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**AMERICANS WOULD SAVE \$38 BILLION IN 2001
IF WE PAID CANADIAN PRICES FOR
BRAND NAME PRESCRIPTION DRUGS**

***How to Win Those Savings and
Use Them to Protect All Americans against High Drug Costs
without Hurting Drug Makers or Drug Research***

With State-by-state Savings Estimates

Testimony of

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Disclaimer: As always, I write and speak only for myself,
not on behalf of Boston University or any of its components.

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conducted with my colleague, Deborah Socolar.

Earlier reports and testimony on prescription drug costs and reform methods are posted on our web site, <http://dcc2.bumc.bu.edu/hs/ushealthreform.htm>

Mr. Chairman and members of the Committee—Good morning. My name is Alan Sager and I am a professor at the Boston University School of Public Health. I am honored by your invitation to testify today.

I. INTRODUCTION

Together, we face two challenges:

- making all needed medications available to all Americans at affordable prices, while
- building a durable financial foundation under drug research and delivery in the U.S.

I am convinced we can do both of these. One reason is that we already spend enough money to do so. But not if we continue business as usual.

II. WHAT IS THE NATURE OF THE PROBLEM?

Many Americans can't afford needed prescription drugs because they lack insurance, suffer low incomes, and face excessive U.S. prices.

Today, 70 million Americans of all ages have no insurance for prescription drugs. Additional dozens of millions have skimpy coverage.

Yet American prescription drug spending per person this year is the world's highest. Total prescription drug spending will be about \$165 billion this year,¹ or roughly 11.6 percent of overall U.S. health spending.² That is some \$575 for the average American.³

The drug cost problem will probably worsen. Drug spending in the U.S. is doubling every five years and is rising about three times as fast as overall health care spending. Between 1994 and 2000, estimated retail prescription spending rose by 116.4 percent while total health spending rose by only 34.2 percent.

If we fail to make vital drugs available to all who need them, public fear and anger will grow. But reasonable action today will prevent reckless over-reaction tomorrow.

Our nation must choose among:

- ***Suffering***: Many of us could suffer and die for lack of needed medications, but that is intolerable.
- ***Paying***: We could spend much more public or private money—or both—to buy needed drugs, but that is both unaffordable and unnecessary.
- ***Changing***: We could secure more drugs from manufacturers for the amount we already spend, plus small extra sums to cover drug makers' actual incremental costs.

Change is the only realistic choice. Buying drugs at lower price levels, such as those already prevailing in Canada—as a result of government action—⁴ is an important first element of that change. Today's high U.S. prices make medications unaffordable for many patients. They induce private efforts to cut drug use, resulting in denial of needed drugs. And they handicap public actions to expand drug coverage for more citizens.

III. U.S. PAYMENTS FOR BRAND NAME DRUGS AT CANADIAN PRICES

If Americans paid average Canadian prices for brand name drugs this year, savings across the United States would total \$38.4 billion, I estimate.

Exhibit

Calculating U.S. Savings on Brand Name Drugs If We Paid Canadian Prices in 2001

(\$ billions)

1. 2001 brand name drug sales, USA, net of discounts and rebates	\$113.7
2. Assume undisclosed discounts and PhRMA generics of 10%	- \$11.4
3. Conservative estimate of sales, USA, brand name prescription drugs	= \$102.3
4. If U.S. paid Canadian prices, which averaged 62.5 % as high in 2000	- \$63.9
5. Savings if paid Canadian prices in 2001	= \$38.4

Note: All dollars are those actually paid to brand name prescription drug manufacturers, net of discounts and rebates.

A. How the Savings Were Calculated

1. To calculate the \$113.7 billion starting point, we began with PhRMA's figure on total projected 2001 U.S. sales net of discounts and rebates. We then factored out veterinary sales in line with their actual share of PhRMA's 1999 total. The result: \$113.7 billion.

2. We then assumed undisclosed discounts and rebates plus generic sales by PhRMA members equal to 10 percent of PhRMA's reported sales. (The 10 percent figure may be generous, but we wish to be conservative in our estimate of U.S. spending and therefore in the estimate of savings gained by paying Canadian prices.) The aim is to address PhRMA's stated concern that some U.S. discounts and rebates are not publicly disclosed and are therefore not considered by the Canadian Patented Medicines Price Review Board in its international price comparisons.

3. This yields a conservative projection of human sales of brand name prescription drugs by manufacturers in the U.S. in 2001 of \$102.3 billion.

4. The Canadian government's Patented Medicine Prices Review Board calculated that Canadian brand name drugs' factory prices averaged just 62.5 percent of those in the U.S.A. in 2000. We applied this to calculate how much would be spent in the U.S. in 2001 if we paid Canadian prices.⁵

5. The result: cutting U.S. payments to manufacturers by \$38.4 billion this year.⁶

B. State-by-state Savings

We apportioned this year's \$38.4 billion in estimated U.S. savings from paying Canadian prices among the states.⁷ The results are shown in the next exhibit. Savings ranged from \$3.2 billion this year in California to \$56 million in Alaska.

Exhibit

State-by-State Projected Spending on Brand Name Drugs in 2001, and Savings if the U.S. Paid Canadian Prices

(\$ millions)

	Brand Name Drug Spending in 2001 at Factory Prices	Savings if Paid Canadian Prices		Brand Name Drug Spending in 2001 at Factory Prices	Savings if Paid Canadian Prices
Alabama	\$1,751	\$657	Montana	\$264	\$99
Alaska	\$150	\$56	Nebraska	\$706	\$265
Arizona	\$1,577	\$592	Nevada	\$539	\$202
Arkansas	\$1,019	\$383	New Hampshire	\$441	\$166
California	\$8,506	\$3,193	New Jersey	\$4,001	\$1,502
Colorado	\$1,095	\$411	New Mexico	\$454	\$170
Connecticut	\$1,528	\$574	New York	\$8,037	\$3,017
Delaware	\$339	\$127	North Carolina	\$2,896	\$1,087
D. C.	\$203	\$76	North Dakota	\$217	\$81
Florida	\$7,001	\$2,628	Ohio	\$4,399	\$1,651
Georgia	\$2,776	\$1,042	Oklahoma	\$1,192	\$447
Hawaii	\$351	\$132	Oregon	\$1,036	\$389
Idaho	\$377	\$141	Pennsylvania	\$5,682	\$2,133
Illinois	\$4,474	\$1,679	Rhode Island	\$451	\$169
Indiana	\$2,323	\$872	South Carolina	\$1,484	\$557
Iowa	\$1,066	\$400	South Dakota	\$227	\$85
Kansas	\$964	\$362	Tennessee	\$2,403	\$902
Kentucky	\$1,765	\$663	Texas	\$6,797	\$2,551
Louisiana	\$1,701	\$638	Utah	\$636	\$239
Maine	\$515	\$193	Vermont	\$207	\$78
Maryland	\$1,894	\$711	Virginia	\$2,404	\$902
Massachusetts	\$2,451	\$920	Washington	\$1,809	\$679
Michigan	\$4,384	\$1,646	West Virginia	\$876	\$329
Minnesota	\$1,683	\$632	Wisconsin	\$1,969	\$739
Mississippi	\$1,086	\$408	Wyoming	\$150	\$56
Missouri	\$2,047	\$768	USA	\$102,300	\$38,400

