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What Can the Public Sector
Contribute to Growth?

Holger Bonus

Serie B - Nr. 11

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Holger Bonus:

What Can the Public Sector Contribute to Growth?

April 20, 1980

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What Can the Public Sector Contribute to Growth?*

Holger Bonus
Universität Konstanz

April 20, 1980

1. INTRODUCTION

When I was offered the opportunity to talk on the above subject before you, my first thought was to decline. I am convinced that the public sector has grown far too large, and that government is tampering around with economic matters far too much: how could the public sector possibly contribute to growth in any other way than by simply leaving the economy somewhat more alone?

However, it is difficult to see just where the government should withdraw. Even amidst Federal election campaigns this year, West German opposition parties squirm when confronted with such questions. Obviously there is a lot to do; public funds are not exactly thrown away, and the programs put forward by the government to stimulate growth are not entirely nonsense. And yet something is basically wrong. By now, the public sector (Social Security included) accounts for roughly one-half of West Germany's GNP; and public debt, which used to be quite moderate throughout the fifties and sixties in West Germany, has exploded since then. Nor can a fundamental shift in this development be detected. We are certainly heading for trouble.

The hypothesis I shall propose in this paper is that the public sector is itself creating much of the trouble it is so busy to cope with. Basically designed to avoid the various prisoners' dilemmas inherent in the public-goods problem, modern governments of the Western hemisphere tend to aggravate this problem where it is present; and even worse, they spread it into

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the domain of private goods. The private sector thus becomes more "public" in the sense that incentives are set false, and decisions on the micro-level result that are adverse to economic welfare. Governments naturally feel obliged to intervene, yet in so doing only set even more false incentives. Individuals get entangled more intricately within prisoners' dilemmas, and more regulation is called for. In other words, governments must intervene more heavily because they gradually transform private goods into public goods. Full-fledged market economies absorb more and more elements of coercion, thereby losing much of their original spontaneity and flexibility. Their capacity to grow is severely impaired. Insofar as that might not be a matter of grave concern in itself, I hasten to add that this is but a symptom of economies that get crippled and cannot move very freely any more¹⁾.

2. PUBLICNESS²⁾

The notion of a polar public good as one that requires governmental action is well-established³⁾. When supply is identical to all, then the marginal willingness to pay (WTP) varies markedly from one individual to the other. It pays for everyone to distort one's own preferences toward the public good; and as a consequence, the collective signal to produce such good is distorted. Highly non-optimal levels are effectively supplied. Private and social evaluations diverge: to the individual it is rational to minimize his own payment; but it would be the common interest of all to contribute each according to his subjective WTP. Thus everybody is caught in a prisoners' dilemma out of which there appears to be just one escape: the government is to provide a supply that the market fails to deliver -- possibly just at that common level as everyone would honestly demand and pay for, if only honesty were rational on the micro-level. Let me define as publicness

¹⁾For a detailed account with respect to imaginative entrepreneurship, see Klein (1977).

²⁾See Bonus (1978, 1980).

³⁾e.g., Samuelson (1954, 1955, 1969), Musgrave (1959).

the property of economic activities to raise the public-goods problem just described for the case of polar public goods; publicness thus is present whenever private and social evaluations diverge such that private incentives induce socially unwarranted results. It is clear, then, that publicness constitutes the raison d'être for the public sector.

It appears obvious (but is not always true) that polar public goods display publicness so defined. Furthermore, as not all public goods are of the polar type, not all public goods are of the same publicness. Following Samuelson's (1969, p. 108) definition of a public good as one with the property of involving consumption externality, the publicness of public goods varies from case to case, their degree of publicness depending on the relative significance of externality.

Externality may be internalized⁴⁾ by equating social and private marginal cost (or benefit); and insofar as internalization is effective, public goods lose publicness. They may in fact become fully "private" in the sense that the public-goods problem vanishes completely, even though physically nothing may have changed. This may also happen when the good in question is a polar public one -- notably when not too many persons are involved⁵⁾.

