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Economic Analysis of the Child Survival Project in Pakistan

This analysis addresses six important economic topics of relevance to the success of the project during the life of the project (LOP) as well as subsequent to it. These topics include: a) the macro-economic context of the project; b) an analysis of GDP health expenditure patterns, particularly as it pertains to child survival activities; c) an analysis of some of the economic savings of using child survival therapeutic technologies in Pakistan; d) an analysis of the determinants of the important progress made towards the achievement of child survival via the EPI and other programs of the GOP and the donor community over the 1982-1987 period; e) the role and expectations of the private health care providers towards child survival activities now and over the LOP; and f) the issues and options pursuant to cost recovery for both child survival programs as well as other services provided by GOP health providers.

Macro-Economic Context

Pakistan has been experiencing a relatively high rate of economic growth over the last fourteen years since the first major international oil price shock in 1973 (see Table 1). Since that period the country has experienced an average of 6.25 percent real growth in GDP, with the figure being even higher in the most recent five years (around 6.7 percent per year). In per capita terms income growth has averaged about 3.2 percent per

Table 1: An Analysis of Pakistan's
Macro-economic Trends, 1959-87

| Year | GDP in Prices 1980 bill rupees | Rate of Growth in GDP |
|------|--------------------------------------|-----------------------------|
| 1950 | | |
| 1955 | 82.88 | |
| 1959 | 93.60 | 12.9 |
| 1960 | 106.46 | 13.7 |
| 1961 | 106.70 | 0.2 |
| 1962 | 113.17 | 6.1 |
| 1963 | 121.50 | 7.4 |
| 1964 | 127.84 | 5.2 |
| 1965 | 132.29 | 3.5 |
| 1966 | 142.48 | 7.7 |
| 1967 | 136.14 | -4.4 |
| 1968 | 142.95 | 5.0 |
| 1969 | 150.46 | 5.3 |
| 1970 | 146.85 | NA |
| 1971 | 147.89 | 0.7 |
| 1972 | 148.49 | 0.4 |
| 1973 | 158.76 | 6.9 |
| 1974 | 167.58 | 5.6 |
| 1975 | 175.28 | 4.6 |
| 1976 | 183.35 | 4.6 |
| 1977 | 190.32 | 3.8 |
| 1978 | 205.65 | 8.1 |
| 1979 | 215.65 | 4.9 |
| 1980 | 234.53 | 8.8 |
| 1981 | 250.92 | 7.0 |
| 1982 | 266.43 | 6.2 |
| 1983 | 283.57 | 6.4 |
| 1984 | 298.67 | 5.3 |
| 1985 | 322.51 | 8.0 |
| 1986 | 346.75 | 7.5 |
| 1987 | | |
| 1988 | | |

Ave 73/86

87.57058

6.26

Ave 60/86

138.2814

5.32

Source: IMF, Financial Statistics
Yearbook, 1987

year during that same period. During this period Pakistan has also been able to manage its rate of monetary expansion, and as a consequence, the rate of inflation between 1980 to 1985 was only 8.1 percent per year which was one of the lowest among the thirty-one low income countries reporting that information in the World Development Report, 1987.

Given that a large share of the cost of operating a child survival program requires foreign exchange to procure, it is instructive to ascertain what the trends are for Pakistan's balance of payments (see Table 2). Pakistan's balance of payments situation is determined by several important factors. The country's foreign exchange earnings is determined by the export of a number of agricultural products led by cotton and rice. In recent years international prices for these two crops have been relatively high. However, merchandise export earnings have not kept pace with the country's import bill requirements. Since the first oil price increase in 1973, the country has been able to earn substantial foreign exchange via worker remittances from abroad. During the early 1980s these remittances from Pakistani workers in the Gulf states were over 2 billion dollars each year and in 1983 they topped 3 billion dollars. However, since then such earnings have declined to around 2.6 billion in 1986 and are expected to decline further over the next several years to a figure in the neighborhood of 2.0 billion dollars by the early 1990s. Thus, total foreign exchange earnings will be under increasing pressure to finance the country's growing import

Table 2: An Analysis of Pakistan's
Balance of Payments Trends, 1967-87

| Year | Bal. of Payments (million \$) | | | Official T Bal | | | | Percent | Percent | Percent |
|------|-------------------------------|------|-------|-----------------------|-------|---------|---------|-----------|-----------|---------|
| | EX. | IM. | T Bal | Private Aid Transfers | Minus | J Minus | is of T | Pri Trans | Pri Trans | Off Aid |
| | | | | | Pri | Off | Pri | Off | IM | IM |
| 1967 | 570 | 1113 | -543 | 41 | 212 | -502 | -290 | 7.55 | 3.68 | 19.05 |
| 1968 | 646 | 977 | -331 | 79 | 192 | -252 | -60 | 23.87 | 8.09 | 19.65 |
| 1969 | 643 | 971 | -328 | 107 | 69 | -221 | -152 | 32.62 | 11.02 | 7.11 |
| 1970 | 672 | 1210 | -538 | 81 | 38 | -457 | -419 | 15.06 | 6.69 | 3.14 |
| 1971 | 661 | 1081 | -420 | 65 | 114 | -355 | -241 | 15.48 | 6.01 | 10.55 |
| 1972 | 627 | 860 | -233 | 129 | 45 | -104 | -59 | 55.36 | 15.00 | 5.23 |
| 1973 | 938 | 1039 | -101 | 147 | 43 | 46 | 89 | 145.54 | 14.15 | 4.14 |
| 1974 | 1015 | 1902 | -887 | 177 | 65 | -710 | -645 | 19.95 | 9.31 | 3.42 |
| 1975 | 1050 | 2207 | -1157 | 275 | 128 | -882 | -754 | 23.77 | 12.46 | 5.80 |
| 1976 | 1167 | 2192 | -1025 | 433 | 111 | -592 | -481 | 42.24 | 19.75 | 5.06 |
| 1977 | 1121 | 2487 | -1366 | 884 | 118 | -482 | -364 | 64.71 | 35.54 | 4.74 |
| 1978 | 1397 | 3221 | -1824 | 1420 | 101 | -404 | -303 | 77.85 | 44.09 | 3.14 |
| 1979 | 1948 | 4289 | -2341 | 1578 | 167 | -763 | -596 | 67.41 | 36.79 | 3.89 |
| 1980 | 2569 | 5445 | -2876 | 2218 | 233 | -658 | -425 | 77.12 | 40.73 | 4.28 |
| 1981 | 2730 | 5656 | -2926 | 2195 | 354 | -731 | -377 | 75.02 | 38.81 | 6.26 |
| 1982 | 2341 | 5744 | -3403 | 2793 | 360 | -610 | -250 | 82.07 | 48.62 | 6.27 |
| 1983 | 2877 | 5592 | -2715 | 3116 | 258 | 401 | 659 | 114.77 | 55.72 | 4.61 |
| 1984 | 2480 | 6234 | -3754 | 2942 | 384 | -812 | -428 | 78.37 | 47.19 | 6.16 |
| 1985 | 2648 | 5878 | -3230 | 2710 | 354 | -520 | -166 | 83.90 | 48.10 | 6.02 |
| 1986 | 3141 | 5961 | -2820 | 2635 | 476 | -185 | 291 | 93.44 | 44.20 | 7.99 |
| 1987 | | | | | | | | | | |

Source: IMF, Financial Statistics
Yearbook, 1987

Ave 77/86 Ave 77/86

437.8133 53.36062
43.78 5.34

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bill via economic activities in the official economy 1/. Principle imports include oil and machinery and these items continue to increase in total value although there has been a slight reduction since the peak in 1984. Workers' remittances have averaged nearly 45 percent of imports during the last decade (1977-86) and they have been a major source of finance for Pakistan's trade gap. However, remittances are now on a declining trend 2/. It will be difficult to continue to finance import levels which were recorded in the late seventies unless Pakistan succeeds in its efforts to find more domestic oil and expand other export earnings. The Pakistan government is aware of the trade imbalance and have recently announced a plan to help resolve the problem by increasing trade among its neighbors such as Iran. However, additional efforts are required in providing incentives for exports and addressing import substitution bottlenecks.

