



Some Observations on the Efficiency of Industrialization

by

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I

Increasingly manifest, in recent discussions of economic policy-making of less developed countries, has been a greater concern for problems of industrial efficiency [see, 1;2;3;4;5;6;10]. This awakening interest is stirred by the realization that the process of industrialization has all too often led to a high-cost industrial structure, and a consequent inability to compete effectively in world markets and against imports. Understandably, absorption of national energies in the task of establishing an industrial structure has frequently meant that consideration of its qualitative performance was not given sufficient weight. Equally understandably, no one should expect the creation, *ab initio*, of a smoothly functioning industrial system.

Hopefully, this changed perspective reflects a more sophisticated attitude towards industrialization, and indeed, is a necessary step for development. Elimination of inefficiency is of great potential significance as a source of economic advance. Where once emphasis on growth dominated the question of choice, in the sense that consideration of the efficiency of resource allocation was thought to be subsidiary relative to, say, raising the rate of capital formation; now it is becoming clear that proper choice is essential for rapid growth. The "intensive inefficiency margin" — crudely approximated by existing labour productivity differentials between the advanced and the developing countries — offers the prospect of substantial reward.

Concern for increased efficiency is also promoted by several other closely related and major themes coming to the fore in discussion on development. The increasing attention devoted to human-resource problems involves a more detailed study of skill-acquisition processes, manpower planning, educational strategy, and the like, and underlines the close connection between industrial efficiency

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and the quality of human input. Reconsideration of the micro-aspects of economic development leads to both closer scrutiny of operational units in the economy, *e.g.*, the individual firm and how it functions, and greater recognition of the need to relate central planning to the environment and incentive structure of the individual operational units. Finally, disenchantment with the philosophy of indiscriminate industrialization at any or all costs has emphasized the importance of more selective industrialization and the necessity for continuous monitoring of its quality.

As part of this general reassessment, developments in Pakistan have also led to substantial interest in the question of industrial efficiency. Firstly, casual observation of and familiarity with Pakistan industrialization strongly supports this theme of operational inefficiency. Differences between potential capacity and realized output, problems of phasing and materials flow, skill deficiencies, infrastructure shortcomings, under-maintenance of capital equipment, frequent breakdown and production curtailment, poor-quality control, and so forth have been the normal accompaniment of Pakistan development. It is difficult to avoid the conclusion that there is great room for improvement.

Secondly, there is a strong suspicion that development policies themselves in Pakistan have contributed to inefficiency. Partly this reflects the waste-in-haste syndrome. Mostly, as will be discussed fully later on, it is related to major and more enduring sins of policy — both of commission and omission. For instance, a chaotic structure of relative prices distorts economic calculation; the multidimensional aspects of policy objectives have too often meant that efficiency was sacrificed for some other, usually less important, goal; and the tolerance, if not active support, of noncompetitive markets, either through external protection or little concern for internal competition, has stultified the efficiency-improving force of interfirm rivalry.

Thirdly, several academic and more sophisticated studies of industrialization in Pakistan [7 ; 9 ; 12] have also suggested a highly inefficient industrial structure. Although some serious questions could be raised concerning the precision of such results, their general validity is accepted.

Finally, even without such evidence, our normal expectations would justify a closer look at this problem. There is, after all, such a thing as a learning curve, and technical knowhow and expertise are time-dependent phenomena. The condition of underdevelopment itself, in both obvious and subtle ways, bears heavily on the question of industrial efficiency.

As indicated above, a simple notion of inefficiency underlies this analysis: namely, high-cost output relative to elsewhere or what might be in Pakistan. It should prove helpful to classify potential sources of inefficiency along three lines: a) the choice of unsuitable industries; b) the use of inappropriate techniques of

production; and c) poor operating performance. Such a classificatory system, although not completely mutually exclusive and watertight, and certainly not elegant, has other homely virtues in its simplicity, operational utility and relevance for policy. But perhaps more than anything else, it grows out of the Pakistani experience and reflects Pakistan's recent and prospective economic history.

II

Choice of Industry

Historically, it seems clear that the pattern and tempo of Pakistani industrialization has been largely shaped by the joint influence of a) the availability of raw materials, which in practice led to emphasizing those industries capable of utilizing domestic raw materials; b) the physical possibility of easily producing an item, which led to those industries requiring less technical skill and less complicated production processes; and c) the assurance of a substantial domestic market, which led to the path of import substitution behind tariff barriers and import restrictions. In addition, the system of foreign-exchange licensing and generous amounts of aid tended to provide capital equipment and intermediate goods at especially attractive prices to support the growth of these industries. Thus, jute and cotton textiles, food processing, tobacco, sugar, paper, natural gas and cement led the way.

Retrospectively, it can be seen that this emergent pattern of Pakistani industrialization took place along the gradient of least resistance. Initially, it was heavily dominated by the historical circumstances of Partition — a raw-material-producing region had been severed from its traditional finishing outlets, and thus the stage was set for forward integration within the region. In its later stages, especially during the Second Five-Year Plan, it was greatly facilitated by large infusions of aid. To have done less over these years would have indeed been a pitifully inadequate response to the splendid opportunities for profit-making that the system provided; to have attempted more would have involved a considerably greater policy wrench and a greatly increased role for a state administrative apparatus which, however able, was not prepared for such added responsibilities.

But success itself undermines sustaining such a pattern of growth. There is a 'natural' limit: the list of 'simpler' industries becomes exhausted and domestic markets become saturated. Over time, establishment and growth are not enough, and critical voices are raised concerning the efficiency and the qualitative performance of the newly established industries. New factor dispositions and improvements in heretofore critically short factor availabilities create new possibilities for industrial growth. And increasingly, an inverted-pyramid structure of output — in which a wide variety of finished goods, mostly

consumer-type, rested on a narrow and, given chronic foreign-exchange stringency, inherently fragile base of imported capital and intermediate goods—was viewed with considerable alarm. Such ‘lopsidedness’, coupled with greater ‘compounding’ because of increasing interindustry interdependence, created a situation in which any interruption, for whatever reason, to the flow of what had now become critically essential imports would have very damaging repercussions. Thus, for these diverse reasons, it becomes apparent that the pattern of industrial growth needed more conscious reconsideration. The previous strategy of industrialization would likely prove to be seriously deficient as a guide for the future.