Unfortunately, however, things may also move the other way around. Internalized externality may be re-externalized such that the publicness of the public good is increased. Thus publicness is not a physical attribute to certain activities, but rather something that does escape proper internalization. This may in part be due to stubborn physical features, but quite as well it may result from institutional failure to recognize an existing potential for internalization⁶⁾.

⁴⁾ See, e.g., Buchanan and Stubblebine (1962).

⁵⁾ When there are just two persons, then a polar public good poses not much of a problem to them. See Coase (1960).

⁶⁾ Interestingly enough, one of the most-quoted polar public goods, the lighthouse, was marketed in the past; see Coase (1974), Peacock (1979). Goldin (1977) even claims that there is no public good at all, but only our willingness to grant free access to some goods.

3. PRIVATENESS

Private goods lack direct externality. A private economic activity directly affects just the agent himself: as an argument, it enters but his own utility (or production) function. Since no direct externality is present, it is possible for one individual to expand his own activity level up to the point where his marginal willingness to pay equates the price which in turn may reflect marginal cost. In that case, private marginal costs properly account for social marginal costs, and the same is true for private and social marginal benefits. Hence the incentives are correct and everybody may act as he cares because there just isn't a need for the public to interfere, as long as distributional matters are left aside.

Define as privateness, then, the property of some economic activity not to raise the public-goods problem. Privateness thus means that private and social evaluations properly coincide.

Is it true that private goods always display privateness? By no means! Consider an ordinary thief⁷⁾. As he runs away with a stolen loaf of bread, his private benefit-cost calculus certainly is at variance with its social counterpiece. The public-goods problem is right there; publicness is involved.

Now suppose that stealing gets really common throughout the population of some quarters (a slum, say). Then it becomes a necessity to steal for a living, as one must make up for the losses suffered from others. Everybody is caught in a severe prisoners' dilemma. It is of no use if he quits stealing as long as everybody else goes on; to quit would rather strip him of all means. Thus while all suffer, no one is in a position to bring about a change. There is virtually no privateness left, even though physically all commodities remain as they were before. Only common action can resolve the dilemma; and this may be brought about by religion (say), or through law and order, i.e., the public sector.

⁷⁾ See Ch. 11, "The Economic Aspects of Crime", McKenzie and Tullock (1975).

Thus privateness, the absence of the public-goods problem, is itself a public good. Continuous public effort is required to maintain such public good in due supply⁸⁾. privateness, far from being just a physical attribute to some specific goods, is quite precarious and will dissipate when not carefully restored at any moment.

4. DIRECT EXTERNALITY: THE PIANIST

As externality is in the core of publicness, a closer look might pay. Let x_g^i be the g -th activity level performed by the i -th person, factors being entered as negative activities ($i=1, \dots, s; g=1, \dots, n$). $X_g = \sum_i x_g^i$ is then the g -th macroeconomic activity level. Let furthermore x_r^i, X_r denote the activity levels of some strictly private numéraire commodity, such that $n + 1$ commodities are considered. Now suppose that in principle all n activity levels of all s individuals enter every single utility function⁹⁾ in a direct way, i.e., without having been bought (or sold), or given voluntarily away free of charge:

$$(1) \quad u^i = u^i(x_1^1, \dots, x_n^1; \dots; x_1^i, \dots, x_n^i; \dots; x_1^s, \dots, x_n^s; x_r^i) .$$

Denote the marginal rate of substitution (MRS) between g -th and r -th activity levels by

$$(2) \quad g_{ij} \equiv \frac{\partial u^i / \partial x_g^j}{\partial u^i / \partial x_r^i} \quad (i, j = 1, \dots, s) .$$

Then for any g -th activity an $(s \times s)$ direct interdependence matrix \underline{G} may be written down:

$$(3) \quad \underline{G} = \begin{bmatrix} g_{11} & g_{12} & \dots & g_{1s} \\ g_{21} & g_{22} & \dots & g_{2s} \\ \vdots & \vdots & & \vdots \\ g_{s1} & g_{s2} & \dots & g_{ss} \end{bmatrix} ,$$

8) Needless to say, the publicness of the public good "privateness" is subject to some internalization. See, e.g., Ch.29, "Police, Courts, and Laws - On the Market", Friedman (1978).

