When nonprofit organizations operate in a field of service that might otherwise be provided by government or by for-profit organizations, such as schools, hospitals, or museums, their decisions on the type and amount of services to be delivered are motivated by factors that are quite distinctive. Because they must operate on a break-even basis with revenues raised on a voluntary basis, nonprofit organizations typically take on activities from which they derive no satisfaction in order to subsidize activities that they regard as of higher value. As a result, the mix of services they offer and the charges they impose will generally be quite different from those of a government institution or a for-profit organization.

In recent months much attention has been focused on the possibility that nonprofit organizations might help to fill the void, as federal and state governments curtail some of their programs in education, housing, health services, support for the arts, and similar areas.

To evaluate the desirability of a public policy that shifts responsibility from government toward nonprofit organizations, first of all one needs to understand how such organizations function. There have been numerous studies of how business organizations operate, presumably bent on producing the largest possible profit over the long run. And the number of studies of the operations of government agencies is rapidly growing. But only recently have economists paid much attention to the nonprofit sector.

Nonprofit organizations are, in a sense, a hybrid of business enterprise and government, and different from both. Unlike the for-profit organizations (but like government), the nonprofit entity has no owners to whom it distributes its profits; instead, all of the organization’s resources must be used internally. Unlike the government (but like for-profit organizations), nonprofit entities must
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raise their funds on a voluntary basis; they do not enjoy the powers of compulsory taxation. The net effect is to produce a pattern of behavior in the nonprofit organization that differs from the behavior of the other two.

What distinguishes the nonprofit organization most clearly from the other two organizational types are the factors it takes into account in deciding what services to produce and in what quantities. For example, a nonprofit organization may run a school of some stated capacity for handicapped children, and a convalescent home of some given capacity for the elderly; it may provide standard or deluxe service in either institution. These decisions may be made by a group of members, by a professional staff, or by a voluntary board of trustees. There may be struggles among them over the choice of services; but for present purposes, let us assume that eventually they speak with one voice, the voice of the manager. How is the manager likely to make these choices?

The manager has preferences regarding the services that the organization produces because he cares which activities he spends his time on, because certain products are considered more prestigious than others, or because he harbors a genuinely altruistic belief that these products are important to society. These preferences may be influenced by the background and training of the manager, by the internal structure of the organization, by the source of the volunteered time and money, or by other factors. The manager's job is to satisfy these preferences to the highest possible degree; in economic jargon, the manager wishes to maximize the utility function of the organization. In the Appendix, I present a formal model that traces out the manager's decision as he seeks to maximize that function, while taking into account the costs of producing various alternative services as well as the need to end up with zero profits. Essentially the model is built on the following considerations.

Assume that the nonprofit organization receives revenues that vary according to the level of services delivered, either because the organization charges a fee for such services or because it receives subsidies that are based on the level of services; private hospitals are a case in point. In addition, some of the organization's revenue may be fixed irrespective of the level of its services; this holds, for example, for well-endowed private universities and museums. The manager (our collective designation for the director, board members, and professional staff) has no way of altering the prices, subsidies, or costs associated with the services being delivered. Then the only way in which he can increase his benefits is by altering the mix of services to emphasize those that best reflect his preferences. This will lead him to produce more than a profit-making firm would of certain services, and less of others. (It follows that in situations where the profit-making firm produces the "right" amount of a service—that is, at the point where marginal social benefit equals marginal social cost—turning the
output decision over to a nonprofit organization would probably produce a less desirable result.)

But there is a limit to which the manager can respond to his preferences—a limit imposed by the fact that the aggregate income of the organization, variable or fixed, must cover the aggregate variable and fixed costs of the organization. This brings us to one of the fundamental characteristics of nonprofit organizations. Because the manager has tastes, preferring to deliver one service rather than another, and because some of the preferred services may not cover their own costs, these organizations characteristically find themselves taking on profit-making activities that will cover the deficit incurred in other activities. This phenomenon, of course, represents the classic case of cross subsidization; and it is a factor that must be given substantial weight in projecting how nonprofit organizations are likely to perform when providing public services.

Cross Subsidization in Practice

The concept of cross subsidization helps us understand certain well-known behavioral characteristics of nonprofit organizations in the fields of education, health, and the arts.

