

# Perspectives On The Pharmaceutical Industry

Granting all Americans access to prescription drugs that work should be a trivial economic challenge for this wealthy nation.

by Uwe E. Reinhardt

**ABSTRACT:** This paper seeks to provide an economic perspective on the pharmaceutical industry, which has come under increasing criticism on a number of issues. In the main, that criticism amounts to a rather ineffective flailing at the supply side of the market for pharmaceutical products—much of it based on inaccurate perceptions—when a more productive policy would be to strengthen the hitherto weak and poorly informed demand side of the market.

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**A**MBIVALENT SOCIAL ETHICS and inconsistent goals have long been the hallmark of U.S. health policy, and nowhere more so than in the nation's attitude toward its pharmaceutical industry. On the one hand, Americans look to that industry for rescue from life-threatening infectious diseases, mental illness, and other chronic illnesses that impair quality of life. Writing in the *New York Times Magazine*, Andrew Salomon goes so far as to argue that psychopharmaceutical intervention could be a major armament in a war on poverty.<sup>1</sup> On the other hand, however, the industry is increasingly viewed as a major burden on the economy, even though per capita spending on alcohol and tobacco combined have only recently been surpassed by per capita spending on prescription drugs, and less than a quarter of the current double-digit increases in private health insurance premiums can be attributed to increases in drug spending.<sup>2</sup>

The public's ambivalence toward the pharmaceutical industry may be shaped in part by the industry's hybrid nature. On the general theory that capitalism is most likely to bestow on society the richest flow of innovative products, Americans have preferred to structure the industry as a set of investor-owned, profit-seeking firms, rather than as rate-regulated utilities or nonprofit enterprises. More so than most other investor-owned industries, however, the drug industry is a creature of government, because it cannot exist for long without government protection of its economic turf.

The most important form of that protection is patents, which grant pharmaceutical firms temporary monopolistic market power

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for their products. A less well understood but very important second form of protection is laws that restrict the resale of drugs among the industry's domestic customers and that erect sundry barriers to the importation of drugs, including U.S.-produced drugs sold abroad at lower prices. These laws allow pharmaceutical firms to segment the markets for their products by customer class—each class with its own price-sensitivity—and to charge different classes of customers different prices for the same product, a practice economists call “price discrimination.” As I explain further on, some price discrimination on the part of producers is the sine qua non of economic efficiency in the pharmaceutical market. The general public, however, may view that practice as inherently “unfair.”

Perhaps because of the pharmaceutical industry's hybrid nature, society posits for the industry inconsistent standards of behavior. On some occasions, lawmakers and the general public seem to expect pharmaceutical firms to behave as if they were community-owned, nonprofit entities. At the same time, the firms' owners—among them the mutual and pension funds that help to manage the savings of Americans—always expect the firms to use their market power and political muscle to maximize the owners' wealth. Caught between these inconsistent standards of behavior is an industry that naturally will never get it quite right.

The remainder of this commentary is intended as an exploration of several issues that seem to trouble the industry's critics. To that end, I do not focus on a single point but examine several distinct facets of the market for pharmaceuticals.

The discussion begins with the question of whether spending on prescription drugs represents an intolerable burden on the U.S. economy. That proposition is sometimes made to warn against establishing additional entitlements to prescription drugs—for example, for elderly Americans. I argue that spending on pharmaceutical products is not now and is unlikely ever to be a significant macroeconomic burden. It would be a burden only if such spending were patently wasteful, as all waste is a burden on the economy. To be sure, spending on these products can be a problem for individual households, but the proper social response to this microeconomic problem is adequate insurance coverage, rather than regulations aimed at the supply side of the market.

The focus of the paper shifts next to the industry's cost structure; to the practice of price discrimination, which is rooted in that cost structure; and to the profits earned by drug firms, which are often decried as excessive. I contend that relative to those of other industries, the pharmaceutical industry's profits may be on the high side, but in the absolute they are not large enough to offer much relief for

any cost containment effort, as they constitute only a minute fraction of total national health spending.

Finally, I argue that the incessant focus of the industry's critics on the supply side of the market for pharmaceuticals is misplaced. A more fruitful effort would be measures to shore up the demand side. The paper ends with some policy recommendations to that end.

