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PROGRAM PERFORMANCE II

**The Assessment of Asian Family Planning Programs
1960-1985**

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with

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PREFACE

1. The Study

This is a report on the second phase of a project to assess the performance of Asian family planning programs. The first phase was supported by USAID under contract number DPE-0632-00-1030-00, project number 963-0632. That project covered 24 Asian countries from 1950 through 1980, including data on social, economic, and political conditions, as well as data on those countries's family planning programs from their inceptions through 1980. The results of that project were reported in Program Performance: The Assessment of Asian Family Planning Programs by Gayl D. Ness, J. Timothy Johnson and Stan J. Bernstein. Copies of the report are available from the University of Michigan Center for Population Planning

The current project, phase II, is supported by the Population Council, under a grant from USAID. For Phase II, we have extended the data set through 1985, giving us 35 years of social, economic, political and family planning data. Since there was almost no national family planning program activity before 1960, however, this report covers the period 1960 through 1985.

As in the first phase of the study, we received a great deal of assistance from our "country correspondents". Many from the previous project helped us in this one by providing data on country programs for the period 1980-1985, using the same data collection forms we had generated for the first phase. We gratefully acknowledge the assistance of the following persons, who served as our country correspondents.

The assistance of these good friends is deeply appreciated, but they should not be held responsible for any of the interpretations made of the data they have helped provide.

Although all country correspondents and associate authors have contributed greatly to the project, the interpretations are the responsibility of the project director alone.

Country Correspondents

Country	Correspondent
Bangladesh Fiji Hong Kong India Indonesia Malaysia Pakistan Philippines South Korea Sri Lanka Singapore Taiwan	Dr. A. Alauddin Mr. Peter Singh Mrs Peggy Lam Dr. Om P. Sharma Dr. Haryono Saryono Dr. Boon-Ann Tan Mr. Gulam Y. Soomro Dr. Perla Q. Makil Dr. See-Baik Lee Mr. Albert Fernando Dr. Paul Cheung Dr. Te-hsiung Sun

For the first phase of the project there were two country changes. Pakistan became Pakistan and Bangladesh in 1970, and North and South Vietnam became one country in 1975. There were no comparable country changes for the period 1981-1985. To adjust, we have extended Bangladesh data back to 1960, and have combined all pre 1975 Vietnamese data into one case. Thus we include here data for 23 Asian countries, as noted below. Of these only 15 currently have national family planning programs for which data are readily available. We were unable to obtain data (or even responses) from Afghanistan, Iran, and Vietnam, which do have programs, though those in the first two countries are of very limited scope. Further, neither Burma, Kampuchea, Laos, Mongolia, nor North Korea have identifiable national programs to limit fertility, although they may well provide some contraceptive services in maternal and child health or rural primary health programs. Later in this report, we separate the 23 countries into the 15 with program data, and the 8 without. They are shown in the table below.

Program Countries	Non-Program Countries
Bangladesh Fiji Hong Kong India Indonesia South Korea Malaysia Nepal Pakistan Papua New Guinea Philippines Singapore Sri Lanka Taiwan Thailand	Afghanistan Burma Iran Kampuchea North Korea Laos Mongolia Vietnam

2. Time Series and Individual Country Analyses

In our earlier analysis we constructed a single model to explain program performance, using all country and year data available in one data set. That has proved to be inappropriate due to problems of serial autocorrelation. We spent a great deal of time and energy in this analysis attempting deal with this problem, but the results have been unsatisfactory. Here we describe two basic tactics that we employed.

First, we attempted to purge the serial autocorrelation by use of Durban-Watson transformations, which are designed to indicate acceptable levels of autocorrelations. Most of our transformed data lie outside the acceptable limits. We undertook a variety of transformations with different sets of countries and years, but still found no acceptable results. For a great deal of time and energy, the results are negative. In effect we cannot use all of the country experiences together in one data set. From this perspective, it is appropriate only to use time series for individual countries over the lifetimes of their program efforts.

There is one other possibility, however. It is possible that the patterns of time series we see are significantly affected by some other sets of conditions or events that we are overlooking. We dealt with this possibility by arguing theoretically that the things that affect individual country program movements over time are political and administrative, and economic. Top political leaders may change policy orientations, either by making explicit statements, by creating or destroying appropriate structures, by changing leadership personnel, or by shifting resources. Further, external economic conditions may provide large windfall gains to the country, which can increase allocations to family planning. External economic conditions can also greatly restrict resource availability. We have seen examples of all types of changes in our Asian countries, and can relate program performance to such changes. A few examples must suffice.

1. Pakistan provides the most dramatic example of positive changes around 1981. President Zia moved family planning from health to Planning and then supported the creation of a new Population Welfare Department within the Planning Ministry. He also appointed to that new Division a senior civil servant, Kareem Iqbal, who proved especially effective. President Zia provided supportive public statements, and made available large amounts of domestic resources for the program. Thus new public statements, new organizational structures, new appointments, and new resources were provided to the program. The program itself undertook significant internal restructurings, and generated new laws to provide more resources to private associations, and to increase the availability of contraceptives. The results appear to have been positive and substantial. Figure 2.4 in Chapter 2 shows the impact of these changes.

2. In the opposite direction, Malaysia's leadership showed considerable ambivalence over family planning after the May 1969 ethnic riots. The ambivalence grew to resistance and by 1982, the government in effect announced a pronatalist policy, which most observers perceive as being focused almost solely on the Malay population. There was a change in the name of the National Family Planning Board to the National Family Welfare and

Development Board, signalling the change of orientation. Basic personnel and financial resources continued to be allocated to the organization, though they declined after 1982 and other, more symbolic gestures also signalled a significant policy change.¹ As a result we have seen personnel and financial resources to the program grow steadily with time, but we have also seen a steady decline in the program impact. These, too, can be seen in the trends of program inputs and outputs, shown in chapter 2, figures 2.3 and 2.4.

3. In the case of Indonesia, the drastic fall in oil prices has placed greater pressures on government resources in general. On the other hand, during the 1970s, most countries of the region experienced substantial increases in the foreign exchange demand from the rapid rise in oil prices. These also increased pressure on government resources, which could have been reflected in reduced resources to family planning.

Given these experiences, we attempted to develop codes of the changes that might have affected program performance. Again a great deal of time and effort were expended with little positive results. First we distinguished between Program, and Environmental changes. We then constructed a numeric score, from 1-5, reflecting what we believed would be the level of impact of those changes on program performance. Again a few examples must suffice.

Program Events

- * creation of a new FP organization: (+5)
- * starting a new marketing scheme for contraceptives: (+4)
- * non-routine budget increases (+), or decreases (-): 3
- * announcing the approval of a new method: (+2)
- * change in top level director, + for pro, - for anti FP: (2)

Environmental Events

- * policy statements (weighted 1-5 by the strength of the statement) need for larger population (-); need for slowing population growth (+)
- * legal change in contraceptive or abortion use: 3, (- for banning), (+ for adopting)
- * population census showing greater than expected population growth: (+2)
- * minor to moderate race riots: (-2)
- * major, widespread race riots: (-4-5)

¹. The Board offices were moved from a central location in Kuala Lumpur to the city's outskirts, where, as some observers pointed out, there was no room for parking and nowhere to eat.

* conducting a national fertility survey: (+ 1)

We combed program reports and news reports for each country for 1970–85, coding each event for each country, each year. We then used scores, by year, for the total period, and disaggregated by Program and Environmental, and positive and negative conditions, to search for determinants of levels and changes in program acceptors and program-derived prevalence rates. In these we used both simultaneous and one and two year lagged analyses. The results were at best inconclusive. In effect we could find no systematic quantitative method for assessing environmental or program conditions that could help us predict changes in performance.

We also extended our earlier political analyses through 1985, generating scores for the five dimensions of political-administrative system strength used previously. These had been developed using grounded narrative scales with values from 1 (low) to 5 (high) for **political centralization**, the degree of **bureaucratization**, the **scope of government**, or the extent to which it intervened in the economy, the degree of **local participation** permitted, and the degree of **administrative decentralization** in the country. In the previous analysis we found that these five conditions factored into two major conditions: the strength of **Bureaucratic Centralization**, combining the first three conditions, and the level of **Local Participation**, which combined local participation and administrative decentralization.

We also found in the previous analysis that bureaucratic centralization helped to explain rises in acceptors, while local participation was more significant in explaining levels of program-derived prevalence. None of these predictions obtained in this analysis, largely because we were limited to examining one country at a time, and the changes in any country over time were generally not significant.

The final result of these extensive exercises was to deny us the use of the full data set of well over 300 country years of observations for a single analysis. We shall therefore focus all of the analysis on individual countries and their changes over time. This will be

quite restricting, since the largest number of observations we have is 26, and for most countries and most measures the numbers are substantially smaller, usually in the range of 10 to 15. Nonetheless, we have found that we can make some significant statements about individual countries and the family planning programs.

Chapter 1

ASIAN OVERVIEW: A Quarter Century of Change

A. Introduction

Asia today includes well over half the world's population. It contains some of the richest countries in the world, especially Japan, but it also includes many of the world's poorest. Our analysis will focus on the experience of 23 of these countries from 1960 through 1985. All were classed as Less Developed in 1960, but some, notably the well-known "Gang of Four", have graduated from Less to More developed status in the course of the 25 years of our survey. Our central question concerns the performance of national family planning programs in addressing current problems of rapid population growth. We omit Japan, as a developed country, and China, for which the type of data we seek have not been available. The 23 countries we include stretch from Iran to Fiji and from North Korea and Mongolia to Indonesia. They are listed clearly in the tables shown in this chapter. Henceforth, when we speak of "Asia" we shall be referring to this group of 23 countries. Even without China, it includes about a quarter of the world's population. Its dynamic and varied experience in social and economic change, and in population policy and programming make it a suitable ground on which to address questions about the character, causes, and consequences of family planning program performance.

The past quarter century has witnessed unprecedented change in most of Third World Asia. There has been rapid economic growth and substantial improvement in human welfare. The region has become more closely linked with the growing international system, for both good and ill, and has emerged as a major source of initiative in the world community. Its population has also grown rapidly, about doubling in this 25 years. Asia has led the Third World in reacting to this rapid population growth with official policies and programs to limit fertility. As a result, apparently, of both socio-economic developments, and government policies, fertility has registered significant declines as has the rate

of population growth. Few countries in Less Developed Asia can claim as yet to be “contracepting societies”, but some have achieved that condition, and more appear to be on the way.

At the same time, this generally positive overview must be qualified by great internal differences within the region. While most countries have moved forward in all aspects, some have moved rapidly, others more slowly, some scarcely show any movement at all, and some have reversed directions in some of the changes. Here we shall briefly explore some of the major dimensions of social and economic change, and begin to ask how they have been related to changes in family planning programs and their performance.

B. Progress in Wealth and Welfare

The 1960s was the Decade of Development, launched with optimism, and aimed at eradicating poverty throughout the Third World. If the aims were not achieved, there has nonetheless been substantial progress in the ensuing quarter century. In Asia this period has witnessed the “economic miracles” of the “gang of four”: South Korea, Taiwan, Hong Kong, and Singapore. It also saw Southeast Asia, more specifically the ASEAN group, emerge as the world most rapidly growing economic region. Along with the economic development has come an increase in human welfare. Death rates have fallen and literacy has increased. Table 1.1 provides a summary set of statistics for our countries over this quarter century.

For the tables presented here, we have divided our countries into two groups. Fifteen countries currently have active national family planning programs, for which substantial amounts of data are available for the 25 year period. These are labelled “Program Countries”. Later in this report, when we focus on program performance, we shall limit most of the analysis to these 15 countries. Next is a group of eight countries, here labelled “Non-Program Countries”, which either have no active specialized national family planning programs, or have programs but do not make data available on them. Burma, Kam-

Kampuchea, North Korea, Laos, and Mongolia are pronatalist in their orientation. Afghanistan and Iran did have active national programs, but both have been disrupted by war or internal revolution. Vietnam maintains what appears to be a vigorous and active fertility-limitation program, but we have been unable to obtain data on it.

In Table 1.1 We have chosen per capita GDP, in constant 1980 prices, expressed in US\$ to represent economic development, and life expectancy at birth to represent changes in welfare. All such aggregate data must be seen as only indirect indicators of real human conditions. Further, they are only estimates, with substantial error margins, which vary among the countries. All of this makes gross comparisons difficult, especially when differences in values are small. Nonetheless, these are commonly used indicators, which do point to important conditions of life. When we see substantial changes in their values over long periods of time, we can be relatively confident that there are changes in real human conditions of life.

All of the 15 program countries in table 1.1 have shown increases in real human productivity (real GDP per capita) over the past decade. The "gang of four" have at least quadrupled productivity. Most of the others have come close to doubling productivity. Bangladesh and Nepal, respectively ranked second and sixth poorest countries of the world in the World Bank list, have shown only modest growth rates (27% and 3% respectively), which by themselves make one skeptical that any real changes have occurred. (The 1986 World Bank's World Development Report estimates average annual rates of growth for these two countries at 0.6% and 0.2% respectively for the period 1965-1984.) Data for the non-program countries are less available. Burma (ranked as the 7th poorest country of the world) and Iran have shown what appear to be real increases. War and internal disruptions in Afghanistan, Kampuchea, Laos, and Vietnam make it appear unlikely that real increases have taken place there. It is quite likely that both Mongolia and North Korea have registered real increases.

Table 1.1 Wealth and Welfare in 23 Asian Countries 1960-1985

Country	Per capita GDP (1980 US\$)				Life Expectancy at Birth			
	1960	1970	1980	1985	1960	1970	1980	1985
Program Countries								
Bangladesh	110	128	129	140	37	45	46	49
Fiji	1090	1717	1856	1886	63	69	71	70
Hong Kong	1200	2310	4579	5546	65	69	76	76
India	170	209	234	258	43	47	52	57
Indonesia	245	318	512	546	41	45	53	55
S. Korea	470	835	1533	2125	54	58	65	68
Malaysia	700	982	1619	1815	57	64	69	68
Nepal	158	171	155	163	37	44	44	47
Pakistan	180	287	341	402	44	48	50	51
Papua New Guinea	540	786	798	770	41	48	51	53
Philippines	450	539	761	694	51	55	64	65
Singapore	1300	2470	4831	6224	64	68	72	72
Sri Lanka	170	216	283	325	62	67	69	69
Taiwan	358	692	1356	1859	64	68	72	73
Thailand	300	487	713	833	57	57	63	64
Non-Program Countries								
Afghanistan	107	105	101	?	34	39	42	41
Burma	115	130	165	200	43	49	54	53
Iran	1296	2760	2138	2827 (1983)	46	50	59	60
Kampuchea	129	117	u	u	41	46	37	45
N. Korea	u	u	u	u	54	61	65	65
Laos	u	u	u	u	40	41	43	50
Mongolia	u	u	u	u	52	61	70	63
Vietnam (N+S)	u	u	u	u	41	43	63	65

Life expectancy data are more widely available and show real increases over the period. Even the poorest — Bangladesh, Nepal, and Burma — have added a decade to life expectancy, indicating that their slow rates of economic growth may obscure real changes in living conditions. Most other countries have also registered increases of about 10 years in life expectancy. The genocide of Kampuchea is reflected in the decline from 46 to 37 years between 1970 and 1980, with an apparent recovery after 1980. The decline from 70 to 63 in Mongolia is an anomaly that suggests some skepticism of the values is in order.

Thus although the rates of change have varied considerably, the region as a whole shows significant increases in wealth and welfare.

C. Population Dynamics

Table 1.2 shows changes in birth, death, and natural increase rates over the quarter century. Fiji, Hong Kong, Malaysia, Singapore, and Sri Lanka began the period with low death rates, and register only very small additional declines. North Korea and Mongolia also started with relatively low death rates (13 and 15 respectively), and went on to achieve the very low levels of the most developed countries of the region. All others show death rates in the 20s in 1960, and reduced them to the teens by 1985. Afghanistan is the lone exception, reflecting both the uncertainties of progress, and the facts of its devastating war.

The changes in birth rates have been much more variable. All began with the high birth rates typical of the pre demographic transition. All of the program countries have registered some declines, but the rates have varied greatly. Three of the gang of four now show birth rates below 20; South Korea approaches this level. This is also true for Sri Lanka, the common deviant case of low levels of economic productivity but high levels of human welfare. All of the other program countries have reduced birth rates from the 40s to the 30s. The non-program countries show even greater variability. North Korea shows the most rapid decline, from 41 to 23. Afghanistan, Iran, Kampuchea, and Laos show

Table 1.2 Demographic Dynamics in 23 Asian Countries 1960-1985

Country	Crude Birth Rate				Crude Death Rate				Rate of Natural Increase			
	1960	1970	1980	1985	1960	1970	1980	1985	1960	1970	1980	1985
Program Countries												
Bangladesh	49	50	46	43	23	24	20	17	23	26	26	26
Fiji	40	30	27	29	9	6	4	5	31	34	23	24
Hong Kong	36	20	18	14	6	5	5	5	30	15	13	9
India	43	42	34	32	21	17	15	12	22	25	19	20
Indonesia	47	48	35	30	23	18	15	12	24	30	20	18
S. Korea	41	34	23	23	13	11	7	6	28	33	16	17
Malaysia	41	34	31	29	10	7	6	6	31	27	25	23
Nepal	46	45	44	41	29	24	21	18	17	21	23	23
Pakistan	49	45	44	42	23	18	16	15	25	28	27	27
Papua New Guinea	44	42	41	35	24	18	16	13	20	24	25	22
Philippines	45	43	37	32	16	11	10	8	29	32	27	24
Singapore	39	23	17	16	6	5	5	5	33	18	12	11
Sri Lanka	39	29	28	26	9	8	7	6	28	21	21	20
Taiwan	40	27	23	18	7	5	5	5	33	22	18	13
Thailand	46	42	35	26	17	12	9	8	29	30	26	18
Non-Program Countries												
Afghanistan	48	50	48	48	31	25	21	23	17	25	27	25
Burma	43	40	39	33	23	17	14	14	20	23	25	19
Iran	43	45	44	40	21	17	14	11	22	28	30	29
Kampuchea	49	46	45	44	23	18	19	18	26	28	26	26
N. Korea	41	39	33	23	13	11	8	6	28	28	25	17
Laos	44	43	44	42	23	23	20	15	21	20	24	27
Mongolia	41	40	37	35	15	11	9	8	26	29	28	27
Vietnam (N only)	42	42	41	37	23	22	18	11	19	21	23	26

what can be taken to indicate no change in human reproduction. The other three show the same pattern of decline from the 40s to the 30s that is common for most of the program countries.