The GOP and the provincial governments have incurred budget deficits every year, except one, since 1959 (see Table 3). Including government servicing costs required to finance these deficits, the deficit has been averaging nearly 37 percent over the last decade (1977-1986), although in the past five years the deficit share has improved slightly to about 32 percent. Until the most recent fiscal year, GOP revenue from taxes and other traditional sources have been able to finance the recurrent portion of the GOP budget, including debt servicing 3/.

Recent budgetary discussions which occurred this summer, however,

Table 3: An Analysis of Pakistan's
Macro-economic Trends, 1959-87
Public Finance (in million Rupees)

| Year | Govt Rev | Govt Exp | Deficit I | Percent | Net | Deficit II | Percent | |
|------|----------|----------|--------------|----------------------|-------|---------------|----------|-----------------------|
| | | | | Def I is of G Exp | | | Grants | Def II is of G Exp |
| 1950 | | | | | | | | |
| 1955 | 1,444 | 1,794 | (350) | 19.51 | 204 | 201 | (347) | 19.34 |
| 1959 | 2,629 | 2,995 | (366) | 12.22 | 119 | 421 | (688) | 22.30 |
| 1960 | 2,353 | 3,245 | (892) | 27.49 | 413 | 499 | (978) | 30.14 |
| 1961 | 2,581 | 3,591 | (1,010) | 28.13 | 907 | 627 | (730) | 20.33 |
| 1962 | 2,934 | 4,142 | (1,208) | 29.16 | 979 | 595 | (824) | 19.89 |
| 1963 | 2,775 | 3,503 | (728) | 20.78 | 631 | 1,103 | (1,206) | 34.43 |
| 1964 | 3,847 | 4,328 | (481) | 11.11 | 674 | 1,485 | (1,292) | 29.85 |
| 1965 | 4,384 | 5,003 | (619) | 12.37 | 527 | (112) | 20 | -0.40 |
| 1966 | 5,457 | 7,560 | (2,103) | 27.82 | 704 | 906 | (2,305) | 30.49 |
| 1967 | 5,957 | 6,548 | (591) | 9.03 | 266 | 3,532 | (3,857) | 58.90 |
| 1968 | 6,048 | 6,841 | (793) | 11.59 | 334 | 2,532 | (2,991) | 43.72 |
| 1969 | 6,977 | 7,304 | (327) | 4.48 | 237 | 2,709 | (2,799) | 38.32 |
| 1970 | 9,007 | 7,904 | 1,103 | -13.95 | 208 | 4,256 | (2,945) | 37.26 |
| 1971 | 7,342 | 7,987 | (645) | 8.08 | 327 | 2,751 | (3,069) | 38.42 |
| 1972 | 7,053 | 8,784 | (1,731) | 19.71 | 239 | 1,091 | (2,583) | 29.41 |
| 1973 | 8,256 | 11,128 | (2,872) | 25.81 | 486 | 2,168 | (4,554) | 40.92 |
| 1974 | 11,794 | 14,520 | (2,726) | 18.77 | 566 | 2,985 | (5,145) | 35.43 |
| 1975 | 14,259 | 19,525 | (5,266) | 26.97 | 378 | 6,578 | (11,466) | 58.72 |
| 1976 | 17,737 | 22,390 | (4,653) | 20.78 | 1,050 | 8,636 | (12,239) | 54.66 |
| 1977 | 20,439 | 24,564 | (4,125) | 16.79 | 1,092 | 9,547 | (12,580) | 51.21 |
| 1978 | 25,171 | 30,793 | (5,622) | 18.26 | 1,082 | 8,707 | (13,247) | 43.02 |
| 1979 | 29,502 | 36,241 | (6,739) | 18.59 | 848 | 12,106 | (17,997) | 49.66 |
| 1980 | 38,102 | 41,084 | (2,982) | 7.26 | 1,826 | 12,188 | (13,344) | 32.48 |
| 1981 | 45,359 | 53,392 | (8,033) | 15.05 | 2,598 | 10,703 | (16,138) | 30.23 |
| 1982 | 50,370 | 55,355 | (4,985) | 9.01 | 2,560 | 12,926 | (15,351) | 27.73 |
| 1983 | 57,750 | 70,560 | (12,810) | 18.15 | 2,189 | 14,163 | (24,784) | 35.12 |
| 1984 | 71,042 | 82,627 | (11,585) | 14.02 | 1,957 | 16,300 | (25,928) | 31.38 |
| 1985 | 76,231 | 97,063 | (20,832) | 21.46 | 2,717 | 18,720 | (36,835) | 37.95 |
| 1986 | 94,306 | 106,135 | (11,829) | 11.15 | 2,717 | 22,756 | (31,868) | 30.03 |
| 1987 | | | | | | | | |
| 1988 | | | | | | | | |

Source: IMF, Financial Statistics
Yearbook, 1987

were resoundingly opposed to any additional tax increases or user charges. Thus the GDP is facing a continuing budgetary crisis in the near term. Clearly, 30 percent overall deficits and the shortfall of revenues to cover recurrent expenditures will place a great burden on maintaining a restrained monetary policy which has helped the country to manage inflation and to continue to achieve the rates of economic growth which it has achieved over the last 15 to 20 years. In addition, the large budget deficits will constrain the rate of growth in the recurrent budget and it is hard to imagine that public health programs will be excluded from that constraint, even though Pakistan has included such activities in the capital rather than the recurrent budget accounts. In particular, such budget constraints imply that employment creation efforts which expand the number and/or size of existing cadres of health personnel, i.e., an envisioned community health worker cadre, will unlikely be viewed by most responsible economic decisionmakers in the GDP as exceeding the fiscal capacity of the government.

The GDP budget situation as described above is defined by decisions made at the provincial and federal levels. Given the 1987-88 budgetary process, the present GDP budget envisages that the Provinces will need 10,273 million rupees in the form of non-obligatory grants to meet their current expenditures. A budget deficit of Rps. 11,848 million is expected after meeting the federal and provincial requirements. The issue of revenue sharing between the federal and provincial governments is being

examined by the National Finance Commission and each potential revenue source is being considered in terms of its elasticity of tax revenue with respect to income growth. Prima facie efforts are required to tackle the problem of tax evasion, recover user charges, and seriously consider the possibility of imposing consumer taxes.

