WAGES, EMPLOYMENT & LABOUR
PRODUCTIVITY IN THE MANU-
FACTURING SECTOR OF PUNJAB

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Introduction

Wages hold great significance in an economy as they represent income to the workers, costs to the business men and are a major source of purchasing power and, as such, have an important bearing on the level of economic activity. Although there are various aspects of wages on which important questions can be raised, we limit ourselves in this study to just two aspects of wages viz. the determination of the average wage level overtime for the period 1964-65 to 1977-78 and the differential in wages across 'twenty four' different industries for the year 1977-78 in the manufacturing sector of Punjab. It is argued sometimes that the concept of the average wage is inadequate because wages do vary between occupations, industries and regions. Nevertheless, such a concept is useful for public policy specially for making comparisons among different sectors of an economy. Some wage differentials among industries are necessary to induce workers to move towards less attractive jobs as it is the relative attractiveness of job in all of its aspects including working conditions, degree of security etc., that influences a worker's decision to take up employment. In this study, we shall try to find out if there are any systematic factors affecting the level of wages across industries.

Economic literature abounds with empirical studies which attempt to identify the determinants of wages overtime as well as across industries. However, keeping in view the under-developed and labour-abundant character of Pakistan's economy, reference will be made only to those studies which have been carried out for under-developed countries.

Guisinger and Irfan [3] held government intervention, trade unions and
the employer himself responsible for wage increases. However, they did
not provide empirical evidence as to the relative importance of these
three factors. Horowitz [4], using both cross-sectional and time series
data for India, found that the impact of employment, capital-labour
ratio and labour productivity on wages was significant. The only time
series study for Pakistan which dealt with wages in a simultaneous
equation framework is that of Irfan [6]. Using data on Pakistan's large
scale manufacturing for 1949-69, he estimated a set of three simultaneous
equations wherein real wage changes, growth in unionization and
industrial employment were assumed to be jointly determined. As far as
analysis of inter-industry wage differentials is concerned, two studies.
Guisinger and Irfan [2] and Irfan [5], have been carried out in
Pakistan. However, both of these studies use Ordinary Least Square
(OLS) to estimate the relationship.

The plan of the paper is as follows. The first section discusses
the model, methodology and data. The second section deals with empirical
results. Section three summarizes the major conclusions, policy impli-
cations, and limitations of the paper.

I. MODEL AND METHODOLOGY

Two main determinants of wages used in our study i.e., employment
and labour productivity are not predetermined but are random variables.
When explanatory variables are not predetermined but are endogenous to
the system then one of the basic assumptions of OLS is violated and as
such application of OLS will yield biased and inconsistent estimates. It
may be noted that wages, employment and labour productivity are jointly

determined variables and as such, we have estimated them simultaneously in this paper by applying the Two-Stage Least Squares (2SLS) technique. The idea behind 2SLS is to purge the explanatory variable of the stochastic component associated with the random term. This is achieved by regressing the endogenous variables on all the exogenous variables in the system and then replacing these variables by their estimated values. We shall first discuss the methodological framework to analyse wage determination over-time.

Specification of Time Series Wage Determination Model

In this paper, wage determination overtime is analysed in a simultaneous equation framework, in the three equation simultaneous equation model; endogenous variables are wages, employment and labour productivity. Our analysis however differs from Irfan's analysis [6] in two respects. First, we have included another equation to explain labour productivity and labour productivity is also one of the arguments in the wage equation. Irfan neither has an equation for labour productivity nor does he use labour productivity as one of the arguments. Second, due to non-availability of data for 1972-73 - 1977-78 the unionization equation has not been included, while Irfan [6] does include that equation. Irfan [6] tested the impact of agricultural productivity, proportionate changes in manufacturing output lagged by one year, minimum wage legislation represented by the product of the percentage of industrial workers covered by the minimum wage legislation and the legal minimum wages deflated by the cost of living index and trade union membership on real wages. An increase in agricultural productivity was hypothesised to exert positive influence on real wages, first because it restrains migration to urban

