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The Performance of Public Sector Enterprises: 1981–1986

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INTRODUCTION

This paper examines the operational performance of seven public sector enterprises in the large-scale manufacturing sector which include the Federal Chemical and Ceramics Corporation (FCCCL), National Fertilizer Corporation (NFC), Pakistan Automobile Corporation (PACO), Pakistan Industrial Development Corporation (PIDC), State Cement Corporation of Pakistan (SCCP), State Engineering Corporation (SEC), and State Petroleum Refining and Petro-chemical Corporation (PERAC). Together, these seven corporations have some 67 units under their control.

Performance assessment can be undertaken in financial and economic terms. Under the former, the key indicators of performance include profitability ratios such as the Gross Profit Ratio, the Return on Investment Ratio, and the Return on Equity Ratio. Other financial ratios include the Debt: Equity Ratio, the Current Ratio, the Acid Test Ratio, the Asset Turnover Ratio, the Return on Asset Ratio, and the Net Profit Margin Ratio. These ratios may also be called Solvency and Liquidity Ratios as they measure the financial performance of the enterprise concerned. The measures listed above dealing with the financial profitability of enterprises are estimated in the *annual reports of the Experts Advisory Cell, of the Ministry of Production, Government of Pakistan.*

In addition, public profitability which is defined as the ratio of public profit to fixed assets is also estimated in these reports. It should, however, be noted that these are at market prices. And we know that the greatest distorter of performance measurement through profit is distorted market prices of inputs and outputs in the developing countries.

In order to evaluate the performance of public sector enterprises it would have been more appropriate if shadow prices had been used to estimate public profitability. But this is not possible as such prices have not been estimated for all inputs and

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outputs in Pakistan. What estimations exist are for the latter part of the Seventies which may not be representative if used today. Besides, the data breakdown which is required for the use of shadow prices were not available for these corporations at a disaggregated level. However, a way out of the dilemma is the use of constant market prices for the evaluation of trends in public profit as suggested by Jones (1981). He discusses that empirical evidence exists which shows that if one looks at trends at constant prices then there is hardly any difference if one uses shadow prices instead of market prices. Although the former is more theoretically pure but practically impossible to follow, therefore a second best approach is to measure trends in terms of constant market prices.

Some studies on the profitability of public sector enterprises have been done by Khwaja Sarmad (1984) and Istaqbal Mehdi (1984). These studies are based on evaluating the public enterprises from strictly a financial point of view. The former study looked at various financial ratios whereas the latter estimates public profitability using an enterprise, Mustehkam Cement, as a case study.

The objective of this paper is to use some economic indicators to measure the operational performance of public enterprises with the help of data taken from various annual reports of the Experts Advisory Cell. These include trend growth rates in value added and employment for the six-year period 1980-81 to 1985-86. Capital-output ratios, capital-labour ratios and rates of return are also estimated for this period. Employment elasticities and profit per worker at constant prices would also be determined which would indicate the employment generation created by the public enterprises as well as the utilisation of the existing labour force employed by these corporations.

These indicators may provide a fair picture of the economic health of public enterprises in the country. However, in the debate about the establishment of such enterprises other objectives such as self-reliance and development of an indigenous industry can play an equally important role. These objectives may be termed to be 'intangibles' in that they are extremely difficult to measure. It is important, therefore, that when evaluating public enterprises such 'intangible' objectives should also be taken into account. Thus, if an enterprises is performing poorly in financial and economic terms, but is performing better in attaining the 'intangible' objectives then more weightage should be given to this fact when evaluating the enterprise.

PERFORMANCE APPRAISAL

Table 1 presents the trend growth rates of value added in constant prices for the period 1981–86 for seven public sector enterprises. The State Cement Corporation of Pakistan (SCCP) had the highest growth rate followed by the State Petroleum Refining and Petrochemical Corporation (PERAC) the Federal Chemical and

Table 1

Growth Rates of Value Added, Employment and Employment Elasticities: 1981-86 (at Constant Prices 1975-76)

	Value Added	Employment	Employment Elasticity
Federal Chemical and Ceramics Corporation	13.79 (10.10)	5.19 (4.08)	0.26
National Fertilizer Corporation	0.67 (0.31)	3.27 (5.13)	2.54
Pakistan Automobile Corporation	0.98 (0.37)	–2.13 (2.22)	–6.30
Pakistan Industrial Development Corporation	–43.00 (2.00)	1.79 (0.32)	–0.06
State Cement Corporation of Pakistan	31.53 (26.82)	1.29 (0.07)	0.12
State Engineering Corporation	4.1 (2.42)	–3.21 (0.28)	1.14
Petroleum Refining and Petrochemical Corporation	20.02 (5.25)	5.10 (5.16)	0.20

Note: Figures in parentheses are *t*-values.