IV. AMERICANS CAN ENJOY THE BENEFITS OF CANADIAN PRICES

Importing drugs from Canada has the potential to provide a measure of relief from high prices to some or even many individuals, so it should be tried until more effective price relief can be obtained. I expect that individual citizens will be able to continue to pursue retail importing solutions that lower their costs, but drug makers will continue to block effective wholesale importing solutions. If, indeed, importing drugs probably cannot do enough to make all needed medications affordable, then more direct techniques will be necessary to give Americans the benefits of low brand name drug prices that Canadians now enjoy.

Americans could try to obtain Canadian prices in three ways. **First**, we could travel to Canada, as growing numbers of Americans are now doing. Several problems arise. They include inconvenience of obtaining a valid prescription and the loss of a single, local pharmacy and pharmacist coordinating all of the patient's medications. Worse, it becomes necessary to transport something relatively heavy, a person, instead of something relatively light, a pill. This defies all we know about transportation economics

Second, Americans could import drugs from Canada, either individually or collectively.

Some pursue this approach idealistically because they reside in border states and are frustrated by visibly lower prices nearby. They justly bemoan the burden borne by older or chronically ill patients who are today forced to travel across the border to buy drugs at more affordable prices. The numbers of people who buy medications from Canada is impossible to quantify but appears substantial. One Massachusetts senior has received over 700 inquiries in the middle few months of 2001 regarding methods of ordering medications from Canada by fax through family physicians.⁸

One objection to this approach is that it creates new and duplicative channels of drug distribution, some legal and some possibly illegal. Some have raised questions about the safety of the imported medications themselves.

The other objection is that, were the law changed to allow wholesale importation of medications at foreign prices, and if the volume of imports were to swell, the drug makers would predictably adapt, as they have adapted to other types of reform in recent years. They probably would:

- export lower volumes of medications from U.S. factories to other nations in the first place, thereby drying up one source of lower-priced prescription drugs;
- hold down the volume of drugs produced at the foreign factories subject to FDA inspection, thereby drying up the other source of lower-priced drugs; and
- try to threaten foreign nations with higher prices if they allow medications to be exported to the U.S.⁹ or simply negotiate or set terms of their sales to other nations that prohibit re-sale of drugs abroad.

Therefore, I do not expect importing to do enough to make medications affordable for all Americans.

Allowing easier importation of medications is an attractive idea. But it resembles other attractive ideas of recent years—many of them implemented through changes in

legislation or medical practice—that have failed to make medications affordable to all Americans. These ideas include patenting of copy-cat drugs, developing formularies, promoting generic substitution, relying on PBMs, and relying on managed care generally. All of these have attempted either to boost competition or to reduce spending through care management or price negotiations by fragmented buyers.

All of these ideas for winning lower prices indirectly seemed appealing. None—individually or together—has apparently slowed the rate of increase in U.S. drug spending. Consider, for example, that generic drugs now account for about two-fifths of all U.S. prescriptions but less than one-tenth of drug makers' revenues—¹⁰ indicating that today's soaring spending is driven by soaring payments for brand name drugs.

Third, Americans could act more directly to win Canadian prescription drug prices by importing the general methods that Canadians employ, not the lower-priced drugs themselves. Adopting Canadian methods in the United States does not require moving people to pills or laundering pills through the Canadian pricing structure. It does not hitchhike on foreign regulation. Rather, it would mean forthrightly regulating drug prices.

Simply legislating lower prices for brand name drugs in the U.S. could work but passing such a law is obviously difficult politically. As you know, the law that actually passed in October of 2000 provided for re-importing drugs, but it is unlikely that this law would actually lower prices even if it were ever implemented, for the reasons just mentioned. We again seem to face the dilemma of “what can work won't pass and what can pass won't work.” This is demoralizing. It breeds cynicism. We can do better.

V. REASSURING THE DRUG MAKERS BY NEGOTIATING A PEACE TREATY

By themselves, price cuts will hurt drug makers. On the other hand, price cuts alone will clearly aid three groups: a) many people who are now able to afford their medications; b) the private insurers/HMOs and public programs that help to finance medications for most of those people; and c) some people who will be able to afford medications (or more of their medications) after the price cuts take effect. But price cuts will not help those Americans unable to afford even the newly reduced prices.

Happily, price cuts can be combined with other approaches to protect both patients and drug makers. If prices are to be lowered to Canadian levels, we should at the same time devise methods of addressing all stakeholders' legitimate interests, including those of drug makers. And including those of all Americans who cannot afford prescribed medications today.

Doing this requires bringing all stakeholders, including drug makers, to the table to conduct serious negotiations. And that requires filtering out manufacturers' bluster about free markets and manufacturers' threats that government interventions to lower U.S. drug prices will destroy research.

No free market sets drug makers' prices. Free markets require many small buyers and sellers, so every actor is a price taker, not a price maker. Free markets require an absence of artificial restrictions on supply, demand, and price. Free markets require easy entry. And free markets require that all parties have good evidence about price and

quality.

In the prescription drug market, patents, mergers among drug makers, entry barriers associated with high research and marketing costs, allegations of anti-competitive practices, patients' (and, often, physicians') lack of good information about price and quality, and patients' inability to act as sovereign consumers combine to mean that nothing close to a free market acts to set drug prices.¹¹

Nor do drug makers set prices to cover costs of research (whatever those costs really are). Drug makers today are obligated to their stockholders to set prices to maximize profits.

If government acts to win lower prices, "The lights go out in the labs, and there is no R&D," according to Tracy Baroni, senior director of policy for PhRMA.¹² This is an example of what my colleague and I call PhRMA's fog of fear.

Reasonably careful, well-tested, and—if possible—negotiated government intervention is much less likely to damage research than is the drug industry's own insistence on more money for business as usual.

