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Editor : A. S. KHALID
Joint Editors : HAMID DAR
MUHAMMAD NAWAZ
RIFFAT NASREEN

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INFLATION AND INCOME TAX*

*Salahuddin Chaudhari***

During the last five or six years inflation has not only been giving the politicians-in-power some very anxious moments and has baffled the economists but has added to the difficulties of the tax administrator also. Not that the problem had not existed before. It was there but confined to a few countries, Latin American countries primarily. But the world-wide acceleration in the rate of inflation that has occurred since the beginning of this decade has made the problem more acute as well as wide spread. Its impact in most of the Asian and Far Eastern countries has been particularly severe. In many economies inflation almost threatens to become a permanent fact. This has given rise to distortions in income-tax systems. When money income rises rapidly, tax-payers are pushed up in the tax schedule and are thus subject to higher tax rates even though their real income is unchanged. If inflation persists a good number of tax-payers may find themselves subject to highest marginal rates of income-tax. Also, persons who previously were not taxed because their incomes were below the taxable limit become liable to taxation. So this combination of inflation and progressivity in our tax systems creates various distortions in the distribution of tax burdens which not only erode the equity base of the tax system, but also affects adversely the usefulness of tax as a stabilization device. The distortions in tax burdens become more severe as the rate of inflation increases. There is thus not only growing awareness of the existence of this problem but also consciousness of the need for governmental corrective action in the form of inflation adjustment measures to neutralise the effects of inflation.

Equity consideration

Perhaps the main justification of the adoption of corrective measures is equity, both horizontal and vertical. Horizontal equity demands that persons with equal real income should pay tax at equal effective rates. But in a system without adjustment provisions this

*Read at an international conference in Tokyo, Japan.

**An old Ravian. At present working as Income Tax Commissioner Lahore.

condition is not met as tax is computed with reference to nominal income and not the real income. The real income of a tax-payer may be overstated because depreciation in his case is based on historical cost. But where a person is getting depreciation allowance with reference to current prices, the real income will be lower attracting lesser amount of tax even though the nominal income in both cases be equal. Inequity in the case of wage earners and salaried persons is quite obvious. In their case since tax is deducted at source and there is no time lag between receiving income and tax payment, such income gets subjected to higher real tax rates than other income in periods of inflation. At such times, tax payers pay less tax in real terms the longer they delay the payment.

Inflation-neutral system can be justified on grounds of vertical equity also. With no provisions for adjustments, the tax structure will become more regressive. This is so because the rate of increase of marginal tax rate decreases as the normal income increase as illustrated by the figures in the table below.¹

TABLE 1

Taxable Income	Rate of increase of marginal tax rate for \$ 10000 of taxable income
\$ 0 —10,001	.57
\$10001 —20,001	.45
\$20001 —350,01	.21
\$35001 —50,001	.13
\$50001 —200001	.05
\$200001 +	0

Thus real burden on individuals in the higher brackets does not increase as rapidly as in those in the lower brackets. This results in the reduction of the progressivity of the tax structure hurting people in the lower income level. Inflation induced increase in tax hits more severely the middle-income as well as low-income tax payers. Some tax payers surely suffer when because of progressivity a larger chunk of their incomes is taken away although the incomes have increased in nominal and not real terms. Others, however, gain when changes

1. "Inflation and Federal Income tax," Yale Law Journal 1973.

to update tax laws or schedules in tune with rising prices lag behind increases in market value or when low interest rate charges for late payment make it advantageous to delay paying taxes.

Economic Stabilization

As is commonly known, income-tax is an anti-inflationary instrument. If increasing proportions of income whether real or nominal generated by inflationary pressures is mopped up through taxation, it will have a dampening effect on monetary expansion resulting in reduction of inflationary pressure. It can therefore be argued that in the course of an inflationary surge any measure which prevents increase in tax revenues through adjustments of price changes will impair the stabilizing properties of the tax system. But a closer look at this line of reasoning will show that the argument is not flawless. Inflation adjustment schemes will no doubt reduce the stabilization properties but not eliminate them entirely.² After all real income will also grow which will surely result in the increase in tax collections at a rate greater than the rate of growth of income. Then, there is another factor - the timing of the adjustments. If the adjustments are made subsequent to the accumulation of distortions from inflation, then it would normally be stabilizing in character. The adjustment scheme used in Netherland is based on the rate of inflation over the period 7 to 30 months preceding the tax year.³ The effect of this time lag is that it strengthens the stability of the tax structure.

Adjustment Techniques

There exists a variety of techniques or mechanism to reduce the inequity or other distortions caused by inflation. Some are simple and not-so-sophisticated while others are complicated as in some Latin American countries which have a fairly long experience of administering them. Any detailed discussion or analysis of these mechanisms is not possible in this short paper. Therefore, only their broad outlines, with brief comments here and there are given in the following paragraphs.

(1) In the first category of schemes the most commonly employed method is to adjust important tax items defined in money

2. "Inflation and Personal Income tax" - Finance and Development September, 1974.
3. "Adjusting tax rates for inflation", Canadian Tax Journal, May 1973.

terms-exemptions, deductions and limits of income brackets in accordance with changes in price indices. This may be done annually through changes in financial enactments or by introducing legal provisions that allow automatic adjustments of these items. In countries like Canada, Argentina, Brazil adjustments of all or some of these items are allowed. Else-where, as in Denmark and Sweden, this mechanism is employed along with changes in tax rates. These schemes have the advantage of being simple to understand and easy to administer. Furthermore, these may be designed, and they usually are, to cover income from all sources-business profits, salaries and wages, property and interest.

(2) Another method could be the reducing of the tax rates in inverse proportion to the increase in the rate of inflation. This will result in distribution of the reduction among all tax-payers in proportion to their total income. It thus has the drawback of being regressive. If tax rates are brought downward in proportion to the price rises, result will be a decrease in average tax rate for all tax payers and a consequent reduction in the progressivity of the tax structure.

(3) Yet another way of neutralizing the adverse effects of inflation is to adjust the *income* to remove the inflationary component first and then subject it to tax. This method is employed for adjusting business profits. No doubt during periods of inflation there is an element of unreal or what is sometimes called "illusory" profit. For instance, depreciation allowance which is deducted out of fixed assets and not the cost of replacing those assets today. Thus the portion of income represents the difference between profits computed using historical cost and profits computed on the basis of current cost of assets is of considered as unreal profit. Taxing these "illusory" profits would make it difficult for the business concerns to maintain their level of investment and production capacity. It would certainly discourage further investment and retard the pace of economic development. Schemes have, therefore, been designed to adjust the profit figure of business firms for the effects of inflation with a view to arriving at a new figure that more accurately represents the firm's real profit after taking account of changes in the general price level. Some provide for adjustments only partially inasmuch as adjustment is restricted to revaluation of fixed assets only. The book value of other items in the balance-sheet except the capital remains unaffected. The

benefits that accrue to the tax-payer are higher depreciation allowance, lower excess profit tax if chargeable and reduced amount of taxable gain on a later sale of the assets. But as is obvious such schemes clearly discriminate against enterprises in which fixed assets are only a smaller fraction of total capital. These include commercial houses as also firms in labour-intensive industries. Profit adjustment mechanism of Uruguay, however, covers other assets also besides the fixed. It permits business firms to deduct from annual gross income 15% of the value of inventories at the beginning of the year.⁴

Brazil and Chile are the two countries which have gradually moved from simpler to more comprehensive but complex mechanism. In Brazil annual revaluation of fixed assets has been made compulsory. Firms revalue their fixed assets by multiplying the original cost by a revaluation co-efficient based on wholesale price index. In the beginning with a view to minimizing revenue losses, the increase in the value of the assets was considered as new investment and were allowed to be depreciated over the remaining useful life of the asset thereby increasing annual depreciation allowance.

Besides fixed assets Brazil also allows firms to revalue their "working capital"—the difference between the total equity in the enterprise reserves and undistributed profits included and the written down value of the fixed assets. The amount of capital at the beginning of the year is multiplied by the wholesale price index. The resultant appreciation is allowed to be deducted from the profits at the end of the year subject to a maximum of 20 per cent of taxable profits provided the said amount is capitalised.

The Chilean Scheme is based on "net worth" concept. The real income to be subjected to tax is determined by comparing the net worth at the beginning of the year with the net worth at the close of the year, both worked out at the end-of-the year prices. This is done by making a number of fairly complicated readjustments to the profit and loss statement involving revaluation of all assets and liabilities at current prices.

Before ending this brief description of the various adjustment techniques, it must be noted that the more comprehensive a scheme is designed the more complex it becomes and consequently more difficult to administer. As the number of items to be revalued under

4. "Taxing Business Profits during Inflation", International Tax Journal 1976.

a scheme goes up, the chances of the inaccuracies in the measurement of 'illusory' income and consequently in the adjustments are increased. The reason is that it is difficult to measure inflation precisely. The yard stick is either the wholesale price index or the cost-of-living index. Both are not without draw-backs and so do not provide the accurate basis for inflation adjustments. The wholesale price index is based on the prices of a limited number of items. Land, stocks, services, transportation do not figure in the calculations. Similarly, a consumer-price index which measures changes in the prices of goods and services consumed is not a fair measure of inflation for income tax adjustment purposes. The reason is that it will vary from area to area and from one social group to the other. The consumption mix of one individual may differ from that of the other and so the use of the same index for both may be inappropriate. But in spite of these shortcomings, the use of either of the two cannot be avoided for re-valuation purposes.

Pakistan case

In Pakistan the problem is of recent origin. Prior to the fiscal year 1971-72 the rate of inflation was moderate. It was only after 1972 devaluation of Pakistani rupee that the trend suddenly changed and aggravated by international price hike the inflation rate rose at a galloping pace. The table below illustrates the price changes in Pakistan over the last 16 years.

TABLE 2
Indices of wholesale prices

Year (July-June)	Price Index (1959-60=100)
1959-60	100.00
1960-61	104.77
1961-62	104.65
1962-63	102.86
.....
1969-70	132.19
1970-71	137.32
1971-72	150.31
1972-73	179.74
1973-74	229.07
1974-75	288.89
1975-76	320.07

(Pakistan Economic Survey 1975-76)

The impact of the change has already been felt. The tax payers find their tax liabilities multiplied and so there is growing demand for relief. The authorities in Pakistan being not unmindful of the new situation have been taking some adhoc measures to remedy it. Exemptions, deductions and minimum taxable limits have been adjusted from time to time. These are summarised below :

1. The minimum taxable limit fixed at Rs. 6000 in 1959-60 was raised to 9000 in 1973-74 and to Rs. 12000 in 1974-75.
2. The maximum limit of earned income allowance for individual which stood at Rs. 4000/- since 1959-60 was enhanced to Rs. 5000/- in 1974-75 and to Rs. 7500/- in 1976-77 for salaried persons and wage earners. For others the revised figure was Rs. 5000/-.
3. Changes in rates of Personal Allowance were as under :

1959—60	1972—73	1976—77
Rs. 2000	Salaried Persons Rs. 3000/-	Salaried persons = 5000 Professionals = 3000 Others = 2500
4. Education/family allowance was increased from Rs. 600 per annum in 1959-60 to Rs. 900 in 1964-65 and to Rs. 1500/- in 1976-77.
5. Some adjustments in the tax rate brackets were also made.

That Pakistan chose a simple mechanism to start with is quite understandable. Having no experience in this field, the first steps had necessarily to be cautious. Also, it was perhaps thought that the high rate of inflation might not persist for long. Therefore, resort to ad hoc measures as against permanent provisions in the legislation was considered sufficient. Now, however, it is felt in some quarters that pros and cons of establishing a more comprehensive mechanism should be weighed because the existing arrangement does not go far enough. It does not help provide for the presentation of more realistic asset values in the financial statements. Nor does it provide for sufficient relief to persons who have been pushed up above the minimum taxable limit or from lower tax-brackets to middle level brackets as is evident from the enclosed Table 3. The calculations in the table assume that the income is from salary eligible for maximum deductions and allowances.

The changes in the distribution caused by the continuing high rate of inflation are not desirable. So, as a corrective measure adjust-

Conclusions

relief to minimise the inequities at a given point of time. because it would be less cumbersome than way to provide the desired level changes, making of adhoc adjustments should be preferred provisions that may ensure automatic adjustments in response to price administrative complexities. Furthermore, instead of inserting legal mechanisms, for no-account and account cases would add to the deductions and limits of income brackets because employing different all tax-payers, adoption of the method which adjusts exemption, scheme will be inapplicable it would be advantageous to consider for do not maintain accounts. Since in their case profit adjustment will not suit the requirements and conditions of Pakistan. A consider- of Brazilian or Chilean type involving complex revaluation calculations mechanism appears to be desirable. But profit adjustment schemes

What ever the policy constraints, revision of the existing adhoc adjustments:

has more than offset the little correction made through the year 1977-78. This lowering of the rate in the highest tax brackets has been gradually reduced from 80% in 1959-60 to 50% for the tax same object in view the maximum rate of income-tax on individuals an incentive for savings and investment by these groups. With the invest. Therefore, tax rate is not increased beyond a certain level as income groups, on the other hand, have higher propensity to save and reduce consumption and to release resources for development. Higher propensity to consume, according to the economists, is higher among tax policies has been promotion of savings and investment. Since economic policy framers in Pakistan. The primary objective of the always weighed more heavily than most other considerations with the lies in the fact that considerations of rapid economic development have payable in 1959-60. The inequity is obvious. Its real explanation the tax payable at 1975-76 rates is less than the amount which was Rs. 20,000/-. On the other hand at Rs. 70,000/- level and beyond, led inflation effect the real income in the later year was far below in 1975-76 it was Rs. 1,670/- although taking into account the accumu- a person enjoying an income of Rs. 20,000/- was Rs. 1,200/- whereas according to the figures in the table in 1959-60 the tax liability of

ment scheme of one form or the other will have to be used so that the hardship resulting from the way in which inflation affects tax rates is minimised. The choice of the mechanism will, however depend on a number of factors — the existing tax structure, the stage of economic development, fiscal policies etc. in a particular country. Care will have to be taken to avoid sophistication which may give rise to administrative complexities. It would be advisable to start with simpler techniques and then gradually move on to comprehensive forms, if required.

