

A Comparison of the Interregional Purchasing Power of Industrial Wages in Pakistan

by

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INTRODUCTION

Data on regional income and its various components are frequently used in Pakistan in economic planning and to formulate and evaluate other economic policies. Characteristically, these regional income magnitudes are estimated on the basis of the prices prevailing in different regions. Generally speaking, any comparative analysis of the regional real incomes on the basis of such estimations is inadequate and in certain cases misleading if the intra-regional price structure is substantially different in various regions. Although work has been done in measuring different components of regional income in Pakistan, no significant effort has so far been made to measure the purchasing power of income or its components in various regions. The focus of attention in this study is the comparison of the purchasing power of industrial wages in various regions in Pakistan. These index numbers may be used to formulate a national wage policy or as a guide to better allocate investment in different regions in the light of national economic objectives. Strictly speaking, these index numbers of purchasing power are not applicable to components of regional income other than industrial wages but in a broad sense they probably indicate the direction of divergence.

A number of studies have been made to estimate the purchasing power of currencies—probably the most comprehensive among these studies is the one by Gilbert and Kravis [1]. They compared the purchasing power of dollar, pound, francs, mark and lire by using formulae which we will discuss in Section II. The use of the same currency in all of Pakistan does not alter the basic nature of the problem of interwing differences in the purchasing power of money in general or industrial wages in particular. The reasons why empirical works on comparisons of interregional costs of living are less frequent than international comparisons are that in most countries regional patterns of consumption are not

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markedly different and, what is more, the internal transportation costs are not high enough to make any significant interregional differences in the prices of goods. Pakistan is a special case in these respects. It is not a geographically contiguous territory—the two wings of the country are separated by a physical distance of twelve hundred miles. The geographical features and some of the characteristics of the population of West Pakistan are typical of the Middle East. East Pakistan, on the other hand, is closer to South East Asia in these respects. The patterns of consumption are much different between the people of the two wings—the basic staples of the West and the East Pakistanis are wheat and rice respectively. For several reasons, most of the interwing trade is seaborne, hence the effective interwing distance becomes about three thousand miles. Apart from the physical limitation of capacity of the freighters, the costs of interwing transportation, lack of adequate storage facilities, internal transportation and distribution costs contribute significantly to differences in the prices of goods traded between the two wings. Interwing geographical mobility of labour is also limited to a great extent and it has led to, among other things, differences in the costs of some of the services.

Three major industrial centres in Pakistan, *e.g.*, Karachi, Lahore and Narayanganj, have been included in this study for a number of reasons. While the price structure in Narayanganj and the consumption pattern of Narayanganj workers can be considered representative of East Pakistan¹, neither Karachi nor Lahore alone can represent West Pakistan in this sense. A pairwise comparison between Karachi and Narayanganj and between Lahore and Narayanganj is necessary to estimate the magnitude of the interwing differences in the purchasing power of wages. Comparison between Karachi and Lahore may be helpful in examining the problems of geographical mobility of labour within West Pakistan.

In this study we have made an attempt to estimate the relative purchasing power of industrial workers at Karachi, Lahore and Narayanganj for the years 1961 and 1965-66. Our computations show that the cost of living in Narayanganj is higher than that of Karachi or Lahore while there is no significant difference in the cost of living between Karachi and Lahore.

II. METHODOLOGY AND DATA SOURCES

A. The Basic Framework of the Analysis

The bundle of consumption goods used by the Central Statistical Office in Pakistan to compute the costs of living indices indicate differing patterns of

¹ The Central Statistical Office (CSO) computes costs of living index numbers for industrial workers at Lahore, Karachi and Sialkot in West Pakistan but for workers at Narayanganj only in East Pakistan.

consumption by typical industrial workers in various regions in Pakistan. Such differences may be due to taste, relative prices and a number of other factors. Let us assume that the typical workers in regions 1 and 2 consume commodity bundles Q_1 and Q_2 respectively. It can be unambiguously shown that the costs of living are lower in region 1 if $\Sigma P_1 Q_1 < \Sigma P_2 Q_1$ and $\Sigma P_1 Q_2 < \Sigma P_2 Q_2$. When $\Sigma P_1 Q_1 > \Sigma P_2 Q_1$ but $\Sigma P_1 Q_2 < \Sigma P_2 Q_2$ or $\Sigma P_1 Q_1 < \Sigma P_2 Q_1$ but $\Sigma P_1 Q_2 > \Sigma P_2 Q_2$ no firm conclusion about the relative costs of living can be drawn without either interpersonal comparison of utility and/or *a priori* knowledge about indifference maps [3].