The drug industry is on a collision course with financial and political realities. The industry's insistence on high prices is frightening and angering many Americans. A few years from now, that anger could translate into precipitous political action to gut drug prices. And *that* would gravely threaten research (and profits). Worries that this might happen could make today's drug makers the most nervous very-well-dressed people in America.

Fortunately, government intervention to lower prices to Canadian levels can—in combination with other reasonable steps—be designed to protect and promote research, and even to protect drug makers' profits.

Careful U.S. action is vital to protecting and promoting research. Unlike other nations, and unlike some U.S. states, the United States government cannot simply cut drug prices without regard for the cuts' effects on research. Because we buy so great a share (and an increasing share) of the world's brand name drugs, the world's drug makers rely on the U.S. market for a disproportionate share of their profits and the dollars they require to finance research.

Four Elements of a Prescription Drug Peace Treaty

The challenge is to put together the right package of policies. Here is an inter-locking four-part method.

First, the federal government could enact a law to lower brand name drug prices to Canadian levels. If nothing else changed, the price cuts would deprive drug makers of \$38.4 billion in revenues from the U.S. market, as calculated earlier.

But ***second***, drug makers would replace much or most of this \$38.4 billion in lost revenue through the natural rise in the volume of prescriptions filled in the private market.

Lower prices allow patients to fill more of their prescriptions and do so more often. The relation between price and volume for prescription drugs appears to be elastic, meaning that the volume of drugs bought by patients in a private market grows substantially when prices are cut.¹³

Third, the federal government could guarantee drug makers that they would recoup every penny of lost revenue that was not replaced through higher private market volume. The best vehicle for replacing that revenue would probably be public subsidies to assist drug purchases by patients of all ages who are unable to afford even the newly discounted prices. The subsidies would be set to ensure replacement of all the revenue lost by drug makers that was not recaptured through higher private market volume. This public spending would not result in an increase in total spending on prescription drugs. Rather, it replaces some of the drug maker revenue lost from the price cut.

Fourth, the public subsidies would also include dollars needed to cover the actual incremental costs of manufacturing the higher volumes of drugs. These are relatively low, compared with current total costs.¹⁴ Public subsidies would also cover the added cost of dispensing the additional volumes of drugs in pharmacies and elsewhere. These two items would result in increased total spending on prescription drugs, but these are all that would be required to extend pharmaceutical security to all Americans. No additional costs would be incurred to pay higher profits to drug makers, because drug makers' profits as a percentage of equity would already be preserved and protected at the high levels antedating the peace treaty's provisions for price cuts, higher private volume, and higher public volume.

Such a peace treaty achieves three things:

1. All Americans—not Medicare beneficiaries alone—can now afford to obtain the prescription drugs they require.
2. Drug makers are kept financially whole. All lost revenue is replaced, and the added cost of producing more pills is covered. Drug makers' profits and capacity to finance research remain intact at today's levels. This guarantee could be maintained for perhaps five years. (It will be useful to consider whether profits should be assured as a percentage of equity or of revenue.)
3. The actual incremental costs of protecting all Americans are relatively low (as estimated in section VI), making the proposal affordable. Cutting prices to Canadian levels makes it much easier to expand coverage. Manufacturers make up for lower prices with higher volume. In other words, the \$38.4 billion squeezed out of the drug makers (by cutting their prices) is returned to them (because many more prescriptions are filled)—when they serve patients who previously could not afford needed medications. Manufacturers do forego windfall profits that they would have garnered from higher volume in the absence of the price cuts.

This straightforward approach works most simply for the short run. It makes today's drugs affordable for all. The arrangement could be designed to run for perhaps five years. The main remaining questions concern how to reward drug makers that develop new medications and how to constrain the projected explosive growth in the cost of

pharmaceuticals. These matters are taken up in section VII.

High drug prices constitute the main logjam blocking the flow of government reforms to win prescription drug security for all Americans. Once prices are lowered, it becomes possible to buy medications for all people who need them at a price that people and payors can afford.

VI. ESTIMATING SHORT-RUN COSTS

Those who have sought to design a prescription drug benefit for Medicare have experienced great frustration during the past two years. Estimates of the cost of federal government subsidies rose from \$118 billion for ten years in the first Clinton plan of June 1999 to \$318 billion for ten years in the Senate Democrats' plan of June 2001.¹⁵

Some of this is attributable to changes in benefits and some to rising estimates of underlying drug spending and other factors. CBO projects that drug spending by or for Medicare beneficiaries during the decade from 2001 to 2010 will be \$1.3 trillion under current law—without a prescription drug benefit. These projections have themselves been rising rapidly.¹⁶

Sadly, even at the \$318 billion level, only about one-quarter of beneficiaries' expected *baseline drug costs of the \$1.3 trillion* (that is, costs before the Medicare coverage is introduced—costs that would surely rise in the wake of new insurance protection) would be covered, requiring very substantial monthly Medicare premiums and out-of-pocket payments.¹⁷ A plan with low premiums and low out-of-pocket payments could cost as much as \$1 trillion over a decade.¹⁸

Some of this is attributable to most proposed legislation's inability to limit drug prices meaningfully, resulting in huge windfall profits for drug makers. Under most Medicare prescription drug plans, drug makers would sell substantially higher volumes of medications at only slightly lower prices. Even with 25 percent or 40 percent discounts, drug makers' incremental revenue would far exceed their incremental cost, generating the windfall profits.

Much of this is also attributable to drug spending projections that take as givens continued unrestricted growth in drug marketing, continued unrestricted introduction of expensive new drugs without careful evaluation of their incremental benefits to patients, and other costs, year after year.

Clearly, unrestricted increases in drug spending are unaffordable. Drug makers would like to imagine that they can marry today's high prices in combination with tomorrow's Medicare prescription drug benefit that boosts volume at those high prices. But that is a fantasy. Even without a Medicare drug benefit, restraint is inevitable—through either private or public action. In response to high drug prices, employers are establishing higher co-payments to try to suppress the volume of drug use. More can be expected in the future if high prices persist.

But that flies in the face of economic and medical realities. Economically, the marginal costs of making more medications are typically very low, once the research is performed

and the factories are built. Medically, high prices lead to restrictions on use that can deny many patients the medications they need. The nation would gravitate toward a Rolls-Royce drug economy when it needs Fords and Chevy's.

To make all of today's medications available to the patients who need them at an affordable cost, and to promote research to develop new medications, The nation needs two coordinated approaches, one short-run (for perhaps the next five years) and the other longer-run.

Short-run Cost Estimates

Cutting drug prices to Canadian levels yields markedly lower estimates of the actual short-run incremental cost of financing full prescription drug coverage for all Americans—not only Medicare beneficiaries.