Under the existing regime, taxes on income and wealth (direct taxes) and taxes on commodities and transactions (indirect taxes) are in the jurisdiction of the Federal Government. Principal Provincial Government levies include: a) urban property taxes, b) water rates, c) motor vehicle taxes, d) taxes on callings and employment, e) excise duties on items not included in the federal list, f) stamp duties, g) duties on electricity and entertainment, h) tolls on roads and bridges, i) capital gains taxes, and j) court fees.

The jurisdiction of the Federal and Provincial Governments are defined in the Constitution. Some items are exclusively allocated to the Federal Government. There also is a concurrent list. The items which are not mentioned in the Federal and the Concurrent lists are in the exclusive jurisdiction of the Provincial Governments. Provincial jurisdiction includes the freedom to levy taxes and spend money. As indicated earlier, the deficit of the Provincial Governments are included in the Federal Budget which has tended to create a disincentive in Provincial Governments for fiscal responsibility.

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In summary, the macro-economic performance of Pakistan has been quite impressive over the past ten to fifteen years, despite the disruptions in the global economy during the 1970's of the oil price increases which adversely affected many developing countries. Economic growth has been robust during the most recent period, averaging over 6.5 percent during the last five years. Due to large remittances from abroad, and a favorable inflow of international assistance, the balance of payments has been manageable. GOP budget deficits have been a problem and are more troubling now than before since the size of the public debt has grown so large. Monetary growth will be difficult to restrain and inflation may lead to increasing difficulties. In addition, recurrent costs of the GOP and the provincial governments, are becoming difficult to manage, particularly as the government is trying very hard to create enough employment opportunities for the growing number of school graduates. The manageable balance of payments situation of the recent period is also likely to change as the level of remittances from abroad slack off as they already have done. Thus, foreign exchange constraints throughout all sectors, including the health sector, are likely to become a greater problem for the country to manage than before. Thus, the child survival project must be designed with these future macro-economic constraints in mind.

Trends in GOP Spending on Health

Over the last fifteen years, the GOP has increased its expenditures for health by a substantial amount (see Table 4).

Table 4: Health Expenditure Patterns in Pakistan, 1970-1988
(in millions of rupees)

| Year | Total Govt Exp (1) | Total Govt Exp Health Dev & Rec | Total Govt Exp Health Dev | Total Govt Exp Health Rec | Total GDP Deflator '80=100 | Hea Dev Real '80=100 | Hea Rec Real '80=100 | Total Dev & Rec Real '80=100 | Percent Change From Prior Year | Health Share of Total Exp | Population (in mill) | Per Capita Health Exp (R & C) Nominal | Per Capita Health Exp (R) Real '80=100 | Per Capita Health Exp (R) Real '80=100 | Rural Health Program | Prevent Health Program | Percent Prev of Dev | Prevent Health Prog Exp Real '80=100 | Per Capita Prevent Health Prog Exp Real '80=100 |
|------|--------------------|---------------------------------|---------------------------|---------------------------|----------------------------|----------------------|----------------------|------------------------------|--------------------------------|---------------------------|----------------------|---------------------------------------|--|--|----------------------|------------------------|---------------------|--------------------------------------|---|
| 1970 | 7,904 | | | | 32.5 | | | | | | | | | | | | | | |
| 1971 | 7,987 | | | 390 | | | 1,143.7 | | | | | | | | | | | | |
| 1972 | 8,784 | | | 371 | 36.4 | | 1,019.2 | | | | 64.30 | | | | | | | | |
| 1973 | 11,128 | 503 | 96 | 407 | 42.1 | 278.0 | 966.7 | 1,194.8 | | 4.5 | 66.84 | 7.5 | 17.9 | 14.5 | 14.1 | 34.0 | 35.4 | 80.8 | 1.2 |
| 1974 | 14,520 | 603 | 176 | 427 | 51.8 | 339.8 | 824.3 | 1,164.1 | -2.6 | 4.2 | 68.85 | 8.8 | 16.9 | 12.0 | 34.2 | 35.4 | 20.1 | 68.3 | 1.0 |
| 1975 | 19,525 | 932 | 363 | 569 | 63.4 | 572.6 | 897.5 | 1,470.0 | 26.3 | 4.8 | 70.90 | 13.1 | 20.7 | 12.7 | 46.6 | 94.5 | 26.0 | 149.1 | 2.1 |
| 1976 | 22,390 | 1,795 | 629 | 1,166 | 71.1 | 884.7 | 1,639.9 | 2,524.6 | 71.7 | 8.0 | 73.21 | 24.5 | 34.5 | 22.4 | 92.2 | 286.0 | 45.5 | 402.3 | 5.5 |
| 1977 | 24,564 | 1,635 | 540 | 1,095 | 78.7 | 686.1 | 1,391.4 | 2,077.5 | -17.7 | 6.7 | 75.44 | 21.7 | 27.5 | 18.4 | 73.3 | 435.2 | 80.6 | 553.0 | 7.3 |
| 1978 | 30,793 | 1,690 | 512 | 1,178 | 85.8 | 596.7 | 1,373.0 | 1,969.7 | -5.2 | 5.5 | 77.75 | 21.7 | 25.3 | 17.7 | 190.9 | 244.4 | 47.7 | 284.8 | 3.7 |
| 1979 | 36,241 | 1,905 | 569 | 1,336 | 90.5 | 628.7 | 1,476.2 | 2,105.0 | 6.9 | 5.3 | 80.13 | 23.8 | 26.3 | 18.4 | 240.7 | 118.6 | 20.8 | 131.0 | 1.6 |
| 1980 | 41,084 | 1,925 | 717 | 1,208 | 100.0 | 717.0 | 1,208.0 | 1,925.0 | -8.5 | 4.7 | 82.58 | 23.3 | 23.3 | 14.6 | 232.8 | 100.2 | 14.0 | 100.2 | 1.2 |
| 1981 | 53,392 | 2,402 | 942 | 1,460 | 110.8 | 850.2 | 1,317.7 | 2,167.9 | 12.6 | 4.5 | 85.12 | 28.2 | 25.5 | 15.5 | 285.8 | 124.1 | 13.2 | 112.0 | 1.3 |
| 1982 | 55,355 | 2,688 | 1,076 | 1,612 | 120.8 | 890.7 | 1,334.4 | 2,225.2 | 2.6 | 4.9 | 87.76 | 30.6 | 25.4 | 15.2 | 271.1 | 89.7 | 8.3 | 74.3 | 0.8 |
| 1983 | 70,560 | 2,630 | 1,080 | 1,550 | 127.7 | 845.7 | 1,213.8 | 2,059.5 | -7.4 | 3.7 | 90.48 | 29.1 | 22.8 | 13.4 | 330.0 | 110.0 | 10.2 | 86.1 | 1.0 |
| 1984 | 82,627 | 3,180 | 1,613 | 1,567 | 140.0 | 1,152.1 | 1,119.3 | 2,271.4 | 10.3 | 3.8 | 93.29 | 34.1 | 24.3 | 12.0 | 20.0 | 324.2 | 20.1 | 231.6 | 2.5 |
| 1985 | 97,063 | 3,385 | 1,505 | 1,880 | 148.2 | 1,015.5 | 1,268.6 | 2,284.1 | 0.6 | 3.5 | 96.18 | 35.2 | 23.7 | 13.2 | 65.4 | 217.9 | 14.5 | 147.0 | 1.5 |
| 1986 | 106,135 | 4,335 | 1,941 | 2,394 | 155.6 | 1,247.4 | 1,538.6 | 2,786.0 | 22.0 | 4.1 | 99.16 | 43.7 | 28.1 | 15.5 | 27.9 | 213.3 | 11.0 | 137.1 | 1.4 |
| 1987 | 131,939 | 5,708 | 2,598 | 3,110 | 161.0 | 1,613.7 | 1,931.7 | 3,545.3 | 27.3 | 4.3 | 102.23 | 55.8 | 34.7 | 18.9 | 25.0 | 242.8 | 9.3 | 150.8 | 1.5 |
| 1988 | 151,071 | 6,791 | 3,105 | 3,686 | 175.0 | 1,774.3 | 2,106.3 | 3,880.6 | 9.5 | 4.5 | 105.40 | 64.4 | 36.8 | 20.0 | 28.1 | 312.2 | 10.1 | 178.4 | 1.7 |