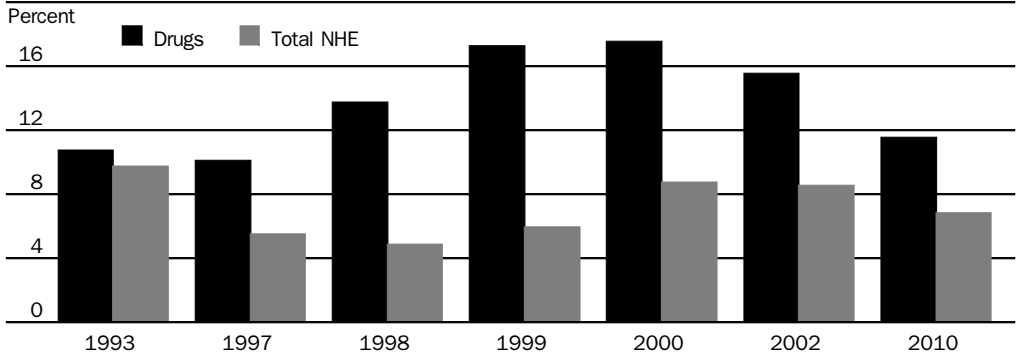
### Prescription Drugs As A Macroeconomic Burden

■ **Current and projected drug spending.** Is it easy to understand the growing concern over spending on prescription drugs (Exhibit 1). While in 1999 prescription drugs accounted for 8.2 percent of total national health spending, that share is expected to reach 14 percent by 2010.<sup>3</sup>

It is generally agreed that these spending increases have been driven much more by increases in volume and switching from older to newer, more expensive drugs than by annual price increases on existing drugs.<sup>4</sup> The increased volume has been driven in part by the greater availability of a stream of new products, especially antihistamines, antidepressants, cholesterol reducers, and anti-ulcerants.<sup>5</sup> Another driver undoubtedly has been the expansion of health insurance coverage for prescription drugs during the 1990s. In 1990 about two-thirds of all prescription drugs were still paid for by patients at the pharmacy, out of pocket, as for any other consumer good. By 1999 only about one-third of total national spending on prescription drugs was paid for out of pocket.<sup>6</sup> Most of the extended coverage for drugs during the decade was offered by employer-based insurance rather than by public insurance programs.

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**EXHIBIT 1**  
**Actual And Projected Annual Percentage Growth In Prescription Drug Spending And In Total National Health Spending, Selected Calendar Years 1993–2010**



**SOURCE:** S. Heffler et al., "Health Spending Growth Up in 1999: Faster Growth Expected in the Future," *Health Affairs* (Mar/Apr 2001): Exhibit 1.

**NOTE:** NHE is national health expenditures.

■ **Drug spending as a percentage of GDP.** As a percentage of gross domestic product (GDP)—a commonsense measure of a nation's "ability to pay" for particular items—the United States does not stand out as a heavy spender on prescription drugs. According to Organization for Economic Cooperation and Development (OECD) data, in 1997 the United States spent only about 1.4 percent of GDP on prescription drugs. A number of European nations and Japan spent more.<sup>7</sup> If by 2010 the United States actually spent the roughly 16 percent of GDP on health care now projected by the actuaries at the Centers for Medicare and Medicaid Services (CMS, formerly HCFA), and if prescription drugs then were to account for the roughly 14 percent of total national health spending also projected by these actuaries, total U.S. drug spending in 2010 would still be only about 2.2 percent of GDP.<sup>8</sup>

To be sure, the percentage of GDP devoted to prescription drugs is apt to increase more rapidly after the baby boomers begin to retire in 2011. This is so because the number of prescriptions per American is more than three times as high for the elderly as it is for those under age sixty-five.<sup>9</sup> Even then, however, outlays on prescription drugs are unlikely to represent an intolerable aggregate burden on the U.S. economy. After all, that economy can be expected to grow.

