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INDICATORS OF HIGH INEQUALITY IN PAKISTAN

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Abstract

Pakistan is considered as a country with relatively low income inequality, as measured by the data from the Household Integrated Economic Surveys (HIES) of the Pakistan Bureau of Statistics. A comparison is made of the distribution of agricultural income, earned income, housing rents, personal bank deposits and expenditure on electricity with the distributions obtained directly from primary sources like the Labor Force Survey, Agricultural Census, Population and Housing Census, SBP and NEPRA with the distributions in the HIES. The conclusion generally is that inequality is grossly understated in the HIES. Accordingly, recommendations are made for improving the design and conduct of future household surveys.

I. Introduction

Pakistan is one of the countries in South Asia which is estimated, according to the Gini coefficient, by the World Bank is having one of the less unequal income distributions. The Gini coefficient is reported at 0.296 as compared to 0.300 in Nepal, 0.328 in India, 0.334 in Bangladesh and 0.377 in Sri Lanka.

The primary source of the level and distribution of household incomes in Pakistan is the Household Integrated Economic Survey (HIES), conducted periodically by the Pakistan Bureau of Statistics. The last such survey was in 2018-19.

The total national sample size was 24,809 households equivalent to 0.073 per cent of the total number of households in the country in 2018-19. Consequently, there are likely to have been substantial sampling and non-sampling errors.

For example, there is very substantial underreporting of the total household income in the country. Application of the appropriate blow-up factors to the HIES numbers leads to an estimate which is only 39.1 per cent of household income in Pakistan as derived from the National Income estimates.

Jamal (2015) undertook a comprehensive consistency check of individual household responses to the annual HIES carried out by the PBS in 2015-16. Based on the extensive cleaning of the raw data he finds that the while the Gini coefficient was originally 0.319, whereas when derived from the clean data it was 0.418.

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The objective of this paper is to provide collateral evidence of relatively high levels of inequality in Pakistan in different indicators. Two measures of inequality are used, namely, the Gini coefficient and the Pashum ratio.

The Pashum ratio was first developed in the 2020 UNDP Human Development report of Pakistan on Inequality. Subsequently, it has been described in Pasha (2023).

The Pashum ratio is the weighted sum of the ratio of income shares between successive parts of a distribution. It ranges in value from zero to infinity. For example, it has a value of 1 when there is doubling of shares with movement from one quintile to the next quintile. As such, it is a more sensitive measure than the Gini coefficient, which has a maximum value of 1.

The introduction was explained earlier in Section I. Thereafter, the paper is organized as follows. The methodology for quantification of the Pashum ratio is presented in Section II.

Section III focuses on the implications of the constructed ratio for various segments of the economy. Starting with the inequality in agricultural incomes. Based on the composition of incomes reported in the HIES of 2018-19 the inequality in agricultural incomes is examined. A comparison is made with the farm size distribution according to the Agricultural Census of 2010.

After agricultural income, the study focuses on inequality in earned income among earners, as reported by the HIES, with the distribution of earned income as given in the Labour Force Survey of 2018-19 of the Pakistan Bureau Statistics.

It then presents the distribution of expenditure on electricity as reported in the HIES and compares it with the pattern of expenditure reported by NEPRA.

Lastly, the study is devoted to an examination of the inequality in the distribution of personal bank deposits as given in the HIES with the distribution of these deposits as reported by the SBP.

Section IV presents a summary of findings on inequality in the various indicators. An assessment of the extent of the downward bias in income inequality reported by the HIES is made. Finally, some recommendations are made for improving the results from future Household Integrated Economic Surveys.

II. Methodology for Quantification of the Pashum Ratio

1. The Pashum Ratio

A distribution can be described as follows:

S_i = Share of the *ith* part of the distribution, for example, population
Y_i = Share of the *ith* part of the distribution, for example, income
with (Y_i/S_i) rising with $i, i=1, \ldots, n$

and

$$\sum_{i=1}^{n} S_i = 1, \qquad \sum_{i=1}^{n} Y_i = 1$$

where there are ***n*** parts to the distribution.