Source: 1. IMF, Financial Statistics Yearbook, 1987

- World Bank, Pakistan Health Sector Review: Financial and Economic Aspects, (Michael Mills), November, 1982
- GDP, Planning Commission and Finance Ministry provided for the fiscal years 1983-1988.

Note: 1. Estimates of total GDP expenditure for the fiscal years 1987 and 1988 were provided by the Ministry of Finance.

- The deflator used to calculate real expenditures is the GDP deflator as defined by the IMF.

during this period, total (recurrent and capital), real (deflated by the GDP deflator with 1980 = 100) spending increased at an average annual rate of about 8.1 percent. Unlike many countries where the growth rate tends to be higher for recurrent expenditures, the greatest increase was for capital improvements and expansion of the public health activities, with the annual increase being over 15.5 percent. Recurrent expenditures increased at about 5.3 percent per year over the same period.

While health spending has increased rapidly over the past fifteen years, the share which health represents of total GDP expenditures, has declined slightly over the period. On average the health share has been about 4.5 percent during this period. During the last five years, however, the share on average has been below 4 percent. Thus, it appears that public spending for health has not grown as rapidly as for other publically provided goods and services.

Another way to analyze these expenditure trends is to ascertain what the GDP has spent for health activities on a per capita basis. These data are also presented in Table 4. They show that over the last fifteen years, combined capital and recurrent real per capita health expenditures have doubled from about 18 rupees in 1973 to an estimated nearly 37 rupees in FY 1988. What is equally instructive in these trends is that the real per capita recurrent expenditures have remained virtually constant, fluctuating around an average of about 16 rupees.

Thus, these data also indicate that the growth in health expenditures by government has been via the capital account.

Two health programs of interest in the capital account are the a) preventive health and b) rural health programs. For a period of several years during the mid 1970s these two programs comprised over 75 percent of the total capital account expenditures. However, during the last five years, since 1983, the share represented by these two programs dropped markedly to around ten percent, in spite of the major public health EPI. These trends suggest that while a substantial programmatic effort has been launched by many donors, including USAID, to expand child survival activities via EPI and an ORT program, that other capital projects have been allocated larger shares of the resources.

This trend is evident in the data on real per capita public health program expenditures which is presented as the last column in Table 4. These data show that with the exception of the mid 1970s, when the smallpox eradication program was active, real per capita public health expenditures has fluctuated between one and two rupees per person per year, or around five percent of total GDP health expenditure in the most recent year 5/. This expenditure pattern indicates that public health programs are quite modest, given the competing claims for GDP resources, even when sizeable funding support is available from external sources.

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In summary, GDP health expenditures have grown absolutely over the 1973-1987 period. At the same time, GDP spending for all other goods and services appears to have increased more rapidly, so that the share devoted to health has declined from around 4.5 percent to perhaps 3.5 percent in 1987. After adjusting for inflation and population growth, the data show that most of the growth in health expenditures has occurred in the capital account. However, when an analysis of the capital budget was performed, the data showed that while spending for public health programs was significant in absolute terms, the amount allocated to public health programs has remained constant at the low figure of one to two rupees per person per year.

An Analysis of ORT Cost Savings

From an economic perspective, new health technologies which are available must either justify themselves by reducing the cost of treating a given illness, or by reducing the cost per unit of health achievement, which in this project is the saving of children's lives. In this section, an analysis is presented which shows the estimated total and net cost saving of a national program designed to use ORT in all hospitals in the country. This analysis is illustrative since the precise information which is necessary for conducting such calculations are not readily available. In particular, information about the a) number of cases treated on an in- and outpatient basis; b) share of diarrhoea cases treated on an in- and outpatient basis; c) the

proportion of those cases which are satisfactorily treated via the application of ORT; d) the average length of stay for diarrhoea cases; and e) the cost of treating diarrhoea cases using other therapeutic interventions has not been obtained in a scientific manner.

However, assumptions by international experts have been obtained and information about hospital costs were obtained from other studies in Pakistan and assumptions about plausible ranges over which certain key parameters might be expected were arranged and presented in the first page of Table 5. Using this information and the related assumptions about how to calculate the cost savings, estimates of the range of these savings are presented in the second page of Table 5. The results of these calculations suggest that with the wide use of ORT in the hospitals alone, the inpatient and outpatient savings would amount to between 0.3 and 1.8 billion rupees per year. In addition, these calculations indicate that the preponderance of the savings would accrue from the use of ORT in the ambulatory setting.

Unfortunately, the cost of establishing an ORT corner or Diarrhoea Treatment Unit in each of these hospitals has not been precisely calculated yet. However, if the cost per DTU or Corner is less than about 470 thousand rupees per corner to operate (using the most conservative estimate of the savings presented in Table 5) the country should realize some saving from the wide

Table 5: Illustrative Hospital Cost Savings From Expanding the Use of DRT in Pakistan

I. Inpatient Cost Savings

1. Presently Admitting 15% of the diarrhoea cases.
2. With the use of DRT will reduce the admission of diarrhoea cases from 15% to 5%.
3. Admitted Diarrhoea Cases occupy 30-45% of the Peads Beds.
4. Ave peads ward in Dist hosp is about 25 beds.
5. Ave occupancy rate in Peads Ward varies from 90% in the Summer, the time when diarrhoea is most prevalent to a low of 70% in the non peak diarrhoea period.
6. Ave length of stay for a normal diarrhoea case is 3 days.
7. Ave. length of stay in district hospital for all patients is about 5.5 days.
8. Ave cost per case in dist Hosp is about 75 rupees (GOP Health Financing Study, 1987).
9. Ave cost per patient day is 14 rupees.
10. Additional cost per IP diarrhoea case is 50 Rp for 2 bottles of IV plus tubing and 25 Rp of additional medicine.
11. The average size hospital is approximately 100 beds, per data from the GOP Seventh Plan and World Bank. There are about 670 hospitals in the country as of January 1986.
12. Costs of the DRT DTU is the alternative costs required to save the above IP costs. It is estimated that the average annual cost of operating a DTU is .

