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by

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PREFACE

The need for 'endogenizing' demographic variables in development lanning is now widely recognized. The planners have to spread their analytical net wider to capture in one 'go' both the demograhic and socio-economic variables. This requires an explicit recognition of the two-way link between changes in fertility on the one hand and those in labour market, wages, income distribution, consumption, savings, investment and other variables on the other. The research work done so far in Pakistan has inadequately addressed itslef to this two-way linkage between demographic and socio-economic phenomena. Researchers, constrained by limitations of both data and analytical framework, have tended to study the demographic phenomenon of fertility in isolation from such related matters as labour force participation, rural-urban migration and income and expenditure patterns. These studies hvae failed to analyse simultaneously the demographic, production and consumption decisions of households. For instance, high fertility rates are generally attributed to biological determinants alone which can be influenced by large supplies of such clinical devices as contraceptives. Such notions about the fertility behaviour of the households have given birth to ineffective government policies. That the many population planning adventures, taking mostly the form of crash programmes, undertaken so far have foundered should not surprise anyone. Fertility, like love that sustains it, is a many-splendoured thing. It must be seen in a broader socio-economic context.

The nature of the influences of economic forces, both direct and indirect, on fertility behaviour should therefore constitute a major area of concern for social scientists and policy makers. To make a start in this direction, the inter-linkages between such variables as fertility, labour force participation and migration and their effects on the household income and expenditure behaviour must be studied. Such a study should permit

us to understand better the decision-making process of the household, which is the basic unit in both the demographic and economic analyses. Research studies of this genre have already been carried out in many other developing countries and have provided gainful insights into the determinants of household economic-demographic behaviour. However, in Pakistan the present exercise is the first of its kind.

In order to understand better the economic-demographic interface the project entitled "Studies in Population, Labour Force and Migration" has been undertaken by the Pakistan Institute of Development Economics in collaboration with the ILO and UNFPA. The project is a 'four-in-one' venture based on a national sample, the field-work for which was undertaken by the Statistics Division (formerly called Central Statistical Office, or CSO for short) covering 10,288 households. The survey generated a wealth of data on the household decision-making process concerning the behaviour of the connected foursome - viz. fertility, migration, labour force participation and income and expenditure. Every effort has been made to ensure reliability of the data. This study, which is being brought out in the form of a series of seven 'first' reports, would enhance our understanding of the behaviour of households with respect to the various ways in which they go about fulfilling their 'basic needs'. Even more important, it should lay the foundations of economic demography in Pakistan, opening up new areas of multi-disciplinary research that could not be perceived before. This study should also provide the researcher with a sufficient feel for the real world to permit formal economic demographic modelling exercises. In this respect the present reports are truly pioneering both in intent and in purpose.

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INTRODUCTION

Notwithstanding the fact that the indexation of deprivation entails arbitrariness, efforts have been to quantify poverty in most of the countries. For Pakistan, quit a few exercisees have been conducted to estimate the level of poverty in rural as well as in urban areas. A recent study summarizes and updates the earlier ones with the conclusion that proverty has increased during the Sixties and declined somewhat in the decade of 1970's (15). Except for the estimation of the numbers and proportions of poor these studies hardly provide any help in the identification of the poor and thereby of the factors which generate poverty. This, in turn, requires that not only the behaviour of the poor in making different choices be scrutinized but also the factors constraining their choice need to be identified. This is a tall order of course.

An effort is made to discuss some of the related issues in this paper by identifying the socio-economic correlates of poverty in rural areas of Pakistan. This characterization of poverty is expected to yield insights regarding the link between incidence of poverty and capacity of the poor to participate in the development process - essentially a function of the power structure of the society, socio-economic policies of the regime and asset base of the family.

In order to reckon with the opportunities and constraints faced by the household, a major demarcation line has been drawn by asset ownership. Land being a major productive asset in rural areas, households are identified as farm household and non-farm. Admittedly a neat distinction between farm and non-farm households is precluded by various inter-linkages operating through factor and product market, but the classification is useful in understanding the nexus between access to assets and poverty of an household. An household is categorized as farm if the

cropped area is reported or the head of the household is reported as working in agriculture. The degree and nature of access to land which a farm household enjoys is identified by using the tenurial status such as share cropper or owner operator. Information on assets owned by non-farm household being unavailable, these are categorized according to the status as proxied by the usual occupation of the head of households. For instance, Kamees (artisan class) who usually lie at the lowest rung of prestige ladder in the village, are distinguished from other groups such as shopkeepers, cottage industry workers and rentier class.

Poverty among the different socio-economic groups as depicted by the above admittedly loose class structure is assessed. Out of the various dimensions of deprivation three measures of poverty, calorie deficiency, child schooling and infant mortality experienced by an household are used to ascertain its poverty status. The choice of these measures is dictated by the availability of the data. Malnutrition or calorie deficiency is a cardinal measure; it helps in arriving at the incidence of poverty among households of different socio-economic groups. The other two measures being essentially ordinal generate ranking of the households. Whether the inter-section of the sets of attributes and characteristics associated with these three different components of poverty yield an empty set or not is of paramount importance for anti-poverty policy formulation.

The calorie deficiency finds its place in the first section, followed by the child schooling in the second section while infant mortality differentials are discussed in the third section. Although the Population, Labour Force and Migration (PLM) Survey serves as major source of data, various other souces of data pertaining to rural

areas of Pakistan are also used to assess the relationship between the poverty so identified and households characteristics such as household income, land ownership, tenurial status and education of the head of the household which form the basis of the class structure used in this paper. Whether the fertility behaviour of the poverty stricken groups is distinct or not is also briefly disucssed to understand the inter-relationship between demography and poverty.

FOOD POVERTY

For calorie deficiency as a measure of poverty, the line used to estimate its incidence is defined on the basis of the requirement of 2550 calories per day for an adult as suggested by the Nutritional Cell of the Planning Commission. Independent information on caloric intake or on the quantities of food items consumed by households, being generally non-available, the caloric requirement is converted into food expenditure per adult equivalent. Food expenditure equivalent is arrived at by using the consumption pattern of lower income classes as reported in 1971-72 Household Income and Expenditure Survey. The prices of various food items and the consumption pattern of the groups used in the construction of poverty line are discussed in detail elsewhere (15). Using average ratio of food expenditure to income, the poverty line has also been translated into income equivalent per adult to be used in case of the data sets which provide information only on household income. It must be noted that it is expenditure (income) level so determined not the caloric consumption which defines the poverty line.

Application of the poverty line as Rs.70 per adult food expenditure assumed to provide 2550 calories per day - to the household data collected under the Population, Labour Force and Migration (PLM)[1] survey of 1979, yields that 39% of the households are poor in rural areas. Higher level of poverty is found in non-farm households (42%) than farm household(36%). Needless to mention that level of poverty is sensitive to the poverty line, as demonstrated by Table-1 below. A change in poverty line by Rs.5.00 in either direction generates substantially different levels of poverty.

1. A detailed description of the survey is available elsewhere (8). Very briefly the survey entailed the administration of four different questionnaires to a nationally representative sample of 10288 households. The four questionnaires pertain to Fertility, Labour Force Participation Household Income and Expenditure and Migration. The result discussed in this paper are based on four fifths of the original sample, because data of the remaining households were not found matchin across the four modules. The data used in this paper are however described in the text.

Table - 1

Poverty Levels by Different Poverty Lines

Poverty line Food Expenditure Per adult per month	Percentage Household Below Poverty Line		
	All Rural Households	Farm Households	Non-Farm Households
Rs. 65.00	28.3	26	31
Rs. 70.00	39.0	36	42
Rs. 75.00	41.4	39	44

Source: PLM Survey 1979.

Whilst the varying levels of poverty according to different poverty lines is too obvious a result to be discussed, the ranking of the households defined by various criteria hardly exhibits a change. In the pages that follow, the poverty characteristics associated with the second poverty line (Rs. 70) are discussed. Whereever, poverty correlates are found too sensitive to a poverty line, they are mentioned accordingly.

Household Income

Major inadequacy of the income data contained in PLM survey like in other Income and Expenditure Surveys of Pakistan particularly for rural areas, stems from the valuation of the household's consumption of their own products. In addition, the reporting errors in household income are widely observed.[1] Despite these limitations, a strong negative association between household income and level of poverty is reflected in Table 2. More than half of the households associated with lowest income group are poor in contrast to one-nineths of the top income group. Decline in the poverty incidence across successive higher income groups occurs at a slower pace in case of non-farm than farm households. Similarly controlling for income group, level of poverty is mostly higher in

1. Azfar tried to ascertain the margin of over/under-reporting in income data reported in HIES (2).

non-farm households than in their counter-parts. This difference is magnified in case of the top income group. These results as discussed later, are a by-product of varying family size and of average income of farm and non-farm household falling into different income groups.

Table - 2

Household Monthly Income and Poverty Incidence
Pakistan 1979

Income group / Area	Total	0-420	421-700	701-1120	1121-2100	2100+
All Rural	39.2	53.7	44.1	38.8	20.0	11.5
Farm House-Hold	36.6	52.5 (12.6)	40.2 (38.1)	35.4 (32.8)	21.0 (13.8)	5.2 (2.7)
Non-Farm Household	42.4	54.9 (16.2)	47.7 (35.8)	43.3 (28.5)	19.0 15.9)	17.1 (3.6)

Note: Figures in aprenthesis pertain to percentage distribution of household in the sample.

It must be recalled that poverty estimates are based on food expenditure per adult equivalent in the household. Whether there is a strong relationship between household income and caloric intake or not can not be directly established from the PLM data due to non-availability of information on the quantity of food items consumed. Micro-Nutrient Survey[1] does provide such an information albeit with a narrow base. The amounts of food eaten on the day prior to the survey date as recalled by house wife constitute the direct evidence on calorie consumption. Despite the limited adequacy of the information on this dietry intake, the association between calorie consumption and income is found significant as indicated by O.L.S regression results pertaining to 442 households in rural areas.

1. Micro-nutrient Survey 1975 with a nationally representative sample of 1000 household. The survey was conducted by Planning Commission, Government of Pakistan.