Consider the case of university education. Assume that undergraduate education, graduate training, and research can be viewed as separable activities. On this assumption, if one measures the resources (especially faculty time) devoted to each, it turns out that the average tuition paid by undergraduates exceeds the cost of their education, while the opposite is the case for graduate students. The undergraduate program employs large classes, and the graduate program small classes, while research is achieved mainly by diverting the faculty from teaching through a reduced teaching load. Teaching undergraduates, therefore, is often a profitable activity carried out in order to obtain the resources for the loss-making graduate and research programs. Moreover, undergraduate class sizes are higher at universities than at colleges and have risen through time as graduate studies and research have grown. Finally, although nonprofit institutions can be found that specialize entirely in undergraduate education, very few can be found that specialize entirely in graduate education or basic research. All these observations are consistent with the notion that nonprofit organizations regularly engage in cross subsidization, and the more they wish to carry out loss-making activities, the more they must seek out profitable activities to provide them with the necessary resources.

The coupling of profitable with unprofitable activities is observed not only in education but also in health. Nonprofit hospitals often couple loss-making activities that generate prestige with more routine profitable activities; for example, profits from appendectomies may be used to finance research and to maintain expensive underutilized facilities such as open heart surgery units.

Similarly in the arts: In recent years, museums have heavily promoted gift shops and special exhibitions; these have been
looked on as the financial salvation of these organizations, while being criticized for drawing attention from other pursuits on which curators place a higher artistic value. At a recent symposium attended by museum curators, the director of the Metropolitan Museum voiced his concern about the “exhibition fever that has gripped today’s museum scene, often working to the detriment of the institution’s own permanent collections.” But, he added, “We would go bankrupt if we lost the exhibitions.”

The Metropolitan Opera sells tote bags, T-shirts, and posters in order to earn a profit that supports its main interest, the opera. Ballet programs held at the Met in 1978 yielded $1 million profit, which helped to cover its $11 million deficit from opera. The absolute role of Anthony Bliss, director of the Met, was that opera could run a deficit but dance companies could not. “They must be run at least at a no-loss basis,” he is quoted as saying, “because our primary responsibility is presenting opera.”

National Public Radio is planning to raise money for its radio productions through a variety of projects, including the sale of audio cassettes of NPR programs and the transmission of business information by satellite communication. “We’re prepared to enter almost any profession except the oldest one,” declared the president of NPR, as he announced his plans to rely on cross subsidization increasingly in the years ahead.

What do these examples, drawn from diverse fields, have in common? They all demonstrate that cross subsidization in nonprofit organizations is not an accidental or short-run occurrence. Instead, it is part of a deliberate long-term strategy by management for financing the consumption of loss-making activities they care about most. This strategy is feasible where part of the organization’s activities concern services for whose costs individuals are willing to pay; that means, in turn, a service which individuals value and which they can be denied. Those criteria apply to an art exhibit, for instance, but not to the St. Patrick’s Day parade. It means also that the manager must be in a position to transfer revenue between activities, whether from tickets of admission, subsidies, donations, or volunteered time.

Of course, the activities that the manager chooses in order to earn surplus revenues must be of a kind that is capable of generating a profit. This means as a rule that barriers to entry must exist: Otherwise, profit-making firms would spring up, and eventually compete away the profits. Some of those barriers are “natural,” visible in the unique reputation of the Met or the Smithsonian Institution. In other cases, the entry barriers stem from public decisions, such as legalizing bingo games in churches or granting accreditation certificates to schools.

Finally, this analysis helps explain another empirical observation—the chronic shortage of funds of nonprofit organizations. Managers of such organizations are chosen in part for their ability to provide services such as art exhibits or musical events or medical care, whose value will be judged by factors other than the willingness of the public to pay; they are chosen also for their
ability to raise the money that will bridge the differences between income and cost; but they are not chosen for their ability to make a profit. Given the relative value that their institutions place on the alternative activities and given the incentive system under which the managers work, we would hypothesize that most nonprofit organizations will face a perpetual shortage of funds, a hypothesis that seems supported by the facts. The root of this situation is not, as has been suggested previously, that these are labor-intensive service industries with a chronic productivity lag. More simply and fundamentally, nonprofit organizations should be regarded as consumption-oriented institutions; and consumers never have "enough" income. So long as the marginal utility of any good exceeds zero there is always a "need" for more, a pressure for the organization to expand some of its activities, and a consequent pressure to expand its resources to finance those desired activities.