The task of choosing an appropriate pattern of industrialization is, however, made extremely difficult by the perverse impact on industry selection exerted by two rather prominent features of Pakistan’s current position. One concerns the general attitudes influencing selection. There is a strong psychological commitment to “closure”, a belief that the path of industrialization is best served by progressively and quickly creating a full range of all possible industries. Industrialization is thought of as rapid extension in all directions; like Noah and the Ark, there must be some of everything. The other relates to the presence of specific environmental disabilities, to be discussed below, which seriously distort the ability to choose properly. Both together constitute a formidable barrier.

A. The Effect of ‘Closure’

Closure dominates the strategy of industrialization for several powerful reasons. Most importantly, it has deep psychological roots. Symbolically, it represents a throwing off and dramatic rejection of a colonial past or a present dependency relationship and fascination with the allure and glitter of modernity. It is an assertion of national manhood, having ritualistic significance as a rite of passage. Objectively, it reflects distrust of reliance on traditional exports and pessimism about the potential growth of ‘light’ manufacturing exports on the one hand, and a wistful optimism about participating in the future export growth of the more dynamic and glamorous modern industries, on the other.

Several other factors also push towards closure. Overconfidence as a result of fairly successful experience so far supports ambitious efforts to create new and more complex industries without at the same time fully and thoroughly analyzing in what ways past experience is relevant and transferable to this new stage. Likewise, the successful example of advanced industrial countries tends to be misread because necessary requirements and preconditions are inadequately appreciated and all the costs not evaluated. Enthusiasm over the end-result obscures consideration of difficulties along the way. Emphasis on physical feasibility criteria at the expense of closer consideration of economic

advantage also biases decision-making toward closure. In a world of uncertainty and political dependency, moreover, the apparent prospect of self-sufficiency afforded by a complete range of industries is a powerful attraction, despite the fact that in important respects it is likely to prove illusory. Countries attempting to accelerate industrialization via a strategy of closure have often found that their sense of dependency increases since now so much of their production depends upon being able to sustain a smooth flow of critically needed imports. Finally, new sources of aid, chiefly Russia and China, reflecting their own development and ideological preconceptions (and perhaps domestic surpluses), are encouraging through their assistance programmes creation of those kinds of industries which fit in with closure.

I should like to make it clear that the desire to have, as it were, a Noah's-Ark type of industrialization is not necessarily without any intellectual foundation or even some merit, nor is it bad in other respects, especially in its psychological utility. Motivation for change is sufficiently rare and chancy that it should not be spurned where found. After all, the desire to industrialize is perhaps our nearest moral equivalent to war in terms of motivational intensity—great efforts should be made to harness towards proper objectives the national energies aroused by this goal. And, certainly, over time industrialization will obviously mean new, modern, complex and heavy industries. But the essence of the problem is precisely the time path of industrialization, and the difficulty with closure is that it seeks to accelerate the process without ensuring that essential preconditions are met at each step of the way. In its hurry to attempt too much too soon, closure is likely to mean the wrong industries at the wrong time.

From this perspective it might be just as well that the actual implementation of a strategy of a closure raises several practical difficulties. For one thing, it would exacerbate interindustry supplier-purchaser conflicts as more expensive home output would replace cheaper imports. Since cheap imports obtained on licence were an important inducement to Pakistan's industrialization so far, the establishment of high-cost domestic supplies will meet with considerable buyer opposition. It is one thing to float high prices off on an unorganized consumer market; it is something else where strong producer self-interest is involved. For another, it is quite likely that those environmental factors which distort choice (to be discussed below) will impinge with rather greater force on closure-type industries. Such industries usually impose greater and more subtle demands on their supporting environment which, in turn, is likely to be unable to fulfill precisely those kinds of requests. Then again, closure raises some acute political problems in terms of regional disparity since at a critical moment for East Pakistan, poised as it is to take the same path as West Pakistan has earlier, a drastic change in the rules of the game to its disadvantage will take place. This will not go down very well.

Two further points should be noted as final words of caution. Because of the important psychological implications of closure-type industries for aspiring nations, inevitably discussion of their creation and growth will become a national past-time. As a result, there will be an unusually high noise-to-signal ratio, and it may very well be that the purposes of psychological uplift can be served by a correspondingly high ratio of talk-to-action, thus achieving the best of both worlds. Similarly, such industries will materially affect capabilities for the production of military goods, and hence their growth will be influenced by the noneconomic considerations associated with the weights a nation attaches to security considerations. Experience would seem to indicate that such weights tend to be rather high.

B. Environmental Disabilities

1) The Structure of Relative Prices

In addition to the influence exerted by the dominance of a psychology of closure, several other specific choice-distorting considerations tend to bias selection toward inappropriate and incorrect patterns of industrial growth. First, and perhaps most important, disarray in the structure of relative prices seriously inhibits proper resource allocation. At least three distinct causes are at work to produce a pattern of relative prices ill-adapted to induce the proper choice of industries: *a*) particular key prices, such as the exchange rate and interest rates, are wholly or largely administratively determined and maintained at disequilibrium levels; *b*) noncompetitive markets have been tolerated, and even encouraged, thus raising prices in the industries concerned and impeding desirable market adjustment processes; *c*) serious distortions exist in the wage structure, reflecting too little effort to compensate for both market failure and the consequences of private preferences and institutionalized practices harmful to development. These will be discussed in turn.