TABLE 3
Tax Calculations

INCOME	1959-60	1970-71	1973-74	1974-75	1975-76
	Rupees	Rupees	Rupees	Rupees	Rupees
6,000	Nil	Nil	Nil	Nil	Nil
9,000	125	25	Nil	Nil	Nil
12,000	335	70	440	Nil	Nil
20,000	1200	440	1625	1825	1670
30,000	3170	1170	4175	4025	3900
40,000	5710	2985	7350	7040	6675
50,000	10020	5435	12000	10600	10300
60,000	15830	9600	17100	16400	15300
70,000	22350	14100	22200	22250	19850
1,00,000	41656	31150	39000	41100	34600

Strategy for Transfer of Improved Technology to Farmers of Different Size and Tenure Categories

*Dr. Muhammad Naseem**

The gap between the production potential and the current production levels in a number of countries in Africa and Near-East is so wide and alarming that it leaves one in great mental exercise as to what could be the contributory factors. Is that the technology itself wanting? Is that the diffusion process lacking? Are that the institutions serving agriculture out of line? Is that the absorbing capacity of the farming community limited? Is that the polarization of various farms size groups too wide to enable smooth transfer of technology? or what?

2. These questions do not lend themselves to an easy answer for want of in-depth analysis of structural and production arrangements under different sets of conditions. Historically speaking, the hopes knitted in the "Green Revolution" technology that it would drastically break the production barrier in great many developing countries, resulting in surplus availabilities of rice and wheat were not fully realized and the hypothesis relating to "Generating of Problems" did not stand the test of the time. Had the "Seed-fertilizer-water" technology, as it came to be popularly known, some inherent problems or were there some exogenous factors contributing to low rate of diffusion of the technology, despite the fact it was highly divisible and neutral to scale?

Structural Framework.

3. Pakistan, like many of the countries in Africa and the Near-East, represents a small scale agriculture where average farm area size is 13.00 acres. The distribution of holdings by farm size and

*Secretary Agriculture, Government of the Punjab, Lahore.

tenure classification, according to 1972 Census of Agriculture is as follows.

	Farms		Farm Area	
	Number (millions)	Percent	Total (million acres)	Percent
<i>(a) Size Classification :</i>				
Under 7.5 acres	1.64	43	5.99	12
7.5 to 12.5 acres	0.92	24	8.91	18
12.5 to under 25 acres	0.79	21	13.06	27
25 acres and above	0.41	12	21.10	43
Total	3.76	100	49.06	100
<i>(b) Tenure Classification :</i>				
Owner	1.57	42	19.40	40
Owner-cum-tenant	0.90	24	15.16	31
Tenant	1.29	34	14.50	29
Total :	3.76	100	49.06	100

It would be evident from the above data that 43 percent of the farms in Pakistan occupying 12 percent of the farm area are less than 7.5 acres in size. Forty-five (45) percent of the farms occupying 45 percent of the farm land are between 7.5 and 25 acres belonging to medium size group. The farms above 25 acres in size are 12 percent with 43 percent of the farm area. The tenure situation, likewise, also presents an interesting picture. Only 42 percent of the farms spread over a farm area of 40 percent are owner farms whereas the rest 58 percent of the farms occupying 60 percent of the farm area are owner-cum-tenant or tenant farms. It would thus be clear from the existing size and tenure structure that the preponderant majority of the farms, 2.56 million out of total of 3.76 million (67 percent) spread over an area of 11.90 million acres are less than 12.5 acres in size, the subsistence level of holding. The spread or transfer of technology to the farm groups with less than 12.5 acres in size mostly constituting tenant farmers and small holders who lack resources to increase their levels of production and productivity is perhaps the major bottleneck towards modernization of agriculture.

Current Spread of Technology.

4. In a field survey conducted in 1970 by the author of this article in a typical district of Pakistan at a time when the impact of the "Green Revolution" technology was being studied in all its ramifications, it was noted that the vast majority of the small farmers, including the tenants with less than subsistence holding (12.5 acres irrigated) were not fully participating in the "Green Revolution" technology. The adoption level of the new technology by the farmers with holdings upto 12.5 acres and between 12.5 to 25 acres was found found to be as follows :

	0-12.5 acres	12.5 to 25 acres
1. Percent of wheat acreage planted to high yielding varieties (HYV).	6.66	92.4
2. Percent of cropped acreage applied fertilizer.	63.1	65.8
3. Percent of cropped area treated with pesticides.	6.6	7.6
4. Percent of farmers owning tubewells.	7.7	19.4
5. Purchase of tubewell water (hours/acre/year)	10.82	7.42
6. Hiring of labour services (hours/acre/year)	61.9	71.1
7. Hiring of transport services (tonnage/year).	0.46	2.01
8. Cropping intensity (percent)	125.8	118.6
9. Gross income ¹ (per acre)	161.58	145.19

5. Whereas the above survey information indicated that the small farmers were using essential agricultural inputs but the level and perhaps the rate of adoption was low as compared to the medium farmers who were the maximum users of the modern inputs.

1. The concept of 'Gross Income' includes both farm (sale of crops, sale of milk, sheep rearing etc.) and off-farm (sale of labour resources etc.) income.

Statistically significant differences exist between the two groups in the use of HYV of wheat and pest control. The use of fertilizer by the farmers in the medium size group is more intensive and so is the use of water due to higher percentage of tubewells installed/owned. Although on per acre basis, the "gross income" is comparatively higher with the small farmers as a result of higher cropping intensities and off-farm revenues, yet these farmers remain basically subsistence-oriented, adding a little to the total output due to poor access to the sources of production.

6. The above data in terms of percentages can be misleading as good percentage of small farmers may be using modern inputs but the use of constituent inputs in recommended quantities and in their optimum combination, is an essential ingredient to output expansion and growth of the small farms. For sensitive production mechanism to react speedily to the package of technology, it is imperative that small farmers, including tenants are actively involved in the production processes and have full access to input complementarities, both in the spatial as well as temporal sense. This strategy would not only be growth-oriented but also would help the great mass of the farming community belonging to smaller size and tenant categories to share the fruit of development.

Constraints in Diffusion of Modern Technology.

7. From the available evidence it appears that modern technology in mid sixties and after was mainly confined to medium and large farm groups, whereas the vast majority of small farmers, which progressively multiplied in number, continued to practise traditional agriculture. In a study referred to earlier two problems were readily identified which inhibited the growth of small farms. These were :

- (i) Lack of credit to purchase agricultural inputs, and
- (ii) Lack of managerial skill to make use of the available technology.

Both these problems are fundamental to the transformation process ; their solution is essential not only for output expansion but also for minimizing inequities in distribution.

8. The problems of lack of investable funds and low level of technical know-how is particularly acute with the tenant farmers who have limited internal savings and little or no access to the capital

market for want of collateral. Lack of tenant investment, insecurities of tenure, high rents etc. are serious impediments to the adoption of modern technology by this group of farmers.

9. For variety of reasons, such as size distribution, tenurial relationships, lack of funds, vagaries of climate, the small farmers are naturally risk averters which is hardly conducive to adoption of new technology. Risk plays an important role in the decision-making process of the small farmers; they will never act as "leaders" in testing new ideas or technologies, they would always be "followers" and that if they are certain that the new techniques will have a high rate of return.

10. The problems of the small farmers have remained unattended due to lack of institutions to serve them, and whatever institutional framework may exist, it is generally un-concerned or apathetic towards them. This effect may be due to extra-long effort needed to motivate and guide the small farmers and provide them with essential ingredients to maximize their output and incomes. The notoriety of weak extension and education services and institutional credit delivery system is too known to be lamented upon here. Yet the fact remains that there has been little understanding to recognize the problem of the small farmers as an impediment to growth, and consequentially little attempt has been made to create institutions to meet their production requirements.

11. As a result of widespread tenant farming and small holdings, the majority of the rural population remains engaged in low productivity, traditional cultivation. It would not be an exaggeration to suggest that these small owners and tenant farmers are the victims of impoverished economic standards; the latter also possessing a low social status. This category of farmers, who are by far the majority, have not been involved in the national effort to increase agricultural production nor are they benefiting, directly or indirectly, from the fruits of production or the Government incentive programmes that help generate it. The success of development effort among this group of farmers will importantly influence the success of any broaden development strategy.

Strategy for Transfer of Technology.

12. The strategy instrument which can be responsible for the widespread use of modern technology can be categorised into number of components keeping in view the production environment, the size

and tenure pattern, the socio-economic status of the farming community and overall resource endowment situation. The options might involve institutional reforms, structural changes or transformation of attitudes. Let us discuss these presently :

Institutional Reforms :

13. The established criteria of exploiting production potential with the leading farmers under optimum resource supply condition can be very mis-leading. Until and unless the great majority of the farming community comprising the small and landless operators is not involved in the production activity, the problem of low productivity, traditional agriculture would remain unsurmountable. As such, the imperative lies in the fact that a deliberate and a purposeful policy is designed to build institutions which should help remove bottlenecks such as non-availability of investable funds or lack of technical guidance. The foundation for institution-building should be laid on the premises which seek to serve the majority. The two major institutions, without the viability and effectiveness of which the standard of agriculture is destined to remain tradition-bound are : (1) strengthening the extension and education services, and (2) institutionalising the credit supply system.

14. *Agricultural Extension Services* : The strengthening of the agricultural extension services both in the terms of quality and quantity is pre-requisite to improved and widespread diffusion of technical knowledge. The current ratio of extension worker to farm families should be up-graded to at least 1 : 500 so that extension education is available to the small and landless farmers as much as to the innovating and large farmers, the later unfortunately having the tendency to capitalize on the service of the extension workers. The training of the extension agents also needs to be sufficiently improved so that they are respected for their advice. The extension organization should be characteristic of an embodiment of dedicated and selfless service.

15. (b) *Credit Delivery System* : The other institutional viod which discriminates against the vast majority of the farming community is the apathy of credit-giving agencies towards the small and landless farmers. There are some isolated experiments of supervised credit where small farmers' participation has been insured with some measure of success but these stray models hardly make a dent into the problem. As much as 85.4 percent of credit needs of the

small farmers, according to our survey, are still being met through non-institutional sources such as friends, relatives, traders, shopkeepers and other private money lenders which in a way reflects the remoteness of the institutional credit system from the farmers, and of the latter from the market economy. Our results indicate that the subsistence farmers who are perhaps in the best need of the loanable funds are simply out of the institutionalized system of credit supply. As such, the transfer of technological innovations, particularly when the key inputs are purchased items, must come to a grinding halt. To reverse this situation, it is imperative that the farmers irrespective of their size or tenurial pattern must be involved in government-sponsored credit scheme to enable them to enter into production processes with higher degree of technological input.

Structural Changes :

16. Unfortunately, the structural pattern obtained in most of the countries in Africa and the Near East does not lend itself to an easy flow of technical information and it also discriminates against the small and the landless farmers. For diffusion of improved technology amongst farmers of various size groups, the need for bringing about necessary structural changes in the rural environment is strongly felt so that by virtue of its very design, it is efficient and least discriminatory. We can discuss structural reforms under two major heads, firstly : the farm size and tenure pattern, and secondly : the agricultural infrastructure.

17. *Farm Size and Tenure Pattern* : In a study done by the author on small farms transformation, an attempt was made to explore the optimal time path growth strategy of the small farms through a multiperiod linear programming model, on a primary data collected in Pakistan in 1970. It was found that initial farm size was an important factor affecting farm growth possibilities. From a base of 12.5 acres size, a solution for alternative farm sizes was carried out; the land size scaled thrice upwardly and thrice downwardly at an interval of 2.5 acres, resulting in seven solutions with land size varying from 5 acres to 20 acres at 2.5 acres increment each. Whereas the resources fixed to the farm were not varied, the variable resources such as capital, borrowing, labour hiring, water etc. were varied proportionately. It was seen that when the land size varied downwards to 5.0 and 7.5 acres, the cropping intensities and

income streams declined over time, indicating that such farms might ultimately go out of business. The case, where land size was parametrically scaled down to 10 acres and then scaled upwards to 15 acres, varying other resources proportionately except those fixed to the farm of 12.5 acres showed some growth possibilities. It was further seen that if some operating capital is made available to these farms, possibilities for generating growth on self-sustaining basis also existed. This is because the cropping pattern selected moved from a traditional to advanced technology and secondly the cash value crops entered into the cropping pattern in an important way.

18. For planning purposes, the inference to be drawn from these results is that farms with 7.5 acres size and less in irrigated tract of Pakistan are simply on the verge of retirement; limitations are imposed on farming/cropping activities despite injection of more capital through increasing credit supply. In other words, below-subsistence farms fail to generate enough internal savings to attain a self-sustaining growth path. Such farms which in Pakistan according to 1972 Agricultural Census are approximately 1.64 million in number and are spread over 5.54 million cultivated acres need to be liquidated in favour of units where growth possibilities exist. These farms are destined to remain tradition-bound and must, therefore, give way to farm sizes of above 7.5 acres so that through infusion of capital, use of purchased inputs and improved extension advice, they can participate in the production processes. The current alternative sought in joint holdings, involving check on further sub-division below the subsistence level, is a poor recourse which in fact adds to the production problems rather than help solve them. The affected peasantry could be settled in alternate lands owned by government or absorbed in other pursuits in agro-based industries.