Finally, rates of natural increase have shown the complex movements that derive from changes in birth and death rates. Hong Kong, Singapore and Taiwan have reduced their rates to about 1% per year. Thailand and North and South Korea appear to have dropped below the 2.5% level. India, Sri Lanka and Burma are at about the 2% level, though of these only Sri Lanka has a death rate sufficiently low to permit a prediction of continued decline. Other countries have shown some declines, but ten (Bangladesh, Nepal, Pakistan, Papua New Guinea among the program countries, and all but Burma and North Korea among the non-program countries) show either no decline or an increase in the growth rate, indicating that mortality has declined as or more rapidly than fertility

D. Family Planning Program Achievements

As late as 1959, less than three decades ago, India was the only less developed country in Asia that gave official recognition to a problem of rapid population growth, and had mounted a program of fertility limitation. Even that policy and program, however, exhibited little urgency or activity until after the results of the 1961 census showed that population was growing more rapidly than the planners had anticipated (Ness and Ando 1984). By 1970 the picture had changed dramatically. Most of our countries (including Afghanistan, Iran, and Vietnam among our non-program countries) had made official decisions to limit fertility and had launched national programs to reduce population growth through reducing fertility. The 1970's was a decade of intense activity of building national programs, and generating international financial and logistical support for them. Despite the rancor over family planning and development in the 1974 Bucharest conference, Asian countries moved ahead rapidly and without serious question about the need for and utility of national family planning programming.

By 1985 the picture had changed again. Iran had curtailed fertility limitation as part of its Islamic revolution. Activities in Afghanistan, Kampuchea and Laos were halted or greatly reduced because of political decisions or internal turmoil. There was even significant change in the program countries. Singapore experimented with a series of eugenic, selectively pronatalist, pronouncements, though they were neither vigorously implemented nor have they appeared to have much impact on patterns of human reproduction. Malaysia announced a more pronatalist position in 1982, and despite official waffling, appears to have curtailed program activity and impact especially among the Malay population. Internal turmoil during the destructive last five years of the Marcos regime greatly curtailed activities in the Philippines, and now the new Aquino government has taken a decidedly anti-family planning stance apparently in response to the preferences of the Roman Catholic hierarchy. Papua New Guinea has also experienced religious pressures that have produced ambivalence in the program.

Table 1.3 provides summary figures on the achievements of these efforts to reduce fertility. In columns 2 through 5, we show the new acceptors of the programs per 1000 married women of reproductive age. In columns 6 through 9 we show our estimates of the program-derived contraceptive users as a percent of married women reproductive age. These are estimates based on program statistics of acceptors by contraceptive method used. (See below and Ness, Johnson, Bernstein, 1983 for details on our estimating procedures.) Finally, in the last column we show estimates of the total prevalence or contraceptive use, derived from national sample surveys. This includes contraceptive use supplied by both the public program and the private market. It provides an interesting view of program performance.

The general pattern is one of increasing program output, though there is much variation. Indonesia and Thailand have shown the most rapid progress in both new acceptors and program-derived contraceptive use. This accords with the general reputation these two countries have achieved for rapid progress in their national programs. In addi-

Table 1.3 Family Planning Program Achievements and Estimates Total Prevalence
in 15 Asian Countries 1960-1985

Country	Program Acceptors per 1,000 MWRA				Program Prevalence (% MWRA)				Total Prevalence % MWRA (yr)
	1960	1970	1980	1985	1960	1970	1980	1985	
Bangladesh	n	28	60	146	n	10.1	12.4	16.6	29 (85)
Fiji	n	261	230	212	n	36.3	36.2	25.6	38 (78)
Hong Kong	30	65	44	49 ^d	2.9	11.6	6.9	4.2 ^d	77 (82)
India	0.9	34	46	122 ^d	0.04	8.6	17.3	25.0 ^d	24 (81)
Indonesia	n	8	128	168	n	0.7	25.6	50.0	55 (80)
S. Korea	17 ^a	144	110	172	2.4 ^a	25.2	30.4	39.0	70 (85)
Malaysia	n	43	50	22	n	7.0	9.2	3.2	61 (85)
Nepal	n	18	86	u	n	2.2	11.0	u	7 (81)
Pakistan	.03	97	63	80	.06	14.3	7.9	10.0	5 (80)
Papua New Guinea	n	4	32 ^c	u	n	0.7	2.8 ^c	u	u.
Philippines	n	65	75	81 ^d	n	6.0	11.5	16.7 ^d	32 (82)
Singapore	3 ^b	103	69	55	0.1 ^b	23.2	34.9	23.6 ^d	71 (80)
Sri Lanka	n	39	92	59	n	5.6	21.2	22.1	55 (82)
Taiwan	n	136	168	174	n	17.7	37.0	35.4	69 (80)
Thailand	n	44	190	224 ^d	n	6.1	29.2	38.3 ^d	63 (84)

a: 1962; b: 1963; c: 1981; d: 1984; n = no data; u = unavailable; Source: see text

tion, Bangladesh, India, South Korea, Nepal, Pakistan, Papua New Guinea, and The Philippines all show increases in both measures, although those for The Philippines are the most suspect in their accuracy.

Hong Kong and Singapore illustrate a pattern we observed in the earlier study, and to which we return here. These cases where program use is far below total use may be considered typical of highly urbanized states with extensive market developments and rapid social and economic progress. National family planning programs have been in operation for some years, but it is obvious that they play relatively small roles in major changes in human reproduction that have taken place in those societies. Obviously the market provides a distribution system sufficient to permit most people to exercise control over their fertility without extensive reliance on public programs. As we shall see later, this stands in marked contrast to much poorer societies, such as Bangladesh, and Indonesia, where most of the change in reproductive behavior appears to come out of public program activity. Taiwan and South Korea also have long standing (indeed, Taiwan's is a pioneer program in the region) and reputedly effective programs. These are also cases, however, where the rapid social and economic development apparently provides sufficient individual demand and private market development to permit many people to control their fertility without exclusive reliance on government programs. In effect, Taiwan, South Korea and most recently Thailand, appear much like Hong Kong and Singapore, but at an earlier stage of both demand generation and private supply system development.

E. Changing Relationships of Development and Fertility Control

Although we shall attempt to examine the impact of family planning programs in some detail later in this report, here we can make one useful summary observation. We generally expect that changes in reproductive behavior are driven by deep social and economic changes. If this is true for the output of family planning programs (contraceptive

acceptors or users) as well, we should expect some stability over time in the relationship between social and economic conditions, and those program outputs. Table 1.4 provides one set of observations on this issue.

For our 15 program countries, we have calculated the Pearsonian correlation coefficient between each of three predictors and one program output condition, the results of which are shown in table 1.3. The first two predictors indicate levels of economic (GDP/ capita) and social (EE)o) development. If program outputs reflect primarily the diffuse social and economic conditions that affect individual demand, we should expect those conditions to predict program output levels with some stability throughout the period. On the other hand, if program conditions vary independently of the larger social and economic conditions, we might expect a weakening of the relationship over time. It is the latter that is supported by the data.

We have also added a program input condition, staff per 1000 MWRA, as a third predictor. If program conditions largely affect output, we should expect stable positive correlations throughout the period. If, however, the relationship is more complex and dynamic, changing with changes in both socio-economic and program conditions, then we should expect some change in the correlations over time. Again, it is the latter that the data support.

Note first that we do not have data for all of our 15 program countries until 1969. In 1965 the 10 cases included in the calculations exclude Indonesia, Malaysia, Papua New Guinea, The Philippines and Sri Lanka. In 1966 Sri Lanka was added; in 1967 Papua joined the list, followed by Malaysia in 1968, and Indonesia and the Philippines in 1969. 15 cases have data for the succeeding years, until we lose Papua in 1978. Even more cases are lost in the ensuing years.

The pattern is quite clear, however. In the first four years program outputs were strongly affected by the larger social and economic conditions. For the next seven years, through 1975, the impact of national wealth declines rapidly, while the impact of the social

Table 1.4
 Pearsonian Correlation Coefficients Between
 Economic, Social, and Program Input Measures
 and Program Acceptors per MWRA
 for 15 Program Countries

Year	Correlation Coefficients Between Acceptors per MWRA and:		
	GDP/cap	E.o	Prog. Staff per MWRA
1965	.63* (10)	.66* (10)	-.59 (6)
1966	.62* (11)	.48* (11)	-.44 (4)
1967	.46* (12)	.50* (12)	-.26 (6)
1968	.48* (13)	.46* (13)	.15 (7)
1969	.48*	.55*	.43 (9)
1970	.40	.58*	.23 (9)
1971	.35	.60*	.38 (10)
1972	.33	.58*	.122 (11)
1973	.35	.58*	.51* (11)
1974	.29	.53*	.00 (11)
1975	.13	.36.	.11 (11)
1976-1981: all coefficients similar to 1975			
1982	-.14 (13)	.11 (13)	.38 (9)
1983	-.38 (12)	-.09 (12)	.52* (9)
1984	-.41 (13)	-.20 (13)	.58* (8)
1985	.19 (9)	.06 (9)	.54 (5)

* significance at .10 or better

Ns are 15 except where otherwise noted in parentheses

welfare condition (E.o) remains strong until the final year. For both measures, however, by 1975 program outputs had become largely independent of those more diffuse demand-driving socio-economic conditions. For the next ten years, all correlations remain very

weak. (We have not shown the coefficients for the relationship between predictor conditions and program derived contraceptive use, primarily to keep the tables from becoming too cluttered. Those relationships do, however, follow closely those shown in the table. There are no significant differences.)

In column 4 of table 1.4, we show correlation coefficients between program acceptors and a measure of program inputs: total staff per MWRA. The cases are both small in number and variable, but again the general pattern is a striking one: weak negative relationships for the early years become very weak positive relationship in the middle years, and then stronger positive relationships in the most recent years. In effect, program conditions, reflected in a simple measure of inputs, have replaced diffuse social and economic conditions as major determinants of program outputs.

This does not mean, of course, that program conditions are determining overall changes in reproductive behavior. Far from it. Table 1.4 reports program outputs, not all of reproductive behavior. This is necessary if we wish to examine program performance, but that is only part, and perhaps only a very small part, of the determinants of reproductive behavior. For the latter we must examine total contraceptive use and actual fertility. Measures of total (as opposed to program-derived) prevalence, and the crude birth rate remain primarily determined by the more diffuse social and economic conditions, with little change over time. The correlation coefficients between these measures and per capita GDP or life expectancy are between .70 and .92 every year. Nonetheless, the changing determination of program outputs continues to be an important observation, indicating some important condition of program performance.

The rest of this report will be concerned with understanding what program conditions affect output, and how the input-output relationship changes over time and is affected by other conditions.

ASIAN PROGRAMS: OUTPUTS AND INPUTS

A. Program Outputs and Inputs

As in our previous study, we conceive of programs as organized activities with inputs of resources and outputs of activities. We define outputs in a straight-forward rationalist manner, based on the stated aims of the program. Programs are officially designed to reduce population growth by inducing reproductive aged people to use some form of fertility-limiting behavior. This could, of course, imply broad value change, achieved by educational or instructional activities or, the specific and narrower activity of service delivery. Although the possible range of program outputs is quite broad, a much narrower range is generally implied in real actions. This includes recruiting acceptors for the use of modern contraceptives, and arranging for a continuous supply of contraceptives to users. Thus program outputs can be narrowly conceived of as new acceptors, and contraceptive users. It is also possible to add an intermediary output between these two, which takes account of the different amount or quality of fertility protection provided by different contraceptive methods. That is, we can weight acceptors by the method used and arrive at a Couple Years of Protection indicator, which links two kinds of service outputs: acceptors or users and method. Thus outputs can be defined as acceptors, CYP, and users.

Program inputs are primarily of two types: personnel and funds. Again, it is possible to conceive of a wider range of inputs, including equipment, physical facilities, political leadership, different levels of human skills and motivation, and even of different technologies. As with outputs, however, our focus is on a narrower range of inputs: staff and funds. We have attempted to collect data on both staff and funds by function, and staff by professional or training level. This proved highly impractical, however, since most programs do not themselves provide a clear accounting of the different types or levels of

these resources. We believe it would be most useful if programs would carefully differentiate these inputs for better management of program processes, but few in fact do this. Thus we are left with counting simple aggregates of staff and funds as the major inputs.

To provide for comparisons among different national programs, both inputs and outputs have been standardized. That is, we examine acceptors and CYP per 1000 MWRA (indicated by "kew"), and users as a percent of MWRA. The latter, of course, makes the user figure comparable with that commonly generated from contraceptive prevalence studies. Staff and fund levels are also divided by 1000 MWRA.

In all cases, we are limited to observations of data that individual countries provide on their programs. As is evident below, our most complete data are on the numbers of acceptors per year. Data on program inputs are far more varied. For fully integrated programs, where family planning is an integral part of the health or MCH program, staff counts are not given separately for family planning. This is the case for Sri Lanka, Thailand, Papua New Guinea and Fiji. Data on funds are more available, even for some of those programs that do not provide staff data. This reflects, in part, the demands of international assistance programs, which make funds available for family planning specifically, and wish to see to what extent the host government also makes contributions to such programs. For Sri Lanka, however, we have data only on government reports of foreign expenditures (and as we shall see later donors reports of expenditures), but no information on differentiated expenditures on family planning.

In this chapter we shall provide three general types of descriptions of the levels and changes of inputs and outputs. First, we briefly examine the overall levels of inputs and outputs for the region as a whole. This provides us with something of a general standard against which to assess the any program at any time. Second, we shall examine the movements of both inputs and outputs over the duration of each country program. Finally, we shall examine the differences between our estimates of program-derived contraceptive use, and estimates made from periodic national sample surveys.

B. Overall Asian Levels of Outputs and Inputs

1. Program Outputs

For our fifteen "program countries" between 1960 and 1985, we have output data on 310 program years, for an average of almost 21 years per program. The basic data are numbers of program acceptors each year. Acceptors weighted by contraceptive method, provides a measure of couple years of protection (CYP), which we also have for 310 total years. From this we have also estimated the annual number of active contraceptive users. As noted above, acceptors and CYP data are provided as a ratio per 1000 MWRA, while users are given as per cent of MWRA. Table 2.1 shows the overall descriptive statistics — ranges, means and standard deviations — for each of the three output measures. We have also broken the overall figure for the region into four time periods: 1960–69, 1970–74, 1975–79, and 1980–85. This shows the overall regional change in output levels. Figure 2.1 shows histograms for the overall period for each of the three outputs.

The overall mean of outputs was about 80 acceptors, or about 8 percent of the eligible couples per year, which produced an average of about 175 couples years of protection, or a prevalence rate of about 13 percent each year. More revealing is the rise in the mean levels of all three output measures through the period. Acceptor means rose steadily from 46.6 to 107.8; CYP rose from 176 to 262, and users from 13 to 20 percent of MWRA over the quarter century. Overall, program outputs rose steadily during the period.

Figure 2.1 shows that the overall output distribution was skewed to the right for all three measures during the entire period. Although the mean was 80, the modal level for acceptors was in the range of 30 to 70, with very few program years reaching levels above 150. For the CYP measure, with a mean of 175, the modal level was in the range of 0–75, with only a very few years reaching levels above 300. For prevalence, mean of 13, the modal level was under 10 percent with only 51 years reaching levels about 25 percent.

Table 2.1
Descriptive Measures for Program Outputs
For 15 Asian Family Planning Programs, 1960-85

Output Measure*	N	Min.	Max.	Mean	Standard Deviation
1965-1985					
Acceptors/kew	310	.009	262	80.9	60.6
CYP/kew	310	.02	704	176.0	147.6
Users % MWRA	310	.001	44.5	13.1	11.0
1960-1969					
Acceptors/Kew	87	.01	248	46.6	50.3
CYP/kew	87	.02	452	95.5	98.3
Users % MWRA	89	0	34.0	5.5	6.6
1970-74					
Acceptors/kew	75	4.3	262	80	62
CYP/kew	75	10.6	651	153	132
Users % MWRA	75	0.7	43.2	12.3	10.0
1975-79					
acceptors/kew	73	19.5	229	95.3	51.1
CYP/kew	73	43.6	548	207.5	136.8
Users % MWRA	73	2.8	39.1	16.1	9.7
1980-85					
Acceptors/kew	75	13.0	224	107.8	60.8
CYP/kew	75	33.2	704.5	262.1	165.6
Users % MWRA	75	2.8	44.5	20.2	11.8

* kew = 1000 MWRA

The two missing years in 1975-79 are for Papua New Guinea 1978 and 1979

The same distribution, skewed to the right, was also found in each of the sub-periods as well, although the modal levels rose for each of the output measures paralleling the rise of the means seen in table 2.1

ACCEPTORS per 1000 MWRA

```

D 33 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
E 21 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
18 13 +XXXXXXXXXXXX
27 18 +XXXXXXXXXXXXXXXXXXXX
36 24 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
45 27 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
54 22 +XXXXXXXXXXXX+XXXXXXXXXXXX
63 20 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
72 18 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
81 15 +XXXXXXXXXXXXXXXXXXXX
90 17 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
99 16 +XXXXXXXXXXXXXXXXXXXX
108 13 +XXXXXXXXXXXXXXXXXXXX
117 4 +XXXX
126 9 +XXXXXXXXXXXX
135 8 +XXXXXXXXXXXX
144 13 +XXXXXXXXXXXXXXXXXXXX
153 3 +XXX
162 8 +XXXXXXXXXXXX
171 6 +XXXXXX
180 9 +XXXXXXXXXXXX
189 7 +XXXXXXXXXXXX
198 4 +XXXX
207 4 +XXXX
216 1 +X
225 2 +XX
234 2 +XX
243 0 +
252 1 +X
261 2 +XX
    
```

CYP per MWRA

```

0 36 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
24 29 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
48 37 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
72 36 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
97 23 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
121 14 +XXXXXXXXXXXXXXXXXXXX
145 18 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
170 23 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
194 18 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
218 14 +XXXXXXXXXXXXXXXXXXXX
242 10 +XXXXXXXXXXXX
267 12 +XXXXXXXXXXXXXXXXXXXX
291 5 +XXXXX
315 12 +XXXXXXXXXXXXXXXXXXXX
340 6 +XXXXXX
364 8 +XXXXXXXXXXXX
388 7 +XXXXXXX
412 7 +XXXXXXX
437 8 +XXXXXXX
461 7 +XXXXXXX
485 1 +X
510 2 +XX
534 1 +X
558 2 +XX
583 0 +
607 1 +X
631 0 +
655 2 +XX
680 0 +
704 1 +X
    
```

Program-Derived Prevalence (%) MWRA

```

0 42 +XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1 20 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
3 19 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
4 25 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
6 31 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
7 13 +XXXXXXXXXXXX
9 25 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
10 24 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
12 21 +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
13 9 +XXXXXXX
15 13 +XXXXXXXXXXXX
16 11 +XXXXXXXXXXXX
18 7 +XXXXXX
19 8 +XXXXXXX
21 8 +XXXXXXX
23 6 +XXXXXX
24 9 +XXXXXXXXXXXX
26 4 +XXXX
27 5 +XXXXX
29 5 +XXXXX
30 4 +XXXX
32 7 +XXXXXXX
33 4 +XXXX
35 1 +X
36 8 +XXXXXXXXXXXX
38 6 +XXXXXXX
39 3 +XXX
41 0 +
43 1 +X
44 1 +X
    
```

Histograms of Program Outputs:
Acceptors, CYP, and Prevalence

Figure 2.1

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2. Program Inputs

For program inputs we shall focus on three measures. The first is total staff per 1000 MWRA (kew). In addition we use two measures of funds: reported government expenditures, and reported total expenditures for family planning programs. As we shall show later in some detail, reports from individual countries list government funds, funds from foreign donors, and funds from "other" sources. The other includes for the most part funds from local private family planning associations, but it may in some cases also include funds from other sources as well. When we examine foreign assistance in chapter 4, we shall note the differences between two major sources of information: host government and donors. In effect, we shall argue that we can have little overall confidence in host government reports of foreign donor expenditures, since they vary greatly from year to year, and we have also found contradictory statements in single reports of the host governments. Nonetheless, we report here both government and total expenditures, as reported by the host government.