areas by creating demand for labour within agriculture and thus causing a leftward shift in the labour supply schedule for the urban labour market and second because high agricultural productivity causes a rightward shift in the demand schedule for industrial products. Manufacturing output lagged by one year was used to represent shift in the demand schedule for labour. However, except for agricultural productivity, all other variables turned out to be significant. Employment changes were hypothesised to be explained by changes in real wages, lagged value-added, lagged employment level, time trend and average agricultural productivity, whereas average agricultural productivity was included in the employment equation to simulate the effect of rising supply price of industrial labour on employment. Changes in unionization level were hypothesised to be explained by changes in real wages, both current and lagged by one year to simulate the credit effect on unionization, a dummy variable to account for the government measures which strangulated union's activities, employment and lagged level of unionization.

We have specified a three equation model to explain the following inter-relationships

$$W = F \, (E, \, LP, \, CPI, \, DE, \, ED)$$

$$E = F \, (O, \, W, \, SE)$$

$$LP = F \, (O, \, K/L, \, W, \, DE)$$

where

W = Average earnings per employee

E = Employment

O = Output

LP = Labour-productivity, it is value added divided by number of persons employed.

CPI = Consumer price index

SE = Share of manufactured exports in GDP

K/L = Capital intensity-value of fixed assets divided by number of persons employed.

DE = Dummy variable for emigration which assumes the value of unity from 1971-72 onwards and zero otherwise.

ED = An interactive variable of employment and dummy variable for emigration = DE x E

All the equations are estimated in log-linear form.

Wage Equation

Employment is expected to exert positive influence on wages as employment reflects the demand for labour and according to theoretical reasoning, a rise in the demand for labour leads to an increase in the wage level. However, the significance of this variable depends on excess demand or excess supply conditions prevailing in the labour market. In some studies, changes in value-added have been used to represent the demand for labour. This is true only if we assume that an increase in output leads to a significant rise in employment. This, however, cannot be justified because of the significant employment lag in the manufacturing sector of developing countries.

The average labour productivity is included in the wage equation so as to represent ability to pay. The higher the ability to pay, higher should be the wage level according to "ability to pay", hypothesis.

The emigration of labour force affects wages indirectly through affecting the elasticity of labour supply curve. The elasticity of labour supply is expected to be lower when emigration is possible as compared to the situation of no migration. A dummy variable which assumes the value

of unity from 1971 - 72 onwards and zero otherwise is used to test the
effect of migration on wages.

An interactive variable of employment and dummy variable for emigra-
tion is introduced in the specification to see the combined effect of
these two variables on wages. As mentioned earlier emigration causes
elasticity of labour supply to fall. Therefore, when labour is emigrating
and simultaneously demand for labour is rising, then wages are expected to
rise more rapidly than they would have had there been no emigration.

The consumer price index is expected to be positively related to the
wage level because as prices rise, trade unions are practically forced to
strive for higher wages in order to keep real wages from falling.

Employment Equation

In the employment equation, the impact of wages on employment is
examined. A priori, a negative relationship between these two variables
is expected because as long as possibilities of substitution exist between
labour and capital, an increase in wages will lead to the adoption of less
labour intensive techniques. Moreover, if the technical change is not
neutral, wage increases will prevent the substitution of labour for capital
which otherwise would have occurred. Secondly, even when factor
proportions are fixed, increase in wages would lead to higher prices and
consequently a fall in employment, of course depending upon the demand
elasticity of the product.

Obviously there is a positive relationship between output and employ-
ment. However elasticity of employment with respect to output is expected
to be less than unity because of increase in productivity through learning

by doing, a neutral and even non-neutral technical change and the existence of economies of scale.

The orientation of government policies to export promotion or to import-substitution also has a significant impact on employment. Since exports from a labour-abundant country like Pakistan are expected to be labour-intensive,[1] an increase in the share of exports in GDP will raise industrial employment.

Labour-Productivity Equation

The output level which reflects economies of scale is expected to exert positive influence on labour-productivity. As the scale of output increases, labour economies are achieved through specialisation and division of labour. Moreover, large scale operations provide considerable experience to technical personnel leading to improvement in labour skills and, in turn, to higher labour-productivity.

