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Poverty Assessment

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Currency Evaluations
Currency unit = Cambodian riel

Average value of US$1.00 in				
1995	**1996**	**1997**	**1998**	**Sept 30, 1999**
2,451	2,624	2,938	3,750	3,900

Weights and Measures
Metric system

Government Fiscal Year
January 1–December 31

Abbreviations and Acronmys

AIDS	Acquired Immune Deficiency Syndrome
CR	Cambodian riel
DPT	Diphtheria, pertussis, and tetanus
FAO	Food and Agriculture Organization
GDP	Gross domestic product
HIV	Human Immuno-deficiency Virus
ICRC	International Committee of the Red Cross
IRIC	Indochinese Refugee Information Center
NGO	Nongovernmental organization
NIS	National Institute of Statistics
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNHCR	United Nations High Commission for Refugees
UNTAC	United Nations Transitional Authority in Cambodia
USAID	United States Agency for International Development
WFP	World Food Programme
WHO	World Health Organization

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Executive Summary

This first poverty assessment for Cambodia is based on the 1997 update of Cambodia's baseline poverty profile of 1993–94. Since the early 1990s Cambodia has made progress in rebuilding its economy following more than two decades of war. Trade and investment flows have risen to unprecedented levels, supporting average annual growth of 6 percent. In 1997 and 1998 reconstruction and recovery were set back by renewed political instability and by the East Asian crisis. With the assumption of office of a new reform-minded government in late 1998, and the virtual end of the Khmer Rouge movement in early 1999, there is renewed optimism that growth and recovery will resume.

Cambodia is nevertheless still a very poor country, with GDP per capita estimated at only $280 in 1998 and with other nonincome indicators of poverty comparing poorly with those in other countries in the region. The 1997 poverty estimates confirm that poverty is pervasive in Cambodia—an estimated 36 percent of the population is poor—and rural households, especially those for whom agriculture is the primary source of income, account for almost 90 percent of all the poor.

The poor are more likely than the better-off to live in households that are larger, have a larger share of children, and have a head of household who is less educated than the average. They also have much less access to public services than the better off. For example, while 17 percent of people in the richest consumption quintile have access to piped water, only 4 percent in the poorest quintile do. In rural areas the poorest quintile has net primary school enrollment of 50 percent, considerably below the 75 percent for the richest quintile. Less than 5 percent of children ages 12–14 in the poorest quintile in rural areas are enrolled in lower-secondary schools, but 25 percent in the richest quintile are. About 21 percent of people in the poorest quintile have to travel more than 5 kilometers to reach a health clinic; only 14 percent in the richest quintile have to travel that far. About 6 percent of the poorest two quintiles live more than 5 kilometers from the nearest road; only 1.4 percent in the richest quintile do. While almost 20 percent of the richest rural quintile have access to publicly provided electric lighting, under 1 percent in the poorest quintile receives the same service.

Differences in the design and coverage of the 1993–94 and the 1997 surveys mean that the two profiles are not directly comparable. Nevertheless, the modest decline in poverty during 1993–97 (from 39 percent to 36 percent) suggested by the profiles is corroborated by the estimated 3 percent increase in real per capita private consumption, as captured in the national accounts, and by broad improvements in other nonincome indicators of poverty such as enrollment rates and maternal and infant mortality rates. The profiles also suggest that rural poverty declined less than urban poverty. This is plausible given the strongly urban bias in growth during the

period. Growth was unbalanced, centered in Phnom Penh and other urban areas, driven by reconstruction efforts, and led by phenomenal increases in such activities as construction and tourism. In contrast, growth of rural activities, based primarily on agriculture, showed considerable variability and significantly lagged growth in the rest of the economy.

Despite its pervasiveness poverty in Cambodia is relatively shallow, suggesting great scope for poverty reduction through rapid growth. In fact, income poverty rates could be cut by as much as 50 percent by 2005 if Cambodia is able to resume and maintain average annual growth of 6 percent. But such gains in poverty reduction will depend strongly on the pattern of growth. If growth continues to be urban-focused, poverty reduction gains can be expected to be much less and rural poverty in particular will remain high—especially since the depth of poverty is greater in rural areas. In contrast, poverty in Phnom Penh would be almost eradicated.

This report recommends three components to a broad poverty reduction strategy for Cambodia:

- Expanding economic opportunities through rapid growth—particularly growth of the rural sector.
- Helping the poor build human assets.
- Providing an adequate safety net to address the needs of vulnerable groups in society.

The government's Five-Year Socioeconomic Plan (1996–2000) gives priority to poverty reduction and recognizes these three elements as critical to its antipoverty strategy. However, much greater attention to the growing HIV/AIDS epidemic is needed given the significant potential it holds for increased poverty—both new poverty as well as a deepening of existing poverty. Extensive public education on the epidemic and on prevention should figure prominently in the government's health and overall poverty reduction strategy.

Creating Economic Opportunities through Rapid Growth

Creating new economic opportunities through rapid and sustained growth, particularly in rural areas, must be the core of a successful poverty reduction strategy for Cambodia. Almost half of the poor in Cambodia would be lifted out of poverty within the next eight years if the economy grew at 6 percent annually. But this growth must be more broad based than in the recent past. This will require maintaining a stable macroeconomic environment and deepening reform in order to tackle the remaining impediments to growth. Fiscal policy will continue to play an important role in stabilization efforts, given the extensive dollarization of the Cambodian economy. The objective of policy should be to avoid levels of fiscal deficit that could be destabilizing because they lead to rapid growth of the money supply, to high levels of domestic borrowing that could crowd out the private sector, or to unsustainable levels of external debt. Cambodia has in the recent past successfully used fiscal policy to maintain macroeconomic stability. However, the quality of fiscal adjustment needs to be improved through greater reliance on revenue generation—especially by addressing governance issues related to forestry revenues—and less on expenditure cuts, particularly in the social sectors and in operations and maintenance. Success in the government's demobilization efforts will be important in achieving sustainable fiscal adjustment while meeting social sector objectives.

Cambodia has made impressive progress in its transition to a market economy. Further reforms are needed, however, to remove remaining distortions in the economy. This is especially important since most countries in the region have reinvigorated their reform efforts in order to speed their recovery from the regional crisis and improve their long-

term competitiveness. Cambodia cannot afford to be left behind. The new government has already introduced fiscal reforms. Other key areas for policy attention include further public enterprise reform; private sector development, and banking sector reform. Public enterprise reforms should focus on commercializing enterprises remaining in the public portfolio in line with the law regulating public enterprises. Rehabilitation plans should be formulated for the six rubber plantations and a privatization plan outlined and implemented. Private sector development can be further fostered by adopting a comprehensive commercial code and by strengthening the rule of law through better enforcement of existing laws and modernization of the judiciary. Banking sector reforms should focus on strengthening the prudential and regulatory framework, including adequate regulations on provisioning for loans, legislation that facilitates the taking and enforcement of collateral, and enactment of a bankruptcy law. In addition, the supervisory capacity of the National Bank of Cambodia should be strengthened, particularly its capacity to enforce capital adequacy standards and force the exit of banks that cannot comply, especially the numerous weaker smaller banks.

But growth must also be more balanced than it has been in the recent past to ensure that economic opportunities are widespread. In particular, special emphasis must be placed on stimulating growth and opportunities in the rural economy, where the overwhelming majority of Cambodia's poor live. This will require both raising agricultural incomes and promoting diversification into other rural activities. Key areas for policy attention include increasing crop productivity through greater access to improved seed varieties; appropriate soil and pest management, and better water control through small-scale irrigation facilities. Increasing livestock and fisheries production is also important, and will require improved technical services for animal health, fisheries research, conservation, and management. Investments are needed to upgrade and maintain secondary and tertiary roads, to strengthen rural infrastructure and provide better access to input and output markets. Support for the development of formal rural finance institutions will be important for expanding access to rural credit. And easing the land constraint will require addressing the issue of military land holding and speeding up land-titling efforts—particularly in rural areas—as part of the creation of a transparent and secure land market.

Government efforts to promote growth must be combined with efforts to increase the assets of the poor, thus allowing the poor to take full advantage of the economic opportunities created through growth. Increasing the physical assets—land, credit, rural infrastructure—of the poor is an integral part of promoting rapid growth of the rural sector and hence of the economy as a whole. Building the human assets of the poor, including education and health, is equally important for helping them access economic opportunities and for sustaining growth.

Expanding Access to Education for the Poor

Cambodia's achievements in education in the 1960s and early 1970s were systematically erased by the Khmer Rouge in the second half of the 1970s, when schools, equipment, and books were destroyed, effectively abolishing education. It is estimated that 75–80 percent of all teachers and secondary school students fled or were murdered in 1975–79 (Asian Development Bank 1996). Post-Khmer Rouge, Cambodia has made impressive progress in expanding schooling. There was a concerted effort to rebuild the education infrastructure, but this had to be

done under tight budgetary constraints. The government made rehabilitation of primary education its main focus in the 1980s, but despite these best of intentions, primary school enrollments plateaued at around 1.3 million between 1985 and 1991, which actually meant declining enrollments given the rapidly expanding primary school-age population (Asian Development Bank 1996). Since then, however, enrollments have expanded more rapidly than population, and gross primary enrollments in 1997 increased to almost 95 percent, according to the Ministry of Education, Youth, and Sports. This is impressive by any standard. But problems remain.

Why Enrollment Rates Are So Low among the Poor

Enrollment rates vary considerably between the poor and the better-off in Cambodia. Only 55 percent of all children of primary school age in the poorest quintile of the population attend school, compared with 79 percent for the top quintile. These disparities increase at higher levels of education, with virtually no children from the poorest quintile enrolled beyond primary school. Both supply and demand factors are important in explaining low enrollment among the poor and the significant disparities in enrollment across income groups. Half of the rural population does not have a primary school in the village and more than 95 percent have no secondary school. Children in the poorest quintile also have to walk longer distances to school—on average almost 7 kilometers to the nearest lower-secondary school outside the village, compared with about 4 kilometers for children in the richest quintile. Limited and poor quality rural roads aggravates poor physical access to schools. Schooling is also extremely expensive for the poor—the cost of one child in primary school takes up a quarter of all nonfood spending per capita in the poorest quintile. Quality of schooling (as measured by such factors as availability of teachers and proportion of trained teachers) is another contributing factor. The probability of enrollment is also strongly associated with gender, with boys more likely than girls to be enrolled.

What Government Can Do to Raise Enrollment Rates among the Poor

Improving physical access to schools by constructing more schools in poorer—particularly rural—areas and by improving rural infrastructure will be critical to raising enrollments, but policy must also address issues of price and quality. In particular, the relative costs of schooling will have to be lowered for the poor. Fewer than 10 percent of the poorest students are exempted from school fees. Fee exemptions, coupled with a clearly established and transparent system of needs-based scholarships for the poorest students will be necessary to raise the enrollment rate of this group. Another option is for the government to provide (or to insure) loans to needy students to help them pay for education costs (as in Thailand and the United States, for example). The advantage of a loan program is that it relies mainly on private resources in a situation in which government funds are severely limited. The funds to finance both scholarships and loans can be obtained by reducing high levels of public subsidies to post-secondary education, a practice that benefits mainly the rich.

As well as reducing schooling costs, a pro-poor schooling policy should address school quality. The extraordinarily high pupil-teacher ratios in rural areas (80 and above) will need to be brought down at least to the national average (around 60)—and probably lower. This will require a more rational policy of deploying teachers across provinces and villages. One way to do this is to pay teachers a premium to work in underserved areas (a policy used with some success in

Indonesia and elsewhere). Funds to finance these quality improvements could also be obtained, at least in the short run, from savings generated by reducing subsidies to post-secondary education.

Data on earnings suggest that women have higher returns to primary and lower-secondary schooling than do men, especially at younger ages. Yet female enrollments, especially at the lower-secondary level, lag behind those of men. This is not only inequitable but inefficient. Targeting at least some additional schooling subsidies to poor girls would boost efficiency and equity. Some countries (Bangladesh and India, for instance) have found scholarship and stipend programs targeted to girls an effective means of raising enrollments of girls.

Data also indicate that the private sector still has only a limited role in schooling in Cambodia. Fewer than 1 percent of students are enrolled in private institutions, most of them in post-secondary schools (typically vocational training). The support of the private sector will be needed to expand secondary school coverage in Cambodia. One strategy would be for the government to target its limited educational spending to providing basic and secondary education to poor students and to let the affluent turn to the emerging private sector for schooling needs. Alternatively, vouchers can be used to provide access to private schools for the poor. Indeed, broader use of vouchers might increase efficiency in education by fostering competition between public and private schools. Household survey data already show a strong shift of upper-income groups to private schools. This should be encouraged, so that the government can better target its expenditures to the poor. It would be useful, however, to identify constraints and problems, including any formal or hidden restrictions imposed by the government, that may put a brake on the private sector expanding its role in the provision of schooling in Cambodia.