PREDICTABILITY AND PLANNING

The same process that leads nonprofit organizations to subsidize one activity from the profits of another allows us to anticipate the responsiveness of such organizations to changes in economic circumstances. (Those who wish to follow the argument in terms of the formal model should consult the Appendix.)

To explore this issue, think of three different kinds of services. One kind yields profits to the organization, but is perceived as having no utility (for example, selling T-shirts to museum visitors); a second also yields a profit, but is thought of as having negative utility at the margin (for example, selling poorly made prints of famous paintings); and a third yields a loss to the institution but has positive utility (for example, providing free museum trips for disadvantaged children).

Picture a case in which the institution with services of all three types receives an unrestricted grant from a wealthy philanthropist who hopes to increase the services provided by the museum. The response of the museum, in view of the utility it assigns to each of its three programs, will be to increase the number of museum trips for disadvantaged children, to reduce the sale of poorly made prints, and to continue selling its T-shirts as it had in the past.

Now change the circumstances that the institution faces. Suppose that the institution's various selling prices all rise, increasing its profits in all the profit-making services and decreasing its losses on the others. Once again, it is likely to increase its program of trips for the disadvantaged, as long as such trips are seen as having positive utility. And it is likely to expand its sale of T-shirts to help pay for the trips. Whether the institution will increase or reduce its sale of poor prints is less clear. Although the increased price of those prints will make them more profitable, thus providing more funds for the museum trips, the negative utility of that activity may mean that now the organization can afford to produce less of it despite the increase in price.

What if the price commanded by some of these activities changes differently from the others? Suppose, for instance, it
becomes feasible to charge a small fee for the museum trips without reducing the demand for such trips. Then the museum will continue to sell its T-shirts, while reducing the sale of poor prints. On the other hand, if the price of T-shirts alone goes up, the trips will be increased and the print sales once again will be reduced. Finally, a rise in the price of poor prints will also increase the museum trip program while leaving T-shirt sales unchanged.

Responses such as these help to explain a number of widely observed reactions among nonprofit organizations. When the number of persons of college age increased in the 1950s, it was not at all clear that private institutions would want to expand rapidly enough to take on the increased demand. Instead, they may have preferred to become more selective and to raise their price of and profits from undergraduate education. This is one possible reason why politicians felt the strong pressure to build new state universities to accommodate the “baby boom.” At the same time, the higher profits from undergraduate education allowed an increase in the preferred activities of graduate training and research, in both absolute and relative terms. I would also predict that as universities grow less affluent in the 1980s than they were in the 1960s and early 1970s, they will seek to become more attractive to undergraduates, will place a greater weight on teaching, and will constrict their graduate programs. We already notice an increased emphasis on part-time adult education, a clear case of an activity that is taken on for its profit-making potential, rather than for the utility it provides to the faculty and school administrators.

The usefulness of looking at the behavior of nonprofit organizations in this way is highlighted by observing what it implies for various proposed policies in education, such as a voucher scheme in which nonprofit tuition-charging private schools are permitted to enroll. If such a scheme existed, it would give private schools a basis for increasing their tuition; and that in turn could lead such schools to reduce their enrollments by shutting out their least-desired students. This perverse supply response would leave many frustrated would-be customers with no place to go—less choice instead of more. Would new private schools then start up to accommodate this leftover demand? When the profit motive has been ruled out, it is difficult to predict the incentives for founding new enterprises. At best, any positive supply response coming from new schools would be slow and uncertain.

WHY PEOPLE DONATE  The foregoing analysis also helps to explain why people sometimes donate to nonprofit organizations, but rarely to profit-making organizations or government. When donors make gifts they are generally in a poor position to determine if the gift will be well used. If the donor cannot monitor the response, there is a risk that the gift will be absorbed into the organization without any change in its services; for-profit organizations will simply add to their profits, while governments will simply reduce their deficits. But nonprofit organizations derive utility from the delivery of services,
not from the generation of profits or surpluses. Thus, donors who are not in a position to monitor the behavior of the recipient may feel safer contributing to the nonprofit entity. Some economists have pointed to increased "trustworthiness" as a reason why people donate to nonprofit rather than to for-profit organizations. Trustworthiness, however, is an amorphous concept which is difficult to observe and measure; moreover, it is not immediately obvious that nonprofit organizations are more trustworthy than for-profit entities. It does, however, follow from the logic of the different constraints facing the two kinds of organizations that nonprofit organizations will increase their output in response to a donation while profit-making organizations will not. (This point is demonstrated more rigorously in the Appendix.)