Capital intensity is one of the very important factors affecting labour-productivity. An appropriate variable which can better explain changes in labour productivity is the capital stock adjusted for changing rates of utilization. Because mere existence of capital stock does not lead to increase in labour-productivity. It is the full utilization of the productive capacity in addition to increase in capital which really matters from the labour productivity standpoint. However, data are not available on capacity utilization and therefore unadjusted capital stock has been used.

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[1] This is what the Hecksher-Ohlin theorem would predict. According to this theorem, factor intensity of exports depends on the factor endowment of a country.

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Average earnings per employee in the productity equation capture the
effect of number of factors on labour productivity. To the extent higher
wages are due to higher level of labour skills, wages capture the effect
of the skill variable on labour productivity. Moreover, sharing the
benefits of increase in productivity motivates an efficient behaviour as
workers agree to maximise joint wealth only if they get a share of it.
Productivity sharing is a form of participation which is likely to generate
a sense of loyalty and attachment to the work. According to Horowitz "wage
productivity nexus has its positive and negative aspects. In its negative
aspect wages provide insurance against slowdowns or sabotage and in its
positive aspect they contribute to better health and hence greater effort.
Also, higher wages help motivate performance at higher levels of efficiency
because the worker feels that he or she is being paid more equitably for
the effort put forth". Furthermore, higher wages may shock management into
improving its efficiency in a manner which will enhance labour productivity.
The failure of management to operate at less than the maximum efficiency
may be attributed to inertia and lethargy.

Specification of Inter-industry Wage Differential Model

The second part of the paper deals with inter-industry wage differen-
tials. Inter-industry wage differentials have been analysed in Guisinger
and Irfan [2] and Irfan [5]. However, both the studies use OLS estimation
procedure. In Guisinger and Irfan [2] skill level, capital intensity,
wage share, foreign participation and trade union membership were used as
explanatory variables, while Irfan [5] treated skill index, capital intensity,
trade union membership, foreign participation, concentration ratio, tariff
protection, export orientation and profit rate as explanatory variables.

Irfan [5] also conducted pooled cross-section and time series analysis using employment and labour productivity as explanatory variables of wages without allowing for interdependence among these variables. The present study includes these two variables in the wage equation and explicitly accounts for interdependence among them by applying the Two-Stage Least Square technique.

The model is specified as follows

W = F (LP, E, PVSP, CR, EO)

E = F (W, O, EO, CR)

LP = F (W, O, CR, K/L, PVSP)

where PVSP = Public VS private sector dummy variable which takes the value
of unity for public sector industries and zero otherwise.

CR = Four firm concentration ratio

EO = Export orientation - the value of exports as a fraction of
the output of an industry.

A number of factors contribute to the explanation of inter-industry wage differentials. Out of those which have been included in the specification are demand for labour in an industry, the ability of an industry to raise prices reflected by the degree of monopoly in the product market, trade-orientation of a product i.e., if it is an export-oriented industry or not, labour productivity and a dummy variable to account for whether the firm is in the private or the public sector. We shall discuss only those variables which have not been included in the time series analysis either because of unavailability of data or because their inclusion was not relevant.

Two hypotheses i.e., "monopolistic exploitation hypothesis" and "monopoly wage hypothesis" can be advanced as to the explanation of the effect of monopoly in the product market measured by the concentration ratio on wages. According to the "monopolistic exploitation hypothesis" Concentrated industries pay lower wages because they have the resources to withstand union's demands. While according to the "monopoly wage hypothesis" industries in which monopolistic power assures supernormal profit usually pay higher wages because employers use monopolistic profits in part to raise wages. Moreover, due to barriers on entry of new firms and lack of competition it is easier for monopolists to pass on the increases in wages in the form of higher prices to consumers. Thirdly, firms in concentrated industries are also expected to pay higher wages because of an inelastic demand for their products and, hence, for labour.

The *composition of output within the manufacturing* sector can also have a significant effect on wages. Export-oriented industries are expected to pay lower wages because due to high demand elasticity of exportables, a wage rise would reduce profits rather than increase prices in these industries.