Improving Access to Health Services for the Poor

Many health facilities around the country were completely destroyed, often deliberately during Cambodia's more than 30 years of war and conflict. Even today many parts of Cambodia still have no health facilities, and in other places facilities are too dilapidated to be of any use. Yet despite these handicaps, the government has taken concrete steps to reconstruct and revitalize the public health system. The Ministry of Health has also been instrumental in developing and expanding programs to tackle infectious diseases, such as the National Tuberculosis Program and the National Malarial Program, and in vastly expanding coverage of child immunization programs. In addition, since 1996 the Ministry of Finance has been implementing a health services plan to expand access to health facilities. This improved access to health services for the population could not have been achieved without the assistance of donors and nongovernmental organizations (NGOs).

Why Health Service Use Is So Low among the Poor

High costs of health services, low household incomes, limited education, and inadequate access to health facilities and to health personnel are all important factors in explaining the low use of health services by poor Cambodians. The cost of health care (measured by health spending per capita relative to household spending per capita on nonfood items) is much greater for the poor than for the nonpoor. One outpatient visit to a commune clinic or district health center would use up half of all nonfood spending for someone in the poorest quintile. Moreover, there is no formal and transparent mechanism for exempting the poor from user fees. For them, health care is simply unaffordable. The poor also have less immediate phys-

ical access to health facilities than the nonpoor. Better-off Cambodians have much greater local (within-village) access than the poor to the four most frequently used health providers—drug vendors, commune clinics, private clinics, and trained midwives. Moreover, the poor have to travel much longer distances to all types of health facilities than the better-off when no health provider is available in their home village.

But other factors, especially education, are also important in determining health services use. Immunization rates among children up to 24 months old are significantly lower for the poor than for better-off Cambodians even though more than 95 percent of the poor reported a child immunization campaign in their village in the previous 12 months. Indeed, since child immunization has such wide coverage and is free in Cambodia, it is difficult to explain the large disparities in immunization coverage based on differences in economic standing or affordability. Cambodians with more schooling are more likely to treat their illnesses than those with no schooling. Moreover, women with primary and post-primary schooling are much more likely than those with no schooling to use preventive health services such as immunization for their children.

While there is no hard data, anecdotal evidence suggests that health services to the poor are of much lower quality than those available to the better-off. The low quality of health services, combined with high relative cost, must act as a strong deterrent to the use of health services by the poor.

What Government Can Do to Improve the Health of the Poor

As with education, government efforts to increase use of health services by the poor should include both demand and supply measures. Reducing out-of-pocket costs of health services for the poor will be critical. Expanding and enforcing user fees, in parallel with a transparent mechanism for exempting the poor from such fees and providing a free supply of drugs targeted exclusively to Cambodia's poorest will be important in ensuring greater equity in access to health services while reducing affordability constraints for the poor. These measures need to be implemented in parallel with greater cost recovery in secondary and tertiary health facilities such as provincial and central hospitals.

Several of Cambodia's health facilities need rehabilitation, but in the long run additional primary health facilities are needed to increase access. Unlike most other developing countries, Cambodia does not have a nationwide network of primary health care facilities. The government's Health Coverage Plan aims to create a new network of 909 health centers, 65 referral hospitals, and 8 national hospitals in 72 operational districts. The location of the new facilities will have to be carefully selected, with an emphasis on providing facilities in remote and underserved regions, to meet the objective of providing equitable access to basic health and referral services for the entire population. In the shorter to medium term increased access in such areas could be provided through mobile health posts.

The low quality of health care in public facilities needs to be addressed. An important first step is to raise staffing standards so that commune clinics and district health centers used by the poor have trained medical workers. Better salaries and benefits for health workers could also provide increased incentives for higher quality service. In addition, stocks of drugs and medical supplies in commune clinics and district health centers need to be increased. The quality of health services could also be enhanced by allowing health facilities to retain a share of fees collected.

These efforts to raise health services utilization by the poor will entail a restructuring of public health expenditures to benefit the poor. Public expenditures need to be targeted more toward proving ade-

quate funding for primary health facilities, a process that began in 1996 as spending was shifted from hospitals toward primary health care. This trend should continue, shifting more resources to preventive health interventions (such as communicable disease control programs) and curative services targeted to the poor. This shift also represents more efficient use of public resources, given the substantial positive externalities of preventive health care and private underspending on such care.

Private sector provision should be encouraged to complement government efforts and to ensure adequate access to health services as living standards improve with growth. Appropriate government regulation will be important in setting quality standards that ensure public safety. This is especially important in the case of private drug vendors who are mainly unregistered and used heavily by poorer groups for self treatment.

Providing an Adequate Program of Transfers and Safety Nets

Vulnerable groups in Cambodia can benefit from the protection offered by a well functioning system of transfers and safety nets. NGO and other aid agencies are active in this area, but there is very little in the way of a functioning government system. A strategy for developing such a system should emphasize timely delivery of assistance and effective and efficient targeting to ensure that resources reach only the intended beneficiaries. Given Cambodia's largely rural population and low level of development, policies that are likely to work include well-designed rural public employment schemes that can provide insurance against agricultural uncertainties. For those unable to work, options to consider include food-based interventions such as food distribution and feeding programs, special operations to provide basic food items to the poor in remote and other high risk areas during times of insecurity, and feeding programs and transfer schemes administered through the public health system. While the need for safety nets is great, the effectiveness and successful targeting of such a system in addressing poverty will depend on further progress in identifying indicators of poverty in Cambodia that have strong predictive ability.

1. A Poverty Profile of Cambodia

This report is the first poverty assessment for Cambodia. It provides an updated poverty profile for Cambodia based on a socioeconomic survey of households conducted in 1997. The assessment covers four areas: education, health, macroeconomic performance, and rural development. This focus is motivated by the strong linkages between these factors and poverty in Cambodia.

Measured by both income and broader human development indicators, Cambodia ranks among the poorest countries in the world. In 1998 per capita income was estimated at only $280, and Cambodia was ranked 140th of 174 countries on the United Nations Development Programme's Human Development Index (UNDP 1998). Thus the prominence given to poverty reduction in the government's development program is fitting. Cambodia's first Five-Year Socioeconomic Development Plan (1996–2000) states that "Eradicating poverty is the single most important long-term objective of the Royal Government, and reducing it is the central thrust of the plan for 1996–2000." Reducing poverty is also viewed as a means of achieving peace and national reconciliation. To be effective, however, the government's poverty strategy needs to be informed by a thorough understanding of the nature of poverty in Cambodia. How many poor Cambodians are there? Who are they? Where do they live? How do they make a living? These questions are addressed in this chapter.

Poverty is multifaceted and can be analyzed from a variety of angles. The approach adopted here is quantitative, focusing on the economic dimensions of poverty. The measure of economic welfare used is household expenditure expressed in per capita terms. In this approach poverty is measured relative to a level of expenditures that allows some minimum standard of living—typically defined as food consumption that provides at least 2,100 calories of energy per person per day and a small allowance for nonfood consumption to cover basic items like clothing and shelter. A baseline poverty profile for Cambodia was developed from the results of the 1993–94 socioeconomic survey, the first such survey for Cambodia. The 1997 survey forms the basis for the current profile.

The 1993–94 Baseline Poverty Profile

The baseline poverty profile was developed using data from the 1993–94 socioeconomic survey.[1] It showed that poverty was relatively low in Phnom Penh (only 11 percent of inhabitants were below the poverty line) but much higher in other urban areas (37 percent poor) and highest in rural areas (43 percent). Nationwide, 39 percent of the population was below the poverty line (similar to neighboring Vietnam and Lao PDR)—22 percent with per capita spending lower than the food poverty line.[2]

Poverty rates were highest in households headed by farmers (46 percent) and lowest in households headed by civil servants (20 percent); more than three-quarters of the poor lived in households headed by farmers. Poverty rates fell with level of schooling and were lower in female-headed households (35 percent) than male-headed household (40 percent). These results parallel findings of other poverty studies in East and Southeast Asia (Ahuja and others 1997).

The 1997 Socioeconomic Survey

The 1997 survey was conducted using three questionnaires: a core household questionnaire, rotating special purpose household questionnaires, and a village questionnaire. The core household questionnaire collected data on demographic characteristics of household members, school enrollment, employment and earnings, use of health care services, morbidity, housing characteristics, household expenditures, and ownership of consumer durables. The questionnaire was designed to collect data needed to monitor poverty rates, including calculation of a wide range of poverty indicators.

Three special purpose questionnaires collected more detailed information in alternating years on access to, use of, and spending on social services, income and employment, and private consumption. The village questionnaire also collected information on land use and access to community and social services (roads, electricity, markets, schools, health facilities, and so on). This information can be combined with household data from the core and special purpose questionnaires to derive additional poverty indicators and to research the causes of poverty. The village questionnaire also collects data on 75 retail prices for selected food and nonfood items (including 10 medicines). These data are used to update poverty lines for retail price changes.

The 1997 survey was administered to randomly selected households in a sample of randomly selected villages in 20 of Cambodia's 23 provinces.[3] A single round of interviewing ran from the end of May to the end of June 1997. In the first stage of sampling, 474 villages were selected using systematic random sampling (with probability proportionate to population size) from Phnom Penh (120 villages), other urban areas (100 villages), and rural areas (254 villages). In the second stage, 10 households were selected using systematic random sampling from each urban village and 15 from each rural village, yielding a sample of 6,010 households. The sample is not self-weighting due to inaccurate household counts in the sampling frame. Thus all estimates are weighted to reflect actual sampling probabilities calculated by the National Institute of Statistics (NIS 1998). Poverty estimates reported apply only to villages included in the sampling frame. No attempt has been made to extrapolate estimates to include villages excluded in the sampling frame. (Details of data adjustments for updating baseline poverty lines are provided in the companion technical report Knowles 1998.)

Updated Poverty Estimates

A plotting of June 1997 real per capita daily consumption by area shows that the cumulative distributions do not cross, although distributions for rural and other urban areas overlap at low levels of per capita consumption (figure 1.1). This implies that the ranking of the three areas for the incidence of poverty should not be affected by the choice of poverty line. The most commonly used poverty measure is the headcount index, or the proportion of individuals with per capita consumption at less than the poverty line. Another measure, the poverty gap index, is the average deficit

between a person's per capita consumption and the poverty line (with a zero deficit for those with per capita consumption above the poverty line). A third measure is the poverty severity index, similar to the poverty gap index except that the deficit is squared before it is averaged. Unlike the other two, this measure is sensitive to the distribution of per capita consumption among those below the poverty line. The updated indicators of poverty in Cambodia are presented in table 1.1).

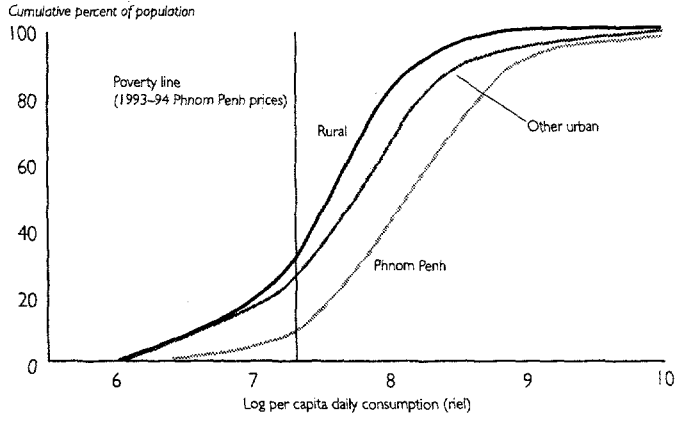
Socioeconomic Characteristics of the Poor

Key social indicators vary across the full range of per capita consumption groups (table A1.1). In some cases (for example, education and literacy, access to safe water), the differentials reflect additional dimensions of welfare and basic need satisfaction that are not adequately reflected in the private consumption data used to develop poverty estimates.

Household Size and Composition

The poor are predominantly members of larger households. The average household size is 5.8 people for the poorest per capita consumption quintile and 4.2 people for the richest quintile. Thus the incidence of poverty increases with the number of people living in a household (from 25 percent for a household of 4 people to 58 percent for one with 10); beyond those numbers, it is a little lower (figure 1.2 and table A1.12).[4] Poorer households also tend to have a larger share of children. Children constitute 48 percent of households in the lowest quintile and 33 percent in the richest quintile of households. The elderly vary little by quintile, although they represent a higher percentage of smaller households in the richer quintiles. Similarly, the percentage of house-

Figure 1.1 Cumulative distribution of per capita consumption, Phnom Penh, other urban areas, and rural areas, June 1997



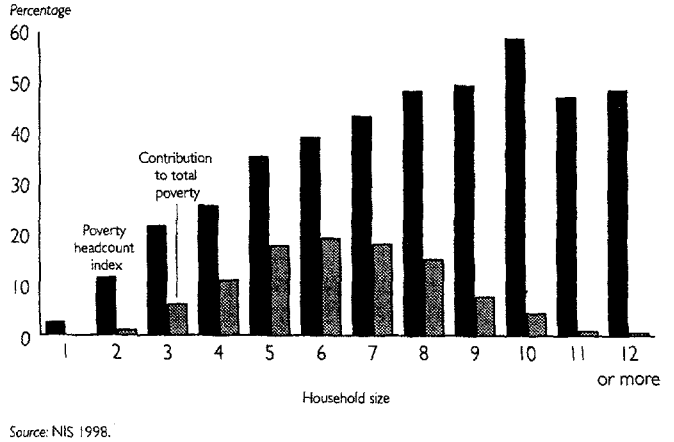
Source: NIS 1998.