This added cost has two components, retail dispensing costs and actual incremental manufacturing costs.

I estimate that as many as 977 million additional prescriptions for brand name drugs would be filled if all Americans could afford the medications their physicians prescribed. This is a deliberately conservative (high-side) estimate.¹⁹ It amounts to a one-third increase over the total number of retail prescriptions filled in 2001.²⁰ This estimate requires considerable refinement, but it will serve for now to permit a rough calculation of the short-run costs of pharmaceutical security for all.

I estimate that the added costs of manufacturing and dispensing these 977 million prescriptions would be in the range of \$6.4 to \$11.8 billion annually.

The lower of the two estimates assumes

- a dispensing fee per prescription of \$3.00 and
- an average incremental manufacturing cost of \$3.51 per prescription, or five percent of the projected average retail price for brand name drugs in 2001.²¹

The sum of the two costs is \$6.51 per prescription. Multiplying that by 977 million additional brand name prescriptions yields an added total cost of \$6.4 billion annually.

The higher of the two estimates assumes

- a dispensing fee per prescription of \$5.00 and
- an average incremental manufacturing cost of \$7.03 per prescription, or ten percent of the average retail price for brand name drugs in 2001.

The sum of these two costs is \$12.03. Multiplying that by 977 million additional brand name prescriptions yields an added cost of \$11.8 billion annually.

This \$6.4 - \$11.8 billion range estimates the full, total incremental cost of filling almost one billion additional prescriptions, enough to protect all Americans in 2001. Some seven aspects of these estimates are worth noting:

1. These are total incremental costs above estimated 2001 spending on brand name prescription drugs. If they are paid publicly, no additional sums for co-payments or premiums are needed.
2. These incremental costs are a small fraction (3.9 percent – 7.2 percent) of the \$165 billion projected to be spent on prescription drugs in the United States in 2001. That is less than six months' increase in total prescription drug spending—increases that have been running around 15 percent annually.
3. These incremental costs are a fraction of those estimated to be required to cover Medicare beneficiaries alone. Consider the \$318 billion Medicare-only estimate for ten years that still leaves very substantial premium and out-of-pocket costs, or the \$1 trillion Medicare-only estimate for ten years that eliminates premium and out-of-pocket costs that were mentioned earlier.
4. Because these are incremental prescription drug costs, they do not include the recycling of the \$38.4 billion squeezed out of the drug makers by applying Canadian prices for brand name drugs to the U.S. market in 2001. That is because all of this money is returned to the drug makers through higher private market purchases and higher publicly subsidized purchases of medication in response to the lower prices.
5. As the \$38.4 billion is recycled, the private share of payments for prescription drugs will fall somewhat and the public share will rise somewhat. That is because individuals, employers, and insurers/HMOs will enjoy most of the benefits of the \$34.8 billion in price reductions, but these private parties will probably pay a smaller share of the costs of replacing the lost revenue. (I have not yet estimated the size of these offsetting changes.)
6. Additional costs of higher volumes of generic drugs are excluded from these calculations. That is because pricing methods for generics are different from those for brand name drugs. And discounts are substantially lower. International comparisons of prices typically employ brand name drugs only. As noted, generics today amount to only about 8.6 percent of total U.S. prescription drug spending, even though they are over forty percent of prescriptions. So higher spending on generics should not be substantial under this approach. Also, lower prices for brand name drugs would reduce the price differentials between generics and brand name drugs, probably reducing generics' share of total prescriptions over time.
7. The estimates do not reflect one-time costs of building pharmacies' capacity to substantially increase the number of prescriptions dispensed annually.

VII. PROMOTING DEVELOPMENT OF BREAKTHROUGH DRUGS, AND CONTAINING LONG-TERM COSTS SO THAT ALL MEDICATIONS REMAIN AFFORDABLE FOR ALL PATIENTS

In the short run, the prescription drug peace treaty described in Section V of this testimony would make all of today's needed medications available to all Americans at a surprisingly low incremental cost.

Looking forward, a number of strategic interventions must be undertaken to keep medications affordable for all Americans and for all payors, to promote the development of new breakthrough drugs, and to generously reward drug makers that develop those drugs.

Clearly, today's pace of drug spending increases cannot continue; spending that doubles every five years is unaffordable. But even reversion to the rates of increase of earlier years could raise grave financing problems: five percent or ten percent annual increases in drug spending would be very costly because they build on 2001's \$165 billion base.

A. Spurring Research to Develop Breakthrough Drugs

Several policy and financing approaches should be considered to encourage breakthrough research. The first is to reward breakthrough research generously. The reward for a new drug should be keyed to the magnitude of its clinical benefit (years of life gained, disability reduced, and pain and suffering for patient and family relieved) for the typical patient who uses it, the number of patients who use it, the actual risks and actual costs of research borne by the company that develops the drug, the drug's effects on other medical and non-medical costs (costs of physician and hospital services, costs of long-term care, and the like), and possibly other factors.

It should be recognized that drugs cannot be cleanly divided between breakthrough or non-breakthrough drugs. Rather, they should be arrayed on a continuum, with profits set in proportion to the benefits and costs just listed.

This activity is essential because nothing close to a genuine free market exists to reward research.

One clear step should be to cease to reward copy-cat research. According to DiMasi, some 40 percent of pharmaceutical research today is imitative.²² PhRMA claims that its members will conduct \$23.6 billion worth of research in 2001.²³ If that claim is accurate and if 40 percent goes to copy-cat research, some \$9.4 billion is probably being spent sub-optimally from the perspective of society.

Some would claim that copy-cat research is essential to generating creating competition, and that that is essential to holding down prices. Perhaps that is true in today's world (conceptually though not practically, since prices have not been held down very effectively). But holding down prices by regulation is much simpler. And \$9.4 billion is accordingly made available to finance breakthrough research this year alone.

Others would claim that some copy-cat drugs could have superior efficacy or fewer side-

effects. In these cases, their developers should profit in proportion to the additional value provided by the copy-cat medication.

In sum, one good way to promote breakthrough research is to pay for it generously, and to refrain from generously rewarding copy-cat research.

Another good way to promote breakthrough research is to subsidize it publicly through the National Institutes of Health. Such subsidies have long been very important to new drug development, and NIH funding has been rising rapidly in recent years. Public dollars often finance the riskiest share of the research. Drug makers should not profit from costs and risks borne publicly, but rather from their own efforts. In that way, effort and results are rewarded, not ability to capitalize on the accomplishments of publicly-financed research.