Governments too are in a poor position to attract donations. If we think of government as a giant multipurpose nonprofit organization, the ability of potential donors to predict the use of their donations may be even smaller than in the case of for-profit organizations. Thus, even though individuals might see themselves deriving some utility from increasing some of government's activities, they are unlikely voluntarily to contribute money to government, aware that they cannot predict which activity will be increased.

Nonprofit organizations, therefore, can be expected to capture the lion's share of the donations of those who want to encourage the delivery of a certain group of services, especially if the donor is in no position to monitor the institution's response. By a Darwinian process, such organizations will dominate over profit-maximizing firms in these areas. The legal constraint on distributing profits serves the purpose of giving nonprofit organizations this comparative advantage in capturing donations and some organizations will voluntarily take on the constraint for that reason; the existence of potential donations can then be seen as a raison d'être for the development of the nonprofit institutional form.

In the case of a nonprofit entity with several different services activities, however, the donor's trust may be partially misplaced. We have observed that larger donations will increase the output of the organization overall; but the activity that the donor had in mind may not be the one that is actually increased. If the donor hoped to finance more appendectomies, he might actually be helping to expand the open heart surgery unit. The resulting allocation effect, therefore, may be very different from the donor's intent.

**DISTRIBUTION AND EQUITY**

It is clear that the activities of nonprofit organizations involve a different distribution of decision-making power than do the analogous activities of for-profit organizations or government agencies. A shift from government agencies or for-profit organizations to nonprofit organizations reallocates some decision-making power from the political apparatus to donors, fee payers, and managers.
Insmuch as managers of nonprofit organizations are presumed to derive some of their returns from the job through their power to determine the mix of their services, the final mix will be affected by their preferences. The efforts of such managers to increase their level of satisfaction produce the phenomenon in which customers of one (profitable) activity subsidize customers of another (loss-making) service. Indeed, this method of financing activities in nonprofit organizations has recently been attacked on precisely these grounds; although the complaint was directed at nonprofit hospitals, it could as well have been applied to other organizations. According to the author,10

... those who control the nonprofit hospital exploit the vulnerability of consumers as potential taxpayers. They charge for hospital services at rates that allow some funds to be directed toward research, teaching, favored patients, and favored departments of the hospital; they do not advertise or fully disclose this practice; and they do not give consumers any choice in the matter ... The point is simply that the controlling group constitutes an undemocratic ruling class with respect to the hospital's minigovernmental functions ... [And] in acting as minigovernments, they employ an unjust method of taxation ... If it should happen that the latter (taxpayers) are taxed according to a plausible ideal of tax policy, the result would be fortuitous. It is far more likely that the non-profit's method of taxation will violate principles of horizontal and vertical equity.

Is it wrong for nonprofit organizations to make a profit in one service in order to subsidize another? Profits abound in our society among for-profit organizations, and these are rarely viewed as a form of unjust taxation. What, if anything, makes profits generated by a nonprofit organization different?

First, of course, is the fact that the organizations concerned hold themselves out as nonprofit; this representation may make those who provide donations or pay its fees more trusting in their approach. Second, the nonprofit status of the organizations affords them exemption from the income tax laws. Finally, in some instances such status also goes hand in hand with exclusive rights of various kinds, such as the right of accrediting boards to determine the status of college programs and the right of church groups to sponsor legal bingo games. All these factors help to differentiate profits in the nonprofit organization and provide a basis for raising questions about the practice of cross subsidization.

