Price regulation in the pharmaceutical industry: Prescription or placebo?

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Abstract

President Clinton and several Legislators have proposed restrictions on price increases in the pharmaceutical industry similar to those on some public utilities. Studies, however, suggest that under conditions of rapidly changing demand (as found in pharmaceuticals), price-caps could be manipulated. Using simulations, we show that in reaction to regulation, pharmaceutical firms would optimally set launch prices 50 percent higher than in an unregulated market. Although initially hurt, after seven years consumers benefit as the unregulated price rises above the price-cap. Thus, before enacting legislation, Congress should assess America's willingness to pay more now for lower prices in the future.

Keywords: Pharmaceuticals; Price regulation; Price caps

1. Introduction

Concern over the rising costs of medical care and the increasing price of pharmaceutical products has led President Clinton and some members of Congress to propose regulating pharmaceutical prices. During the first three months of the
1993/1994 session, three bills to control the price of prescription drugs were introduced in the House of Representatives [HR 916, HR 1158, HR 1434]. The proposed legislation would remove the favorable tax credits and patent protection of manufactures which had price increases in excess of the rate of inflation. The Clinton proposed Health Security Act also contained provisions that would limit price increases on products sold to Medicare beneficiaries.

These bills were introduced shortly after the release of the US Senate, Special Committee on Aging report *Earning a Failing Grade: A Report Card on 1992 Drug Manufacturer Price Inflation* (U.S. Senate, Special Committee on Aging, 1993). This report claimed "drug makers broke their promise to hold down prices in 1992." During 1992, the report contends, drug prices increased at more than four times the rate of inflation, although manufacturers had agreed voluntarily to hold price increases to the rate of inflation. This voluntary agreement had followed a decade of rapid price increases. The report further contends that "during the period 1980–1992, while overall inflation was 21.7 percent, pharmaceutical inflation was 128.4 percent, six times this amount." While some economists dispute these overall figures, the public and political impression remains that drug prices are rising too rapidly and that the pharmaceutical industry is getting rich while contributing to the health care cost crisis in America.

This paper examines the impact of using price-cap regulation to control pharmaceutical prices, the method proposed in the above legislation. The remainder of the paper is divided into three sections. Section 1 examines the recent literature on price-cap regulation in public utilities to derive the likely impact of price regulation on the pharmaceutical industry. It shows there are several potential problems which must be closely monitored when applying price-cap regulation to the pharmaceutical industry. One of the largest is the problem of setting the introductory prices. The second section uses a simulation model to determine the magnitude of the introductory pricing problem under market conditions typically found in the pharmaceutical industry. These simulations suggest that the impact will be a 50 percent increase in the launch price of new products. This result is robust to changes in the key parameters of the model. As a result of this increase, there are large consumer losses in the initial years. Moreover, the

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3 U.S. Senate, Special Committee on Aging (1993, p. 1).
4 For example, Berndt et al. (1993) and Griliches and Cockburn (1993) argue that the Bureau of Labor price indices, the basis for these statistics, did not adequately capture the effects of new drug introductions and the consumer shift to generic drugs.
5 The issue of whether pharmaceutical prices are too high or have been rising too rapidly is addressed in Abbott (1995). In that paper, I concur with the papers cited above that there are significant problems with the reported figures. More importantly, I conclude that there is little evidence that the pharmaceutical industry has excessive prices or profits, and that there is no reason to believe that price regulation of any kind will be successful in holding prices while providing adequate incentives for future R&D.
present value of the social welfare effects of price-cap regulation could be either positive or negative depending upon the discount rate assumed. The final section summarizes these results and makes suggestions for additional research.