Table 1.1 Poverty measures, June 1997
(percent)

	Headcount index	Poverty gap index	Poverty severity index
Food poverty line			
Phnom Penh	3.4	0.5	0.1
Other urban areas	15.4	3.3	1.1
Rural areas	20.0	3.9	1.2
Total[a]	17.9	3.5	1.1
Poverty line[b]			
Phnom Penh	11.1	2.2	0.6
Other urban areas	29.9	7.5	2.7
Rural areas	40.1	9.7	3.4
Total[a]	36.1	8.7	3.1

a. Sampled areas only.
b. Includes nonfood allowance (table 1.2).
Source: NIS 1998.

Figure 1.2 Poverty by household size, 1997



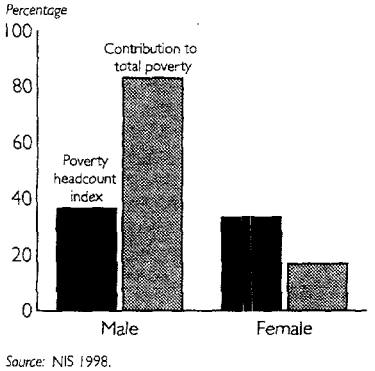
Source: NIS 1998.

hold members who are disabled changes little across per capita expenditure quintiles.[5]

Age and Gender of Household Heads

Poorer households tend to have younger heads than do richer households—the age difference is roughly two years between the poorest and richest quintile. Poorer households are also less likely to be headed by a woman. Women head 21 percent of households in the poorest quintile and 26 percent in the richest quintile. Thus poverty appears to be higher among male-headed households, at 37 percent, than among female-headed households, at 33 percent (figure 1.3 and table A1.11). One explanation may be that the average age of women heading households (50.1 years) is greater than that of men heading households (42.3 years), and in Cambodia poverty rates decline with the age of the household head beyond age 39.[6] But even after adjusting for age differences, poverty is still significantly lower among households headed by women. Most women are not household heads, however, and most do not live in female-headed households (only 21 percent). Still, "femaleness" (the percentage of household members age 15–60 who are female) is positively and significantly related to per capita consumption, when other variables, such as education and place of residence, are held constant (Prescott and Pradhan 1977).

Figure 1.3 Poverty by gender of head of household, 1997



Source: NIS 1998.

Education and Literacy

Differences across per capita expenditure quintiles are strong in literacy—and even more so in years of schooling. For example, 56 percent of adults (ages 15 and above) were literate in the poorest quintile and 74 percent in the richest quintile. Average schooling in the poorest quintile was only 2.7 years; it was 5 years in the richest. Poverty rates are also high (and similar) for people in households in which the head has had no schooling (42 percent) or only some primary schooling (40 percent; figure 1.4 and table A1.9).[7] These two groups accounted for 81 percent of all poverty. Poverty rates were also large among those whose highest level of education is technical or vocational (40 percent), but they accounted for only 2 percent of all poverty. In contrast, there was no poverty among households in which the head is a graduate (less than 1 percent of the population), and poverty was low among those with higher secondary and lower secondary schooling (12 percent and 24 percent).

Using the poverty headcount index by reported literacy of the household heads shows that poverty was lower among the literate (34 percent) than among the illiterate (42 percent; figure 1.5 and table A1.10). The difference is relatively small, however, compared with that between primary and secondary school leavers. Almost two-thirds of the poor still live in households whose head is reported to be illiterate.

What these findings on poverty and education and literacy imply for policymakers is that adult literacy campaigns are unlikely to have a big impact on poverty (although they undoubtedly improve quality of life), while expanding primary and secondary education should secure major reductions in poverty.

Access to Housing and Consumer Durables

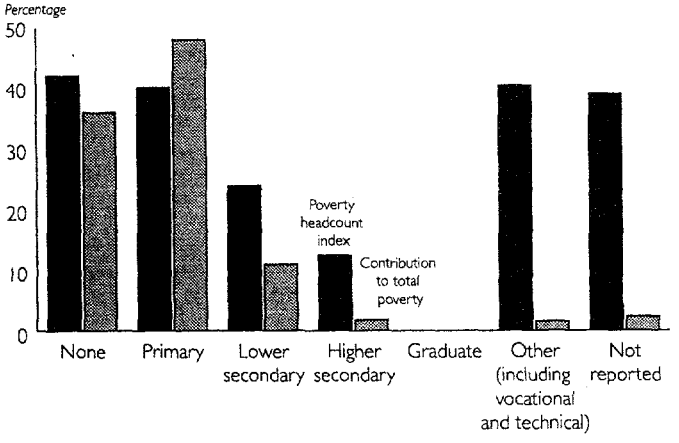
Some housing characteristics vary sharply across per capita expenditure quintiles. For example, only 4 percent of households in the poorest quintile have access to in-house toilet facilities while about 37 percent of households in the richest quintile enjoy such facilities. Access to piped water does not seem to vary much between the poorest three quintiles (all just under 20 percent) but increases to close to 33 percent for the richest quintile. Differentials in ownership of consumer durables such as television sets and radios are particularly striking. About 21 percent of households report ownership of television sets, but the share in the richest quintile is more than four times that in the poorest. Similarly the share of households with radios in the richest quintile is double that in the poorest.

Where the Poor Live

Unfortunately, the 1997 survey is only large enough to support regional poverty comparisons at a highly aggregated level. While this provides a broad sense of the appropriate policy orientation in regional targeting, it is of limited practical value in selecting the geographic placement of projects.

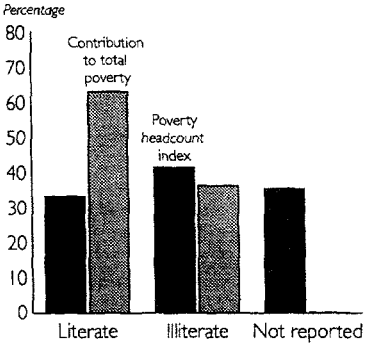
The incidence of poverty, however measured, is considerably lower in Phnom Penh than in either other urban or rural areas (see table 1.1). For example, the poverty headcount index is only 11 percent in Phnom Penh, whereas it is 30 percent in other urban and 40 percent in rural areas. These differences are even more marked when using the food poverty line or the poverty severity index. The poverty severity index in Phnom Penh, for example, is only about a sixth that in either other urban areas or rural areas. The majority of the poor live in rural areas: rural poverty accounts for about 88 percent of the poverty gap index, and about 89 percent of the poverty severity index. Antipoverty policies in Cambodia clearly need to be targeted to the rural poor.

Figure 1.4 Poverty by education of head of household, 1997



Note: Education refers to highest grade level started.
Source: NIS 1998.

Figure 1.5 Poverty by literacy of head of household, 1997



Source: NIS 1998.

Key Sources of Livelihood for the Poor

The poverty status of most people in any country is determined by their earnings and the income of other household members. The household head is usually the most important income earner, and employment of other household members is often linked to the employment characteristics of the household head (for example, when the household head is self-employed and other household members work for the household head).

By employment of the household head, the poverty headcount is highest in

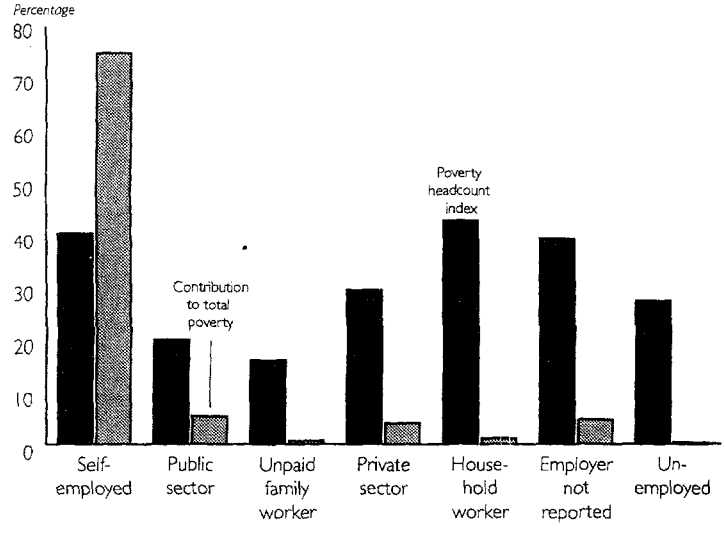
agriculture—44 percent. Indeed, most of Cambodia's poor—71 percent—are employed in agriculture. In no other industry is there more than 10 percent of the total poor, and only people in households where the head is not in the labor force accounted for more than 5 percent of poverty (8.4 percent). But other industries with high headcount rates include construction and utilities (38 percent), manufacturing and mining (29 percent), and other services (27 percent). Relatively low poverty rates are found in education and health services (17 percent), government services (18 percent), trade (19 percent), and transportation and communications (20 percent).

We look next at headcount by type of employer together with the relative contributions of each to the total poverty rate (figure 1.6 and table A1.8 show similar estimates using the poverty gap and poverty severity index). The highest incidence of poverty is among household workers (43 percent) and the self-employed (40 percent). The self-employed, however, accounted for 74 percent of all poverty, whereas household workers accounted for only 1 percent. The lowest poverty incidence (16 percent) is found among unpaid family workers. Poverty incidence is also relatively low for public sector workers (20 percent).

Poverty rates are also estimated for other industry and employer categories, including those working but for whom industry or employer was not reported, the unemployed, those not in the labor force, and those for whom no employment information was reported. For all these groups the incidence of poverty is lower than average (figures 1.6 and 1.7 and tables A1.7 and A1.8). In particular, the percentage of household heads who report that they are unemployed is less than 1 percent. The largest group, heads of household who are not in the labor force (10 percent of the total), account for 8 percent of all poverty.[8]

The policy implication clearly is that poverty alleviation needs to focus on the self-employed, particularly those in agriculture. Only about 4 percent of the poor work in private sector nonfamily businesses, so policies such as minimum wage legislation will have little effect on the poor. Rather, the poor will benefit most from policies that improve the functioning of rural markets, including those for agricultural commodities, inputs and rural credit.

Figure 1.6 Poverty by employer of head of household, 1997



Source: NIS 1998.

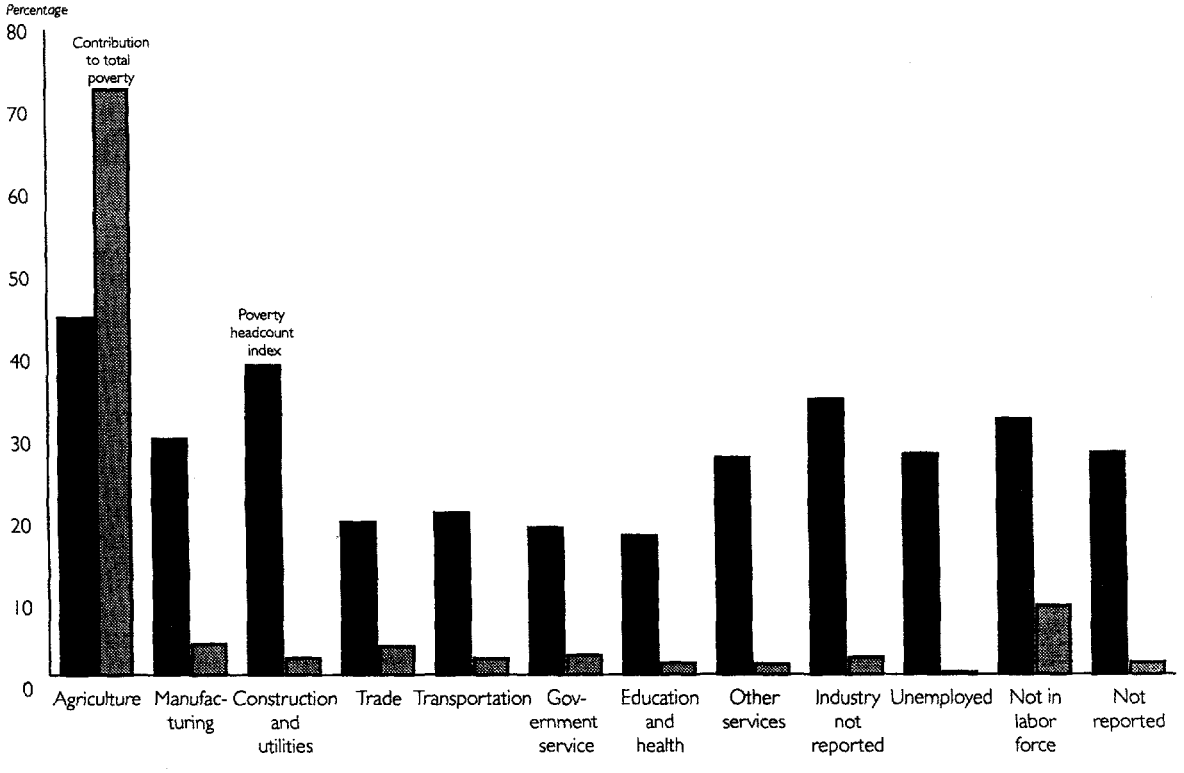
Inequality

Measured by several alternative indicators, inequality is consistently higher in Phnom Penh, declines in other urban areas, and is lowest in rural areas (table 1.2).[9] Inequality in Cambodia as measured by the Gini coefficient is higher than in most other countries in Asia at Cambodia's level of economic development (table 1.3).