Some observers have proposed that nonprofit organizations should be required to disclose that they were cross-subsidizing their services wherever that occurred, in order to control such practices. The difficulties in implementing such a policy, however, should not be minimized. Many products at a hospital or a university are jointly produced, so the calculation of their separate costs entails some unavoidably arbitrary allocations. At best, the
process would be costly; at worst, meaningless to the average consumer and subject to extensive litigation. The disclosure problem is compounded by the fact that the fields of health and education consist of many small units, each of which would have to go through an elaborate cost analysis; in this respect, they stand in contrast to public utilities, which are much more highly concentrated and can therefore analyze their financial performance without prohibitive expense. Besides, it is not at all clear that students would change colleges or patients hospitals, upon learning that the colleges or hospitals were earning a profit from the services they provided. In any event, the important point in the present context is the difference between nonprofit organizations on the one hand and government agencies or for-profit firms on the other, when making decisions on the mix of those services and the prices to be charged. In the case of the nonprofit organizations, the decisions are affected heavily by the preferences of the institutions that deliver the services, while the political process and the incentive of maximizing profits take lesser roles.

SOME CRITICAL IMPLICATIONS

What light does this analysis throw on the likely impact of reducing government subsidies and increasing the public's dependence on nonprofit organizations and voluntary contributions? In general, we have observed that the nonprofit organization chooses its mix of activities differently from a for-profit organization or a government agency. Variations among the organizations within the nonprofit sector make it difficult to anticipate their behavior. However, certain generalizations are possible.

The for-profit entity presumably seeks to maximize profit, while the government agency presumably responds in some degree to the mandates of its political masters. In this respect, the activities of both for-profit organizations and government agencies are governed to some extent by criteria that relate to social utility: The activities of the for-profit organization must survive the test of the marketplace, while those of the government agency must survive the scrutiny of the political structure. The activities of the nonprofit organization, however, are determined by criteria and processes that are more ambiguous in their results, and the social utility of the outcome depends upon the “validity” of their manager’s preferences.

If government reduces the subsidies that it gives organizations which provide public services, such as education or health, some activities will decline but others will, for the same reason, expand. Those organizations that prospective donors prefer will have the better chance of surviving, although the favored organizations may sometimes choose to deliver services different from the donor’s intent or expectation.

Perhaps as significantly, many organizations will seek out activities that are profitable in order to finance those that are not. The organizations that find such profitable activities will thrive and cross subsidization will become even more important in the
future than it has been in the past. The temptation and search for profitable activities has arisen in a particularly controversial way in the academic world, in connection with biomedical research. Attracted by the possibility of large profits, Harvard University considered creating a genetics engineering company but ultimately abandoned the idea, fearing that the commercial motive would run counter to its traditional academic role; on the other hand, Massachusetts General Hospital, which is affiliated with the Harvard Medical School, accepted $50 million from a German chemical firm in return for priority access. While the president of Stanford University has expressed concern about potential conflicts of interest, Stanford recently entered into an agreement with several private firms to build a new biotechnical research center.12

An important limiting factor, from both the organization's and society's point of view, is the entrepreneurship and risk capital that new ventures require. When the supply of entrepreneurial resources is limited, the optimum allocation between profitable production and loss-making consumption activities becomes a crucial issue. If the organization does “too much” of the former, it has insufficient entrepreneurship left over for the latter; but if it does “too little” it cannot afford the latter at all. As nonprofit organizations face the task of delivering more services, some may find themselves devoting so much effort and energy to their profit-making activities as to alter their fundamental character. Paradoxically, they may operate more like profit-maximizing firms even as they are expected to take on more governmental functions.

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**APPENDIX** This appendix derives and compares the equilibrium outputs and responses to revenue changes of a multiproduct nonprofit and profit-maximizing firm. The organization must choose its product mix, i.e., the output level of each activity, where decisions about quality and technology are all considered part of the product mix.

**The Model** The nonprofit manager has preferences regarding his product mix, which I take as given in this model. He also must cover all his costs, from variable revenues (i.e., direct revenues from product sales, donations, and government subsidies that are contingent upon output) or fixed revenues (which accrue in fixed amounts regardless of current output decisions). I assume that price, donations, and government funding per unit are all exogenously given, as are technology and factor prices which determine the cost function. Thus, the manager cannot appropriate the revenues for himself in the form of higher remuneration, which would constitute a disguised distribution of monetary profits. He can, however,
increase his nonpecuniary benefits through his choice of output mix, a form of organizational consumption in which he is less likely to be challenged. Consequently, he chooses the product mix that maximizes his utility function \( U(Q_1, Q_2) \) subject to the zero-profit constraint

\[
(P_1 + D_1 + G_1) Q_1 + (P_2 + D_2 + G_2) Q_2 + FR - C(Q_1) - C(Q_2) = 0,
\]

where

- \( Q_1, Q_2 \) denote quantities of the two products,
- \( C(Q_i) \) denotes the cost function, assumed to be the same for both products for notational simplicity,
- \( P_i \) denotes the price per unit, paid by direct recipients,
- \( D_i \) denotes donation per unit,
- \( G_i \) denotes government funding per unit,
- \( FR \) denotes total "fixed revenue," independent of \( Q \),
- \( C_i > 0, C_{ii} > 0, C_{ii} = 0 \),
- \( U_i \geq 0 \) but > 0 for at least one product,
- \( U_{ii} \leq 0 \) and \( U_{ii} = 0 \).