9) Sen (1969), Evans (1970).

where an underlined symbol denotes a matrix (or vector), and g_{ij} represents the i -th individual's marginal willingness to pay in return for the j -th individual's g -th activity level. Diagonal elements are of course positive¹⁰⁾. Negative off-diagonal terms indicate (marginal) negative externality, positive off-diagonal values (marginal) positive externality. The j -th individual appears in the j -th column as the sender of externality, and in the j -th row as receiver. Private goods, then, exhibit diagonal interdependence matrices, public goods nondiagonal ones¹¹⁾.

To see the peculiar character of externality, consider a (j -th) pianist as he plays away at the level x_g^j . Since the music can be heard in the surrounding, one would suppose that off-diagonal elements in the j -th column of \underline{G} are nonzero. But that is not necessarily so. If nobody is around, or his neighbors are indifferent or deaf, then no externality is present. Suppose, however, the public likes his play and is gathering around his window. Then positive off-diagonal values turn up in the j -th column of \underline{G} . Obviously, some publicness occurs because the pianist will simply equate g_{jj} to his own marginal cost and quit thereafter, while the marginal social value of his play (i.e., $\sum_i g_{ij}$) would warrant further action.

Now let the pianist pull down his window and invite bystanders in, charging each an amount of y_j per minute, say. Provided that only insiders can hear him, all publicness has gone. Those who did not pay won't listen any more. Those consuming music have paid for it on the market; and now that same music enters the i -th individual's utility function no longer as an externality $\partial u^i / \partial x_g^j$, but as his own (listening) activity $\partial u^i / \partial x_\ell^i$. Isn't the problem left that marginal WTP's differ as everybody is exposed to the sound the same way? No, because each visitor stays in just so long as to equal his own WTP to y_j per minute, or otherwise chooses to visit another pianist who charges less.

Thus piano playing has turned a private good with a diagonal interdependence matrix. The j -th player finds marginal opportunity cost lowered by the proceeds

¹⁰⁾ Traditional "polar" goods would be an exception, as just one single activity level (that of the government, say) is defined. See Bonus (1980) for types of public goods with regard to the direct interdependence matrix.

¹¹⁾ Evans (1970).

of ticket sales and plays somewhat longer; or he might even turn professional, reversing the sign of x_g^j .

But how can the privateness of concerts be itself a public good to be secured through public authorities? Suppose some persons refuse to pay and won't leave either. Then \underline{G} picks up some positive off-diagonal elements: publicness enters the picture. Those who did pay before will abstain; and the professional players will quit, the amateurs drastically reduce activity levels. Everyone suffers, no one can change things for better; the prisoners' dilemma is felt. As a result, Pareto-optimal activity levels cannot be sustained.

Is privateness, then, restricted to those cases where the interdependence matrix can be made diagonal? Not quite. Denote by $\hat{G} = [\hat{g}_{ij}]$ the matrix evaluated within a Pareto-optimum. Then all off-diagonal elements of \hat{G} are Pareto-irrelevant¹²⁾. If $\sum_{i \neq j} \hat{g}_{ij} = 0$, then publicness is absent: social and private (marginal) benefit-cost ratios with regard to x_g^j yield both unity. Divergences between private and social evaluations do occur, however, when $\sum_{i \neq j} \hat{g}_{ij} \neq 0$; and they are the graver the larger $\sum_{i \neq j} \hat{g}_{ij}$ is compared to \hat{g}_{jj} . Thus the ratio of both indicates the (direct) degree of publicness¹³⁾ of x_g^j ; only when that ratio is zero, then full privateness is present. In that case the public sector may be restricted to secure the institutional setting required to preserve privateness. When the degree of publicness is of high absolute value, on the other hand, this will cause distortions severe enough to look for help from the public sector. Such help should not, of course, further increase the existing degree of publicness but should lower it by proper internalization.