B. Containing Costs in Order to Keep Medications Affordable for All

The peace treaty described in Section V will make today's medications affordable for all. The research promotion just described will continue to spur the development of new breakthrough medications. The remaining challenge is to make tomorrow's medications affordable for all.

This is probably the knottiest job. No one tool will suffice. Although other approaches will probably be necessary as well, I suggest starting with these three tools:

1. Cut marketing waste

PhRMA does not, apparently, estimate or report its members' marketing costs. Instead, the drug makers cite an estimate from IMS Health that drug makers' marketing costs were only \$13.9 billion in 1999. (This estimate is unnaturally low, since about one-half of it is the retail value of samples, which grossly exceeds their cost to drug makers.) The drug makers did report that their own research spending that year was \$20.4 billion.

A more skeptical estimate puts marketing spending at \$24 billion and research at \$10 billion. This rests on an analysis of the allocations of drug makers' revenue published in manufacturers' financial reports. As shown in the following exhibit, 31 percent of drug makers' revenue went to marketing and administration, while only 11 percent went to research and development.²⁴

Exhibit
How Six Drug Makers Spent Their Money, 1999

Marketing and administration	31%
Research and development	11
Production	32
Taxes	6
Other	4
Profit	16

The truth may well be somewhere between the two sets of estimates. Clearly, more accurate information and analysis is required to resolve conflicts and inadequacies plaguing some of the currently available data.

But one piece of evidence is clear—the drug makers’ marketing employment soared by 57 percent between 1990 and 2000, while its research employment rose by only 10 percent, as shown in the following exhibit.

Exhibit

PhRMA Members’ Marketing and Research/Development Employment, 1990 and 2000

Type of employment	1990	2000	% change
Marketing	56,014	87,810	+ 56.8 %
Research and Development	43,952	48,527	+10.4 %

In today’s world, drug marketing aims to maximize company profits. Drug makers rely on their current marketing techniques, despite their high cost, because these techniques pay off in higher sales. But it is far from clear that the nation’s patients are getting their money’s worth. Often, new medications are being widely marketed, advertised, and sold even though they are much costlier than older medications they replace—and without adequate evidence that they are markedly more effective.

This may be good for drug makers but it is not good or affordable for patients. At some point, it will probably be necessary for the federal government and the drug makers to negotiate simple and enforceable limits on marketing and advertising expenditures.

2. Carefully evaluate the efficacy of each medication and compare efficacy with cost, and disseminate the results to physicians and patients.

If marketing becomes much less important, how will physicians and patients learn about which drugs might be helpful, and whether they are worth the money?

This function should probably be performed by a research office in the National Institutes of Health or the Food and Drug Administration, or possibly by a separate non-governmental non-profit research corporation. Objective evidence on efficacy should be compiled, along with the information needed to calculate a fair return on a drug maker’s investment in a new medication. The objective evidence should be disseminated to all physicians, along with recommendations from expert panels of physicians and scientists regarding which medications are effective and efficient in treating various ailments.

We can marshal the huge sums now badly spent on marketing, and recycle them to finance the job of collecting and disseminating this objective evidence.

Any public agency charged with this work must be insulated politically. It cannot be influenced by pressure from cost-cutters to downgrade its assessment of the value of a new drug in order to reduce public spending. That would undermine citizens' trust. We should not substitute information from a public agency motivated to hold down spending for information from drug makers motivated to increase spending. This consideration might argue for relying on an independent non-profit corporation.

3. Give more careful thought to what constitutes fair profits for drug makers

As my colleague and I have noted,²⁵ drug makers' reported profits have been extraordinarily high since at least the 1970s. The data in the following exhibit indicate that the prescription drug industry's return on equity in 1999 of 35.6 percent was 2.21 times as great as the 41-industry median of 16.1 percent. And the prescription drug industry's return on revenue of 18.6 percent was 3.58 times as great as the 41-industry median of 5.2 percent.²⁶

Exhibit
Prescription Drug Industry Returns on Equity and Revenue
Compared with 41-Industry Median, 1999

	prescription drugs	41-industry median	Rx/41-industry ratio
return on equity	35.6%	16.1 %	2.21
return on revenue	18.6%	5.2 %	3.58

The profits that drug makers actually garner by manufacturing and selling prescription drugs may be substantially higher than those they report overall. It is important to be clear that, in making this statement, I am not in any way suggesting that any drug maker has done anything remotely improper. Corporations report corporation-wide financial results.

For example, my colleague and I examined Merck's profits as a percentage of revenue (the only measure that could be calculated) after factoring out the relatively low returns on revenue of its Medco PBM subsidiary.²⁷

Merck reports a consolidated 1999 income before taxes of \$8,619.5 million on revenue of \$32,714.0 million, for a before-tax return on revenue of 26.3 percent. This includes revenue and profit on Merck's large Merck-Medco segment. But how much did Merck make on its prescription drug business alone? ²⁸

The answer is that Merck garnered a 37.4 percent before-tax return on revenue on its prescription drug business. A brief glance through Merck's annual report did not reveal this number, though it may be there, somewhere. The 37.4 percent return on revenue is more than two-fifths greater (42.2 percent greater) a return on revenue than the consolidated 26.3 percent of revenue that Merck reports overall. The calculations are shown in the exhibit that follows.

Exhibit

Merck Pharmaceutical Segment's Revenues and Profits, CY 1997 – 1999

(\$ millions)

	1997	1998	1999
1. Segment revenue	\$12,122.20	\$12,839.90	\$14,418.70
2. Segment profit	\$7,396.20	\$7,367.30	\$8,495.40
3. Less all unallocated costs	\$3,162.90	\$2,370.20	\$3,109.10
4. Segment profit after unallocated costs	\$4,233.30	\$4,997.10	\$5,386.30
5. Segment profit as % of segment revenue	34.9%	38.9%	37.4%

Source, Merck & Co., Inc. 1999 Financial Report, p. 55.²⁹

Drug makers say they need high profits to finance research. But profits do not finance research. The profits that they report—and that are so far above those of other industries—are the sums left over **after** they pay for research, manufacturing, marketing, advertising, administration, taxes, and other costs.

Finally, the drug makers are not willing to identify a ceiling on their profits or revenues—the level of profit or revenue beyond which no more money is needed to finance useful research. Similarly, the drug makers are unwilling to identify any floor on their profits or revenues—the level below which vital research would suffer. Their position is simple: more money (for themselves) is better. That would make sense only if the drug makers operated in a competitive free market. They do not, as discussed earlier.