Overvaluation of the exchange rate has pervasive and far-reaching effects, despite an impressive assortment of measures which seek to ward off its most damaging and obvious consequences. The indictment is long, but classical in its simplicity. Imports have been excessively cheap which encourage their uneconomic use and inhibit the creation of domestic substitutes. Or, perhaps more accurately with respect to the latter, necessitate numerous and complex ad hoc measures designed to offset such disincentive effects. Exports, despite the export bonus and other incentive schemes, have been held back by the relatively depressed price incentives. Pointing to impressive recent growth rates for exports is not a devastating riposte since it does not answer the question of what the level of exports could or should be. Satisfactory growth rates do not preclude, after all, even better performance. Especially critical in this respect may be the fringe of potential exports which would emerge once the domestic prices of foreign exchange were raised. Finally, the administrative overload

has become increasingly cumbersome, and the system increasingly difficult to manage. Literally, a labyrinthian maze of decrees, regulations, administrative rulings, appeal procedures, exceptions, and exceptions to exceptions (and all of these changing from time to time) has given rise to such complexity and arbitrariness as to make unfathomable (to supporter and critic alike) the net impact of this crazy patchwork of control.

Likewise, interest rates are distorted. Where interest rates are set by government either directly through public-financing bodies (*e.g.*, PICIC, IDBP) or implicitly through direct funds allocation to public-sector enterprises, they are usually below a market-clearing equilibrium level. Interest rates established in the private sector are strongly influenced by the high concentration of financial power and substantial interlinks among financial and industrial concerns. These close connections tend excessively to generate various kinds of captive and preferential arrangements for access to finance.

In addition, captive finance arrangements combined with the dominance of family arrangements and the managing agency form of organization undoubtedly are a major force inducing 'mini-conglomerate industrialization' or what the Economic Commission for Latin America has called 'industrialization in breadth': the setting up of many different industries but each tending to operate at suboptimal levels. Financial concentration also tends to depress rates of return to savers as evidenced, for instance, in the gentleman's agreement among commercial banks to limit rates paid for savings deposits. Apart from concentration, the limited and unorganized character of financial markets in general leads to inadequate and imperfect financial intermediation, and hence unjustified arbitrariness in the pattern of interest rate.

The consequence of noncompetitive markets in general has been to raise prices and restrict entry. This affects relative prices and resource allocation in several ways. Directly, it affects other industries whose inputs must be purchased in noncompetitive markets. Since such markets can only be maintained through sheltering firms from external competition, the easier conditions created thereby tend to cause firms to concentrate on the home market at the expense of potential exports and to adversely affect their efficiency. Finally, the excessive profit share, because of the nature of the labour market, tends to support either capital flight and luxury consumption or, in view of the limits upon expansion within a noncompetitive market, mini-conglomerate industrialization. As we have suggested, forces which tend artificially to spread industrialization into new lines are not desirable.

The third factor affecting the structure of relative prices is the distortion in wage structure associated with the failure sufficiently to compensate for aberrations resulting from externalities and from rather widely held preferences

and institutionalized practices inimical to development. With respect to externalities it is not so much that the wage structure is or is not appropriate in itself, but that the horizontal supply curve for labour is not conducive to training and health expenditure by the firm to continuously improve the quality of the work force. Because the firm can always find someone else at the going wage and can, even less than in more stable environments, little ensure that it is able to completely capture the benefits of labour-force improving expenditure, it has little incentive to extend its efforts in these directions. Moreover, there is too little attempt in Pakistan to offset, with respect to human input costs, private valuations with allowances for social cost and benefits. Thus, the cost to society from inadequate attention to education and training, insufficient provision for reasonable health and welfare standards, *etc.*, is likely to be quite large.

With respect to preferences and institutionalized practices, there is of course the well-known desire for clean occupations; clerk-type, white collar, and office jobs tend to be prized and occupations requiring physical exertion and dirty jobs tend to be avoided. Similarly, as Mahbulul Haq has stressed, there are excessive demands for 'ornamental' education unrelated to the emergent structure of occupational needs defined by Pakistan's development goals, and also serious deficiencies in adapting educational curricula to more closely match and accommodate these developmental requirements. The universality of these conditions tends simultaneously to create perverse wage differential and excess supply for highly desired but socially unprofitable kinds of jobs.

Seniority and increments based on length of service are supremely important in determining wage patterns. There is usually little relationship between performance and reward, and indeed, little attempt to measure and evaluate individual job performance, create job standards, emphasize individual accountability, and generally follow progressive personnel policies. There is also a kind of paternalism in which the employer assumes almost lifetime responsibility for his employees, thus leading to excessive numbers for particular jobs. Clearly, the reasons for such distortions in the wage system lie deep in the nature of Pakistani society and in many cases reflect a colonial heritage. But such distortion of the wage structure has little justification on economic grounds and certainly will affect prices. Perhaps more importantly, most of these distortions systematically inhibit the growth of skill acquisition, retarding the growth of particular industries greatly dependent upon the availability of skilled workers, and worst of all, depressing the overall level of industrial performance since all industries are to some extent affected.

To summarize then, there are substantial departures in the structure of relative prices from what should exist in terms of providing desirable incentives for an appropriate pattern of industrialization. Such departures tend to be

systematically biased in the wrong direction and are not usually offset either by specific corrective policies or through extensive use of accounting prices in planning. It is, therefore, little wonder that much of planning consists of ad hoc responses to the undesired consequences of an irrational price structure.

It is, however, difficult to fully comprehend the net impact of these forces on the structure of relative prices, in the sense of measuring their complete influence both on the price structure and on industrial selection. Obviously, all of these forces do not consistently exert pressure in one particular direction, and doubtlessly some are mutually offsetting. Although prospects for precisely measuring their influence are thus unpropitious, nevertheless some rough indications, or at least presumptions, are possible. Thus, very roughly and crudely, it can be said that overvaluation penalizes (actual and potential) export and import substitution industries; interest rates maintained at artificially low levels promote capital-intensive industries; restricted competition within industries tends to penalize other industries up the vertical supply line and promote excessive spill-over and conglomerate industrialization; this latter tendency is especially exacerbated when captive sources of finance facilitate its indulgence; and the existing wage structure tends to work against the upgrading of human inputs and skill acquisition and, therefore, seriously retards industries depending upon these qualities in the labour force. All in all, this is a very damning indictment of the consequences caused by disarray in the structure of relative prices. What makes it worse is that there seems to be little improvement over time, and it must be remembered that relative prices exert a strong influence on other important areas of economic decision-making as well as industry selection.