¹²⁾ See Buchanan and Stubblebine (1962).

¹³⁾ For a more detailed elaboration, see Bonus (1980). When the (direct) degree of publicness is standardized such that it is defined over the open interval between -1 and +1 (negative externality yielding negative values and positive externality positive ones), then the degree of publicness is given by $(\sum_{i \neq j} \hat{g}_{ij}) / (\sum_i \hat{g}_{ij})$ if $\sum_{i \neq j} \hat{g}_{ij} \geq 0$, and by $(\sum_{i \neq j} \hat{g}_{ij}) / \hat{g}_{jj}$ if $\sum_{i \neq j} \hat{g}_{ij} < 0$. Note that Pareto-irrelevant externality does matter!

5. INDIRECT EXTERNALITY: THE EGALITARIAN ¹⁴⁾

In order to understand better one of the major disturbances caused by improper conduct of the public sector, it is necessary to formally derive a kind of externality that we did verbally mention before, one that will induce serious publicness of purely private goods. The public-goods problem may arise even when the direct interdependence matrix is strictly diagonal. To keep things apart, let me assume that \hat{G} (as evaluated at Pareto-optimal activity levels) is indeed diagonal and remains so: no direct externality whatsoever is present. Consider then equilibrium values x_g^{*j} that are realized when the j -th person's utility is maximized. The i -th person's indirect utility function ¹⁵⁾ u^{*i} -- dual to his direct utility function u^i -- is then given by ¹⁶⁾

$$(4) \quad u^i(\underline{x}^{*i}) = u^i[\underline{x}^*(m^i, \underline{p})] \equiv u^{*i}(m^i, \underline{p}) ,$$

where \underline{x}^{*i} is the $(n+1)$ -element column vector of the quantities demanded by the i -th person, m^i his total expenditure and \underline{p} the $(n+1)$ -element price vector. Note that $\partial u^{*i} / \partial m^i = \lambda^i$ and $\partial u^{*i} / \partial p_g = -\lambda^i x_g^{*i}$, where p_g is the price of the g -th commodity ($p_r \equiv 1$) and λ^i the i -th person's marginal utility of income.

Now suppose some egalitarian succeeds in convincing parliamentarians that marginal costs of the g -th activity should really be shared by all because it wouldn't be just to let individual activity levels x_g^j depend on personal incomes m^j . Let the share to be borne by individuals be the same for all persons such that each pays p_g/s when one unit is consumed by someone. Then the indirect utility function of the i -th person becomes

$$(5) \quad u^{*i} = u^{*i} [m^i(x_g^1, \dots, x_g^s); \underline{p}] .$$

¹⁴⁾ Bonus (1980).

¹⁵⁾ See, e.g., Houthakker (1960), Samuelson (1965).

¹⁶⁾ Factors of production (negative activities) are disregarded in this section for convenience, and some positive amount m^i is introduced that is spent on purchases of the $n+1$ goods at prices \underline{p} .

Disposable income m^i is now affected by foreign activities x_g^j ($j \neq i$), and the maximum attainable utility level u^{*i} is made subject to decisions beyond control of the i -th person.

To some degree, this is of course always true, as foreign activities alter shadow prices and hence m^i as well as p . Such "normal" interdependencies are known as pecuniary externalities¹⁷⁾ and properly disregarded as they simply reflect the market mechanism. In the case just described, however, nonmarket interdependencies are created that are not due to shifts in shadow prices, and therefore constitute genuine externality. Define as indirect externality, then, any $\partial u^{*i} / \partial x_g^j$ ($i \neq j$) other than such as caused by shifting shadow prices. Assuming for simplicity that shadow prices are not affected, positive indirect externality occurs when $\partial u^{*i} / \partial x_g^j > 0$ and negative indirect externality, when $\partial u^{*i} / \partial x_g^j < 0$ ($i \neq j$).