For all these reasons, it will be necessary to investigate, debate, and negotiate the level of profit required to induce drug makers to retain their motivation to innovate and produce breakthrough drugs.

VIII. LEARNING FROM THE EVOLUTION OF STATE PRESCRIPTION DRUG POLICY

Examining the evolution of states' prescription drug policy in recent decades may enlighten future federal action. States' first phase was paying for drugs. Their second phase is holding down prices.

All state governments began paying for prescription drugs on a large scale through their Medicaid programs. Many others followed with special pharmacy programs to subsidize drug purchases for citizens who did not qualify for Medicaid, usually for seniors.

In the past few years, many states have realized that soaring drug costs were raising the costs of both of these activities to troubling levels.

States therefore moved from financing to price controls. Maine legislated an innovative price control law. Vermont sought to cover more citizens under the umbrella of its Medicaid rebate. The drug industry has challenged these efforts in the courts. If the drug industry prevails, states will try other techniques, such as establishing themselves as sole buyers or wholesalers of drugs within their borders, thereby perhaps avoiding a possible Commerce Clause pre-emption of state action.

Thus far, some states have been motivated, politically, to respond to the crisis of high drug prices because state governments feel those prices directly and because, it appears, ordinary citizens who suffer from high drug prices have been able to make themselves heard by some state governments.

States can act to cut drug prices without worrying about the consequences for research. The federal government cannot do so.

The federal government has, in one way, already acted to protect itself against high drug prices by legislating low prices for the Veterans Administration and the military. Unlike other nations, however, the federal government has thus far protected mainly itself—not all citizens—against high drug costs.

High prescription drug prices are one of the main reasons many Americans cannot afford needed medications. High prices have spurred a number of complicated, sometimes well-intentioned, and usually ineffective responses, ranging from PBMs to formularies to higher co-payments to obtaining drugs from abroad.

High prices spur efforts to reduce use. But this can harm patients who would benefit from those drugs, and it flies in the face of the low incremental or marginal cost of those drugs.

Instead of cutting use in response to high prices, federal action should cut prices to Canadian levels, in order to facilitate higher use, as medically appropriate. This is best done as part of a comprehensive prescription drug peace treaty that protects the legitimate needs of patients, payors, and drug makers.

NOTES

¹ PhRMA projects \$121.7 billion in U.S. domestic sales in 2001 for ethical prescription drugs. Sold in the U.S. by U.S. and foreign members of PhRMA, these are overwhelmingly brand-name drugs for human use. Based on 1999 breakdowns, we calculate that 93.4 percent of this is for humans. Applying the 93.4 percent share to the \$121.7 billion yields \$113.7 billion. See Pharmaceutical Research and Manufacturers of America, *Pharmaceutical Industry Profile, 2001*, Appendix tables 11 and 12, http://www.phrma.org/publications/publications/profile01/app_a2.phtml#table_11. It is estimated that some 74 percent of the overall retail dollar goes to manufacturers. (See National Association of Chain Drug Stores, "The Facts about Prescription Drug Pricing," Alexandria, Virginia: NACDS, 1999 (unpublished draft), 3rd quarter 1998, chain drug stores only.) Applying this 74 percent share to the \$113.7 billion yields \$153.6 billion in retail sales of prescription drugs for humans. We round up to \$165 billion to account for generics manufactured by non-PhRMA members. In 1998, spending on generics was 8.6 percent of the U.S. total. That figure was reported by the Generic Pharmaceutical Industry Association, "Generic Share of U.S. Market," Facts and Figures, www.gpia.org/edu_facts.html, but it appears that this site is no longer in operation.

² This rests on the Health Care Financing Administration/CMS projection of 2001 total health spending of \$1,424.2 billion. See Health Care Financing Administration, National Health Projections, Table1, March 201, <http://www.hcfa.gov/stats/NHE-Proj/proj2000/tables/t1.htm>.

³ This reflects our projection of U.S. population for 1 July 2001. The population estimate is built on the U.S. population reported in the 2000 Census and increases it by the average annual population rise from 1990 to 2000, and adds one-quarter of a year to move the estimate from 1 April to 1 July.

⁴ David J. Cantor, "Prescription Drug Price Comparisons: The United States, Canada, and Mexico," Washington: Congressional Research Service, Library of Congress, 23 January 1998; see also U.S. General Accounting Office, *Prescription Drugs: Companies Typically Charge More in the United States than in Canada*, Washington: The Office, 1992 (GAO/HRD-92-110).

⁵ Patented Medicine Prices Review Board, *Annual Report 2000*, Ottawa: The Board, 11 June 2001, Figure 8. The report expressed U.S. and other non-Canadian prices as percentages of Canadian prices; we calculated Canadian prices as a percentage of U.S. prices.

⁶ The low Canadian prices for brand name drugs are no aberration. Consider these

nations' brand name drug prices as a percentage of U.S. prices in the year 2000:

Italy	52.9 %
France	55.2
Canada	62.5
Sweden	63.6
Germany	65.3
U.K.	68.6
Switzerland	69.2

Source: Patented Medicine Prices Review Board, *Annual Report 2000*, Ottawa: The Board, 11 June 2001, Figure 8.

⁷ Actual savings in a given state would vary slightly from those calculated here. That is because these calculations make three simplifying assumptions:

a) That prescription drug spending in 2001 is distributed among the states in the same proportions as reported by the Health Care Financing Administration's Office of the Actuary for 1998. (See United States Health Care Financing Administration, 1980-1998 State Health Care Expenditures Estimates, 29 September 2000, posted on-line at <http://www.hcfa.gov/stats/nhe-oact/stateestimates/>.)

b) That private insurance, Medicaid, and self-pay shares of the market are similar from state to state. These actually varying somewhat from state to state.

c) That discounts and rebates are shared evenly among the states; in reality, these also vary somewhat from state to state.

⁸ Personal communication from Hilda BenEzra (regarding Isaac Ben Ezra) to Deborah Socolar, 30 August 2001.

⁹ The last tactic would be useful only when drug prices are negotiated rather than regulated. I am indebted to John McDonough for mentioning this tactic, one that drug makers apparently employed when a U.S. state was considering obtaining medications from a Canadian province.

¹⁰ Generic Pharmaceutical Industry Association, *Facts & Figures*. See www.gpia.org/edu.

¹¹ The United States government emphatically rejects PhRMA's claims that a free market legitimizes drug makers' prices, or that cutting prices is dangerous, by taking a 42 percent (or so) price discount for medications for the Veterans Administration and the military, and by taking an 18 percent (or so) rebate for the Medicaid program. This is the sort of thing foreign governments have long done for all their citizens.