Ceramics Corporation (FCCCL) and the State Engineering Corporation (SEC). One corporation, which is the Pakistan Industrial Development Corporation (PIDC), had a negative growth rate (–43.0) for the period.

The poor showing of the PIDC is due to a variety of factors. Over the years many of its productive units have been transferred to other corporations. For example, the distribution of gas was transferred to the Ministry of Petroleum and Natural Resources. Similarly, units manufacturing fertilizers, cement, chemicals, ceramics and heavy engineering have also been transferred to other public sector corporations. These transfers were carried out so that the public sector could function more effectively. Thus, the units that were left with the PIDC were more of

being socio-economic in nature. To cite two, the Harnai Wollen Mills and the Dir Forest Complex, were set up in backward areas with poor infrastructure and high costs of production. Thus, the overall growth rate for the corporation suffered due to these loss-making units under its control. The PIDC now has a limited objective confined to the planning, promotion and development of new ventures as suggested by the government.

The SEC also faced problems during this period. Many of the units under its control have obsolete equipment raising production costs, and hence, the prices of products produced by these units. Another factor that affects the profitability of this corporation is the rather liberal import facilities available to the importers of engineering goods. Thus, large organizations prefer to import their requirements rather than to have them produced domestically which affects the capacity utilization rate of the domestic industry. Despite these shortcomings, the SEC posted a positive growth rate of 4.1 percent.

PACO has performed indifferently over the six-year period and also faces difficulties in that demand for their products is declining. Also, in the last couple of years, the units producing cars and jeeps have been adversely affected by the rising foreign exchange price of the Japanese currency for the unit that assembles Suzuki jeeps and cars. Thus, necessary remedial steps have to be taken, for instance, increasing the deletion programme could be one such step to offset the appreciating value of the yen. Another would be to rationalize the product mix of PACO to increase capacity utilization, and hence, production of its various units.

Table 1 also presents the growth rates of employment for the period 1981–86 for the seven public enterprises. Again, two corporations have not performed well in promoting employment. These are the PACO and the SEC where the employment growth is negative. The problems that may have contributed to this poor showing have been mentioned earlier. The PIDC's and SCCP's growth rates were positive but not impressive as far as increasing employment is concerned. The three corporations that performed well include the FCCCL, the NFC and PERAC which have capital-intensive techniques of production.

If one were also to look at the employment elasticities also shown in Table 1, it is again evident that PIDC and PACO have performed poorly in employing people. Their overall employment elasticities for the period 1981–86 are negative. This compares with an employment elasticity of 0.13 for 1983–86 as shown for the large-scale manufacturing sector in the 1986-87 Economic Survey (1987). Four corporations the NFC, the FCCCL, the SEC and PERAC have an employment elasticity equal to or higher than the one shown in the Survey (1987). The SCCP is the only enterprise with an employment elasticity near the one given in the same Survey (1987). However, interpreting employment elasticities is a difficult task as low elasticities can mean that productivity of labour has increased and yet this increase of

productivity may have been brought about by using more capital-intensive production processes. If this happens then it defeats the purpose of increasing employment opportunities.

Table 2 presents the capital-output ratios, capital-labour ratios, profit per worker, and rates of return for the seven public enterprises.

Capital-output Ratios

The corporation which has the lowest ratios is PACO. For five years of the six under review the capital-output ratios are less than 1. In the sixth year the ratio is just above 1. This implies that the corporation is very efficient in the utilization of its capital to produce output. That is one interpretation which one can put on the low capital-output ratios for PACO. However, this corporation's performance under other indicators such as employment generation and growth in value added is quite poor. Also, the capital-labour ratio for this corporation has been increasing over the six-year period. Thus, not much should be assumed about the efficiency of this corporation. The PIDC has the worst capital-output ratios, particularly for the years 1982-83 to 1985-86. The reasons for the poor performance of this corporation have been given earlier.

PERAC also has high capital-output ratios for the period under review. This may be due to the fact that this particular activity is inherently capital intensive in nature. The FCCCL also has high capital output ratios which is partly due to the capital intensity of the production process and also due to the obsolete nature of the plant and equipment in some of its component units. The capital-output ratios of the NFC and SCCP are also on the high side; reflecting the capital intensity of their production processes. The SEC has on the whole a lower capital-output ratio than the NFC and the SCCP.