Table - 3

$$CAL = 12829 + 9.90Y - 0.009Y^2 \qquad R^2 = .14, \quad F = 35$$
$$(61.3) \quad (27.4)$$

Y = Household Income per month

CAL = Calories consumed by household

T = Values in parenthesis

The above table suggests a curvilinear relationship between household income and caloric intake of the family which is plausible given the fact that food expenditure as a fraction of household income declines across higher income groups. The relationship between household income and caloric intake or food expenditure is not very revealing by itself because it is definitionally related with poverty measure. It will be more instructive to examine the factors, such as assets which generate this particular classification.

Land

Quite a few studies dealing with disparity and poverty issues in Pakistan's rural areas emphasized the role of asset owned by an household. In this context land has been singled out as a major indicator of household asset position as well as determinant of its ranking in the village heirarchy. Few surveys of the selected districts and villages conducted in Pakistan provide such an information. Below we briefly discuss these few cases studies to be followed by a detailed discussion of PLM survey data.

Hirashima in his survey of few villages carried out in 1971-72 in Punjab - provided income and assets of zamindars and Kamees.[1] The interesting results emerging out of this study pertain to the characteristics of thepoor. All of them belonged to landless or

1. Zamindars refer to land owner and operator while Kamees is generally used for landless artisan class in the village.

artisan class with no or very little productive assets. Hirashima viewed, "In a situation where the household is the basic unit of society and income level is low, income disparity based on individual labour unit is not a sufficient indicator to determine disparity. The decisive role of assets per household in dealing with the disparity issue in agriculture should therefore be emphasized" (6). The relationship between poverty and assets particularly the land-ownership and tenurial status can be further explored by using the information given in 1974 district surveys of Multan and Campbellpur in Punjab[1] province.

It is interesting to note that, while Multan with a rich soil having irrigation facility and Campbellpur being rainfed, both yield roughly same level of poverty[2]. A closer perusal of the data of these two district surveys suggests that in 1974 90% of the farm households in Campbellpur and 45% of those of Multan suffer from poverty. Reverse is the position in case of non-agricultural rural households. The poor in non-farm account for 30% and 88% of the total household respectively. The varying incidence of poverty among farm population in the two districts can be partly explained in terms of availability of irrigation, while the difference in poverty among non-farm households bespeaks of the importance of the non-farm employment opportunities.[3]

According to tenurial status the tenants in both the districts are worst sufferer. The tenants in irrigated district of Multan are, however, better off than owners and owners/tenants in reinfed district of Campbellpur. According to tenurial status the estimated farm sizes permitting the subsistence income are shown below.

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1. The survey were conducted by Directorate of Manpower and Training, Government of Punjab, Household data are not available for further analysis.
2. The poverty line defined in this case is different than the one used for PLM survey i.e. Rs.70/= food expenditure per adult in 1979.
3. Two of the largest projects of the country Tarbela Dam and Wah Factory constitute major sources of non-farm employment for residents of Campbellpur the rainfed district.

	Campbellpur	Multan
Owner cultivator	12-25 Acres	5-77 Acres
Owner/Tenant	50+ Acres	7½-12½ Acres
Tenant	N.A.	12½-25 Acres

The gradual rise in the size of the farm according to the tenurial status reflects degree of participation of the tiller in his fruit of work. A little exercise suggests that equal land distribution in Multan district would provide subsistence income to the entire farm and non-farm population. Such a radical measure, however, could bring only half of the farm population in Campbellpur district out of the clutches of poverty, because of the lower land productivity due to non-availability of irrigation and limited land resources per family in the latter district.

Identification of poor with little or no land is also a major conclusion of a recent study based on a survey of eight villages (5). Nearly half of the poor were accounted by landless labour while additional one-fourths belonged to tenant class. Higher level of poverty was found in rainfed areas (45%) than in the irrigated villages (27%).

Unlike the above mentioned data sources the PLM survey though provides a national picture but with lesser details. The data on land pertain to cropped area reported by an household with an additional information on tenurial status of the working members of the household. While one can identify owner operator, share cropper and landless agricultural labourer, it is difficult to distinguish an important category, part owner part tenant, which may have been included either in the category of owner operator or share cropper. Similarly absentee land-lord or rentier class

can be distinguished in the data set but their land holding is not reported, because the information pertains to area cropped by an household whether owned or rented. Furthermore, the information on quality of land or existence and non-existence of irrigation facilities is not available. The importance of such a regional control variable is evidenced by comparison between two districts in the preceding pages. In addition, this being the first ever attempt by Federal Bureau of Statistics to collect information on land in the labour force survey, the data quality may have suffered both from reporting and non-reporting errors. While inter-preting the relationship between land and poverty status as provided in Table-4 the above mentioned data limitation must be kept in mind.

The table is reflective of a very high level of poverty among the landless labour (51%) while the owner operator and share cropper being indistinguishable on that score. Only one-thirds of the houses of these latter two groups are found to be poor. The landless labour being one-sixth of the farm households account for one-fourths of the poor, this higher incidence of poverty appears in conformity with thatof the earlier studies discussed above. The result that level of poverty among owner operator and share cropper is roughly similar is at variance with the findings of earlier studies however. Since the tenurial status of the household is defined on the basis of the head of household, possibility of misclassification can not be ruled out, if other members of the household are working under tenurial arrangement different than the head of household. Similarly the non seperation of owner/tenant category may have been responsible for ironing out the distinction between these two categories.

Table - 4

Incidence of Poverty By Cropped Area and Tenurial Status

Size of Cropped Areas / Tenurial Status	Family Size	0	Less than 5	5.1-12.5	12.5-25	25.1+	Total
Owner Operator	6.3	-	26.38	33.2	33.0	25.7	33.06
Share Cropper	6.2	-	19.35	32.6	44.53	42.6	33.60
Agricultural Land-less Labourer	5.5	51.72	-	-	-	-	51.72
Total Rural Fram Household	6.1	51.72	24.20	34.9	36.3	28.4	36.62

Source: PLM Survey 1979.

Above all the poverty level provided in the table is specific to this poverty line. A slightly higher poverty line results in a different configuration wherein share croppers appear to suffer from level of poverty (42.8%) much higher than owner operator (34.8%) (See appendix table 1). In addition a closer perusal of the table-4 is suggestive of the fact that holding constant the tenurial status, the size of the cropped area hardly bears a systematic relationship with level of poverty, though largest size category of owner operator has lowest level of poverty. Even this is not true for share cropper wherein interestingly the lowest level of poverty is turned out by the smallest land size (0-5 acres) category. It is difficult to determine the extent to which inadequate quality of data on land explains lack of association between farm size and poverty incidence. It is important to know because other factors such as out-migration and family size can drive this wedge also. Below we make such an attempt.

Recently an effort has been made at PIDE to estimate the household income by cross fertilization of land data (as reported in Agriculture

Census) and National income data for the year 1980 (19). Under the assumption that tenants get 50% of the crops the estimated crop income for different farm sizes is reported in table below:-

Table - 5

Crop Income of Tenant and Owner Farm Household by Farm Size

Farm Size	Owner Household (%)	Tenant Household (%)	Annual Net Income of Crop Onwers (Rs.)	Tenants (Rs.)
1.0 acres	5.93	1.41	912	347
1.0 to 2.5 acres	14.79	7.51	2531	1049
2.5 to 5.0 acres	17.53	13.91	5094	2160
5.0 to 7.5 acres	16.03	18.95	7528	3338
7.5 to 12.5 acres	18.35	29.44	10483	5207
12.5 to 25.0 acres	16.59	20.08	17488	7373
25.0 to 50.0 acres	7.20	6.76	30155	11719
50.0 to 150.0 acres	3.08	1.77	65494	22986
150.0 and above	0.50	0.17	254266	70331
All Farm Household	100.00	100.00	12822	5375

Source: "The Structure of Rural Income in Pakistan: Some Preliminary Estimates" by Dr. Faiz Mohammad and Ghulam Badar, PIDE, April, 1985.

The distribution of households according to farm size is indicative of a higher fraction (37.25%) of owner operator both at the lower (5 acres or less) and upper end (25+) of the distribution than the tenant. Crop income of a tenant on average is around 42% of that of owner operator. This fraction declines as one moves up the farm sizes, being 42% for less than five acres and 27% for 150 and above acres. This is suggestive of the fact that larger farm sizes tenancy is mostly found in areas where land is less prodcutive than the average.

A systematic and strong relationship between crop income and farm size, may tend to be diluted in case of total household income. Crop income accounts for less than half of the total household income for lower farm sizes. On the upper end of land distribution crop income forms however, an overwhelming proportion of total. In fact a significant portion of the income for the households associated with lower farm size, irrespective of tenancy, is from wages and income from livestock animals (see Appendix Table No.2). Thus the relationship between household income or poverty and cropped area may be influenced by the availability of wage earning opportunities and capacity of the household to participate in wage labour market, mostly a function of size and structure of family size.

As reflected in the Table-4 the poorest class, the landless labour, has smaller size of the family (5.5) than owner operator (6.3) or share cropper (6.2). Controlling for the tenurial status the average family size appears to have a curvilinear relationship with the cropped area at the command of household, wherein the largest cropped area household (25 acres plus) is associated with a family size lower than the next category (12-25 acres). Both the share cropper and owner operator display a similar behaviour except that rise in the average family size across the cropped area is sharp in case of share cropper (4.6 to 7.2) in contrast to owner operator (5.4 to 7.3). In general the smaller family size is associated with higher nuclearization - the parents and un-married children. The dependency load, members of household less than 10 years of age, hardly exhibits substantial changes across tenurial groups. Household having cropped area of 25 acres or above, the largest size, however reflect a smaller dependency load than their counterparts having smaller cropped area at their disposal.

Whilst family size observed at a point of time hardly constitutes an evidence on fertility behaviour of different socio-economic groups under discussion, De-Tray (4), on the basis of NIS 1968 data, however, viewed that the type of family chosen by head of household and children ever born (CEB) are inter-related. The fertility behaviour of various groups is discussed in a following section, it must be noted, however, that substitution between own children and other family members in household production activities as implied by De-Tray is not fully borne out by data set at our disposal.