It is very important to note that we are not making any interpersonal comparison of utility. It is likely that the taste of the consumers in two regions may be quite different. In comparing costs of living only goods and services enter into our estimation, and we do not include many qualitative aspects of living, e.g., climatic conditions, cultural environment. Our index number analysis only shows that given Q_2 it is possible for a consumer to buy more of both the goods in terms of the prices in region 1, but given Q_1 it is not possible to do the same in terms of the prices in region 2.

B. Measurement of Costs of Living

The Family Expenditure Survey conducted by the Central Statistical Office (CSO) in Pakistan in 1955-56 supplies the basic information on the pattern of consumption by typical industrial workers at different important industrial centres. On the basis of this Survey the CSO has computed a new series of cost of living index numbers for industrial workers at various industrial centres with 1961 as the price comparison base. From the CSO the detailed record of the percentage distribution of expenditure, using 1955-56 quantity weights, on different items of consumption for the year 1961 can be obtained. These expenditure figures are used by the CSO to compute the costs of living indices for industrial workers (Base = 1961). The CSO also has a complete monthly (unpublished) record of prices for all these items since 1961. From these sets of information we computed the *composition* of the implicit bundle of commodities consumed by a typical worker at various centres. For example, in 1961 a typical worker at any particular centre spent a proportion (say) $P_w Q_w / \Sigma P Q$ of his expenditure on wheat. Dividing $P_w Q_w / \Sigma P Q$ by the *base year* (1961) *price* of wheat we get $Q_w / \Sigma P Q$. In this way we arrive at a bundle of commodities [Q_{11} , Q_{12} , ..., Q_{1n}] consumed by a typical worker at that particular centre per unit of expenditure. The ratios $\Sigma P_1 Q_1 / \Sigma P_2 Q_1$ or $\Sigma P_1 Q_2 / \Sigma P_2 Q_2$ are not affected by the magnitudes of the commodity bundles because the relative composition of the commodities remains invariant. In estimating relative costs of living for both 1961 and 1965-66 we have used the same Q 's, e.g., the Q 's we obtained by dividing

1961 expenditure distributions by 1961 prices. In this study the geometric averages of these two above ratios are used to measure the relative costs of living between regions 1 and 2. However, it is quite clear from the above analysis that when one of these ratios is greater than 1 whereas the other is less than 1, the meaning of the comparative costs of living is somewhat ambiguous.

C. Qualitative Difference and the Problems of Estimation

A glance at the percentage distribution of expenditure by the typical industrial workers at various centres (Table I) shows the difference in the pattern of consumption. An itemwise comparison of the articles of consumption and distribution of weights among items confirms the above observation [2].

TABLE I
GROUP WEIGHTS AND THE NUMBER OF ITEMS IN
CONSUMER PRICE INDEX NUMBERS FOR
INDUSTRIAL WORKERS AT DIFFERENT CENTRES

Items	CITIES		
	Karachi	Lahore	Narayanganj
1. Food	56.47 (46)	60.11 (44)	69.77 (45)
2. Apparel, textiles and footwear	10.92 (30)	7.22 (24)	10.38 (23)
3. Housing and household operation	11.27 (6)	15.04 (7)	9.35 (11)
4. Miscellaneous	21.34 (30)	17.63 (34)	10.50 (21)
Total:	100.00 (112)	100.00 (109)	100.00 (108)

Source: [2].

A further investigation into the lists of commodities shows that for any pairwise comparison a number of commodities are *not* common to both the bundles. The commodities which are common to both the bundles will be called *binary* commodities and the rest will be called *unique* commodities. The monthly time series price data for the binary commodities are readily available from the Central Statistical Office. The simple average of these monthly prices for the years 1961 and 1965/66 is used in our estimation to represent the price level for those years. On the other hand, price data for the unique commodities are sparse which meant that unique commodities were excluded in the pairwise comparison. In evaluating the interregional costs of living the quantity units have to be adjusted for quality differences since a higher quality product constitutes more consumption than one of lower quality. It is convenient, in considering the problem, to divide all binary goods and services into two categories: *a*) identical products, and *b*) common products. Identical products are defined as

those which have the same specification and characteristics, although here may be some minor negligible differences. Common products, on the other hand, bear the same name and serve the same purpose but are basically products of different qualities. It is quite obvious that in cases of common products we have an obligation to specify the correct relationship among these products. In our present study, there are at least three major areas where quality differences may be significant to introduce bias in our estimation.