During the roughly two decades from 1980 to 1998 real GDP per capita rose at an average annual compound rate of 1.86 percent.<sup>10</sup> If that rate persists over the next several decades, GDP per capita in 2025 will be 59 percent higher than it was in 2000. Even if, for some reason, that growth rate declines to only 1.5 percent per year in the future, GDP per capita in 2025 still will be 45 percent higher than it was in 2000. Although the CMS actuaries now project that total national health spending will continue to grow faster than the rest of GDP in the foreseeable future, and that the share of GDP devoted to health care will rise continuously, it is a safe bet that in 2025 the GDP per capita that will not be devoted to health care (including prescription drugs) and thus will be available for the other good things in life will still be much larger than it is today.

In short, the central question confronting the United States is not whether the nation as a whole can afford currently projected health spending during the next several decades, but merely whether that spending can be justified in terms of the real benefits it yields.

■ **Drug spending at the household level.** For most American families, average annual outlays on prescription drugs probably would be a manageable budget item, even if they did not have insurance coverage for drugs. In 1999, for example, average U.S. per capita spending on prescription drugs was \$358, compared with \$413 for alcohol, tobacco, and entertainment combined.<sup>11</sup> These data provide

*“Uninsured families would find at most minor relief from regulatory policies aimed at the supply side of the drug market.”*

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added perspective on the question of whether our nation can “afford” current and projected levels of drug spending.

Averages, however, can be deceiving in the context of health care, because health spending per capita varies enormously across age groups and is highly skewed even within each age group. In general, a relatively small fraction of households account for the bulk of total national health spending in any given year.<sup>12</sup> That high skew applies to prescription drugs as well. A recent study by Express Scripts indicated that the top 2 percent of the most costly patients whose drug use the firm managed accounted for 33 percent of annual drug spending, and the most expensive 5 percent of patients accounted for about half. Furthermore, patients who were high-cost users of drugs in one year were likely to be so in subsequent years.<sup>13</sup> Among elderly Americans, the top 4 percent of heaviest users accounted for 24 percent of total drug spending for elderly Americans in 1996, while the bottom 40 percent accounted for only 5 percent.<sup>14</sup> Median per capita drug spending for the elderly in 1998 has been estimated to be only \$895, although per capita spending for the elderly in the ninety-fifth percentile of the spending distribution was \$4,111, and for those in the ninety-ninth percentile, \$6,597.<sup>15</sup>

At the household level, drug spending becomes a fiscal problem mainly when lack of adequate insurance coverage intersects with high usage as a result of severe acute or chronic illness. In 1996 some 31 percent of the roughly thirty-seven million Medicare beneficiaries did not have any drug coverage during the entire year, and only 53 percent had coverage for the entire year. Among the 231 million nonelderly Americans, 23 percent did not have any drug coverage, although that is an overall average. For the nonelderly below the federal poverty level, 31 percent had no drug coverage in 1996, and for those between 100 percent and 200 percent of poverty the percentage without drug coverage was as high as 36.5 percent.<sup>16</sup> For many of the uninsured, the desire to control acute or chronic illness with modern drugs does undoubtedly cause serious fiscal hardship.

While it is easy to empathize with uninsured families burdened with heavy out-of-pocket spending for prescription drugs, such families would find at most minor relief from regulatory policies aimed at the supply side of the pharmaceutical market. The proper policy response in this regard would be adequate public subsidies toward prescription drug coverage for these families. In a nation

whose current GDP approaches \$10 trillion, whose GDP can be expected to grow steadily in the future, and whose population will forever remain among the youngest in the industrialized world, granting every American access to prescription drugs that work would seem to be one of the more trivial economic challenges. At its core, that challenge is not a purely economic one at all; it is a moral challenge in the political economy of sharing abundant resources.