From (5) one derives $\partial u^{*i} / \partial x_g^i = -\lambda^i (\partial m^i / \partial x_g^i)$, where $\partial m^i / \partial x_g^i < 0$ is the amount that the i -th person must give away per unit of his own activity x_g^i ; $\partial u^{*i} / \partial x_r^i = \lambda^i$, and $\partial u^{*i} / \partial x_g^j = \lambda^i (\partial m^i / \partial x_g^j)$ if $i \neq j$. In the case just considered, $\partial m^i / \partial x_g^i = -(1/s)p_g$ and $\partial m^i / \partial x_g^j = (1/s)p_g$ if $i \neq j$.

In analogy to \underline{G} , an $(s \times s)$ indirect interdependence matrix \underline{G}^* may be constructed. The equilibrium marginal rates of substitution are given by

$$(6) \quad g_{ij}^* \equiv \frac{\partial u^{*i} / \partial x_g^j}{\partial u^{*i} / \partial x_r^i},$$

and thus

$$(7) \quad \underline{G}^* = \begin{bmatrix} g_{11}^* & g_{12}^* & \cdots & g_{1s}^* \\ g_{21}^* & g_{22}^* & \cdots & g_{2s}^* \\ \vdots & \vdots & & \vdots \\ g_{s1}^* & g_{s2}^* & \cdots & g_{ss}^* \end{bmatrix}.$$

¹⁷⁾Viner (1931).

The normal market case is then simply

$$(8) \quad \underline{\hat{G}}^* = p_g \begin{bmatrix} 1 & 0 & \dots & 0 \\ 0 & 1 & \dots & 0 \\ \vdots & \vdots & & \vdots \\ 0 & 0 & \dots & 1 \end{bmatrix} = \underline{\hat{G}},$$

where $\underline{\hat{G}}$ is the direct interdependence matrix evaluated at Pareto-optimal levels. The egalitarian changes this into

$$(9) \quad \underline{\hat{G}}^* = \frac{1}{s} p_g \begin{bmatrix} +1 & -1 & \dots & -1 \\ -1 & +1 & \dots & -1 \\ \vdots & \vdots & & \vdots \\ -1 & -1 & \dots & +1 \end{bmatrix} \neq \underline{\hat{G}}.$$

How should (9) reflect publicness? Consider first (8), suppose that p_g reflects marginal cost, and that all other variables are at Pareto-optimal levels. The the Pareto-optimum will persist, as $\underline{\hat{G}}^*$ is equal to $\underline{\hat{G}}$ which in turn is diagonal by assumption. There is no incentive, with regard to the g -th activity, to violate optimality conditions: each person's own activity affects just his own disposable income and therefore just his own attainable utility. He will look after the optimality conditions himself because he is the one who suffers if he doesn't watch out carefully.

The egalitarian has changed everything. In (9), $\underline{\hat{G}}^*$ has dramatically shifted away from $\underline{\hat{G}}$; equilibrium values are far from Pareto-optimal. More specifically, the j -th individual has expanded x_g^j up to the level where $g_{jj} = p_g/s$; his MRS accounts for just a small fraction of marginal cost, which will generally mean¹⁸⁾ that the activity level is blown up beyond reasonable limits.

18) As nonmarginal changes, possibly for many activities at a time, may be involved in the comparison between $\underline{\hat{G}}^*$ and $\underline{\hat{G}}$, some reservation is in order. See Baumol and Oates (1975, pp. 90-101).

How come? Virtually all marginal cost of his own consumption, namely $(s-1)/s$ of it, is spread over the rest of the population and is not felt by the agent himself.