There is another major source of error in the statement of funds that should be noted here. We have used government reports in local currencies at current prices, converted to US\$ using IMF exchange rates for each year. Thus neither inflation nor cross-national differences in purchasing power are taken into consideration in these measures. Later, when we examine expenditures in greater detail, we shall make some attempts to adjust for some of these differences, but we cannot claim to make much advance here on the intractable problems of estimating "real" costs of family planning programs.

Table 2.2 shows the descriptive statistics for these three input measures both for the entire period, and for the same sub-period breakdowns used in table 2.1

As with program outputs, inputs rose over the period. Staff per 1000 MWRA averaged 0.76 throughout the period, with the mean rising from 0.62 to 0.9. Government expenditures averaged almost one US dollar (\$929 per 1000 MWRA) per eligible woman or couple for the period, rising from just over \$0.25 to just over \$ 2.00 (\$2071.6 per 1000

Table 2.2
Descriptive Measures for Program Inputs
for 15 Asian Family Planning Programs 1960-1985

Inputs Measure	N	Min.	Max.	Mean	Standard Deviation
1960-1985					
Staff/kew Government	200	0	3.11	0.76	0.58
Exp./kew (US\$)	248	0	6484.0	929.7	1140.2
Total Exp./kew (US\$)	255	0	6887.8	1303.3	1243.5
1960-69					
Staff/kew Government	44	0	2.06	0.62	0.63
Exp./kew (US\$)	62	0.48	1286.1	279.6	290.3
Total Exp./kew (US\$)	67	0.95	1301.3	384.9	333.9
1970-74					
Staff/kew Government	52	0	1.91	0.68	0.49
Exp./kew (US\$)	67	0	1765.0	418.3	386.5
Total Exp./kew (US\$)	69	0	3576.6	791.4	633.0
1975-79					
Staff/kew Government	53	0.21	3.11	0.82	0.61
Exp./kew (US\$)	65	0	3758.4	1128.7	073.6
Total Exp./kew (US\$)	65	0	4514.1	1649.9	1068.9
1980-85					
Staff/kew Government	51	0.09	2.26	0.90	0.58
Exp./kew (US\$)	54	292.92	6484.4	2071.6	1558.3
Total Exp./kew (US\$)	54	629.8	6887.8	2679.6	1375.9

MWRA). Total expenditures averaged \$1.30 per eligible woman or couple for the period, rising from less than \$0.40 (384.9/kew) to about \$2.68. Note that none of these dollar amounts has been adjusted for inflation, which varied greatly from country to country over the period. Thus the real increases have been substantially less than those shown here.

We do not show histograms of inputs comparable to those for outputs, but the patterns are much the same. All distributions are substantially skewed to the right. Overall, however, staff levels changed relatively little, as shown in the mean levels in table 2.2. For most program years, we show about 0.5 staff per 1000 MWRA. Although the maximum is just over 3.0, there are very few program years than show more than 1.0 staff per 1000 MWRA. For the levels of funding, most program years show between US\$ 0.50 and 1.00 per MWRA.

C. Movements in Individual Country Programs

If the overall trend of inputs and outputs was upward for the entire region, individual countries have shown substantial variance from one another. The best way to see these is to chart outputs and inputs over time for the entire duration of the programs in the 25 year period. Figures 2.2 and 2.3 provide these pictures. Table 2.3 and 2.4 provide statistical summaries of the patterns that can be readily seen in the figures. The tables show the slope coefficients obtained by regressing each of the output and input measures on program duration. They also show for each equation the proportion of variance explained by program duration. For the country experiences in figure 2.2 we also show the "total" prevalence data, which are obtained from periodic national sample surveys, or other forms of country estimates. We shall use these figures in the next section of this chapter.

1. Program Outputs

For the fifteen program countries shown in figures 2.2, three general patterns of movement in outputs can be seen over time.

a. Steady Upward Movement. For eight countries: Bangladesh, Sri Lanka, Taiwan, India, Indonesia, South Korea, Nepal, and Thailand, there is a steady upward movement of acceptors and program prevalence levels. With only two exceptions², program duration explains the overwhelming amount of variance (80–99%) in outputs. Overall, these programs represent what can be called a pattern of rational bureaucratic accretion. If programs are rationally designed activities to increase contraceptive acceptance and use, we can expect them to increase their outputs over time. The increase derives from the simple growth and spread of the program, as well as, possibly, some organizational learning in the process of performing the tasks assigned to it.

b. Variance The second pattern to be observed is one of considerable variance, or no real change over time. This is the case for 6 programs: Fiji, Hong Kong, Pakistan, Papua New Guinea (for which data are rather scanty), the Philippines and Singapore. Fiji's acceptor levels rose then fell, while prevalence levels rose quickly then levelled off. The Philippines shows a similar pattern with more pronounced declines following increases in both measures. Hong Kong's program also shows earlier increases then a decline or leveling off, though generally at much lower levels than those apparently achieved by Fiji and The Philippines. Pakistan has shown for both acceptors and prevalence three periods of increase, in which each of the first two were followed by periods of decline. As we shall note later, these are apparently related to periods of political stability and turmoil. The most recent pattern is one of increase, related to a new organization of the program, which will also be the subject of later analysis. Papua New Guinea shows a very slight increase, though at very low levels, for acceptors. Prevalence also increases until the last time point, when it apparently declined. The changes are so small, however, that it would be safer to see this program as showing a flat curve, or no real change over the period. Singapore shows what is in one respect the most variant pattern. Acceptor levels rose for a

². The two exceptions are acceptor levels for Sri Lanka and South Korea, for which the R squares are only .56 and .32 respectively.

few years then fell steadily. Program prevalence levels rose, fell, rose again, then levelled off at about 20 per cent. This indicates a shift in program acceptors from the earlier reliance on the pill to an increasing use of sterilization. For these programs, time, or program duration, explains only a small, and often insignificant, amount of the variance in outputs. The R^2 s, or coefficients of determination, are in the range of 0 to 30 per cent. Only Singapore's experience with program prevalence produced a substantial R^2 of 60 per cent, but even this is far less than the coefficients found in the first group of steady risers.

c. **Decline** Malaysia is the one program that shows a steady decline in acceptors and a slower decline, or near stability in program prevalence. We shall argue later that this is related to extreme ethnic sensitivities against which the program struggles. For Malaysia time explains only 36 percent of the decline in acceptors, and does not explain any of the movement in program prevalence.

2. Program Inputs

Staff inputs have risen overall, but rather slowly. This is true for the entire region, and for most of the countries. The patterns are clearly shown in figure 2.3, showing staff and both government and total expenditures over time. The statistical results of the regressions of inputs on time shown in table 2.4. Only for Indonesia has the increase been substantial, showing a slope of 0.10, indicating a rise of 0.1 staff per 1000 MWRA per year of the program's duration. Time alone explains 95 percent of the variance in the Indonesian programs staffing. For another seven countries, staff rose slowly but steadily through the program's duration. This includes Taiwan, Hong Kong, India, South Korea, Malaysia, Nepal and Singapore. For these countries time explains one third to three quarters of the variance in staffing, and the slope coefficient indicate a rise of .01 to .05 staff/kew per year. Three countries show a decline in staff over the program's duration. For Bangladesh this is a very small, and statistically non-significant decline. Pakistan's

Table 2.3
 Regressing Program Outputs on Time
 Slope Coefficients and R²s for
 Acceptors and program Prevalence for
 15 Asian Family Planning Programs 1965-1985

Country	Acceptors/kew		Program Prevalence	
	Slope	R ²	Slope	R ²
Bangladesh	5.3	.80**	.78	.87**
Sri Lanka	2.6	.56**	1.1	.97**
Taiwan	6.8	.81**	1.7	.98**
Fiji	4.1	.21*	1.2	.36**
Honk Kong	-.33	.02ns	-.02	.00ns
India	3.8	.74**	1.1	.97**
Indonesia	11.5	.94**	1.5	.96**
South Korea	3.2	.32**	1.4	.90**
Malaysia	-1.2	.36*	0.02	.03ns
Nepal	6.0	.97**	.77	.98**
Pakistan	2.6	.20*	.35	.29*
Papua New Guinea	2.5	.92**	.27	.75**
Philippines	-5.8	.30ns	-.11	.02ns
Singapore	-.30	.35*	.6	.61**
Thailand	12.3	.96**	2.1	.99**

** significance greater than .01

* significance greater than .05

staffing levels rose and fell; those in the Philippines rose twice and fell twice, to produce the most unstable pattern of any of the countries. Unfortunately, we do not have staff data for Thailand, which shares a reputation for dramatic success with Indonesia.

When we turn to expenditures, however, there is a much more consistent pattern of increase for each country. We do not have separate government expenditure figures for Sri Lanka. Of the remaining 14, ten show substantial increases in both government and total expenditures, with time explaining 70–90 percent of the variance. Only four countries deviate from this positive pattern. Fiji shows a slow increase, with time explaining only 66 percent of the variance, with sufficient deviation around a trend line to make the pattern statistically significant only at the .09 level. Pakistan's government expenditures rose through 1981 then fall slightly, while total expenditures rose through 1976, then fell, and rose again after 1981. The general trend is positive, but time explains only somewhat less than half the variance in funding. For Papua New Guinea, the scanty data suggest stability of funding. Bangladesh provides an interesting picture of substantial differences between government and total funding. Government funding is roughly stable throughout the period, but total funding rises consistently to quite high levels since 1972, with a slight fall in 1982 and 1983, followed by two years of continued strong increase. While time explains no variance in government funding, it explains about 55 per cent of the variance in total expenditures. For Bangladesh, foreign assistance has obviously been a major resource for the program.

D. Program Versus Total prevalence

As in the first phase of this study, we again use acceptors by method to estimate current contraceptive users each year. Essentially, we have used decay curves of continued use for sterilization and IUDs, calculating for each year the users predicted from previous years' acceptance plus estimated users from the current year acceptors. The disadvantages of this method rest primarily in the errors of the estimation. Where possible we created decay curves on the basis of follow-up surveys of continued contraceptive users. These data are not available for most countries, necessitating the use of commonly accepted drop-out rates. Further, we have estimated continued use for IUD and Sterilization acceptors. Current use for oral pills and other contraceptives are estimated from the

Table 2.4
 Regressing Program Inputs on Time:
 Slope Coefficients and R²s for Staff and Expenditures
 for 15 Asian Countries 1965-1985

Country	Staff/kew		Govt. Exp		Total Exp.	
	slope	R ²	Slope	R ²	Slope	R ²
Bangladesh	-.00	.00ns	-.60	.00ns	84	.55**
Sri Lanka	.nd	.nd	.nd	.nd	nd	.nd
Taiwan	.01	.68**	215	.92**	181	.88**
Fiji	.nd	.nd	136	.66ns	136	.66ns
Hong Kong	.01	.20*	41	.89**	63	.56**
India	.05	.76**	86	.80**	102	.79**
Indonesia	.10	.95**	140	.84**	175	.82**
South Korea	.06	.55**	228	.72**	243	.79**
Malaysia	.02	.79**	235	.81**	238	.80**
Nepal	.02	.65**	27	.86**	108	.61**
Pakistan	-.04	.36*	30	.41**	44	.40**
Papua New Guinea	.nd	.nd	4.7	.11ns	4.7	.11ns
Philippines	-.02	.00ns	202	.73*	372	.79**
Singapore	.01	.36**	264	.90**	258	.92**
Thailand	.nd	.nd	48	.89**	129	.91**

** significance better than .01

* significance better than .05

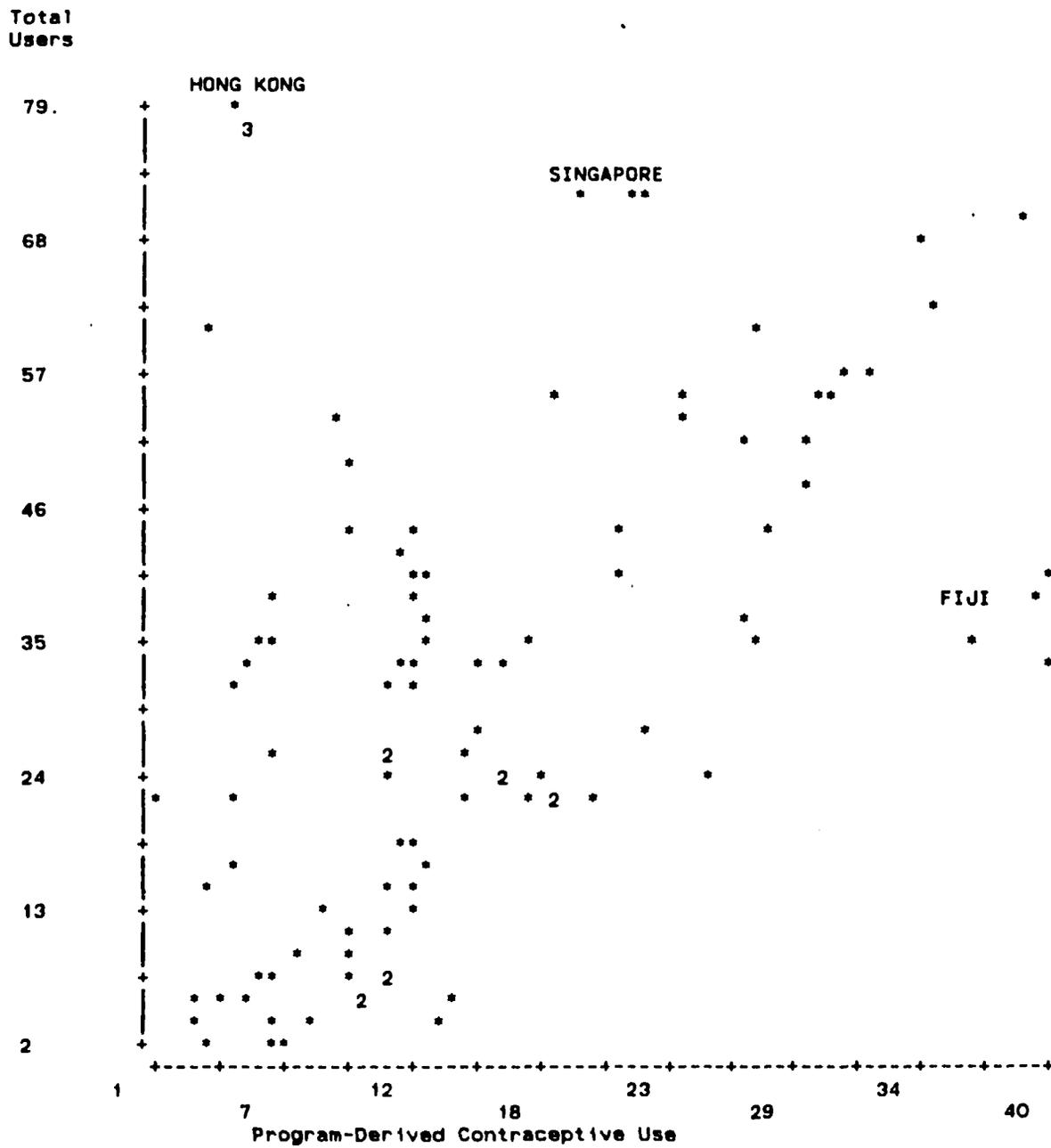
.nd = no data

distribution of supplies where available, or from simple numbers of acceptors where supply distribution figures are not available. The error margins from this estimating procedure may be substantial, though we believe they are not and have some evidence of this. More serious, however, is that the error margins most likely vary by country and time, and we do not at present have a way to assess this variance.

The advantage of the procedure, of course, is that it gives us estimates of program-derived contraceptive use each year. For our 15 program countries, we can estimate program-derived prevalence for a total of 312 program years; from survey-based or other country estimates we have observations for only 98 program years. The longer series permits us to track program outputs annually, using data that take account of the different method mixes of country programs. It also permits us to examine our estimates of program-derived prevalence against estimates of total prevalence gained from periodic national sample surveys, or from other types of estimates that countries make. The periodic national sample surveys must be counted more accurate than estimates based on program statistics, but they are not available year by year, and they often do not give a very good picture of the sources of contraceptive supply.

For 98 program years of our 15 program countries we have survey-based estimates of total prevalence, which can be compared with our estimates of program-derived prevalence. Figure 2.4 shows a scattergram of these two measures, with the total prevalence estimate on the Y axis and our program-derived prevalence estimate on the X axis. It is evident from this that there is a strong positive correlation between the two, but it is also evident that there are a few outliers. The linear regression equation for this distribution shows an intercept at 18.7 total prevalence, and a slope of 0.93, with an R^2 of .19. Although there is a significant positive correlation between these two estimates, one explains slightly less than a fifth of the variance in the other. If any set of significant outliers (described below) is removed, however, the intercept falls to about 10% total prevalence, and the R^2 or explained variance rises to above .40.