2. Price-cap regulation

Price Cap Regulation (PCR) was brought to the United States by the Federal Communications Commission after the divestiture of American Telephone and Telegraph. Since then, many other public utility commissions have introduced price-caps and other forms of "incentive" regulation. These alternatives to traditional Rate-of-Return Regulation have been introduced to deal primarily with the adverse consequences of cost-based regulation on productive efficiency and the high administrative costs of rate-of-return regulation (Averch and Johnson, 1962; Crew and Kleindorfer, 1979; Crew and Kleindorfer, 1986; Vogelsang, 1989; Cabral and Riordan, 1989; Liston, 1993). In addition, PCR gives the firm some flexibility in pricing which allows it to respond to changes in its environment. This is important for traditional public utilities as regulators have sought to further encourage efficient production by permitting competitive entry in selected areas (Abbott and Crew, 1994).

Under PCR, the direct link between the prices charged for individual products and the costs of production is broken, providing the incentive for firms to produce efficiently. The gains from increased productivity are shared with consumers through a mechanism which ratchets the real price downward at an agreed upon rate. That is, the price level for the firm is permitted to rise with the rate of inflation less a fixed percentage called the "X factor". In the context of a multi-product firm, the price-cap is usually applied to an index of the firm's prices rather than each product individually. Frequently the quantities sold in one period are used as weights for constructing the price change index (Brennan, 1989). That is, for all goods in a particular basket, the price cap implies that

\[
\sum_{i=1}^{n} (P_{it}Q_{it}) \leq (1 + CPI_i - X) * \sum_{i=1}^{n} (P_{it}Q_{it}).
\]

This is a general form of the regulation currently proposed in Congress. Using the first period quantities as weights has the advantage of being measurable and thus implementable at the beginning of the period.\(^6\)

\(^6\) Unfortunately, using the first period quantity weights also introduces the well known bias in using a Laspeyres Index number to measure changes in consumer welfare because of the fact that it does not take into account the way in which consumers substitute one product for another as relative prices change. This could be a particularly severe problem in the pharmaceutical industry where generic and private label substitutes are gaining ever increasing market share — see Griliches and Cockburn (1993).
In addition to the obvious incentives for improved productive efficiency created by the price-cap mechanism (provided the commitment to the price-cap environment is credible \(^7\)), several recent papers have examined the question of allocative efficiency. Bradley and Price (1988) and Vogelsang (1989) advance the argument that if the regulated firm maximizes profits under the price cap constraint, it will set prices that over time approach the Ramsey structure. Brennan (1989) shows formally that "As \( t \to \infty \), the sequence \( \{P_t\} \) converges to a point where consumer surplus and profit satisfy the Ramsey condition, i.e., consumer surplus is maximized subject to the profit received by the firm". \(^8\) Thus, it appears that price-cap regulation not only induces productive efficiency but also efficient pricing (subject to the allowed profits). As a result, a general consensus seems to have been reached that PCR is superior to ROR regulation.

Two recent papers by Neu (1993) and Abbott and Crew (1994) reach different conclusions, however. These papers observe that the superiority of price-cap regulation has been demonstrated only in stable markets. In particular, Brennan (1989) and Vogelsang (1989) assume that both the cost and the demand functions are constant over time. If, on the other hand, demand grows at different rates across products under a common price-cap, the regulated firm has the incentive to increase the price of the product which is growing most rapidly and decrease the price of the product growing least. Neu demonstrates this result under myopic pricing behavior, while Abbott and Crew find it in a two period optimization model. Abbott and Crew also explore the implications of price-cap regulation for the introduction of new products. They found that under price-cap regulation, the regulated firm has the incentive to introduce products at prices above the single period optimal price. Thus, they conclude that price-cap regulation is inappropriate for markets in which demand is volatile and that it has many of the same informational and incentive problems as Rate-of-Return regulation when pricing new products.