2) *The Milieu of Underdevelopment*

A second factor which affects the ability to choose the appropriate pattern of industrialization is a marked insensitivity to the milieu of underdevelopment. There is, I suggest, an inability to perceive or react sufficiently to the environmental deficiencies and peculiarities which constrain and influence choice. (This has sometimes been called the 'infant economy' problem.) The countless difficulties of transplanting technologies where underlying conditions are vastly different tend to be systematically underestimated. The close interdependence and cohesive articulation of an industrial society is insufficiently recognized or appreciated. The issue of scale raises serious problems. Too often, the choices are limited, on the one hand, to too small a scale for efficient production because of limited domestic markets and an inability to compete externally, and on the other hand, where an appropriate scale is chosen on technological grounds, a high degree of underutilization. Indeed, you can have the worst of both worlds: highly modern, expensive, and automatic equipment, little adapted to the idiosyncracies of its environment, will stand idle or only partially utilized for substantial periods. Similarly, the greater uncertainty, instability, and

discontinuity associated with underdevelopment produce an inhospitable environment for many sophisticated and modern industries. Such industries require smooth-flowing networks of sub-assembly, finely graduated divisions of labour and function, and most importantly, assuredness of continuity of input supply, all of which reflect, in short, substantial operating interdependency. Because the establishment of such environmental requirements takes much effort and even more time, prematurely creating industries heavily dependent upon them necessarily entails an efficiency penalty.

It should be pointed out that sometimes this environmental sensitivity can to some extent be mitigated, if known about, by making specific facilitations adjustments in choice of process, technology, or resource combinations, provided there is sufficient flexibility in these directions. Alternatively, those industries which make less demands on their external environments can be given initial preference. Thus PIA can be grafted rather relatively painlessly on to an underdeveloped economy; the operating equipment is mostly foreign and its requirements from the local economy are fairly modest and direct. A steel mill, for instance, would exhibit much greater local dependence, and such industries as automobiles and electronics would generally call for even more complex linkages.

3) *Non-competitive Markets*

The predominance of noncompetitive markets is a third factor distorting the ability to choose properly. It affects choice not only through its impact on relative prices, as discussed above, but also tends to curb expansion of existing firms within an industry, and discourage new entry. A sheltered, insulated industry, moreover, is not under great pressure to reduce its costs and improve its product, thus directly affecting the operating conditions of other industries. Although this effect is impossible to quantify or fix with any great precision, it would be unwise to ignore the thrust towards expansion into other industries such restrictionist policies induce.

4) *Foreign Assistance*

A fourth consideration affecting choice of industry is the susceptibility to unwise selection associated with dependence upon foreign assistance. Sometimes this takes the form of establishing industries simply because an offer of aid cannot be resisted. However inappropriate or untimely or noncompetitive an industry's establishment might be, the argument goes, it is free (or on concessional terms), and, after all, the economy is likely to grow sufficiently to make good use of it in the future. One must, therefore, take while the taking is good. Doubtlessly, there are many exceptions to such a pattern but there are also many reasons to account for it. In part, it reflects bargaining inexpertise and the lack of technical sophistication; partly it reflects an inappropriately high

time discount and writedown of future operating costs; occasionally, temptations to venality are not resisted. In any case, the providers of foreign assistance are usually in a position to exert considerable leverage over its use, and thus their views, good or bad, will exert decisive influence. The old saw that 'one should not look a gift horse in the mouth' has perhaps been excessively followed.

5) *Human Frailty*

As final factors distorting the capacity for proper choice, the recurrent and enduring human foibles of being influenced by prestige, or political considerations, or plain corruption must be mentioned. New nations are just as likely, perhaps more, prone to err along these lines as their advanced counterparts, and more importantly, they can afford it less. The temptation to erect a modern facade to cover up the lack of fundamental progress, the immense propaganda, if little economic value of showpieces and monuments, some serious shortcomings and incapacities in distinguishing private gain from public welfare, the ever-present temptation to degrade economic decision-making for purposes of maintaining political power in the short run — all of these and similar activities contribute to the creation of an inappropriate pattern of industrialization. It should be clear that one is not asking here for pristine and unattainable standards of purity in these regards. Rather the frequency of such socially aberrant behaviour needs to be contained within reasonable bounds. This has not always been possible.

Although most of these considerations affecting the ability to choose are by no means only recently emergent, this issue may now be entering a more critical phase in Pakistan¹. One of the fruits of industrial evolution so far is the widening, as it should be, of the spectrum of feasible physical possibility. The field of choice has been enlarged, and hitherto remote and unthinkable options are now possible. Until recently, as discussed earlier, industrialization has not been venturesome and over-reaching, but this has been due less perhaps to desire than to incapacity. Now that a watershed of sorts seems to be reached, a more sophisticated and discriminating approach is needed, where what is possible and even feasible should often be rejected as not desirable and certainly not optimal. The cumulative experience of the past two decades should not be squandered on mindless filling out of the industrial tableau.

It is of course easier to suggest caution and beware of danger than to point out the proper path of industrialization. Yet it is possible to draw

¹I should like to make it clear that I am not concerned in this essay with the appropriateness of choice of industry in the sense of whether potential supply constraints on development need to be overcome by the development of a domestic capital-goods industry [13] or whether creation of consumption-goods industries stimulates excessive consumer spending [8;11]. Both of these issues have been ably explored by others and thus the problems can be conveniently noted and passed over.

some general conclusions from our discussion. In any case, with imitative propensities being given full sway by the dominance of a strategy of closure, the price system sending out the wrong signals, the subtleties of the environment likely to be overlooked, foreign assistance affecting internal decision-making, little discipline emanating from competitive markets, and the ever-present danger of building monuments to prestige, glory, and worse, it would be extremely unwise to accept uncritically whatever pattern might emerge or to make decisions without full consideration of these disturbing forces. Choosing industries under such circumstances is a game of chance, not a process of rational selection. Without specifying particular industries, certain general strictures can be stated.