The Pashum Ratio, $\boldsymbol{P_S R}$, is given by

$$P_S R = \left(\frac{1}{1 - S_1}\right) \sum_{i=1}^{i=n-1} \frac{(Y_{i+1} \ / \ S_{i+1})}{(Y_i \ / \ S_i)} \cdot S_{i+1} \quad -1$$

In particular, if $S_i = 0.2$ for $i = 1$ to 5, corresponding thereby to quintiles,

then

$$P_S R = \frac{1}{4}\left[\left(\frac{Y_2}{Y_1}\right)+\left(\frac{Y_3}{Y_2}\right)+\left(\frac{Y_4}{Y_3}\right)+\left(\frac{Y_5}{Y_4}\right)\right] \quad -1$$

III. Implication of Pashum Ratio

1. Agricultural Incomes

The last Agricultural Census of 2010 reveals a high degree of inequality in the farm size distribution in Pakistan. There have been no substantive land reforms in the country. However, there may have been some redistribution due to inter-generational transfers. The farm area ownership distribution according to the Census is presented in Table 1.

The extreme inequality is highlighted with the number of farms having a size of 50 acres or more at only 1.2 per cent of the total number of farms. However, these farms have pre-empted over 22 per cent of the farm area in the country. At the other extreme, the very small farms of less than 1 acre are over 15 per cent of the farms with barely 1 per cent of the farm area. Income inequality may be even higher because of larger yields in bigger farms.

Both measures reveal a high degree of inequality in the farm area distribution. The Gini coefficient is as high as 0.610, while the Pashum ratio is significantly above unity, at 1.517.

The distribution of agricultural income by quintiles in the HIEs of 2018-19 is presented in Table 2. There is substantially less inequality according to this survey. The Gini coefficient is extremely low at 0.162 and the Pashum ratio also has a very small magnitude of 0.270.

There is the likelihood that the HIES surveyors have been unable to get an adequate response from large farm owners. This is part of the strong stance against

TABLE 1

Distribution of Farms by Size
According to the Agricultural Census 2010
Theoretical Framework

Area (Acres)	% of Farms	% of Farm Area
< 1	15.2	1.0
1 < 2.5	28.3	7.1
2.5 – 5.0	21.2	11.6
5.0 – 12.5	24.8	27.1
12.5 – 25.0	6.8	18.1
25.0 – 50.0	2.5	13.0
50.0 – 150.0	1.0	10.7
> 150.0	0.2	11.4
Total	100.0	100.0
Gini Coefficient:	0.610	
Pashum Ratio:	1.517	

Source: Agricultural Census, 2010.

agricultural income tax. Consequently, there is likely to be a considerable bias in the reporting of agricultural incomes. Some large land owners may even consider themselves above the law and not liable to respond to the HIES questions.

TABLE 2

Distribution of Agricultural Income among Quintiles
According to the HIES

Quintile	% of Population	% of Agricultural Income
Bottom	20.0	11.6
2nd	20.0	16.7
3rd	20.0	20.6
4th	20.0	21.7
Top	20.0	29.4
Total	100.0	100.0
Gini Coefficient:	0.162	
Pashum Ratio:	0.270	

Source: HIES.

2. Earned Income

Earned incomes are a major component of the income of households. Information on earned income distribution of workers can be obtained from the Labor Force Survey (LFS) carried out periodically. For purposes of comparison with the HIES of 2018-19, the findings of the LFS of 2018-19 have been analyzed.

The distribution of earned incomes according to the LFS is presented in Table 3. There are only four parts of the distribution. Consequently, there is a heavy clustering at the top of the distribution. This includes over 64 per cent of the workers with 86 per cent of the total earned income, each with a monthly income of Rs 15,000 or more.

TABLE 3

Distribution of Earned Income
According to the LFS, PBS

Level of Income	% of Earners	% of Earned Income
0 – 5,000	6.6	0.7
5,000 – 10,000	11.4	3.6
10,000 – 15,000	17.7	9.3
15,000 +	64.3	86.4
Total	100.0	100.0
Gini Coefficient:	0.231	
Pashum Ratio:	1.442	

Source: LFS, PBS.

The consequences of this clustering is that the Gini coefficient is low at 0.231, while the Pashum ratio is relatively high at 1.442.

The distribution of earned income among workers/earners, according to the HIES, is given in Table 4. There appears to be limited inequality, with the top over 20 per cent of the workers having a share of 42 per cent of the total earned income. This implies that the highest paid workers on average get just over only twice the average earned income per worker in the country.

The consequence is that the Pashum ratio of earned income in the HIES report is relatively low. It is only 0.458, as compared to 1.442, according to the earned income distribution in the LFS.

Here again, it appears that significant under reporting by respondents to the HIES of the level of earned income. This may also be due to concern about income tax liabilities.