Although the factors influencing the information of families, timing of the split and union, are least explored in the context of Pakistan, the association between large family size, lesser nuclerization and larger sized cropped area tend to suggest that this may be a strategy of share-cropper to rent in additional land specially for the households having 12.5 to 25 acres of land because additional land can be rented in with more labour. Higher proportion of non-nuclear families for large size cropped area owner operator may well be a response to modern technology package such as tractors to keep size of farm sufficiently large and avoid splitting of families and fragmentation of land holdings.

This inter-dependence between family size and household income appears to be an interactive effect of the asset base and labour use pattern of the family. Activity rates of family members belonging to various tenurial classes is presented in Table-6 which needs to be interpreted with care. Labour force participation is measured through the use of the conventional labour force concepts, whose limitations for the developing world is discussed extensively by Standing among

others (25). In the context of Pakistan the specificity of the labour force participation rate to the wordings of questionnaires and notion of work is discussed by Irfan (10). Major problems are involved in the application of the notion of work is a situation where family based enterprize and self-employment dominates. Not surprisingly the degree and nature of labour market participation is generally determined by the opportunities of self-employment available to the household. This is particularly pertinent to rural areas where wage employment accounts for a small portion of total employment.

Table - 6

Labour Force Participation and Migration by Tenurial Status: Farm Population Pakistan Rural

Tenurial Status	Owner Operator	Sahre Cropper	Laneless Agricultural Labour
1. Dependency (% of population less than 10 years of age)	32	35	35
2. Labour Force Patricipation of 10 years and above (both sexes)	53	60	54
3. Labour Force Participation of female 10 years and above	19.5	27.3	18.2
4. Children 10-14 in labour force	32	43.2	37.2
5. Female 10-14 in labour force	15.3	19.0	20.11
6. Out-migrant as a % of population 10 and above	2.7	2.1	1.8
7. Percent of migrants outside Pakistan	24	10	4.0
8. Household income per month (rupees)	943	860	705
9. Income per worker per month (rupee)	417	353	365
Average Family Size	6.27	6.24	5.5
Per Capita Income	150	138	128

Labour force participation of members of 10 years and above indicated in the said table reflects a higher level of activity for share croppers than owner operators and landless labours. Since most of the heads of the households and working male are engaged in work,

the difference in the activity rates observed is mostly due to variation in the higher activity rates of females and children belonging to the families of share cropper.

The factors influencing female labour market participation are investigated by Irfan (10). The determinents of the female activity rates, based on PLM data, tend to vary with the mode of employment - welf-employment or wage employment. While self-employment appears to be a function of the opportunities existing within the household production activities, wage employment is bi-modal. Better educated females generally belonging to upper income groups tend to join labour force as professionals or in white collar occupations. Higher level of female education is found negatively associated with self employment. Less educated or illiterate females belonging to the poverty stricken or low income households would take up jobs as maid servants. Since self-employment being dominant the overall picture obtained is reflective of a positive association between female activity rates and the existence of the self employment opportunities particularly in the middle income groups.

The activity rates of females belonging to landless labour are lower than that of share cropper primarily because of limited opportunities of self-employment. The lower female work participation of owner operator appears to be a prosperity induced leisure preference which is highlighted by the lowest activity rates (5.5%) displayed by females belonging to largest size cropped area owner operator (see Appendix Table 3). Such a leisure preference for the same cropped area size is hardly visible in case of share cropper.

Child work appears to be influenced by availability of employment opportunities as unpaid family helper and the subsistence needs of the household. The Table 6 is suggestive of an higher activity rate of children (10-14 years of age) belonging to share cropper families. These are followed by landless labour, while activity rate of children belonging to owner operator's families is lowest. Within a given tenurial class there is hardly any systematic relationship between cropped area at the disposal of an household and work participation of its children although one can trace higher level of child work in the middle range of the cropped area size categories (see Appendix Table 3 and 4).

The relationships between these work pattern of family members and poverty status are difficult to interpret even if they can be identified. Child work may have been responsible for extricating the family out of poverty jaws, but at the cost of lower investment in human capital. Not only this distress sale renders the association between poverty and child work unobservable but masks an inter-temporal and possibly intergenerational transfer of resources (or sacrificies). This becomes little obvious by focussing upon household and per worker income.

Average income per worker for the three tenurial classes, given in the table is lower for share cropper than that of landless labour. Because of higher number of workers per house hold in the former category, household income presents an opposite ordering, thereby resulting in lower level of poverty for share cropper than for landless labour despite (or because of) their large family size on the average. To the extent family size influences the access to land and its size, it indirectly weilds its impact on work participation and hence constitutes a source of strength for the family.

Income differential attributable to land ownership can be inferred from the difference in the worker income across the cropped area and tenurial classification (see appendix table 3 and 4). Per worker income is higher for owner operator than share cropper suggesting a substantial income share due to mere ownership of land. Income per worker suggests a rising trend along the cropped area categories in case of owner operator. Such a trend is however completely missing for the share croppers where per worker income is highest for the households having the smallest size land category (5 or less acres). Interestingly per worker income of this group of share cropper is also higher than their counterparts among the owner operator. It must be noted, however, that per worker income is inclusive of all types of receipts hence totality of the difference can hardly be ascribed to land ownership, though it may account for major fraction of the differentials. Part of the income differentials stem from the work participation of the family members outside the village.

Out-migration of family members to participate in ex-village labour market bears upon a wide spectrum of household behaviour. By a rise in income of the family through remittance it modifies the constraints and enlarges the opportunity set. In so doing it bears upon the reproductive behaviour of the families because the vlaue of children may be enhanced. Needless to mention that in the context of family life cycle out-migration tends to affect the pace of asset formation and economic status of the household too.

Rural to urban migration in Pakistan has always been a noticable phenomenon. During the past few years a massive outflow of workers to Middle East has added a new dimensions to the problems and prospectus unfolded by human mobility. The totality of the effects on the society

associated with this export of manpower is hard to determine and beyond the scope of this paper. Relevant to the concerns of this paper, there are evidences that remittances have a positive effect on poverty status of the recipient household (14). Income distribution may have deteriorated in the process, however (11).

Household's poverty status based on PLM survey appears to have been influenced by their varying degree of participation in the Middle East and out of the village labour market. As reported in the table a higher level of out-migration is recorded for owner operator to be followed by share croppers while the landless labour ranks the lowest. Whilst out-migration as a fraction of population aged 10 years and above is indicative of a gradual and marginal decline across these tenurial groups, the participation in the Middle East market reflects a substantial variation. Around one fourths of the out-migrants from owner operators household landled in Middle East. The corresponding percentages for share croppers and landless labour are 10% and 4% respectively. Outmigration from household tends to bear an inverse relationship with the size of cropped area of the household in case of owner operator- wherein higher incidence of emigration is also found among the lower sizes cropped are (see Appendix Table 3 and 4). For share cropper the highest percentage of out-migration is reported for the household having 12.6 to 25 areas of cropped area. Emigration is however, highest (56%) for the smallest cropped area. Correspondingly one therefore finds a varying level of contribution of remittances to household income, the lowest being for landless labour (4%). For other categories the percentage share of remittance in household income (see Appendix tables 3 and 4) is highest for the share croppers associated with smallest farm size. Thus relatively higher level of participation in

high wage market of Middle East generated interesting and puzzling results wherein this group is found less poor and with higher income per worker than other share croppers.

Whilst the above discussion of out-migration and emigration provides explanation of some of the apparently implausible findings as mentioned already, variation in the participation of household's labour in the ex-village and Middle East labour market however can not be fully understood with the help of data at our disposal. The determinants of the household participation in the labour market outside village are not well explored in Pakistan. Research on human mobility has been more or less pre-occupied with the estimation of flows and characterization of migrants.

Since sending a family member involves a substnatial amount of money beyond the capacity of majority of the low income households this provides an explanation for lowest incidence of emigration for the landless labour. In addition the job structure in Middle East favoured the intake of skilled and semi-skilled production workers which may have constrained the participation of the household members belonging to large sized cropped area (25+) among the owner operator. Financing the cost of move also appears to hold for low level of out-migration within Pakistan from the landless labour class. The mechanism is slightly different however, wherein the cost of moving varied with the nature and size of family. Unlike owner operator who can keep their families in village because they own the houses, landless labour has to take all of them unless there is some-one else to take care of them in the family. A positive assocation between family size, joint families and out-migration from the

household lends support to this conjecture (see Appendix Table 5). Not only therefore the per worker and household income is higher for the large sized families but incidence of poverty is also lower than the other groups within the class of landless labour.

NON-FARM HOUSEHOLD

As already mentioned in the introduction, identification of non-farm households in terms of their asset is precluded by a lack of data. In an effort to understand their economic status in the context of rural society, data were collected on the usuall occupation, which are expected to indicate the relative position of an household. Unfortunately this effort met with limited success because more than half of the non-farm households could not be identified in terms of their usual occupation and therefore were placed in the category of 'other'. Around 14% of the heads of households, however, were categorized as KAMEES (artisans such as black-smith, tailor, and barbers etc). One-tenth of the household were found to be headed by shop keepers while 8% were classified as rentier class, majority of which were presumably absentee land owners. The remaining 11% household fell under the category of industrial and other employees. Poverty incidence by head of household's usual occupation is presented in Table No.7. Kamees, assetless folk, generally lie at the lowest rung of heirarchical ladder in rural society, are found most poor. This is followed by the rage bag category of others, while shopkeepers and industrial and other employees are indistinguishable, the rentier and absentee land owner class exhibits the lowest level of poverty (25%).

The above table is reflective of very little association between average size of the family and poverty level for these classes. For instance, family sizes are roughly the same for Kamees and shopkeepers, similarly rentier class and employees hardly differ in this respect. Their poverty levels are however disimilar.