Figure 2.2
Total and Program-Derived Contraceptive Use
for 102 Country Program Years, Showing Major Outliers



From this distribution, there are two classes of outliers. There are only two cases of negative outliers, where the total prevalence level is substantially less than predicted by the program-derived estimate. These cases are Pakistan for 1970 and 1975, when program-derived prevalence exceeded survey based total estimates. In both years the total estimate was about 5 percent, while the calculated program-based estimate was about 13 percent. The first year was one of considerable internal turmoil in Pakistan, and the second was a year of the famous inundation schemes. It is reasonable to believe that program estimates were considerably inflated in those years.

Of the 98 cases, there are 11 in which program estimates are greater than survey-based estimates. In all cases, the differences are quite small. Two (South Korea 1971 and Papua New Guinea 1977) are less than 1 percentage point difference. Six more are in the range 1 to 5 percentage points. Only three are above 5 points: Fiji 1973 (6), and Pakistan 1970 and 1975 (8 and 9, respectively). In fact, Pakistan accounts for five of the eleven cases.

There were also eight cases of substantial positive outliers, where survey based prevalence estimates are much higher than predicted by the program-based estimates. (These are cases where the standardized residuals are 1.5 or greater than the mean of the residuals.) As expected, all are cases of high overall or total prevalence, with quite modest levels of program-based prevalence. Hong Kong alone has four cases: 1977,78,80, and 82, where program-based prevalence is estimated at 4 or 5 percent, while total prevalence is estimated above 70 percent. Singapore has three years of significant deviation: 1977,78,and 80. Note that all of these are cases of highly urbanized and economically advanced city-states. Here the social-economic conditions have produced high demand for fertility-limitation, and the well developed private market structure makes supplies of contraceptives readily available. In these cases, the organized public program appears to play a far less significant role in contraceptive supply than is the case in poorer countries with less well developed alternate private supply channels.

The one additional significant outlier in this analysis is Malaysia in 1985, where the program appears to have produced a 3.5 percent prevalence rate, while the overall society shows a 60.7 prevalence rate. As we shall note later, Malaysia has had serious ethnic problems which, since the major ethnic riots of 1969, have seriously impeded program activity. Further, in 1982 the government announced a pronatalist orientation, which further reflects the difficulties of the program.

Overall, then, for countries with very low levels of prevalence, and for the more advanced market systems, the differences between program-based estimates and survey-based estimates produce considerable difference. In the former, program error margins should be considered substantial. For the latter, it is not the estimating errors that are so important. It is simply that the program is far less important as a supply system than it is in other countries. For the majority of experiences, however, program and total estimates are relatively similar, though the latter are, as expected, higher than the former. For Sri Lanka, Taiwan, India, Indonesia, South Korea, and Thailand, both estimates of prevalence grow steadily, indicating a significant, though hardly unique, role for the country program in promoting contraceptive use. Even for the more recent years in Pakistan and Bangladesh, the pattern has become similar to that for the more advanced programs: both estimates rise, but program-derived prevalence levels are lower than total prevalence, as expected.

Figure 2.3

Program Outputs
by Time for 15 Countries

(key: -●- Acceptors; -P- Prevalence)

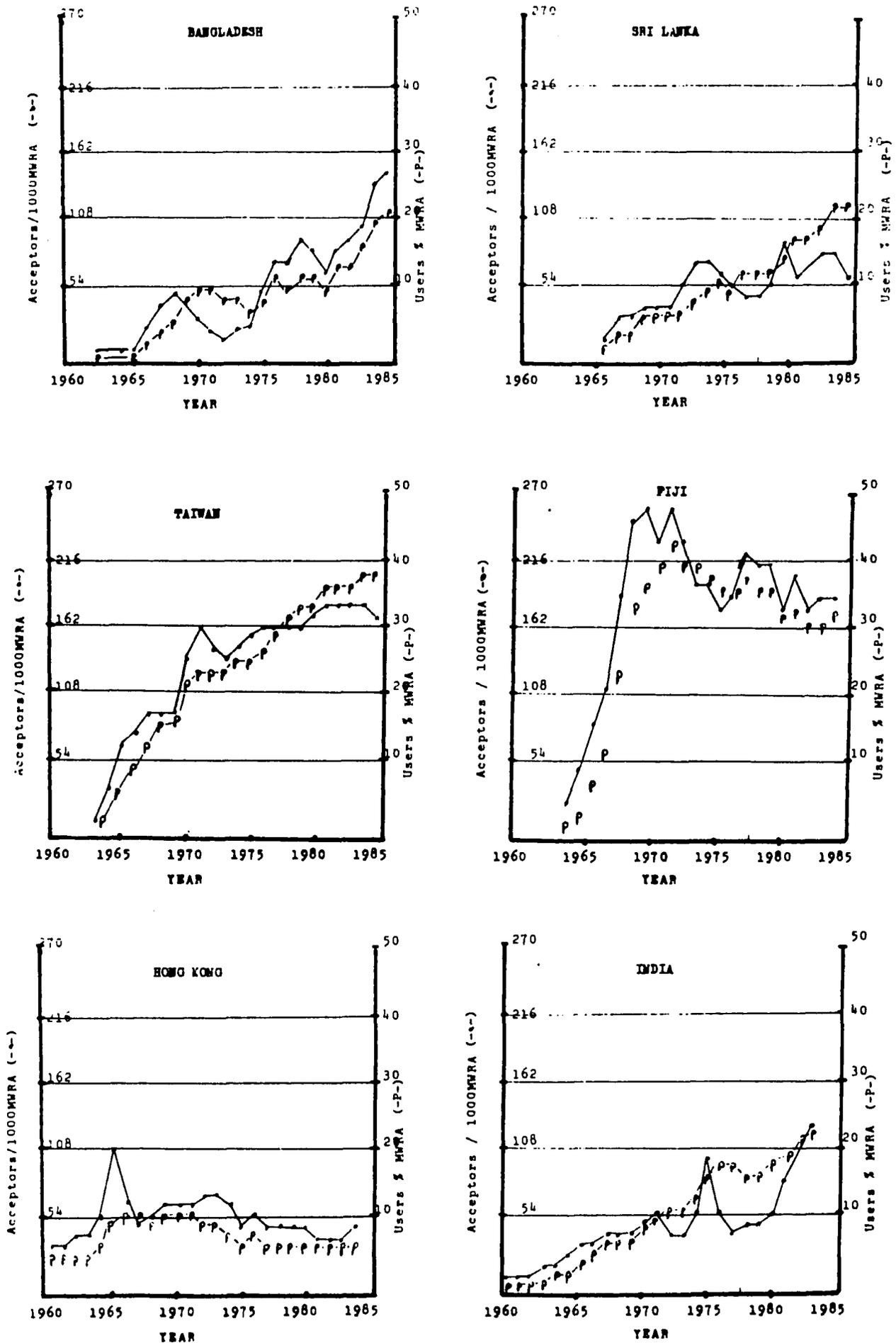


Figure 2.3
Program Outputs
by Time for 15 Countries

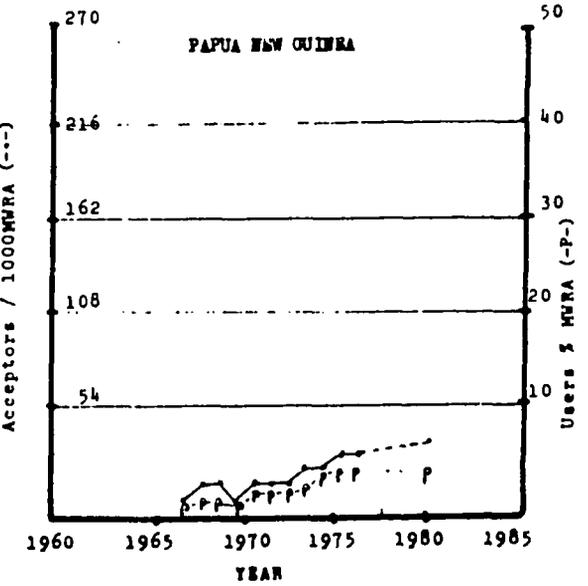
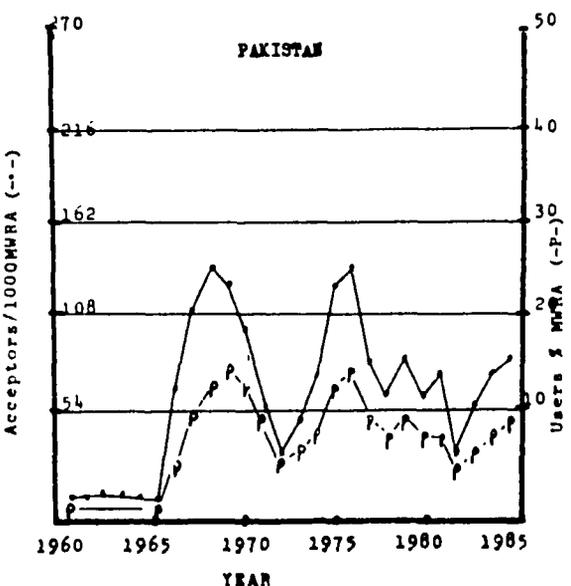
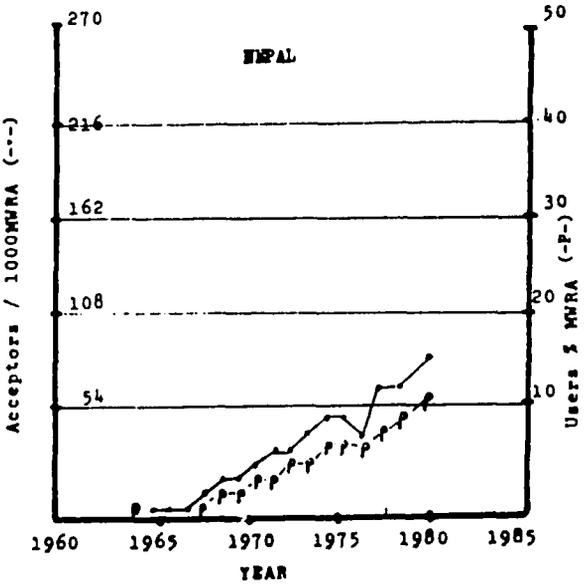
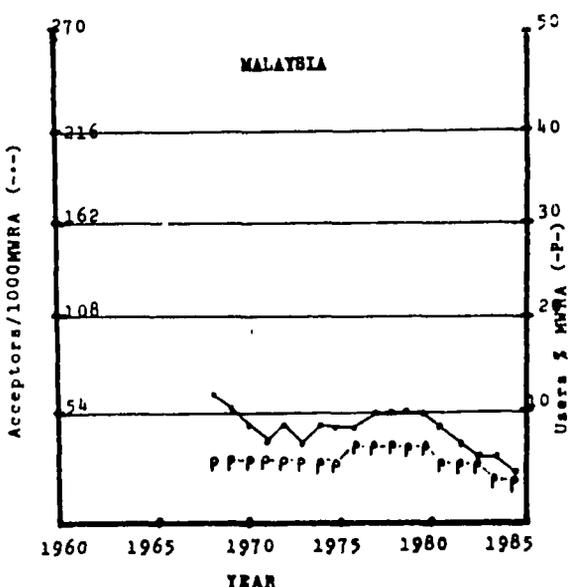
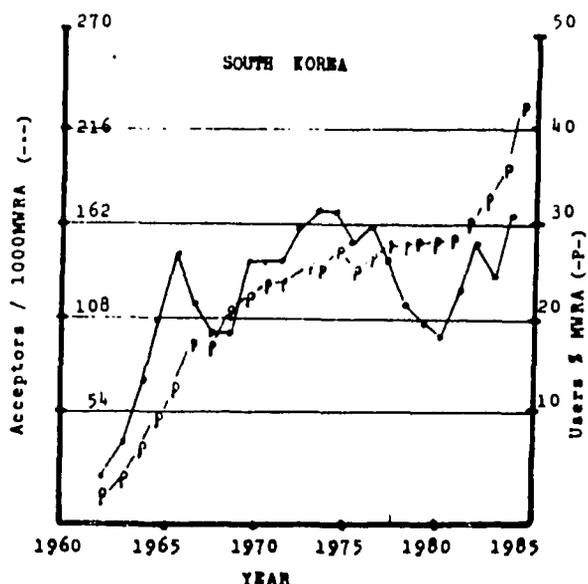
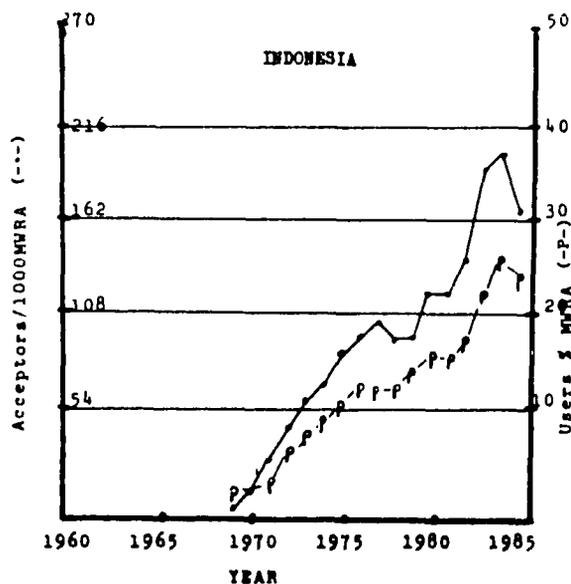