II. Outpatient Cost Savings

1. The average number of outpatients patients treated at a typical hospital in Pakistan is about 500 patients per day.
2. Diarrhoea cases comprise between 10 and 20 percent of the total number of outpatient cases on average with a larger share being seen in the summer and a smaller share during other times during the year.
3. DRT treatment is assumed to be a sufficient treatment to address 90 percent of the outpatient cases of diarrhoea.
4. The cost of treating a diarrhoea case without DRT is assumed to be equal to the median charge by a private physician for a visit which is 14 rupees, according to the GOP, Health Financing Study, 1987. An alternative figure of 5 rupees is also used for sensitivity testing purposes.
5. The cost of medicines used to treat an outpatient case of diarrhoea in Pakistan is assumed to equal the median charge by a private chemist according to the GOP, Health Financing Study, 1987 which varies from 20 rupees for those who self refer (by going directly to the chemist) to 70 rupees for those who come with a prescription.

III. Estimated Annual Hospital Cost Saved (EACSH) = (IP Cost Saving (IPCS) + OP Cost Saving (OPCS)) - DRT DTU Costs

Thus, EACSH = (IPCS + OPCS) - DRTDTU, where,

$$\text{IPCSH} = \{(\text{No of Peads Beds per Hosp (PBDS)} * \text{Share of Peads Beds With Diarrhoea Cases (DiarShr)} * \text{Net reduction in Diarrhoea Cases (DMINUS)} * \text{Ave occupancy rate in Peads Beds (OCCP)} * \text{No of Days per Year (365)} * \text{Ave Cost Per Patient Day (Cost1)}) + \{(\text{PBDS}) * (\text{DiarShr}) * (\text{OCCP}) * (\text{DMINUS}) * (365) / (\text{ALOSDiar}) \text{ Average Length of Stay for Diarrhoea Cases} * \text{Additional Cost per Diarrhoea Case (IVMED)}\} * \text{No of Hosp in Country (HOSP)}$$

and,

$$\text{DPCSH} = \{(\text{No. of patients per OP clinic per day (VISITS)} * \text{Share of Visits which are Diarrhoea Cases (DVISITS)} * \text{Ave Charge per Case (PRICE)} + \{(\text{VISITS}) * (\text{DVISITS}) * \text{Ave Charge for Medicine at a Chemist (MEDPRICE)}\} * (\text{HOSP}) * (365))$$

Table 5: Illustrative Hospital Cost Savings From Expanding the Use of ORT in Pakistan (page 2)

AN EMPIRICAL ESTIMATE OF THE HOSPITAL SAVING

I. Alternative Inpatient Cost Saving Estimates

| IPCSH | PBDS | DiarShr | DCCP | DMINUS | 365 Cost1 | IP I | ALDS | IVMED | IP II | | |
|-------|------|---------|------|--------|-----------|------|-------------|-------|-------|----------|--------------|
| I | | 25 | 0.3 | 0.8 | 0.67 | 365 | 14 20,542.2 | 3 | 75 | 36,682.5 | |
| II | | 25 | 0.45 | 0.8 | 0.67 | 365 | 14 30,813.3 | 3 | 75 | 55,023.8 | |
| | | | | | | | | | | | HOSP |
| | | | | | | | | | | | TOT IP |
| | | | | | | | | | | | 670 |
| | | | | | | | | | | | 38,340,549.0 |
| | | | | | | | | | | | 670 |
| | | | | | | | | | | | 57,510,823.5 |

II. Alternative Outpatient Cost Saving Estimates

| OPCSH | VISITS | DVISITS | DMINUSII | PRICE | 365 OP I | MEDPRICE OP II | HOSP | TOT OP | | |
|-------|--------|---------|----------|-------|----------|----------------|------|-----------|-----|---------------|
| I | 500 | 0.1 | 0.9 | 14 | 365 | 229,950 | 20 | 328,500 | 670 | 374,161,500 |
| II | 500 | 0.2 | 0.9 | 14 | 365 | 459,900 | 20 | 657,000 | 670 | 748,323,000 |
| III | 500 | 0.1 | 0.9 | 5 | 365 | 82,125 | 20 | 328,500 | 670 | 275,118,750 |
| IV | 500 | 0.2 | 0.9 | 5 | 365 | 164,250 | 20 | 657,000 | 670 | 550,237,500 |
| V | 500 | 0.1 | 0.9 | 14 | 365 | 229,950 | 70 | 1,149,750 | 670 | 924,399,000 |
| VI | 500 | 0.2 | 0.9 | 14 | 365 | 459,900 | 70 | 2,299,500 | 670 | 1,848,798,000 |

III. Estimated Range of Total Annual Hospital Inpatient and Outpatient Savings From the use of ORT DTU's (in millions of rupees)

| Inpatient Savings Scenarios | Outpatient Savings Scenarios | | | | | |
|-----------------------------|------------------------------|-------|-------|-------|-------|---------|
| | I | II | III | IV | V | VI |
| I | 412.5 | 786.7 | 313.5 | 588.6 | 962.7 | 1,887.1 |
| II | 431.7 | 805.8 | 332.6 | 607.7 | 981.9 | 1,906.3 |

IV. Estimated Range of Annual Net Hospital Cost Savings, Given the Cost of Operating the ORT DTU's

spread use of this technology in the treatment of diarrhoeal diseases in Pakistan. Using a liberal estimate of about 50 thousand rupees to annually operate a Corner or DTU in order to pay staff, obtain the necessary supplies and equipment and amortize any capital additions, it is clear that the savings are likely to be substantial 6/.

Depending upon the utilization of RHC's and BHU's, additional savings may be forthcoming by the use of similar treatment corners in those health facilities as well. Simulations of these savings are necessary and should be analyzed prior to the launching of a national program to establish these corners on a national basis.

An Analysis of the Achievements of the EPI in Pakistan

In Table 6 socio-economic data are presented from the World Bank's, World Development Report, 1987 for Pakistan and some of its neighboring Asian countries in order to establish the comparative context within which to review the progress of the EPI in Pakistan. This table shows the social situation in Pakistan in terms of population growth, infant and child mortality, life expectancy, contraceptive prevalence, food supplies and health personnel availability in comparison with a number of its neighbors. These data show that the country has lagged behind many of its neighbors in improving the health

Table 6: Socio-economic and Health Status Indicators Of Pakistan and Other Countries in Asia

| Country Name | GDP Per Capita \$ 1985 | Rate of GDP Growth per Capita 65-85 | Rate of Population Growth 80-85 | Life | | Crude Birth Rate 1985 | Total Fertility Rate 1985 | Percentage of Married Women of Childbearing Age in 1984 Contracepting | Population per Physician 1981 | Population per Nursing Person 1981 | Per Capita Daily Calorie Supply 1985 | |
|--------------|------------------------------|---|---------------------------------------|--------------------------------|----------------------------------|-----------------------------|---------------------------------|---|-------------------------------------|--|--|-------|
| | | | | Expectancy at Birth 1985 | Infant Mortality Rate 1985 | | | | | | | |
| Bangladesh | 150 | 0.4 | 2.6 | 51 | 123 | 18 | 40 | 3.7 | 25 | 9,700 | 19,400 | 1,899 |
| Burma | 190 | 2.4 | 2.0 | 59 | 66 | na | 30 | 3.0 | 5 | 4,900 | 4,890 | 2,547 |
| Egypt | 610 | 3.1 | 2.8 | 61 | 93 | 11 | 36 | 3.3 | 32 | 760 | 790 | 3,263 |
| India | 270 | 1.7 | 2.2 | 56 | 89 | 11 | 33 | 3.0 | 35 | 3,700 | 4,670 | 2,189 |
| Indonesia | 530 | 4.8 | 2.1 | 55 | 96 | 12 | 32 | 2.8 | 40 | 12,300 | na | 2,533 |
| PAKISTAN | 380 | 2.6 | 3.1 | 51 | 115 | 16 | 44 | 4.6 | 8 | 2,910 | 5,870 | 2,159 |
| Philippines | 580 | 2.3 | 2.5 | 63 | 48 | 4 | 33 | 3.0 | 32 | 6,710 | 2,590 | 2,341 |
| Sri Lanka | 380 | 2.9 | 1.4 | 70 | 36 | 2 | 25 | 2.3 | 57 | 7,460 | 1,260 | 2,385 |
| Thailand | 800 | 4.0 | 2.1 | 64 | 43 | 3 | 26 | 2.2 | 65 | 6,870 | 2,140 | 2,462 |

Source: World Bank, World Development Report, 1987, (Washington D.C.: World Bank, 1987)

status of the people in spite of the economic growth which the country has achieved.