## The Industry's Revenue, Cost, And Profit Structure

■ **Cost structure.** A recent Deutsche Banc Alex. Brown research report shows a breakdown of the disposition of the sales revenue earned by the eight largest research-based pharmaceutical manufacturers in 1998.<sup>17</sup> According to these data, roughly 27 percent of these companies' revenues in 1998 was absorbed by the manufacturing cost of goods sold, 35 percent by selling (marketing) and general administration (SGA), 13 percent by research and development (R&D), 7 percent by taxes, and 18 percent by reported after-tax accounting profits.<sup>18</sup> The data are fully consistent with information assembled by research analysts at Banc of America Securities LLC.<sup>19</sup>

Great care must be taken in the interpretation of these financial data. First, the SGA category represents many expenses other than selling expenses and should not be seen as an estimate purely of outlays on marketing, as the industry's critics occasionally do. Second, the Generally Accepted Accounting Principles (GAAP) that guide the reports to shareholders and the U.S. Securities and Exchange Commission (SEC) give companies some discretion over the assignment of expenses to these broad categories, which blurs somewhat the lines between them. Some outlays on marketing, for example, could be treated in the financial reports as part of R&D, and vice versa. Third, the typical pharmaceutical company is a multi-product firm whose sales revenues cover regular consumer products (such as beauty aids) or services (such as pharmaceutical benefit management services) other than prescription drugs proper. Ratios of a firm's R&D or SGA spending to its total revenue therefore can be misleading, unless those ratios are based strictly on revenues earned from prescription drugs.

To illustrate, a large fraction of the revenues of Merck and Company come from its pharmaceutical benefits management subsidiary Medco, for which R&D is a minor item. Thus, for 1998, Merck spent only 16 percent of total revenue from all sources on SGA, although that spending was 23 percent of revenue strictly from pharmaceutical products. Similarly, Merck was reported to have spent only 6.4 percent of revenue from all sources on R&D, but 12-14 percent on revenue strictly from pharmaceutical products.

A fundamental question troubling policymakers is how the three spending categories—especially R&D—would respond to downward pressure on total revenues. That pressure might come from either government or the private managed care sector. Empirical research on this question is not conclusive.<sup>20</sup> Up to a point, downward pressure on sales revenues through lower prices might well trigger added spending on marketing, as drug manufacturers sought to defend their revenues through volume increases. Eventually, however, such outlays will decline with reductions in revenue. Similarly, downward pressure on revenues might initially increase R&D spending, to recoup lost revenue through the sale of new products. On the other hand, it also may be that annual R&D spending is constrained by the liquidity provided by retained earnings, which is to say, by annual profits. Although, in theory, business firms can finance promising R&D investments with funds procured externally from the debt and equity markets, in practice most business firms do not treat external sources of funds as perfect substitutes for internal sources (retained earnings). If so, annual profit levels may act as a strong determinant of annual R&D spending.<sup>21</sup>

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■ **Reported accounting profits.** Drawing on Form 10K, the detailed annual reports that firms must submit to the SEC, *Fortune* magazine routinely develops financial profiles for its list of the 500 largest companies in the United States, among them the nation's leading drug firms. The magazine ranks industries on selected statistics, including various profit ratios.<sup>22</sup> For 1999, the U.S. drug companies represented among the Fortune 500 ranked at the top of the list for “return on revenue,” defined as after-tax accounting profits as a percentage of sales revenue. In the vernacular, that ratio is also known as the “profit margin.” The margin was 18.6 percent for the pharmaceutical industry, compared with 14.1 percent for the closest runner-up, commercial banks.

Although it is common practice in the media to compare “profit margins” across industries, accounting professors teach their students that this figure is not informative across industries with different degrees of capital intensity.<sup>23</sup> This assertion can be explained with the following simple equation:

$$\text{ROA} = (\text{after-tax profits/sales revenue}) \times (\text{sales revenue/assets})$$

The acronym ROA is the ratio of the firm's annual after-tax profits to the total assets it deploys. It is generally considered the most meaningful yardstick for cross-industry comparisons.<sup>24</sup> The first term on the right-hand side of this equation is the familiar “profit margin,” and the second is the “asset turnover rate,” a measure of a firm's or industry's capital intensity. Supermarkets, for example,

have very high asset turnover ratios, which means that they can earn handsome rates of returns on assets (ROAs) by earning only a few pennies per dollar of sales (profit margin). By contrast, capital-intensive industries have low asset turnover ratios, which means that to earn the same ROA that is achieved by supermarkets, they must earn much higher profit margins. In short, cross-industry comparisons of profit margins would be meaningful only for industries with similar asset turnover rates.