19. Similarly in case of tenants farms, some positive policy measures are necessary to eliminate the age-old vestiges of the sharecropping system as this set of landless farmers neither have access to modern agricultural inputs, including credit nor they are amenable to extension advice. The standard of agriculture with them will remain out-moded not only because of their lack of investment capacity but also due to their below subsistence level of holdings. The tenant farmers need, therefore, be conferred upon proprietary rights on government lands lying as culturable waste (4.85 million acres in Pakistan) and also suitably aided to develop

these lands. This would remove physical constraints in the transfer of technology to this group of farmers who could then be expected to respond to new technological innovations.

20. (h) *Agricultural Infrastructure*: The agricultural infrastructure is often defined as the physical capital and the institutions or the organizations which provide economic services and which have a significant effect, directly or indirectly, on the economic functioning of the individual farms. Development possibilities in agriculture are closely related to existence of these infrastructural facilities and other social overheads. In fact development of objective relating to productivity increases as it breaks vicious circle of inertia, creates place utilities, promotes investment in agriculture, encourages growth of entrepreneurship and creates requisite external economies. Unless, therefore, appropriate physical infrastructure comprising; (1) irrigation and public water, (2) communications, (3) power and (4) water supply, and compatible social infrastructure comprising: (1) housing facilities, (2) school/colleges, (3) dispensaries/hospitals, and (4) shopping centres are not developed, the profitability of investment in projects/programmes in agriculture leading to higher levels of production and income for rural masses are not likely to be realized. Unfortunately again the preponderant majority of farming class, the small and landless farmers who constitute 67 percent of rural community, suffer the most in terms of production and income due to lack of infrastructural facilities. The diffusion of new technology amongst this group of farmers remains constricted resulting in poor agricultural social development. Although, building up of agricultural infrastructure in an under-developed environment requires good deal of public investment which often is shy due to variety of reasons, all the same development of such physical and social overheads is essential to enable the majority of the farmers to have access to the technological innovations.

Attitudinal Transformation

21. Transfer of technology has also much to do with the attitudes of: (1) the carriers of technology, (2) the recipients of technology, and (3) responses generated by the environment. Let me take up the last mentioned parameter first. The receptiveness of the environment to technological change might depend upon certain legal, political and socio-cultural requirements but without the responses of the environment, widespread diffusion of the

technology might not be possible. May be it is an institutional problem to be dealt with in a different framework, for example, building up of cooperative organizations to insure flow of physical inputs/credit and technical know-how to the farmers, irrespective of their size categories or tenure relationships, but such an institutional effort would certainly hinge on the attitudes portrayed by the constituent groups. For integration of supplier/credit/marketing, cooperativization might provide a suitable answer but cooperatives by themselves cannot lead to technological breakthroughs unless there is proper development of attitudes to work through a framework. The legal or political backing to such an arrangement would be a consequential treatment.

22. The attitudes of those responsible for the transfer of technology and those of the recipients are another set of elements which must be fully brought into play. This means a good extension work all over. The carriers of technology must themselves know the technology fully well both in its practical as well as its theoretical sense, and then they must know their clientele so that proper approaches can be developed for maximum success. Good number of extension methodologies can be employed to achieve the objectives but the attitude of the extension workers themselves towards their work, their clientele (irrespective of their limitations) and the environment will ultimately determine the measure of their success. Their education, training, bent of mind and methodologies employed will remain vital to their success. Similarly the recipients' attitudes towards technology will be vital for its acceptance. Whereas the transfer of technology would much depend upon its nature, for example, it might be wasteful to seek acceptance of a lumpy input by a small farm or a technique with limited use or return, all the same the farming community must also develop attitudes to expose themselves to new technique or practices, cost factor aside. The problem is acute in an underdeveloped environment where the level of education amongst the farmers is generally low which eludes modernization. But farmers generally being economic men respond to incentives and they are, to a varying degree, profit-motivated. They can be encouraged to adopt new technologies suiting to their set of physical and social situation provided there is a deliberate and an honest attempt to bring them on a development continuum.

RURAL—URBAN DISPARITIES IN PAKISTAN

Need for Industry—Led Growth ?

*Khalid Aftab.**

Since the Second World War the less developed countries have become increasingly aware of the need for economic growth. Policies have been vigorously pursued to achieve higher growth rates in these countries. Great emphasis has been placed on the strategy of rapid industrialization in order to speed up growth, though not always yielding satisfactory results.

The policy makers who supported "Growth via Industrialization" strategy were convinced that alternative development strategies would have led to extremely low growth rates. Development planning in Pakistan has also been guided by similar economic ideas. On hindsight it seems that neither the concern about growth rates nor the industrial policies of the past allowed us to fix correct development priorities.

Review of Pakistan's plans reveals that in an effort to liberalize the economy to the utmost, the Government of Pakistan in the past years followed a policy of redistributing income to the industrial classes in the hope that this would ensure high rate of growth via high rate of domestic savings. The redistribution was so extreme that the standard of living of rural people (in terms of per capita) in 1964/65 remained the same as in 1949/50, perhaps even lower.

TABLE—1
PER CAPITA INCOME AND CONSUMPTION

GNP/Per capita (Rs)	Rural Income	Food grains/ per capita (Ounces per day)
1949/50 311	207	15
1954/55 316	201	13
1959/60 318	194	14
1964/65 360	207	N.A.

Source : Griffin, K 1

*Assistant Professor, Department of Economics, Government College, Lahore.

1. Griffin, K B. : "Financing Development Plans in Pakistan"; P.D.R. 1965.

Looking into the evidence contained in Table-II, reveals that average urban incomes were six times higher than the rural and they grew four times faster (12.8% over ten years vs 3%). This was evident that income distribution was becoming more unequal, and the majority of population living in rural areas remained poor.

TABLE—II
RURAL—URBAN INCOME DISTRIBUTION

	1954/55	1964/65	Increase	
			Absolute	Percentage
Population (m)	88	112	27	27.3
Urban	10	16	6	60.0
Agriculture	78	96	18	23.1
Income per capita	316	360	44	13.9
Urban	1133	1278	145	12.8
Agriculture	201	207	6	3.0

Source : Griffin, K. B. ²

Similar trends are evident from table—III showing the domestic terms of trade for West Pakistan.

TABLE—III
DOMESTIC TERMS OF TRADE (WEST PAKISTAN)

Year	(Three Years Average)		AGR/MFG
	AGR/MFG	Year	
1951-54	97.39	1960-63	108.28
1954-77	91.41	1963-66	110.0
1957-60	99.43	1968-69	106.55

Source : Lewis, S.R. ³

Supporting evidence can also be obtained from the differences in implicit exchange rates between industrial and agricultural goods for West Pakistan.

- Griffin, K.K. : "Financing Development Plans in Pakistan"; P.D.R. 1965.
- Lewis, S.R. : "Recent Movements in Agriculture's Terms of Trade in Pakistan, P.D.R. 1970.

TABLE—IV

Implicit Exchange Rates for Agricultural and Manufactured Goods, West Pakistan (Three-year averages)

	MFG GOODS			AGR GOODS	
	Gross output	Purchased by AGR	Marketings	Purchased by MFG	Official Ex. Rate
1951-54	7.07	8.39	3.81	4.13	3.31
1952-55	7.63	8.94	3.81	4.15	3.31
1953-56	7.84	9.00	3.76	4.06	3.78
1954-57	7.66	8.51	3.94	4.19	4.27
1955-58	7.90	8.56	4.33	4.57	4.75
1956-59	7.96	8.57	4.73	5.06	4.75
1957-60	7.95	8.68	4.85	5.30	4.75
1958-61	7.73	8.59	5.06	5.60	4.75
1959-62	7.68	8.61	5.19	5.70	4.75
1960-63	7.53	8.41	5.40	5.79	4.75
1961-64	7.39	8.33	5.35	5.69	4.75

Source : Lewis, S.R. 4

Two indicators are noteworthy from the above table. First, the relative levels of the implicit exchange rates of the two sectors indicate the extent to which trade restricting policies of the government discriminated against the other. Second, the movement of differential in rates over time gives some information on the extent to which the protected industries had moved towards reducing the cost of protection by lowering their implicit exchange rates.

Implications For Growth.

All this has happened due to excessive emphasis on industrialization—that too, misplaced emphasis on some industries as a result of which “narrow-based industrialization” not only thrived on agricultural sector’s income but also failed to provide necessary support for improved agricultural production. Three aspects of industrial strategy can be identified which have relevance for the issue under discussion :

4. Lewis, S.R. : Economic Policy and Industrial Growth in Pakistan (1969).

1. What kind of industries we have set up ?
2. What sort of industries we should set up now, and why ?
3. How can the in-egalitarian nature of economics development be changed with the help of new policy of industrialization, with a view to reducing ruraturban differences ?

Pakistan's past strategy of economic growth consisted in encouraging private capitalist with the help of special incentives in the form of subsidies, protection, and tax concessions. The impact of this policy was to transfer income from agriculturists to the newly born manufacturer. No doubt, this bread growth of inefficient industries which is reflected in the two to three times higher prices (using implicit exchange rates) of manufured goods compared to the C.I.F. prices of similar goods at official exchange rates in 1950s. By the and of 1950s, this pattern of industrialization was being aided by public sector investments in intermediate goods, industries such as cement, fertilizer, chemical and paper products. But all this while growth of output was checked by lack of capital goods, and lack of intermediate goods to utilize existing capital goods.³ Moreover, withdrawal of resources from agriculture resulted in only marginal growth in this sector.

The differential effects of tarrif-structure, system of import licensing and over-valuation of currency had little effect on the structure of production in 1950s. Scarcity of goods made it profitable to produce any good. These problems and dangers of these policies became even greater in II plan, though the foreign aid temporarily eased the situation. The said policy of industrialization involved substantial costs :

- (i) Excessive protection and concessions helped establish inefficient industries and neglect of productivity ;
- (ii) Only 'imported' industrialization could take place ;
- (iii) Industrialization ocoured mosty in consumer goods with limited value added ;
- (iv) Due to lack of attention towards export-oriented industries a declining proportion of manufacture was exported ;

5. Power, John : "Industrialization in Pakistn : A case of Frustrated Take off ?" P.D.R. 1983.

(v) Industrial development was concentrated in location as well as in ownership ;

(vi) The second plan was responsible for "sub-optimization" rather than optimization from the point of view of national development.

What type of industries we should now have and why ? It is proposed that a time has come to replace the policies of import substitution of consumer goods by more appropriate industrial policies aimed at import substitution of capital goods.

Present Situation

Post 1970 industrial policy carried forward some elements of third plan strategy which consisted in :

- (i) Shift of emphasis from consumer to capital industry ;
- (ii) Emphasis on increased exchange earnings through export of manufacture ; and
- (iii) recognition of growing inequality of real incomes. The annual plan for 1972-73—that marked an end to reference of planning within fourth plan per-view—had articulated New Social objectives that had to be carried out in 7-8 years through a planned social justice programme. One way of achieving this objective was through immediate ploughing of resources in capital goods industries in the public sector. Substantial amounts of funds channeled for setting up and modernization of steel, cement, heavy machinery, tractors, commercial vehicles, fertilizer and petro-chemical industries are indicators of government's eagerness to remove shortages of capital goods on the one hand and reducing dependence on imports on the other. At present, large amounts of our scarce capital is committed in these projects which are in different stages of completion.

Now, one important issue need to be looked into. Should we abandon or continue the strategy of developing the strategic industries ?

We believe there is an urgent need for import substitution of our imports of raw materials and capital goods. This can be possible only if we let the non-industrial sectors feed the planned growth of selected industries for sometime more. No doubt this will be achieved

through additional sacrifices of agricultural sector. But this cost is sure to be adequately compensated by increased supplies of commodities like iron, steel, tractors etc in the near future. Our dependence on imported capital goods must be reduced by establishing the large-scale industries. We must expand our iron and steel manufacturing capacity and machine building capacity even at short run disadvantage to agricultural sector with a view to consolidating future economic gains for agriculture as well as for the economy. This strategy will also help in effecting genuine rural transformation in the near future.

As for the third issue i.e., in what fashion a new industrialization strategy be used to narrow rural-urban disparities, the remedy lies in changing the growth strategy so as to check the inherent forces of rapid industrialization that cause inequalities. It may be admitted frankly that growth in Pakistan has taken place in "Enclaves", surrounded by traditional activities. The traditional sector has failed to respond suitably or significantly to economic opportunities. Inegalitarianism of development process drives from the failure of horizontal spread from the enclave to the traditional sectors. Apart from some other effects such as reducing employment opportunities (low "trickle-down") and geographical polarisation, this enclave development causes two major disadvantages :

- ✓(i) Population growth reduces income per head in the traditional sector ; and,
- ✓(ii) Stimulates migration from the countryside. With the acknowledgement that rural development is a necessary condition of economic growth, we shall have to face the criticism of industrialization policies that tend to create enclaves and suggest means to achieve the broader of social objectives-

The disenchantment with industrialization is in fact with the form that it has taken in Pakistan and the distribution of its benefits. An industrialization strategy that would lead to proper composition of products and selection of suitable technology will help stop rural population migration to urban areas. Thus priority must be accorded to a form of industrialization which is consistent with a programme of rural transformation. But, can the surplus of industry be used to create jobs and generate incomes in the agricultural sector? The way out is the Green revolution itself that can come through the establishment of strategic industries. No doubt agricultural revolution remains the most effective method of widening the market. In the end industry's orientation towards domestic market will be determined by the agricultural revolution in raising the rural income.