Poverty Indicators

The core household questionnaire of the 1997 Cambodia Socioeconomic Survey collected information on a wide range of poverty indicators. These indicators

Figure 1.7 Poverty by industry of employment of head of household, 1997



Source: NIS 1998.

Table 1.2 Consumption inequality measures, June 1997

	Gini coefficient	*Population-weighted Theil measure*	*Per capita consumption-weighted Theil measure*	*Variance of the logarithm of per capita consumption*	*Consumption share of the poorest 10 percent of the population (percent)*	*Consumption share of the richest 10 percent of the population (percent)*
Phnom Penh[a]	0.46	0.78	0.38	0.41	2.6	40.3
Other urban areas	0.44	0.49	0.33	0.47	2.7	37.6
Rural areas	0.33	0.21	0.17	0.30	3.7	27.1
Total[b]	0.42	0.48	0.29	0.41	3.0	35.3

a. Based on adjusted consumption data.
b. Sampled areas only.
Source: 1993–94, Prescott and Pradhan 1997; 1997, NIS 1998.

serve three main purposes. First, they help policymakers understand the dimensions of poverty, thus enabling them to draw up more effective poverty alleviation policies. Second, they can be used to monitor poverty alleviation even when detailed information on household consumption is not available (and they can act as a check on that information where it does exist). Third, they can help targeting (for example, means testing, geographic targeting). An effective set of poverty indicators needs to meet certain criteria, however. They need to be:

- Valid—that is, they need to distinguish between the poor and nonpoor, and those close to the poverty line and those further away.

Table 1.3 Gini coefficients for selected countries, most recent year

Country	Gini coefficient	1998 GNP per capita
Bangladesh (1992)	28.3	350
Cambodia (1997)	**42.0**	**280**
China (1995)	41.5	750
India (1992)	33.8	430
Indonesia (1993)	31.7	680
Lao PDR (1992)	30.4	330
Mongolia (1995)	33.2	400
Pakistan (1991)	31.2	480
Philippines (1994)	42.9	1050
Thailand (1992)	46.2	2200
Vietnam (1993)	35.7	330

Source: World Bank staff estimates.

- Applicable to the whole population—or to important segments of it, such as the rural population.
- Easy to observe and verify.
- Not too closely correlated with each other, so that together they provide a more accurate indication of poverty than any single indicator.
- Not subject to opportunistic responses by the household or individual.

Once poverty indicators have been identified, it is critical to verify their effectiveness in future surveys.

Poverty indicators derived from the 1997 survey can be classified into two groups. The first consists of aggregate poverty indicators (such as net primary school enrollment or number of outpatient health care visits per 1,000 people) summarized across four categories—population below the food poverty line, population between the food poverty line and the overall poverty line, the nonpoor, and the total population (table A1.2). Sharp differences in the means of these indicators across the first three groups (or between the poor and nonpoor) suggest effective poverty indicators. The second group consists of indicators at the household level such as whether the household owns a television set or whether the head of household speaks a foreign language fluently.

Among both groups of indicators, those referring to housing characteristics look most promising as overall poverty indicators—for example, floor area per household member, distance to the main source of drinking water, household's main source of lighting (electricity), household's main source of drinking water (piped, public tap, or tanker), toilet located in dwelling, households using fuel other than firewood as primary cooking fuel, wall of dwelling made of concrete or plywood, roof of dwelling made of material other than thatching or mixed thatch material, and floor of dwelling made of material other than earth or wood. Some indicators appear more useful in distinguishing the poor from the nonpoor (floor area per household member, for instance), and others help distinguish between more severe and less severe poverty (distance to the main source of drinking water, for instance). In addition to indicators related to housing characteristics, other promising indicators of poverty at the household level include, value of land owned, value of outstanding loans, household's main source of income in the previous 12 months (other than agriculture), household ownership of motorbike, scooter, or television set. At the more aggregate level, enrollment (both gross and net), annual outpatient visits per person, and number of annual hospital admissions per 1,000 people are promising poverty indicators.

Among demographic indicators, neither percentage of household members who migrated nor percentage of household members who are female appears to be related to poverty status. Although percentage of household members who have worked in the past week is moderately related to poverty status, number of jobs per household member and percentage of children under age 15 working in the past week are only weakly related. Percentage of children who have died is actually lower among the food poor than among either of the remaining poor or the nonpoor (probably because mortal-

ity is underreported in this group). Percentage of children under age two who have a vaccination card is only weakly related to poverty, which speaks well of Cambodia's immunization coverage. Among the asset and liability indicators, livestock owned (pigs, buffaloes, cows, poultry) appears to be a weak poverty indicator, even when restricted to rural households. Among characteristics of heads of households, being in an ethnic minority does not appear to be related to poverty status.

The large number of promising poverty indicators suggests that this is an area that merits more research. Further work could attempt regression-based decomposition of the effects on the welfare measure of changing indicators over time and changes in the returns to the indicators. The ultimate goal would be to reduce poverty indicators to a manageable set of robust, easily collectable and verifiable indicators that could be applied in the field for targeting social service subsidies and other poverty-alleviation interventions.

Conclusion

The 1997 poverty estimates show that rural households—particularly those where agriculture is the primary source of income—continue to account for almost 90 percent of Cambodia's poor, and poverty alleviation needs to be targeted mainly to them. Because three-quarters of the poor are self-employed, policies designed to make markets function more efficiently (particularly markets for agricultural commodities, inputs, and rural credit) will be more useful as poverty alleviation measures than policies targeted to employers and employees, such as minimum wage legislation, social security, and mandatory fringe benefits. Education is likely to be an effective poverty alleviation intervention, too. The 1997 poverty profile, however, suggests that the greatest gains accrue to education beyond the primary level; and it casts some doubt on the poverty-alleviation value of adult literacy campaigns (although literacy is a basic need).

Although more work needs to be done to identify the most effective set of poverty indicators for Cambodia, this analysis identifies potentially useful poverty indicators. Some of the most promising indicators at the household level are related to housing characteristics; for example, living in households where a fuel other than firewood is used for cooking—13 percent of the nonpoor, 1.2 percent of those below the food-poverty line, and 1.8 percent of the remaining poor. Another is the value of outstanding loans (an average CR 277,000, or $110, among the nonpoor, CR 130,000, or $52, among the food poor, and CR 137,000, or $55, among the remaining poor) and the qualitative indicator, households owning a television set (30.5 percent of the nonpoor, 9.1 percent of the food-poor, and 13.1 percent of the remaining poor). At a more aggregated level, gross secondary school enrollment rate—27.4 percent for the nonpoor, 5.4 percent for those below the food poverty line, and 11.6 percent for the rest of the poor is a promising poverty indicator.

Notes

1. For details on the construction of the baseline profile, see Prescott and Pradhan (1997).
2. The baseline poverty profile was limited to the surveyed population. No attempt was made to extrapolate the poverty estimates to the uncovered population.
3. Provinces excluded were Mondul Kiri (included in the sampling frame, but not represented in the randomly selected sample), Preah Vihear, and Oddar Meanchey.
4. The household size patterns could also be purely the result of the choice of welfare measure (consumption per capita).
5. The disability rates in table A1.1 for 1997 are almost three times higher than those reported in the 1993–94 poverty profile. One explanation for this difference may

be that the data on disabilities in the 1993–94 profile were obtained from the listing form for households (that is, the form used to select sample households from a census of households in the villages selected in the first stage of sampling) rather than as part of a direct household interview. Disability rates obtained by household interview in the 1996 survey were even higher than those in the 1997 survey.

6. The incidence of poverty increases steadily from 29 percent among those living in households where its head is under age 25 to reach a maximum of 42 percent for those whose head is 35–39 years of age, after which it declines steadily to 30 percent for households whose head is age 55 or more.

7. Classifications by grade level in figure 1.5 are according to definitions introduced in 1997—that is, primary schooling is classes 1–6, lower secondary is classes 7–9, and upper secondary is classes 10–12. The 1993–94 classification was primary (classes 1–5), lower secondary (classes 5–8), and upper secondary (classes 9–11).

8. Of heads of household not in the labor force, 47 percent were women. The reasons most often given were "too old, infirm, or retired" (52 percent, of which 38 percent were female); "housekeeping" (20 percent, 92 percent female); and "believes no work is available" (12 percent, 29 percent female). Only 5 percent gave "disabled" as the reason for nonparticipation (41 percent female).

9. The area measures of inequality in table 1.2 are unaffected by adjustments made to total consumption for the underreporting of medical expenditures, since the same percentage adjustment was applied to all households within each stratum. The aggregate measures of inequality for Cambodia as a whole were little affected by these adjustments, the combined effect of which was to reduce slightly the degree of overall inequality. For example, in the absence of any adjustments, the Gini coefficient for Cambodia would be 0.43 (instead of 0.42 after adjustments), and the share of total consumption of the richest 10 percent of the population would be 36.3 (instead of 35.3 after adjustments).

2. Legacy of War and Social Upheaval

Cambodia's pervasive poverty must be viewed in the context of more than two decades of war and civil strife. Some of the most pernicious results include the widespread displacement of families, the large and still growing numbers of disabled persons, and high levels of government spending on defense and security to the detriment of social expenditures that could benefit the poor. Each of these outcomes has implications for poverty, though causal linkages are hard to substantiate empirically given the weak database. The purpose of this chapter is not to establish such linkages. Our interest is to show the human story behind the poverty numbers by highlighting these important post-conflict issues and to draw out their implications for antipoverty policy.

Internally Displaced Persons and Returnees

The rise to power of the Khmer Rouge in 1975 resulted in the internal displacement of hundreds of thousands of Cambodians. The inhabitants of Phnom Penh and other cities were forced into the countryside as part of a strategy to build an agricultural revolution in support of Khmer revival. This massive population displacement followed on earlier internal displacements caused by bombings along the eastern part of Cambodia in the late 1960s and early 1970s and fighting in Cambodia during 1970–75. More recently, an estimated 190,000 Cambodians were internally displaced in fighting during 1989–91. Many Cambodians were also forced to flee the country when the 1978 Vietnamese invasion drove the Khmer Rouge from power. Thousands fled to Thailand seeking food and security and were eventually settled in camps along the border. By 1991 the population of these camps had swollen to about 360,000.

Repatriation

Following the Paris Peace Accord in 1991, the UN High Commissioner for Refugees (UNHCR) arranged for the return of refugees from the Thai camps in time for the UN-sponsored elections in 1993. Most returnees—an estimated 60 percent—chose to settle in the northwestern provinces, some 25 percent of them choosing to return to Battambang and Banteay Meanchey alone. The resurgence of fighting and insecurity in 1997 generated a new wave of refugees, displacing some 80,000–100,000 Cambodians internally or to new camps along the Thai border. Since1997 UNHCR has returned about 46,000 Cambodians from Thai-border refugee camps.

The 1992–93 repatriation was well financed, with each refugee receiving an estimated $330. Since then, several million dollars more have been spent on rehabilitation projects to assist returnees and to develop areas where large numbers of them have settled. But many of the assumptions on which the repatriation plan was based proved to be

unsound. In particular, the plan had not envisaged the extreme loss of usable land as a result of land mines, decayed transportation and irrigation infrastructure, and the speculative rise in the value of land after reforms in 1989. As a result, instead of the initially promised land for agricultural use, most returnees were presented with a series of new options involving housing or cash. This was a big shift in the repatriation strategy: instead of providing returnees with enough assets (in particular land) to become self-sufficient, the new strategy was based on the hope that returnees could depend on relatives in Cambodia who would support them till they became self-sufficient (Studdert 1995). While many returnees did find relatives (an estimated 85 percent), that did not guarantee them access to assets or a livelihood.

Reintegration Success and Poverty

How have returnees fared? Has economic reintegration been achieved?[1] Not all returnees have found new homes and livelihoods. Five surveys of returnee communities conducted between 1993 and 1999 all confirm that many returnees still face considerable economic difficulties (Geiger 1993; WFP 1993 and 1999; Court 1994; Davenport, Healy, and Malone 1995). While few Cambodians have an easy life, the studies suggest that returnees are economically more vulnerable than those who had not been displaced. According to those surveys, 30–40 percent of refugees are "not making it." Many are living hand to mouth. With no assets to sell or resources to fall back on in case of illness or other misfortune, and without enough assets to improve their situation in future, many can do no more than focus each day's efforts on finding food for that day.[2] The World Food Programme (WFP) 1998 Survey of Target Zones also found evidence that households in these zones used riskier coping strategies, such as working in forests and on agricultural land where there were land mines. These findings all suggest a greater incidence of food poverty among returnees than in the general population, where an estimated 17 percent of people are unable to meet their basic food needs.

The studies highlight several factors that appear to distinguish returnees who are making it from those who are not: access to land, capital and skills, sufficient labor, and diverse sources of income.

Access to land. Access to arable mine-free land in a secure area with basic services and sufficient water appears to be the best guarantee of successful economic integration, conditions that apply to very few returnees. Only 12 percent of respondents in the WFP survey had access to land to grow rice or crops. This is in stark contrast to local villagers. An Indochinese Refugee Information Center survey found that 15 percent of returnees had access to cultivable land, well below the 79 percent share for local villagers (Court 1994). The survey also found that the average size returnees' land was one-third smaller than that of local villagers. In the Battambang area returnees constituted a disproportionate share of the landless poor). Landlessness was low among local residents, but nearly the entire sample of returnee—more than 99 percent—was landless (Davenport, Healy, and Malone 1995).