TABLE 4

Distribution of Earned Income among Earners
According to the HIES, 2018-19

Quintile	% of Population	% of Agricultural Income
Bottom	18.5	9.4
2nd	19.9	12.8
3rd	20.6	14.9
4th	20.6	20.7
Top	20.4	42.2
Total	100.0	100.0
Gini Coefficient:	0.280	
Pashum Ratio:	0.458	

Source: HIES, 2018-19.

3. Rents of Housing

This includes both actual rents for rented housing and the imputed value of rents in owner-occupied housing. A comparison is made of the distribution of housing units by size in terms of number of rooms as reported in the Population and Housing Census of 2017 with the distribution of rents in household expenditure, as revealed by the HIES.

The distribution according to the Census is given in Table 5. There is the likelihood that the distribution by number of rooms understates the inequality in rents. Larger housing units are likely to be characterized by high quality of construction, whereas small housing units may have Katcha or Semi-Pucca construction only.

Table 6 presents the distribution of housing units by number of rooms derived from the Population Census. Over 61 per cent of households live in housing units with only one or two rooms. The share of housing units with five or more rooms is 10 per cent.

The skewness in the distribution has implied an extremely high Pashum ratio of 1.996. Also, the Gini coefficient is relatively large at 0.565.

The inequality in rents among housing units is substantially underreported by the HIES. The Gini coefficient is 0.352 and the Pashum ratio is 0.696.

There is the likelihood that in this case there is also a serious measurement problem. Almost 82 per cent of the housing units are owner-occupied. There is no clear methodology used during the HIES Survey to evaluate the equivalent rental value of an owner-occupied housing unit.

TABLE 5

Distribution of Housing Units by Number of Rooms
According to the Population Census, 2017

Number of Rooms	% of Housing Units	% of Rooms
1	31.4	6.8
2	30.2	17.6
3	18.2	19.9
4	10.2	17.7
5	4.4	11.1
6	2.6	9.0
7	1.2	5.7
8	0.8	4.4
9 and above	1.0	7.8
Total	100.0	100.0
Gini Coefficient:	0.565	
Pashum Ratio:	1.996	

Source: Population and Housing Census, 2017.

Expenditure on housing is the largest single component of consumer expenditures. As such, the biases in measurement of the rental value of owner-occupied housing adversely impacts significantly on the overall quality of income and expenditure data in the HIES.

TABLE 6

Distribution of Housing Rent by Housing Units
According to the HIES

Quintile	% of Housing Units	% of Rent
Bottom	15.4	5.2
2nd	17.2	8.2
3rd	19.4	12.1
4th	21.6	18.9
Top	26.4	55.6
Gini Coefficient:	0.352	
Pashum Ratio:	0.696	

Source: HIES.

TABLE 7

Distribution of Personal Bank Deposits
According to the SBP

% of Depositors	% of Deposits
13.4	0.7
21.3	4.8
26.1	12.3
23.1	21
12.4	23.4
3.7	37.8
Gini Coefficient:	0.636
Pashum Ratio:	1.737

Source: HIES.

4. Personal Bank Deposits

Information on personal deposits in the banking system is likely to be a proxy for household savings, although a large number of low income households may not have bank accounts.

The distribution of personal deposits in banks is given by the State Bank of Pakistan. The data is presented for 2018 in Table 7.

A high level of inequality is revealed by the SBP estimates. At the upper end of the distribution, only 3.7 per cent of the depositors have almost 38 per cent of the deposits. Consequently, both the Gini coefficient and the Pashum ratio are high at 0.636 and 1.737 respectively.

The HIES also reveals significant inequality in personal bank deposits. The top quintile has over 53 per cent of the deposits. Accordingly, the Gini coefficient is 0.427 and the magnitude of the Pashum ratio is 0.885.

The HIES tends to use deposits as an indicator of savings. However, this may understate savings at the lower end and in the middle of the income distribution of households who do not have bank accounts.

5. Expenditure on Electricity

There is need also to examine the quality of expenditure reporting in the HIES. Expenditure on electricity is an appropriate choice, as households make payments against bills charged by the distribution company.

TABLE 8

Distribution of Personal Bank Deposits
According to the HIES

Quintile	% of Bank Deposits
1st	5.0
2nd	10.0
3rd	11.6
4th	20.4
5th	53.4
Gini Coefficient:	0.427
Pashum Ratio:	0.885

Source: HIES.

A comparison is made of the reported distributing of billing of domestic consumers in Pakistan by the NEPRA (National Electric Power Regulatory Agency) with that reported by quintiles in the HIES.

Table 9 gives the distribution according to NEPRA. It is extremely skewed. At the upper end, only 0.5 per cent of the domestic electricity consumers account for over 12 per cent of the billing. As opposed to this, 78 per cent of the consumers, with low consumption below 100 kwh, account for less than 28 per cent of the billing.