On the more meaningful ROA criterion, the drug industry also ranked at the top of *Fortune's* list in 1999—16.5 percent, compared with the 15.4 percent earned by the closest runner-up, the computer peripherals industry. Unfortunately, for research-based enterprises the ROA, too, is a tainted measure, as a result of the tax and accounting conventions that drive the R&D expenditures in a firm's financial reports. In principle, a firm's annual R&D spending should not be deducted as an expense on its income statement in the year that the R&D spending is incurred. It should be "capitalized," which means that it should be shown as an asset on the firm's balance sheet and depreciated (shown as an expense on the firm's income statement) gradually over time. Because the tax credits granted by Congress toward R&D spending by U.S. firms do not extend to capitalized expenses, however, virtually all drug firms now treat the year's total R&D outlay as an expense on their income statements. In an industry with rapidly growing R&D spending, this practice has an uncertain effect on the reported ROA of drug manufacturers. On the one hand, the practice of expensing R&D understates the firms' total assets, which, by itself, overstates the reported ROA. At the same time, the practice overstates the firm's reported expenses and thereby understates the firm's reported accounting profits, which, by itself, understates the firm's reported ROA.<sup>25</sup>

#### ■ **Pharmaceutical profits as a source of cost containment.**

These sundry caveats on the accounting profits of pharmaceutical companies notwithstanding, there is little doubt that, overall, American society has allowed that industry to earn handsome profits on its investment in R&D and manufacturing, although the return on investment varies widely across firms and across products within firms. The thought may occur, therefore, that at least some relief from rising health spending could be had by constraining the industry's profits. As it happens, there is less room for relief here than intuition might suggest.

According to the most recent CMS data, total national drug spending in 1999—presumably at retail prices—amounted to roughly \$100 billion. According to data from the National Association of Chain Drug Stores, drug manufacturers receive an average of



seventy-four cents of every retail dollar spent on prescription drugs.<sup>26</sup> If they earned 19 percent on those sales, their total profits would have been about \$14 billion on the \$100 billion total national spending on prescription drugs, or about 1.16 percent of total national health spending of \$1,211 trillion in 1999. Thus, even if all of the profits on that year's drug spending had been confiscated and rebated to American health care users, it would not have made much of a dent in total national health spending—only about \$50 per person.

### **The Practice Of Price Discrimination**

Research-based pharmaceutical firms have high fixed costs (costs unrelated to the annual volume of production) and low variable costs (those that vary roughly proportionately with the volume of production). Such a cost structure is a natural platform for price discrimination—that is, the practice of charging different classes of customers different prices for the same product. Hospitals, hotels, airlines, telecommunications companies, and pharmaceutical companies all exhibit this type of cost structure, and all are able to segment their customers into distinct groups with different sensitivities to prices. The price these industries charge a particular group is then set to be inversely related to that group's price-sensitivity.

On its face, this pricing practice may appear unfair, especially when the prices charged vary less with customers' ability to pay than with the market power customers can marshal. As every first-year student in economics learns, however, the imposition of a single-price policy on firms with high fixed costs and low variable costs typically results in an inefficiently low volume of production. The output rate would be inefficient, because a single price set so as to cover at least all of the firm's fixed costs would price out of the market many highly price-sensitive customers who would be willing and able to cover at least the purely incremental production costs (and perhaps more) of additional output, but who are unwilling or unable to pay the higher single price with full-cost recovery. Clearly, serving such price-sensitive customers would yield added social benefits.<sup>27</sup> It would be more efficient in that sense.

It follows that if society wishes pharmaceutical companies to be both solvent over the long run and efficient in the choice of their output levels, at least some price discrimination on their part must be countenanced. The problem is that the incidence of that practice can be highly regressive. Low-income families without insurance coverage (among them millions of elderly Americans without drug coverage) have little market power and therefore pay the highest prices for pharmaceutical products at the retail level. Once again,

however, the proper social response to this problem would be to provide these Americans with adequate prescription drug coverage rather than imposing on the industry a single-price structure.