Given this situation, it is important to note the progress which the EPI has achieved in the country since 1982 when the program was launched. In 1982 full immunization coverage of the most vulnerable group in the population, the under one year of age group, was only 2.3 percent of the vulnerable group. By 1986, four years after the program had started, estimates of the national full coverage rate among this critical group varied between 41 and 60 percent ^{7/}, and it is estimated that coverage will approximate nearly 80 percent nationally by the end of 1987.

In the Punjab, the coverage of the EPI in many districts has exceeded 80 percent and in those areas, the program has entered a maintenance phase. However, the coverage of the most vulnerable group, the under one year of age group, in other areas of the country has not achieved such high levels yet. In part the lower coverage levels are due to the lack of measles coverage and the establishment of mobile teams throughout these areas, although the data suggest that progress has been made throughout the country, including in Baluchistan and NWFP. Thus, in these areas where the coverage has not achieved the levels of the Punjab, the EPI strategy is to continue to improve upon the progress made in the first phase of the effort.

The performance data clearly suggest that in the near future surveys designed to estimate movement in the infant mortality rate should show a decline. One such survey finding from the household health expenditure survey taken in 1986 was the their estimate of infant mortality was around 100 per thousand, which if true, suggests that health status progress is occurring in comparison with the figure of 115 shown in Table 6 for 1985 from the World Development Report. While it is too early to say what precise progress has been made the numbers are suggestive of a trend toward improvements in health status. It is assumed that indicators of demographic change such as fertility indicators and contraceptive prevalence will begin to reflect these important health improvements soon.

These improvements have been achieved via the concentrated efforts of the country's EPI and other socio-economic changes which have been occurring in the country. While it is a bit presumptive to assume that the entire improvement in the IMR can be attributed to the EPI, it is instructive to reflect on the calculation of estimated expenditures on EPI over the 1986-88 as defined in the document, Articles of Understanding, National Plan of Action for the EPI, 1986-88, (June 1986), by GOP et.al., in comparison with a range of estimates of the number of infant and child deaths averted over the same period. These illustrative calculations are presented in Table 7.

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Table 7: Investigations into the Costs and Impacts of Pakistan's EPI, 1986-88

Costs of the EPI Program in Pakistan

Based on the Articles of Understanding Between the GOP and WHO, UNICEF, and USAID, for the Pakistan EPI During 1986-88, Expected Costs of the Program are Delineated Below (in millions of U.S. dollars).

| Cost Elements | GOP | Donors | Total \$ | Total |
|---------------------------------------|---------------|--------------|---------------|----------------|
| | Fed/Prov. | Total | | Pak. Rps |
| | | | | 17.43 |
| I. Recurrent Costs | | | | |
| 1. Salaries & Allowances | 12.102 | 0.378 | 12.480 | 217.526 |
| 2. Supplies & Equipment | 8.061 | 0.150 | 8.211 | 143.118 |
| 3. Cold Chain/Transport | 1.536 | 0.374 | 1.910 | 33.291 |
| 4. Vehicle Op. & Maint. | 0.486 | 0.000 | 0.486 | 8.471 |
| 5. Media & Health Sd. | 0.400 | 0.000 | 0.400 | 6.972 |
| 6. Inform. System | 1.023 | 0.000 | 1.023 | 17.831 |
| 7. Staff Training | 0.084 | 0.740 | 0.824 | 14.362 |
| 8. Monitoring & Eval./Res. | 0.024 | 0.065 | 0.089 | 1.551 |
| 9. Contingencies/Misc. | 1.289 | 0.045 | 1.334 | 23.252 |
| Total Rec. Cost | 25.005 | 1.752 | 26.757 | 466.375 |
| II. Capital Costs | | | | |
| 1. Cold Chain Equip. | 0.000 | 2.110 | 2.110 | 36.777 |
| 2. Vehicles | 0.000 | 2.513 | 2.513 | 43.802 |
| Total Capital Costs | 0.000 | 4.623 | 4.623 | 80.579 |
| Total Rec. & Capital Costs | 25.005 | 6.375 | 31.380 | 546.953 |

Estimates of the Deaths Averted (Based on Calculations and Assumptions Found in Dr. Stanley O. Foster Evaluation Report of Oct. 1986, pg.3)

I. Estimate for 1986

Total Deaths Prevented per Year 74,120

Share of Deaths Potentially Averted via Complete Immuniz. 30.1

II. Estimate for 1986-88

Estimate (1): Three fold 1986 est. 222,360

Estimate (2): 5%/yr growth in 1986 233,663

Estimate (3): 10%/yr growth in 1986 245,337

III. Estimated Cost per Death Averted, 1986-88

| | U.S. \$ | Pak. Rps |
|--------------|---------|----------|
| Estimate (1) | 141 | 2,460 |
| Estimate (2) | 134 | 2,341 |
| Estimate (3) | 128 | 2,229 |

Table 7 provides three types of information, all of which are based on estimates, and not actual figures. First, the table presents an estimate of the total cost of EPI over the 1986-88 period, based on national and provincial GOP budgets, and what the three donors (WHO, UNICEF, and USAID) which supported this effort were prepared to commit in 1986. The estimate assumes that the figures for FY 1986 GOP provincial expenditures prevailed for each of the three year period, FY 1986-88. In addition, without any information readily available on prior year capital inputs in the form of cold chain and vehicles, it was assumed that the estimated capital costs presented for the 1986-88 period might provide one possible estimate of the capital cost actually used during the 1986-88 period.

The cost estimates show that about 31.4 million dollars (U.S.), or nearly 547 million rupees were allocated to be spent on EPI during the 1986-88 period. Most, i.e., about 93.5 percent, of the envisioned recurrent cost of the program (26.8 million dollars) were to come from various GOP budgets, and all of the capital costs which consists of the cold chain equipment and vehicles would be provided by the donors.