THE POVERTY CURTAIN : CHOICES FOR THE THIRD WORLD A Review Article

*Riffat Nasreen**

Thinkers have to undergo the process of evolution. "The Poverty Curtain" depicts the process of evolution in Dr. Mahbub ul-Haq's thought over a period of eighteen years, ranging from 1958 to 1976. He himself considers it as "more an evolution of ideas over time". This is mainly due to the reason that his ideas regarding development strategy have changed entirely. For instance in 1963 he believed :

"There exists a functional justification for inequality of income if it raises production for all and not consumption for a few. The road to eventual equalities may inevitably lie through initial inequalities".

While in 1971 he viewed :

"It is time to stand economic theory on its head, since a rising growth rate is no guarantee against worsening poverty . . . Divorce between production and distribution policies is false and dangerous, the distribution policies must be built into the very pattern and organisation of production".

"The Poverty Curtain : Choices For The Third World" is a thought provoking study of "two different worlds, two separate planets, two unequal humanities one embarrassingly rich and the other desperately poor." In order to raise this curtain, struggle is needed, which is basically political in nature. This very struggle demands equality of opportunity because there exists unequal relationship between the rich and the poor nations. The poor nations are struggling for the elimination of widening disparities through fundamental institutional reforms, on the other hand, the rich nations are in favour of existing international market mechanism and argue that the poor nations must

*The author is a post graduate student in the Department of Economics, Government College, Lahore.

develop through hardwork and gradual capital formation as there are no shortcuts to it. Therefore Dr. Haq considers :

"The task, then, for the Governments of the developing countries is to reorient their development policies in order to attack directly the personal poverty of the most deprived 40 percent of their populations. This the Government can do without abandoning their goals of vigorous overall economic growth. But they must be prepared to give greater priority to establishing growth targets in terms of essential human needs :

"Such a reorientation of social and economic policy is primarily a political task, and the developing countries must decide for themselves if they wish to undertake it".

Equality of opportunity is the demand which arises as a natural result of philosophy that "Government must act on behalf of the poorest section of population and is a natural second stage in the liberation of the developing countries". At this very point Dr. Haq points out that the developing countries must recognize the "intimate link between the reforms of the national and international orders". Equality of opportunity requires the establishment of such a link.

The book is divided into three sections and to each section an introductory chapter is given.

The first section deals with new development strategies. After confessing the seven sins of economic planners, the author discusses whether a rapid increase in GNP is a sufficient condition for successful development i.e. whether growth oriented development strategy is the required and most appropriate development strategy for developing countries.

The outcome of growth-oriented development strategy came out to be frustrating and disturbing as unemployment increased, real wages declined, regional and income disparities worsened. All these led to discontentment among masses, though there was economic growth in terms of GNP. This gave rise to a demand for new development strategies.

Dr. Haq discards the growth-oriented development strategy and stresses that new development strategy must attack the worst form of poverty and it should define minimum consumption standards.

He blames developing countries for creating permanent development crisis due to their craze for higher growth rates in GNP, adoption of mixed economy and heavy dependence on foreign aid. The new development strategy must take into account that poverty cannot be tackled by assuming that growth rates benefit the masses. The author recommends that the new development strategy must launch a direct attack on mass poverty, adopt socialism and a greater degree of self reliance. However, the pursuit of the desired target of development depends on bridging the implementation gap. Implementation gap is one of the main causes of the failures of policies and strategies in the developing countries.

Then the author passes on to the analysis of outward-looking strategies, inward-looking strategies and regional and subregional cooperation among the developing countries.

In the last chapter of the first section Dr. Haq analyses the critical problem of mass poverty. He is of the view that the development strategy should pay specific and direct attention to the poorest segments of population. This requires identification of the minimum basic human needs and a production programme geared to satisfying basic needs. The strategy should pay a greater attention to the production of essential commodities and create employment opportunities for all. Previously growth-oriented strategy aggravated the problem of unemployment.

Trade, both within developing countries and with developed countries plays an important role in economic development. Therefore the desired development strategy must deliberately change the trade-development relationship. Dr. Haq is realistic in his belief that trade should not be considered as a leading sector. There should be a viable trading block for the promotion of trade among developing countries. Trade strategy should be subordinated to new development strategy. The existing trade pattern is least conducive to the economic development of the developing countries, therefore it should be changed. Dr. Haq's proposal for establishing a viable trading block among developing countries is relevant as well as prompt.

The author ends the first section by concluding the debate on new development strategies. He argues that the developing countries must immediately solve the crucial problem of adopting a new development strategy in order to make the world economic order work in their favour.

The problems faced by economically advanced countries are entirely different from those faced by the developing countries. For instance, since the early 70's, the developed economic world has been concerned about the problems of a limit to growth, environmental pollution and population explosion. On the contrary, developing countries are confronted with the issues of poverty; development and distribution on the national level and of improving an unequal relationship with developed countries. The second section of the book deals with these issues.

The developed countries argue for the quality of life while the developing countries are concerned about maintaining life. The developed countries are worried about the conservation of non-renewable resources. On the other hand developing countries are trying to solve the problems of exploitation of these resources and optimum allocation of these resources. Thus there exists a sharp contrast between developed and developing countries on the issue of nonrenewable resources.

Dr. Haq discusses the thesis, "limit to growth" in great detail. He critically analyses the problems of population explosion, pattern of industrial production, limitation of physical resources, earth's capacity to absorb pollution and limitations of technical progress.

It is an established fact that there exists a problem of population explosion due to high population growth rates in developing countries. New reserves of non-renewable resources can be exploited, therefore their current estimates and figures are subject to change over time. Dr. Haq regards the assumptions of non-renewable resources in "limits to growth" thesis as based on unreliable estimates. He lessens the danger of exhaustion of resources by estimating that "natural resources will last long enough to allow us time to make deliberate adjustments in the way we see them so that resource needs can be met indefinitely".

There exists the problem of environmental pollution all over the world. The author objects to the assumptions regarding pollution because he considers them arbitrary. He criticises the model on grounds of its extreme aggregation, unrealistic assumptions, long term projections and treatment of role of technology. He agrees that basic weakness of the model is "that it was complacent" about social and political problems which are the most predominant constraints to economic development of the developing countries.

Environmental issues affect international trade. Dr. Haq envisages that exports of certain raw materials may be adversely affected by stringent environmental standards imposed by the developed countries. Transfer of technology is also affected by environmental issues. Some argue that the "transferred technology" will become even more inappropriate when it is subject to the pollution control of the developed countries. Others view that less polluting technology may not lead to optimum "real use of resources". The developing countries will benefit from this new technology of fighting "environmental degradation" only at later stages. Dr. Haq rightly believes that less polluting technology will not be suitable for both developed and developing countries to the same extent. This is a realistic conclusion.

It is being argued that developed countries should pay a major part of the costs of environmental improvement in the developing countries on the ground that these countries have the means and with these means they can exploit the common property reserves.

The higher rates of population growth in developing countries have led to rapid increase in population and posed the threat of population explosion. It is the paramount need of the time to solve the very problem of population explosion because it is exerting a considerable burden on physical resources. Dr. Haq links the population problem with problems of resource exhaustion and environmental threat. The developed and developing countries blame each other for the depletion of resources. The developing countries argue that it is the consumption pattern of developed countries which is exerting excessive burden on physical resources. On the other hand developed countries allege that the population growth in the developing countries is responsible for this. Dr. Haq considers that "high rate of population growth in developing countries is a national, not a global problem". High rate of population growth only hinders the development of these countries as these countries already have shortage of productive resources. The author supports his argument by giving figures of percentages of total world population and consumption of world's gross national product. The developing countries of the third world (excluding OPEC) consist of 70 percent of total world population and consume only 11 percent of total world gross national product. From these figures it can be concluded that a one percent increase in population of developed countries puts more pressure on world's resources than that of developing countries. Pressure on world's

resources can be lessened by slightly changing the distribution of world's income in favour of developing countries. The author discusses different approaches to the problem of population growth and concludes that population can be checked by changing income distribution and socio-economic environment, besides family planning programmes. Thus the author believes in population planning rather than family planning. At the end of the discussion, he gives his solution to the problem. He suggests that "the sure solution to the problem of population is to be found in the solution to the problem of poverty". This problem should not be solved separately as it is linked with prevailing social, cultural and economic institutions.

The widened disparity between rich and poor nations has aroused awareness in poor nations of their being economically backward. It is only due to their economic backwardness that rich countries are exploiting them. It is the foremost need of the time to change the existing world economic order so as to enable the poor nations to develop. In the third section of the book, Dr. Haq undertakes this subject and pleads for equality of opportunity. At present there exist inequalities in the distribution of international reserves and in value added to the products traded. The relationship between multinational corporations and the developing countries reflects a fairly unequal sharing of benefits.

Market mechanism, in practice, suffers from failures and leads to gross inequalities in world income along with a number of other problems. Market mechanism has failed not only in developing countries but also in developed countries. The failure of market mechanism has led to a debate on adopting new development strategies.

Dr. Haq stresses that economic policies in the developing countries should be responsive to the needs of poor and should not benefit only a privileged few, only then reforms introduced in international order world have any meaning for these countries.

The author discusses the old economic order in historical perspective and concludes the discussion by giving a solution of changing the institutional system, thereby giving equal economic opportunities to the poor nations so as to increase productivity in the long run.

For changing the old economic order, changes in international credit system, movement of goods and services, movement of labour from the poor nations, a greater control of developed countries over the

exploitation of natural resources and over different stages of primary production, proper settlement of past external debts, renegotiation of all past leases and contracts and increase in the voting strength of poor nations within the World Bank and IMF are required. For bringing these changes the author puts the responsibility on universities and research institutions. His suggestion is to adopt a step-by-step approach. This suggestion is not only realistic but also sure to succeed.

Dr. Haq foresees the shifting of balance of power in favour of the third world. According to him demographic trends indicate the shrinking of the rich nations in terms of numbers. It will not be possible for the rich nations in future to control the third world economically, financially and politically. There will be a spread of nuclear weapons bringing an end to nuclear monopoly. The developed countries will be increasingly dependent on natural resource as regards import of natural resources as well as for sustaining the effective demand for their increased production. The pattern of exploitation of natural resources will change. The OPEC countries will be having a major proportion of the total world resources.

The author believes that the bargaining strength of the third world lies in its political unity. These countries must pool their basic strength together through the process of collective bargaining. Research on components of political and economic power must be undertaken. Through the establishment of its own forums, such as group of 77, these countries can fight for their cause more successfully. The third world must struggle for the establishment of a new economic order which is needed not only by them but also by other economic and political blocks.

For the establishment of a new international order, Dr. Haq emphasises the need to establish a single World Development Authority. The major task should be the regulation of short term international credit, provision of long term development finance, creation of a framework for expansion of world trade, striving at a balance between world population increase and food production and to act as a global economic planning commission with an advisory role.

In the last chapter of the book, the author discusses the development of a new framework for orderly resource transfers from the rich to the poor nations. He advocates the step-by-step approach in

this regard. In the new framework, whatever it may be, the World Bank will have to face and accept changing situations and needs of the developing countries.

Dr. Haq seems to be too optimistic about the future of the third world. For instance he considers that "the third world is the future international order." He believes that in the long-run, power will shift from developed to developing countries i. e. to the third world.

"The Poverty Curtain" is the voice of the third world. The author calls himself a "citizen of the third world". The book assigns an important role to the third world in the new international economic order.

The study discusses the various dimensions of the existing economic problems and exposes the exploitation of the developing countries.

Dr. Haq makes a bold attempt in criticising the weaknesses of the existing economic order and urges for its replacement by a new international economic order.

Dr. Haq's approach has certain weak points as well. For instance, it does not take into account attitudes and institutions in the analysis. Attitudes and institutions play an important role in the economics of the developing countries, therefore, realistic economic analysis of these countries must take these into consideration. In the words of Gunnar Myrdal, "they should be given an important and explicit place".

In reality there are no economic problems, there are simply problems. For the solution of economic problems, economic as well as non economic factors must be taken into account. Dr. Haq's study does not consider traditional values and other non-economic factors in his analysis of the developing countries.

He also ignores the importance of climatic factors which are of economic importance in developing countries, particularly of their economies being agrarian in nature.

The term "developing countries" is also objectionable. Gunnar Myrdal considers it "illogical, since by means of a loaded terminology it begs the question of whether a country is developing or not or whether it is foreseeable that it will develop".

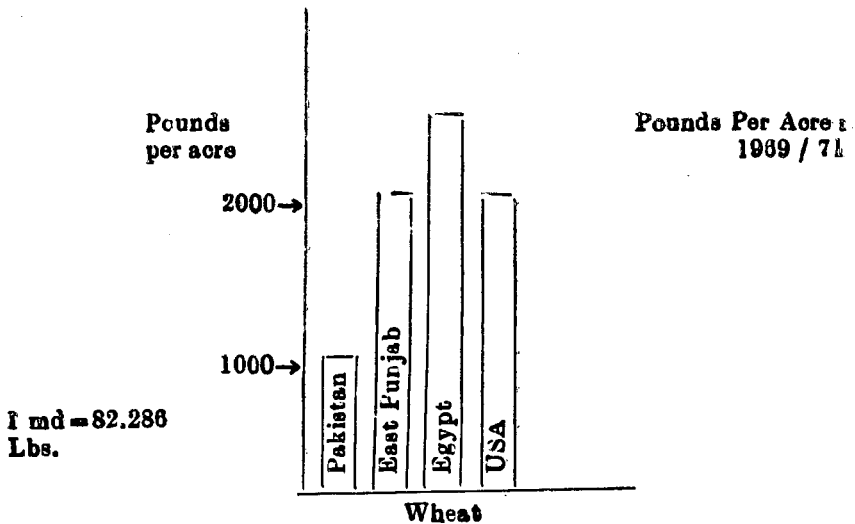
Finally, in spite of its being biased, Dr. Haq's approach towards the unequal relationship between embarrassingly rich and desperately poor invites the reader to think over the problems of inequality of opportunity, adoption of new development strategies, limits to growth and the establishment of a new international economic order.