The need for selectivity is paramount. If policy tends towards imitative industrialization but environmental circumstances make this highly inadvisable, then either more attention should be directed to altering these fractious circumstances or more careful consideration be given to the time path of industrialization. Since the former is usually both difficult and time-consuming, it would follow that the appropriate strategy would emphasize those industries not making excessive and insupportable demands on so unpromising an environment. More specifically, the option of better, rather than new, may offer considerable promise. To divert the energy and effort which would and must go into establishing new lines of industry into a sustained campaign to improve already existing industries can produce a handsome pay-off. Indeed, as suggested earlier, much evidence suggests that substantial increases in efficiency are good possibilities.

Likewise, the possibilities of a more discriminating use of the international division of labour should be carefully explored. Industries (and industrial processes too, as we shall discuss later) are sometimes divisible, and it may be very worthwhile to consider the advantages of splitting up an industry rather than simply accepting it as a complete package. There would seem to be sufficient flexibility in technology and incentive in relative prices to permit a more imaginative approach to this problem. Make-or-import decisions should receive greater consideration on a sub-industry basis.

On a longer term basis, and along similar lines, criteria of reasonably priced imports should be given more weight in devising industrialization strategy. World markets for many commodities are, and likely to remain, vigorously competitive, and buyers should not fail to take advantage of competitive international supply conditions. Thus, with a substantial number of producing countries in a world of international rivalry, importing countries can look forward with some assurance to the maintenance of competitive conditions. Given the persistent bias of policy in Pakistan towards import-substitution industrialization, is it not now time to reconsider whether the balance of advantage does not lie in more ambitious export promotion? And it should not be

forgotten in this connection, that the most effective export-promotion device is to make one's currency cheaper in terms of foreign currencies!

The relationship between relatively few firms within a sheltered market and the nature of industrial expansion needs more thorough investigation and, also, has implications for both fixing the appropriate international division of labour and the possibilities of expanding and improving already existing industries. The combination of absence of external competition and relatively few firms has probably inhibited desirable expansion and improvement, since sheltered markets tend to output restriction and excessive complacency. Potential exports are also hindered because home-market sales appear easier and more desirable. Frequently, also, greater home sales and more vigorous competition, both for their effects in increasing firm size and accelerating reduction in cost, will lead to the emergence of new or radically larger export industries. All in all, too little thought has been given to the consequences of efficiency and export potential of sheltering domestic industries.

Finally, one aspect of industry choice which always needs to be kept in mind is how irrevocable such decisions are, and whether they inevitably lead to commitments exceedingly difficult to reverse, should events prove them unwise? One does not argue for a world without mistakes; one does expect the consequences of actions turning out wrong are properly evaluated. The possibility of being saddled with high-cost undesirable industries which are difficult to throw over, having acquired a substantial degree of vested interest, and worse still, constituting a burden upon industries further up the supply line, should be borne in mind. There is the twin danger of compounding, *i.e.*, building inefficiency on inefficiency, and of trying to make a go of a bad thing, *i.e.*, to attempt to rescue what is already sunk rather than write it off. Mistake generates further mistake and pride can admit neither.

III

Choice of Production Technique

Many of the factors affecting choice of industry apply with equal force to choosing techniques of production. The psychology of closure takes the form of a bias towards imitation rather than adaptation. The elements of perversity in the structure of relative prices exert their influence. There are subtle and pervasive aspects of the milieu which make it difficult to transplant technological processes. Foreign assistance is probably systematically biased towards duplicating its own technology. The lack of competition engenders a permissiveness with respect to improper choice of technology, and considerations of prestige, status, politics and venality also operate at this level. Perhaps it may be useful to summarize such diverse and far-reaching influences under the headings of the problem of factor proportions in the small and in the large.

The former problem is of course the more well-known issue of the appropriate composition of inputs in the face of sharp differences in relative factor availabilities and therefore factor prices. Thus, there is justifiable apprehension that chosen technologies will be capital, and skill-intensive and not sufficiently responsive to local scarcities. Furthermore, supporting this apprehension, it is likely that policy will be biased towards "technologism and modernism" in the sense that physical-engineering considerations tend to receive greater attention than rational economic calculation. Just as the psychology of closure seems to dominate industry choice, so does the assumption that the latest technologies in the advanced countries are the most appropriate for the developing areas.

I should like to make it clear that I do not believe that this is an absurd position. This issue has been vexatious and hotly debated in the literature. The upshot of this discussion, it seems to me, is that one cannot make definitive pronouncements, and there is a danger of pursuing it at too high a level of abstraction. It seems to depend heavily upon the specific situation. In general, such considerations as the extent to which a process is flexible and can be broken down into component processes, the costs of adapting to different factor environments and how great an output sacrifice is involved, and the ease of substitution among inputs, are important in determining decisions in specific cases.

The greatest danger is in the lack of awareness of and sensitivity to the problem, and not thinking about it at all, rather than making the wrong choice after thorough review. As indicated above, I have some concern that physical considerations tend to dominate, that there is a bias towards modernism without thinking through its economics or considering the possibilities of imaginative adaptation, and that foreign assistance tends towards replicating its own technology. There is some presumption that in choosing technologies, policy has not been sufficiently aware of such issues.

What I have called the problem of 'factor proportions in the large' tends to be a less obvious danger since it refers to the impact of more diffuse environmental conditions upon the appropriateness of the technology chosen, that is to say, the technology is not sensitive or suitable or adapted to strategic aspects of its supportive milieu. By not fully and properly taking into account environmental circumstances, processes working extremely well elsewhere fail or are more costly in the developing area; modern industries are not completely self-contained and self-supporting activities.