The implications of these papers for the pharmaceutical industry is pronounced. The pharmaceutical industry is noted for volatile demand and short product life cycles. In their 1993 report on Pharmaceutical R&D, the US Congress, Office of Technological Assessment estimated that the average global sales profile for a new chemical entity increased dramatically over the first 8 to 10 years after introduction, and then fell precipitously until sales completely died off after 20 years (US Congress, Office of Technology Assessment, 1993). This estimated profile took into account the long lag in the FDA approval process as well as the effects of the introduction of competing products and generic substitutes. If the use of generic

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\(^7\) Crew and Frierman (1991) stress the importance of credibility in the commitment to the price cap mechanism. If the firm believes that the regulator will break its commitment to letting the firm keep the profits from increased efficiency, the firm will not have the incentive to produce efficiently.

substitutes is increased by recent changes in health care delivery, then the rate of price declines resulting from generic drugs (even without the proposed reforms in pricing pharmaceuticals) is likely to increase. Such rapid changes in the demand for individual products are unheard of in the telecommunications industry, where most of the experience with price-cap regulation has occurred. Unless the adverse incentives created by fluctuations in demand are attenuated — patterns exacerbated by the short product life-cycle — price-caps are likely to be easily manipulated and lead to adverse outcomes in the pharmaceutical industry. In theory, some of these dynamic concerns could be addressed by defining the price index over individual products. However, in practice this could be difficult to implement in the pharmaceutical industry because of the multitude of product presentations. The critical question is how to define the product for purposes of the price cap. Is a bottle of 50 400 mg tablets the same product as a bottle of 25 800 mg tablets? What if additional active ingredients are added to one but not the other? Or, what if one product is in solid form and the other in liquid? Clearly, there are many ways in which the same basic active ingredient could be incorporated into a “new product,” and the pharmaceutical industry is noted for its ingenuity in developing alternative presentations. Introducing one and phasing out the other might enable the pharmaceutical firm to avoid the price cap and could be very difficult to detect — was the product changed in order to get around the price cap or is the “new” product really better for consumers?

3. Impact of price cap regulation on introductory prices

To determine the importance of the incentives to increase the launch prices discussed above, I use a simulation model calibrated to typical market conditions in the pharmaceutical industry. In these simulations, I compare the optimal prices of an unregulated firm to the optimal prices of a firm facing price-cap regulation requiring constant real prices over the life of the product. In the model, I assume the firm is able to set the introductory price of its product. This focus on product introductions is for several reasons. First, although imposing price controls on existing products is likely to have only a minor effect on the manufacture of these drugs, it is likely to result in long court battles over the constitutionality of such laws. Second, due to the rapid turnover in products in the pharmaceutical industry, as patents expire and generic products enter the market and as new products which are safer and more effective render existing products obsolete, the consumer

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9 One of the major claims behind the introduction of "managed competition" is the fact that the purchasers of health care will now be in a position to exercise market power against suppliers, as well as tighter control over which services consumers purchase. In the context of pharmaceutical products, one can only imagine that this will increase the rate at which consumers are switched to cheaper generic products once patents and/or exclusive marketing agreements have expired.
Table 1
Simulation base parameters

<table>
<thead>
<tr>
<th>Year</th>
<th>Price</th>
<th>Index (^a)</th>
<th>Revenue</th>
<th>Index (^a)</th>
<th>Elast (^b)</th>
<th>Constant (^c)</th>
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<td>-1.083</td>
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<td>-1.071</td>
<td>103.45</td>
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</tr>
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<td>70</td>
<td></td>
<td>-1.030</td>
<td>81.66</td>
<td></td>
</tr>
</tbody>
</table>


\(^b\) The elasticity is calculated assuming that the marginal manufacturing costs are $5.00 and the firm maximized profits in each year. Thus the formula used is:

\[\text{Elasticity} = \frac{\text{Price}}{(\text{Price} - \text{MC})}\]

\(^c\) The constant is calculated assuming a constant elasticity of demand function. Thus the formula used is:

\[\text{Constant} = \text{Sales} \cdot \text{Price}^{-(1 - \eta)}\]

benefits from regulating existing products is likely to be short lived. Thus the focus of the analysis is forward looking at the impact of price-cap regulation on products introduced in the future.