AGRICULTURAL PRODUCTIVITY IN THE PUNAB SOME PROBLEMS AND REMEDIES

I

Azhar Mohyiddin*

Economists and experts have been expressing their opinion for a long time that Pakistan is moving towards an agricultural break through. According to Leslie Nulty, Pakistan should have become self-sufficient in her wheat requirements till now. She expressed this view in her book 'The Green Revolution in West Pakistan' which was published in 1972. The same view that Pakistan is moving towards an agricultural breakthrough is being expressed even now. It is being said that Pakistan's agricultural sector recorded a positive rate of growth of 3.9 percent in 1975-76. Major crops recorded a growth of 4.5 percent in 1975-76 as against a decline of 5 percent in the preceding years. The record wheat crop of 81 lakh tons was 7.3 percent more than that of 1974-75.



*The author is an old Ravian. The article is the second part of an extract from his thesis submitted to the Punjab University in 1975-6, in partial fulfilment of the requirements for Masters Degree in Economics. The first part appeared in Summer 1977, issue of this Journal.

The growth which has been recorded in production of wheat so far seems very impressive, but the picture looks somewhat different when we make a comparison of the comparative crop yields.

The table on page 23 shows a comparison of per acre yield for production of wheat in Pakistan, which is almost the same as that in Punjab, East Punjab, Egypt and U. S. A. Although the above position shown in the table is for 1969-71, the comparative position has not changed much. East Punjab (India,) Egypt and Punjab (West Pakistan) have comparable climate, and irrigation infrastructure. The U.S.A. represents a highly mechanised technology covering large geographical areas with widely varying temperature, water and cropping conditions. Although Pakistan has made substantial gains, wheat yields are still less than half the levels in the other three countries.

The comparative crop yields of wheat on the one hand make us realise that we are far behind the other countries and on the other hand it shows the great scope for improvement in our agricultural production, specially wheat crop. This shows that we should not become satisfied with our present achievements but give greater attention to make a real 'agricultural break through'. In Punjab we have a great scope to develop this sector as it is apparent from its situation and position as discussed above. We shall analyse this problem in light of the studies which have been made mostly in Sargodha Division.

We shall see now that how far is this view correct that small farmers could not reap the benefits of the green revolution. The general opinion has been that

1. farmers with small holdings have been unable to adopt dwarf wheats as economically they face great risk and uncertainty with new varieties ;
2. that the small farmers have been unable to finance complementary production inputs which push dwarf wheats to higher yields i.e. fertilizers, water, pesticides etc. and therefore they need special price incentive and special credit and extension support in order to adopt the new technology ;

Thus it has also been discussed and green revolution has been mostly held responsible for increasing the intraregional and inter-regional differences, We shall be able to see that to what extent is it true that the benefits of this revolution have not been equally shared.

Concerned with the first point, in the summer of 1969 an extensive survey was conducted by Dr. Mushtaq Hussain in the districts of Rawalpindi, Sahiwal and Lyallpur (in the Punjab province). Though the data were primarily used to measure the opportunity cost of switching from local wheat to Mexican dwarf varieties, the reported results give us some idea of the use of the new varieties in these districts. Dr. Mushtaq Hussain's survey showed that the districts of the Punjab with average farm size of less than 17 acres had at least 25 per cent of their total farm area sown with Mexican dwarfs. On the other hand the larger farms in Hyderabad and Dadu districts in the Sind Province (34 acres and 42.60 acres respectively) had proportionately less of their area (14 per cent) sown with the new varieties.

The Planning and Development Department, Government of the Punjab has carried out 751 interviews in forty randomly selected villages of Lyallpur, Sahiwal and Sheikhpura Districts. This survey revealed that about 73 per cent of the respondents total wheat acreage was sown with Mexican wheats during Rabi 1969-70. See table given below.

TABLE 1

Mexican wheat acreage as percentage of all wheat acreage during Rabi 1969-70, by size and tenure of holdings. Lyallpur, Sahiwal and Sheikhpura Districts

Size of holding	Owner holdings	Owner tenants	Tenant holdings	All holdings
Upto 12.5	71.0	80.4	66.7	72.5
12.5 to 25	63.3	71.7	69.2	68.0
25 to 50	71.9	92.7	81.9	82.0
50	73.0	87.3	67.3	78.6
All sizes	69.4	80.5	70.0	73.4

According to the survey report a very high percentage of farmers, 85 percent, has adopted the use of Mexican wheat seed by now. Although for all farmers combined the percentage of farmers that sow some Mexican wheat slightly increases as the holding size become large, the increase is insignificant. Similarly for all farmers combined the type of tenure had no significant influence on the percentage of farmers that adopted Mexican wheat.

During 1968-69 the West Pakistan Agricultural University, Lyallpur carried out a survey of 416 farmers in Toba Tek Singh Tehsil of District Lyallpur. Of their sample 71.30 per cent were peasant proprietors, 6.28 per cent owner-cum-tenants, and 22.42 per cent were tenants. Of the farmers surveyed 26.90 per cent had holdings ranging between zero and 6.25 acres, 38.57 per cent between 6.25 and 12.50 acres, 26.68 per cent between 12.50 and 25 acres, and 7.85 per cent had holdings of 25 acres or above. This survey showed that 75.34 per cent of the farmers were growing some Mexican wheat of whom 66.34 per cent were growing only Mexican wheat. This survey further showed that the percentage of total farm area sown to Mexican varieties was 26.01 per cent in the case of farmers possessing holdings of upto 6.25 acres; 33.39 per cent in the case of farmers possessing holdings from 6.25 to 12.50 acres, 32.10 per cent in the case of farmers having holdings of 12.50 to 25 acres and 41.72 per cent in case of farmers possessing holdings of 25 acres. This study also revealed that in case of peasant proprietors 47.64 per cent of their total wheat acreage was devoted to Mexican varieties. The corresponding figures were 56.32 per cent and 47.96 per cent in the case of owner-cum-tenants and tenants respectively. The above shows that neither the size of the holding nor the type of tenure had any significant effect on the adoption of Mexican varieties of wheat in Toba Tek Singh Tehsil.

Particularly striking is the realization that very little crop research has been done under barani conditions to identify better wheat varieties for barani farmers. Instead it has been found that barani small holders initially experimented with handful of seed (barrowed from neighbours and purchased locally), observed the results with their own experiments and increased the area sown with dwarf wheats the following season. It has been seen that there are significant differences in yield between dwarf and desi wheats; enough to make the adoption of dwarf wheats by barani small holders a profitable investment.

During 1971 Mr. Lowdermilk carried out interviews with 353 farmers drawn from a random sample of 30 villages in Khanewal Tehsil of Multan District. Lowdermilk's survey dealt with a wide range of farm sizes. Generally he reports a very rapid diffusion of dwarf varieties for all farm size categories.

TABLE 2

Percentage of sample farmers reporting cultivation of some dwarf wheat by Rabi season and expecting to cultivate in 1970-71

Size of holding	1966-67 or before	1967-68	1968-69	1969-70	Expect in 1970-71.
2.5-7.5	8	66	71	81	85
7.5-12.5	10	69	90	91	86
12.5-25	8	66	86	90	93
25-50	14	71	88	94	95
50 and above	30	88	95	99	99

During April 1972 a survey of village Harmoia (chak No. 104 JB) in Lyallpur District was carried out by Mr. K.M. Azam. This village was selected at random out of the villages of Lyallpur District, excluding the villages lying in its sugarcane belts.

The total number of farmers in this village was 133 out of which the land of ten farmers was found to be affected by salinity and it was considered advisable to exclude them from the sample. Out of the remaining 123 farmers 57.72 percent were peasant proprietors, 30.08 percent were owner cum-tenants and 12.20 percent were tenants. With regard to the size of holdings, 27.64 percent farmers had holdings up to 6 acres, 52.02 percent had holdings between more than 6 acres and 12.50 acres, 18.17 percent between more than 12.50 and 25 acres, whereas 1.62 percent had holdings more than 25 acres.

This survey showed that 96.75 percent of the farmers were growing some Mexican wheat. This survey further showed that 86-99 percent of the farmers were growing only Mexican wheats. The corresponding percentages were 79.41 in case of farmers having holdings of up to 6 acres, 90.63 in case of farmers having holdings of more than 6 acres to 12.50 acres, 86.98 in case of farmers having holdings of more than 12.50 to 25 acres and 100 percent in case of farmers having holdings of more than 25 acres.

During the survey it was revealed by these farmers that they had resorted to local wheats due to an acute shortage of irrigation water during Rabi 1970-71. All these farmers further revealed that had there been no constraint of irrigation water, they would have

grown only Mexican wheats. We may conclude that the farm size does not have any significant effect on the adoption of Mexican wheat.

In terms of tenure our survey revealed that in the case of peasant proprietors 2.16 percent of their total wheat acreage was devoted to Mexican varieties. The corresponding figures were 98.23 percent and 100.00 percent in the case of owner-cum-tenants and tenants respectively. Our survey further revealed that 78.88 percent of peasant-proprietors, 97.30 percent of owner-cum-tenants and 100 percent of the tenants were growing only Mexican wheats. Thus according to our survey the type of tenure had no effect whatsoever on the adoption of Mexican varieties of wheat.

In view of the above evidence we can safely reject the idea that farmers with small holdings have been unable to adopt dwarf wheats.

The next important point is that the small farmers have been unable to finance complementary production inputs which push dwarf wheats to higher yields i.e. fertilizers, water pesticides etc. and therefore they need special price incentives and special credit and extension support in order to adopt the new-technology. Eckert interviewed 115 farmers in the Sahiwal District during 1969. He broke down his sample into two categories on the basis of size of crop acreage; those with 25 acres or less and with 25 or above in size.

Significant among Eckert's findings was that both farm size categories produced similar wheat results. On the small and large farms, desi wheat averaged 16.54 and 15.35 maunds per acre respectively; dwarf wheats averaged 22.04 and 24.48. However there were moderate differences in some input levels. Small farmers had higher labour land ratios (represented by bullock pair hours used per acre), slightly lower seed and lower use of phosphatic yard manure. Dr. Eckert concluded that there was no conclusive evidence to suggest that small farmers were not able to compete with large farmers in terms of yield in Sahiwal district.

Dr. Eckert's conclusion is also supported by a study carried out by the West Pakistan Agricultural University. The yield differentials as reported by this study also show no significant differences between large and small holdings in Toba Tek Singh Tehsil of Lyallpur District. (See table No. 3).

TABLE-3

Yield differentials between local and Mexican varieties of wheat
among different size of holdings,
1968-69

Size of holdings (acres)	Local varieties	Mexican varieties	All Wheats
Upto 6.25	17.75	22.00	20.50
6.25 to 12.50	18.00	25.50	22.50
12.50—25.00	15.25	26.12	23.25
25.00	13.50	23.00	22.00
All sizes	16.75	24.25	22.50

In the sample of the earlier mentioned survey of the Punjab Planning and Development Department, the farmers with upto 12.50 acres had 37.3 percent of the land (of which small owners held 20.7 percent of the total acreage, owner-cum-tenants 8.6 percent and tenants 8 percent), 83 percent of these small farmers as compared with 98.1 percent in the more than 50 acres category were using fertilizer at the time of the interview; owner-cum-tenants used the most fertilizer and tenants were just slightly below the farmers who owned their land. 16.7 percent of the small farmers did not use fertilizer. However, 79.8 percent of these non-users said they could not arrange funds to purchase fertilizer while 35.2 percent of the non-users also cited the lack of water as a limiting constraint on the ability to use fertilizer.

TABLE 4

Nutrient pounds of nitrogenous fertilizer per acre applied to Mexican wheats by size of holding and tenure :
Lyallpur, Sahiwal and Shekhupura Districts 1970

Size of holding	Owner holdings	Owner cum-tenant	Tenant holdings	All holdings
Upto 12.5	44.1	36.5	41.1	41.3
12.5 to 25.0	48.0	49.4	40.4	47.0
25.0 to 50.0	75.4	52.5	62.3	62.7
50.0	58.0	66.7	49.7	62.7
All sizes	52.0	49.0	45.5	49.7

Table 1 shows that there are moderate differences in the amount of fertilizer used on Mexican dwarf wheats by farmers operating under different forms of tenure with the same size of holding. It is evident, however, that large farmers used more nitrogen per acre than small farmers and hence came closer to the optimum recommended for dwarf wheat production.

According to the Punjab Planning and Development Department survey of the three irrigated districts of the Central Punjab, 85 percent of the farmers have adopted the dwarf wheats. Of the 15 percent of the farmers who did not grow any Mexican wheat, 43 percent cited lack of water as the main reason and 37 percent said they preferred the taste of desi wheat.

On the basis of Lowdermilk's findings the most limiting constraints on the small holders' ability to raise overall crop production appeared to be water and credit (which could be used to purchase fertilizer and other factors of production including tubewell water). In particular farmers with less than 25 acres reported that sufficient tubewell water was not easily available to them for Rabi 1969-70. The same category of farmers also reported that fertilizer was not easily available for the same growing period. On the subject of credit relatives, neighbours and friends were shown to be the main sources of credit for all farm size groupings. However 32 percent of the farmers with 50 acres or more cited the bank as an important source of credit while banks were rarely cited by the rest of the respondents.

A study on the peasant proprietors in Sahiwal Tehsil of Sahiwal District carried out by Muhammad Shafique has revealed that 95 percent of the peasant proprietors owning 5 acres or less than 5 acres of land expressed their need for credit. This percentage declined to 90 percent in the case of peasant proprietors possessing holdings of 7.5 to 12.50 acres and to only 55 percent for those possessing holdings of 12.50 to 25 acres. This shows that the small farmers are facing more difficulties than the larger farmers in meeting their credit needs.