Figure 2.3
Program Outputs
by Time for 15 Countries

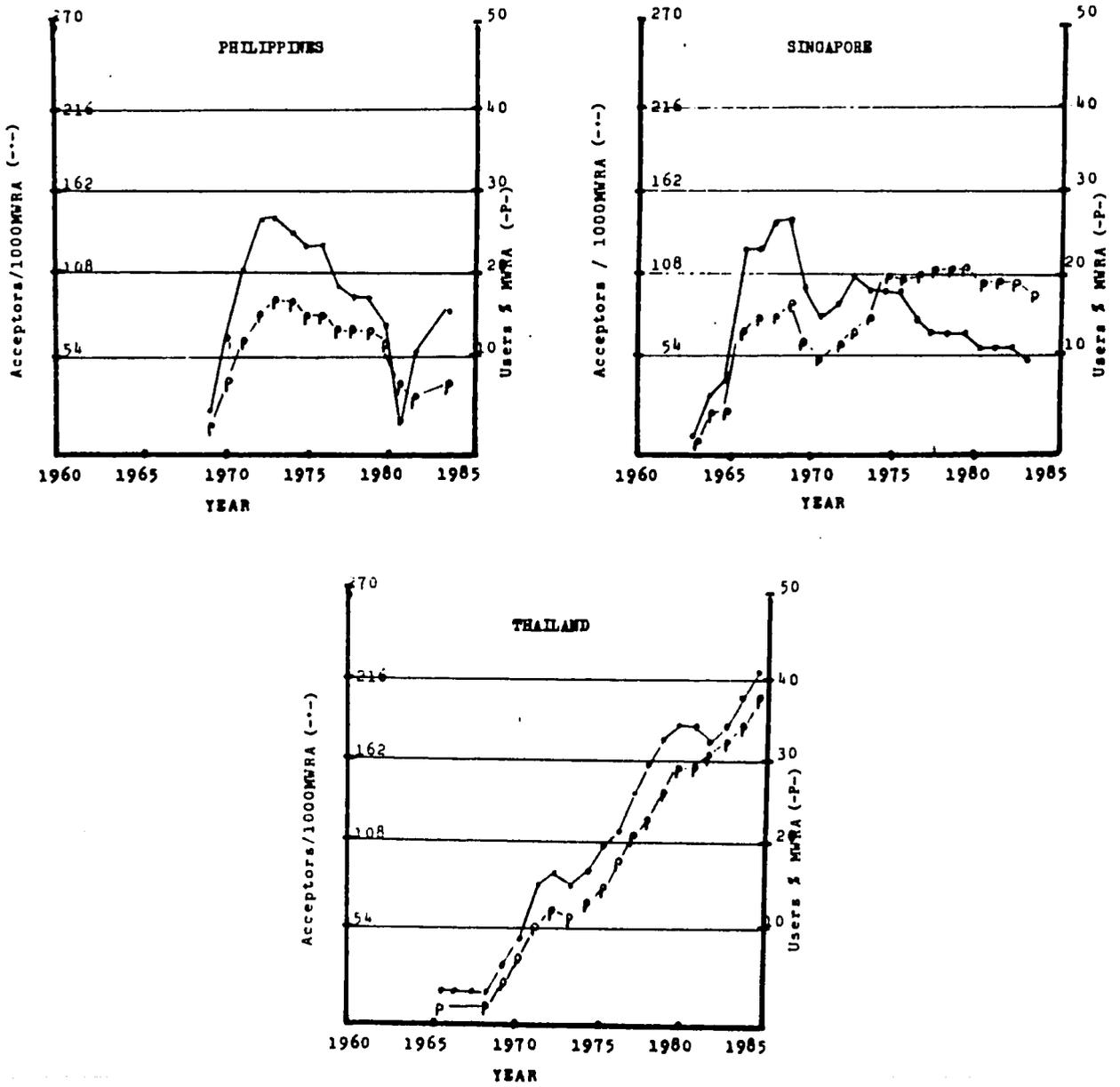
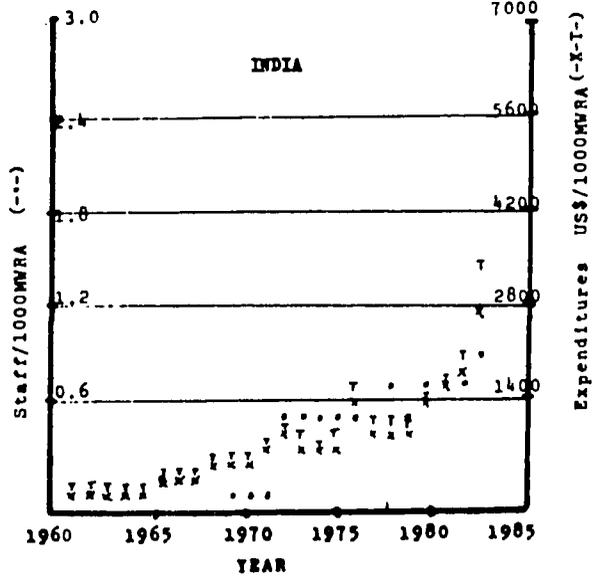
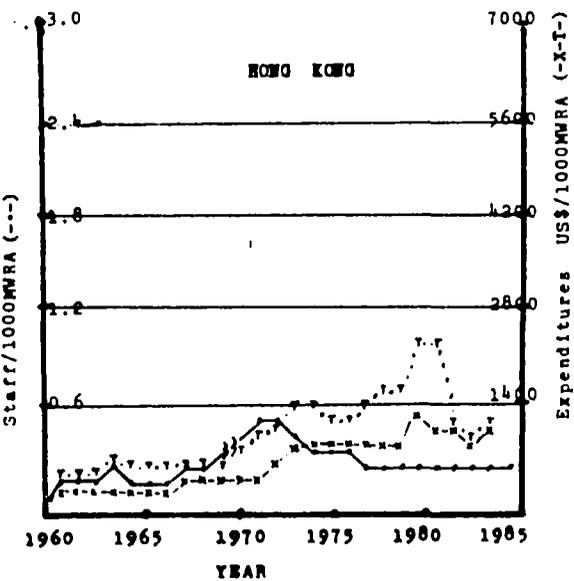
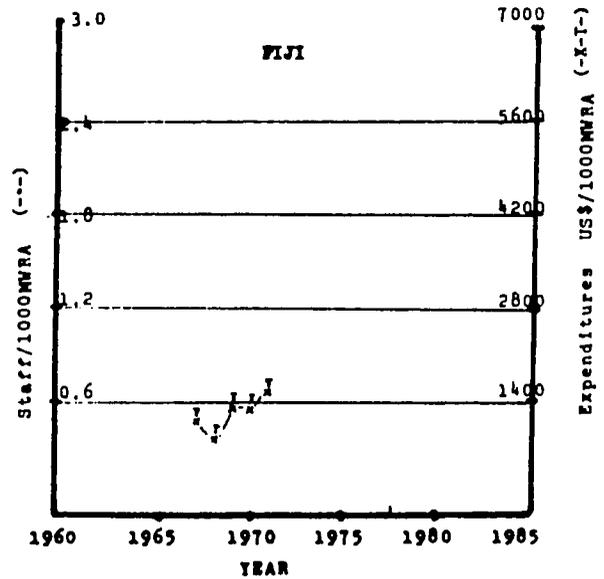
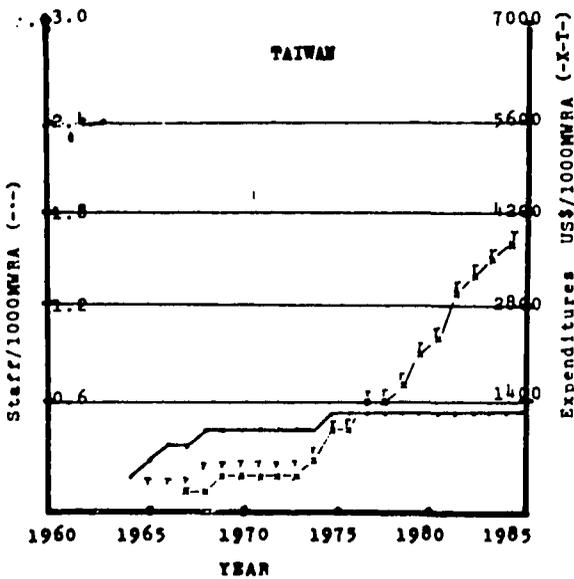
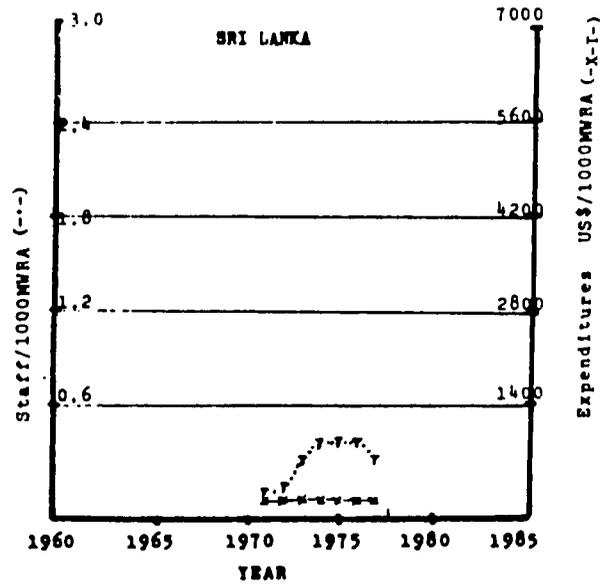
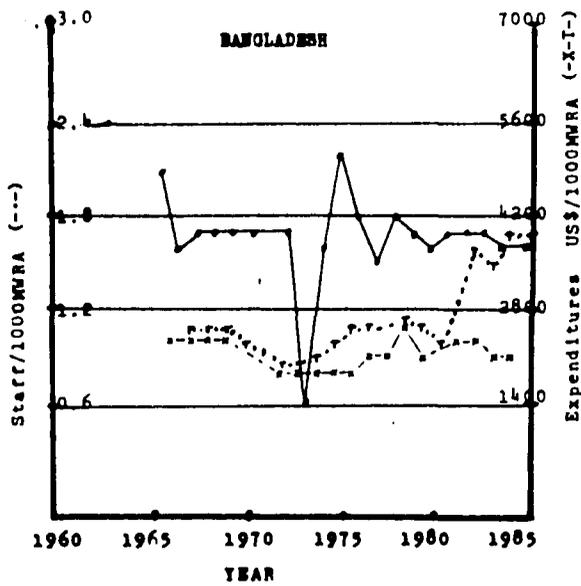


Figure 2.4
Program Inputs
by Time for 15 Countries

(key: --- Staff; -X- Government Exp.; -T- Total Exp.)



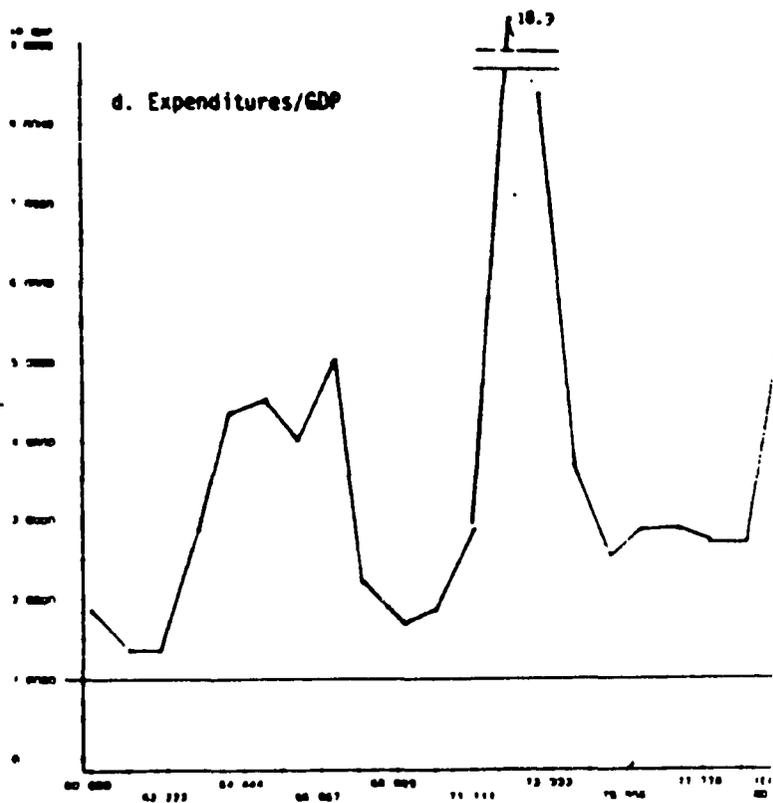
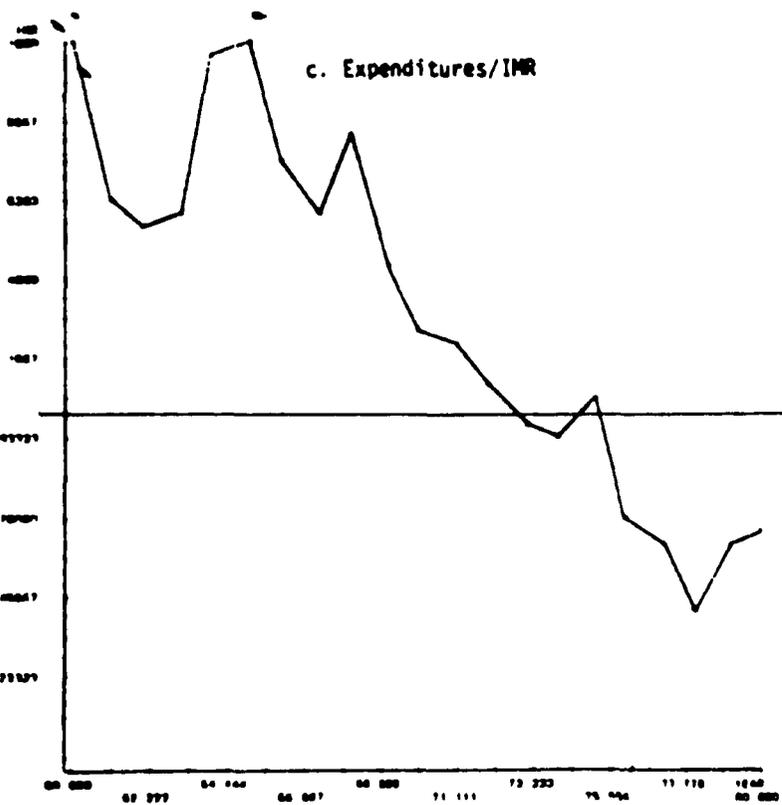
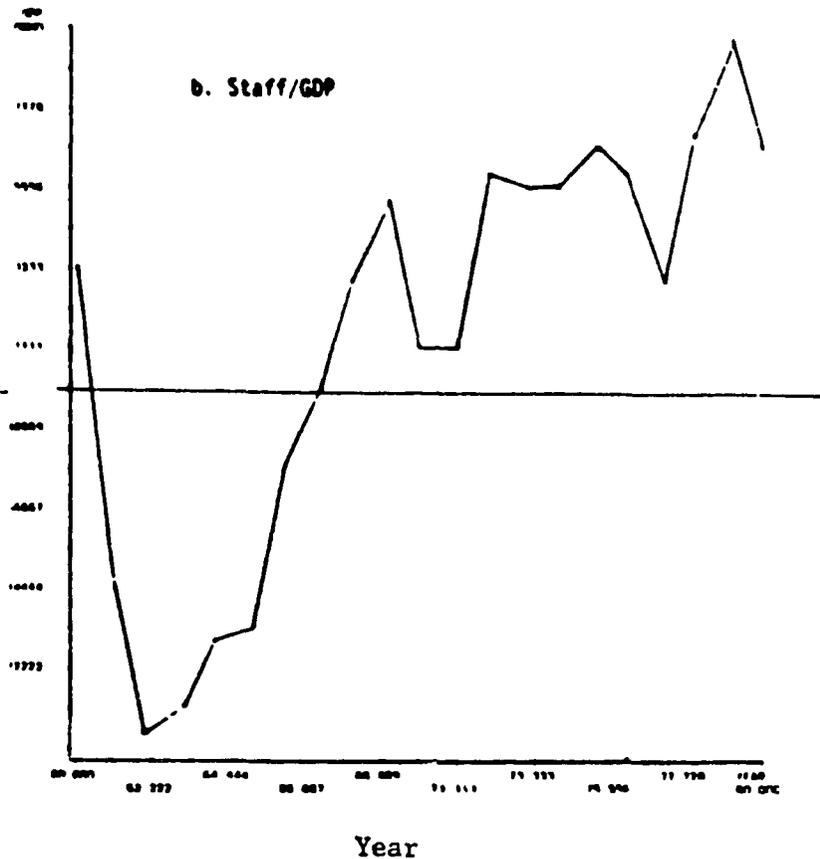
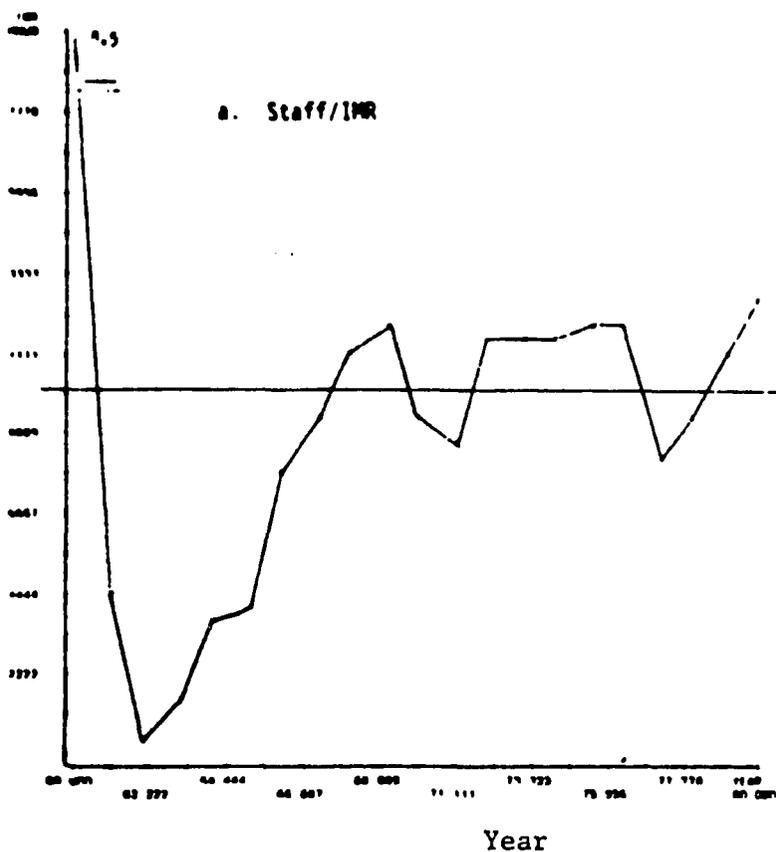
which are generally upward when the comparison is with GDP/cap. The expenditure to IMR ratios are much more erratic and when predicting program prevalence, the general trend is downward.

These patterns and differences are also clear from the annual data (of five year moving averages) shown in the figures. All the staff ratio slopes are definitely upward and much of the period shows ratios above unity. The expenditure ratios are much more erratic, and the clear negative slopes can be seen in the case of expenditures and IMR predicting program prevalence.

A possible explanation can be offered for the general upward patterns and the difference between staff and expenditure ratios. Two general principles may be at work. The first we can call the bureaucratic accretion principle; the second concerns resource lags, or the lag time for human and financial resources. As programs begin they are typically small, and focus much more on urban areas. This is the period when they gain most from the latent demand created by past processes of social and economic change. In this period, the levels of social and economic development, and the rapidity of their change may be expected to provide the largest impact on acceptance and use of fertility limitation. As programs move through time, however, they gradually build up capacities to penetrate into the more isolated rural areas, and to locations of lower literacy and economic development. It is in this phase that the program inputs tend to be most important. If the program does grow steadily and does break the social, economic, and physical isolation of the poor rural areas, it will be reaping more benefits from its own actions than from past social and economic change. This, then, is when the ratio of the program and environmental impacts rises in favor of the program inputs. Note that for most of our measures, this occurs around the end of the 1960s. The 1970s was a decade of very rapid growth in program inputs and activities. This rapid growth appears to have produced more impact on program outputs than did changes in the levels of social and economic welfare.

Figure 3.2

Ratio of Betas for Two Variable
Equations Predicting Prevalence Rates
1960-1985



The resource lag phenomenon is related to bureaucratic accretion. When policies are adopted and political-administrative actions are taken to implement a policy through developing a program, the easiest and quickest thing to do is to increase the funds. Start-up costs are often quite high, as the leading staff must be recruited, office space and equipment found, and networks established for field work and logistics. Most important, field staff must be recruited and trained, then put in place and supervised. It takes much more time to put a staff in place than to allocated funds for the activity. At the same time, since this is a human service type of activity, it is the staff that really makes the impact. Money may talk in some circumstances, but in human service delivery systems, it is the talk of human beings that makes the greatest difference. In effect, there is a relatively brief lag between public policy intent and action when financial resources are concerned; a much greater lag when human resources are concerned. This is why we may see expenditure to environment ration fall in the early stages only to rise later. The lag works in both directions, however. Money can be easily allocated, and just as easily cut back in the short run. For most programs, however, staff are only built up slowly, and even when funds are cut back, this does not necessarily mean a staff retrenchment.

Like Rome, organized family planning programs are not built in a day. They take time and rational, persistent effort. Further, where service delivery is concerned, they take rational human effort. This is, of course, precisely what the much-maligned bureaucratic organization is designed to produce: time, effort, and rational human planning to implement the policies for which the organization was deliberately created in the first place.

Not all programs, of course, have experienced steady accretion. WE have seen massive swings in the Pakistan and Philippine programs, with especially radical swings in Philippine staffing at one point. WE are now witnessing a substantial change in Malaysian population policy, reflecting much past program behavior. But in the overall

Asian experience, these appear more as exceptions than the rule. For most of the programs of Asia we have seen the steady growth of inputs and outputs, and the steady growth of some impact in acceptor and user rates.

FOREIGN ASSISTANCE

A Introduction

Foreign assistance specifically for population programs has been a dominant activity of the world community for the past quarter century. The earliest specifically population assistance grants can be traced back to the mid 1950s, when the formation of the International Planned Parenthood Federation provided both a distinctive donor organization that could mobilize funds for assistance, and a series of host country organizations that could receive those funds. There were also a few grants from the Scandinavian countries to Sri Lanka and Pakistan at the end of the 1950s. Since 1966 both the United Nations and USAID, and a handful of other governmental and nongovernmental organizations, have provided funds specifically for population activities. For the most part these funds have been for the direct provision of contraceptive services, and for data collection and informational activities related to the programs of fertility reduction.⁸ With specific donors, recipients and activities, it would appear that counting foreign assistance for population would be a relatively straight-forward process.

It is not. There are problems in the definition of population assistance, problems of both omission and inclusion, data availability, and consistency in what data are available. There are also the inevitable problems in international comparison of price indices and foreign exchange rates.