3.1. Estimating demand parameters

As in most economic studies of pricing, the results depend on the parameters of demand. In developing the parameters for a "typical" new drug, we used data provided in Appendix F of the OTA report (1993) and originally provided by Schondelmeyer (1991). These data include 14 year average deflated sales and real price indices for a sample of 35 drugs which went off patent during the mid 1980s and are presented in Figs. F-1 and F-5 of the OTA report. These data are presented in columns 2 and 3 of Table 1.\(^{10}\) In order to obtain estimates of the demand

\(^{10}\) The original price and sales data appears to be noisy in some of the early and late years. This results from the fact that the number of drugs available to calculate these early/late date points is often quite small (eg. for the first year there are only 5 observations). However, smoothing out the price and revenue indexes using interpolation does not qualitatively alter the results.
parameters from these data, we needed to normalize sales "units" so the price in year seven (the year the drug went off patent) equaled 100. This permitted me to interpret the real price index directly as deflated prices. Next, assuming that the real marginal cost of manufacturing was constant and that pharmaceutical firms price drugs to maximize their profits in each year, one can infer the product-specific elasticity of demand in each year by using the familiar relationship that the Lerner index is equal to the inverse of the elasticity. Solving the Lerner index for the elasticity, one obtains that

\[ \eta = \frac{p}{(p - c)} \tag{2} \]

where \( p \) is the price in any given period and \( c \) is the marginal cost. Assuming that the marginal cost per "unit" was $5.00, one obtains the estimates of the price elasticity in each period presented in column four of Table 1. These estimates show that the elasticity of demand fell over time. This is consistent with much of the literature on pharmaceutical pricing which shows that over time, and even after the entry of generic competitors, pharmaceutical firms increased real prices, e.g., Hurwitz and Caves (1988), Frank and Salkever (1992), Scherer (1993), and Griliches and Cockburn (1993). Moreover, these results are also consistent with the empirical estimates of individual pharmaceutical product price elasticities found in Berndt et al. (1994) and Abbott and Rizzo (1994) for firms with heavy product detailing.

Given the estimated elasticity of demand, price, and normalizing real sales to $100 million in year seven, one can estimate the constant term of a constant elasticity demand curve using the simple definition of the demand curve. That is,

\[ \kappa = S \times p^{-(1 - \eta)} \tag{3} \]

where \( \kappa \) is the constant term, \( S \) is the sales and the other variables are defined above. Using this approach resulted in the estimates presented in the last column of Table 1.

Thus, the parameters used in the simulations depend only on the sales index, the price index, and the assumed marginal cost. Later, in the sensitivity analysis section, I discuss how alternative values of the marginal cost ranging from $5.00 to $20.00 affect the simulation results.

Throughout the analysis, it is assumed the firm knows the parameters of the demand curve with certainty and bases its pricing decisions on them. Incorporating

\[ \text{Although the point estimate of the elasticity of demand is very sensitive to the choice of marginal cost, the overall results when comparing monopoly versus regulated prices are not (as discussed below).} \]

\[ \text{For this method to provide reasonable estimates of the impact of price-cap regulation, I only need the Constant Elasticity of Demand function to hold as a local approximation of the actual demand curve.} \]
uncertainty into the model would provide additional incentives for the firm to increase the introductory price, as the price cap allows the firm to lower its prices but restricts its ability to increase its price. Thus, with uncertainty, it would be optimal for the firm to initially set its price very high and if it found the elasticity was higher than expected, it could always decrease the price later on. Thus, ignoring uncertainty would tend to mitigate the distortionary effects of the price-cap regulation and the results presented here should be interpreted as lower bounds on the affect of price-cap regulation.

3.2. Pricing simulations

Given these parameters of the demand curves, one can derive the optimal price for both the unregulated and regulated pharmaceutical firm. The unregulated firm is assumed to profit maximize in each period. Since this assumption was used to derive the demand parameters, one would expect to recover the original prices and quantities. These are presented again in the second and third columns of Table 2 to facilitate comparison with the regulated prices.