Less than half of returnees had titles for their agricultural land. This was a reflection partly of the heavy pressure on land because of the prevalence of land mines and unexploded ordnance and partly of a resentment toward returnees, who were often perceived as wealthy or viewed with suspicion because of their political background. Since 1994 an estimated 15 percent of returnees' titled agricultural land and as much as 70 percent of their untitled agricultural land has been confiscated by the military, local offi-

cials, and local villagers (Pendleton and Teas 1998).

Capital and skills. In the absence of land, skills and the capital to set up a business—a shop, a motorcycle taxi or repair shop—have enabled some returnees to make a reasonably secure living. Again however, this group makes up a minority of returnees. Capital has come from savings, from wealthy relatives, or from assistance from NGOs. Credit appears to have played almost no role in the reintegration of returnees. Credit is generally unavailable, and when it is available interest rates are extremely high and few returnees are willing to borrow in the amounts necessary to successfully launch a business. In addition, even with capital, many of the skills taught by internationally funded programs are not useful in Cambodian villages. For example, there are simply not enough motorcycles to repair.

Sufficient labor. In addition to land or capital, most returnee families required at least two or three able-bodied adults in order to make it. Families need labor to till the land and to help with other productive activities. Sometimes kinship connections can be used to acquire labor through traditional labor exchange, or (less frequently) capital can be substituted to hire labor. Labor is especially crucial for families that do not have land or capital. Sufficient labor, if well managed, can provide families with reasonably secure income even when they lack land or capital. Some families have been able to secure a living through a strategy of diverse labor-intensive activities—farming small pieces of land for vegetables or cash crops, buying or selling goods, and the like. The crucial factors are a critical mass of labor and the organizational ability to manage a diverse set of strategies. For these reasons widows with small children have been particularly vulnerable.

Diverse sources of income. The majority of returnees support themselves through multiple activities, including fishing, seasonal farm work, home goods production, day labor, and vegetable gardens. Well-planned diversification may be one of the few ways a returnee family with no land or capital can improve its situation. While some families become trapped in a daily search for food, others have been able to save and improve their situation. This kind of success requires able-bodied family members, good management, the ability to build relationships and a certain amount of luck.

Support from relatives. The surveys found that a significant proportion of returnees (45 percent in the WFP study) live with relatives and that this group tended to fare better than others. The Indochinese Refugee Information Center study found that 27 percent of returnee families living with relatives lived hand to mouth compared with 46 percent of those living without relatives (Court 1994). While relatives can be an important source of help for returnees, the studies also suggest that the amount of help depends on the closeness of the relationship and on the economic situation of relatives. Relatives could provide a temporary base and a source of resources (shelter, capital, labor) at reasonable rates but could rarely provide newcomers with enough to establish a new source of livelihood.

Other factors. In addition to these factors, social integration—access to social networks of information and resources (box 2.1)—and outside support have also been important in determining returnee success. There has been no overall analysis of the importance of outside support from NGOs and other international organizations Some returnees have received substantial support that has changed their lives, while many have had little or no contact with an aid agency since returning from the border. While

Box 2.1 Access to social networks

For families without land or capital, access to social networks of information and resources is crucial. One commonly cited form of resource sharing is *provas* "give with one hand, take with the other." This can be applied to the exchange of labor or information about job opportunities and government services. The most commonly cited example is the sharing of cows. Profitable farming requires draft animals, but draft animals are prohibitively expensive for most families. Cambodian villagers have a tradition of giving their cows to poorer families to take care of, letting the poorer family keep one of the calves every other year in exchange.

The question is how easily returnees can access these kinds of networks. At the beginning of repatriation, there were reports of jealousy by locals toward returnees who had large sums of cash and received rice without having to work for it. However, jealousy seems to have stopped with the end of the rations, as it became evident that many refugees, without land or animals, were poorer than locals. There is some evidence to suggest that reintegration was slowest in new sites and faster in areas where returnees made up a lower percentage of the population. However NGOs report that deliberately situating projects to include old and new villages seemed to help build relations, as did drawing new settlers from a mixed group of returnees and local landless. Situating schools so that children from both villages study together is another way to facilitate integration.

NGO programs for returnees or the landless have probably helped those with whom they have had contact, traditional development projects (rice banks, cow banks) have probably been less effective since most returnees have neither land nor the minimum level of resources needed to participate.

The WFP's Food for Work Program seems to have had the broadest impact since it reaches the most people. Most villagers have stressed that without Food for Work they would not have been able to stay long enough to make the land productive. Most studies agree that quick impact projects ease the burden of returnees on local facilities. However, an emphasis on quickness means that projects often have a limited development impact. An often cited example is the construction of schools without making sure that teachers were available to staff them. Also, with the withdrawal of the UNHCR, some villages are taking back the land they gave to returnees in return for projects.

Internally displaced persons were generally ignored by the government and the aid community until 1990 when there were approximately 130,000 scattered around the country. At that time a national committee, with provincial counterparts, was formed to take responsibility for internally displaced persons and the Cambodian Red Cross was given responsibility for coordinating relief efforts. Currently, internally displaced persons are concentrated in seven provinces around Tonle Sap. In October 1995 the Cambodian Red Cross recorded 57,000 internally displaced persons (excluding long-time displaced persons, who have more or less resettled). There have been few studies on the reintegration of internally displaced persons, but the limited work available suggests that land mines are the biggest obstacle to returning home. Those who settle in new locations find themselves in a similar situation to the returnees.

Large Numbers of People with Disabilities

The protracted armed conflict has left a large and still growing number of Cambodians disabled. The 1997 socioeconomic survey found that 25,805 Cambodians are disabled because of war or conflict, and another16,290 are disabled because of land mines. This means that one in every 250 Cambodians has a disability due directly to the country's war history. The vast majority (93 percent) of those with disabilities are men. With 1 amputee for every 384 people, Cambodia also has one of the highest proportions of amputees in the world—close to Angola's 1 per 334, but far more than Afganistan's 1 per 631, Mozambique's 1 per 2,414, or Ethiopia's 1 per 6,663 (ICRC 1997). Cambodians disabled by war and land mines represent close to 60 percent of the total number of people with disabilities. Cambodia's 1997 "Human Development Report" found that though the rate of disability is lower

for the poor than for the better off, there is a higher concentration of amputees among the poor than the rich.

Land mines and other unexploded ordnance are still widespread and continue to maim and kill. At the end of 1998 land mines were claiming 100 to 200 victims every month, most of them civilians. Between March 1998 and February 1999, 659 of the 1,076 reported casualties from mines and unexploded ordnance were civilian. The economic and social costs of this legacy are likely to be significant.

Assistance to People with Disabilities

Cambodia has no specific government programs to assist people with disabilities in general or people disabled from war. Much of the small budget of the Ministry of Social Affairs, Labor, Vocational Training, and Youth Rehabilitation, which is responsible for vulnerable persons, goes to pensions for public servants, assistance programs for widows and orphans, and a rehabilitation program for about 1,000 families that come to to Phnom Penh every year to return to their original homes (usually in the countryside). Assistance for people with disabilities (including those disabled by war) comes mainly from the several NGOs active in this area. NGOs provide training and physical rehabilitation services such as assistive devices, physiotherapy, and treatment for children with disabilities and economic assistance in the form of loans, mostly in-kind but also in cash. It is clear, however, that current programs reach only a small proportion of those needing assistance, leaving significant needs unmet. For example, according to ministry records, only 3,132 people with disabilities received training between 1987 and 1998, barely 10 percent of the of the total. Veterans International produces about 100 prostheses in Cambodia per month, but most of their clients are not newly amputated. There is also limited analysis of the cost effectiveness of assistance programs. For a country as poor as Cambodia this could hinder the proper prioritizing of services and the long-term sustainability of programs, both financially and operationally. Overall coordination of NGO assistance in this area is weak despite government attempts to promote such coordination.

Land Mines and Unexploded Ordnance

Cambodia is one of the most heavily landmined countries. The Cambodian Mine Action Center estimates that there are 4–6 million land mines, nearly one for every rural inhabitant in Cambodia. An estimated 1.7 percent of Cambodian territory is mined or infested with unexploded ordnance—much of it in the most productive parts of the country. A United Nations Transitional Authority in Cambodia mine survey in 1992 in Rattanak Mondul district (southwest Battambang) found that some 65 percent of highly productive land—land that had sustained one of the country's most prosperous centers of commercial agriculture in the mid-1960s—was unusable because of land mines. In some communities in this area people have entered known mine-risk areas to gather food, to hunt and fish, and to gather wood, bamboo and other natural resources. These activities, once a useful supplement to incomes gained primarily from agriculture, have become for many in this area the only source of livelihood, but also the prime cause of casualties.

There is a fundamental link between infestation by mines and unexploded ordnance and rural economic impoverishment. While the costs to individual households and to Cambodia as a whole have not been quantified, they are surely large. Mines are a major cause of handicap, limiting victims' ability to find employment that will allow them to support themselves and their families. Mines hinder the resettlement and reintegration of internally displaced persons and

returning refugees, limiting land available for cultivation and for homesteads. Each of these factors adds to vulnerability within Cambodian society and helps to perpetuate a vicious cycle of inadequate human and physical assets, increased vulnerability, and poverty.

The Cambodian Mine Action Center is engaged in mine awareness, marking, and clearance, work it carries out in conjunction with two NGOs—Mine Advisory Group and HALO trust. The priorities for mine action are land for resettlement of internally displaced persons and returnees for agriculture, community purposes, and for reconstruction and infrastructure development. The average demining unit is able to clear about 3 square kilometers each year. Some 2,000 square kilometers remain to be surveyed and demined. At the current rate of clearing, this would take 25 to 30 years to complete. The Cambodian Mine Action Center's activities for 1999–2001 will cost an estimated $70 million. Weak management procedures have, however, made it hard to monitor the Center's activities and the productivity of its demining platoons.

Table 2.1 Sectoral composition of expenditures, 1996–98
(percent)

	1996	1997	1998
Defense and security	32	33	47
Education	13	12	10
Health	9	7	3
Others	46	48	37

Source: World Bank staff estimates based on government of Cambodia data.

Table 2.2 Actual expenditures as percentage of budgeted expenditures

	1994	1995	1996	1997
Defense and security	204	177	123	132
Administration	86	102	91	88
Economic services	73	55	88	57
Social services	69	94	81	42
Health	61	66	72	46
Education	84	155	99	33

Note: Data are for nonwage recurrent expenditures.
Source: World Bank staff estimates based on government of Cambodia data.

Large Public Expenditures on Defense

Another legacy of Cambodia's war history is the high levels of public spending on defense and security, to the detriment of social spending and spending to rebuild physical and economic infrastructure. Spending on defense and security accounted for more than 30 percent of total expenditures during 1996–97 and increased to nearly 50 percent in 1998. Shares of spending on social services (education and health) declined sharply during the same period. In 1996 domestic spending on social services was 22 percent of total government-financed expenditures but fell to only 13 percent in 1998 (table 2.1).

The overriding priority given to defense and security spending can be seen clearly in the difference between budgeted (planned) spending and actual spending in 1994–97 (table 2.2). From 1995 to 1997 domestic revenue collection fell short of budget estimates by 5–7 percent, yet in all three years changes in priorities during budget implementation resulted in actual spending on defense and security substantially exceeding budget estimates. And in 1994, when actual revenues exceeded budget estimates by about 20 percent, actual spending (on nonwage recurrent expenditures) was about 31 percent less than budgeted for social services and 27 percent less for economic services. Changes in priorities during 1994 resulted in defense and security expenditures exceeding original budget allocations by more than 100 percent.

Not only has social spending been low overall, but spending on activities known to benefit the poor the most, such as primary education and primary health care, suffered as well. This implies limited government assistance to help the poor acquire the human assets needed to enable them to participate in growth. In 1996 budget outlay on primary education from the government's own

resources was just 0.5 percent of GDP. Even more telling, this spending declined in 1994–96. Government spending on primary health services has been just as low.

Demobilization and a Shift from Defense to Social Spending

There is clearly plenty of room for improving the poverty impact of public spending by changing the composition of budgetary spending in favor of pro-poor spending and away from defense spending. This will require, first and foremost, successful demobilization of the military. Toward this end, the government has established the Cambodian Veterans Assistance Program to manage the demobilization of about 55,000 soldiers from an estimated 148,000 and to reintegrate them into civilian life. The program covers around 37,300 soldiers from the regular forces and about 17,300 from five special target groups, including the spouses of deceased soldiers, chronically ill or disabled soldiers, and female soldiers. Given an average family size of about 5.2 people, this program would directly affect some 290,000 people.

The program has four stages—registration, demobilization, reinsertion, and reintegration. It is expected to achieve its objectives in four phases over a five-year period, beginning with a trial run of 2,000 soldiers in 2000. Lessons from this trial run would be incorporated into the remaining rounds of demobilization. The last phase of demobilization is expected to be carried out in 2003. The program would provide transitional safety net assistance to each family to facilitate the most difficult phase of transition into civilian society. Reintegration support would be provided through a community economic and social reintegration fund to support community-based reintegration activities. In addition to this fund, special groups would be provided with targeted assistance, including special counseling, medical rehabilitation, and reintegration support through specialized NGOs.