Unfortunately to the j -th person, however, he feels very much the impact from consumption of his fellow agents who spread, in turn, virtually all marginal cost of their own consumption over the community. Suppose for a moment that Pareto-optimal activity levels \hat{x}_g^j were somehow maintained. Then the average agent would have to pay just as much as he had to before the egalitarian intervened. But he would now find himself out of control, because he would no longer be in a position to determine his own contribution by choosing his activity level. Given this, he will acknowledge that costs are exogenous to him, and that consumption is virtually free of charge. He will act accordingly and expand his activity level -- only to find himself trapped in the worst of all possible situations. He pays much more than he did before, and in addition he cannot control expenditure any more. Obviously the community is being held within a prisoners' dilemma. There is a lot of publicness around; but this time, such publicness is created by the public sector itself, who was inspired by egalitarian thought.

As in case of direct externality, the (indirect) degree of publicness may be derived from \hat{G}^* . It is zero for (8) and negative for (9) where negative indirect externality is present¹⁹⁾. Its absolute value increases as s becomes large in (9) : the more agents, the more serious the public-goods problem.

The concept of indirect externality may also be developed for prices that are subject to manipulation; we shall not pursue this matter here²⁰⁾. Again, publicness of pure private goods may be brought into existence through ill-advised government intervention. Rent-control is a point in case.

¹⁹⁾ See Bonus (1980) for details. When the (indirect) degree of publicness is standardized as stated in footnote 19 above, each column of (9) exhibits a degree of publicness of $-1 + 1/s$ (which approaches the highest possible value as s grows). The disturbance is very grave.

²⁰⁾ Lerner's (1933/34) monopoly degree can be shown to be the (indirect) degree of publicness of the monopolist's activity; monopoly thus gives rise to the public-goods problem. See Bonus (1980).

6. WHY A PUBLIC SECTOR?

I may now pull ends together. It is sometimes argued that public goods are by themselves the reason why we need a public sector. But this is not true; it is really publicness, the public-goods problem, what calls for some coordination of private activities, if not necessarily a public sector²¹⁾.

When publicness occurs, private diverge from social evaluations, and people are led to do things that hurt everybody. They must be induced to refrain from hurting each other, by institutions that guarantee that indeed all (not just some) will refrain. It takes common action to escape the prisoners' dilemma set up by publicness; and the public sector is one instance of how this may be arranged.

Now the publicness even of public goods is not at all a natural constant. In some happy cases it may completely dissolve through internalization, while physical attributes of the commodity itself remain unaltered. In other cases, the degree of publicness of some public good may be substantially reduced such that the public-goods problem loses much of its impact. In this sense, the publicness of public goods is man-made and may therefore as well be aggravated, as improper arrangements are drawn up to cope with direct externality.

Unfortunately, private goods are no guarantee that publicness stays out of the picture. Quite to the contrary. If we call privateness the absence of the public-goods problem, then the privateness of private goods is itself a public good. A public sector is required to preserve privateness.

Why, then, a government? To reduce the degree of publicness, of public as well as of private goods.

²¹⁾ For an intelligent statement how to do without, see Ch. 39, "The Right Side of the Public Good Trap", Friedman (1978).

7. RAISING THE ECONOMY'S DEGREE OF PUBLICNESS

This leads me right back to my starting point. What modern governments of the Western hemisphere tend increasingly to do is to inflate publicness, not reduce it. As publicness calls for public intervention, such government activity breeds further government activity; and as publicness misleads people to act against their own interest, modern governments feel urged to regulate, in growing detail, people's private action. Thus on one hand, the public sector keeps expanding and the private shrinking; on the other hand, the remaining private sector becomes less private. Needless to say, an overregulated economy will not thrive to the extent that it would if individuals were free to act as they see apt to. Even those, however, who came to abhor economic growth should be aware that this development keeps adding elements of coercion to our everyday's life.