In deriving the optimal pricing for the regulated firm, we assume the firm maximizes discounted cash flows from the sale and manufacturing of the drug, subject to the regulatory imposed price constraints and the demand curve. That is, the firm solves the following optimization problem:

\[
\text{Max } \sum_{t=0}^{14} \beta^t (P_t - c) Q_t,
\]

\[P_t, Q_t\]

subject to

\[P_{t+1} \leq P_t,\]

\[Q_t \leq K_t P_t^{-\eta_t},\]  \hspace{1cm} (4)

where \(\beta\) is the appropriate discount factor for the firm.  \(^{13}\)

Since price always exceeds the marginal cost of production, it is optimal for the firm to sell all it can at a given price level. Thus, the demand curve will always be binding and can be substituted out. In addition, since the elasticity of demand is constantly falling as discussed above, there is constant pressure to increase prices from one year to the next. As a result, the price constraint will also always be binding and can be substituted out. The net result of this is that the regulated firm's pricing problem can be reduced to the selection of a single price, the

\(^{13}\) Note that the discount rate does not enter into the unregulated firm's decisions because it is assumed to be able to optimally price in each and every period without any intertemporal price effects. A richer model of demand behavior which allows for intertemporal effects is beyond the scope of the data.
Table 2
Simulation results

<table>
<thead>
<tr>
<th>Year</th>
<th>Unregulated</th>
<th>Regulated</th>
<th>Changes</th>
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<td></td>
<td>Price</td>
<td>Sales</td>
<td>Price</td>
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Key assumptions

<table>
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<th>Net present value</th>
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<td>Corporate discount 3%</td>
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<table>
<thead>
<tr>
<th>t</th>
<th>$\beta_i$</th>
<th>$K_i$</th>
<th>$P$</th>
<th>$\eta_i$</th>
</tr>
</thead>
</table>
| $\beta_i (P - c) K_i P^{-\eta_i}$ | \(\sum_{t=0}^{14} \beta_i (P - c) K_i P^{-\eta_i} = 0\) (5) \[
\sum_{t=0}^{14} \beta_i K_i P^{-\eta_i} (1 - \eta_i) + \frac{\eta_i c}{P} = 0, (6)
\]

which is non-linear in $P$. However, since the problem has only one parameter, it is

}\footnote{Extending the firm's horizon beyond 14 years would increase the benefits of raising the introductory price and thus result in an even higher introductory price.}
easy to program a search algorithm to obtain the optimal introductory price for any
set of parameter values.

One solution, under the assumption of a 3% real corporate discount rate, is
given in Table 2 and illustrated in Fig. 1. As expected, the optimal regulated real
introductory price is significantly above the unregulated introductory price ($90.54
versus $60). Moreover, it is not until the seventh year that the regulated price
becomes lower than the unregulated price. Thus, in the initial years, consumers are
unambiguously hurt by imposing price-cap regulation. It is not until after the
seventh year, when the unregulated rises above the regulated, that consumers
benefit from the price-cap.

One of the relevant policy questions is whether consumers are better off overall
having the regulation imposed. To evaluate this question, we compute the change
in the consumer surplus between the two regimes. This can be measured using the
usual
\[ CS = \int_{P_r}^{P_u} p^{-\eta} \, dp. \]  

(7)

The results of this computation are shown in column 6. As expected, initially
the change in consumer surplus is negative because the regulated price is in excess

\[ \text{This calculation implicitly assumes that the consumer is paying the full cost of the pharmaceutical}
\text{product and thus the demand curve represents their willingness to pay. It is easy to show that if the}
\text{typical consumer only pays fixed proportions of cost that the actual consumer surplus (based on}
\text{willingness to pay) would be proportional to the amount shown on Table 2. That is, if the consumer has}
\text{20% coinsurance, the true consumer surplus would be 20\% of the amount shown. The existence of}
\text{coinsurance therefore weakens the case for price caps.} \]
of the unregulated price. After six years it turns (and remains) positive. The net present value of the consumer surplus will thus be sensitive to the discount rate chosen to evaluate this stream. At the bottom of the table, we present the net present value at alternative discount rates. With no discounting, the consumers gain $84.07 million dollars per drug from implementing price-cap regulation. As expected, the higher the social discount rate, the lower the benefits of regulation to the consumer, and at a discount rate of 7%, the net benefits turn negative.