TABLE 9

Electricity Billing Distribution
NEPRA

No. of Units	% of Domestic Consumers	% of Billing
0 – 100	78.3	27.6
100 – 200	14.3	20.6
200 – 300	4.6	16.6
300 – 700	2.3	22.8
> 700	0.5	12.4
Total	100	100
Gini Coefficient:	0.584	
Pashum Ratio:	2.202	

Source: NEPRA.

The result is an extraordinarily high Pashum ratio at 2.202 and a Gini coefficient at 0.584.

The surprise is the apparently very defective reporting by the HIES of distribution of expenditure among households. The Gini coefficient is exceptionally low at 0.275 and the Pashum ratio at only 0.462.

The extreme divergence between the actual domestic electricity billing by the NEPRA and that reported in the HIES raises fundamental issues about the quality of data collection from household respondents by the HIES Surveyors.

TABLE 10

Distribution of Expenditure on Electricity by Households According to the HIES

Quintile	% of Housing Units	% Share in Electricity Expenditure
Bottom	15.4	6.5
2nd	17.2	10.3
3rd	19.4	15.1
4th	21.6	21.6
Top	26.4	46.5
Gini Coefficient:	0.275	
Pashum Ratio:	0.462	

Source: HIES.

IV. Summary of Inequality Estimates

Table 11 presents the inequality estimates as measured by the Gini coefficient and the Pashum ratio respectively of key components of household income and expenditure. The objective was to check the validity of HIES with direct estimates from the Population or Agricultural Censuses or by Agencies like the SBP, NEPRA and other surveys by the PBS.

Invariably, the extent of inequality is understated in the HIES estimates. In all five cases, the Pashum ratio is significantly above 1, when derived from other sources. As opposed to this, there are no HIES estimates with Pashum ratio above 1.

There is no doubt that based on the above evidence, income inequality is grossly understated by the HIES. The Gini coefficient in 2018-19 was 0.298 according to the Survey. The 'true' inequality estimates from diverse sources reveal that it is likely to be significantly above 0.400. Pasha (2022) earlier had estimated the 'true' level of income inequality at a Gini of 0.405.

The above sections have also highlighted the deficiencies in the survey process of the HIES. First, the overall national sample size is too small. The sampling frac-

tion for similar surveys in India is at least twice as large.

Second, there appears to be need for more training of surveyors of the HIES and resort to digital procedures. Collateral evidence ought to be collected, for example, on farm size or size of dwelling unit from other sources prior to the survey of a particular household.

Third, the methods used for key magnitudes estimation need to be improved. This includes the measurement of the rental value of an owner-occupied dwelling unit, level of savings, etc.

Finally, there has been an inordinate delay in conducting the HIES, as the last such survey was in 2018-19. Historically, HIES has been undertaken once every two or three years. The next Survey should be based on the same digital methodology as the 2023 Population and Housing Census, for which the credit due should be given to the PBS.

TABLE 11

Measurement of Inequality According to HIES
and other Sources by the Gini Coefficient and the Pashum Ratio

	Gini Coefficient	Pashum Ratio
Distribution of Agricultural Income		
HIES	0.162	0.270
Agricultural Census	0.610	1.517
Distribution of Earned Income		
HIES	0.280	0.458
LFS	0.231	1.442
Distribution of Housing Rents		
HIES	0.352	0.696
Population and Housing Census	0.565	1.996
Distribution of Personal Bank Deposits		
HIES	0.427	0.885
SBP	0.636	1.737
Distribution of Expenditure on Electricity		
HIES	0.275	0.462
NEPRA	0.584	2.202

Source: Authors' estimation.

References

Allison, P.A. (1978). Measures of inequality. American Sociology Review, 43(1), 865-880.

Blackwood, D.L., & Lynch, R.G. (1995). The measurement of inequality and poverty, World Development, 22(4), 567-578.

Foster, J., Seth, S., Lokshin, M. M., & Sajaia, Z. (2013). A Unified Approach to Measuring Poverty and Inequality, World Bank.

Pasha, H.A. (2022). A new measure of inequality in Asian economies. Pakistan Development Review, 61(4), 659-662.

Pasha, H.A. (2022). The 'true' level of income inequality in Pakistan. Pakistan Journal of Applied Economics, 32, 126-138.

UNDESA. (2015). Inequality measures (Development Issues No.2).

UNDP. (2020). Pakistan Human Development Report. Islamabad.