Wages are expected to be higher in public sector industries as compared to private sector industries, as public sector industries are not strictly run on profit maximisation principle. Therefore PVSP which assumes the value of unity for public sector industries and zero otherwise, will be positively related to the wage level.

The only new variable which has been introduced in the cross-sectional employment equation as compared/time series analysis is the concentration ratio. Under competitive conditions, each point on the labour

demand curve represents the value of the marginal product of labour which is the product of the price of output and marginal physical product. Under monopolistic conditions, each point on the labour demand curve is marginal revenue product, which is marginal revenue multiplied by marginal physical product. Since marginal revenue is always less than price for monopolistic firms, marginal revenue product is less than value of marginal product and consequently monopolistic labour demand curve lies below competitive labour demand curve. Therefore the concentration ratio will be negatively related with employment level.

Impact of concentration ratio on labour productivity is examined in order to verify the generally advanced proposition that concentrated industries tend to be less efficient due to lack of competitive pressures.

The primary source of data for the study is the Census of Manufacturing Industries abbreviated as CMI [10]. The data on wages, output, employment and the value of the fixed assets have been taken from CMI. Data on value of exports are taken from "Foreign Trade Statistics" [8]. Whereas data on consumer price index are taken from different issues of the monthly Statistical Bulletins [9]. Concentration ratios have been obtained from Kemal [7]. For cross-sectional analysis a sample of twenty four industries as shown in Appendix 'A' has been used.

II.   RESULTS

DETERMINANTS OF WAGES, EMPLOYMENT & LABOUR PRODUCTIVITY OVERTIME

Time Series Analysis[2]

This section of the paper is divided into two parts; the first part

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[2] Only two sets of equations are reported here, the third set with both DE and ED was also tried but it did not work, since the sign of ED became perverse due to high multicollinearity between ED and DE.

discusses the results pertaining to the determination of wages, employment
and labour-productivity overtime as presented in Table I and the second
part discusses the results pertaining to inter-industry differentials in
wages, employment and labour productivity presented in Table II.

It is evident from Table I that the excess demand for labour hypo-
thesis when confronted with the data in not substantiated: the employment
variable is insignificant in both of the wage equations (wage equation 1.1
and 2.1). However, the insignificance of this variable may stem from
multicollinearity between employment and labour productivity as employment
which is the indicator of scale economies, is itself a determinant of
labour productivity. To test multicollinearity between these two vari-
ables, a correlation coefficient between them has been computed which is
as high as 0.82 indicating the existence of multicollinearity. In order
to see how far the significance and precision of the employment coefficient
has been affected, labour productivity has been dropped from wage equation
1.1 and as a result employment variable has become significant[3]. This may
imply that industrial sector is facing the shortage of labour which may be
attributed to out-migration of the labour force — which has been in
operation during the seventies. However, any inference based on this
result must be viewed with caution since the coefficient of employment
variable may have become biased due to exclusion of labour productivity.

Elasticity of wages with respect to labour productivity is reasonably
high and significant showing that increases in labour-productivity have
resulted in higher earnings for labour; one percent rise in labour produc-
tivity leads to approximately 0.52 percent rise in wages. The consumer

[3] (1.1) W = -9.24 + 0.94E + 1.05 CPI + 0.049 DE
         (1.46)   (7.08)   (0.35)

Table I

Time Series Results

INDENENDENT VARIABLES / DEPENDENT VARIABLES	CONSTANT	E	LP	CPI	DE	W	O	SE	K/L	EDI	D.W
SET I											
(1.1) W =	-3.457	0.279	0.527	0.568	0.868						1.82
		(0.691)	(3.209)	(3.20)	(1.15)						
(1.1) E =	6.318					-0.333	0.413	0.10			2.18
						(-2.26)	(2.89)	(2.62)			
(1.1) LF =	-5.46				-0.21	0.465	0.38		0.319		2.24
					(-3.36)	(2.99)	(2.42)		(2.44)		
SET II											
(2.1) W =	-3.47	0.275	0.539	0.56						0.00008	1.795
		(0.66)	(3.25)	(3.16)							
(2.1) F =	7.81					-0.214	0.301	0.101			2.34
						(-1.35)	(1.961)	(2.608)			
(2.1) LF =	-5.76					0.229	0.618		-0.008		2.05
						(1.126)	(2.99)		(-0.068)		

* 't' values are given in parenthesis.