We point to these six specific indicators of the absence of a free and competitive market:

1. Prevailing price disparities are themselves evidence of the lack of a free market for prescription drugs. While different payors today pay very different prices for the same drug, prices would tend to converge if there were a free market. In a free market, price competition would result in the same price throughout the market.
2. The drug industry's high U.S. prices—prices many times marginal cost of production—also suggest that nothing close to a freely competitive market is at work here. In a free market, prices tend to track marginal costs.
3. The industry's monopolistic (or oligopolistic) character in many sectors gives drug manufacturers tremendous power to set prices. Recent reports have documented that there is only limited competition within many major categories of medication. For example, in four important categories of drugs, the top-selling three drugs accounted for 71-90 percent of 1998 U.S. retail sales. (National Institute for Health Care Management, *Prescription Drugs and Intellectual Property Protection*, Washington: NICHM Research and Educational Foundation, 24 July 2000, p. 2, and p. 6, Figure 4, <http://www.nihcm.org/prescription.pdf>. Similarly, see Henry J. Kaiser Family Foundation, *Prescription Drug Trends: A Chartbook*, Menlo Park, CA: The Foundation, July 2000, p. 65, and p. 69, Exhibit 4.4, <http://www.kff.org/content/2000/3019/PharmFinal.pdf>.)
4. This power will grow as drug makers merge into fewer and larger corporations. ("Mergers Could Kill Competition for Drugs, Spur Price Hikes," Associated Press, 28 January 2000.)
5. Vertical integration—including Merck's control of a major PBM—is also a concern.
6. And allegations of such anti-competitive practices as suppression of generic competitors are further signs of continued monopoly and oligopoly. (See, for example, U.S. Federal Trade Commission, "FTC Charges Drug Manufacturers with Stifling Competition in Two Prescription Drug Markets," Press Release, 16 March 2000, <http://www.ftc.gov/opa/2000/03/hoechst.htm> ; John Martin, "Conspiracy to Fix Drug Prices: Drug Makers Keep Generic Drugs Off the Market," 16 March 2000, http://abcnews.go.com/onair/CloserLook/wnt_000315_CL_genericdrugs_feature.html; Ronald Rosenberg, "Drug Makers Seek Curb on Sale of Generic Cyclosporin," *Boston Globe*, 7 April 2000; Michael F. Cannon, "Suppressing Generic Drugs Fleeces Consumers," Citizens for a Sound Economy Foundation *Issue Analysis*, No. 86, 25 February 1999; "The High Price of Drugs," ABC News, *20/20*, 23 July 1999, www.abcnews.go.com/onair/2020/transcripts/2020_990723_drugs_trans.html; and Sheryl Gay Stolberg and Jeff Gerth, "How Companies Stall Generics and Keep Themselves Healthy," *The New York Times*, 23 July 2000, <http://www.nytimes.com/library/national/science/health/072300hth-generic-drugs.html>.)

¹² Cited in Deborah Baker (Associated Press), "Many in Southwest Lack Drug Benefits,"

Albuquerque Journal, 7 September 2000. Ms. Baroni was testifying before the New Mexico legislature's Health and Human Services Committee.

¹³ First, some market responses to predictions of lower drug prices suggest that high sales volumes would offset threatened price discounts. Three British drug companies' stock prices rose 3.4 percent (Glaxo), 2.3 percent (SmithKline Beecham), and 1.9 percent (AstraZeneca) following President Clinton's January 2000 State of the Union speech calling for a Medicare prescription drug program. " (Glaxo Leads UK Drugs up after Clinton Speech," *Dow Jones Newswires*, 28 January 2000.)

Second, we have seen earlier estimates of the price elasticity of demand for prescription drugs ranging from -0.10 to -0.64.¹³ (A price elasticity of demand of -0.10, for example, would mean that a 1 percent price cut for drugs would result in an offsetting 0.1 percent rise in volume of drugs purchased. The increase in volume, multiplied by the prices of the drugs purchased, would equal the replacement revenues garnered by the manufacturers in response to the lower prices.) Much of the empirical work on price elasticity of demand for medications rests on introduction of, or increases in, co-payments for prescription drugs. It is not clear how easily these findings can be generalized to price cuts, especially to substantial price cuts.

Third, a June 1999 Merrill Lynch analysis estimated that a 40 percent price cut for Medicare recipients lacking prescription drug coverage would result in a 45 percent volume increase for these individuals. (Merrill Lynch, "Pharmaceuticals: A Medicare Drug Benefit: May Not Be So Bad," Merrill Lynch, 23 June 1999.) That translates into a price elasticity of demand of -1.125. (A similar price elasticity of demand might also apply to the remainder of the 69 million or more Americans lacking prescription drug coverage.)

Merrill Lynch also estimated that the same 40 percent price cut would net out to a 25 percent price cut for Medicare recipients who have prescription drug coverage (because they already enjoy discounts estimated to average 15 percent), and that the 25 percent price cut would raise the volume of drugs purchased by 10 percent. We suggest that is a very conservative estimate of the increase in volume for Medicare recipients who have prescription drug coverage. Many recipients have very shallow coverage, such as a benefit through an HMO with a cap of \$500 annually.

Even with that conservative estimate, the Merrill Lynch report concluded that, taking increased sales volume into account, a 40 percent price cut for Medicare beneficiaries would yield only a 3.3 revenue loss—or even a slight revenue gain.

Fourteen months later, Merrill Lynch continues to strongly espouse this general position. In August of 2000, Merrill Lynch's health care manager, Jordan Schreiber, has asserted that "Even with drug price cuts I think there's a good chance the pharmaceutical group will actually come out as a net beneficiary as the presently uninsured become customers, albeit less profitable customers." (Ian McDonald, "10 Questions With Merrill Lynch Healthcare Manager Jordan Schreiber," *TheStreet.com*, Fund Watch I, 14 August 2000, http://biz.yahoo.com/ts/000814/fund1_000814.html.)

See also Beth M. Mantz, "Merrill's Tighe Sees \$207.08B in '00 Global Drug Revs," *Dow Jones Newswires*, 25 September 2000.) Other Wall Street observers have recently

concurrent. (See Derrick Jackson, "Drug price cuts won't kill industry," *Boston Globe*, op-ed, 22 September 2000.)

¹⁴ Once research is conducted and factories are built, it should not be very great. We estimate the marginal cost of additional volumes of medications at 5 percent of the retail dollar, or about 6.8 percent of the manufacturer's cost. (Taking the manufacturer's share of the retail dollar at 74 percent.) How can this be so low?