To illustrate, two examples may suffice. The first is West Germany's education system, specifically in its higher echelons. Justified or not, the idea was that higher education was something that constituted a barrier against social mobility, as only the well-to-do could afford to let their children participate. To remove the barrier, tuition was abandoned, and funds were given by the state to those whose parents' income was below some threshold value. This -- together with a couple of similar aids to lower-income households -- turned out a disincentive to those who might otherwise have searched for better job opportunities. But consequences to the higher education system itself were devastating. Universities were flooded with students, many of them unfit for scientific work; standards were lowered to accommodate the many. While qualified workers couldn't be found on the labor market any more, the higher education system suffered congestion up to the point of breakdown. To ration scarce capacities, a numerus clausus was put to work that was linked to high-school grades. Since demand exceeded capacity the most in case of medicine, only straight-A students got a chance to study medicine even when their excellence was truly in philosophy, not science. With relative school-grades becoming utterly important, kids in class wouldn't cooperate any more with their fellow kids; unprecedented anxieties were reported to spread in schools. To alleviate hardships, students were allowed to gather

points by waiting a year or two before enrolling for medicine. Consequently, holding patterns developed which further contributed towards congestion of universities, as people would enroll for biology or chemistry, say, before switching to medicine. Even remote subjects as history of arts got swamped this way.

Of course the example is somewhat simplified as the real story is a rather complex one. But the main point is that a product sufficiently private to be handled by the market was loaded with publicness. It is easily seen that the consequences for economic growth are dark.

A second case in West Germany's medicare system, membership to which is compulsory for households whose income is below some threshold value, but voluntary to others. Again simplifying, it was felt that health is too vital a good to be subjected to rationing through prices. Thus medical treatment was basically provided free of charge to members, and the cost recovered by membership dues independent of how much treatment one member had received.

In Arrow's (1968, p. 537) wording, this method of insurance influenced the demand for services provided. Demand jumped up and so did cost, as capital-intensive medical devices became common. In addition, incentives were created for hospitals to keep a patient longer than necessary, as hospitals were constrained to charge fixed daily rates that wouldn't cover the high cost of initial treatment, but would more than cover the lower cost of later days in hospital. A cost-explosion resulted, which in turn led the government to issue tight regulations as to what doctors were to prescribe and what not. With dues exploding, the young and healthy tended to leave medicare as soon as their income exceeded the threshold value. So these values had to be steadily raised to keep people in; and there is now much talk about making the whole system compulsive in order to prevent people from leaving.

Ignoring the many complications which make the economics of education and of health highly specialized fields that I am not really familiar with, I picked the examples to demonstrate what results when indirect externality

is introduced and the degree of publicness of economic activities increased. Basically what happens is that diagonal, or nearly diagonal interdependence matrices as shown in equation (8), are transformed into something similar to the matrix shown in (9). Thus the public-goods problem is artificially raised, more government and more regulation required, and the economy's capacity to adjust to new situations impaired. What can the public sector do to contribute to growth? Fulfill its task, preserve privateness, reduce publicness.

8. CONCLUSION

Modern economies get more public all the time. One reason is that direct externality abounds as economic activities physically interact in so many ways; and techniques of internalization are not well-developed as yet. The other reason is at least as grave, and has been my central argument. Publicness is man-made to high degrees. It takes institutions specifically designed to avoid the public-goods problem, to preserve privateness. The public sector is itself such institution.

There is a strong tendency, however, for the public sector to increase the economy's degree of publicness out of egalitarian motives. Publicness thus established requires stern regulation, and that in turn tends to further increase the degree of publicness. Consequently, the public sector expands rapidly; but in addition, the private sector becomes itself severely inflicted with the public-goods problem. Both developments induce much rigidity into the economic system, cutting its spontaneity and responsiveness through elements of coercion. The public sector would have to reverse that tendency to encourage growth, but it will more likely react by adding even more publicness to the system.

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