Table - 7

Poverty Incidence, Family Size and Other Incidence by Usual Occupation of Head of Household (Non-farm Population)

	Kamees	Shop-keepers	Industrial and Other Employees	Rentier	Other
Average size of household	6.4	6.2	5.4	5.4	5.8
Dependency	66.3	64.5	64.6	73.8	65.9
Labour Force Participation Age 10+	52.1	46.7	46.3	30.9	40.3
Female Labour Force Participation	15.5	10.4	7.4	5.8	9.9
Children (10-14) Labour Force Participation	28.8	22.2	20.4	23.9	21.2
Percent Nuclear Families	59.0	64.0	73.0	60.9	58.2
Household Average Income	786.0	873.0	739.0	1335	980
Average Income per worker	374	467	457	1084	636
Out migration	2.6	1.7	1.6	3.1	4.2
Emigration as out-migration	16.0	16.0	23.2	13.4	26.3
Percent Poor	48.2	37.7	39.4	25.0	44.0
Percentage in the Sample	12.3	10.3	11.2	8.4	56

Similarly one finds little association between labour market participation and level of poverty. For instance, highest activity rates are registered by family members of Kamees. It simply is reflective of the fact that these are denied the access to productive jobs, which is also manifest from lowest per worker income for this group.

The relationship between poverty and few other characteristics of the head of households are also studied. As indicated in Appendix Table No.6, there is an inverse relationship betwen head of households level of education and poverty. While 41% of the households headed by illiterates are poor, the corresponding figures for degree holder are 19. A similar cross tabulation for employment status and occupation of the head of households (see Appendix Table-8) indicates a lower level of poverty for employer (35.7) than the employees (48.3). Out of the occupations professionals are relatively better off than the remaining groups, while production workers suffer from highest level of poverty (46%). Needless to mention that like education the employment status and occupation tend to indicate the household economic status. Whether or not economic status constrains and governs the household behaviour in other spheres like investment in human capital, and health is the topic of the following section.

schools. It must be mentioned that compared to other sources of data such as the Population Census, 1981, the school attendance reported in PLM appears to be on the higher side. It is difficult to determine whether PLM data represent over reporting or the Population Census under reports enrollment. The discrepency between the two sources merits further investigation. To the extent, however, the reporting error if any in PLM data, are not systematically associated with the socio-economic groups of the households used in this paper the findings based on PLM data will be less sensitive to the reported level of child schooling.

Table - 8

School Enrollment of Children (10-14 years) by Sex (percentages)

Sex	All Rural	Farm Household	Non-Farm Household
Both sexes	33.5	29.0	38.3
Male	52.0	46.9	59.1
Female	13.3	10.1	17.2

Source: PLM Survey 1979.

Enrollment differentials by sex are worthy of notice, while roughly half (52%) of the male children are enrolled in schools only one-sevenths of female children have similar access. In addition to difference in the availability of schools the inter-sex variation in school enrollment finds its explanation in culture, tradition, job market opportunities and old age benefit considerations of the parents. Since job structure, particularly in rural areas, can hardly accomodate educated females, thereby little incentive is left

CHILD SCHOOLING

Child schooling reflects the parental capacity and propensity to invest in human capital. An examination of the differentials in child school enrollment across various socio-economic groups affords an identification of the determinents underlying the perceived costs and benefits associated with investment in human capital. To the extent this investment influences life time prospects, such an exercise also yields inferences regarding the transmission of poverty as well as inter-generational mobility.

The PLM data on educational attainment or school enrollment pertain to the information on level of education of each person in the household, while that on the current enrollment in school is available only for household members aged 10 years and above. This latter information is obtained in response to the question on "reasons for not working". This paper is confined to the school enrollment of children belonging to either sex and falling in the age group (10-14), which is treated as a proxy of parental investment in child quality. The problems therefore, such as current enrollment being a censored observation, and issues of joint determination of enrollment and attainment are not addressed in this exercise. Most of these children (10-14) are expected to be attending the (Class VI-IX) middle level, though some insignificant fraction may be enrolled in either primary or secondary classes. The differentials observed for various socio-economic groups are presented below wherein the findings of bivaraite cross-tabulations are supplemented with that of the multivariate regression results too.

School enrollment of children (10-14) years of age provided in Table-8 indicates that on-thirds of these children are attending

to invest in the schooling of daughter who are, any way not expected to help fathers in the old age, because they leave the parents' house after marriage.

At an aggregate level of classification of household by farm and non-farm, the former displays a lower level of enrollment than the latter. The difference is registered by both the sexes. Farm, non-farm child schooling differentials have generally been attributed to higher opportunity costs of sending the child to schools due to relative higher utilization of children in the production activities of the former households. This differential opportunity cost appears to hold in case of Pakistan, though the enrollment differentials between farm and non-farm are significantly narrowed for the high income groups (see Table 9 & 10).

Relationship between land ownership and child schooling can not be determined a priori. Land ownership may have more than one effect - wealth effect, opportunity cost effect and bequest effect (16). Enrollment data pertaining to farm household indicate a sex-specific relationship between child schooling and size of the cropped area. While male school attendence tends to have an inverse relationship with the size of the cropped area except for the largest size categorised, female schooling on the other hand has a positive association. (Appendix-7). This is suggestive of wealth effect being dominating in case of females but opportunity cost holds for male schooling[1]. For a given size of the cropped area higher level of enrollment for both the sexes is registered by children coming of owner operators than that of share cropper. Overall the level of school participation is higher for offsprings of owner than the remaining two classes, share cropper

1. Conversely child work participation is reported to be higher for the households associated with middle range of cropped areas as well as income (15).

Table - 9

Percentage of Children (10-14 years) Attending School of Sex Household Income and Rural Occupation of Thatex (Non-farm)

Income		Household Income Rs./Month				
		Total	0-420	421-700	701-1120	1121+
Usual Occupation						
All	Both sexes	38.3	35.3	35.97	34.28	46.99
	Male	59.1	57.8	54.25	55.21	71.34
	Female	17.2	10.5	15.15	12.94	25.70
Kamees	Both sexes	28.3	6.8	38.9	16.4	45.9
	Male	48.8	15.5	55.1	34.4	74.9
	Female	10.1	0.0	22.5	3.4	9.9
Shopkeeper/Business Class	Both sexes	48.9	30.4	49.6	48.0	53.6
	Male	70.5	65.8	73.2	68.9	71.0
	Female	24.2	0.0	24.0	17.1	36.1
Employees industrial not age woekers and other	Both sexes	41.0	47.9	41.1	38.6	40.8
	Male	68.0	81.9	62.0	57.6	89.0
	Female	14.7	10.1	10.5	20.9	14.8
	Both sexes	42.1	29.0	32.0	39.7	50.1
	Male	59.1	62.2	30.5	62.0	70.0
	Female	16.4	0.0	34.10	11.9	12.90

Source: PLM Survey 1979.

Table - 10

Percentage of Children (10-14 years) by Income and Tenurial Status, Head of Household (Rural Farm)

All Farm Population		Total	0-420	421-700	701-1120	1120+
All	Both sexes	29.9	18.2	25.13	26.38	43.49
	Male	46.9	39.9	42.58	42.01	63.11
	Female	10.1	1.0	5.40	8.89	18.75
Owner Operator	Both sexes	36.60	6.8	33.80	32.98	45.59
	Male	54.92	26.8	49.51	49.77	66.49
	Female	13.61	0.001	9.03	12.71	19.40
Sahre Cropper	Both sexes	19.02	24.8	13.58	16.81	34.69
	Male	33.27	52.00	29.31	25.77	53.33
	Female	3.91	0.00	2.43	5.53	5.79
Land less Agriculture and Labour	Both sexes	25.0	20.01	22.4	21.21	48.61*
	Male	39.6	30.47	39.2	35.80	58.73
	Female	8.2		1.6	6.98	34.79

Source: PLM Survey 1979

*Per few observation.

and landless labour. Among the latter two groups, the performance of the landless is slightly better, which is mostly due to very low school attendence of the share cropper's associated with cropped area size of 6-12.5 areas. The remaining categories of share croppers have better record than landless labour.

Among the non-farm population the lowest level of participation in school is registered by the children of KAMEES (28%) while the shopkeepers (48%) and rentier class (43%) tend to dominate others. Interestingly even controlling for income, Kamees tend to be associated with lower level of child schooling (Table-11). Such a behaviour is explicable in terms of labour market discrimination wherein the persons of similar education level and up having jobs widely dissimilar in financial and other prospects, depending upon their family status and background. If that holds then a given unit of investment in human capital will fetch lower rate of return for the child belonging to lower strata[1].

Inter-relationship between school enrollment and household income is provided in Table 9 & 10. It must be noted that household income is inclusive of the contribution of children 10-14 working (not attending schools) which creates interpretational problems. To the extent higher level of income owes to child work, the influence of income on schooling is masked. Ideally for such an analysis household income should be adjusted for children's contribution. Owing to prepondence of self-employment such a purification could not be attained. Given these limitations of the data the top income groups sends 45% of their children to school while the other three groups hover around the figure of 29%

1. That such a discrimination in labour market prevails is borne out by PLM data, though the investigation is at prelimianry stages (15).

and are indistinguishable among themselves. In terms of sex specific behaviour, female enrollment bears a positive association with household income, while that of male being higher at the either end of the income distribution and lower in the middle ranges. This curvilinear relationship between male schooling and household income stems from higher incidence of child work in the middle income group.[1]

Stark differentials in the school enrollment of children is visible by education of fathers (Table 11). While two-thirds of children belonging to households having graduates (14 classes or more) as their head, the corresponding figures for illiterates are 29%. The differentials are more striking in case of girls than boys, with the result that sex differentials in school participation tends to be narrowed with the rise in educational level of fathers. In terms of the employment status of fathers (or head of household), a higher fraction of children belonging to employer's family (41%) was found attending schools, to be followed by employee head of household (36%). Children living in the households headed by self-employed persons have lowest school enrollment rates (31%) which presumably reflects higher opportunity cost of sending the child to school because of the greater need for their work in family based enterprize.