Also Lowdermilk's survey revealed that small farmers reported least contacts with Government workers. In Lowdermilk's view extension personnel gravitate to the large farmers to a great degree. Contacts with small farmers are surprisingly few. Knowledge of extension workers is also related to farm size.

The survey of Harmonia village conducted by K.M. Azam revealed the following yield differentials.

TABLE No. 5

Yield differentials in local and Mexican varieties of wheat among different size of holdings in Harmoia Village 1970—71.

Size of holding (Acres)	Local wheats	Mexican wheats	All wheats
	(Maunds)		
Upto 6	17.86	23.92	23.27
6 to 12.50	17.16	24.75	24.49
12.50 to 25.00	17.00	23.09	22.87
25.00	—	25.00	25.00
All sizes	17.64	24.13	23.83

The statistical analysis of data presented in table 5 shows that there was no significant difference in Mexican wheat yields of small and large farmers. The following table shows the yield differentials among different tenures :

TABLE No. 6

Yield differentials in local and Mexican varieties of wheat among different tenures in Harmoia village 1970-71

Type of tenure	Local wheats	Mexican wheats	All wheats
	(Maunds)		
Peasant-proprietors	17.60	24.60	24.05
Owner-cum-tenants	18.00	25.84	23.74
Tenants	—	23.40	23.40
All types	17.65	24.15	23.85

The analysis of data presented in table 6 shows that there was no significant difference between the Mexican wheat yields obtained by peasant proprietors, owner-cum-tenants and tenants.

The following three tables show the extent of fertilizer usage on wheat crop by various categories of farmers in Harmoia village of Lyallpur District. Tables 7 and 8 show that all categories of farmers are using some fertilizer on both local and Mexican varieties of wheat.

Table 9 however, shows that the quantity of fertilizer used increases with the farm size, indicating that larger farmers came closer to the optimum yield giving dosages recommend for Mexican wheats.

TABLE No. 7

Percentage of farmers in various categories of holdings using some fertilizer on wheat crop in Harmoia village Rabi 1970-71

Size of holding (acres)	Local wheats	Mexican wheat
	(Percentages)	
Upto 6.00	86.71	96.71
6 to 12.50	83.33	98.41
12.50 to 25.00	100.00	100.00
25 00	—	100.00
All sizes	87.50	98.32

TABLE No. 8

Fertilized area as a percentage of total area under wheat crop by size of holdings in Harmoia village, Rabi 1970-71

Size of holding (acres)	Local wheats	Mexican wheats
Upto 6.00	84.57	96.60
6.00 to 12.50	80.55	99.51
12.50 to 25.00	100.00	100.00
25.00	—	100.00
All sizes	87.50	99.29

TABLE No. 9

Nutrient pounds of nitrogenous fertilizer per acre applied to wheat crop by size of holdings in Harmoia village Rabi 1970-71

Size of holding (acres)	Local wheats	Mexican wheats
Upto 6.00	19.18	51.39
6.00 to 12.50	22.89	60.49
12.50 to 25.00	47.03	61.30
25.00	—	74.57
All sizes	42.76	60.01

Table 10 indicates the importance of various difficulties faced by various categories of farmers in Harmoia village in using as much fertilizers as they would have liked to.

TABLE 10

Main reasons for not using as much fertilizer as desired by various categories of farmers in Harmoia village during Rabi 1970-71 and Kharif 1971-72

Main reasons for not using desired amount of fertilizer

Size of holding (acres)	Cultivators reporting some difficulty	Lack of credit	Shortage of irrigation water	Non-availability of fertilizer when required	Fertilizer sale point too far off
(percentage of fertilizer users)					
Upto 6	100.00	94.12	20.59	2.94	2.94
6.00 to 12.50	95.31	87.60	21.87	12.50	6.25
12.50 to 25.00	60.09	56.52	17.39	4.35	8.70
25.00	50.00	—	50.00	—	—
All sizes	89.43	82.11	21.13	8.13	5.69

The above table shows that the smaller farmers in the first two categories faced much greater constraints in using the desired amount of fertilizers. The lack of credit was the most important constraint faced by all categories of farmers except the largest. The second most important constraint was the lack of irrigation water. The non-availability of fertilizers at the right time and the distance of fertilizer sale point were also quoted as difficulties to varying extents by all categories of farmers except the largest.

During the survey of Harmoia village K.M. Azam also asked the cultivators what, according to them, were the main constraints on the farm production. Their answers have been tabulated in table 11.

TABLE 11

Main constraints on farm production faced by different categories of farmers in Harmoia village, Lyallpur Distt. during Rabi 1970-71 and Kharif 1971-72

Size of holding (acres)	Irrigation water	Credit	Fertilizer	Improved seed	Pest protection
(percentage of farmers)					
Upto 6.00	88.23	94.11	14.70	—	—
6.00 to 12.50	92.18	62.50	25.00	6.25	7.81
12.50 to 25.00	72.91	43.43	43.48	13.04	8.69
25.00	50.00	—	—	50.00	100.00
All sizes	86.99	68.86	25.20	6.50	7.31

This table clearly shows that irrigation water followed by credit were the most important constraints felt by the farmers in Harmoia village. It is interesting to note that the larger farmers stated plant protection as the most important constraint on the farm production.

The survey further revealed that the smaller farmers were seldom visited by the extension agents of the Agriculture Department, while only very small number of large farmers had been visited by Extension agents occasionally. None of the farmers having holdings of up to 12.50 acres was visited by the Extension agents. This finding and a similar observation by Lowdermilk quoted earlier must, however, be evaluated against the proposition that in the irrigated plains of the Punjab it is not the larger farmers who need the Extension agents, rather the position is the other way round.

The evidence given above indicates that while the smaller farmers do face relatively more severe constraints of irrigation water and credit the difference in the severity of these constraints is not serious enough to have caused any significant differences in the yields obtained by the small farmers as compared with large farmers. It seems that small farmers are able to offset the severity of these constraints to some extent by making changes in their input mix relying to a greater degree on the resources available on the farm i.e. farm labor and farmyard manure.

In view of the evidence presented above, we would tend to reject the idea that small farmers have been unable to finance complementary inputs and that they need special price incentives and special credit and extension support in order to adopt the new technology. However, it is felt that to make a categorical statement like this, there is need for a more extensive survey.

Now we shall discuss, how far green revolution is responsible for creating intra-regional and inter-regional differences. We shall see whether the benefits of this revolution have been bestowed equally to all groups or not.

Dr. Eckert's survey in Sahiwal district and the West Pakistan Agricultural University and K.M. Azam's survey in Lyallpur District had revealed no significant difference in the dwarf wheat yields of small and large farmers. Although the evidence presented above does indicate that small farmers are facing a relatively more severe

constraint of resources as compared with larger farmers, particularly with regard to irrigation water and credit, this constraint is not so severe that it would inhibit the adoption of new technology by small farmers to any significant extent. The small yield differentials that have been noticed between large and small farmers are primarily due to the fact that large farmers are able to use more nearly optimum dosages of fertilizer coupled with irrigation water. Clearly yield differentials are not large enough to have created as yet any serious problem of duality or polarization of the farm population into two distinct sectors—a progressively modern sector and the other a regressively backward sector. This however does not mean that we can afford to be complacent. Urgent and co-ordinated action is needed with regard to enhanced credit and irrigation water supplies to the small farmers. These facts must be kept in mind while planning for the irrigated agriculture in the Punjab and West Pakistan as a whole as well.

The physical production is but only a part of the total benefits; quantum of benefits accruing to small or large farmers is also function of the prices received by them. It is also pertinent to note that the socio-political risk involved in duality is not a function of the rate of adoption of new technology but of difference in the quantum of benefits flowing to different groups of people and different regions. It has been observed that in West Pakistan a major supply increase generated by the new technology exerted a downward pressure on the harvest prices of food grains, e.g., harvest price of wheat fell down to Rs. 13.00 or even Rs. 12.00 per maund during 1967-68 as against the support price of Rs. 17.00 per maund fixed by the Government. In such circumstances the quantum of benefits flowing to the farmers becomes a function of the ability of the farmers to sell their produce at the Government support price. If the institutional arrangements set up by the Government for this purpose have a bias towards the larger farmers, this would obviously lead to a gap in the quantum of benefits which flow to these two categories of farmers.

From the above analysis we come to know first of all that a much greater amount of yield per acre can be attained from the agricultural lands in the Punjab, since under similar conditions as regards climate and irrigation infrastructure in East Punjab and Egypt, yield per acre is much higher. This shows that we can positively improve and increase our production of wheat. We have also had a look at the constraints faced by our farmers.

Although we have proved that no particular group of farmers is lagging far behind any other group, as regarding the production of wheat or yield per acre of wheat is concerned, but still it has been seen that different groups have felt the constraints by varying intensities. In the light of this analysis we could easily search remedies and suggest measures to improve our agriculture sector.

Farmers belonging to different categories have been able to keep up with all others till now but to make a real leap ahead we shall have to give greater attention to the problems of our agriculture sector as a whole. Irrespective of any particular category of farmers the community as a whole needs proper guidance and many more facilities than what are being provided. After studying the shortcomings we shall be able to suggest measures and policies to remove them in the next part of the article.

II

To ensure a breakthrough in wheat production a wide range strategy must be designed that will bring maximum benefit to the farmers with least cost and yet easy to adopt. The components of such strategy may comprise of measures such as :

1. To bring maximum wheat area under high yielding varieties ;
2. To cover maximum wheat area with chemical fertilizers, both nitrogenous and phosphatic and correcting N : P ratio ; and
3. To plant maximum wheat area with improved cultural practices.

1. Increased Area Under High Yielding Varieties.

Despite the fact that HYV were first introduced in 1965 the spread of these varieties which are highly responsive to fertilizer use and other input combinations, has not been quite satisfactory. Over a decade only 65 percent of wheat area has been put under HVY ; 22 percent area in irrigated and 85 percent area in the rainfed tracts are still planted to local varieties. We must focus our attention on replacing local varieties with the high-yielding ones, particularly when the baking quality of some of the high-yielding varieties such as Sundal is equally superior. The possibility of increasing the area under HYV's should be fully exploited; stipulating 100 percent coverage with improved varieties within the next 2 or 3 years time period.

2. *Increased Use of Chemical Fertilizer and Correcting N.P. Ratio.*

Another aspect of our wheat production strategy is to ensure widespread use of chemical fertilizers, both nitrogenous and phosphatic, in their recommended quantities and in their optimum mix, maintaining an N:P ratio of 2:1. The recommended doses for irrigated areas under average conditions are 120 N Lb of nitrogenous (N) and 50 N Lb of phosphatic ($P_2 O_5$) fertilizer and of 70 N Lb of N and 50 Lb $P_2 O_5$ for the rainfed areas. It must be underlined that one of the reasons that we have failed to fully exploit the yield potential of HYVs is that our farmers have not been making judicious applications of nitrogenous and phosphatic fertilizers with the result that levels of wheat productivity have been declining over time. One of the keynotes for achieving higher wheat production is to apply fertilizer to every acre that is planted under wheat and it must receive both nitrogenous and phosphatic fertilizers in the recommended quantity.

3. *Adoption of Better Cultural Practices.*

There are a number of improved cultural practices, concurrent to the use of seeds of HYVs and chemical fertilizers in their optimum mix that must also be adopted on a wide scale to generate increased output. There are a few recommendations which are least costly but have high pay-off in terms of yield. These are, for example:

(a) *Seed Treatment:*

Treatment of wheat seed with vitavax (2 oz : for 30 seers of seed) is likely to enhance the yield potential by 2-4 maunds to an acre. Vitavax is a fungicide which not only protects the seed against soil and seed-borne diseases but it also promotes germination and plant growth which adds to the yield potential.

(b) *Line Drilling:*

Sowing of wheat in lines with drill ensures placement of seed at proper depth (1.5 to 2 inches below soil surface) which is reflected in optimum plant population and better standard of the crop resulting in high yields. If combined seed and fertilizer drills are used, these ensure proper placement of both seed and fertilizers which has still a larger yield-increasing effect.

(c) Irrigation Practices :

About 5 irrigations including rauni are enough to mature a crop of wheat under maximum potential conditions. Experimental data shows that if first irrigation to improved varieties of wheat is given 10-15 days after seed starts germination, it has a high yield effect. 2-3 maunds extra produce can be realised only through adjustment in the timing of first irrigation of wheat.

(d) Weed Control :

The control of weeds which compete with wheat plants is a must. Weeds can effectively be controlled in many ways. Manual labor can also be used for this purpose. This would give high returns in terms of output expansion.

These and some other recommendations relating to improved cultural practices such as proper seed bed preparation, timely irrigation, judicious application of fertilizers etc., can go a long way in maximising wheat yields; in fact, improved cultural methods form an important ingredient of the 'technology package' which must be widely diffused along with other conventional inputs, amongst the farmers throughout the rural environment.

As it has been mentioned throughout this work water availability plays a very vital role. As regards water availability, there is hardly 0.8 of an acre foot for each acre. Wheat requires about 2 acre feet, while double cropping requires 3.5 to 4 feet. The ground water sources of the Indus Plain are estimated at 2,000 million acre feet. This resource needs to be developed for supply. Precision land levelling could save one third of the water wasted on the farm. If applied throughout the irrigated area, these savings translate into some 25 million acre feet of water, which is more than twice the water to be provided by Tarbela Dam.

In rainfed or barani areas, most of the families are living at subsistence levels in terms of incomes, crop yields, livestock production, nutrition and health. Simple available technologies can result in increased incomes, yields, food supplies, health and employment.

If properly planned the performance of barani agriculture can become double or possibly treble of what it is at present. Greater emphasis is needed on distribution of fertilizer and high yielding

seeds in these areas. Better agricultural practices and farm management such as deep ploughing, land levelling and contouring rotation techniques should be made use of. Agricultural research to identify best seed varieties and fertilizer ratio should be carried out.