The Table also provides an estimate of the impact of the 1986-88 EPI in Pakistan based on the 1986 report of Dr. Stanley Foster 8/. Dr. Foster has estimated the disease specific deaths averted for the seven immunizable diseases incorporated into EPI by ascertaining the disease specific immunization coverage rate,

vaccine efficacy, case fatality rate for each disease, the attack or incidence rate of the disease, and the target population. On the basis of these calculations and assumptions, he calculated that about 74 thousand child and infant deaths were averted, or about 30 percent of the total potential deaths averted if the immunization program had prevented all potentially preventable deaths (in 1986 this number was estimated by Dr. Foster to be about 246 thousand infant and child deaths). The estimate of the number of the deaths averted in 1986 was used in three alternative calculations to provide a first set of estimates of the number of deaths averted over the period, 1986-88. These three estimates are presented in Table 7 and show that the number of deaths averted via the immunization effort may be between 222 and 245 thousand deaths 9/.

Based on the information presented above about cost and impact, a rough calculation was made of the cost per death averted. These calculations are summarized at the bottom of the table in both U.S. dollars and Pakistan rupees. The calculations show that the cost per death averted in Pakistan is in the range of 125-140 dollars. Unfortunately comparative figures for other EPI interventions, other health programs, or even other sectoral impacts within Pakistan or other developing countries are not readily available to the author at this time. However, as one possible bench mark, Howard Barnum estimated on an ex-ante basis, what the cost per death averted via EPI might be in Kenya in 1979 10/, which was about \$85 (in 1987 dollars 85 1979 dollars would

be about 128 dollars 11/. Given that Barnum's estimate was based on an hypothetical program, the figure obtained from the calculations presented in Table 7 appear to be reasonable and within the bound of a well implemented program 12/.

In summary, Pakistan's EPI appears to have accomplished a great deal in the last five years. Coverage in many parts of the country has reached nearly the entire eligible population of children and the level of tetanus coverage is expanding as well. In addition, although the exact figures are unavailable about the cost and the impact, in terms of deaths averted, the admittedly rough calculations and comparative information suggests that the program is operating in an effective and a cost-effective manner.

Role of the Private Health Sector in Child Survival Activities

It has been recently estimated that most medical care, with the exception of preventive services such as immunization, are provided by private health providers from private physicians, hospitals and clinics, as well as chemists, hakims and TBAs 13/. Only about 25 to 30 percent of total utilization as reported in a household expenditure survey is provided in government hospitals and rural health facilities, such as rural health centers, and basic health units.

The number of medical school graduates has increased in recent years to about 4,000 per year due to the expansion of the

number and size of medical school classes. This level of new entrants into the number of registered physicians in Pakistan (46,494 in 1986) has created a problem of unemployment among physicians, particularly in urban areas. This situation has lead the GOP to adopt a number of policies to improve employment opportunities for physicians 14/.

Besides the rapid buildup in the number of physicians and the attendant policies of the GOP to employ them, there are a number of physicians who practice privately on a full time basis (as of January 1984 there were nearly 6,000 full time general practioners in the country). A number of specialist physicians also work privately, often in their own private hospitals (in 1986 there were 165 private hospitals). Finally, there are a number of private retail pharmaceutical outlets. The number of private chemists is large and they often not only dispense medicines, but also perform diagnostic functions as well.

In addition to the aforementioned modern practioners, there are a number of variously categorized private homeopaths and hakims which amount to nearly 50,000 individuals as of June 1984. It is also estimated that an equal number of dais and TBAs are working throughout the country.

This above review highlights the breadth of the private health sector. As indicated above, both utilization and resource

flows reflect this breadth as well. Since they are widely spread throughout the country it is conceivable that incentives can be arranged for them to extend the GOP delivery system beyond its present coverage and provide both ORT and immunization services to a larger share of the population. Since these individuals are private providers of services, it is unlikely that many will be willing to provide ORT and immunization services without remuneration in some form.

Research from other developing countries suggests that it costs between four and fifteen dollars (at present rates of exchange, this amounts to between 70 and 260 rupees) to fully immunize a child for measles, DPT, polio, and tuberculosis 15/ depending upon the delivery system involved. Unfortunately, it is not presently possible to obtain the necessary information to make a similar set of calculations for Pakistan at this time, however, it is clear that as the country enters a maintenance phase in many heavily populated parts of the country, it will be important to conduct a cost-effectiveness analysis of the delivery modalities utilized so far and whether they will continue to be the cost-effective modality in a maintenance phase.

If the above cost range per fully immunized child from other countries are inclusive of what might be found in a study of Pakistan's EPI, it suggests that some form of incentive program for private physicians and perhaps other care providers

could be implemented with the development of appropriate monitoring and control by the regional departments of the MOH or the NIH. This is particularly true when a) there are unemployed medical school graduates who could be employed by presently existing private clinics in urban areas to develop a preventive practice, and b) the median fees reported by households as having been paid to private practitioners in Pakistan range between 50 and 80 rupees per visit (which typically includes some form of medication as well) 16/. Some form of reimbursement per fully registered immunized child could be negotiated and monitored on a pilot basis.

A different set of issues are involved in gaining the cooperation of private physicians and chemists in promoting the use of DRT. DRT directly competes with more costly, and given standard markup pricing policies employed by both chemists and physicians, more profitable alternate treatment modalities. Unless the GOP is willing to tackle the politically difficult issue of essential drugs and ban the production, import and use of alternative products for the treatment of diarrhoea, alternative incentive programs must be devised which may include both payments, high allowable markups, and in kind benefits.

A program has been recently launched in India with the Indian Medical Association to try to improve the knowledge among private physicians about the efficacy of DRT as one way to expand the acceptability and improve the use of DRT 17/. The

success of this effort must certainly be monitored for possible application in Pakistan. However, it is difficult to anticipate how the effort will change the behavior of many physicians without an alteration of the economic incentives which presently exist in favour of the existing behavior or without regulatory controls. Given the substantial benefits which could accrue to Pakistan if ORT were widely used just in the hospitals, (refer to Table 5 above), it may be possible that some form of incentive program, along with a share of cost recovery involved, could be devised and tested during the life of the project. This resistance may also disappear if a mass media campaign educated the population to demand this treatment modality when certain symptoms presented.

In summary, there are many private medical practitioners of health care services in Pakistan. Recently available information show that private providers see the largest share of those who are ill and that they obtain the largest share of total expenditures on health care. Some evidence presented above suggests that it may be economically feasible for the GOP to introduce a reimbursement program for immunizations performed by private providers. It will be difficult to change the prevailing view by private practitioners which is against the use of ORT. However, with a national media campaign to educate consumers, some selective use of regulation of anti-diarrhoeal medication, and possibly some incentive program, it is expected that this resistance can be overcome.

Issues of Cost Recovery in Child Survival in Pakistan

As was indicated above in the section on the role of the private sector, fee-for-service medicine is the norm in Pakistan. However, at the present time, health services, which are provided by facilities operated by the GOP, charge very little for the services rendered. For example, the recently completed GOP, Health Financing Study, (1987) reports the mean and median cost per visit at GOP hospitals and rural health facilities (RHCs and BHUs) as 16 and 1, and 7 and 2 rupees, respectively. When the provincial government of the Punjab in FY 1986 announced a number of fee increases for primarily inpatient care in hospitals under its jurisdiction, it was forced under intense political and consumer pressure to withdraw them. Further, the national government initially proposed a FY 1987/88 budget in which a number of tax and user charges were proposed. This set of revenue budget proposals were widely criticized by the members of parliament and the public generally. Given this recent withdrawal of proposals for increased user charges in GOP facilities, it is viewed by most observers that it is unlikely that further efforts to extend and expand such charges will be fruitful until after the 1990 national elections.