The influence of household economic and social status on investment in child quality (schooling) is highlighted by bivariate cross tabulations discussed so far. In order to reckon with the availability of schools, an important measure of direct cost, and other village level variable, multiple regression was resorted to which also provided check on the

1. See footnote on page 27.

Table 11

Percentage of Children (10-14) Attending School by Sex, Household Income and Education of Household Head

All Rural

Income Group / Head of Household head	0-420			421-700			701-1120			112+			Total		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	BOth sexes	Male	Female
Graduate and above	-	-	-	-	-	-	52.8	76.4	41.7	81.3	80.1	82.3	64.3	78.3	56.0
Matric	27.5	41.89	0	54.02	68.6	22	71.53	72.4	70.0	58.5	89.3	25.5	60.5	77.7	40.0
Middle	37.7	45.6	20.1	46.6	67.9	25.4	63.2	57.2	44.1	54.4	81.3	33.1	51.J1	66.1	32.8
Primary	33.0	77.6	0	42.4	62.8	16.4	38.1	62.3	8.1	44.2	67.3	18.05	41.2	65.1	14.3
Illiterate	26.3	51.3	5.8	26.7	43.8	8.1	24.5	40.7	7.05	40.2	59.5	19.4	29.5	47.4	10.2
Total	26.1	48.0	6.02	29.9	48	9.9	29.5	46.0	11.15	45.0	66.4	22.2	33.5	51.9	13.1

Source: PLM Survey 1979.

bivariate findings discussed already. The major findings of this regression analysis detailed elsewhere (15) are briefly discussed below:

Since the age cohort under analysis is generally enrolled in Middle level classes (IV-IX) one would, therefore, expect a significant positive association between school enrollment and the existence of Middle and High schools in the village. The information on these institution pertains to 1972, any expansion in their supply between 1972 and 1979 (the time of the survey) is therefore not taken into account. The binary variables denoting the existence of Middle School in the multiple regression is significant only in case of boys in farm households and girls in non-farm households. High schools availability in the village significantly influences the school enrollment of girls in non-farm households. The presence of primary school in the village appears inconsequential for boys as well as girls. Literates in the village population, the other community variable, is significantly positively associated with child school enrollment suggesting that relatively developed villages, with more literate population exhibit an higher level of human capital formation, may be reflecting a "Duesenbery effect"(16)?

As an extention of the above result a significant positive influence of father's education is found on child schooling. The binary variable used as a proxy of the father's education level of matric and higher is significant in non-farm household and for boys in farm households. Using usual occupation which connotes the status of an household, significant negative association is found between child schooling and father's status being Kamees in non-farm and landless labour in farm households. Since household income is controlled this result bespeaks of the influence of

labour market hiring procedure which determines return to education. No significant relationship between farming activities proxied by size of the cropped area and its squared term, and child schooling is found. The effect of cropped area on child schooling is presumably captured by household income. The tractor use is however, found significantly positively associated with child schooling which hints at the possible role of the need of child work hence lower opportunity cost may operate upon child schooling. Since tractor tends to replace adult labour which in turn may substitute the children in actual farming operation.

Household income emerged as a significant explanatory variable of child schooling. The influence of income varies with the sex and level of schooling being examined. Elasticity measures provided in Table 12 clearly being out this point.

Table - 12

Proportionate Change in Enrollment Ratio
by Proportionate Change in Household Income

Type of Household/sex	(Age of Children (Years) 10-14	17-20
Rural Farm		
Boys	.22	0.65
Girls	.46	2.10
Non Farm		
Boys	.09	0.71
Girls	.25	0.97

Source: PLM Survey 1979.

The Table-12 is reflective of the fact that girls school participation is more responsive to rise in income than boys.

Similarly elasticity measures are higher for enrollment in higher level of education. The responsiveness of the school enrollment of boys and girls belonging to 17-20 years of age (mostly enrolled in colleges) to household income is substantially higher than that of enrollment of children aged 10-14. Variation in the elasticity measures between level of education partly stems from the fact that level of college (17-20) enrollment is much lower than that of school (10-14). Recalling that enrollment ratio has an upper bound such a finding is plausable.

Overall the regression results are indicative of the influence of households status both economic and social on their propensity to invest in children. In terms of the classification of household adopted in the preceding section, food poverty and lower participation in child schooling appear to go hand in hand, suggesting that poverty of parents tends to be transmitted to their children. Whether the mortality and fertility differentials behave accordingly or not is a subject matter of the next section.

MORTALITY

Mortality reflects distribution of life itself and has often been used as a measure of welfare (21). As a component of poverty, use of mortality poses few problems. Firstly poverty status of an household may have little to do with mortality which may be more or less a function of exogenous supply of medical facilities. Secondly, mortality by influencing dependency load as well as its distribution over different phases of life cycle, and by affecting the productivity of individuals (if mortality bears a positive association with morbidity at the level of household) may be related in a causal sense with household income or poverty. Finally, cross-secitonal nature of the data presents additional problems of time reference. Information on socio-economic variables pertains to current situation while mortality may be affected by an experience over the life cycle.

Notwithstanding the ambiguities involved in the use of mortality as a component of poverty, infant (0-11 months) and child (0-23) mortality differentials across socio-economci groups will be examined. In order to allow for temporal incongruance between incidence of mortality and socio-economic characteristics contained in the data set, relationship between recent mortality (during the 10 years prior to PLM survey 1979) and household characteristics will be investigated by bivariate cross-tabulations and supplemented with the findings of a multivariate analysis.

Mortality in Pakistan underwent a significant decline from 1951 to 1965. Since then mortality level hardly seems to have changed. From the analysis of the reproductive histories of the

PFS 1975 Iqbal Alam and John Cleland, for instance, concluded that "the most important findings to have emerged from this analysis of PFS mortality is that infant and child mortality appears to have stabilized around 1960 at a high level". Whether the causes of mortality, that is the disease patterns have changed or whether the health care delivery mechanisms have not yet succeeded in trickling down to poverty stricken and underprivileged groups of the society or both, has not been fully investigated as yet. By examining the mortality differentials among different groups of the population, some understanding of the imperviousness of mortality to policy interventions may be gained. In addition this exercise will enable us to assess the relationship between correlates of other measures of poverty and that of the mortality.

Demographic Correlates

Demographic variables, like mother's age at child's birth, the order of birth, and the preceding birth interval constitute some of the important associates of infant mortality. Based on PLM data, the association between infant mortality and mother's age at birth was found to be U-shaped curve. Both at younger and older ages of mothers the risk of infant death is higher than in the middle ages. The relationship betwen birth order and the probability of survival of a child generally mirrors the association between mother's age and infant mortality, hence an inverse association is observed between risk of death and birth order till fourth child. Thereafter, the direction of the association is reversed suggesting a lower probability of survival of higher order births. These findings are consistent with other studies on mortality in Pakistan and in general (12).

The influence of the preceding birth interval on infant mortality in Pakistan appears to be well documented. The PFS 1975 data suggest a negative effect of the length of the preceding interval on the mortality of the index child. This was found to persist despite controls for age, education and residence of mother, birth order and survival status of the preceding child. According to PLM 1979 data, for a specific survival status, there is a negative association between infant mortality rate and the length of the preceding birth interval. Holding, however, the preceding birth interval constant, there appears to be a positive association between survival probabilities of siblings. Whether this correlation is a reflection of some genetic or hereditory factors or whether it stems from selection owing to the distribution of privileges and economic opportunities is difficult to ascertain.

Socio-Economic Correlates of Mortality

The mechanism through which socio-economic factors operate upon mortality is not very obvious. A closer scrutiny of the nature of interaction between individula's capacity to derive benefits from the health facilities and the existence and delivery of these facilities is needed to obtain meaningful clues to the understanding of socio-economic differentials in mortality. To the extent the decisions concerning the allocation of health facilities follow the overall development strategy, the distribution of such facilities is endogenous to the process of decision-making wherein communities, classes and regional power groups participate. A disproportionate allocation of such facilities to urban areas in the developing countries may, therefore been due to urban biased develop-

ment strategy. One of the results is higher mortality particularly infant and early childhood mortality in rural areas.

Within a community, the availability of facilities purporting to reduce the exposure to disease for all individuals may have differential impact even if the service is free. The differential participation may find its explanation in either the difference in the individual's behaviour, such as risk taking, or in the discrimination or the neglect of the government functionaries who are involved in actual delivery of these services or both. In a village better services will be rendered to the landlords or well-to-do persons than to the labourer whose goodwill is least needed by the government servants. Because of the fact that these services, are free involving no cost other than travelling time, they are often regarded as having impact exogenous to household behaviour (24). In the cultural setting where the socio-economic status of the individual consumers is taken into account by those who deliver these services, the association betwen the benefits accrued and household socio-economic status can not be ruled out, though this association may originate from the supply rather than demand side.

Equally it is very difficult to identify whether a service is truly provided free of charge or not. To the extent the chances of getting an admission to the hospital or the ward depend upon the patient's visit to the doctor's private clinic, it can hardly be considered as a free access. In addition, the subsidized services are expected to be demanded differentially by individual who are endowed with different amount of economic resources or are of different abilities and attitudes. The differentials in mortality and morbidity are therefore a product of a variety of factors,

both on the supply and the demand side.

Systematic variation in mortality across socio-economic groups in Pakistan has been a subject matter of a few studies. In a suburb of Lahore, family income and duration of marriage were the only two independent variables which acquired statistical significance in the explanation of child mortality (1). In a recent study of a low income area of Karachi family income and length of breast-feeding were found to be significant explanatory variables of child mortality (18). In addition to these small area studies, mortality determinants were assessed using national level[1] data by Ali Khan and Sirageldin (17) In a simultaneous equation estimation framework births, deaths, income and female labour force participation were endogenously explained. In the rural areas time required to reach a medical facility was the only significant variable in the mortality equations. In the case of urban areas, in addition to time, female age, age at marriage and family structure (nuclear or extended) emerged as significant factors. Interestingly, parental education failed to qualify as a significant explanatory variable of infant and child moratality in the above mentioned analysis. The studies based on PFS 1975 data, however, found educational level of both mother and father to be important factors influencing infant mortality. Bivariate relationship between few socio-economic variables and infant mortality is briefly discussed below using PLM data.

Parental Education

An inverse association between parental educational levels and proportion of infant and children who had died in the household is shown in Table 13 & 14. The survival probability of infants

1. National Impact Survey 1968.

Table - 13

Female Education and Proportion Infant (0-11 months) Died

Mother's Level of Education	All Births			Births to Years Prior to Survey		
	Pakistan	Urban	Rural	Pakistan	Urban	Rural
No schooling	11.93	10.56	12.33	11.5	10.4	11.7
1-9 Classes passed	8.14	7.02	9.50	9.8	9.3	10.5
10+ Classes	4.63	4.63		5.0	5.0	*

Source: PLM Survey 1979.