Our resolution of these problems will not be totally satisfactory, but it will provide a substantial set of data, which we believe reflects accurately the growth and distribution of funds. We use donor rather than recipient reports largely because of the greater coverage of the former. For the definition of "population assistance", we shall, in effect, accept

⁸. I have discussed these issues further in "The Impact of International Population Assistance," in Anne O. Kreuger et al, Aid and Development (Baltimore: Johns Hopkins University Press, forthcoming 1988).

whatever the donor defines as population in the assistance. We resolve the prices and foreign exchange rate problems by counting assistance in US dollars at official exchange rates in current prices. Finally, we have counted only funds provided directly to the 23 countries in this study, excluding regional or international activities in which these countries participated.

B. Population Assistance to Asia

Our donor reports show a total of US\$2,010,500 provided for population assistance to the 23 Asian countries from 1960 through 1985. This amount was officially reported for 433 country-years, for an average of about \$4.6 million per country-year of support. The range, however, extends from a miniscule amount⁹ to \$61 million recorded for Bangladesh in 1984.

This \$2 billion in foreign assistance can be compared with records of government expenditures for family planning. Our records show a total of about \$3 billion reported for 242 country-years. There are, however, two major flaws in this comparison, only one of which can be adjusted for with our data. First, we can use for the total comparison only those years for which governments provide data on their family planning expenditures. This gives us 242 country-years of data, for which the foreign assistance total is \$1.652 billion, compared with country totals of \$3.006 billion. This can be interpreted in a number of ways. We can say that the poor countries are providing about twice as much as are the wealthy foreign donors for population activities; or that foreign donors are carrying one-third of the burden of this particular development activity.

The second source of error in this comparison, however, lies in the difference of the activities covered. Host country family planning expenditures cover only a portion of the total costs of activities for which foreign assistance is provided. For a more appropriate comparison, we should include regular regular government expenditures for the census and

⁹. The smallest amount involved is actually a negative figure. In 1978, Burma is reported to have *returned* \$6,093 to the UNFPA.

other statistical services, and on the extensive public medical delivery system that is often used to carry the family planning activities. Were these more extensive costs included, foreign assistance would be providing a much smaller proportion of the total.¹⁰

Table 4.1 shows the amounts of foreign assistance recorded by year. From just over US\$ 137,000 in 1960, the total rose to US\$230,575,000 in 1985. Large increases can be observed in 1968 and 1970, when USAID added first 12 million and then about 20 million dollars to the totals. The total grew steadily, except for a dip in 1971, until 1980 when it reached US\$203 million. It then declined to US\$163 million for 1981, after which it rose steadily to the 1984 and 85 level of US\$230, million.

Although all 23 countries in our sample, with the exception of North Korea, have received some foreign assistance for population, the distribution has not been equitable. As might be expected, size is a major determinant of the absolute amount received.¹¹ India received 23 percent of the total, Bangladesh, 19, Indonesia, 10, and Pakistan 7 percent. Thus these four largest countries in the region accounted for 59 per cent of all foreign assistance to the 23 countries. The next two substantial recipients were The Philippines with 10 percent and Thailand with 7, giving 76 per cent of all foreign assistance to six countries. These countries did, however, contain about 73 per cent of the 1980 estimated 1.363 billion for all 23 countries. Only four other countries received more than 1 percent: South Korea (4), Malaysia (3), Nepal (3), and Sri Lanka (2). The remaining 22 received less than \$20 million each.

The foreign assistance came from a great variety of international organizations. Table 4.2 shows total amounts for the 26 years by groups of donors. We show amounts for the most prominent UN organizations, the United Nations Fund for Population

¹⁰. A comparison made for India through 1980 indicated that at most India received 17 per cent of the overall costs of just its family planning program from foreign sources. See Gayl DF. Ness and Hirofumi Ando, The Land is Shrinking, (Baltimore: Johns Hopkins University Press, 1984), chapter 3.

¹¹. The Pearsonian correlation coefficient for the two is +.557, implying that size explains about 31 per cent of the variance in foreign assistance by country and year.

Table 4.1
Foreign Population Assistance
to 23 Asian Countries 1960-85.

Year	US\$ million	Year	US\$ million
1960	0.137	1973	58.931
1961	0.169	1974	65.932
1962	0.786	1975	78.745
1963	1.037	1976	100.298
1964	2.327	1977	117.178
1965	3.081	1978	130.916
1966	3.609	1979	197.593
1967	5.154	1980	203.000
1968	19.101	1981	163.563
1969	19.029	1982	193.039
1970	40.034	1983	205.369
1971	26.205	1984	230.851
1972	34.896	1985	230.575

Activities, The World Bank and the World Health Organizations. USAID, the largest single source of funds, is distinguished from all other bilateral donors, which are grouped together. As is true for the larger world of international development assistance, only 13 countries have provided the overwhelming majority of population assistance funds. In addition to the US, the list includes Australia, Canada, Denmark, Finland, West Germany, Italy, Japan, The Netherlands, Norway, Sweden, Switzerland and the United Kingdom. The International Planned Parenthood Federation is distinguished in the table as the most prominent non-governmental organization. The total list of NGOs is quite long, including major donors such as the Ford and Rockefeller Foundations and the Population Council,

newer organizations such as the Pathfinder Fund and Family Planning International Association, and scores of smaller organizations that deal with population either exclusively, or as a part of larger international assistance work.

For the first five years of our period, the IPPF, and a few non-governmental organizations and Scandinavian bilateral donors provided all of the funds. In the last half of the 1960s, however, a pattern of three major donors emerged and remained throughout the period. The UNFPA is currently the largest international governmental organization providing assistance for population. The US\$347 million it provided to our group of Asian countries constituted about 17 per cent of the total funds for this period. Its first grants in 1969, of just over half a million dollars (US\$588,179), were made to 12 countries, and constituted only 3 per cent of the total. By 1974 it was providing almost 20 per cent of the total, a position it has retained since.

USAID has provided almost a third of all funds to these Asian countries over the past 26 years, but its share has varied widely in that time. It provided no funds until 1965 when a grant of US\$35,000 to the Philippines gave USAID about 1 per cent of the total to the Asian countries. Three years later, in 1968, its US\$12 million amounted to two-thirds of the total. USAID continued to provide about half or more of all funds through 1972, then declined steadily to the current one-third level in 1974.

The World Bank became the third major donor to these countries in 1973 when loans to India and Indonesia constituted almost 6 per cent of the total. By 1976 its loans roughly equalled the UNFPA grants, bringing its overall allocation to about 18 per cent of the total. As we shall note below, the World Bank total exceeds that of the UNFPA because of the high concentration of The Bank's population loans to only a few Asian countries. Since the Bank began its population loan program, the three — UNFPA, USAID and the Bank — have provided two-thirds to three-quarters of all funds to our 23 countries.

Table 4.2
International Population Assistance to 23
Asian Nations 1960-1985 by Donor Categories.

Donor	Country-Years*	US\$millions	Per cent
UNFPA	292	347.4	17.3
World Bank	77	361.2	18.0
World Health Organization	160	30.3	1.5
USAID	146	641.3	31.9
Other Bilaterals	179	340.0	16.9
IPPF	267	116.2	5.8
Other NGOs	328	174.1	8.7

* With 23 countries and 26 years (1960-85) in our set, there is a total of 598 country years for which foreign assistance can be recorded. To this we should add 15 years, 1960-74, for South Viet Nam, when it did receive population assistance for 10 years, and subtract 12 years, 1960-71 from Bangladesh, bringing the total to 601 possible country years of population assistance.

The list of donors and their country-years of assistance provides a series of important observations on the functional differentiation of population assistance. This differentiation renders less than fully appropriate any direct comparison of donors simply on the basis of funds allocated. For example, USAID has provided almost twice as much assistance as has the UNFPA, and with a substantially smaller overall staff. On the other hand, the UNFPA's 292 country years, compared with only 146 for USAID, indicate that it has provided assistance to more countries than has USAID. The first UNFPA grants in 1969 went to 12 countries, and since that time, it has provided grants to all the countries in our set, except for Kampuchea and Taiwan, which since 1972 may not even be mentioned as a country in United Nations documents. It has even provided assistance to Burma, Mongolia and North Korea, which remain officially pronatalist. USAID has provided assistance to only 11 of the 23 countries, and the great majority of its funds have gone to only six countries: Bangladesh, India, Indonesia, Pakistan, the Philippines, and

Thailand. By its position as the leading United Nations population organization, UNFPA is constrained to make many small grants to all countries of the region. As an arm of US foreign policy, USAID provides larger, wholesale, grants and loans to a few countries that are especially important to US interests.

On the non-governmental side, the IPPF operates in a very distinctive manner. It has been able to work in almost all of the countries of the region, although it has been excluded from Mongolia and North Korea. It is also distinctive in being one of the earliest organizations operating in the region, and it has often played a significant pioneering role in population assistance. It provided assistance to many countries before they adopted antinatalist policies, and its work can be credited with facilitating the important policy changes made in many countries. Thus although its overall allocations have constituted only 5.8 per cent of the funds to these 23 countries, it has had a significance far greater than indicated by this small proportion.

Finally, we can note that although the World Bank is one of the three largest providers, it operates in very narrow geographic and functional arenas. Its first loans were to India and Indonesia, and since then it has added only 7 other countries to the list: Bangladesh, Iran, South Korea, Malaysia, Pakistan, the Philippines, and Thailand. Of these, Bangladesh, India, Indonesia, and the Philippines have taken the great majority of loans. The World Bank also operates in the narrow functional arena of loans, and these are heavily concentrated in construction of combined health and population centers. In addition, there is an important upward bias introduced by these accounts. World Bank data show loans granted, not actually drawn down. We have pro-rated the granted amounts over the period of the loan, but it is often not until some time after the terminal date of the loan that it is possible to discover how much was actually disbursed. To this time, these data have not been reported by year. In an earlier study (Ness, Johnson, and Bernstein, 1983), for example, we found World Bank loans to Iran totalling US\$12 million. Data collection for this study, however, revealed that only US\$642,000 had actually

been disbursed. (Since only the total was available, we pro-rated the amount over the six years of the original loan agreement.) In a study for the Malaysian government in 1977, we found that only 25 per cent of the World Bank loan had actually be used. Both the narrow arena and the inaccuracy of the data make World Bank loan figures less than fully useful for any analysis of international population assistance.

C Time and Foreign Assistance

We saw earlier, in chapter 2, that program inputs tended to rise steadily with time. The same is true of foreign assistance, both in total and for most of the recipient countries. For the total by year shown in table 4.1, regressing funds on years (1960–1985), provides the following equation: $Y = -\$58,489,000 + \$10,402,000x$ with an explained variance (r squared) of .89. On the average the total grew by about \$10 million per year.¹²

Table 4.3 shows the results obtained by regressing foreign assistance on time (the years for which assistance is recorded) for each of the program countries. We include the results from Afghanistan, which received assistance throughout the period, although we classified it as a non-program country in the earlier discussion.

For all but two countries time alone explains half or more of the variance in the amount of aid received. Only Taiwan and Hong Kong have not experienced this pattern of bureaucratic accretion. Taiwan's case is understandable from the international political situation. It received important assistance for ten years from 1965. This averaged almost \$300,000 per year for the period, though even here the pattern showed a rise from less than \$100,000 in 1965 to \$400,000 in 1972, followed by a continuous decline \$160,000 in 1975, and continuing downward to our last recorded input of \$7,000 in 1980. Further, this support came almost exclusively from non-governmental organizations. Since Communist China gained its place in the United Nations in 1972, Taiwan has been something

¹². This statistic, and the total regression result shown in table 4.3 are provided for illustrative purposes only. The serial autocorrelations problems from this data set make the use of regression for the entire data set technically inappropriate for analytical purposes.

Table 4.3
Foreign Assistance Regressed on Time
for 14 Asian Countries, 1960-1985

Country	(N)	slope (\$)	T Statistic*	R squared
Afghanistan	26	53,846	4.9	.50
Bangladesh	14	4,802,400	16.6	.96
Fiji	14	64,814	5.5	.72
Hong Kong	18	15,932	2.4	.26
India	26	2,305,900	9.2	.78
Indonesia	26	1,244,700	8.2	.74
S. Korea	22	302,890	4.2	.47
Malaysia	26	336,490	8.0	.73
Nepal	18	547,220	8.8	.83
Pakistan	24	654	4.4	.47
Papua New Guinea	11	261,870	4.5	.69
Philippines	26	815,470	9.2	.78
Singapore	26	21,900	7.1	.68
Sri Lanka	26	197,410	8.0	.76
Taiwan	26	-3,726	-0.9	.04
Thailand	26	693,820	7.6	.71
Total Sample	364	503,830	9.8	.21

* We use the T-statistic here to show the strength of the relationships. For samples of this size, a T-statistic of 2.5 to 3.0 is required to produce a significance level of 1 per cent or better.

of an outcaste of the major donors. Hong Kong has received support over a longer period and from more donors, including NGOs, the IPPF, WHO, and since 1980, the UNFPA. Its total support rose erratically in the early 1960 to about \$270,000 in 1972. Since that time the total has risen to above \$500,000 in two years (1978 and 1980), and has fallen as low as \$230,000 (in 1983), with no discernible trend. It can be argued that neither program desperately needs foreign assistance to maintain the country's current pattern of changing reproductive behavior. Taiwan has demonstrated its independent capacity to mount a successful program and thus to take full advantage of the fertility-depressing impact of the social and economic developments that its policies have produced. Hong Kong's high density and full urban character make the program itself of something less than an urgent necessity to produce fertility declines.

In two other cases the impact of time on foreign assistance is notably different from the majority of the countries. For most countries time explains 70 to 96 per cent of the variance in assistance. But for South Korea and Pakistan the explained variance is only 47 percent. The patterns for the two countries have been considerably different, however. South Korea's trend resembles that of Taiwan in the secular rise and fall of foreign assistance, but differs in its central position for the major donors. USAID was a major donor, with amounts rising to about \$1.5 million as early as 1968, and falling to \$350,000 in 1975. UNFPA began assistance in 1969 and showed a gradual rise to almost \$2 million in 1979, followed by a secular decline. The World Bank provided a major loan over the period 1979-83. WHO's assistance was roughly stable at around \$200,000 from 1972 to 1985. The IPPF and the NGOs have provided rising and falling levels from the mid 1960s to 1985, and the bilaterals gave assistance from 1968 through 1977. Foreign assistance can be said to have been important in institutionalizing the national program. This has helped to induce substantial government support, which has risen steadily since the mid 1970s when the foreign assistance began to decline.

Pakistan shows the same erratic pattern of assistance that we can see in its overall program over the past 25 years. There were small amounts of assistance from the IPPF and NGOs in 1960 and 61. Bilateral donors began continuous support in 1963, USAID in 1967, UNFPA in 1969, WHO in 1972 and the World Bank joined with a major loan in 1984. The total amount of assistance rose steadily to over \$5 million in 1969, then declined through 1971. It rose again to \$14 million in 1976, then declined to \$3.8 million in 1981, after which it rose again to a level of almost \$24 million in 1985. This generally follows the pattern of emphasis in the 1960s, declining, rising and then declining in the 1970s, with strong increases after the major reorganization of the program after 1981.¹³

¹³. For one analysis of the political and organizational changes that mark these erratic shifts in government attention to population, see Jason L. Finkle and Gayl D. Ness, Managing Delivery Systems, University of Michigan Center for Population Planning, 1985.

When the government was interested in promoting family planning, foreign assistance was forthcoming. It declined when the government became ambivalent or lapsed into something less than concerted effort, which reflected activity both in family planning and in over all development promotion.

The overall pattern of assistance, then, is one in which time marks the growth of donor assistance. For a few more developed countries the assistance waxes and wanes, showing early support to launch a program for which the government then assumed more and more responsibility. Where government policy vacillated, foreign assistance followed domestic policy.

D. The Impact of Foreign Assistance on Program Performance

With the massive amount of foreign assistance that has flowed into Asian family planning activity, it is legitimate to ask what impact this may have had on the performance of family planning programs. What we have just said above, however, suggests that there may be two very different types of impact: qualitative and quantitative. Donors like the IPPF and other NGOs provided smaller amounts of funds, but had substantial impact on changing government policy. In effect, they helped to identify a problem and to produce a qualitative change in public orientations to population planning. Later and larger donors provided the massive amounts of resources needed to implement policies. We can identify the former impacts through detailed historical analyses of organizational actions. The more quantitative impact can be identified by asking whether the *amount* of funds provided has had any impact on program performance. It is the latter that we undertake in this section.

In effect, we wish to determine whether the level of foreign funding has had a significant and independent impact on program performance. We can do this by comparing the impact of foreign funds with that of domestic staff or government financial inputs. This can be done cross-sectionally, using all countries with a different analysis for each

year. It can also be done in time series, examining each country over the lifespan of its family planning program activity. Before we do this, however, we must make some adjustments in the measure of foreign assistance.

First, we shall use foreign assistance per 1000 eligible couples, to adjust for the different sizes of countries. For the most part we can use the total funds received in any year as the basic figure. We have seen, however, that the World Bank figures are distinct from those of other donors in important ways. The bank has operated in only eight of our program countries. Further, whereas most donor funding is provided in relatively stable amounts from year to year, the Bank's funds come in very large amounts for short periods of time. Further, as we noted, the Bank data are for loans formally agreed upon, not for funds actually drawn on. Thus in some cases we might get very different results by including or excluding World Bank funds.

We addressed this problem by comparing two sets of foreign aid figures, including and excluding World Bank funds, in their zero order relation with both acceptors and program prevalence rates. For Bangladesh, India, Indonesia, Pakistan and the Philippines we get the same results from including and excluding World Bank funds. Thus for these countries we use the total foreign assistance figure. For South Korea, Malaysia and Thailand, however, the exclusion of World Bank funds increased the impact of foreign aid on the two measures of program performance. For both South Korea and Malaysia the difference was substantial; for Thailand it was significant but not overwhelming. We can see this in the brief set of data presented in table 4.4, which shows the explained variance (R^2) and the regression coefficient together with its T-statistic for four equations for each country. For each equation we also control for the impact of the level of social and economic environment, indicated by life expectancy.