We proceed by setting up the Lagrangian:

\[
L = U(Q_1, Q_2) + \lambda \left[ (P_1 + D_1 + G_1) Q_1 + (P_2 + D_2 + G_2) Q_2 + FR - C(Q_1) - C(Q_2) \right]. \tag{A1}
\]

Our first-order conditions are

\[
L_1 = U_1 + \lambda \left[ (P_1 + D_1 + G_1) - C_1 \right] = 0, \tag{A2}
\]

\[
L_2 = U_2 + \lambda \left[ (P_2 + D_2 + G_2) - C_2 \right] = 0, \tag{A3}
\]

\[
L_\lambda = (P_1 + D_1 + G_1) Q_1 + (P_2 + D_2 + G_2) Q_2 + FR - C(Q_1) - C(Q_2) = 0. \tag{A4}
\]

Rearranging terms and dividing (A2) by (A3) we obtain the familiar condition that the relative marginal utilities of \( Q_1 \) and \( Q_2 \) equal their relative net marginal costs.

\[
\frac{U_1}{U_2} = \frac{C_1 - (P_1 + D_1 + G_1)}{C_2 - (P_2 + D_2 + G_2)}. \tag{A5}
\]

The values of \( Q_1 \) and \( Q_2 \) that maximize \( U \), denoted \( Q_1^* \) and \( Q_2^* \), can be obtained from eqs. (A2)–(A5). (The signs in the second derivatives assure that we have indeed achieved a maximum, not a minimum.)

This contrasts with the problem for the profit-maximizing firm, which is to maximize

\[
\tilde{L} = (P_1 + D_1 + G_1) Q_1 + (P_2 + D_2 + G_2) Q_2 + FR - C(Q_1) - C(Q_2). \tag{A6}
\]

The well-known first-order conditions are
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\[ L_1 = P_1 + D_1 + G_1 - C_1 = 0, \quad (A7) \]
\[ L_2 = P_2 + D_2 + G_2 - C_2 = 0, \quad (A8) \]

i.e., in equilibrium, marginal revenue equals marginal cost. The values of \( Q_1, Q_2 \) that maximize profits are denoted by \( \overline{Q}_1, \overline{Q}_2 \).

By comparing eqs. (A2) and (A3) with eqs. (A7) and (A8) we observe the following:

1. If \( U_i = 0 \), then \( Q_i^* = \overline{Q}_i \). The nonprofit and profit maximizer both choose the same quantity, the point of "maximum potential profits," for product \( i \). I call such activities "pure production." If \( C(Q_i)/Q_i < C_i \) at this point, the nonprofit makes a profit on product \( i \), despite its nonprofit appellation.

2. If \( U_i > 0 \), \( Q_i^* > \overline{Q}_i \). The nonprofit produces more than the profit maximizer because its manager derives positive utility from \( Q_i \). It is also possible that \( C(Q_i)/Q_i > (P_i + D_i + G_i) \) at this point, that is, the nonprofit makes a loss on product \( i \). I call such utility-yielding activities "implicit organizational consumption."

3. If \( U_i < 0 \), \( Q_i^* < \overline{Q}_i \). The nonprofit produces less than the profit maximizer. Moreover, if \( U_i < 0 \) everywhere, \( Q_i^* > 0 \) only if \( C(Q_i)/Q_i < (P_i + D_i + G_i) \), that is, only if product \( i \) is profitable. Such activities, which I call "joint production-negative consumption," may also have a backward-bending supply curve and are therefore particularly interesting when we analyze the nonprofit response to revenue changes below.

In sum, the organization uses its profits from its production activities to finance its consumption activities—hence cross-subsidization.