a) The cost of medical services (physician per call) is quoted as slightly higher in CSO figures for Karachi than in Lahore or Narayanganj. On the other hand due to a higher concentration of trained doctors and hospitals, it is likely that medical services in Karachi are of a higher quality than that of other areas. Karachi workers moreover have more facilities for free medical services than workers in other regions. However, we have not made any adjustment for quality due to lack of any measurable criteria and it might introduce some upward bias in the costs of living in Karachi.

b) The tuition fees for school-going children are much more (about 50 per cent) in Narayanganj than in Karachi or Lahore. It is very difficult to make any judgement about the relative quality of education in the two wings of Pakistan. In the absence of any definite information on this aspect no quality adjustment has been made in our computation and depending on the quality differential it is possible that we might have introduced some unintentional bias in one direction or the other.

c) Firewoods used as fuels are much more expensive in West Pakistan than in East Pakistan if no quality adjustment is made. Here again we do not have adequate information to make any adjustments for quality by reducing the physical quantities in terms of thermal units hence we had to assume that one maund of firewood of different qualities used in CSO costs of living index numbers is equivalent.

The weights of the binary commodities (excluding housing and transportation) are shown in Appendix I. It can be seen from Appendix I that the weights of the binary commodities in all pairwise comparisons constitute a high percentage of the total weights in all the commodity bundles. However, we felt that it was possible to increase the weights of the common items without introducing unreliable data. In an attempt to do so we have selected two items with comparatively large weights, *e.g.*, housing and bus transportation and probed the relative costs of these two items by a) interviewing persons from these areas residing in Karachi, and b) analyzing the published records.

a) For industrial workers' housing, a limited number of objective and measurable criteria could be specified to identify housing units of comparative

quality in different regions. In this study, the criteria were floor space and proximity to the city centres. Since lack of other amenities is very much in common in all the regions, no adjustment was necessary in that respect. Our estimation shows that the costs of housing indices (Karachi = 100) for Lahore and Narayanganj are 80 and 140 respectively. It seems that the high costs of housing in Narayanganj are mainly due to the lower pace of construction of dwelling units in that region. Moreover, due to heavy downpour in East Pakistan, the houses in Narayanganj, which are otherwise similar to that of Karachi, had to be more or less rainproof.

b) In case of bus transportation the choice of the unit of measurement substantially affects transportation costs indices because long distance travel is relatively cheaper in Karachi than in Lahore and Narayanganj. An examination of the distribution of expenditure shows that an average worker in Karachi or Lahore spends much more on transportation than his counterpart at Narayanganj. The choice of bus fare per mile instead of rates (say) per 10 miles would, therefore, overstate the cost of transportation for the Karachi workers and to a lesser degree for the Lahore workers. We think it a reasonable assumption that industrial workers in Pakistan generally prefer to walk short distances rather than travel by bus. We assumed, therefore, that the average journey was 4 miles, and that the unit of measurement chosen was rates per 4 miles of bus travel. The cost indices (Karachi = 100) for both Lahore and Narayanganj were estimated to be 120.

With the inclusion of housing and transportation the final weights of the binary commodities were as follows:

Karachi	81.30	Karachi	89.77	Narayanganj	90.74
Lahore	85.52	Narayanganj	89.23	Lahore	98.14

In section III we have discussed in details the possibility of bias in estimation due to omission of unique commodities.

D. Reallocation of Weights and Computation of General Index Numbers from Group Indices

Strictly speaking, the construction of index numbers is an *approximation*, since the whole set of prices and quantities in any field is generally impossible to obtain. Prices and quantities that enter into the index are, in practice, samples representing the whole set. When a group of commodities represent others in this sampling sense, their weight will represent the entire group. In conformity with this general principle we have reallocated the weights of each of the items in such a way that it does not affect the group weights in the original bundles,

i.e., in estimating the relative costs of living we have computed the relative costs of each of the groups of commodities, *e.g.*, food separately and then combined these indices according to the weights of these groups².

III. LIMITATIONS OF THE STUDY

As we have mentioned earlier our index numbers should be interpreted as an *approximation* to the "true" interregional cost of living indices for industrial workers. Although the weights of the binary commodities are more than 85 per cent in all cases, it is possible that the items we had to leave out for lack of price data could affect the estimation significantly. The accuracy of our comparison depends upon the assumption that the same purchasing power equivalent would apply to unique commodities as well. It may be argued that although the unique commodity may be relatively cheaper in the commodity bundles of the regions where they appear, the price ratio between binary and unique commodities may be significantly different in various regions. There is, however, no good reason why this should be so and, moreover, because the weights of the unique commodities are small the differential in the ratios have to be very large in order to affect our estimation significantly.