Table 4.4
Results of Regression Equations Showing the Impact
of Foreign Assistance on Acceptor and Prevalence Rates,
Including and Excluding World Bank Funds. (T- statistic)

	South Korea		Malaysia		Thailand	
	Incl WB	Excl WB	Incl WB	Excl WB	Incl WB	Excl WB
Y = Acceptors/kew a= (T-Stat) R squared	.005 (.2) .24	.06 (2.8) .44	-.004 (1.9) .24	-.007 (4.3) .58	.02 (2.2) .87	.04 (3.7) .92
Y = Prevalence % a= (T-stat) R squared	.0006 (.3) .85	.008 (3.1) .89	-.003 (1.7) .21	.0006 (4.1) .56	.002 (1.3) .92	.004 (2.5) .94

Given this substantial impact of the World Bank figures, when we examine the impact of foreign aid we shall use the total figures for all countries except for South Korea, Malaysia and Thailand. For these three, we shall use foreign assistance exclusive of World Bank loan data.

Next we must compare foreign aid figures with domestic inputs, either staff or government expenditures, in their relative impact on acceptor and prevalence rates. As noted above this can be done either in cross-sectional or time series analysis. We first ran regression equations, using life expectancy, domestic staff and foreign assistance to explain both acceptor and prevalence rates. A separate equation was run for each year 1960-1985. These were done both with simultaneous and lagged foreign assistance figures to test the assumption that it takes time for foreign assistance to get into the system and have an effect on program performance. As we saw before in chapter 2, the number of cases varies greatly, with as few as six in the early 1960s, rising to about 14 by the mid

1970s. In no case did we find significant effects of foreign assistance. Almost all of these equations were non-significant. Thus we have used time series analyses for each country, using the lifetimes of the foreign assistance and country program efforts.

The most direct test of the relative impact of foreign and domestic inputs can be gained by including both values in the same multiple regression equation explaining either acceptor or program prevalence rates. We also attempted in each case to control for the level of social and economic development, by using the figure for life expectancy at birth. Unfortunately, the small number of cases and the problems of multicollinearity greatly restrict the analysis. In all cases, however, the zero order correlation between life expectancy and either staff or foreign assistance was high, in the range of $+ .7$ to $+ .9$. Thus life expectancy has been excluded and the equations whose results are reported in table 4.5 include only the domestic and foreign input figures.

In addition, for Indonesia, Singapore and Thailand, the zero order correlation coefficients between foreign and domestic inputs were also in the $+ .7$ to $+ .8$ range, precluding using both together in the same equation. In these three cases we merely compared explained variance and the strength of the independent variable coefficients in two separate equations, using domestic and foreign inputs.

The results of the two-input equations are shown in table 4.5. This table uses program staff per 1000 eligible couples as the measure of domestic input. We reran the same equations using government expenditures per 1000 eligible couples. For the most part this produced no change. We also ran all of the equations using acceptor and prevalence rates as the dependent variables. Since both results for each country were virtually the same, we do show only the results for acceptor rates.

For Bangladesh, foreign assistance appears to have had a much greater impact on program performance than have numbers of staff or government expenditures. From this perspective, the country can be said to have a weak program greatly shored up by a massive influx of foreign assistance.

Table 4.5
 Results of Regression Equations Using Domestic Staff and Foreign Assistance to
 Explain Program Acceptors per 1000 Eligible Couples, for Nine Asian Countries

Country	Slope Coefficients for: (with T Statistic)		R Squared
	Staff	Foreign Assistance	
Bangladesh	12.7 (0.9)	.03 (8.7)	.82
Taiwan	441.6 (17.5)	-.08 (3.0)	.95
Hong Kong	77 (2.0)	-.02 (1.5)	.18
India	50.6 (2.0)	.02 (0.3)	.36
S. Korea	32.2 (3.1)	.08 (4.4)	.57
Malaysia	11.5 (0.7)	-.002 (4.1)	.57
Nepal	120 (4.1)	.012 (3.9)	.87
Pakistan	56.2 (3.0)	.04 (2.7)	.39
Philippines	6.4 (0.6)	-.007 (0.4)	.08

The opposite is the case for Taiwan, where domestic inputs have been far more important than foreign assistance. This is not surprising in that Taiwan received a small amount of high quality early inputs from private funding sources, and almost nothing from large public donors. What Taiwan has done, it has done without large scale foreign assistance.

India also shows a larger impact from domestic than from foreign inputs, though the overall strength of both sets of inputs combined is much weaker than for most other countries. When we ran these equations explaining prevalence rates, which are very high due to the extensive use of sterilization, the strength of both local and foreign inputs was substantially increased, but domestic inputs remained stronger than the foreign (T statistics were, respectively 4.8 and 3.1, and the overall explained variance rose to .86).

For Hong Kong, South Korea, Nepal, Pakistan, and the Philippines domestic and foreign inputs show roughly equal weights, although the strength of inputs in explaining program performance varies greatly. We can infer from this great variance in the strength of the program itself. In both South Korea and Nepal, the explained variance is substantial and both domestic and foreign inputs contribute significantly to program performance, and in roughly similar relative amounts.¹⁴ As different as these situations are, it appears that both have respectable levels of internal program effectiveness and both are substantially helped by foreign assistance. Pakistan is roughly similar with roughly equal weights accorded to domestic and foreign inputs, but the overall level of impact is substantially less, as seen from the lower level (.39) of explained variance. Pakistan's internal political and administrative turmoil can be said to have obstructed both the internal ability to mount an effective program, and the ability to use what foreign assistance has been available to make the program more effective.

Hong Kong and the Philippines share equal but low levels of impact, from both domestic and foreign inputs individually or combined. Hong Kong may not have needed much assistance given its level of development, nor did it receive much assistance. The Philippines, on the other hand, received very substantial external support, from as early

¹⁴. Note that for South Korea, foreign assistance has a greater impact when we are explaining acceptor rates. When explaining program prevalence, however, staff and government expenditures are slightly stronger. The opposite obtains for Nepal. In both cases, however, the differences are small and should not be considered significant.

as 1965, but it appears to have been unable to use that support to increase program performance. Nor has it be able to use what domestic resources it has had to increase performance.

Malaysia presents something of an anomaly. The equation explains a substantial amount of the variance (.57), and foreign inputs have been much stronger than domestic staff or government expenditures. But the foreign impact has been *negative*. The historical situation makes this more understandable, however. Malaysia is a well ordered and wealth, country with an effective government. Donors are anxious to lend it money, because it can readily repay its loans, or to give it money, because it can implement plans readily. At the same time, the country has been torn by intense ethnic tensions, which have been especially detrimental to population planning. Since 1970 all of Malaysia's indicators of output have gone downward, despite the equally consistent rise in inputs. Government policy has been ambivalent since 1970 and has moved to a pronatalist policy, *but for Malays only* since 1982. (Needless to say this policy is not official and would clearly be denied. The interpretation is that of the senior author, and is not necessarily shared by other members of the research team.) The government can mobilize domestic inputs, and can absorb foreign ones, but its internal ethnic problems prohibit it from using those inputs to increase program performance.

Indonesia, Singapore and Thailand require a more crude form of analysis since domestic and foreign inputs are themselves highly related to one another, and therefore cannot be used in the same equation. (They are also highly related to life expectancy.) The results, however, show a clearly greater impact from domestic than from foreign inputs. For Indonesia the explained variance is .88 for staff and .41 for foreign assistance. The T statistics for the respective input coefficients are 10.0 and 3.2. When we use government expenditures rather than staff for domestic inputs, the explained variance drops to .70, and the T statistic for the coefficient is 5.7. (The same relative weights are found when program prevalence is used as the dependent variable rather than acceptor

rates.) In effect, domestic staff inputs show the greatest impact on program performance, followed by government expenditures, followed by foreign assistance. The contrast with Bangladesh is striking. Both countries have received massive amounts of foreign assistance for family planning. In Indonesia these have helped to make a good program better; in Bangladesh they have probably saved a weak program from complete disaster.

It will not be surprising to find that Thailand shows a pattern similar to that for Indonesia. For domestic inputs¹⁵ the explained variance is .89 with a coefficient of .23 and a T statistic of 11.2; the respective figures for foreign assistance are .73 explained variance, .06 and 7.2 for the coefficient and its T statistic. Roughly the same results are obtained using program prevalence for the measure of program performance. As with Indonesia, foreign assistance appears to help a good program to be better.

Singapore produces another anomaly. When we attempt to explain variance in the acceptor rates using staff and foreign funds, neither inputs are very weighty. Staff explains a marginal 25 per cent of the variance, and its coefficient just manages to reach a significance level of 5 per cent. Foreign assistance is even less significant. When we use government expenditures for domestic inputs, however, the explained variance rises to .66 and the coefficient has a T statistic of 5.8. Moving to the explanation of program derived prevalence gives us better fitting equations throughout, though again, domestic expenditures show a substantially greater impact than does either foreign assistance or staff levels. Thus for Singapore, it is local money, rather than numbers of staff or foreign assistance that appears to drive program performance. This may not be surprising for the highly developed city state with an exceptionally high level of public welfare service.

It is, however, in contrast with Hong Kong, where local money shows no impact on performance, nor does foreign assistance, and staff levels are only marginally important. In these two great city states, foreign assistance has had no quantitative impact on

¹⁵. Since Thailand's program is fully integrated with health, it shows no separate figures for staff. It does, however, show separate figures for expenditures, thus we have used these for the measure of domestic input.

program performance, and the two differ considerably in how much domestic program inputs affect program performance. Recall that our earlier analysis showed Hong Kong's program-derived prevalence rates to be only about one-tenth of the total; for Singapore the program appears to have provided almost half of total contraceptive use. This comparison parallels others that note the strong role of government in all Singapore aspects of life, while Hong Kong remains the anomaly of a state with a government that deliberately performs only the barest minimum of services.

Chapter 5

ASIAN PROGRAMS:

A Comparison of Indicators

In the preceding chapters we have been able to provide some statistical appraisals of Asian family planning program performance, both overall and for individual countries. We saw a process of bureaucratic accretion. Programs grew over time, with increases in both inputs and outputs. Further, we saw an increase in the relative impact of program inputs over environmental conditions on program outputs. We also saw that foreign assistance provided considerable support to the programs, but for many, domestic inputs had a greater impact on program performance than did foreign assistance. In all of these measures some countries consistently performed better than others, providing relative assessments of program performance.

Here we can examine those results alongside some of the other attempts to provide quantitative assessments. We shall first review one of the most energetic attempts, the Lapham-Mauldin assessments of program effort. Then we shall present one other set of *penetration* indices developed for this analysis, and compare all the different indicators for the different types of information they can provide. Finally, in the closing section, we shall provide a brief set of comments on each program country.

A. Comparison of Indicators

1. Lapham-Mauldin Program Effort

Perhaps the best known and most used set of quantitative indicators of family planning programs is that developed by Robert J. Lapham and W. Parker Mauldin. This began with a preliminary assessment in 1972, and continues to the present, with the latest data for the year 1982. For the most recent assessment, four different dimensions

of program activity were assessed for 73 countries of the world.¹⁶ Expert observers were used to assess country scores based on narrative statements. The four dimensions included **policy** and stage setting, **service** activities, **record keeping** and program evaluation processes, and the **availability** of the range of fertility-limiting methods from abortion through sterilization, IUDs, pills and injectables, to condoms and other barrier methods. These were then summed to provide a **total** score for each country. It represents by far the broadest systematic assessment exercise we have of modern family planning programs.

All of our 23 Asian countries are included in the Lapham-Mauldin assessment, though Kampuchea, Laos, and Mongolia receive scores of zero on all dimensions. There are also scores for the five additional countries we list as “non-program” countries (or those without real data): Afghanistan, Burma, Iran, North Korea, and Vietnam. For this analysis, we shall use the data from our 15 “program countries” alone. Table 5.2 shows the five Lapham-Mauldin scores for our program countries in columns 4–8.

2. Penetration Indices

We have also developed a simple set of ratios designed to show the extent to which overall delivery systems penetrate a variety of barriers to provide fertility-limiting service to the population. In all cases we have used prevalence rates from recent national fertility surveys, dividing prevalence ratios for different groups to construct the index. Since the prevalence rates are from national sample surveys, they provide an indication of the extent to which the *overall delivery system* can overcome a variety of forms of *isolation*. The delivery system includes the government family planning program, private family planning associations, private medical doctors, and the market itself. We know from chapter 2 that for our Asian countries the government program varies greatly in the extent to which it serves the total community. It is least important in Hong Kong and Singapore,

¹⁶. For example, see Robert J. Lapham and W. Parker Mauldin, “Contraceptive Prevalence: The Influence of Organized Family Planning Programs”, Studies in Family Planning, Vol 16, No. 3, (May-June, 1985), pp 117–137.

and much more important in the poor countries, Indonesia, Thailand, Bangladesh or Nepal, for example. The penetration indices reflect the work of the overall delivery system, from which we cannot at this point extract the work of the government program.

Dividing rural by urban prevalence rates indicates the extent to which the delivery system overcomes the barriers of physical distance, lower density and transportation costs to reach the population. This rural urban difference can be said to indicate the extent to which *physical isolation* can be overcome. We can also divide prevalence rates for women with high levels of education by those for women with no education. This indicates the capacity of the delivery system to overcome the *social isolation* that comes from illiteracy or lack of education. Finally, there are two ratios based on parity that can indicate the extent to which a *normative isolation* of high fertility norms is overcome. One ratio uses prevalence of low to high rural parity, referring to a rural reproductive norm. The other divides prevalence of low parity rural women with that of high parity urban women. In effect this bridges the full range of parity-related use of fertility-limitation, and can be said to speak to the entire national reproductive norm. Table 5.2 also shows these ratios for **Rural, Education, Rural Parity, and Total Parity** in columns 9 through 12.

Where data permit, we can examine the movement of these ratios over time. Our analyses in chapters 1 and 2 indicated that Asian countries have experienced something we call bureaucratic accretion. As organizations are created and operate through time, they tend to grow and to increase both their coverage and penetration of the target population. Inputs and outputs from most country programs have grown with time, and time is one of the most powerful predictors of levels of both inputs and outputs. Table 5.1 shows time changes in penetration ratios for the seven countries in our list that provide data for more than one time period.

Table 5.1
Four Penetration Indices
Over Time for Five Asian Countries

Country & Year	Rural/ Urban	Low-High Education	Rural Parity	Total Parity
Bangladesh 1975	37 7/19	38 6/16	27 3/11	11 3/28
1979	55 12/22	32 10/32	33 6/18	21 6/28
India 1970	41 11/27	18 10/56	na	8 2/25
1980	61 31/51	44 28/64	na	8 4/51
S. Korea 1974	83 33/40	97 37/38	17 7.42	13 7/52
1979	98 54/55	93 51/55	21 13/63	20 13/65
Nepal 1976	9 2/21	15 2/13	— 0/5	— 0/25
1981	26 6/23	23 6/26	7 1/14	2 1/40
Sri Lanka 1975	80 32/40	56 22/39	32 13/41	25 13/53
1982	97 57/59	79 48/61	46 32/69	43 32/75
Taiwan 1965	49 21/43	32 19/60	na	14 0.6/4.2
1976	94 73/81	100 78/78	na	27 10/37
Thailand 1975	71 34/48	84 31/37	54 20/37	33 20/61
1978	83 50/60	98 53/54	79 44/56	56 44/78
1981	89 58/65	87 54/62	55 36/65	44 36/82

Figures below each ratio are the actual prevalence rates. Total parity ratios for Taiwan are for 1964 and 1969, re

Note that almost all ratios show an increase with time.¹⁷ The rank order of the ratios is intuitively acceptable. They are lowest for Nepal, the country with the most difficult geographic or transportation problems. Bangladesh has moderate ratios, and those for the other three countries are quite high. For these latter countries both the physical isolation of the rural areas and the social isolation of low education have been largely overcome. This accords with general perceptions of the effectiveness of these programs in reaching the rural areas. Note how even the Nepal program has increased coverage and made inroads into all forms of isolation in the five years of program activity.

We can also examine differences among the ratios of each country, for other interesting observations. For most it appears easier to overcome physical than social isolation. And it is even more difficult to overcome the barrier of reproductive norms. Sri Lanka, Thailand, South Korea, and Taiwan, however, indicate what may well be deeper cultural differences in those reproductive norms. All four countries have achieved very high indices in rural and educational penetration. Neither ruralness nor lack of education appear to be barriers to the acceptance and practice of fertility-limitation. But the Sri Lankans and Thai have apparently accepted postponement of pregnancy earlier in the child-bearing cycle than have the Koreans or Taiwanese. Parity ratios for the latter two are much lower than they are for the former even at a time when the former were older and more developed.

In Table 5.2 below, we have collected a series of different measures of program performance for our 15 Asian "program" countries. Columns 2 and 3 show the prevalence rates from national sample surveys in the most recent year available, and the program-derived prevalence rate given in 1982. Columns 4 through 8 show the 1982 Lapham-Mauldin program effort scores by their total and four individual dimensions. Columns 9

¹⁷. The one deviant case is Thailand for 1978, when the differences between the respective prevalence rates are very small. For three of these, the ratios decline between 1978 and 1981, though the latter ratios are all higher than the original ratio in 1975. We have no explanation for this anomaly.

through 12 show the scores for the penetration indices discussed above, using data from the most recent survey. Column 13 summarizes material from chapter 4, especially in table 4.5. This indicates whether domestic inputs have greater (>), equal (=), or less (<) impact in explaining the rise of acceptor and prevalence rates. Columns 14 and 15 show standardized regression coefficients when acceptor or prevalence are regressed on time. See Chapter 2, especially table 2.3 for details.

There are a number of observations to be made from the overall table, and some of the analyses that can be done with these data. First, we had hoped to be able to use the slopes of our time series regressions to show different levels of program performance over time. Unfortunately, the differences in the value are not very subtle, and can show only very large differences in the countries. For most countries, time explains 80 to 99 percent of the variance in either acceptor or prevalence rates. This is true for experiences as diverse as those of Bangladesh, India, Indonesia, South Korea (for prevalence), Nepal, Papua, Taiwan and Thailand. Obviously the measure tells us little. For Hong Kong and the Philippines there is no relationship, for Malaysia it is a negative one. It is weak for Pakistan, and very mixed for Singapore, with a strong positive impact for prevalence but no impact for acceptor rates. It is difficult to take these measures very far.