Now, if \( (P_i + D_i + G_i) \) is an accurate representation of society's marginal valuation of these goods, production at the profit-maximizing point is efficient, so nonprofit production would be inefficient. Specifically, joint production-negative consumption activities would be underproduced and implicit consumption goods overproduced. Nonprofits, however, may operate precisely in those fields where positive externalities exist, where \( (P_i + D_i + G_i) \) understates the true social marginal benefit. In that case, the profit-maximizing level of output is too low, and a nonprofit manager with a preference for such a good would move us closer toward efficiency. But for nonprofit behavior to be optimal, the manager must be endowed with exactly the "right" set of preferences regarding the marginal values of these goods—hardly a likely eventuality. And the level of production-negative consumption activities would remain inefficiently low (unless these are a source of negative externalities).

Comparative Statistics

I now investigate the effects on \( Q_1 \) and \( Q_2 \) of an increase in \( FR \) or \( P \). This is shown to vary, depending on whether \( U_i \geq 0 \) or \( U_i \leq 0 \), and to be generally different from the profit-maximizing response except in cases where \( U_i = 0 \). The major results appear in boxes, below.

Income effects. I proceed by total differentiation of eq. (A2), (A3),
and (A4), solving the resulting equations for $dQ_1$ by Cramer's rule. If we hold $P_1$ and $P_2$ constant and vary FR,

$$\frac{dQ_1}{dFR} = - \frac{D_{31}}{D},$$

where

$$D = \begin{vmatrix} (U_{11} - \lambda C_{11}) & 0 & (P_1 + D_1 + G_1 - C_1) \\ 0 & (U_{22} - C_{22}) & (P_2 + D_2 + G_2 - C_2) \\ (P_1 + D_1 + G_1 - C_1) & (P_2 + D_2 + G_2 - C_2) & 0 \end{vmatrix}$$

and

$$D_{31} = (U_{22} - \lambda C_{22})(P_1 + D_1 + G_1 - C_1).$$

Since $D > 0$ when the second-order conditions for maximization are satisfied, the sign of $dQ_1/dFR$ depends on the sign of $(-D_{31})$. Since $U_{22}$ is assumed to be $< 0$ and $C_{22} > 0$, the first term on the right is $< 0$. By eq. (A2), the second term is greater than if $U_1 < 0$, and vice versa.

$$\therefore dQ_1/dFR > 0 \text{ if } U_1 > 0, \text{ i.e., for "consumption" goods,}$$

$$< 0 \text{ if } U_1 < 0, \text{ i.e., for "production-negative consumption" goods,}$$

$$= 0 \text{ if } U_1 = 0, \text{ i.e., for "pure production"; this is also the case for the profit-maximizing firm.}$$

The fact that $dQ_1/dFR = 0$ for a profit-maximizing firm, but not for a nonprofit helps explain why people donate to the latter but not the former. Donors are often unable to monitor the quantity and quality of the organization's output. This means that donations cannot be made contingent on output; hence they constitute FR. Now, we have shown that $dQ_1/dFR = 0$ for a profit maximizer but $> 0$ for a nonprofit with $U_1 > 0$, because of the positive income effect. Thus, people who cannot monitor and think their donation may be viewed as FR may contribute to a nonprofit but not to a profit-making firm, since their donation will alter (some) output in the former but not the latter.

**Price effects.** To find $dQ_1/dP_1$, we hold $P_2$ and FR constant, so that

$$\frac{dQ_1}{dP_1} = - \frac{D_{11}}{D} \frac{Q_1 D_{31}}{D},$$

where $D_{11} = -(P_2 + D_2 + G_2)$. The second term on the right is the income effect, with the same sign as $dQ_1/dFR$ and, hence, as $U_1$. The first term on the right is analogous to the substitution effect. Since $D_{11}$ is always negative, $-D_{11}/D$ is always positive.
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\[ : \frac{dQ}{dP_1} > 0 \text{ if } U_1 = 0, \text{ due to the substitution effect}, \]  
\[ : \frac{dQ}{dP_1} > 0 \text{ if } U_1 > 0, \text{ due to the income plus substitution} \]
\[ \text{effects}. \]

However, if \( U_1 < 0 \), the income and substitution effects move in opposite directions, so \( \frac{dQ}{dP_1} \) is greater than, less than, or equal to 0 depending on which is stronger. If the income effect is stronger, \( Q_1 \) will have a backward-bending supply curve so higher revenues will, perversely, cause it to produce less, not more.