*Less than 20 observations

Table - 14

Edcuation of Head of Household and Proportion Infant (0-11 months) Died

Educational Level of Head of Household	Pakistan	Rural	Urban
No schooling	12.47	12.87	10.70
1-4 classes	11.98	12.53	10.79
5-9 classes	11.10	11.64	10.10
10-14 classes	8.31	10.19	7.43
16+ classes	3.86	*	3.86

Source: PLM survey 1979

*Less than 30 observations.

(0-11 months) born to mothers having higher level of education (class 10 and higher) is too and half times that of the average and slightly less than twice of the next lower educational class (1-9 class). A closer examination of the data reveals that these differentials are not only carried to childhood but get enhanced. The relationship between infant mortality and education of father or head of the household (in the case of joint families) tends to recount the same story. A quantum change is associated with the father being post-graduate. The difference in infant mortality between households having illiterate father and those with fathers who passed 10-14 classes are also noticable.

The differentials observed by perental education are similar for both rural and urban areas and also for overall as well as recent mortality. It must be noted that parents having higher educational levels, such as females who passed 10 or more classes and post-graduate fathers, represent a select class enjoying higher level of income.

Household Income

A higher level of income is expected to be associated with an higher expenditure on food, shelter and sanitation which have a positive influence on survival of the household members. These possible links between household income and infant mortality may, however, be difficult to assess from cross-sectional data because of the temporal incongruance of the data on current income and mortality of infants some of whom may have died in the past. Current income of household may very well partly carry the effect of past mortality. The consequence of infant mortality on the size and structure of the family, the resultant

dependency load and earning potentials at different phases of the family life cycle are not well explored in the literature. In addition data on income collected through surveys generally suffer from measurement errors. The bivariate association between household income and infant mortality set out in Table-15 needs therefore, to be interpreted with caution. The table indicates a positive influence of household income on the survival probabilities of infants. Infant mortality rate is 75% higher for the lowest than for the highest income group. This differential is slightly narrowed (64%) in the case of births during the 10 years prior to survey. Interestingly the infant mortality differentials are sharper in urban than in rural areas, whereas the relative gain associated wiht the two higher income groups is less visible in rural areas. Rural-urban differentials persist after controlling for income level of the household and tend to become larger for higher income groups. In the case of recent mortality experience, rural-urban differentials for the two lower income groups are minimal.

It is difficult to explain the variation in the direction and level of the effect of household income on infant mortality between rural and urban areas. The possibility that measurement error in income and recall error in mortality may be larger in rural than in urban areas, besides the widely different availability of health facilities in two areas may have some influence on the income - mortality relationship. In addition, it may be recalled that it is the permanent not the current income which is expected to influence household behaviour. Imputation of permanent income using the information on current income, age, and education of the earners, as done in many research studies (16), is not attempted

here because of the predominance of self-employment wherein the role of assets in the determination of income is of paramount importance.

Occupation of Fathers

Information on assets is hardly available, though we have data on area cropped by the households in rural farm population. For urban and rural non-farm househlds the occupation of fathers/ head of the household is used as an indicator of socio-economic status instead. The bivariate relationship between infant mortality and father's occupation revelas that children born to fathers with white collar occupations enjoy a substantially higher survival probability than those of the blue collar workers in urban areas. The mortality rate is 32% higher for the infants belonging to the latter group than the former. Controlling for the occupation, the employment status of fathers or the heads of household appears to have some influence. Lower infant mortality rate is displayed by employers, but substantial difference is obtained only for employers in the occupational group of professional. This occupational classification is very aggregative: priamry school teachers are lumped with engineers and classified as professionals despite the wide difference in their income and socio-economic status. In the case of rural areas this classification appears less relevant and the usual occupations which can be regarded as a better proxy for income and socio-economic status are used in the non-farm population. The limitations of this classification were discussed in the preceding section on food deficiency and poverty.

However, the relationship between usual occupation and infant mortality in rural non-farm households is set out in Table - 16.

Table - 15

Household Income and Proportion Infant (0-11 months) Died

Income Group (Rs. per month)	Total	Rural	Urban
1-500	0.164	0.17	0.13
501-1200	0.117	0.12	0.11
1300-2800	0.098	0.11	0.08
2801+	0.094	*	0.07

Source: PLM Survey 1979
*Less than 30 observation.

Table - 16

Proportion Infant Died by Usual Occupation and Employment Status of Head of the Household

(Rural Non-farm Population)

Usual Occupational Categories	Total	Employ-ers	Self-employed	Employ-ees	Others and not working
KAMEES, Cottage and Handicraft workers	15.00	13.6	15.11	12.8	14.05
Industrial workers and other employees	14.77	*	6.35	15.08	11.74
Shopkeepers	11.71	15.82	11.47	13.38	*
Landlords and other rentier class	12.05	11.74	10.98	*	13.94
Undefined categories	11.97	13.11	12.57	11.87	11.38

Source: PLM Survey 1979
*Less than 30 observation.

Major differentials appear between the KAMEES and the remaining groups. KAMEES are generally at the lowest rung of the status ladder in the rural areas and their infants have 20% higher mortality than the average. The remaining three groups - shopkeepers, rentiers and others are indistinguishable with respect to infant mortality.

Landholding

The relationship between landholding, tenurial status and infant mortality for the farm population in rural areas is presented in Table 17. The data fail to reflect any substantial differential either across land size categories or tenurial status of fathers except for the noticeable higher mortality associated with landless agricultural labour. This category has 25% higher infant mortality than the other classes. The difference between the survival probabilities of infants of theowner operators and shrare croppers is very small. It must be noted, however, that data on land pertain to

Table - 17

Proportion Child Dead by Cropped Area and Tenurial Status Rural Areas Pakistan: 1979

Cropped area (acres)	Tenurial Status			
	Total	Owner Operator	Share cropper	Agricultural landless labour
Less than 12.5 acres	13.07	13.53	12.09	
12.6 - 25	11.23	11.67	9.70	
26-50	13.50	12.44	16.94*	
Over 50 acres	13.00	12.02	14.21*	
Total	19.92	12.84	11.37	15.46

Source: PLM Survey 1979

*Less than 30 observation.

the operational holding, not to ownership. Furthermore, the absence of a systematic variation appears to be partly due to age structure

of the females. For instance, a detailed examination of the data shows that the fact thatinfant mortality associated with the land size of 12.6 to 25 acres being lower than for the larger landnoldings stems from the disproportionate share of younger mothers in the former group. In addition, the quality of land and accessibility to irrigation facilities and regional variation is not controlled for. Overall, however, the above results suggest that the groups generally regarded at the lowest in the class structure of the rural areas - agricultural landless labourers and KAMEES - experience around 20 to 25% higher infant mortality rate than the average.

Multivariate Analysis:

In order to investigate the association between infant mortality and the forgoing variables, a multi-variate regression analysis was performed. Independent variables used in the estimation are described in Table-18. Wherein O.L.S.[1] regression results pertaining to rural areas are reported. Four variants of the proportion of children died are used as dependent variables. The classification is based on age of child at death (0-11 months or 0-23 months) and whether it can be treated as recent mortality experience (births during 10 years prior to survey) or not. Overall the explained variance ranges between 20% and 23% which is encouraging given the cross-sectional data. Regression coefficients of the demographic variables (not reported in the table) bear expected signs and are statistically significant. For instance, female age has a significant non-linear (U-shaped) relationship with the dependent variables. A host of factors like birth order and cohort

1. The dependent variable being proportin of children died less than or equal to one year of age, proper estimation technique would have been logit or probit. Owing to non-availability of a package computer programme O;L.S is resorted to.

Table - 18

O.L.S Regression Results of Proportion Child Died: Rural Areas (All Births)

	Birth During 10 years Prior to PLM Survey		All Births	
	0-11 Months	0-23 Months	0-11 Months	0-23 Months
Household Income	-0.000006*	-0.000008*	-0.000006*	-0.000008*
Mother's Education				
1-4 years	-0.024	-0.011	-0.021	-0.015
5-9 years	-0.036*	-0.045*	-0.026*	-0.035*
10+ years	-0.081*	-0.094	-0.085*	-0.099*
Father's Education				
1-4 years	-0.004	-0.004	-0.003	-0.004
5-9 years	-0.001	-0.005	-0.009	-0.11**
10+ years	-0.03*	0.04*	-0.22	-0.031*
Community Variables				
Dispensary	0.006	0.007	-0.002	-0.03
Hospital	0.009	0.004	-0.007	-0.012
R^2	0.23	0.22	0.21	0.20
F	104.48	98.8	100.94	97.88
DF	4815	4815	5335	5353

Demographic Variable included in the equation

1. Age of female
2. Squared of age of female
3. Length of breast-feeding in last closed birth interval

* Significant at 5% level
** Significant at 10% level.

effect appear behind this finding of lower child survival probability at both the ends of female reproductive age span. Length of breast-feeding in the last closed birth interval, which presumably also picks up the influence of the omitted variable of the length of the preceding births interval, is negatively associated with infant mortality and statistically significant. This relationship is plausible given the fact that mother's milk is an essential nurtient and imparts immunity against various infections diseases.

Among the socio-economic variables, all the bineary variables denoting parental education have expected signs but statistically significant is only educational level of matriculation and higher (10+ classes) for father or heads of the household. In the case of females the educational level of 5-9 years is also significant and negatively related with mortality. The size of the regression coefficients of mother's education is larger than that of father's for the same level of education suggesting that the survival probabilities of children are more responsive to mother's education than that of father or head of the household.