One of the constraints faced by the farmers which was discussed earlier is the non-availability of extension service. All the modern techniques, and suggestions are useless, if they cannot reach the farmers. This shows how vital is the need for extension programmes. These programmes are mainly of an educational, advisory and demonstrational nature and do not involve permanent investments in agricultural land improvements. Planners and high government officials may well know what type of agricultural programmes a country needs to get off the ground and accelerate its development. These policies should be conceived in terms of national programmes of nationwide implementation and their administrative and financial provisions should be based on national operational requirements.

We must realise of course that our extension workers and cooperating farmers must be supported by modern inputs such as fertilizer, pesticides machinery, improved crop varieties and fertilizer, and seeds and by credit arrangements to make them accessible to farmers in order to achieve output increases.

There is no doubt that a decisive task of the extension officers in these projects is to arouse aspirations and hopes for a better future in the farmers, not only for themselves but for their country as well. There are many different kinds of motivations which make people strive for progress of which sheer individual profit is only one, and not a very strong one if the farmers feel that there is a lot of risk involved. Doing things together contributing to building a better community can become an exhilarating experience and a strong motivating force. If farmers realise that so much will depend on their success in raising production, this realization in itself can become a strong additional motivation.

In Japan it has been found that one extension field officer should not be assigned to more than 600 farms lest his effort becomes dispersed and loses its effectiveness. In highly developed countries we often find one extension officer for every 400 to 500 farmers.

We in Pakistan, or for that matter in the Punjab like other developing countries, cannot wait until we can assign an officer with four years or more of academic training to serve 600 farmers each. A promising method of overcoming the initial dearth of trained field staff is exemplified by Indonesia's 'Mass Agricultural Extension Programme' which started in 1964-65. For the 1965-66 rice growing season 6,000 students from the universities were sent in pairs into 3,000 villages. The students were given a one week special training course focussed upon three types of activities they were to perform.

1. help farmers to increase the rice yield.
2. improve the management of cooperatives.

3. and teach and work with farmers in groups of eight and twelve. Reports indicated that in the first 250 villages where 500 students worked with the farmers along these lines, farmers achieved an average increase of 40 percent in production during the first year. This method could be effectively used in Pakistan as well.

In connection with extension service, head-quarter officers can be useful only to the extent to which they really serve the functions of the field officers who deal directly with the farmers. Headquarter officers and those at intermediate levels are most effective if they spend most of their time checking the work of the field officers, maintaining contact with experiment stations and other government agencies to help the field officers solve the many technical problems they encounter in the operation of their area projects. The majority of these officers would be more effective if they were assigned to field work, except for the few highly skilled specialists who are best stationed at regional centres to be on call for the field officers.

It is not true that whatever information the extension service puts out does reach the farmer and does influence his farming methods. Radio programmes and films, these much heralded audio-visual mass media can be useful but mainly for arousing interest. Unless they are followed up by local field officers, through visits to individual farmers, demonstrations in farmer's fields, small group meetings and various other personal contacts, no action will result from these mass media-except in areas where the farmers are already well advanced in farming techniques, are literate and know how to go

about getting the additional information and assistance needed on their own initiative. This, however, is not the case in most developing countries including our own.

Adaptive Research: This is a necessity which cannot be overlooked if we want to develop our agriculture and increase production of wheat as well as other crops. Without adaptive research, extension service programmes would become useless. Production methods in agriculture are intimately affected by micro-ecological conditions of plant growth, by soil moisture and climate conditions of specific localities which vary widely often within short distances. A highly productive crop variety developed in an experiment station may be found much less productive under somewhat different soil-conditions. For instance certain wheat varieties lodge easily where nitrogen is ample or are susceptible to yellow rust or some other disease which was absent in the experiment station locality. A fertilizer dosage proven highly effective in one place may show disappointing results in another if moisture in the soil is lacking. This dependence of plant growth upon the specific local conditions makes it very difficult to standardize and routinize recommendations for many farming practices which can be relied upon to produce satisfactory results over a large area. This is all the more disconcerting as a wrong recommendation to farmers may deal a severe blow to their confidence in extension advice and to the rate of progress in the farming techniques.

Some countries are approaching this problem by setting up branch experiment stations in various major farming regions. This helps to some extent as it does bring the experimental work closer to ecological conditions of a particular region. But even within such a region the variations of soil and moisture conditions are wide indeed and can produce very different results from a certain crop variety or fertilizer application. Moreover the research techniques employed at branch stations tend to be much the same those used at central stations. Hence the results obtained are again strictly applicable only to the very specific micro-ecological conditions of branch stations location.

There is a different and, for purposes of truly adaptive research, much more efficient approach that can be used to take account of variations in micro-ecological conditions: systematic simple trials on cultivators fields. In principle we might state the issue in terms of a complementary division of labor between experiment station

work and trial on cultivators field. Experiment stations are most suitable for improving the internal genetic capacity of crops to transform plant nutrients into the useful parts of the crop, to develop resistance to certain pests and diseases and to breed for certain crop characteristics such as stiff straw to reduce lodging of grain etc. For this standard scientific methods of control of variables and ceteris paribus conditions are essential.

Trials on the cultivators fields on the other hand are most suitable for testing the range of variations in ecological conditions which a promising crop variety can tolerate and still maintain a superior performance under farming conditions. For this the conventional scientific constraints must be greatly relaxed and the conventional experimental designs greatly altered.

We must not under-rate the effect which adaptive research of this nature is bound to have on the farmers who cooperate in these trials, on their neighbours and even the village community where the purposes and results of the trials should be presented and discussed in group meetings.

An extension service approach of assisting farmers to do specific things on their farm accelerates progress much more than an approach of educating farmers through lectures in technology, for instance, why fertilizers produce higher yields. This kind of extension service and research should be carried out side by side to bring maximum benefit to our farmers in the Punjab and even the country as a whole. In fact it should be made a point that when the farmers are provided with credit provision should be made for proper supervision and guidance along with it. It has been found that at times farmers have been misusing the credit, if at all, it is made available to them. Extension services or supervision must go along with improved credit facilities as well.

Even in the marketing system of our agricultural produce there are serious flaws. A better marketing system is a must if we want that our farmers should be able to reap benefits of the Government price support policies. As it has been seen, specially the small farmers could not reach the Government's procurement centres. These farmers who are often badly in need of money have to sell their produce to middlemen who do not pay the full price. In this way small farmers are not only deprived of their due share but they no longer find an incentive to produce more. Our marketing system

could greatly improve if farm to market roads and store-house facilities are improved. At places these facilities are not available at all.

Mobility of goods and people heralds economic change. A first principle of agricultural development according to Daniel W. Strut is to get the loads of people's backs onto wheels. Yet at present there are farmers who still carry their farm produce on their heads, shoulders and backs. If we want our farmers to double and triple their yield we cannot expect them to carry a double or triple honest load on their backs for miles to the market, nor to carry large amount of fertilizers to the fields.

In the same way if the farmers can get storing facility for their produce, their bargaining position could become stronger. This would also go in the national interest because a lot of wheat grain gets damaged due to lack of storing arrangements. Since the crop is left outside for long, rains, flood etc., get a chance to create menace. It was stated by the Punjab Food Minister that the target for this year (that is 1976)-set at 15 lakh tons-has not only been achieved but it has been exceeded. According to the Food Minister the storage capacity has now been raised to 13.50 lakh tons. The officially stated storing capacity also falls short of the Government's procurement target. This is not the end of the story because the situation is much worse in fact. The destructive role of the floods in this respect can be well imagined.

As regarding the storing provision we can follow the Chinese example. China not only grows sufficient grain to feed her population of eight hundred million but takes every care to store it in good condition. Hundreds of millions of tons of grain for the market and stored reserves are protected from spoilage by mildew and from depredation by harmful insects, mice and sparrows.

They build the store-houses from straw and clay. The straw is mixed with clay and then twisted into thick chord-like pieces which are placed coil up coil on the ground to form a circular structure. When dried in the sun, silo-like structure is strong enough to withstand the weight and pressure of the grain. Such structures are suitable for storing various kinds of cereals.

The store houses stand on rock and cement or limesand-and rock foundations, 70 to 80 cm high which give them protection against ground moisture and mice.

In every production team there is a special grain managing group made up of a team leader, a representative of the commune members, a militia man, accountant and store keeper. Before the newly harvested grain is stored every year, three things are done. The store house must be cleaned and sterilised. The grain itself must be clean enough to ensure that no harmful insects are carried in with it. The moisture rate of the grain must have a safety coefficient of under 13.5 percent. The storekeepers regularly check the temperature and moisture rate of grain and whether there are harmful insects present. When the weather gets warmer in the spring the grain is sunned to reduce its moisture to prevent spillage in the heat and wet summer months.

Circular clay store houses are now being built not only in the dry northern parts of China but also in the rainy and hot south. Peasants in the coastal areas of eastern Kiangsue province, where the annual rainfall is more than 1200 mm, build their clay granaries on high dry places. They cover the structures with thatch from dome to base to protect them from rain.

This kind of clay granaries which have become so popular in China will suit us very well. We can satisfy our need in this way and at the same time be practicing frugality. The clay storehouses save on steel, timber and cement. The materials are easily available in the countryside and they cost little to put up. The structure which is firm, strong and well sealed is simple and easy to build and cannot catch fire.

The best way of overcoming some of the problems being faced by the very small farmers is Cooperative Farming. Indeed well managed cooperatives can bring to small farmers practically all the benefits of economies of scale that large scale plantations and collective farms enjoy and still retain the decentralization of initiative and managerial responsibility among farmers that is so important for agricultural progress in view of the nature of the production process and its spatial dispersion. This has been demonstrated by the Scandinavian countries, Japan, Taiwan and Israel.

Establishing cooperative requires Government support with trained manpower and finances for organising and managing cooperatives and educating farmers in membership participation and responsibilities for a period of years with provision of gradual transfer of management

control to farmer members, as for instance Egypt did fairly successfully under its land reform programme. What we actually need is to form Multipurpose Cooperatives.

There are only a few developing countries where cooperative credit provides a major share of all short-term loans to farmers. This holds for Japan and Taiwan where credit is one of the function of strong multi-purpose cooperatives along with marketing and extension work and sometimes also cooperative use of specialised machinery and the processing of farm products. This requires a well trained cadre of managers technical and administrative personnel and a strong legislative and or organizational support from the Government.

The combination of these three basic functions of marketing credit and extension is highly effective in modernizing farming operations as they mutually support each other. And since these functions must be closely and currently adopted to widely varying local conditions the responsible participation of farmers in managing these multi purpose cooperatives is by far the most efficient organizational principle for carrying out these functions.

Cooperative credit in conjunction with the marketing of the members produce provides an ample pool of collateral security, which can be used to reduce risk, and the interest rate. In conjunction with extension services the use of farm loans can be made efficient through guidance and technical assistance in the application of modern inputs and production methods, which also reduces risk and permits a lower interest rate.

A new philosophy of farmers cooperation is being forged in the developing countries which is quite different from that which guided the cooperative movement in the Western countries. The English Rochdale and German Raiffeisen principles of cooperative organization were based upon independence from Government financial help, guidance and supervision and upon voluntary membership of individuals. These principles do not fit the conditions in newly developing rural areas. They require modifications to take account of the much more active role governments are playing in the agricultural development process and much worker bargaining position of the masses of farmers vis-a-vis the market and the rural elite.

In principle, the government's function is limited to giving financial and organisational support where needed to supplement the contributions by the farmers and to setting certain standards of marketing and pricing practices, credit terms and interest rates, financial accountability and other operating procedures. Within this framework the local cooperative must have ample freedom in the management of its affairs and the responsibility to adopt its credit and marketing functions to local conditions.

We in the Punjab as well as the whole of Pakistan at present lack the trained personnel for launching multi-purpose cooperatives on a massive national scale. But it is important that vision of their development role is clear in the minds of our leaders and farmers. These cooperatives deserve strong Government support and a forward looking training programme for the personnel to make them work efficiently. If keen interest is taken in this respect we shall be able to start this kind of cooperatives very soon. This will be not only in the interest of small farmers but the whole nation shall be able to reap the benefits. It can prove to be an important step towards the achievement of self-sufficiency in food. Along with wheat production agricultural produce of other crops will also be affected favourably.

An Ordinance known as the Cooperative Farming Ordinance, 1976 has been passed by our Federal Government. Under the proposed scheme Government will welcome the formation of cooperative farming societies, each commanding contiguous land not less than 500 acres (except in NWFP where the minimum area should be 300 acres) and comprising at least 20 members.

These societies will be voluntary associations, but a number of incentives will be offered to prospective cooperators like priority in the supply of tools, equipment and lower rates of electricity. The earnings of the cooperative and dividends paid to members will be exempted from the levy of income tax. The cooperatives will also be exempted from the operations of Land Reforms. Further, landowners joining the cooperatives will have the unhindered right to evict their tenants. These tenants will, however, have the first claim on jobs available on the farm or in allied agriculture-based industries. Once a landowner withdraws from a cooperative the evicted tenant's rights to tenure will be revived. However, no member will be able to leave the cooperative before three years after joining it. It has been

claimed that the stipulation of a minimum membership of 20 will keep the landlords from monopolizing the scheme, that it will benefit the owners of small holdings and that it will not be difficult to absorb a large number of landless tenants. It has also been claimed that the scheme is intended to replace small scale primitive production by large-scale mechanized farming so as to create a highly developed agricultural base bringing the country nearer the self-sufficiency target.