## Shoring Up The Demand Side

The current response of employers, health insurance executives, politicians, and the media to the ever escalating spending on prescription drugs amounts largely to a futile flailing at the supply side of this market. A more productive response would be to shore up the countervailing power of the demand side. Such a strategy might have two distinct prongs: more judicious cost sharing by patients, and better information on the pharmacoeconomic characteristics of prescription drugs.

■ **Cost sharing by patients.** Three-tier copayments are now the most common form of cost sharing by U.S. patients with private health insurance. Under that system, patients make one of three distinct, staggered copayments per prescription, depending upon whether the product is a generic on the health plan's formulary, a brand-name product on that formulary, or a brand-name drug not on the formulary. Either way, the patient neither knows nor experiences nor cares about the full price that the health plan must pay for the drug. In the insured patient's mind, all drugs have one of only three relatively low prices.

A much more powerful method of cost sharing, recently proposed in this journal by Haiden Huskamp and colleagues for administering a drug benefit under fee-for-service Medicare, is a variant of the German reference-price system.<sup>28</sup> Germany has used reference pricing since 1992 for its statutory health insurance system (the GKV), which covers close to 90 percent of the German population. Under this system, drugs are classified into therapeutically equivalent groups, not merely by compound but by therapeutic objective. This grouping is done on a nationwide basis. The sickness funds (health plans) then reimburse the insured only the "reference price" (*Festbetrag*) for a low-cost product in the group. That reference price, too, is set on nationwide basis. The insured person who wishes a particular brand-name drug is then left to pick up the entire difference between the reference price and the price charged by the pharmacy. About two-thirds of all prescriptions in the GKV are covered by this system.

An American version of reference pricing probably would not rely on nationwide groupings and reference prices but would leave these to the discretion of each health plan. Although that version of reference pricing would be a genuine market approach to setting drug prices, leaders of the U.S. drug industry nevertheless view it with

*“A workable compromise between strict reference pricing and weaker three-tier copayments would be three-tier coinsurance.”*

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alarm, probably because in Germany it has tended to drive the prices of all drugs in a therapeutic class toward the reference price.<sup>29</sup> Even under the more decentralized approach likely to emerge in the United States, the supply side of the market would be confronted with far more potent countervailing market power than is inherent in the current system of three-tier copayments.

A workable compromise between strict reference pricing and much weaker three-tier copayments would be three-tier coinsurance. Under that scheme, pharmaceutical products would still be categorized into therapeutically equivalent groups, just as under pure reference pricing. Within the same therapeutic group, the insured might be asked to pay only modest coinsurance (or none) for a generic product on the formulary, a higher coinsurance rate for a brand-name drug on the formulary, and a still higher rate for a brand-name product not on the formulary. The approach would be less severe than pure reference pricing, because the insured would not have to pay the full difference between the low reference price and the actual price of the chosen drug. On the other hand, the insured still would be apprised of the full price that the insurance carrier actually pays for that drug.

■ **Better pharmacoeconomic information.** Whatever means employers and government ultimately adopt to shift more of the rising cost of prescription drugs onto patients, one can expect much rancor over the practice—and possibly much litigation—unless the underlying formularies or therapeutic groupings can be explained to physicians, patients, and juries with appeal to scientifically sound cost-benefit analyses. As Patricia Danzon has observed on this point, “Efficient incentives for drug utilization and for...R&D require that prices for different drugs reflect their relative effectiveness.”<sup>30</sup>

It is difficult to argue with Danzon’s proposition, although it leaves open the question of who should determine “relative effectiveness.” To be sure, patients will always be part of the team making that determination, but it is doubtful that they will ever have the competence to do it on their own.

Of course, pharmaceutical manufacturers are not obligated to provide these cost-benefit analyses, for no other suppliers of goods and services are required to do so for their offerings. Even if drug manufacturers did provide the analyses, however, their conclusions would be suspect from the outset. Such studies can easily be biased

strategically, because the measures of both “costs” and “benefits” can be variously defined, and the analysis itself is highly complex.<sup>31</sup>

Employers, the insurance industry that functions as their agents, and public insurance programs on the demand side might be viewed as the proper sponsors of the required cost-benefit analyses. Unfortunately, their studies, too, would be viewed with suspicion by patients, physicians, and the pharmaceutical industry, on the grounds that payers are interested solely in reducing costs without proper regard to benefits.