A second type of limitation of our study arises out of the basic data on the percentage distribution of expenditure on various commodities. In all three centres we have compared, the weights of firewood are much greater than that

² For example, the indices $\Sigma P_K Q_L / \Sigma P_L Q_L$ for 1961 between Karachi and Lahore for various commodity groups and the weights of those groups in the consumption bundles for Lahore workers are as follows:

Items	$\frac{\Sigma P_K Q_L}{\Sigma P_L Q_L} \times 100$	Weights in the consumption bundle	$(1) \times (2)$
	(1)	(2)	100
1. Food	89.43	60.11	53.756
2. Apparel, etc.	102.83	7.22	7.424
3. Housing, etc.	107.71	15.04	16.199
4. Miscellaneous	104.43	17.63	18.411
			95.790

By combining these index numbers with their respective weights in the consumption bundle we arrive at the general index of 95.79.

Within each of these groups the weights of each of the commodities were reallocated in such a way that the total weights of these binary commodities become equal to one hundred. Thus, the weight of a particular commodity in the food group was inflated by 100/90 if the weights of the binary commodities in the food group were 90 per cent

of house rent. This seems to conflict with our common sense presumption about the percentage distribution of expenditure on these two items. The percentage expenditure on housing also seems to be underreported. In Narayanganj, the percentage expenditure on housing by a typical worker is about 1.73. Considering the heavy rainfall and high cost of housing in East Pakistan, such a small percentage seems to be very unlikely.

In estimating the comparative costs of living of industrial workers in various regions in Pakistan for the years 1961 and 1965-66 the commodity weight base was 1955-56. It is likely that the pattern of consumption of the workers has changed over time. However, the bias in estimation introduced by such changes in consumption pattern are characteristic of and cannot be overcome in the Laspeyre type indexes. Similarly, our implicit assumption of an unchanged commodity bundle for the relevant period and its use in computing the relative costs of living for the years 1961 and 1965-66 might have led us to some bias in estimation.

IV. SUMMARY OF THE FINDINGS AND CONCLUSION

Our estimations of the interregional comparative costs of living index numbers for industrial workers are shown in Tables II to IV. We have found that the purchasing power of industrial wages is about 10 to 15 per cent higher in West Pakistan than in East Pakistan for both 1961 and 1965-66. A comparison between 1961 and 1965-66 shows that whereas the purchasing power differential has somewhat decreased between Karachi and Narayanganj, it has increased between Lahore and Narayanganj. In 1961 the purchasing power of industrial wages was somewhat less in Lahore compared to Karachi (mainly due to food items) but in 1965-66 the gap has virtually vanished. We have not found any evidence in favour of the contention that it is the high price of food in East Pakistan which is mainly responsible for the interwing disparity in the costs of living.

TABLE II
THE COMPARATIVE COSTS OF LIVING INDEX NUMBERS FOR
INDUSTRIAL WORKERS IN KARACHI AND NARAYANGANJ FOR
YEARS 1961 AND 1965-66

Items	$\frac{\Sigma P_N Q_N}{\Sigma P_K Q_N} \times 100$		$\frac{\Sigma P_N Q_K}{\Sigma P_K Q_K} \times 100$
1. Food	1961	: 114.20	115.76
	1965-66	: 112.59	106.60
2. Apparel, etc.	1961	: 115.08	113.51
	1965-66	: 106.23	117.33
3. Housing, etc.	1961	: 110.06	120.02
	1965-66	: 108.08	119.44
4. Miscellaneous	1961	: 97.85	113.52
	1965-66	: 91.23	114.52
General Index	1961	: 111.93	115.52
	1965-66	: 108.82	110.91
Geometric mean:	1961	: 113.71	
	1965-66	: 109.86	

TABLE III

**THE COMPARATIVE COSTS OF LIVING INDEX NUMBERS FOR INDUSTRIAL
WORKERS IN LAHORE AND NARAYANGANJ
FOR YEARS 1961 AND 1965-66**

	$\frac{\Sigma P_N Q_N}{\Sigma P_L Q_N} \times 100$	$\frac{\Sigma P_N Q_L}{\Sigma P_L Q_L} \times 100$
1. Food	1961 : 103.99 1965-66 : 112.71	114.53 119.17
2. Apparel, etc.	1961 : 106.85 1965-66 : 121.32	107.75 119.03
3. Housing, etc.	1961 : 108.69 1965-66 : 120.01	134.27 139.04
4. Miscellaneous	1961 : 107.76 1965-66 : 97.04	121.53 107.38
General index	1961 : 105.11 1965-66 : 112.28	118.24 120.07
Geometric mean	1961 : 111.48 1965-66 : 116.04	