** All the equations are estimated in log-linear form.

price index also turns out to be highly significant determinant of wages, the elasticity of wages with respect to CPI being 0.56 percent (one percent change in CPI leads to 0.56 percent change in wages).

The dummy variable for emigration turns out to be significant with the positive sign (wage equation 1.1) indicating that emigration has caused wages to rise.

The interactive variable of employment and dummy variable for emigration also turns out to be marginally significant with the right sign when dummy variable for emigration itself is not included in wage equation 2.1. The positive sign of the interactive variable conforms to the hypothesis according to which labour shortages have developed due to emigration and under these conditions, a rise in the demand for labour leads to a significant rise in wages.

The estimates in Table I show that all the variables in the employment equation have the anticipated signs and are significant. The elasticity of employment with respect to output is not very high showing the phenomenon of employment lag. Employment lag can be attributed either to rising wage levels which induce substitution of capital for labour or to other reasons which stress the inevitability of employment lag due to the following factors:

(a) importation of labour-saving techniques from developed countries
(b) the existence of economies of scale (c) increased productivity through learning by doing (d) the output mix i.e., whether it includes capital-intensive industries (when policy of import-substitution in followed) or labour-intensive industries (when policy of export-promotion is followed).

Employment lag may be caused by different factors with different policy implications, therefore it is important to distinguish the causes of employment lag. Our results show that economics of scale are one of the important causes for employment lag as can be discerned from labour productivity equation 1.1 and 2.1. A rise in wages also leads to a decline in employment. One percent increase in wages leads to 0.33 percent fall in employment. While 1 percent change in the share of exports in GDP leads to 0.10 percent change in the employment level

The labour productivity equations 1.1 and 2.1 in Table I show that the output variable is significant indicating the importance of economies of scale in the context of increase in labour productivity. The positive and significant relationship between wages and labour productivity in both labour productivity equations 1.1 and 2.1 confirms the hypothesis according to which wage increases induce productivity growth. Capital intensity exerts positive and significant influence on labourproductivity in labour productivity equation 1.1. However, much reliance can not be placed on this finding because in the second set the sign of capital intensity becomes perverse, (labour productivity equation 2.1). The negative sign of the dummy variable for emigration confirms a priori expectations about the adverse effects of out migration of skilled labour on industrial production (labour productivity equation 1.1).

DETERMINANTS OF INTER-INDUSTRY DIFFERENTIALS IN WAGES, EMPLOYMENT AND LABOUR-PRODUCTIVITY

A Cross-Sectional Analysis

This part of the paper deals with the interpretation of the results relating to the determinants of inter-industry differentials in wages, employment and labour productivity. In view of the existence of strong

multicollinearity which would have led to the wrong impression about the significance level of the explanatory variables, different specifications have been tried. The results are presented in Table II.

The relationship between wages and employment as shown by wage equation 1.1 turns out to be significant for cross-section of industries showing that differences in the demand for labour account for a significant part of differences in wages. However, simultaneous introduction of employment and labour productivity not only renders employment insignificant but also spoils the sign of this variable. There is no evidence to suggest that concentrated industries pay lower wages. On the contrary, our results show that concentrated industries pay higher wages (wage equation 1.1). However, this positive relationship may be due to the fact that these industries get better quality workers. To the extent workers are of better quality, the high wage rates are offset. The negative sign of export-orientation confirms a priori expectations that export-oriented industries, being price takers, would pay lower wages as compared to other industries. However, this variable is insignificant at conventional levels. Labour productivity turns out to be highly significant determinant of wages (wage equation 2.1). However the elasticity of wages with respect to labour productivity is lower than that of the time series analysis, being 0.46 as compared to 0.53 of time series analysis. The sign of the public VS private sector dummy variable turns out to be positive showing that public sector industries pay higher wages as compared to private sector industries.