To gain the respect of all parties, pharmacoeconomic intelligence must have a disinterested source. One workable solution might be the creation of pharmacoeconomic research institutes that would be completely fiscally independent of third-party payers and drug manufacturers after their initial endowments had been established, most likely with public funds. Even a 1 percent set-aside of one year’s total national spending on prescription drugs would yield an endowment of more than \$1 billion. A mere 5 percent set-aside of the annual National Institutes of Health (NIH) appropriation would achieve the same objective. If \$1 billion were insufficient, adequate endowments could be built up over several years.<sup>32</sup>

In effect, the new research institutes would be able to function just like not-for-profit foundations. They could attract first-rate pharmacoeconomic researchers who would be able to make distinguished professional careers there. They would fund both intra- and extramural state-of-the-art research on the benefits and costs of new and existing drugs, starting with the most frequently prescribed and most expensive products and constantly updating the list as new products came to market.

The institutes would disseminate their work in the scholarly literature, as well as on easily accessible Web sites aimed at both physicians and patients. Their work would be subject to full peer review by any interested outside party, which means that they would be obliged to share with outsiders all of the raw and transformed data used in their analyses, as well as the statistical methods used to reach their conclusions. Full transparency is the sine qua non of any respectable research enterprise.

The findings disseminated by the institutes would not be legally binding upon any insurer. They merely would furnish a detached, sophisticated database on which third-party payers could structure their reimbursement policies and that could inform Web-enabled physicians and their patients as well. Specifically, such a research base should make it much easier to explain the clinical and economic decisions embodied in drug formularies to physicians and the insured. It might also be helpful in resolving malpractice claims.

WITHIN THE NEXT TWO DECADES it will be discovered that the metabolism of individual patients for many drugs is strongly influenced by a patient's unique genetic factors. That, of course, will make the task of establishing one-drug-fits-all formularies or therapeutic groupings much more complicated. In many instances, it will call for more customized drug regimens, albeit on a superior pharmacogenomic knowledge base, rather than mere hunches or trial and error. The economics of efficient drug pricing and delivery in that brave new world poses entirely new challenges that go beyond the compass of this paper.

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*The author thanks several anonymous peer reviewers for their helpful comments.*

### NOTES

1. A. Solomon, "A Cure for Poverty," *New York Times Magazine*, 6 May 2001.
2. If prescription drugs currently absorb about 15 percent of a health plan's premium (a relatively high estimate), and if spending on prescription drugs per insured in that plan rose by 20 percent (a high estimate as well), then only three percentage points of the total annual increase in that health plan's premium could be attributed to prescription drugs. With premiums again at double-digit levels, that leaves much of these increases to be explained by cost drivers other than prescription drugs.
3. S. Heffler et al., "Health Spending Growth Up in 1999: Faster Growth Expected in the Future," *Health Affairs* (Mar/Apr 2001): 193-203.
4. R.W. Dubois et al., "Explaining Drug Spending Trends: Does Perception Match Reality?" *Health Affairs* (Mar/Apr 2000): 231-239.
5. National Institute for Health Care Management Research and Educational Foundation, *Factors Affecting the Growth of Prescription Drug Expenditures* (Washington: NIHCM, 9 July 1999).
6. Heffler et al., "Health Spending Growth Up in 1999," Exhibit 7.
7. OECD Data for 1997, cited in Henry J. Kaiser Family Foundation, *Prescription Drug Trends: A Chartbook* (Menlo Park, Calif.: Kaiser Family Foundation, July 2000), Exhibit 2.6.
8. Heffler et al., "Health Spending Growth Up in 1999," Exhibit 1.
9. Kaiser Family Foundation, *Prescription Drug Trends*, Fig. 3.8.
10. *Economic Report of the President*, transmitted to Congress in February 1999, Tables B-2 and B-34.
11. Heffler et al., "Health Spending Growth Up in 1999"; and U.S. Department of Labor, Bureau of Labor Statistics, consumer spending data, <ftp://ftp.bls.gov/pub/special.requests/ce/standard/y9399/multiyr.txt>.
12. M.L. Berk and A.C. Monheit, "The Concentration of Health Care Expenditures, Revisited," *Health Affairs* (Mar/Apr 2001): 9-18.
13. Ryan Soderstrom, senior director of marketing corporate communications, Express Scripts, personal communication, June 2001.
14. U.S. Department of Health and Human Services, *Report to the President on Prescription Drug Coverage, Spending, Utilization, and Prices* (Washington: DHHS, April 2000), chap. 2, Fig. 2-10.
15. E.P. Steinberg et al., "Beyond Survey Data: A Claims-Based Analysis of Drug Use and Spending by the Elderly," *Health Affairs* (Mar/Apr 2000): Exhibit 2.
16. DHHS, *Report to the President*, 9, 34, 36.
17. Deutsche Banc Alex. Brown, *Pharmaceutical Industry Outlook: Sobering Up on Drugs*