The underlying objective of the veterans assistance program is to promote the reallocation of public funds from defense to social and economic sectors, capturing an important peace dividend as the country emerges from war. With a much smaller army, public resources would be freed up for other uses. By the end of the program the share of defense in government recurrent spending is expected to have dropped to about 20 percent and the share of defense in GDP from 3 percent to about 2 percent. This thus provides a unique opportunity to restructure public spending in favor of pro-poor activities such as primary education and health. But this restructuring will not happen automatically. It will take the concerted effort of key line ministries to ensure that freed-up resources are channeled into pro-poor expenditures.

Two points are worth noting. First, such restructuring, important as it is, will be only a first step toward reducing poverty by helping the poor build up their assets. Increased funds for social sector spending will need to be used in ways that achieve the maximum positive results. Doing this requires several other conditions, including improved public expenditure management capacity—especially greater transparency and improved monitoring and a capacity to design and implement effective poverty reduction intervention. Second, expenditure restructuring alone is unlikely to resolve the underfunding of pro-poor social services in Cambodia. Cambodia will need to greatly improve its revenue effort to allow a substantial increase in public resources that will permit sustained improvements in pro-poor spending while maintaining budgetary balance.

Cambodia's return to political stability and national rebuilding began in the early 1990s, but progress has been slow. Efforts were set back in 1997 and 1998

with the events leading up to and following the overthrow of Co-Premier Prince Norodom Rannaridh. Since democratic elections and the assumption of office of a new government in 1998, some measure of political stability has been achieved, but it remains to be seen whether this will be translated into lasting peace and social stability.

Key Issues for Government Attention

Cambodia's war past raises several related issues for government attention in its antipoverty strategy. A first is Cambodians' vulnerability to poverty. These include the increasing numbers of Cambodians who may not be able to participate fully in growth because of war-related injuries and disabilities, the large numbers of war orphans, and the lack of access to key assets—notably land and capital—among returnees. Each of these groups is likely to become trapped in poverty. A second issue is the limited access to good quality, affordable social and economic infrastructure, given the heavy destruction during the war period and the related excessive spending on defense.

Policymakers should take these issues into account when designing antipoverty strategies and interventions. Most important:

- A first and critical step would be to consolidate the recent peace and begin to build social and political cohesion.
- A strong system of transfers and safety nets is needed to address the significant vulnerability created by displacement and war- and land mine–related disabilities. There is currently little in the way of a well-functioning government system of transfers and safety nets. A strategy in this area will need to emphasize timely delivery of assistance and effective targeting to ensure that resources reach the intended beneficiaries.
- Efforts are needed to ensure the full integration of internally displaced people and returnees. This will require addressing the lack of access to land and to credit that seems to be especially acute within these communities.
- Demining activities should be accelerated, and management problems in the Cambodian Mine Action Center need to be addressed.
- Demobilization should be accelerated as part of the effort to restructure public expenditures toward investments in helping the poor build human capital assets.

Notes

1. *Reintegration* is defined as attaining parity with the local population in terms of living conditions and means to self-sustainability (see Robinson 1994).

2. All of the studies used slightly different criteria. The WFP survey in 1993 used wealth indicators to classify 74 percent of returnees as needy or at risk. A year later, using different criteria, the IRIC study described 34 percent of returnees as living hand to mouth, compared to 17 percent of local villagers. The Vulnerable in the Village survey estimated that 40 percent of returnees interviewed were "not managing" or "destitute."

3. Economic Recovery and Poverty

Empirical evidence shows that good economic performance, though not sufficient, is critical for poverty reduction. An analysis of economic policies and outcomes in Cambodia is thus important for understanding poverty trends. Cambodia has made good economic progress since the Paris Peace Accord of 1991, though economic recovery suffered a setback in 1997 and 1998 from political upheaval and from the East Asian crisis. Since early 1999 a new coalition government has reinvigorated reform, and the Khmer Rouge movement is effectively dead. These developments should help secure peace and restart growth and recovery. The question for this chapter is whether poverty has declined in parallel with generally good economic performance during the 1990s. In particular, has the pattern of growth over the 1990s benefited the rural poor who form the bulk of the poor in Cambodia?

Recovering from War, 1991–96

Barely a decade ago Cambodia was just emerging from more than two decades of civil war. Growth had plummeted to just 1.2 percent a year in 1990. Investment was estimated at just 8.2 percent of GDP and total exports at 6 percent of GDP. Market reforms had begun much earlier in the 1980s, but political instability had limited overall positive impacts. With the return of peace and security earlier reforms began to take hold and additional reforms were put in place. However, the loss of aid from Cambodia's former Soviet bloc partners in the early 1990s, just as the system of transfers from state enterprises was being replaced by a more market-oriented tax system, severely hurt public sector finances. In the absence of significant external assistance, monetization of the growing public sector deficit became the root cause of severe macroeconomic instability. During 1990–92 inflation hovered around 140 percent on an annualized basis.

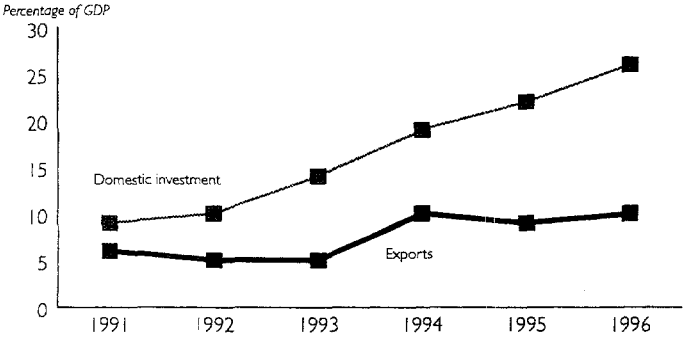
In 1992 a package of stabilization measures was adopted to arrest further fiscal deterioration. Given the extensive dollarization of the economy and the lack of monetary policy instruments, fiscal policy was the centerpiece of Cambodia's macroeconomic stabilization efforts. In 1993 the newly formed Royal government resumed comprehensive reform with the strong support of the international donor community. Reforms have reduced the size of the public sector with the privatization of public enterprises and other state assets, opened up the economy to international trade with the rationalization of the trade and tariff regime and the reduction of subsidies and protection, and promoted domestic and foreign investment through liberal investment legislation (box 3.1). Agricultural incentives have improved with private ownership of land and reforms in pricing, taxation, and marketing.

The improved political climate and renewed reform and reconstruction activity helped stabilize the economy and

Box 3.1 Major structural and macroeconomic reforms in Cambodia

- *Liberalization:* Prices liberalized; private property rights restored; state intervention in commodity markets abolished
- *State enterprise sector:* Enterprises given greater autonomy; process of privatization launched; budget constraints facing enterprises hardened; line ministries banned from commercial activities; sector share in economic activity reduced to 10 percent of GDP
- *Public finance:* Organic Budget Law enacted; revenue transfers consolidated; New Financial Law passed
- *Trade:* Private sector permitted to establish trading companies; licensing requirements eliminated for most goods; import tariff system streamlined—creation of four-band system applying to more than 93 percent of tariff items; all quantitative restrictions eliminated; export restrictions enforced only for four commodities
- *Foreign investment:* Liberal Foreign Investment Law adopted
- *Exchange rate system:* Greater market orientation of exchange rate system: official market rate kept generally within a 2 percent band of parallel market rate
- *Banking:* Two-tier banking system set up; interest ceilings eliminated; minimum deposit requirements introduced for commercial bank deposits; Central Bank Law strengthening autonomy of the National Bank enacted.

Figure 3.1 Domestic exports and investment, 1991–96



Source: World Bank staff estimates based on government of Cambodia data.

provided the beginnings of economic recovery. Both the fiscal and the external current account deficits widened as reconstruction and investment activities picked up, but more prudent financing—through concessional external assistance and foreign direct investment—limited the risk of renewed macroeconomic instability. Monetization of the fiscal deficit was virtually eliminated by 1995. This allowed rapid deceleration in inflation to about 3.5 percent in 1995. Exchange rate stability was also a factor in inflation control. The riel stabilized at 2,400–2,600 riel to the dollar from 1995 to 1996. Reserve cover rose slightly from about 1.5 months of imports in the early 1990s to about 2 months in 1996.

The supply response was generally positive. Trade and foreign investment flows rose significantly (figure 3.1). The dollar value of domestic exports grew 58 percent annually, increasing almost fivefold between 1991 and 1996. Domestic investment rates rose to 26 percent of GDP in 1996, financed by the resumption of official external assistance and by strong growth in foreign direct investment flows. These flows, mainly from the region, rose from $40 million in 1992 to about $240 million by 1996. Increased external flows made up for low or stagnant domestic savings—estimated at only 10.6 percent of GDP in 1996. Recovery in exports and investment spurred rapid growth averaging 6 percent annually between 1991 and 1996. Per capita income is estimated to have doubled from about $150 in 1991 to nearly $300 in 1997.

But growth was unbalanced, varying significantly across key sectors, in part a consequence of the fact that much of the economy is still subject to the vagaries of weather. Industry and services grew rapidly. Construction and tourism experienced phenomenal growth, fueled by reconstruction expenditures and by Cambodia's increased attractiveness as a tourist destination as security improved. Growth in agriculture, the key sector, was less spectacular, averaging just under 3 percent over the same period, barely above the population growth rate. The fastest growing activities have been forestry, livestock, and fisheries. Governance problems, which have led to uncontrolled illegal logging, helped fuel the rapid growth in forestry. Crop and rubber production has performed more poorly.

During the 1980s rice production recovered from the dramatic declines of 1975–79, but growth has since slowed,

averaging under 1 percent annually between 1991 and 1996 (table 3.1). Drought and floods damaged rice crops in parts of the country over much of the period, but constraints to productivity improvements also had a role, despite broad sectoral reforms to improve factor incentives. Key constraints are lack of water control, limited access to high-yielding crop varieties, and inadequate access to infrastructure and credit. Rice production represents the single most important economic activity for rural Cambodians, accounting for more than 80 percent of estimated agricultural labor input. Rice also provides an estimated 75 percent of total energy intake for Cambodians and is thus a key factor in food security. Its less rapid growth could thus have important implications for rural incomes and poverty overall. While Cambodia has recorded exports of rice since 1996, a large number of Cambodians are food insecure, unable to access food that may be available in other parts of the country because of marketing and transportation constraints.

Given this sectoral pattern of growth, the structure of the Cambodian economy has shifted in favor of industry and services. Industry's share has risen from15 percent of GDP in 1990 to 20 percent in 1998, while services have risen from 33 percent to 37 percent. Nevertheless, small-scale subsistence agriculture, including livestock, fisheries, and forestry, still remains the most important sector, contributing about 43 percent of GDP in 1998 and providing employment for an estimated 77 percent of the employed population. Manufacturing and construction represent the largest shares of industry. However, most manufacturing is conducted on a small-scale, informal basis. The fortunes of manufacturing activities such as brick making and ceramics are linked to the fortunes and performance of the construction sector. The service sector is heavily dominated by trading activities, geared predominantly toward a foreign clientele.

Table 3.1 GDP growth, 1992–98
(percent)

	1992	1993	1994	1995	1996	1997	1998
GDP	7.0	4.1	4.0	7.6	7.0	1.0	0.0
Agriculture	1.9	−1.0	0.0	6.4	2.4	1.3	0.4
Industry	15.7	13.1	7.5	9.9	18.2	−2.8	1.1
Services	11.1	7.2	7.5	7.9	6.9	2.8	−1.1

Source: World Bank staff estimates based on government of Cambodia data.

Apart from its sectoral concentration, growth was also concentrated in Phnom Penh, which accounts for only a small share of the population, and a few other urban centers. This growth was initially driven by the increase in consumption demand with the arrival of the United Nations Transitional Authority in Cambodia (UNTAC). UNTAC's presence, along with the enhanced activities of the United Nations Development Programme, related UN agencies, bilateral donors, and NGOs, stimulated a significant increase in demand for trade and services, particularly in the hotel, catering, and housing sectors. This led to a construction boom, largely in Phnom Penh where the bulk of activities were based. Tourism services and related construction activity were also an important part of rapidly growing flows of foreign direct investment.

Domestic Political Upheaval and the Asian Crisis, 1997–98

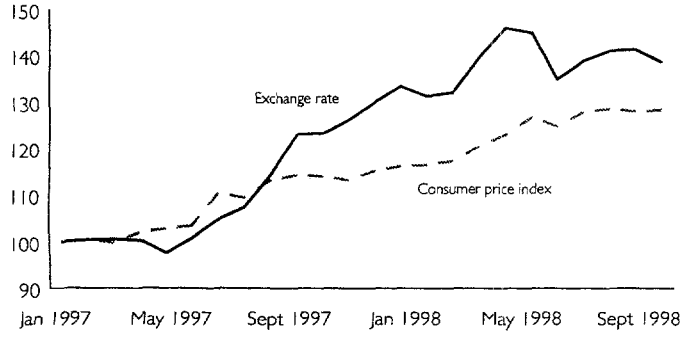
Cambodia's economic recovery was set back by the domestic political upheaval leading up to and following the change in government in July 1997 and by the regional financial and economic crises. It is hard to disentangle the individual effects of these two crises, which occurred around the same time, particularly because they can be expected to have qualitatively similar effects on economic performance and outcomes. Nevertheless, the preliminary evidence suggests that the political events may be more to

blame for Cambodia's poor economic performance in 1997 and 1998 than the regional crisis. The extensive dollarization of the economy appears to have helped moderate adverse effects on macroeconomic stability.

