governments and the WHO on pharmaceutical matters. DWL had the idea for the article, wrote the first draft, and is the guarantor. JL did the analyses, edited the draft, and made empirical contributions.

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