As can be seen from employment equation 2.1 of Table II, the elasticity of employment with respect to output is quite high being in the

Table II

Cross-Sectional Results

INDEPENDENT VARIABLES / DEPENDENT VARIABLES	CONSTANT	E	LP	CR	EO	W	K/L	PVSP	0
SET I									
(1.1) W =	5.67	0.196 (1.84)		0.363 (1.56)	-0.035 (-0.806)				
(1.1) E =	53.91		.561 (0.50)	-0.550 (-0.832)	0.0409 (0.095)	-1.8 (-0.404)			
(1.1) LP =	-1.93	0.424 (1.66)		0.936 (1.65)			0.492 (1.59)	-0.477 (-0.815)	
SET II									
(2.1) W =	4.44	-0.028 (-0.494)	0.460 (0.33)					0.055 (0.33)	
(2.1) E =	9.41			-0.129 (-0.353)		-1.97 (-2.174)			0.922 (5.61)
(2.1) LP =	-11.10					2.458 (2.24)	-0.116 (-0.410)	-0.073 (-0.195)	0.028 (0.194)

* T- values are given in the parenthesis

** All the equations are estimated in log-linear form.

order of 0.92 as compared to only 0.32 in the time series analysis indica-

ting that when employment fully adjusts to output level, the phenomenon of

employment lag does not remain that serious as it is in the time series

analysis. A greater proportion of increase in output is absorbed in

increase in employment and a lesser proportion is absorbed in increase in

labour-productivity. Secondly, this high magnitude of elasticity is also

due to disaggregation of labour-intensive and capital-intensive industries.

Obviously, an increase in output of labour-intensive industries leads to

a significant rise in the demand for labour in these industries. The

negative sign of concentration ratio confirms the hypothesis according to

which monopolistic firms tend to restrict employment. Multicollinearity

between wages and concentration ratio renders it insignificant. However,

when wages are excluded from the employment equation, concentration ratio

becomes significant[4]. The elasticity of employment with respect to wages

is 1.97 compared to 0.33 for the aggregate of industries in the time

series analysis. The difference in the elasticities derived from cross-

section and time series analysis may be due to two factors. First,

because wage increases in highly labour-intensive industries have a large

impact on labour costs and hence, on production and employment. However,

this effect of wages on employment tends to be concealed due to aggrega-

tion of capital-intensive and labour-intensive industries. Second, wage

elasticity is high because it is based on cross-sectional observations

which reflect long-run optimizing behaviour. Though the export-orientation

has the expected positive sign yet it is insignificant (employment equation
in
1.1), the rest of the variables/employment equation 1.1 i.e., labour

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[4] (1.1) $E = 3.55 + 1.11 \ LP - 51 \ C.R + 0.10 \ EO$
$\qquad\qquad (1.82) \qquad (-1.93) \quad (0.667)$

productivity, wages and concentration ratio exert significant influence on employment, when wages are excluded from this equation. (see footnote 4)

Labour productivity equation 1.1 shows that economies of scale measured by the size of the labour force employed significantly account for inter-industry productivity differentials. The output level has also been used to measure economies of scale but it does not emerge as being significant due to high multicollinearity between wages and output. However, when wages are excluded from labour productivity equation, output level becomes significant[5]. Concentration ratio exerts positive influence on labour productivity. The positive relationship between these two variables can be explained in terms of high market prices, labour productivity being measured at market prices tends to be higher in concentrated industries because under monopolistic competition prices are held above the competitive level. Capital intensity exerts significant and positive influence on labour productivity (L. P. equation 2.1). However, when wages are introduced in the labour-productivity equation the sign of capital intensity becomes perverse due to multicollinearity between these two variables. (L. P. equation 2.1). Public VS private sector dummy variable is negatively related with labour-productivity indicating that public sector industries have lower labour productivity as compared to private sector industries. (L. P. equation 2.1).