In spite of these sobering political realities, both a theoretical case as well as recently obtained empirical evidence from Pakistan suggests that user charges are feasible and realistic within the context of a child survival strategy for

the period 1988-1993. The theoretical case for cost recovery is particularly compelling for ORS packets where the individual and the household capture a large share of the direct benefits of averting death from any given bout of diarrhoea. In the case of immunizations, the individual and/or the household is not as likely able to value the significant social externalities which accrue to the society at large when a major disease is eradicated, as was the case of smallpox, or controlled. However, to the extent that people in Pakistan value the protection which full immunization affords, they theoretically would be willing to pay for a portion of the cost of that protection. In a number of African countries, for example, cost recovery programs have been implemented for immunization programs via such strategies as a small charge for the immunization record card 18/. In Pakistan, the 100 percent yes response to a question on the willingness-to-pay a charge of at least 10 rupees for immunization services indicates that the people value such services at least as much as 10 rupees 19/. The number of private entities (both private health providers as well as NGOs) are in a position to test the extent to which user charges can be implemented in Pakistan without public opposition. Alternative ways to ensure that the indigent obtain care may be a way to dampen the existing critical public response. With additional information obtained from the experiments and an improved media strategy developed for introducing such a policy, cost recovery appears to be a realistic objective during the life of this project.

1. There is a large unofficial economy in Pakistan fueled by the war in Afganistan and the illegal earnings from drugs. The size of this economy is unknown but substantial and plays a major role in generating economic activity in many border areas.

2. One of the principle reasons for Pakistan's trade gap has been the significant increase in the price of oil since 1974. In 1974 oil comprised less than 10 percent of the total import bill. By 1982, oil comprised over 30 percent and in 1986 was still around 20 percent after the significant decline in oil prices during that year. World Bank, Pakistan Sixth Plan Progress and Future Prospects, Report No. 6533-Pak, (Washington D.C.: World Bank, February 26, 1987).

3. page 2 and 3, GOP, Annual Budget Statement, 1987-88, (Islamabad: Finance Division, 1987).

4. Estimates of the GOP total expenditure for the fiscal years, 1987 and 1988 vary from a low of 131,939 and 151,071 million rupees respectively as provided by an estimate provided by the Ministry of Finance on Nov. 18, 1987, to a high of 158,762 and 199,362 as defined in the GOP, Annual Budget Statement, 1987-88, June 4, 1987. The range of these different figures can vary the estimated health sector share of total estimated expenditures from a low of 3.6 to a high of 4.3 percent in 1987, and 3.4 to 4.5 percent in 1988. The statement in the text is true even if the optimistic share estimates are used.

5. These data will be analyzed further in a subsequent section in light of the information about the health outcomes of the EPI program launched in 1983.

6. The calculations presented do not shadow price any inputs. Since occupancy rates are not 100 percent, it is clear that the opportunity cost of a certain share of the hospital is zero, at least in the short run, such that the economic benefits may be over estimated accordingly. A more in depth analysis and more detailed information is required in order to adjust the calculations for these issues. The USAID in Pakistan has requested that a special cost-effectiveness study be launched of the various child survival interventions and the Planning Commission is clearly interested in such a study as well.

7. Two important sources of information differ in their coverage estimates. USAID, in their Child Survival Strategy Statement for Pakistan, April 22, 1987, page 8, cites a figure of 41 percent whereas the EPI cell of the National Institute of Health, GOP cites an estimated annual target figure for 1985-86 for the coverage of this group as being 60 percent in GOP et.al. Articles of Understanding, National Plan of Action for the Expanded Programme on Immunization, 1986-1988, June 1986.

8. See Dr. Stanley O. Foster, "Pakistan Expanded Programme on Immunization Surveillance Evaluation, October 18-30, 1986", Centers for Disease Control, Atlanta, Georgia, 1986, Mimeced.

9. It is important to reiterate at this point that it is unknown what the exact number of deaths may have been averted via EPI since some of the information which may have been valid for 1986 may not now be so due to changes in coverage, and many other factors. It is clear that for continued program effectiveness, a more careful set of calculations are required, based on present information. Thus, a special cost effectiveness study of the EPI in Pakistan is warranted for managerial and policy decision making.

10. Table 5, Annex D, Howard Barnum, "Cost-Effectiveness Study", January 1980, in AID, Project Paper: Combatting Childhood Communicable Diseases, Project Number 698-0421, September 15, 1981.

11. The annual rate of inflation for the U.S. during the 1980-1985 period was reported to be 5.3 percent per year. See Table 1 in the Appendix of the World Bank, World Development Report, 1987.

12. Information in the GOP study, GOP, Health Expenditure in Pakistan: A Financing and Expenditure Study, (1986), op.cit., report that the cost per fully immunized child for the period 1982-85, was 52.3 rps., excluding the foreign exchange cost. Without further information it is difficult to know whether this figure is comparable to the figure reported in the text.

13. GOP, Health Expenditure in Pakistan: A Financing and Expenditure Study, (1986), (for Ministry of Planning and Development by the Institute of Health Economics and Technology Assessment and United Computers Ltd.).

14. The GOP has recently implemented a number of policies to increase the employment of recent medical graduates many of whom in the past went to the Gulf or migrated to European and North American countries. These policies include: a) posting of male physicians at all BHUs (2686 of them in the country as of 1986); b) posting a second male physician at each RHC (402 of them in the country); c) introducing a second shift at all urban hospitals (390 GOP hospitals are located in urban areas); d) improving the staffing patterns at district hospitals; e) improving emergency unit care via increased staffing at hospitals; f) posting physicians to public schools in the provinces of Sind and the Punjab (the populations of these two provinces comprise nearly 80 percent of the country and there are about 86,500 primary, middle, and secondary schools as of 1985); and h) developing a loan fund of 200 million rupees for use during FY 1986 for private physicians to apply for in order to set up a private practice with a larger amount potentially granted to persons who want to establish a rural based practice (this

fund could assist up to 2,000 physicians during that year). See the GOP, Report of the Working Groups on the Seventh and Perspective Plans: Health and Nutrition Sector, December 1986, and especially the Report on Medical Education.

15. See Howard Barnum, "Economic Analysis, Annex C," AID Project Paper for the Combating Childhood Communicable Diseases (CCCD) Project, Africea Bureau, September 15, 1981; Donald Shepard, Ivory Coast Study, 1983, and Logan Brenzal, REACH Project Report on Mauritania, 1987.

16. This possibility is further reinforced by the response to a hypothetical willingness to pay question about whether households would be willing to pay five and ten rupees for the a) vaccination of a child and b) treatment of a child with diarrhoea at a government clinic which would provide improved service in the recently completed GOP, Health Sector Finance and Expenditure Study, Draft Final Report, 1987. 100 percent of those who were asked the question about vaccinations responded that they would be willing to pay at least 10 rupees and nearly 90 percent responded that they would be willing to pay at least 10 rupees for a child afflicted with diarrhoea.

17. This effort has been developed by Dr. John Rohde via the USAID program in India.

18. See the documentation from such AID funded projects as the CCCD project in which EPI services are being made more widely available throughout sub-saharan Africa.

19. See the GOP, Health Financing, op.cit., 1987; and footnote above in which the exact wording of the question in the survey is reproduced.