(New York: Alex. Brown, 11 October 1999), Fig. 40.

18. Economists argue that a firm's "accounting profits" systematically overstate the true "economic profits" earned by the firm. To obtain a firm's "economic profits," one must deduct from its "accounting profits" the amount needed to cover the shareholders' opportunity cost of investing their money in the firm, rather than in the next best alternative investment vehicle.
19. According to Leonard Yaffe of Banc of America Securities LLC, total R&D spending of the seven largest research-based pharmaceutical companies averaged 13.1 percent in 1998, SGA spending accounted for 35.5 percent, and after-tax profits, 20 percent. Personal communication, 9 March 2001.
20. In Germany, where since 1992 drug spending has been controlled with strict budget caps per physician and tough downward pressure on prices by the sickness funds, R&D spending is reported to have been 17.6 percent of total revenue in 1997, 16.4 percent in 1998, and 16.6 percent in 1999. See Verband Forschender Arzneimittelhersteller e.V., *Statistics 2000: Die Arzneimittel in Deutschland* (Annual Report of the Association of Research-Based Pharmaceutical Producers, 2000), 26.
21. For an analysis of this subject, see F.M. Scherer, "The Link between Gross Profits and Pharmaceutical R&D Spending," *Health Affairs* (Sep/Oct 2001): 216-220.
22. "Fortune 500: America's Largest Corporations," Top Performing Industries, <www.fortune.com> (11 July 2001).
23. See, for example, C.P. Stickney and R.L. Weil, *Financial Accounting*, 9th ed. (Orlando, Fla.: Dryden Press, 2000), chap. 5.
24. *Ibid.*
25. In principle, interindustry comparisons of rates of returns to assets should be adjusted for the so-called business risk inherent in the firms' collection of assets. A consideration of this rather complex topic exceeds the space limit of this commentary. A brief discussion on this point, excised from an earlier draft, is available from the author upon request, <reinhard@princeton.edu>.
26. Cited in Kaiser Family Foundation, *Prescription Drug Trends*, Fig. 3.2.
27. The social benefit of price discrimination is most clearly demonstrated by the sale of drugs to low-income developing countries (for example, countries in sub-Saharan Africa) at low incremental costs that contribute nothing to the recovery of the seller's fixed costs.
28. H.A. Huskamp et al., "The Medicare Prescription Drug Benefit: How Will the Game Be Played?" *Health Affairs* (Mar/Apr 2000): 8-23.
29. P.M. Danzon, "Pharmaceutical Benefit Management: An Alternative Approach," *Health Affairs* (Mar/Apr 2000): 24-25.
30. *Ibid.*, 25.
31. U.E. Reinhardt, "Making Economic Evaluations More Respectable," *Social Science and Medicine* 45, no. 4 (1997): 555-562.
32. This idea is not novel. In the early 1990s the Jackson Hole Group proposed a similar, quasi-governmental body for all technology assessment in health care. See P.M. Ellwood, A.C. Enthoven, and L. Etheredge, "The Jackson Hole Initiative for a Twenty-first Century American Health Care System," *Health Economics* 1, no. 3 (1992): 149-168.