The twin crises eroded confidence in the economy and disrupted economic activity, leading to exchange rate depreciation, inflation, and a significant slowdown in output growth. The riel depreciated by about 28 percent in nominal terms relative to the dollar between July 1997, when both crises hit, and June 1998 (figure 3.2). Inflation initially moderated in 1997 but then became more pronounced in 1998, rising to 19 percent on an annualized basis by mid-year. Significantly reduced external aid inflows forced declines in both the public sector deficit and the external current account deficit. In both cases, however, the declines masked important imbalances.

Economic activity slowed dramatically. Sectors that were most severely hit include forestry, construction, and tourism. Forestry was hurt by depressed regional demand due to the economic crisis. Tourism suffered a double blow, from the deteriorating security situation and the increased financial attraction of other tourist destinations in the region following the deeper depreciation of other regional currencies. The slowdown in construction activity reflected the sector's heavy dependence on foreign financing. Domestic investment fell as official donors cut back on aid disbursements and as foreign direct investment flows declined sharply following the regional liquidity crunch and increased insecurity in Cambodia. New commitments of foreign direct investment also declined about 35 percent in 1997. There was a slight recovery in 1998, but it is not clear that it will be sustained since some of the underlying factors for the slowdown still remain. Overall, growth fell to 2 percent in 1997 and then to zero in 1998.

Figure 3.2 Consumer price index and exchange rate
(Index, Jan 97 = 100)



Source: World Bank staff estimates based on government of Cambodia data.

With the formation of a new government in late 1998 and an improved political climate, confidence is returning and economic activity has begun to recover, particularly in tourism and retail trade. Macroeconomic instability has also been moderated. Inflationary pressure eased in the last quarter of 1998 as the exchange rate stabilized. At the end of December 1998 the riel had appreciated 5.3 percent of its value against the dollar in June 1998, and inflation had fallen to 13 percent on an annualized basis from about 19 percent in June 1998. In the first quarter of 1999 inflation has continued to decline, falling to 8.6 percent on an annualized basis in February.

However, major difficulties remain. Fiscal adjustment has relied excessively on cuts to nonwage recurrent spending, while expenditure categories such as defense spending have continued to explode. Revenue effort has remained abysmally low. In addition, about a third of the deficit in 1998 was financed through government borrowing from the central bank—a significant and dangerous deviation from practice in the recent past (table 3.2). The reduction in the external current account deficit has been driven by cutbacks in imports for externally financed investment and a boom in garment export growth, while other major export categories have suffered. Neither trend is sustainable over the medium term.

Table 3.2 Government operations, 1996–98
(percentage of GDP)

	1996	1997	1998
Revenues	9.1	9.7	8.5
Expenditure	16.3	13.9	12.5
Current	9.9	9.0	8.9
Capital	6.4	5.0	3.6
Current balance	–0.8	0.6	–0.7
Overall balance	–7.2	–4.3	–3.9
Domestic financing	0.2	–0.7	1.3
Foreign financing	7.0	4.9	2.7

Source: World Bank staff estimates based on government of Cambodia data.

While the recent improvement in the political climate augurs well for the resumption of economic activity and growth, Cambodia's heavy reliance on East Asia for trade and investment flows leaves it vulnerable to adverse medium- and longer-term effects from the ongoing slowdown in the region. In addition, significant depreciation of regional currencies has resulted in strong exchange rate competitiveness gains for most economies in the region. Most countries are also pursuing comprehensive reforms that will improve their overall competitiveness, expand exports, and make them more attractive destinations for foreign investment flows. Cambodia will have to make significant improvements in its economy to ensure that it is not left behind. This will be important for promoting strong, broad-based growth that will provide opportunities for sustained poverty reduction.

Has Poverty Declined during the 1990s?

Did poverty decline in Cambodia in parallel with the improved growth performance between 1991 and 1996? The most direct way to address this question would be to compare the baseline poverty profile (based on the 1993–94 socioeconomic survey) with the 1997 poverty profile (based on the 1997 survey). However, significant differences between the 1993–94 and 1997 sample surveys and coverage mean that the two profiles are not directly comparable. The 1997 sampling frame included many more villages than did the 1993–94 survey. The 1997 survey included all villages in Phnom Penh but excluded 73 villages (9 percent) in the other urban areas and 1,571 villages (14 percent) in the rural areas.

The 1997 survey covered a more aggregated and smaller consumption set (20 food and 13 nonfood items compared with 177 food and 266 nonfood items in 1993–94). In some cases the consumption data in the 1997 survey were based on longer recall periods than the 1993–94 survey. For example, the 1997 survey asked for education expenditures over the previous 12 months, whereas the 1993–94 survey asked for education expenditures during the previous month. Both factors would tend to reduce the 1997 consumption estimates and therefore bias the 1997 poverty estimate upward. In addition, because of concerns about security, the 1993–94 survey was unable to cover some remote rural areas where poverty incidence was likely to be significantly higher. This suggests that the baseline profile underestimated rural and therefore overall poverty. Finally, the 1997 survey was conducted in one round, whereas the 1993–94 survey was conducted in four rounds over a 12 month period. To the extent that there are seasonal fluctuations in household consumption, the two sets of estimates are less comparable.

One way around some of these problems is to combine different types of information to search out the answer. These include national accounts estimates of private consumption, which tell us about average levels of living; the consumption estimates of the two surveys, which tell us more about the bottom end of the distribution and, allowing for all possible biases, could confirm a decline in poverty; and direct measures of welfare, such as infant mortality rates and enrollments. All these

tell the same story, which is that welfare levels have improved from a very low base.

Between 1993–94 and 1997 real per capita private consumption increased about 3 percent, suggesting modest improvement in the well-being of the average Cambodian over this period. The consumption estimates from the two poverty profiles also show a modest increase in real per capita consumption of close to 2 percent for the poorest quintile of the population (table 3.3) This trend is confirmed by results from a participatory household survey conducted by the World Food Programme (WFP) in 1996, which found a clear pattern of decreasing reliance on food aid among the vulnerable and the poor. In 1993 vulnerable households and internally displaced persons each received about 80 kilograms of rice, fish, and oil in emergency relief. By 1996 the average yearly amount of food aid received by Food for Work participants was only 67 kilograms. Free emergency relief food has declined sharply from over 103,000 tons in 1993 during the repatriation of 370,000 Cambodians from Thailand to 1,211 tons in 1997, despite continuing problems of displacement. The poorest quintile of Cambodians also had a significant increase in their ownership of consumer durables such as radios, televisions, bicycles, and motorcycles.

Table 3.3 Summary indicators of per capita consumption, 1993–94 and June 1997

		Per capita consumption per day (riel)		*Food share*
		Nominal	*Real*[a]	*(percent)*[b]
Consumption quintile				
1–poorest	1993–94	734	963	0.75
	1997[c]	796	979	0.75
2	1993–94	1,029	1,356	0.71
	1997	1,160	1,413	0.73
3	1993–94	1,314	1,721	0.69
	1997	1,543	1,849	0.70
4	1993–94	1,803	2,307	0.66
	1997	2,183	2,557	0.68
5–richest	1993–94	4,281	4,962	0.57
	1997	5,435	5,852	0.62
Area				
Phnom Penh	1993–94	4,367	4,367	0.56
	1997	5,453	4,693	0.53
Other urban areas	1993–94	2,412	2,873	0.67
	1997	2,859	3,076	0.68
Rural areas	1993–94	1,403	1,887	0.69
	1997	1,735	2,187	0.72
Total[d]	1993–94	1,832	2,262	0.68
	1997	2,223	2,530	0.69

a. Expressed in 1993–94 Phnom Penh prices using the Laspeyres price deflator reflected in the food poverty lines for each area (table 1.1).
b. Food consumption as a proportion of total consumption.
c. Based on adjusted consumption data.
d. Sampled areas only.
Source: NIS 1995, 1998.

The profiles also suggest that the incidence of poverty nationwide, as measured by the headcount index, fell moderately between 1993–94 and 1997, from 39 percent to 36 percent. The decline in poverty appears to have been largest in urban areas, where poverty incidence fell from close to 37 percent to just under 30 percent. The severity of poverty also appears to have remained the same in rural areas, while falling in Phnom Penh and other urban areas. The recent trends and patterns of growth are also consistent with the smaller decline in rural poverty. Agriculture—the main source of livelihood for rural Cambodians—has grown at a much slower rate than industry and services. Because the impetus for growth has come from Phnom Penh and other urban areas, the urban population has benefited the most from growth. Nonincome poverty indicators suggest improved welfare and declining poverty since the early 1990s. Key indicators such as infant mortality, primary enrollment rate, and life expectancy at birth are estimated to have improved (table 3.4). Better security and the decline in social conflict would also be expected to contribute to improved general welfare.

Despite the generally positive trend of declining poverty, preliminary evidence on the effects of the recent political and economic crises suggests that some of these gains are at risk. The depreciation of the riel and rising inflation have eroded real incomes, particularly for those who receive income in riel—mainly the poorer groups in society. The contraction

of the economy has also led to employment cuts. But employment effects have varied by region and sector. Employment has fallen sharply in construction and tourism, while it has more than doubled in the garment industry. Insecurity caused by the political crisis led to new waves of internally displaced persons and created new refugees. Both developments are likely to have contributed to increased poverty, though some of the impact may be temporary.

There are also indications that food shortages emerged in some parts of the country in 1997 and 1998 as a result of drought and an increase in illegal rice exports to neighboring Vietnam. Efforts to cope with declining real incomes and food shortages put some households at increased risk of malnutrition and ill health. A small segment of the Cambodian society—those who receive incomes in dollars—has fared well under the crises.

Table 3.4 Social indicators, various years

Indicator	Latest single year		
	1970–75	1980–85	1990–98
Gross primary enrollment rate			
Total (percentage of school age)	42	—	47
Male (percentage of school age)	48	—	48
Female (percentage of school age)	35	—	46
Life expectancy at birth (years)	40	46	52
Infant mortality rate (per 1,000 live births)	181	160	110
Maternal mortality ratio (per 100,000 live births)	—	500	473

— Not available
Source: World Bank, *World Development Report* and *World Development Indicators*, various years.

Table 3.5 Reduction of poverty incidence under different growth scenarios

	1997		2005 (poverty headcount index)		
	Gini coefficient	Poverty headcount index	Low case	Base case	High case
Phnom Penh	46.0	11.1	5.8	3.6	2.3
Other urban areas	44.0	29.9	22.5	15.2	12.3
Rural areas	33.0	40.1	31.9	21.6	18.0
Cambodia	**42.0**	**36.1**	**28.3**	**19.1**	**15.8**

Note: Average growth rate assumptions for per capita consumption during 1998-2005 are 1.6 percent for the low case, 3.4 percent for the base case, and 4.2 percent for the high case (corresponding to average GDP growth rates of 3.5 percent, 5.3 percent, and 6.1 percent).
Source: World Bank staff estimates.

Prospects for Growth and Poverty Reduction

Different growth paths will have different implications for poverty reduction in Cambodia. If recent progress toward peace and security is consolidated and if the competitiveness of the economy improves, the government expects economic recovery and growth to resume. The Five-Year Socioeconomic Development Plan (1996–2000) envisages growth of 7 to 8 percent annually over the decade. This translates into annual per capita growth in income of about 5 to 6 percent. If Cambodia does grow at this rate, what will be the implications for a reduction in income or consumption poverty?

A base case scenario of 5.3 percent average annual growth between 1999 and 2005 (3.4 percent per capita income growth) is contrasted with a low case scenario of 3.5 percent average annual growth (1.6 percent per capita income growth) and a high case scenario of 6.1 percent average annual growth (4.2 percent per capita income growth), which is consistent with the goals of the growth objectives of the Socioeconomic Development Plan. In the base case the incidence of poverty is cut by close to 50 percent by 2005. Poverty reduction would be even more rapid in the high growth scenario, falling about 56 percent (table 3.5).

These projections suggest that growth can yield high payoffs in terms of reducing income poverty. Close to half of the poor in Cambodia would be lifted out of poverty within the next eight years if the economy grew at about 6 percent annually over the period. This fairly high degree of responsiveness of poverty to growth likely reflects the fact that poverty in Cambodia is relatively shallow (table 3.6). The poverty gap ranges from a low of 2.2 in Phnom Penh to 9.7 in rural

Table 3.6 Comparison of poverty gap index for Cambodia, Lao PDR, and Vietnam

	Year	Index
Cambodia	**1997**	**8.7**
	1993	**9.2**
Lao PDR	1993	12.1
Vietnam	1993	15.1

Source: World Bank staff estimates.

areas and is estimated at about 8.7 for the country as a whole.