What are the features inevitably associated with the condition of underdevelopment which make conventional technology unsuitable? First, limited size and/or scale of operation—sometimes due to inadequate domestic demand and the impossibility of competing in world markets, sometimes due to severe

input deficiencies—may mean either choosing a less efficient technology, or not fully utilizing an efficient, but excessively large, relative to normal operating range, facility. Secondly, there is a much greater frequency of physical discontinuity and supply interruptions. Usually, this reflects inadequate maintenance, excessive breakdowns, lack of complimentary inputs, thin margins for failure, *etc.* Sometimes it is due largely to policy-associated instability—periodic foreign-exchange crises, stop-go kind of economic policies, and the normal dislocation of imperfectly functioning markets and administrative procedures. Typically, the infrastructure is chronically over-extended and inadequate, resulting in unreliable provision of essential common service inputs and a rather embryonic and sketchy sub-assembly network. It might be added that the efforts of the individual firm to extend its span of control precisely to avoid excessive reliance upon an undependable external environment, do little to deal with the problem, since endemic management-administrative scarcities are further exacerbated by such efforts.

Thirdly, the problem of staying current in industries which are subject to rapid and almost continuous technological change is likely to prove especially troublesome. There is always the danger of becoming locked into a particular technology as of a moment in time. Modification, adaptation, and innovation are difficult in the absence of supporting factors in the environment. It is of course especially the glamorous science-based industries in which this process of continuous improvement is most in evidence. Attempting to establish such kind of industries, but lacking the appropriate supportive milieu, is likely to mean being frozen into an increasingly obsolescent technology. Industrialization needs to be looked upon as a continuous process of improvement, rather than as a once-for-all creation of a particular facility.

Finally, the nature of entrepreneurial behaviour and motivation is an environmental factor which has far-ranging effects. For one thing, entrepreneurial time horizons tend to be excessively myopic; they always tend to look through the wrong end of a telescope. Partly this represents a safety-first attitude towards uncertainty, and given the high degree of instability, has much private rationality, however regrettable its social consequences. But profit snatching, or short-run rather than long-run maximization, has a definite impact on the issue of technology. It tends to degrade proper maintenance, emphasize short-lived physical assets, is set against quality control and long-run build-up of product integrity, and, in general, thoroughly distorts the pattern of private incentives towards quick gains when the socially desired pattern of resource allocation would probably be quite different. Here too, the absence of competitive pressures is a factor.

These considerations affecting process choice raise several broad issues. First, there is the inter-action between technology and environment. Obviously,

it would be a wonderful world if there were ready at hand technological processes perfectly suited to the factor dispositions and environmental conditions prevailing in the developing areas. But such technology, if possible at all on a large scale, is likely to be costly and take time to develop. Doubtlessly, efforts along these lines are to be commended and encouraged. But enthusiasts are prone to underestimate the costs and overestimate the speed of such developments. On the other hand, as discussed above, mechanical imitation is likely to be highly inappropriate. What may be more feasible is creatively adapting where possible by adjusting some parts of a process and recombining inputs in ways more suitable to prevailing conditions. This is analogous to breaking up industries into component sub-industries; in the same way, industrialization processes can be divided and recombined².

Obviously, there is room for both processes to occur; technology can be creatively refashioned, and the environment can be made more hospitable to conventional technology. But it is important to remember that the time dimension cuts two ways. Although time permits levels of competence to rise and allows necessary environmental change, it also means that the economy becomes saddled with the errors enshrined in the creation of inappropriate kinds of physical assets and institutions. Additionally, there is a build-up of vested interests always seeking to perpetuate themselves. Thus, it is not appropriate to assume that time will heal all; mistakes will yield consequences long into the future. Even though some learning errors are inevitable, it is extremely important to keep them to a minimum because of these future consequences. As with many mistakes, avoidance in the first place is greatly to be preferred to subsequent attempts at correction.

IV

Level of Performance

The dimension of performance is closely linked to the questions of industry and technology choice. These distinctions concerning sources of inefficiency are conceptual, and do not preclude interaction. Indeed these interrelationships are quite important and shall be discussed below. Further, it should be noted that in discussing performance it is all too easy to elevate gossip, hearsay, and even cocktail-party conversation to the exalted status of scientific truth. Certainly, one horror story is not a complete picture, and failures do tend to be trumpeted and success unheralded. Nonetheless, serious discussion and more thorough investigation suggest that there is indeed a rather large fire producing all the smoke.

²My favourite example in Pakistan is the diesel-powered portable cement mixer combined with the human-chain techniques for pouring the cement.

No matter how extenuating the circumstances, there seems to be an infinitely extensible catalogue of horrors concerning industrial performance in Pakistan. In the use of capital, organization of labour, control over input flow, standards of professional and administrative competence, and maintenance of product reliability and quality, there are gross departures from efficient practice. Some of these deficiencies are of course the previously discussed environmental factors which influence choice of industry and technique. Thus, physical equipment is systematically undermaintained and abused. (Paradoxically, it is sufficiently scarce that every effort is made to keep antiquated equipment in service, if possible, through extraordinary repair work.) A popular rule of the game seems to be that 'what can be gotten away with in the care of physical assets up to the point of direct and actual breakdown will be tried'. As long as retribution can be delayed for a time, sub-standard inputs will be used, maintenance will be skimped, machinery will be overloaded, and manufacturer's instructions will be violated. In some cases, this is privately rational, given opportunities for quick profit skimming, exceedingly high rates of time discount, and import-licensing policies. In other cases, such malpractices are due to short-sightedness and ignorance and the costs of learning. Sometimes it reflects reaction to perverse policy incentives.

Likewise so far as labour is concerned, similar deficiencies abound. Even the most casual observer is struck by the abundance of supernumeraries. Inadequate training programmes, lack of appropriate internal manpower policies within the production unit, limited job and in-plant mobility and little reliance on professionally skilled manpower — all contribute to poor job performance, and consequently inefficient production. One of the effects of a horizontal supply curve of labour, as suggested above, has been to create a marked disinterest in the skill development of their work force by employers. Employers seem to prefer low nominal money wages to low real wage costs reckoned in terms of efficiency wages, *i.e.*, money wages deflated by an index of labour productivity. And the predominance of the family group and close personal control has limited the spread of managerial opportunity and competence.