Capital-labour Ratios

The highest capital-labour ratios are evident for PERAC, followed by the NFC, the SCCP, the FCCCL, the PIDC, the SEC and the PACO. If one looks at the period as a whole a trend emerges. For example, the capital-labour ratios for PERAC has increased for five years out of the six under review. In the case of the SCCP and PACO a rising trend is evident for the period 1980-81 to 1985-86 showing that the operations of these corporations are becoming more capital intensive, and thus less conducive to increasing employment opportunities. This is particularly so as PACO's employment elasticity is negative for the period overall (Table 2). In the case of the NFC, a declining trend emerges, particularly from 1982-83 to 1985-86. This may be due to the fact that the production process may have become more efficient over time lowering the capital employed vis-a-vis labour. The FCCCL, in the last three years of the period, also shows a declining trend in the capital employed per

Table 2

Capital-output Ratios[1], Capital-Labour Ratios[2] (in Rs), Profit per Worker[3] (in Rs) and Rates of Return[4] (%) for Seven Public Sector Enterprises (in Constant Prices 1975-76)

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86
Federal Chemical and Ceramics Corporation						
1. Capital-output Ratio	3.14	3.13	4.58	3.74	3.67	3.11
2. Capital-labour Ratio	79,220	86,070	157,516	148,045	124,919	122,404
3. Profit per Worker	1,149.70	2,973.41	−1,103.62	4,332.28	453.23	923.83
4. Rates of Return	14	15	12	16	15	16
National Fertilizer Corporation						
1. Capital-output Ratio	2.62	3.04	2.93	3.51	2.81	3.01
2. Capital-labour Ratio	521,138	604,250	578,203	567,107	538,404	530,401
3. Profit per Worker	59,031.42	84,056.94	63,980.36	43,887.84	66,480.22	59,982.83
4. Rates of Return	35	30	31	25	32	29
Pakistan Automobile Corporation						
1. Capital-output Ratio	0.42	0.49	0.53	0.81	1.00	1.27
2. Capital-labour Ratio	20,426	23,302	29,524	48,700	57,021	68,383
3. Profit per Worker	10,542.72	11,045.82	14,173.76	18,098.53	19,782.65	10,641.48
4. Rates of Return	141	113	107	74	58	40

Continued –

Table 2 – (*Continued*)

Pakistan Industrial Development Corporation						
1. Capital-output Ratio	3.25	2.93	4.77	40.82	55.88	11.36
2. Capital-labour Ratio	80,220	80,246	45,569	87,128	111,604	78,714
3. Profit per Worker	4,761.10	7,569.60	−11,514.67	−20,171.38	−20,657.70	−15,999.60
4. Rates of Return	19	21	0.7	−6	−5	−0.5
State Cement Corporation of Pakistan						
1. Capital-output Ratio	3.40	2.84	4.05	3.57	2.69	2.86
2. Capital-labour Ratio	113,528	121,657	185,727	199,201	202,377	255,439
3. Profit per Worker	3,943.13	6,736.22	4,741.54	8,213.31	19,393.80	30,908.68
4. Rates of Return	14	19	14	18	26	25
State Engineering Corporation						
1. Capital-output Ratio	2.85	2.57	2.62	3.04	2.67	2.99
2. Capital-labour Ratio	62,587	64,458	65,529	62,373	60,788	64,540
3. Profit per Worker	1,899.51	3,592.48	2,889.76	523.58	1,009.99	1,649.66
4. Rates of Return	17	19	17	12	13	9
Petroleum Refining and Petrochemical Corporation						
1. Capital-output Ratio	4.03	4.40	5.78	8.38	7.03	4.36
2. Capital-labour Ratio	669,867	746,933	1,005,274	1,417,479	1,322,084	1,281,953
3. Profit per Worker	24,456.64	35,203.32	32,523.07	56,472.75	52,171.92	45,878.37
4. Rates of Return	21	19	14	10	12	20

Notes: 1. Data on fixed assets and value added were adjusted by the relevant deflators based on information from Government of Pakistan (1987).
2. Data on fixed assets were adjusted by the use of relevant deflators based on information from Government of Pakistan (1987).
3. Profit per worker at current prices were adjusted to constant prices by using the wholesale price index for manufacturing Government of Pakistan (1986).
4. Data on fixed assets and value added have been adjusted using the relevant deflators based on information from Government of Pakistan (1987).

labourer. No clear trend is discernible for the remaining two corporations, the PIDC and the SEC, where the ratios sometimes increase then decrease then increase again.

Profit per Worker

In the case of profit per worker the PIDC has performed poorly because of the reasons mentioned earlier. The FCCCL also did poorly by showing a negative profit per worker for one year, which may be due to its poor management and obsolete production plants being unable to compete with foreign supplied products. For the other corporations, PACO had a rising trend in its profits per worker for five years out of six. For the NFC and the SCCP no discernible trend was evident. Similarly, the remaining two corporations, the SEC and PERAC also displayed a mixed trend, sometimes rising then declining.

Rates of Return

The PACO has shown extremely high rates of return in the initial part of the period but then declining towards the latter part of the period. This is puzzling because PACO has performed poorly under all the other indicators which depict performance. A possible explanation is that the high rates of return may be more nominal than real, i.e. there is a large element of price inflation in these figures. The rates of return may have been increased artificially through raising the prices of the output rather than through efficient production. For the remaining corporations no trend is discernible in the rates of return whether they are consistently rising or decreasing. However, the NFC is the only enterprise where the rates of return are above the 20 percent cut-off rate used in the selection or rejection of public sector industrial projects.