Household income is negatively correlated with proportion of children died in the household. The size of the coefficient is not large; it yields low elasticity estimate for total as well as recent mortality. The relationship between household income and mortality is statistically significant for all rural households and farm households. Interestingly, the existence of health facilities in the village failed to emerge as a significant explanatory variable in the multivariate analysis. It must be noted that presence of hospital or a dispensary in the village hardly constitutes by itself an evidence that actual use of these facilities

is higher in the village than in the adjoining ones not equipped with these facilities. More important in this respect appears to be the distribution and location of private and informal health services such as medical doctors, homeopaths and traditional network of HAKIMS. None of these were included in teh estimating equation and, hence, the insignificance of a binary variables denoting the presence of health facilities in the village suggests tnat these institutions fail to have a significantly different effect on infant mortality than the private and traditional facilities. Even this result may be regarded as tentative till more indepth investigation of the use of these facilities is made.

Regression analysis seperately for rural farm and non-farm (not reported) areas produced similar results. The occupational category of KAMEES was significantly positively associated with inant mortality in rural non-farm regression analysis. In the case of rural farm set, the additional variable emerging as significant was the squared term of land size suggesting that the households with very large size farm holdings have lower infant mortality rate. The landless agricultural labourers have higher level of mortality but conventional statistical significant is not achieved by this variable.

The results of the bivariate classification and multi-variate analysis lend support to the contention that infant and child mortality experienced by a household is reflective of its capacity to participate in the system. Some of the possible limitations of this analysis need to be mentioned. Statistical relationship between income and mortality appears to be specific

to the construction of variable and functional form chosen in the estimation. Given the fact that there is a lower bound to mortality level, log of household income appears more appropriate: in that case the statistical significance of the variable would be enhanced. Construction of the income variable in terms of per capita or per adult poses problems wherein not only the income variable is rendered insignificant but in certain case acquires positive signs. This appears to be related to the ommission of fertility as determinant of mortality. Given the widely known positive assocation between fertility and infant mortality the regression coefficients reported contain both direct and indirect effects of the variable on mortality, the indirect effects operating thorugh fertility. Fertility behaviour of the socio-economic groups under-discussion is very briefly discussed below to ascertain whether or not the groups suffering from higher mortality levels tend to reproduce more.

Fertility

PLM data afford a unique opportunity to examine the effect of a wide range of factors on fertility. Since the fertility module administered for the data collection was replica of the questionnaire used in PFS 1975, the PLM data are also used to discern changes, if any, between these two surveys conducted 5 years apart. Various studies of fertility levels and differentials have been made so far.(13). A very brief discussion of their major findings is presented below

Majority of the biological and demographic variables such as female age, her age at marriage, and breast-feeding ar found to behave according to expectation. While female age has a quadratic relationship

with fertility. Age at marriage bears at significant negative relationship which is obvious because of the curtailment of reproductive span by a rise in female age at marriage. A notable result of the analysis is the diminuation in the size of the regression coefficient of age at marriage: Inter-temporal (between PFS 1975 and PLM 1979) as well as intra-temporal (lower for older age chorts). This suggest that either the nature of the association between age at marriage and CEB has changed or age at marriage has entered the zone of adminishing marginal returns or both. The cross-sectional behaviour of the coefficient alludes to the possbility that influence of late marriage may have been countered by narrow spacing of births. Mean length of breast-feeding of 12 months or more has a depressing effect, but shorter duration appears positively associated with fertility which may depict the reverse causation - higher mortality, short birth interval and smaller length of breast-feeding but larger CEB. Mortality represented by inverse of child survival ratio, in the OLS regression was found to be significantly positively associated with fertility. Although the direction of causation being unclear the replacement factor to achieve the desired family size was high specially in rural farm households. An insignificant fraction of married females are reported as contraceptive users and majority of these have above average CEB, thereby imparting a positive association between contraception and fertility.

Inter-relationship between socio-economic factors, such as parental education, household income, cropped area, and tenurial status of the head of household, and fertility are currently being examined at PIDE. Mother's educational level which emerges as a

relevant variable in bi-variate cross-tabulations fails to retain its significance in teh multivariate regression equations for farm and non-farm areas. The results for urban areas, however, are different; highly educated (class 10 and above) females tend to have significantly lower fertility. This simply is reflective of the importance and nature of job structure available to mothers because in the urban areas educated females take up wage employment which introduced the incompatability between child bearing and employment. Because of self-employment in rural areas the absence of such a relationship is understandable.

Availability of land and nature of technology used in farming appears to have an influence on reproductive behaviour. Land size classification (dummy variables) used in the regression equations pertaining to rural farm areas reveals a significant positive relationship (in comparison to excluded category of landless agricultural labour) up until land holding size of 20 acres. The coefficient of the binary variable denoting the largest size category fails to retain it significance level. Tenurial status, once land size is controlled, appears to have no significant effect on fertility, and both owner operator and share cropper reflect a similar reprodcutive behaviour. A significant negative association between use of tractor and fertility, a result of multivariate anlaysis, bespeaks of lesser needs for children in the wake of mechanization, besides, tractor owning households can be regarded as more innovative, having different (lower) family size norms.

Household income has a significant non-linear (inverted J type) relationship with fertility. This is also born out by bivaraite cross-tabulations (see Appendix Table 8) whereas number

of children tends to rise in successive higher income group, but it drops for the top income group. Similarly, in the multivariate regression, the household income and its squared term bear a significant relationship with fertility, the sign of the coefficient of the former being positive while that of the later is negative. The turning points yielded by the equations suggest that income levels approximately 5 to 7 standard deviations larger than average, less than 1% of the population are associated with lower fertility

Except for the behaviour of this selected top income groups and, in urban areas also of those highly educated and belonging to professional class, the reproductive behaviour in Pakistan is fairly homogenous. The socio-economic groups (landless labour and Kamees) which suffer from high infant and child mortality have not necessarily above average fertility. Although this enhances our confidence in the relationships observed between various socio-economic factors and mortality in the preceding section, the absence of relationship between mortality and fertility obtained for these socio-economic classes needs an explanation. Part of the reasons may lie in the recall error which is more likely in case of poor households whose majority of females are illiterate. Also the possibility that the reproductive span of females belonging to poverty stricken groups is shorter owing to earlier onset of fecundity impairment can not be ruled out. This class specific relationship between mortality and fertility merits further investigation, however.

CONCLUDING REMARKS

Investigation of poverty phenomenon with a view to understand the mechanics of poverty generation is a major objective of the study. In order to discern the household behaviour in the context of surrounding environments and constraints, a class structure, loose of course, using the criterion of ownership and access to land in rural areas is depicted. Application of three measures of poverty - calorie deficiency, infant mortality and participation in child schooling-to this classificatory scheme yields that socio-economic groups suffering from higher level of calorie deficiency also mark a poor performance in infant mortality and child schooling. Assetlessness emerges as a major correlate of poverty wherein landless labour and Kamees are the worst sufferer.

This particular classification of households at a point of time, is however, a product of the dynamics of family life cycle . Visualized in this context, both the asset formation and demographic burdens as well as the level of deprevation that a family experience may vary during different phases of its life cycle. Although the cross-sectional data at our disposal hardly afford sufficient insights, this study attempts to unravel the nexus between demographic behaviour and poverty in the context of socio-economic stratification prevailing in Pakistan.

Demographic characteristics such as size of the family has always been regarded as relevant for distinction between poor and non-poor. A positive association between size of the family, dependency load and degree of poverty is always considered a strong relationship. However, according to the analysis of this paper which

cast in terms of the identifiable socio-economic groups rather than the usual poor/non-poor categories, the vulnerable groups are not necessarily the ones having either large family size or above average fertility. This is despite the spurious correlation introduced by the measurement of poverty wherein sizd of the family enters as a denominator, particularly in case of calorie deficiency and presumably to some extent in the other two measures of poverty - infant mortality and child schooling.

The findings of this paper suggest that the size as well as the formation of household is a response and represents an household survival strategy. Association between large family size, lesser nuclearization and large size cropped area does allude to existence of such a strategy. Similarly large family size may permit a rise in household income and hence less poverty, even for an assetless group. This venue is provided by the participation of household memebrs in the job market outside the village confines. For instance, one finds that out of the landless labour the households falling in the upper income groups (and less poverty) are the ones having large family size and higher propensity to participate in ex-village labour market. That large family size may constitute a source of strength rather than burden appears to be the case in rural areas of Pakistan.

Similarly the fertility behaviour of the poverty stricken group is not found significantly different than the average. It has already been noted that except a selected top income group the repreoductive behaviour in Pakistan is fairly homogenous. The findings that the assetless groups like landless labour and Kamees

suffer from high child and infant mortality but do not relfect above average fertility appear bit puzzling. Whether or not the association between fertility and mortality is class specific merits further investigation. Our results are however, suggestive of the fact that socio-economic groups inflicted with higher level of poverty and up having number of surviving children, lower than the average.

The foregoing clearly underscores the need to understand the demographic behaviour in the overall context of constraints and opportunities faced by the household. To the extent higher fertility represents a survival strategy of the household, the oft quoted demographic burden hardly qualifies as a cause of poverty, it may be a symptom though. Demographic blinkers blown beyond proportion, therefore, may run the risk of being unproductive. A class neutral population control policy hardly appears to have a chance of success. There exists a real possibility that such a policy unaccompanied by other measures envisaged to alleviate poverty by introducing the structural changes in the economic system, may adversely affect the poverty stricken classes.

BIBLOGRAPHY

1. Afzal Mohammad, Zubeda Khan and N.A. Choudry. "Age at Marriage, Fertility and Infant Mortality in a Lahore Sub-urb (Part-II)" The Pakistan Development Review, Summer 1976.

2. Azfar Javed. Distribution of Income in Pakistan Before and After Taxes. An unpublished Ph.D Thesis Harvard University, 1971.

3. Becker Gary and Tomes Nigel. "An Equilibrium Theory of the Distribution of Income and Inter-generational Mobility" Jornal of Political Economy, December 179.

4. De-Tray, Dennis, "On the Micro-Economic of Family Behaviour" in Rural Household Status in Asia. Edited by Han. P. Binswenger, R.E. Evenson, C.A. Florencis, and Banjamine NE. White Singapore Univeristy, Pree 1980.

5. Ercelawan Aly "Income Inequality in Pakistan, A Study of Sample Villages" Pakistan Journal of Applied Economics. Summer 1984.