First, because producing the medications consumes a relatively small share of the average manufacturer's total revenues. In 1999, for example, only 32 percent of six large drug makers' revenues, on average, was devoted to acquiring raw materials and to manufacturing drugs. As this is the average cost, which includes substantial fixed costs for engineering, equipment, and workers, then the marginal cost of producing additional volumes will be substantially lower. Costs of raw materials are typically very low. One report noted that "the cost of the raw materials runs only a few cents in pills that often sell for up to \$15 apiece." (Elyse Tanouye, "Drug Dependency: U.S. Has Developed an Expensive Habit: Now, How to Pay for It?" *Wall Street Journal*, 16 November 1998.) A revealing example was reported recently. The vital ingredient for Xalatan, a successful medication to prevent glaucoma, costs only about one percent of annual sales. (Jeff Gerth and Sheryl Gay Stolberg, "Medicine Merchants: Birth of a Blockbuster; Drug Makers Reap Profits on Tax-backed Research," *New York Times*, 23 April 2000.)

Second, private conversations with managers of drug factories have supported the 5 percent figure.

Third, the prices set by manufacturers of generic drugs are very much lower than those set by manufacturers of brand name drugs. A Mylan executive has asserted that her company sells two-fifths of its 104 products at prices equal to 10 percent (or less) of the prices charged by brand name manufacturers. (Patricia Sunseri, "FTC Antitrust Complaint vs. Mylan," 23 December 1998, www.genericaccess.com/info.html.)

¹⁵ See, for example,

First Clinton Plan: Associated Press, "Drug Stocks Soar in Light of Medicare Proposal," *Boston Globe*, 30 June 1999;

CBO's estimates of cost of first Clinton plan: Robert Pear, "Budget Office Says Clinton Underestimated Cost of Drug Plan," *New York Times*, 23 July 1999. Underestimates were attributed by CBO to faster growth in underlying drug costs, including drugs for nursing home residents (which should be a transfer from Medicaid to Medicare, thus result in no real increase in total federal plus state government costs), more low-income people expected to apply for federal aid in paying premiums and co-payments, and lower expected discounts won by PBMs in a federal program than in a private program.

Senate Democrats' Plan: Robert Pear, "Rival Medicare Drug Plans Are Both Ruled Affordable," *New York Times*, 9 June 2001.

¹⁶ In only eight months from March 2000 to January 2001, CBO's projections for drug

spending by or for Medicare beneficiaries during the decade from 2001 to 2010 rose from \$1.1 trillion to \$1.3 trillion under current law—without a prescription drug benefit. See Dan L. Crippen, “Laying the Groundwork for a Medicare Prescription Drug Benefit,” Statement before the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives, 27 March 2001, Table 2.

¹⁷ \$318 billion divided by \$1.3 trillion equals 24.5 percent.

¹⁸ Anjetta McQueen, “More Money Needed for Prescriptions,” Associated Press, 16 May 2001.

¹⁹ It assumes the following:

Group of people	number in group	added brand name prescriptions/person	total increase in brand name prescriptions annually
number of Non-Medicare uninsured	57,000,000	5	285,000,000
number of Non-Medicare underinsured	75,000,000	3	225,000,000
Non-Medicare subtotal			510,000,000
number of Medicare uninsured	13,843,148	15	207,647,225
number of Medicare underinsured	25,936,014	10	259,360,135
Medicare subtotal			467,007,360
Grand Total			977,007,360

²⁰ Some 2.84 billion retail prescriptions were filled in 2000, a five percent rise from 1999. Another five percent rise in 2001 would mean 2.98 billion prescriptions in 2001. (National Association of Chain Drug Stores, “Facts at a Glance,” www.nacds.org/wmspage provided 1999 and 2000 data.) And the 977 million increase divided by 2.98 billion equals 33.4 percent.

²¹ The average price of a brand name retail drug in 2001 is estimated at \$70.27, making for an estimated incremental cost of \$3.51, with the increment estimated at five percent of retail. The \$70.27 average price was calculated by applying the 1999 to 2000 rate of increase in price to the average price in 2000. National Association of Chain Drug Stores, “Facts at a Glance,” www.nacds.org/wmspage provided 1999 and 2000 data;

²² Cited in Merrill Gozner, “The Price Isn’t Right,” *The American Prospect*, Vol. 11, No. 20, 11 September 2000, <http://www.americanprospect.com/archives/V11-20/gozner-m.html>. Gozner also reports that “FDA statistics for the 1990s suggest that about half

of the industry research is aimed at developing me-too drugs.”

²³ Pharmaceutical Research and Manufacturers of America, *Pharmaceutical Industry Profile, 2001*, Appendix Table 1, http://www.phrma.org/publications/publications/profile01/app_a1.phtml#table_1.

²⁴ The data were compiled from an opportunity sample of seven large drug companies (now merged into six) whose financial reports were readily on-hand. The drug makers are Merck, Pfizer plus Warner-Lambert (which have merged), Bristol-Meyers-Squibb, American Home Products, Lilly, and Schering-Plough. We are grateful to Robert DeNoble for his careful work in compiling and reducing the financial data. The firms' combined 1999 revenue was \$114.8 billion. The firms are generally representative of the industry.

²⁵ Alan Sager and Deborah Socolar, *A Prescription Drug Peace Treaty: Cutting Prices to Make Prescription Drugs Affordable for All and to Protect Research*. Boston: Health Reform Program, Boston University School of Public Health, 5 October 2000.

²⁶ The prescription drug industry and other industries' data are presented in <http://www.fortune.com/fortune/fortune500/medians.html>. We calculated the 41-industry median at the mid-point between the 20th and 21st-ranked industries on each list of 41 industries.

²⁷ Alan Sager and Deborah Socolar, “Prescription Drug Spending Is Already Enough to Buy All the Drugs All Americans Need,” Session on Cutting Drug Prices and Expanding Coverage—Federal and State Efforts, Health Equity and Public Hospitals Caucus, American Public Health Association, Monday 13 November 2000.

²⁸ *Merck & Co., Inc. 1999 Financial Report*, p. 42.

²⁹ Note: Unallocated costs are "indirect production costs, research and development expenses and general and administrative expenses, all predominantly related to the Merck pharmaceutical business, as well as the cost of financing these activities."

We calculated these unallocated costs by starting with before-tax profits reported for all segments (which do not reflect those costs not allocated to any segment) from p. 55 of the Financial Report, and subtracting before-tax profits reported on the consolidated income statement (which reflect all costs). See *Merck & Co., Inc. 1999 Financial Report*, pp. 42 and 55.