One of the most striking indicators of poor performance is the excessive frequency with which normal production operations are seriously disturbed. Although sometimes this reflects poor marketing forecasts and unforeseen demand variability, for the most part it is caused by supply discontinuities, which in turn stem from poor production planning, equipment breakdown, critical input unavailability, *etc.* Sometimes these latter conditions are the result of serious policy errors; more often they reflect the thin margin for error associated with the condition of underdevelopment.

Some curious and recent anomalies along these lines have been the disparity between actual output and potential capacity, and the fact that new investment takes place frequently in industries which have considerable excess

capacity. Several explanations have been offered for these phenomena; an excessively low price for imported capital permits its lavish use; overinvoicing of capital goods as a means of capital flight tends to generate excessive imports of capital equipment; the fact that materials licensing depends upon 'capacity' encourages overcapitalization to get valuable import licences; unavailability of complementary inputs because of periodic foreign-exchange stringency, administrative dislocation, or fundamental scarcities of key inputs causes excessive 'down' time, *etc.* Obviously, excess capacity in a country where capital is and should be a very scarce resource is such a fundamental contradiction that, whatever the reason, this situation should not be allowed to continue for very long. Similarly, the investment sanctioning procedures need to be considerably tightened up to prevent additional investment from being allocated to those industries which already suffer from excess capacity.

Finally, poor performance is reflected in inferior output as well as in these input and process difficulties. Quality-control standards leave much to be desired. Adulteration is a constant danger. Too often, whether well-founded or not, there is a marked preference for comparable imports. Standardization programmes have been difficult to secure agreement upon, even with respect to exportables where great harm to an export drive can be done by a small percentage of substandard output. In many cases, incentives to use inferior materials inevitably lead to poor product results³. Clearly much needs to be done in this area.

Although there is probably little disagreement over the fact that poor operating performance characterises industrial activity, there is considerable division concerning its causes. Several factors are responsible and perhaps it will be most useful to distinguish among *a)* those which are inevitable in the sense that they are primarily time-dependent processes; *b)* those which are environmental in the sense that they reflect deep-seated institutional circumstances; *c)* those which are behavioural in the sense of being rooted in persistent patterns of human conduct; and *d)* those which are determined by policy in the sense that they are directly or indirectly attributable to specific and reversible measures undertaken by economic authorities. I shall discuss these in turn.

Learning and building up the necessary resource base and human-skill inventories are time-consuming processes, and obviously high levels of industrial performance must wait upon their substantial progress. Thus, in their absence

³Press reports in recent years, for instance, have revealed that textile producers have imported 'seconds' of synthetic fibres in order to stretch out a given amount of foreign-exchange allocation, and then, by virtue of a protected home market, can sell with impunity the resultant inferior output. Likewise, Importers of steel products have brought in 'seconds', invoiced as first-quality items as a way of illegally exporting capital, with equally pernicious effects upon the quality of output. Although one never knows whether such incidents are deviant or representative, the fact that existing arrangements provide considerable incentive for, and rather weak economic penalties against, such practices makes one suspicious.

in the early stages of industrialization, operational deficiencies are bound to occur with excessive frequency. Furthermore, there is learning-by-doing taking place, and mistakes and errors are an essential part of such learning. Thus, as pointed out before, operating deficiencies should be expected and looked upon as object lessons for speeding up the learning process. In the same way, thin margins for error and inadequacy of reserves and stocks can be overcome, but only in the fullness of time. It should be noted, however, that normal expectations of some mistakes should not be a licence to excuse or justify all error.

Since we have already stressed environmental shortcomings of an institutional nature, we can be brief. Clearly, as we have emphasized, interindustry and infrastructure links tend to be shaky and unreliable. Given the importance of dependence upon the supporting environment for efficient performance, inevitably such shortcomings will continue to cause production discontinuities and thus prevent that process of routinization and regularization which is the crux of modern industrialization. Likewise, deficiencies in the quantity and quality of key inputs will lead to similar results.

Certain kinds of behavioural patterns have substantial impact upon the quality of performance. It is of course difficult to separate behaviour from environment since much behaviour reflects man's adaptation to his particular environment. As the environment changes, so does the behaviour. But there is, in addition, habit persistence and traditional social-cultural factors shaping behavioural patterns. Therefore, particular kinds of conduct have a life of their own and can play an independent role in determining operational efficiency. Typically, for instance, entrepreneurs in Pakistan tend to have a very high-time rate of discount. This can reflect their reaction to the experience of greater instability and uncertainty in a society undergoing rapid change, that is to say, a perfectly rational response to their environment. On the other hand, it also can reflect the habit persistence of, say, a trader's mentality and the effects of limited knowledge and narrow horizons. Likewise, propensities to imitate reflect not only blind flattery, but also a safety-first response and a less demanding initial strategy. Maintenance of family control over enterprises limits their growth and inhibits professionalization of management, but where family loyalties are strong, trust among people not widespread, and shareholder rights not adequately protected, then this mode of ownership control becomes a logical form of business organization. In sum, the point to be made is simple but has far-reaching implications: namely, that attitudes and behavioural patterns persist which are harmful to, and inconsistent with the requirements of, a new industrial order. Consequently, this is a source of potential inefficiency.

Finally, policy affects operating performance in many significant ways. To the extent that a distorted structure of relative prices is permitted to exist, then of course the pattern of resource use will be inappropriate and wasteful.

To the extent that instability and excessive uncertainty are not eliminated by more appropriate stabilization policies, then discontinuities, shortages, capacity-output disparities, and the rest will occur with embarrassing frequency. As long as noncompetitive and sheltered arrangements dominate the industrial sector, vigorous rivalry to stimulate efficiency, cost reduction, and quality improvement will be greatly muted. Gentleman's agreements and exhortation are usually inferior in these respects to real competition. Certainly, there is a real conflict between providing sufficient security and support to induce the growth of a modern industrial sector and the stimulation of healthy rivalry to ensure the forces operating for improvement are not overly repressed. It would seem, though, that the balance has been more inclined toward security.