6. Hirashima, Hired Labour in Asia. Institute of Developing Studies, Tokyo Japan. 1980.

7. Iqbal Alam and Jhon Cleland. "Infant and Child Mortality Trends and Determinants in Fertility in Pakistan: in A Review of Findings From Pakistan Fertility Survey" Edited by Iqbal Alam and Betzy Denison, International Statistical Institute W.F.S. Netherlands, 1984.

8. Irfan Mohammad."An Introduction to Studies in Popualtion, Labour Force and Migration" PIDE Research Report No.118, 1981.

9. Irfan Mohammad. Poverty in Rural Pakistan , Mimeo PIDE. June, 1984.

10. Irfan Mohammad. The Determinants of Female Labour Force, Participation in Pakistan. PIDE Research Report September 1983.

11. Irfan Mohammad. Population Distribution, Migration and Economic Development. A paper read at Population Seminar held at Islamabad, July 1984.

12. Irfan Mohammad and Iqbal Alam, Socio-Economic Correlates of Mortality. Mimeo. PIDE August 1984.

13. Irfan Mohammad and G.M. Farooq. An Investigation of House hold Reproductive Behaviour, PIDE Research Report September 1983.

14. Irfan Mohammad and Rashid Amjad."Poverty in Rural Pakistan" Published in Poverty in Rural Asia, ARTEP June, 1984.

15. Irfan Mohammad, The Determinents of Child Schooling and Child Work in Pakistan, Mimeo, PIDE 1985.

16. King M. Elizebeth, Lee A Lillard, Determinants of Schooling Attainment and Enrollment Rates in the Phillipine . Rand, Santa Monica April 1983.

17. Khan M. Ali and Sirageldin. "Education Income and Fertility in Pakistan", Economic Development and Cultural Change April 1979.

18. Knowles, James C. "The Determinants of Mortality in a Low Income Area of Karachi", Pakistan Journal of Applied Economics. Summer 1982.

19. Mohammad Faiz and Ghulam Badar, The Structure of Rural Income in Pakistan: Some Preliminary Estimates. Paper presented at the Second Annual Meeting of Pakistan Society of Development Economics, May 1985, Islamabad.

20. Lindert P. "Sibling Position and Achievement" Journal of Human Resources, Spring 1977.

21. Morris, David. Measuring the Condition of the World's Poor: The Physical Quality of Index New York, Pergmon Press, 1979.

22. Rodgers, Gerry. Poverty and Popualtion: Approaches and Evidence. International Labour Office Geneva March, 1984.

23. Rosensweig, M and K. Wolpin. "Testing the Quantity - Quality Fertility Model: The Use of Twins as a Natural Experiment" Econometrica January 1980.

24. Schultz. T. Paul. Interpretations of Relations Among Mortality Economics of the Household and Health Environment. A paper presented at the meeting on Socio-economic Determinant and Consequences of Mortality, Mexico city, June 1984.

25. Standing Guy. Labour Force Participation and Development, I.L.O Geneva, 1978.

Appendix Table - 1

Poverty Incidence by Tenurial Status and Different Poverty Line - Farm Population Rural Areas

Poverty Line Food Expenditure per adult	Owner operator	Share cropper	Agricultural land labour
Rs. 65	23.8	25.2	39.00
Rs. 70	33.0	33.60	51.72
Rs. 75	34.8	42.8	53.40

Source: PLM survey 1979.

Appendix Table - 2

Percentage Distribution of Farm Household Income From Different Sources: 1980

Farm size	Crops	Milch Animals	Labour
1.0 acre	7.1	31.2	50.0
1.0 - 2.5 acres	22.8	35.3	27.1
2.5 - 5.0 acres	39.3	32.3	15.0
5.0 - 7.5 acres	49.4	29.1	9.2
7.5 - 12.5 acres	57.0	24.8	7.4
12.5 - 25.0 acres	64.4	20.8	5.1
25.0 - 50.0 acres	70.6	17.1	3.4
50.0 - 150 acres	73.7	15.8	2.0
150 and above acres	81.0	12.4	0.5
Farm households all	54.3	26.6	7.5

Source: The Structure of Rural Income in Pakistan: Some Preliminary Estimates.

Notes:
1. Household income is not adjusted for interest on debts and expenditure on hiring labour.
2. The income due to labour is under-estimated because labour provided outside the household activities are valued at the unskilled wage rate.

Appendix Table - 3

Labour Force Participation and Migration by Cropped Area Owner Operators: Rural Pakistan 1979

Cropped Areas (acres)	Upto 5	5.1 - 12.5	12.6 - 25	25+	Total
Labour Force Participation 10 years and above	53	51	54	55	53
Female L.F.P. 10+	22.3	17.0	23.0	5.5	19.5
Male children 10-14 in L.F.	27	31	36	31	32
Female children 10-14 in L.F	13.2	14.0	19.8	11.3	15.3
Out migrant outside Pakistan as % of above	17	32	20	4.0	24
Remittance as % of Household Income	6.5	9.5	2.0	1.0	
Average Income per worker (Rupees)	384	411	402	526	417
Household Income	733	846	1050	1447	943

Appendix Table - 4

Labour Force Participation and Migration by Cropped Area Share Cropper: Rural Pakistan 1979

Share cropped area (acres)	5	5.1 - 12.5	12.6 - 25	25+	Total
Labour Force Participation 10 years and above	59.3	62.3	57.0	60.0	60
Female L.F.P. 10+	22.3	31.0	23.1	24.5	27.3
Male Children 10-14 in L.F.	42.2	46.1	41.3	31.0	43.2
Female children 10-14 in L.F	21.9	16.9	23.2	10.7	18.7
Out-migrant as a % of 10+ population	2.9	1.0	4.0	0	2.1
Migrant outside Pakistan	56	0	0	0	10
Remittance as % of Household Income	19.8	4.0	1.0	-	-
Average Income per worker	421	362	317	326	353
Household Income	726	886	887	952	860

Appendix Table - 5

Labour Force Participation and Outmigration by Income Group: Landless Labour Rural Areas

Income Group	(Household Income Rs/month) 0-420	421-700	701-1120	1121+
1. Average Family Size	4.0	5.4	6.6	7.6
2. Percent Nuclear Families	87.0	71.0	54.0	54.0
3. Outmigrants as % of Population 10 years and above	1.2	1.7	1.8	3.2
4. Migrants Outside Pakistan	0	0	10	5
5. Income per Household Rupees	327	547	868	1640
6. Income per worker Rupees	253	302	336	670
7. Percent Household poor	60.2	51.4	44.2	14.7
8. Percentage Distribution of Household in the sample	25.8	38.7	27.9	1.3

Source: PLM 1979

Appendix Table - 6

Poverty Incidence by Educational Level of Head of Household and Income Group Rural Areas Pakistan

Education / Income Level / Group	0-420	421-700	701-1120	1121-21000	2101+	Total
Illiterate	53.1	45.8	39.1	20.4	19.7	41.2 (76.8)
Primary but less than Middle	51.6	39.1	36.4	20.5	1.8	34.0 (14.0)
Middle but less than Matric	*	32.07	36.7	29.2	0	34.2 (5.3)
Matric but less than Degree	-	33.9	41.5	5.6	5.2	25.9 (3.4)
Degree and above	-	-	42.4	0	0	19.4 (0.5)
Total	53.9	44.0	38.7	20.0	11.5	39.2

\- No observation
* Less than 30 observation

Figures in parenthesis reflect percentage distribution.

Appendix Table - 7

Percentage of Children (10-14 years) Attending School by Sex and Cropped Area Cultivated and Tenurial Status of Household

Cropped Area / Tenurial Status	5			0 - 12.5			12.5 - 25			25+			Total		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Owner Operator	39.8	62.1	7.8	36.8	55.4	12.8	35.4	41.7	19.3	38.4	56.0	20.6	36.6	54.9	13.6
Share cropper	21.7	43.0	0	12.1	20.7	4.0	24.8	41.6	3.5	41.3	59.0	13.7	19.10	32.8	4.2
Landless Agri-cultural workers	-	-	-	-	-	-	-	-	-	-	-	-	22.4	38.9	7.8

Source: PLM Survey 1979.

Appendix Table - 8

Mean Children Ever Born by Household Income by Age of Female

AGEF	Income Groups	Household Income 1	2	3	4	5	6	7	8	At a Standardized Means (Pakistan)
25 years	Rural total	1.24	1.30	1.17	1.08	0.78	1.35	1.25	1.27	1.29
	Farm Household	1.17	1.25	1.08	0.99	0.68	1.19	1.14	1.03	1.10
	Non-farm Household	1.31	1.35	1.33	1.16	0.82	1.57	1.37	1.57	1.30
25-29	Rural total	2.97	2.93	3.12	3.07	2.95	3.19	2.87	1.93	2.94
	Farm Household	2.50	2.85	3.17	2.68	2.75	3.35	3.01	0.78	2.82
	Non-farm Household	3.01	3.07	3.03	3.42	3.23	2.96	2.75	0.35	3.10
30-34	Rural total	3.84	4.03	4.59	4.46	4.80	4.49	4.04	4.69	4.26
	Farm Household	3.58	4.07	4.77	4.77	4.56	4.95	4.07	4.14	4.30
	Non-farm Household	4.10	3.98	4.35	4.02	4.99	4.30	3.00	568	4.23
35-39	Rural total	4.30	5.27	5.88	5.67	7.23	6.72	5.02	4.84	5.54
	Farm Household	4.13	5.00	5.75	5.61	7.28	6.36	5.59	4.68	5.36
	Non-farm Household	4.50	5.59	6.16	5.78	7.14	7.17	5.68	4.97	5.79
40+	Rural total	4.90	6.35	6.72	6.60	6.85	6.82	6.98	5.99	6.39
	Farm Household	5.58	6.07	6.57	6.67	7.11	6.49	6.63	5.31	6.33
	Non-farm household	4.17	6.78	7.03	6.49	6.58	7.49	7.41	6.76	6.55
Standar Means Pakistan	Rural total	3.26	3.99	4.50	4.44	4.43	4.68	4.07	4.69	4.11
	Farm household	3.90	3.86	4.45	5.42	4.43	4.31	3.91	3.10	4.01
	Non-farm Household	3.25	4.17	4.62	4.42	4.43	4.67	4.29	4.55	4.22