We find the implementation of this scheme fraught with dangerous consequences for the peasantry, specially the tenants working on middle rank landlords holdings. As for practice no amount of sophistry can prove that owners of small plots, i.e., upto 12½ acres, will be tempted or able to join the cooperatives. No less than 50 peasants with an average individual holding of 10 acres each are needed to form a cooperative; and 100 if the average individual holding is five acres or less. This means that unless 50 or 100 small peasants holding 500 acres of contiguous land agree to join hands, a cooperative cannot be formed. The stipulation of unanimity (that too voluntary) and contiguity of land will be hard to meet. Further, it can be shown that a peasant who himself tills 10-12 acres of land will not find the cooperative idea economically attractive. Statistics show that such cultivators even though working without machines, achieve almost the same production level as most of the bigger landlords. The whole family works on the land and the profits are not shared with anyone. Suppose such a self-cultivating owner joins a cooperative. Five percent of the cooperative's profit will go to the reserve fund, 40 percent, will be divided among the members, and 55 percent will be distributed among the workers. Thus the member in this model will be entitled to 40 percent of the profit from his share of the land, plus wages for the work he may put in as a labourer. Since it is conceded that cooperatives will render 6 percent of the farm hands surplus, all the family members of this farmer will no longer be employed. Now, add up the returns and see if as a member of the cooperative he can get as much out of the land as he has been getting so far. He can't.

On the other hand it is obvious that the scheme offers built-in advantages to the owners of between 20-25 acres each. Twenty land owners with average holdings of 25 acres will form a good cooperative. Even better would be a cooperative with one member with 100 to 150

acres and the rest made up by poorer cousins and hangers-on. Most probably the senior partner in such a cooperative is having problems with tenants, especially after the Land Reform as now he is supposed to share the burden of seeds and water rate. All his problems are solved by joining a cooperative—the tenants are thrown out, he can go in for mechanised farming and if his investment goes up so does his profit as he gets all the reward in these days of rising prices.

Although an attempt has been made to explain away the threat to tenants, the argument is far from convincing. It has been said that the evicted tenants will have the first claim to jobs on cooperative farms and allied industries. But it is conceded that farm labour will be reduced by 60 percent. Where will this army of evicted tenants go? Formation of cooperatives and eviction of tenants will be a simple matter, establishment of agro-based industries will take a long time. Obviously the dispossessed tenants will have no work on the land, at least for years. The promise of tenancy restoration once a landlord leaves a cooperative is potently meaningless. For one thing a prosperous land owner will have no reason to quit such a cooperative and for another it is a bad joke to presume that an evicted tenant will stay on the land (or be allowed to stay) and share for a minimum of three years while his landlord experiments with cooperatives.

It goes without question that the proposed cooperatives of richer land owners will create a capitalist land economy, mechanized and perhaps efficient. If this scheme is meant for the welfare of smaller land holders and farmers than modifications must be made in a way that is more suitable for farmers with very small holdings. We will have to make conditions of participating in this programme more attractive for smaller farmers.

The ideas presented in this article can definitely be made use of to increase wheat production in the Punjab. If these proposals are given a serious consideration Punjab could not only become self-sufficient but the requirements of the whole country could be met by its produce. It would not be wrong to say that proper planning can completely change the scene. A sincere effort can soon bring the day when we will be able to meet the needs of hungry people in the other countries as well.

PATERN OF INDUSTRIAL GROWTH IN LAHORE

Habibur Rahman

Lahore is now rightly acclaimed as the biggest industrial centre in Pakistan after Karachi. So far as textile industry is concerned, Lyallpur has a comfortable edge over Lahore, but on the whole, Lahore has acquired a predominant position in the growing industrial complex in the up-country. Endowed with favourable combination of economic factors required for the growth and concentration of industries, Lahore meets all the requirements e.g., abundant supply of skilled and unskilled labour, availability of raw materials, transport and communication facilities, power housing facilities, facility of banking, insurance and other commercial services and the availability of all the required infrastructure. A research study conducted by the Housing and Physical Planning Department, Government of Punjab, in November, 1974, has very aptly identified Lahore as one of the very high potential areas of the region for industrial development. According to the latest "Directory of Industrial Establishments in Punjab" issued by the Punjab Directorate of Industries and Mineral Development in July, 1975, out of the total number of 6236 industrial units in the province, 1950, are situated in the urban areas of Lahore. This number exclude 1631 small powerloom units which have sprung up in Lahore District. Thus about 31% of industrial units of the province are in Lahore. This number includes factories registered under the Factories Act, 1934 and licensed for imported materials and spares as well as un-registered and un-licenced units.

Historical Growth

Before the capture of power by the British, Lahore occupied an important place in the commercial life of the region and was regarded a centre of native crafts. The colonial policy of the British which manoeuvred to turn the whole region into an agricultural hinterland of Great Britain had its dismal effect on the industrial and commercial character of Lahore and gave a parting blow to the native crafts of the city. The alien Government considered it suitable to their vested interests not to encourage any appreciable measure of industrialisation

in the region. The Housing and Physical Planning Department study mentioned earlier, which has traced the history of industrial growth of Lahore District, has revealed that Lahore District had only 5 factories in 1912 employing 9263 workers which could only grow to 303 by the time of the partition. The efforts of the national Government elevated the figure to 935 by 1970. The position obtainable today owes much to the concerted efforts in this direction. The average annual industrial growth in Lahore District during 1947-70 has been recorded at 17.4% as compared with 33.5% of Gujranwala and 40.8% in Sheikhupura during the same period. The growth rate of 9.7% in Sialkot was relatively smaller because of hostilities on the border and large-scale migration of industrial labour from that area. The average annual industrial growth rate of Lahore provides a clear evidence of steady growth in the area since partition. The skills brought by the refugees with them have been greatly instrumental in stimulating industrial growth of the city which also owes a good deal to the adoption of free enterprise policy by the Government in the early days of the history of the independent country by which freedom was allowed to private entrepreneurs to set up industries at any place of their choice where they could find markets for their products, suitable land, facilities of infrastructure, abundant labour supply and availability of efficient transport network etc. Industrial development in Lahore really gained momentum with the first formal pronouncement of the Government's industrial policy which was the need of the hour. It was in the light of this policy that entrepreneurs favoured the location of wheat milling and textile factories in Lahore in the vicinity of wheat growing areas of Lyallpur, Sahiwal etc. and cotton growing areas of Lahore, Sahiwal, Lyallpur and Multan. As shown by the latest enumeration of industrial units by the Directorate of Industries, in Lahore there are at present 26 wheat and grain milling factories out of 122 units in the province and 13 cotton textile units out of 61 in the entire province.

Import Substitution

Industrial concentration in Lahore like other areas of the country also owes much to the policy of import substitution resulting in restrictions on imports by the Government, particularly finished consumer goods. This provided a considerable filip to industrialisation in Lahore. In the wake of this policy industries producing cotton textiles, leather and rubber products, drugs and pharmaceuticals,

paints and varnishes, soap, glass products, steel re-rolling, engineering and foundry, electrical appliances, cycles, stationery goods etc. were established in the city. Financing and distribution system already developed by the business community was greatly helpful in the growth of industries in the city.

A district-wise distribution of industrial units in the Punjab by status of registration under the Factories, Act, 1934 and licensing for imported raw materials and spare parts has been made by the Punjab Director of Industries and Mineral Development in its census conducted in 1969-70. According to this survey, about 77% of the industrial units in Lahore were registered units and about 65% were authorised directly for import of material and spares.

In Lahore the bulk of industrial activity is concentrated in areas around Badami Bagh, on G.T. Road and Sheikhpura roads in Kot Lakhpat areas and along the main railway line where the rail and road links provide easy means of transport and communication vitally required for industrial growth. Such industrial concentration has taken place in a rather haphazard fashion. Consequently, some parts of the city present a look of a complete industrial city while the remaining areas have a conspicuous blend of an agrocommercial urban life. The concentration of industrialisation of industries in a few selected spots in the city has given rise to a large number of socio-economic problems common to industrial cities such as :

- (i) (1) Encroachment of rich agricultural land.
- (2) Increasing the number of road accidents in the industrial areas.
- (3) Serious transport and accommodation problem for the labour.
- (4) Problems of proper provision of utility services.
- (5) Lack of proper arrangements for the disposal of industrial wastes.

(ii) In fact, Lahore with a high potential for industrialisation has already got a substantial industrial base and further industrialisation in the already congested areas of the city is not desirable from the socio-economic as well as defence points of view. Further industrialisation in Lahore, if any, may be made in the southern stretch of the city specially in the area between Lahore and Okara where no industrial

development of an appreciable magnitude has taken place resulting in regional economic disparities between these areas and the industrialised parts of the city.

Urbanisation

The rate of urbanisation in Lahore has also been conspicuously high. Rural population has shifted to Lahore in very large numbers in recent years in search of job opportunities as the rural areas have suffered heavily from the inadequacies of essential services and civic amenities and have persistently low level of income and employment.

The average growth rate of urbanisation of Lahore District during 1961-72 as shown in the Housing and Physical Planning study is 4.2% as compared with 5.2% of Gujranwala and 4.5% Sheikhpura districts. Sialkot has been at the lowest ebb 3.5% for the obvious reasons of disturbance during Indo-Pakistan wars and large scale migrations from the area to foreign countries. The average growth rate of urban areas in the Punjab as a whole during the same period has been registered at 4.6%

Major Industries

The following table shows at a glance the position of major industrial units in Lahore as compared with the total number in the entire province :

S. No.	Type of Industry	No. of Units in Lahore	No. of Units in the whole of Punjab
1.	Wax Candle	302	326
2.	Misc : Light Engineering	112	336
3.	Steel Re-rolling	72	197
4.	Printing Presses	76	95
5.	Electrical Machinery	78	261
6.	Machinery Other than Electrical	84	131
7.	Diesel Oil Engines	57	103
8.	Misc. Building Material and Electric Furnaces.	55	100
9.	Carpets and Rugs	48	221
10.	Misc. Engineering and Foundries	42	109
11.	Drugs and Pharmaceuticals	40	60
12.	Plywood and Furniture	33	73

13.	Leather and Rubber Products	29	81
14.	Cycle Industry and parts	26	39
15.	Surgical Medical Instruments	20	80
16.	Pumps all sorts	24	55
17.	Glass Products	20	51
18.	Specialised Textiles	31	95
19.	Cotton Textile Spinning and Weaving	13	64
20.	Cotton Textile Finishing	17	149

As revealed by the above table, Lahore's industrial complexion is dominated by light engineering industries. Lahore shares 112 light engineering industrial units out of 336 in the entire province. Similarly in addition there are 42 miscellaneous other engineering units and foundries out of 109 such units in the Punjab. The next important industry is electrical and non-electrical machinery the combined strength of which is 162 units against the total number of 392 in the province. This includes a large number of fan units in Lahore which have grown tremendously during the last few years. The number of diesel oil engine units in Lahore is also quite significant. There are 57 units out of 103 in the whole province. The number of units producing building material in Lahore which are 55% of the whole Punjab is also quite impressive. Similarly, in other major industries like drugs and pharmaceuticals, leather and rubber products, cycle industry and parts, pumps and in various other products like glass and specialised textiles, industries in Lahore claim a lion's share in the whole province.

A fairly impressive growth pattern is revealed when we compare the latest number of certain types of industrial units in Lahore city with similar numbers about five-six years ago. Data for the whole Lahore District, including city limits, are obtainable for 1969-70. This comparison though looks odd, gives a good idea of the trend in view of such data limitations. A brief table given below summarises this trend :

S. No.	Type of Industry	No. of units in Lahore city in 1975	No. of units in Lahore District in 1969-70	% increase in city over District
1.	Diesel Oil Engine	57	47	21%
2.	Electrical Machinery	78	23	239%
3.	Misc. Engineering and Foundries	42	28	50%

4. Surgical Goods	20	8	150%
5. Cotton Textiles	30	17	76%
6. Cycles	26	21	24%
7. Pumps	24	14	71%
8. Wheat Milling	26	17	53%
9. Leather Tanning	18	5	260%
10. Cosmetics	12	7	71%
11. Agricultural tools	29	11	164%

In order to encourage the growth of industries in Lahore, the Small Industries Corporation has set up a mini Industrial Estate in Kot Lakhpat in Lakhpat in an area of about 7 acres. Industrial Estates in Gujranwala, Sialkot and various other places are much bigger in size. The pace of development of the Industrial Estate in Lahore has proved to be satisfactory. If we take the size of employment as a criterion of industrial growth, Lahore is playing an important role in the industrial activity in the Province. According to the survey conducted in 1969-70, about 23% of industrial labour force of the Punjab is employed in Lahore District. By virtue of its comparatively larger industrial nucleus at the time of partition, the percentage of industrial population to the total district population of Lahore has ranked highest. In 1939-70, it was 1.3%, certainly better than other districts of the region, vis., Gujranwala, Sheikhpura, Sialkot, Sahiwal and Gujrat. The same survey has also revealed that textiles and allied industries provide maximum employment to people in Lahore followed by metal products and machinery and a large number of engineering industries.

BIBLIOGRAPHY

1. **K.M. Azam** "Green Revolution", International Journal of Agrarian Affairs, Oxford.
2. **J.B. Eckert** "The Impact of Dwarf Wheats on Resource Productivity in West Pakistan's Punjab", Michigan State University, 1970.
3. **M.K. Lowdermilk** "Preliminary Report of the Diffusion Adoption of Dwarf Wheat Varieties in Khanewal Tehsil, West Pakistan", Cornell University, 1971.
4. **Syed Mushtaq** "Price Incentives for the Production of High Yielding Mexican Varieties of Wheat," The Pakistan Development Review, Winter 1970.
5. **L. Nulty** The Green Revolution in West Pakistan.
6. **M. Shafique** "Short and Medium term Credit Needs of the Peasant Proprietors Class in Sahiwal Tehsil," West Pakistan Agricultural University, 1966.