CONCLUDING OBSERVATIONS

To recapitulate, the paper has estimated trend growth rates in value added and employment, employment elasticities, profit per worker, capital-labour ratios, capital-output ratios and rates of return. These measures, we figured, are an improvement over purely financial measures of operational efficiency of the public sector enterprises but may not be considered to be a substitute when evaluating enterprises within a broader framework keeping in view the objectives of increasing national welfare through self-sufficiency and other 'intangibles'. What emerges from the analysis presented above is that most, if not all, of the enterprises are capital intensive in nature. The corporations that have performed the worst are the PIDC followed by PACO.

We feel that the issue central to evaluating public sector enterprises is the criteria on which it should be based. This takes on back to the approval stage when

an enterprise is initially established under certain criteria. But when it comes to the operational stage a different set of criteria is used to evaluate its performance. Therefore, to evaluate enterprises in isolation from the original criteria is an unfair proposition. We, therefore, feel that following a narrow criterion based on financial/ commercial profitability could be self-defeating in the long run as non-economic criteria may be just as effective in evaluating public enterprises. And, in many cases, public enterprises have been established on non-economic criteria. For example, one of the objectives in the case of the SEC is to develop and establish self-sufficiency in the engineering industry in the country. This may, in the beginning, prove economically expensive but it is the indigenous engineering base that is important because its development can then lead to the establishment of other capital goods industries in the economy thus contributing to the self-reliance of the country and so on and so forth.

Thus, to assist in meeting these objectives the government also has to initiate the appropriate pricing and commercial policies so that these enterprises can play their due role in the development process. For example, in the engineering goods-related industry a very liberal import policy has adversely affected its development. This policy has, therefore, to be revised so that this industry can develop to its full potential.

Thus, to conclude, the performance evaluation of public enterprises should not be limited to purely financial and economic evaluation but should take into consideration the wider objectives for which they were established. These wider objectives include such non-financial and economic ones as self-reliance and technology transfer.

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Comments on "The Performance of Public Sector Enterprises: 1981–86"

This paper examines the performance of seven public sector corporations on the basis of a very large number of performance ratios and indicators, which are normally not available in the regular publications about public enterprises. For the seven corporations the authors have calculated the growth rates of value added and employment, employment elasticities, capital-output ratios, capital-labour ratios, profit per worker and rates of return for the years from 1981 to 1986. Such information can be quite useful, particularly when used in conjunction with the information collected by the agencies monitoring the performance of the public enterprises on a regular basis.

The authors begin with a discussion about the appropriate methodology for the evaluation of performance of public enterprises and rightly note the importance of shadow prices in such an exercise. Shadow prices are important and useful from the policy point of view and have been used extensively in the economic analysis of projects and also for macro-economic analysis. There is of course the computational difficulty of calculating shadow prices especially when they are estimated from a general equilibrium model. In an alternative approach, approximations to the shadow prices can be obtained by adjusting market prices for the distortions in the market. In highly distorted markets even simple adjustments to the market prices have provided useful results. Without such adjustments the evaluation of public enterprises on the basis of market prices will include the effect of market distortions in the values of the performance indicators so that from such results one can get, at best, only a general feeling of the way the enterprises are performing. Take the case of market wages, which because of distortions, like union pressure, do not reflect the true opportunity cost of employing labour. In such a situation, a shadow wage rate which is less than the market wage rate would suggest the use of production techniques which are more capital intensive than those suggested by the comparative advantage of the country.

The results in the paper show a sharp fluctuation not only over time but also between corporations, which may be a reflection of the underlying changes in the performance of the corporations or could partly be explained by problems in the data. The best way to look into this issue would be to evaluate the performance of

the individual enterprises in the various corporations, which would also enable to calculate the relevant performance indicators for continuing firms only.

It would be interesting to know what caused the apparently capital intensive enterprises to record higher growth rates of employment. Was this due to increase in investment and changes in capacity utilization or were there other causes?

In the case of profit ratios and rates of return it would have been useful to have a detailed picture of the factors contributing to the changes in their values. Some of the improvement in the performance of the enterprises could have been due to changes in capacity because of new investments and investment for balancing and modernization. Other factors, like real increases in operational efficiency, as measured by the improvement in the productivity of labour, relative price changes and even changes in the quality of products, could also have influenced the values of the performance indicators.

The issue of relative prices is particularly relevant in the case of the automobile corporation. It is well known that input prices in this industry have increased significantly during recent years. On the other hand, the output prices of the products of the cement and petroleum corporations have increased substantially. All these factors influence the values of the various performance indicators and have to be taken into account.

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