This four-fold classification of the causes of inefficiency does not preclude other possibilities for rationalizing and explaining poor performance. For instance, it is possible to distinguish factors which particularly influence or act upon different levels of activity, *e.g.*, the firm, the industry, the economy. For some purposes, such distinctions are quite useful, enabling us to pinpoint where problems lie and the proper area for applying remedies. The basis for the classification drawn, however, lies largely in the natural time-ordering which it suggests. If policy lapse is at fault, then presumably remedies are quick at hand, depending on the speed of diagnosis and the extent of political muscle, in the form of changing the offending policies. If it is a matter of environmental deficiencies or perverse behaviour patterns, then these of course require more time and perhaps some more complicated set of specific remedies. To the extent, however, that perverse behaviour is a rational response to specific incorrect policy measures, then of course the change could be quite rapid. Finally, the problems associated with those processes which are time dependent, must be suffered until the necessary passage of time permits solution. It should be observed that these distinctions emphasize critical aspects rather than imply single causation. Obviously, with respect to most circumstances causing poor industrial performance, these factors will be simultaneously operative and the virtue of this classification is that it provides, as it were, a time scale to apply to different dimensions of corrective action.

V

Concluding Observations

In this essay I have identified some potential sources of high-cost output in the form of inappropriate industries, unwise techniques of production, and poor operational performance. The reasons for this have been discussed as well as some rough observations on the importance of different kinds of causes. These distinctions concerning sources of inefficiency and their causes should not make us lose sight of the fact that *a*) a particular disturbance can have an impact at all levels, and *b*) interrelationships and interactions among the different sources

of inefficiency are likely to be very important. With respect to *a*), the fact that relative prices are seriously distorted cannot only lead to the wrong industries and inappropriate technologies being selected, but also to wasteful usage of mispriced resources in short supply. Likewise, with respect to *b*), there are many possible kinds of interaction. The unwise choice of industry can make an otherwise appropriate technology appear wrong, as for instance would happen when the industry chosen produces because of demand limitations, on too small a scale to support the appropriate technology. Similarly, inappropriate technology can cause unwise industry selection, as for instance, when the availability of certain raw materials, *e.g.*, molasses, low iron-content ore, leads to the adoption of inferior processing-activities for alcohol production and iron and steel products. Similarly, poor operating performance can turn what would otherwise be an appropriate industry or technology into the wrong choice, and on the other hand, industries and technologies can be selected which inevitably will lead to poor performance since they make unattainable demands upon available resources. Likewise, industries and technologies can be chosen which fail to utilize and draw upon local sources of talent and skill and do not adapt to the relative advantages of their environment. Thus, it can be seen that there are close connections between the three levels distinguished, and remedies for dealing with inefficiency would have to patiently sort out these interactions.

I have suggested that despite the persistence over time of these factors promoting inefficient industrialization, we are now probably approaching a more critical period. In this connection, I have emphasized the dangers of an indiscriminate filling-out of the industrial tableau, and suggested that, on the whole, it would be the better part of wisdom to move more slowly into new industries and place greater emphasis upon improvement of already existing industries. I have also emphasized that, with respect to techniques of production, mechanical imitation of what exists elsewhere or heroic attempts at transforming the environment of underdevelopment are both likely to lead in the wrong direction. In my opinion, more effort should be devoted towards creatively adapting technology to the peculiarities of the environment. Finally, with respect to efficiency, an attempt has been made to identify the factors responsible for poor performance and to distinguish along a time scale the rough shape of appropriate remedies.

The upshot of these observations would be that the expansion path for industrialization should be more closely evaluated in terms of relative advantage rather than pursue more glamorous but probably less helpful policies of rapid extension into new kinds of industries which require so much of what Pakistan has so little. This conclusion reflects a growing belief among economists that efficiency has been too much sacrificed at the altar of indiscriminate growth when in fact greater efficiency would be highly rewarding in terms of growth. More specifically, there is much evidence to suggest that expansion path of industry should not stray as far as it has from meeting the salutary tests imposed by having to

compete in world markets. This implies both more formidable competition from imports by reducing trade barriers and greater attention to export expansion.

At the same time, the obviously inflated degree of generalization of this essay only underlines the importance of more closely detailed industry-by-industry analysis. As it is, we are long on horrendous examples, egregious mistakes, and lofty generalization; we are short on systematic analyses of performing industries and the factors which bear upon their efficiency. In this connection, several interesting questions suggest themselves: the extent of intraindustry variation in efficiency and the causes thereof; the effect on industry efficiency of such specific factors as the degree of foreign affiliation, process complexity, export concentration, large-firm domination, *etc.*, and the time trend of measures of efficient performance. Unfortunately, published data on individual firms are rather scanty in the details needed to fully explore such questions. This level of generalization does, however, reveal serious common shortcomings, which could be responsive to general policy measures. Skill acquisitions, training programmes, productivity-mindedness, *etc.*, are sufficiently universally deficient so that national programmes concerning them could be initiated without waiting for closer specification of the problems of particular industries.

A final word on what is a delicate subject, and especially so, in the light of the recommendations of this essay. Nothing that I have said should be taken to mean that the developing areas in general, and Pakistan in particular, are being consigned, now and forever, to a lesser role as producers of simple and non-glamorous goods, and hence eternally to be denied the benefits of science and progress. My intention is precisely the reverse. All that is being asserted is that at this particular juncture in development there is likely to be a much higher pay-off to the strategy suggested in this essay. Nothing said here should be taken to prevent concurrent activity to build up the resource base for rapid progress in those other sectors in the future. Indeed, I believe I have emphasized that milieu transformation should and must take place. I have only argued that the time dimension in this must be recognized. Accordingly, it should be possible and desirable to push forward with experiments in new industries, on a micro-basis and in the form of pilot activities, emphasizing the contribution to training and learning rather than to output. Moreover, a critical eye should always be maintained on whether world market conditions permit the strategy suggested above. In particular, if advanced countries are not sufficiently responsive in opening their markets to the products of the less developed world, then of course alternative solutions must be reexamined. But that contingency would have to be explored in another paper.

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