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[5] (2.1) LP = 2.34 + 0.32 K/L + 0.25 0
                   (1.33)   (1.99)

III. CONCLUSION & POLICY IMPLICATIONS

Looking at the results, the general conclusion that emerges is that employment, labour productivity and wages are jointly determined. Therefore OLS will yield biased and inconsistent estimates and an application of Two Stage Least Square technique enables us to determine the true relationship among these variables. Correlation between wages and productivity over a period of fourteen years i.e., from 1964-65 to 1977-78 is high. Similarly, correlation between wages and productivity among industries is very high. On both counts the evidence suggests that productivity induced wage rise is significant. Moreover, the evidence based on both cross-sectional and time-series analysis shows that the effect of wages on productivity is also significant which is reflective of the fact that higher wages are an investment in higher labour productivity. The positive impact of the interactive term (of employment and dummy variable for emigration) lends support to the notion that labour shortages have developed in the economy due to emigration. Furthermore, the negative impact of the dummy variable for emigration on labour productivity points to the fact that emigration of labour force has been costly to the economy in terms of production losses. These results show that outmigration has caused wages to rise and this can adversely affect the pattern of comparative advantage of the country as rising wages can deter export expansion by raising the costs of production of Pakistan's exports and thereby affecting its comparative advantage in such goods. Moreover, the simultaneous inflow of remittances and the fall in industrial production due to outmigration of skilled labour causes inflation in the country as there is too much money chasing too few goods. The phenomenon of serious employment lag in the manufacturing sector as a whole has been explained

in terms of increase in labour-productivity, increase in wages and the nature of techniques adopted which are assumed to depend on export-promotion or import-substitution policies followed by the government. It is found that economies of scale are the main source of employment lag. An employment lag is not undesirable if it is caused by economies of scale. But of course it is an unwanted phenomenon if it is caused by the use of labour-saving and capital intensive techniques. Nevertheless, economies of scale themselves may be a result of automation of production process, and as such they are a mere proxy of capital deepening. Wage increases also turn out to be an important deterrent of employment growth. The tendency of monopolists to restrict employment has been confirmed by empirical results reflecting the economic undesirability of monopolistic elements in the static analytic framework. The significant relationship between share of exports in GDP and employment shows the significance of industrial trade policy in the extent of its contribution to employment creation.

LIMITATIONS OF THE ANALYSIS

The main problem confronted in the analysis is the unavailability of data on some of very important variables like skill index and capacity utilization. As it is well-known that increase in wages overtime is a result of improvement in labour skills, furthermore inter-industry wage differentials reflect to a large extent differences in skill composition of labour. Improvement of skills is also believed to be the main cause of high labour-productivity. However the impact of skill index on these variables could not be tested due to unavailability of data. Capital intensity unadjusted for rate of utilization is not that useful a determinant

of labour productivity since two plants with the same capital stock but with different capacity utilization will have different capital labour ratio effectively, with the increase in the capital utilization rate, labour productivity will grow despite the absence of any capital deepening.

The second main problem faced in the analysis is the existence of strong multicollinearity among some of the variables which makes it difficult to disentangle the relative effects of explanatory variables on the dependent variable.

Thirdly the use of dummy variable for emigration involves the problem of identification as it may capture the effect of all the structural changes which took place during the Seventies.

List of Industries Used in the Cross-Sectional Analysis

1. Food Manufacturing

2. Non-Alcoholic Beverages

3. Tobacco Manufacturing

4. Cotton Yarn

5. Cotton Textiles

6. Silk & Art Silk

7. Carpets & Rugs

8. Leather Footwear

9. Wood & Wood Products

10. Furniture & Fixture

11. Paper & Paper Products

12. Leather Products

13. Rubber Products

14. Drugs & Pharmaceuticals

15. Industrial Chemicals excluding Fertilizers

16. Paints & Varnishes

17. Manufacture of Cement

18. Non-Mettalic Mineral Products

19. Basic Metal Industries

20. Metal Products

21. Machinery excluding Electrical Machinery

22. Electrical Machinery

23. Transport Equipment

24. Surgical Goods

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