In the last column of Table 2, we show the change in the corporate profits (over marginal manufacturing costs)\textsuperscript{16}. As expected, these are negative in all years — since initially the firm prices above the unregulated price and later it prices below. The net present value of these lost profits, discounted at the 3% rate used to determine the optimal introductory price, is $-2.083$ million dollars. This is the amount the firm would be willing to pay, per drug, to avoid price regulation. In making Pareto comparisons between the regulated and unregulated environments, the consumer benefits would have to be weighed against these losses, and against the cost of implementing regulation, before conclusions could be drawn. Thus, the policy question turns on how one values the future relative to the present. The more weight placed on the present, the less is the benefit of price-cap regulation.

3.3. Sensitivity analysis

It is important to determine the sensitivity of these results to the key parameters of the model, in this case the assumed marginal cost and corporate discount rates are the key parameters. As expected, the estimated elasticity of demand is sensitive to the assumed marginal cost — as expected from Equation 2. However, as shown in Table 3, changing the assumed marginal cost does not alter the net consumer surplus significantly. This is because, as the assumed marginal costs change, both the implied elasticity and constant terms also change. The net result of these offsetting changes is that the introductory price remains stable at about $90.55 — as shown in the middle the table. Therefore, the consumer surplus is insensitive to the assumed real marginal cost.

The effect of changes in the manufacturing costs on profits, however, is quite large as shown at the bottom of the table.\textsuperscript{17} Increasing the assumed manufacturing costs increases the impact of the regulation on the firm. At a manufacturing cost of $20 per unit, the firm would be willing to pay nearly 10 million dollars per new drug to avoid the price-cap regulation. As a result, for any discount rate of over 4

\textsuperscript{16} Hurwitz and Caves (1988) suggest that pharmaceutical manufacturing exhibits constant returns to scale, hence the average cost is equal to marginal cost and this figure can be used to approximate manufacturing profits.

\textsuperscript{17} It is important to keep in mind that this figure represents the change in the profits between the regulated and unregulated environment, and does not provide a measure of the absolute level of profits.
percent the net benefit to society (even assuming costless regulation) are negative.\textsuperscript{18}

The corporate discount rate is the second key parameter of the model. Examining alternative real corporate discount rates ranging from 0 to 10 percent, we find that the introductory price, and hence consumer surplus, is much more sensitive. These results are presented in Table 4. Somewhat paradoxically, as the firm values the future less, i.e., it has a higher discount rate, the firm drops its introductory price and consumer benefits rise. This results from the fact that the regulated introductory price is above the unregulated price. By decreasing the regulated price the firm increases the profits in the short run (but lowers profits even more in the future when the price is below the monopoly price). Thus, if the corporate discount rate is high enough, consumers are unambiguously made better off by the price-cap regulation.

In summary, the policy conclusions depend on both the social discount rate and the corporate discount rate. If the corporate discount rate is low enough, and the social discount rate is high enough, price-cap regulation intended to benefit consumers and control costs, will actually hurt consumers. Reviewing the litera-

\textsuperscript{18} Somewhat surprisingly, the overall impact of price caps on the profitability of the pharmaceutical firm, and hence the impact on the incentives for Research and Development, are quite modest. This is because the pharmaceutical firm is able to "price around" the price cap by boosting its launch prices. If the regulator could somehow force the firm to introduce the product at the lower price, and then hold it there, the price cap regulation would have a much larger impact on the firm's profitability.
Table 4
Consumer benefits changing corporate discount rate