In a direct comparison between Karachi and Narayanganj (Table II) the index numbers, with both Karachi and Narayanganj commodity weights, for each of the commodity groups excepting miscellaneous show that the costs of living in Narayanganj are higher than that of Karachi. The reasons why miscellaneous group shows reversal when commodity base is changed are *a*) that the group includes such services as haircut and shaving, medical services and laundry charges which are more expensive in Karachi but have comparatively more weights in the Narayanganj consumption bundle; and *b*) that certain items in the miscellaneous groups like bus fare and tuition fees for schools are cheaper in Karachi, and have comparatively larger weights in the Karachi consumption bundles. A special feature of the miscellaneous group is that, excluding personal services, there is not much interwing difference in the prices of goods which appear in this group. Over the period 1961 and 1965-66, costs-of-living disparity has narrowed down by 4 per cent mainly due to the *relative* decline in food prices in Karachi. A comparison between Lahore and Narayanganj (Table III) points to some interesting changes in the index numbers over time. Between 1961 and 1965-66 the comparative costs of living in Narayanganj have increased for all commodity groups except miscellaneous. An item by item investigation indicates that the relatively faster rate of increase in the costs of services and medicines in Narayanganj led to such results. An examination of the comparative costs of living between Karachi and Lahore (Table IV) shows that the price level of the items in the food group is much less in Karachi than in Lahore and there have not been any changes over the period 1961 and 1965-66. It appears that the relatively higher prices of wheat, rice and certain

TABLE IV

**THE COMPARATIVE COSTS OF LIVING INDEX NUMBERS FOR
INDUSTRIAL WORKERS IN KARACHI AND LAHORE FOR
YEARS 1961 AND 1965-66**

Items	$\frac{\Sigma P_K Q_K}{\Sigma P_L Q_K} \times 100$		$\frac{\Sigma P_K Q_L}{\Sigma P_L Q_L} \times 100$	
	1961	1965-66	1961	1965-66
1. Food	92.69	101.43	89.43	97.67
2. Apparel, etc.	105.26	99.95	102.83	105.43
3. Housing, etc.	98.25	97.14	107.71	107.48
4. Miscellaneous	108.02	108.27	104.43	107.48
General index	97.57	102.12	95.79	100.90
Geometric mean	96.67	101.51		

types of vegetables in Lahore push up the comparative price level of the food group. Housing group indicates a reversal when commodity base is changed for both 1961 and 1965-66 mainly because housing, which has a smaller weight in the Lahore commodity bundle, is more expensive in Karachi and it is the other way round in case of firewood. The price level of the goods in the miscellaneous group is higher in Karachi mainly due to the higher costs of services including doctors' fees and tuition fees for schools.

REFERENCES

1. Gilbert, M., and I. B. Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies*. (Paris: O.E.E.C.).
2. Pakistan, Central Statistical Office, *Consumer Price Index Numbers for Industrial Workers, 1961=100, November 30, 1964*, Karachi.
3. Samuelson, P.A., "Evaluation of Real National Income", *Oxford Economic Papers*, 1950.

Appendix I

THE PERCENTAGE OF WEIGHTS OF BINARY COMMODITIES* IN EACH COMMODITY GROUP IN PAIRWISE COMPARISON

Commodity	CSO weights	Binary com- modity weights	$\frac{(1) \times (2)}{100}$	CSO weights	Binary com- modity weights	$\frac{(1) \times (2)}{100}$
	(1)	(2)		(1)	(2)	
	Karachi			Narayanganj		
1. Food	56.47	92.43	52.17	69.77	89.65	62.55
2. Apparel, etc.	10.92	93.82	10.24	10.38	99.40	10.32
3. Housing, etc.	11.27	95.58	10.77	9.35	88.08	8.24
4. Miscellaneous	21.34	36.68	7.83	10.50	52.43	5.51
			81.01			86.62
Lahore			Narayanganj			
1. Food	60.11	92.66	55.70	69.77	91.00	63.49
2. Apparel, etc.	7.22	92.04	6.65	90.38	71.40	7.41
3. Housing, etc.	15.04	97.91	14.73	9.35	87.45	8.18
4. Miscellaneous	17.63	84.17	14.84	10.50	86.17	9.05
			92.92			88.13
Karachi			Lahore			
1. Food	56.47	90.91	51.34	60.11	95.79	57.58
2. Apparel, etc.	10.92	70.78	7.08	7.22	74.21	5.36
3. Housing, etc.	11.27	58.35	6.35	15.04	61.45	9.24
4. Miscellaneous	21.34	36.41	7.77	17.63	40.36	7.12
			72.54			79.30

* Excluding housing and transportation.