Finally, we investigate the sign of \( \frac{dQ_1}{dP_2} \). Holding \( P_1 \) and \( FR \) constant,

\[ \frac{dQ_1}{dP_2} = \frac{-D_{21}}{D} \Delta \frac{D_{31}Q_2}{D} \Delta \frac{dP_2}{dP_2^1}, \]  
(A13)

where \( D_{21} = (P_2 + D_2 + G_2 - C_2)(P_1 + D_1 + G_1 - C_1) \). The second term on the right, related to the income effect, has the same sign as \( \frac{dQ}{dFR} \) and \( U_1 \). As for the first term (or cross-substitution effect), we have the following matrix of signs for \( -D_{21} \):

<table>
<thead>
<tr>
<th>( U_1 &lt; 0 )</th>
<th>( U_1 &gt; 0 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( &lt;0 )</td>
<td>0</td>
</tr>
<tr>
<td>( =0 )</td>
<td>0</td>
</tr>
<tr>
<td>( &gt;0 )</td>
<td>&gt;0</td>
</tr>
</tbody>
</table>

The combination of income and cross-substitution effects yields the following matrix of signs for \( \frac{dQ_1}{dP_2} \):

<table>
<thead>
<tr>
<th>( U_1 &lt; 0 )</th>
<th>( U_1 &gt; 0 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( &lt;0 )</td>
<td>0</td>
</tr>
<tr>
<td>( =0 )</td>
<td>0</td>
</tr>
<tr>
<td>( &gt;0 )</td>
<td>( \equiv ) 0</td>
</tr>
</tbody>
</table>

The prevalence of nonzero elasticities of supply means that (unlike the profit-maximizing situation) the output of a good may change even if its own costs and demand are unchanged and \( U_i, C_{ii} \) are zero, adding to the unpredictability of nonprofit behavior.

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NOTES 1. For studies that focus on particular organizations or industries see Baumol, W., and Bowen, W., Performing Arts—The Economic Dilemma (New York: Twentieth Century Fund, 1966); Hansmann, H., "Non-

2. James, E., "Product Mix and Cost Disaggregation: A Reinterpretation of the Economics of Higher Education," *Journal of Human Resources, 13* (Spring 1978): 157–186; James, E., and Neuberger, E., "The University Department as a Non-Profit Labor Cooperative," *Public Choice, 1981*. In 1966–1967, undergraduate students in the lower division of private universities in the United States were more than paying their own way while upper-division students had just passed the break-even point; on the other hand, the cost for graduate students exceeded tuition by over $1500 per year. In the same period at public universities, undergraduate students were paying a much higher percentage of their real costs than were graduate students.


5. "How Ballet Helps Foot the Bill for Opera," *New York Times*, June 10, 1979, p. D1, 29. However, there are certain exceptions to this rule. "The exception is something that will make a strong artistic impact for the Met—there we'd be prepared to take a greater risk."


7. As one case in point: *The Omaha Sun*, in 1972, ran a Pulitzer Prize-winning article on Boys Town, maintaining that it had raised "more money than it knows what to do with." Its annual income of $8 million from investments amply covered operating expenses, yet it continued to collect more than twice this amount from annual contributions. Shortly after this "unfavorable" publicity, a new director was appointed for Boys Town, and a large spending program began, including long-term donations to Catholic University and Stanford University, construction of a Center for the Study of Youth Development and an Institute for Learning Disorders in Children. By 1976, a million dollar deficit had been achieved by the highly regarded new manager. See *Newsweek*, October 25, 1976, p. 18.

8. For a discussion of the chronic impoverishment of nonprofit organizations in the performing arts, an impoverishment which they attribute to a productivity lag, see Baumol and Bowen, *Performing Arts*. 
9. The prevalence of very inelastic and even backward-bending supply curves has also been noted with respect to certain hospital activities. See Pauly and Redisch, "The Not-for-Profit Hospital as a Physician's Cooperative."

10. Clark, "Does the Nonprofit Form Fit the Hospital Industry?", pp. 1439, 1468.

11. For a discussion of some of these problems with respect to calculations of educational costs, see James, "Product Mix and Cost Disaggregation."