The domestic to foreign impact values in column 13 summarize what we saw in the last chapter. For what are generally perceived to be strong programs — Indonesia, Taiwan, and Thailand — domestic inputs have been far more important than foreign assistance in explaining the rise of both acceptor and prevalence rates over time. Domestic inputs are also greater than foreign in India as well, but the relationship is a weaker one. For South Korea and Nepal, the two sets of inputs have substantial and roughly equal impact. This provides a more encouraging view of the Nepalese program than is generally available. What makes Nepal appear so intractable is the immense problem of poverty and physical isolation. But the program has grown steadily in the past decade or more; it is having an impact on prevalence levels; and a substantial portion of its success

Table 5.2

Selected Measures of Family Planning Program Performance for 15 Asian Country Programs

Country (1)	Prevalence		Lapham-Mauldin Scores*					Penetration Scores*				For/Dom (13)	Time Slopes**	
	Total Program (2)	(3)	Total (4)	Policy (5)	Service (6)	Records Avail. (7)	(8)	R/U (9)	Ed (10)	Rur. Parity (11)	Total Parity (12)		Accept. (14)	Preval. (15)
Bangladesh	14	18	68.5	18.6	28.5	5.1	16.3	55	32	33	21	D<F	.89	.94
Fiji	34	38	59.8	16.9	25.0	4.2	13.7	81	123	25	22	na	.46	.60
Hong Kong	5	80	82.2	17.7	30.2	11.4	23.5	na	na	na	na	D=F+	-.14	-.01
India	20	32	75.6	23	31.5	7.2	13.9	61	44	na	8	D>F	.86	.99
Indonesia	17	48	89.9	24.5	40.6	11.2	13.6	87	67	41	30	D>F	.97	.98
S. Korea	32	58	94.8	23.5	37.2	10.5	23.6	98	93	21	20	D=F	.57	.95
Malaysia	5	42	61.1	18.9	18.4	8.7	15.1	64	63	46	29	D<F++	-.61	-.16
Nepal	5	7	44.7	17.7	15.6	5.0	6.4	26	23	7	2	D=F	.98	.99
Pakistan	5	6	48.5	18.8	14.5	6.3	8.9	25	29	20	5	D=F	.42	.51
Papua N.G.	3	5	29.7	12.8	8.3	3.1	5.5	na	na	na	na	na	.95	.89
Philippines	4	45	65.2	18.2	26.0	5.6	15.4	66	26	41	26	D=F+	-.27	-.1
Singapore	20	71	93.4	21.3	38.6	10.0	23.5	na	na	na	na	D=F@	-.1	.83
Sri Lanka	18	57	80.4	21.3	35.1	7.1	16.9	97	79	46	43	na	.75	.99
Taiwan	37	70	94.3	20.1	38.7	11.5	24	94	100	na	26	D>F	.90	.99
Thailand	32	59	72.9	16.7	27.6	8.6	20.1	89	87	55	44	D>F	.99	.99

* See text for explanation; ** values of standardized beta weights for acceptor and prevalence rates regressed on time; + Non significant relationship; ++ Foreign assistance is negatively related to performance; @ Impact on prevalence, not on acceptor rates.

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is apparently due to the growth of domestic resources. At the same time, foreign assistance can be credited with real a real impact in what is certainly a very difficult environment. It is also noteworthy that two programs and environments as those of Nepal and South Korea can show the same pattern of strong and equal impacts from both domestic and foreign inputs. Both types of input also have equal impact for Singapore, Philippines, and Hong Kong, but for these the relationships are very weak. Bangladesh, as we noted in chapter 4 provides a striking example of a situation where foreign assistance appears much more important in explaining program performance than do domestic inputs. Malaysia remains the striking case of declining performance, which makes the statistically significant foreign assistance appear with a negative impact on performance.

The Lapham-Mauldin measures can provide different insights, however. For the 19 countries for which total prevalence data are available, the Lapham=Mauldin measures explain more than 80 percent in the variance among countries. But if we use a stepwise regression technique, selecting out the most important explanatory variables in order of their importance, we find that nothing more than **availability** of fertility-limiting methods is necessary to explain the variance. After we use the availability measure, no other measure adds significantly to the amount of variance explained.¹⁸ On the other hand, if we wish to explain program-derived prevalence, the only measure needed to explain the variance is **service** related activities. Thus the measure of service activities appears to provide the best single indicator of program strength, whatever that is, at least for these 15 program countries.

We can raise the same questions about the relationship between the Lapham-Mauldin scores and our penetration indices. Here we find that the **service** score is sufficient to explain rural penetration; whereas the **availability** score is sufficient to explain variance in the educational and parity ratios. We may tentatively conclude that we need

¹⁸. All measures are highly intercorrelated, with the average of all coefficients being .91, so that one cannot readily examine their relative weights by including them all in the same equation.

good service oriented program organization to overcome the physical isolation of the rural areas. To overcome the more social or normative types of isolation, availability of different fertility-limiting methods is more important. We can suggest from this that the strategic changes in program orientation seen especially in Thailand and Indonesia, moving from the urban clinic to the village, have been especially important in penetrating the isolation of the rural areas. It should also be noted that Taiwan and South Korea both showed very distinctive early results in raising rural acceptance to levels as high as those in the urban areas.¹⁹

B. Country Summaries

1. Non-Program Countries

The countries we have designated "non-program" represent a wide range of conditions, for which quite different expectations can be generated. First is **Viet Nam**, which does have an extensive national family planning program, dating back to 1962 in the North. A recent UNFPA assessment will shortly be released and will undoubtedly give us some substantial information about the program. A number of conditions make it likely that we shall see rapid increases in program acceptors and contraceptive use, and a decline in fertility. The country is densely settled and currently experiencing stringent economic constraints. This should raise the demand for fertility-limitation. At the same time, the strong political and administrative organization, the focus on rural areas in preventive health, and the forthcoming external assistance from the UNFPA and other NGO or bilateral donors, all indicate that there should be a relatively good supply system. It should not be surprising to see a rapid expansion of program activity, with quite substantial impact on reproductive behavior.

Afghanistan, Iran, Kampuchea, Laos are torn by internal turmoil or external war. They are also all in some way in the midst of radical internal political changes,

¹⁹. It should also be noted that both Taiwan and Korea, but especially the former, showed distinctive successes more generally in raising rural incomes to levels roughly equal to those in urban areas. Thus broader development changes may also

whose outcomes are by no means clear. It is difficult to foresee any form of public fertility-limiting activity at least until internal and external order is established and some form of administrative structure can be put back in place. In addition, the uncertain political and ideological outcomes will surely have an important impact on whatever is done in public fertility-limiting activities.

North Korea and Mongolia experience internal peace, strong centralized governments with what can be considered effective orientations to public health. The World Health Organization has been active in Mongolia's primary health care system, and the UNFPA has recently been involved in some new initiatives in North Korea. Thus it is likely that the supply system for contraceptives, even if only for maternal and child health, is in the process of being activated and can be expected to have some impact. The two countries are vastly different in levels of population density, however, and this can be expected to have some impact on both policy and the patterns of implementation. With just one person per square kilometer, Mongolia can rightly claim that it needs more people to increase productivity and welfare. North Korea has a much higher level of density (about 160 per square kilometer), but its combative relationship with South Korea is likely to maintain pressures for a pronatalist policy. Thus perhaps policy changes will remain the single most important determinants of changes in reproductive behavior in the near future.

Burma is in some ways the most interesting of the non-program countries. Social and cultural conditions are much like those that have helped to produce rapid fertility declines in Thailand, but the government remains staunchly pronatalist, with at least legal restrictions on the import and distribution of contraceptives. At the same time, it is apparent that fertility is declining. Neither the reasons nor the mechanisms of this change are yet clear, though they may become so in the near future. Further, the current top leadership is quite old and one can expect substantial personnel changes in the not too distant future. If these bring radical policy changes, opening Burma more to external influen-

ces, it is likely that the country will experience a substantial change in reproductive behavior. If the policy changes move in the direction of Thai fertility policy, it is even likely that we shall see a reduction in fertility quite as rapid as that we have seen in Thailand.

These speculations indicate that the social, economic and normative conditions that affect what is often called the demand side vary considerably, and it is not likely that we shall see radical changes in these dimensions. On the supply side, however, policy changes in some of the countries (North Korea, Mongolia, Burma) could be expected to produce rapid change in reproductive behavior, though the prospects of such changes are quite uncertain. For the other countries, changes in the supply side will have to require extensive construction of a public health infrastructure before the various types of isolation can be overcome to bring fertility-limiting capacities to the populations.

2. Program Countries

We begin with the general observation that almost all countries have experienced a steady growth in program inputs and outputs. Exceptions will be noted below. There has been considerable variance, however, in the impact of various types of inputs, and especially in the difference between domestic and foreign inputs, on program performance.

Bangladesh has achieved considerable success in program performance, especially given its national poverty and the secluded position of women. The statistical evidence suggests, however, that much of this achievement has come from external resources. It is likely that many observers would agree, despite the honor of the United Nations Population Award given to President Ershad in 1987 for his support of family planning. External assistance has been massive. Bangladesh has received one of the highest levels of any of our countries in per capita population assistance. It has also received the highest per capita level of all foreign assistance of our 15 program countries. It is important to note that the external assistance has not only been in the form of funds. Massive funding also implies, even attracts, a large amount of external human resource, both from wealthy

donors and from other more advanced countries in the region. Foreign assistance has been vital to Bangladesh's not inconsiderable achievements in program performance. Nor is it likely that the importance of foreign assistance will diminish in the near future. There may well be waste and inefficiency in the massive amount of assistance, but its effectiveness would indicate it should be continued.

Fiji and Sri Lanka have long histories of a well developed programs supported by effective government administrations and high levels of general social and economic development. It is difficult to say much specifically about program performance, since family planning is fully integrated into health services in both countries and neither personnel nor cost data for family planning are reported separately. Nonetheless, acceptor and prevalence rates have increased steadily in both countries, and they approach being considered "contracepting societies". On the other hand, in both countries internal ethnic tensions may well have an impact on population policy not unlike those seen in a much more extreme form in Malaysia. If such policies are generated and implemented, it is possible to envision a two-tiered program, with higher levels of performance among the more urbanized Indian populations, and lower levels among the more rural indigenous populations. For Sri Lanka there is the added complication of internal war affecting the overall administrative system, which may be expected to have especially strong negative implications for family planning services. Further, it is likely that this breakdown will affect the Tamil population more than the Sinhalese, and this might also produce a Tamil resistance to the national antinatalist policy.

Hong Kong and Singapore The two great city-states of Asia have shown both extensive program development and rapid change in reproductive behavior. They have, for all practical purposes, completed the demographic transition, and can be called contracepting societies. The role of "program" activities in these changes, however, may be somewhat different. In both cases, private family planning associations were established in the early 1950, and received government support. Also in both cases, the government

moved into the provision of services, vigorously in Singapore, and quietly in Hong Kong. Foreign assistance was provided to both, but it is likely that the technical and human resources were more important than the financial resources in this assistance. Both now have effective public and maternal and child health programs through which contraceptive services are widely distributed. Both also have extensive market and private medical delivery systems, which also provide ample access to contraceptives. Rapid growth is no longer a problem. Thus it can be suggested that both countries are beyond the point at which specialized family planning programs are needed. Public policies with reference to population issues, on the other hand, will remain important, and the range of population issues — distribution, the implications of age structures, etc — will increase.

India remains large, fascinating, and enigmatic. It has the oldest official policy and program in the world. Its program efforts have grown steadily, especially since the impact of the 1961 census was felt. It has received large amounts of external assistance from the full range of donors, yet its own domestic inputs remain statistically stronger than the foreign inputs in explaining program performance over time. India is also marked by its heavy use of sterilization, and for some years, of male sterilization, as almost the only real “program” method. More recently, the IUD has come back into greater use. Perhaps the most significant observation here is the increasing acceptance of the IUD in rural areas. Rural acceptors as a proportion of the total IUD acceptors has risen steadily in the past five years from less than 60 per cent (where it has been since about 1966) to more than 75 per cent, and the total number of acceptors now roughly equals that of sterilizations. India’s persistent resistance to the use of the pill remains a puzzle. We believe this is primarily a policy condition, whose change might be expected to increase contraceptive use substantially. At the same time, the low level of the parity penetration index indicates what has been widely observed, that the norm of high fertility remains strong and has apparently been little affected by national policy or program implementation.

Indonesia and Thailand are two significant success stories in national fertility policy and program implementation. Both have experienced greater fertility decline than might be expected from their levels of social or economic development. Family planning programs have obviously been important. Both experience strong political support, with an edge given to Indonesia. Both have had cultures that have accepted government direction in reproductive behavior, again with an edge to Indonesia. Both have developed vigorous and effective programs with high levels of activity in the rural areas. Both also have cultures that have probably facilitated acceptance of new fertility-limiting behaviors, and here the edge probably goes to Thailand. Finally, both have had substantial amounts of foreign assistance, though in neither case does the quantity of this assistance appear to be as important as domestic inputs in explaining program performance. In both cases, however, the foreign assistance has been of high technical and human quality. We cannot provide systematic quantitative indicators, but we believe most observers would agree. Finally, though both have achieved considerable success, it appears that continued vigorous program leadership and foreign assistance will be called for. At the same time, both systems are sufficiently well developed to be able to provide their own external technical assistance to less developed countries, as they have been doing.

South Korea and Taiwan are two of the oldest and clearest success stories in the region. They were among the first to develop strong program efforts with the use of the IUD, under governments that were supportive but not intrusive. They have also developed programs somewhat similar in structure, but also explicitly tailored to their distinctive geographic conditions and political-administrative histories. It is also noteworthy that both have been highly successful in the use of the IUD, and began with almost exclusive use of that method. Taiwan's program achievements have grown more steadily than have those in Korea, which showed some rise and fall in the late 1970s. Both have had important forms of foreign assistance, but the levels and impacts have been quite different. Taiwan received high quality human and technical support, but a very small

volume of foreign assistance, and only from a narrow range of private organizations. Quantitatively this assistance is insignificant compared with the importance of domestic inputs in explaining program performance. Korea has also received high quality personnel and technical assistance, but a much higher *volume*, and from almost the full range of donors. Further, the sheer level of assistance has been as important as the level of domestic inputs in explaining program performance.

Nepal and Papua New Guinea experience similar low levels of wealth and immense problems of physical access to much of the population. Nepal has, however, been influenced by its proximity to India and has a longer program, showing organizational specialization, fairly clear government support, and steady increase in performance. In fact the steady increase in performance, and the steady penetration of the program in overcoming various forms of isolation can be considered a substantial achievement, especially given the severe geographic and economic obstacles. It is noteworthy that, as in Korea, both domestic and foreign inputs have been equally important in explaining the rise of program performance. This alone would be sufficient to indicate further foreign assistance, since it is likely to continue to be important and successful. Papua New Guinea is less poor and has quite different cultural and external political-administrative influences. There has been more conflict on the issue of public fertility-limiting policy, and the program has been fully integrated into the health system, precluding systematic counting of program inputs.

Pakistan and Philippines show the most erratic movements in both policy and program of all countries in the region. Pakistan was one of the earliest to announce an official antinatalist policy, in association with its general thrust to modern economic development, and it has been sufficiently important for all donors to be the recipient of large amounts of funds *whenever it wished to receive them*. The Philippines did not adopt an official policy until 1969, but it had a variety of private program activities for a decade before the policy change, and has received substantial financial assistance for the past 25 years.

In fact, the Philippines has had one of the highest per capita levels of assistance of all countries in the region, and yet has the least to show for this assistance. Both countries have shown wild fluctuations in program effort. Policy vacillations have been the most extreme in Pakistan, though since 1981 both policy and program have been strongly supportive of fertility-limitation, and program performance shows a period of substantial increase. The past five or more years have seen the opposite in the Philippines, with political and administrative changes greatly reducing program performance. On the other hand, the cultural conditions that affect the demand side appear to be far more favorable to fertility limitation in the Philippines than in Pakistan. Thus similar program weaknesses and foreign assistance failures show up in similarly low levels of program-derived prevalence, but are also associated with very different levels of total prevalence (6 per cent for Pakistan, and 45 per cent for the Philippines.)

Malaysia stands out as a striking case of an apparently well organized and well endowed program showing long term declines in performance, and almost no discernable impact on contraceptive use. (Program-derived prevalence is only 5 percent, while total prevalence is estimated at 42 percent.) Malaysia is a wealthy, well governed and well administered country. Its government has been quite successful at organizing a series of effective development programs *especially in rural and land development*, which indicate high levels of administrative capacity. It has also had access to large amounts of foreign assistance. As a wealthy country that can repay loans, it is a favorite of the World Bank, which has pushed on the country population loans that were apparently neither wanted nor needed, judging from the fact that the allocated amounts were not used. The declining performance of its family planning program is thus something of an anomaly. The anomaly is relatively easily explained, however, by the ethnic composition of the population. With roughly 50 percent Malays, 40 percent Chinese and 10 per cent Indians, population policy is politically very delicate. It is instructive to note that the antinatalist policy was decided upon shortly after the ruling government won a landslide electoral vic-

tory in 1964, gaining support from all ethnic groups. It began to express more ambivalence, however, after the electoral reverses and ethnic riots of 1969. These grew increasingly troublesome so that in 1982 the government effectively announced what has become an ethnically differentiated policy. The official policy is now more pronatalist, with the aim of a 70 million population. While it is not announced loudly, government encourages higher fertility among the Malays, and appears willing to support family planning services among the non-Malay population. It is, however, not very effective in this programmatic effort. Thus program-derived prevalence rates are very low. At the same time, the country is wealthy, well educated, and with high levels of female autonomy and status. These are conditions that increase the demand for fertility-limitation, and raise overall prevalence rates to as high as 42 per cent. Despite government policy, Malaysians are reducing their fertility.

Overall, then, these 23 countries reflect an immense variety of the range of conditions that are thought to affect the performance of modern family planning programs. Basic policies differ, as do organizational structures, strategies and tactics. Foreign assistance has varied, but for the most part it appears to have followed government policies rather than led or been independent of those policies. Further, the more diffuse cultural and economic conditions that affect individual fertility behavior also show the full range of conditions that can be seen throughout most of the world. In some cases, fertility is very low and specialized government interventions to this end are probably no longer necessary. In other cases, conditions would predict that even the most effective government policies, even if they could be generated, would probably not have a large short term impact. At the same time, the experience of Nepal is both instructive and encouraging for the proponents of family planning programming. Poverty and terrain make Nepal a very unlikely location for successful program efforts, yet here there has been a steady growth in both activity and achievements. Both domestic and foreign efforts can be helpful in producing these achievements. Bangladesh provides another type of lesson. Even where

local political and administrative conditions would not normally produce program achievements, foreign assistance can be expected to help, especially if it is in large amounts.