<table>
<thead>
<tr>
<th>Social discount rate</th>
<th>Corporate discount rate</th>
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<td>32.93 66.20 87.20 135.31</td>
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<tr>
<td>2%</td>
<td>19.81 50.74 70.27 115.00</td>
</tr>
<tr>
<td>3%</td>
<td>8.55 37.37 55.56 97.24</td>
</tr>
<tr>
<td>4%</td>
<td>-1.10 25.80 42.78 81.69</td>
</tr>
<tr>
<td>5%</td>
<td>-9.37 15.79 31.68 68.07</td>
</tr>
<tr>
<td>6%</td>
<td>-16.45 7.13 22.02 56.13</td>
</tr>
<tr>
<td>7%</td>
<td>-22.49 -0.35 13.63 45.66</td>
</tr>
<tr>
<td>8%</td>
<td>-27.64 -6.81 6.34 36.46</td>
</tr>
<tr>
<td>9%</td>
<td>-32.02 -12.39 0.00 28.39</td>
</tr>
<tr>
<td>10%</td>
<td>-35.72 -17.20 -5.50 21.30</td>
</tr>
<tr>
<td>Regulated price</td>
<td>93.403 90.537 88.776 84.877</td>
</tr>
<tr>
<td>Corporate profits</td>
<td>-2.629 -2.083 -1.791 -1.245</td>
</tr>
</tbody>
</table>

Key assumption
Manufacturing cost $5.00

ture on the social discount rate used to justify public works projects suggests that the social discount rate should be lower than the corporate discount rate, and perhaps as low as zero. This would suggest that on balance, society would be better off with price-cap regulation. However, this does not take into account the "political" discount rate. That is, while one may be able to convince the public that they should invest millions in a public works project which will benefit their children, one can only speculate as to their reaction to the prospects of paying a "regulated" price of $90 for something that would have an unregulated price of $60. While it is true that they are making an investment in the future, in ten years the regulated price will still be $90 whereas the unregulated price would have risen to $123; it may nevertheless be difficult to sell around election time.

4. Summary and future research

Under current proposals, there are several major problems facing the pharmaceutical price regulator. First is the problem of the dynamic distortions introduced through differences in the growth rates of individual products. The problem arises if the price-cap mechanism is applied to a bundle of drugs, and would result in price increases for products which are growing rapidly (i.e., the newly developed, highly demanded drugs) which are offset by price decreases on older drugs for which demand is falling (or growing less rapidly) because of increased competition or obsolescence. This problem could be overcome by defining a price index
for each drug, but then one has difficulty with the introduction of new doses, delivery systems, and formulations. Are they subject to the old price-cap or to a new price-cap?

Second, regardless of whether price caps are placed on individual drugs or baskets of drugs, there are major problems in determining the introductory prices. If the firm sets its introductory price, the results presented here suggest that at best, the benefits of price-cap regulation are delayed for several years and at worst, the well intentioned policy to protect consumers actually ends up hurting them. If the regulator attempts to control the introductory prices, the key question is how? How do you determine a “fair” introductory price for a drug? Price-Cap Regulation does not provide an answer — and neither do any of the proposed bills. The Clinton proposal at least recognizes the problem, but unfortunately does not offer any solutions other than to allow the Secretary of Health and Human Services to exclude from coverage any new drug which is deemed to have an “excessive” retail price — without any real criteria for determining what is an excessive price.

Finally, in choosing to regulate pharmaceutical prices in the public interest, much additional research is needed before intelligent public policy can be developed. Changes in how pharmaceutical products are priced will affect the expected rewards from conducting R&D activities, which in turn will affect the number of firms in the industry, the level of R&D expenditures, the rate of pharmacological innovation, and the overall level of health care expenditures.\(^{19}\) Making decisions based on an analysis of only a small part of these considerations — the current cost of pharmaceuticals — without considering the broader picture, is likely to result in poor policy. Economists, and future economic analysis, may help to quantify these interrelationships and guide intelligent policy making in this area.

References


\(^{19}\) Some preliminary work on the effects of pharmaceutical regulations, particularly the effects of the 1962 Amendments to the Food, Drug and Cosmetics Act which greatly increased the amount pre-marketing testing associated with new drugs, is presented in Peltzman (1973), Grabowski et al. (1978), Temin (1979) and Thomas (1990). This evidence may be useful in attempting to assess the impacts of imposing price constraints on pharmaceutical firms.


Temin, P., 1979, Technology, regulation, and market structure in the modern pharmaceutical industry, Bell Journal of Economics 10, 429–446.