Poverty reduction will also depend on the degree to which the poor participate in growth. Since there are no data on GDP growth by regions, this analysis assumes that growth rates are the same in the three regions (Phnom Penh, other urban areas, and rural areas). However, the recent sectoral pattern of growth suggests that rural growth (based mainly on agriculture) has lagged behind urban growth. That would mean that the projections tend to overstate the poverty reduction in rural areas and to understate it in urban areas. Given the large weight of the rural population, the projected overall poverty reduction may be too optimistic.

If the current pattern of urban-focused growth persists, poverty is likely to be less responsive to growth and will not fall as much a projected. Rural poverty will also remain a major problem. Even when it is assumed that rural growth is as rapid as urban growth, poverty still remains quite high in rural areas. Rural poverty would remain close to 22 percent in the base case and 18 percent in the high growth while being almost eradicated in Phnom Penh, an outcome that could lead to a reemergence of social tensions and civil strife. A clear policy implication is that promoting more rapid growth in rural areas and broader poverty reduction efforts targeted to rural areas will be important for achieving poverty reduction goals.

Cambodia's medium-term growth prospects will invariably be influenced by performance in the region. Nevertheless, the government still has considerable scope to resume and sustain rapid growth through appropriate domestic policies. Key areas for government attention include maintaining a stable macroeconomic environment, tackling remaining impediments to private sector growth, and promoting growth of agriculture and the rural sector (see chapter 6).

Given the extensive dollarization of the economy, fiscal policy will remain the central element of stabilization efforts in the short term. Government should continue to maintain reasonably low deficit levels that avoid the use of potentially destabilizing finance methods and loss of monetary control. Recourse to domestic financing of the deficit—as occurred in 1998—should be avoided.

Cambodia's stabilization gains are not sustainable without improvements in the quality of fiscal adjustment. More emphasis should be placed on raising domestic revenue effort—Cambodia's revenue effort is extremely low—by addressing governance issues related to management of forestry revenues and by strengthening tax administration. The new government has already announced measures on management of forestry revenues. Domestic expenditures should be rationalized and restructured away from military and defense and toward the provision of social services and economic infrastructure. These revenue and expenditure changes will help achieve the social development objectives without compromising macroeconomic stability. The recent Cambodia Public Expenditure Review (January 1999) provides more detailed policy recommendations for improving fiscal management.

Market reforms over the past decade have stimulated impressive foreign private investment flows. Private sector activity is nevertheless still constrained by public sector inefficiencies, inadequate regulations of private sector activity and poor enforcement of regulations, a weak financial sector, and inadequate infrastructure. In a 1998 survey of 200 Cambodian enterpris-

es (conducted by the Association of Cambodian Local Economic Development Agencies under World Bank supervision), respondents overall saw government as useful. Nevertheless, they identified as serious constraints to private sector activity several problems in government management of economic policies and rules affecting businesses, in its delivery of services, and in the integrity of many agencies. Firms also identified inadequate access to financing and weak infrastructure as important impediments.

Government action is needed to tackle these constraints and create an environment conducive to rapid private sector–led growth. Specific measures include identifying and taking a tough stand against all forms of corruption, improving public sector efficiency by completing the privatization program and commercializing enterprises remaining in the state portfolio, adopting a comprehensive commercial code, and strengthening the rule of law through better enforcement of existing laws and modernization of the judiciary. To improve banking and financial services, the government should enact adequate regulations on provisioning for loans, on taking and enforcing collateral, and on bankruptcy. The central bank's capacity to enforce these regulations—particularly capital adequacy standards and the exit of noncomplying banks—should be strengthened. These policy efforts should be complemented by appropriate investments in transport and other economic infrastructure.

The government's antipoverty strategy should take account of adverse macro-level shocks that could constrain growth. The recent political and economic crises illustrate the risks to poverty reduction from such shocks. Growth fell to only 1 percent in 1997 and to zero in 1998. While household survey data that can quantify the magnitude of adverse poverty effects from recent events are not yet available, the effects of recent crises are likely to have been considerable. For a country like Cambodia that depends heavily on agriculture, negative macro-level shocks could also be caused by adverse weather conditions (see chapter 6). Some macro-level shocks are unavoidable (for example natural disasters and external shocks due to Cambodia's growing integration into global markets). The antipoverty strategy will help reduce, to the extent possible, the frequency and degree of such shocks through prudent macroeconomic and sectoral policies and appropriate policy responses. A well-designed, well-functioning system of transfers and safety nets to meet the needs of the most vulnerable groups will help limit the adverse poverty effects of macroeconomic shocks when they do occur.

Conclusion

Growth in the 1990s has led to some poverty reduction in Cambodia. Resumption of growth can provide considerable payoffs in reducing income poverty. But growth must increase in the rural sector to allow such payoffs to occur and to ensure that the rural poor do not get left out of future prosperity. Resuming growth will require actions to achieve more sustainable macroeconomic balance and the creation of a business environment that fosters rapid private sector–led growth—including improved public sector efficiency and governance, a stronger legal and regulatory framework, and efforts to build a better functioning financial sector. Providing security through transfers and safety nets against the adverse poverty effects of macro-level shocks to output is also important.

4. Schooling and the Poor

The poverty profile for Cambodia shows that poor education is both a cause and a result of persistent poverty. As shown in chapter 1, differences across per capita income are high for literacy and even higher for years of schooling. Adult (ages 15 and above) literacy was 56 percent in the poorest quintile of households and 74 percent in the richest quintile. Average schooling was only 2.7 years in the poorest quintile but 5 years in the richest quintile. Households in which heads had no schooling or only some primary schooling had high poverty incidence, accounting for over 81 percent of total poverty. Constraints faced by poorer households led to lower school enrollment levels for poor children.

Cambodia's achievements in education in the 1960s and early 1970s were systematically and bloodily erased by the Khmer Rouge in the second half of the 1970s, through the destruction of schools, equipment, and books. It is estimated that 75–80 percent of all teachers and secondary school students fled or were murdered between 1975–79 (Asian Development Bank 1996).

Post-Khmer Rouge, there was a concerted effort to rebuild the education infrastructure. The government made rehabilitation of primary education its main focus in the 1980s, but despite these intentions, under tight budgetary constraints primary school enrollment plateaued at around 1.3 million between 1985 and 1991, which actually meant declining enrollments given the rapidly expanding primary school-age population (Asian Development Bank 1996). Since then, however, enrollment has expanded more rapidly than population: gross primary enrollment increased to almost 95 percent in 1997, according to the Ministry of Education, Youth and Sports.[1] This improvement is impressive by any standard. But problems remain.

The quality of primary education is extremely low. There are large economic disparities in primary schooling opportunities, with enrollment rates among the poor significantly lower than among the nonpoor. Cambodia's secondary enrollment rate is among the lowest in the world and will be a drag on economic growth and industrialization in the future. Disparities between regions, economic groups, and boys and girls in secondary enrollments are even greater than in primary education.

Cambodia's gross primary enrollment ratio is comparable to that of most countries in the region (table 4.1). While its net primary enrollment ratio is lower than that in other Asian countries (except for Lao PDR), most of those have significantly higher per capita incomes. Cambodia's gross secondary enrollment ratio, however, is the lowest of any country, lower even than Lao PDR, Myanmar, and Nepal. Cambodia has considerably underinvested in secondary education expansion compared with other countries in Asia.

School Enrollment

Data from the Cambodia Socioeconomic Survey of 1997 (NIS 1998) show that 66

Table 4.1 Enrollment ratios for selected Asian countries, 1995

	Primary		Secondary
	Gross	Net	gross
Armenia	82		79
Azerbaijan	104		78
Brunei	110	91	78
Cambodia	**104**	**66**	**21**
China	118	99	67
India	100		49
Indonesia	114	97	48
Kazakhstan	96		83
Kyrgyz Rep.	107	97	81
Lao PDR	110	60	25
Malaysia	91	91	57
Mongolia	88	80	59
Myanmar	103		30
Nepal	110		37
Pakistan	74		
Philippines	116	100	79
Sri Lanka	113		75
Tajikistan	89		82
Thailand	87		55
Vietnam	101	78	47

Source: UNESCO 1998, except net enrollment Lao PDR, World Bank 1995, and Vietnam, World Bank 1994; and Cambodia net primary and gross secondary, NIS 1998.

percent of children ages 6–11—the official primary school age group in Cambodia—are enrolled in primary school. Beyond this age, enrollment drops off sharply, with only 14 percent of children ages 12–14 enrolled in lower-secondary school and 7 percent of children ages 15–17 enrolled in upper-secondary school (table 4.2). Post-secondary net enrollment is less than 1 percent.

As in most developing countries at Cambodia's per capita income level, discrepancies between net and gross enrollments are large, reflecting over-age enrollment (table 4.3). For instance, gross primary enrollment for the whole of Cambodia is 113 percent (more than two-thirds larger than net enrollment) and gross lower secondary enrollment is 35 percent (almost two and a half times the net ratio).

About 510,000 of the 1.59 million children ages 6–11 are not enrolled in school. If secondary school-age children are included, Cambodia has about 1.1 million children ages 6–17 not enrolled in school, a huge waste of human resources.

Table 4.2 School enrollment by consumption quintile and region, 1997
(percentage of target group at each level)

	Expenditure quintile					Nation-	Phnom	Other	Rural
	1–poorest	*2*	*3*	*4*	*5–richest*	*wide*	*Penh*	*urban areas*	*areas*
Net enrollment									
Primary	55.4	64.7	70.5	73.2	77.5	67.0	81.3	69.8	64.9
Lower-secondary	5.6	6.0	13.0	17.1	31.0	14.1	37.9	23.8	9.5
Upper-secondary	1.6	1.2	5.0	6.9	18.1	6.6	31.6	7.7	3.1
Post-secondary	0	0	0.1	0.6	2.3	0.7	5.8	0.6	0.1
Gross enrollment									
Primary	94.0	112.0	119.5	122.8	124.2	112.8	118.3	109.2	112.7
Lower-secondary	13.6	20.4	31.8	39.6	72.9	34.7	76.5	48.2	27.1
Upper-secondary	2.4	2.5	8.0	12.3	32.0	11.6	49.4	15.1	6.1
Post-secondary	0.2	0.0	0.4	0.8	4.0	1.2	10.7	1.1	0.2
Age-specific enrollment									
Ages 6–11	55.5	65.3	71.0	74.4	80.8	68.0	86.6	71.6	65.3
Ages 12–14	69.3	74.1	80.5	79.1	85.0	77.4	84.8	79.9	76.1
Ages 15–17	33.4	37.3	39.3	44.3	55.2	42.0	68.9	44.0	38.1
Ages 18–24	6.9	8.3	8.1	8.8	15.7	9.9	21.7	10.3	8.6

Note: The age-specific enrollment ratio is the proportion of children in the specified age group who are enrolled in school. Zero values in the table do not imply that there is no enrollment in that category, only that there were no such cases in the 1997 survey sample. Quintiles are based on real per capita consumption expenditure (deflated using the food poverty lines for Phnom Penh, other urban areas, and rural areas).
Source: NIS 1998; Cambodia Ministry of Planning 1998.

Rural and Urban Disparities

There are large disparities in enrollment between urban and rural areas, especially at higher levels of schooling. For instance, the net primary enrollment ratio is 81 percent in Phnom Penh, or 25 percent higher than in rural areas, while its net lower-secondary enrollment ratio is 4 times higher than in rural areas and its net upper-secondary enrollment ratio is 10 times higher. Almost 86 percent of the 510,000 children ages 6–11 not in school live in rural areas, 10 percent in urban areas outside Phnom Penh, and 4 percent in Phnom Penh.[2] Thus policies to raise enrollments should be targeted mainly to rural areas.

Disparity across Economic Groups

Disparities in enrollment by income are even greater than regional disparities. Only 55 percent of all children ages 6–11 in the poorest quintile attend primary school, compared with 79 percent of children in the richest 20 percent (table 4.4). As with regional disparities, disparities across economic groups widen at higher levels of education. Virtually no children in the poorest 20 percent continue beyond primary school; their net enrollment is 6 percent in lower-secondary schools and 2 percent in upper-secondary schools. The corresponding ratios are 31 percent and 18 percent for the richest quintile.

The population of primary school-age children in Cambodia is more or less equal across the per capita expenditure quintiles, except for the richest quintile, where there are fewer primary school-age children.[3] At higher levels, the differences are even starker. For instance, only 8 percent of lower-secondary students are from the poorest quintile, while 38 percent are from the richest. And the poorest quintile accounts for only 4 percent of upper-secondary students, the richest quintile for 56 percent. This implies that government subsidies to upper-secondary and post-secondary education will benefit primarily more affluent groups.[4] Subsidies to primary education tend to be distribution-neutral, however.

Table 4.3 Gross primary enrollments in Cambodia, Vietnam, and Lao PDR

	Cambodia 1997 survey		*Vietnam 1993*		*Lao PDR 1994*	
	Gross	*Net*	*Gross*	*Net*	*Gross*	*Net*
Primary	112.8	67.0	100.8	78.2	110.0	60.0
Lower-secondary	34.7	14.1	48.2	36.1	32.0	15.0
Upper-secondary	11.6	6.6	15.0	11.2	—	—

— Not available.
Source: Cambodia, NIS 1998; Vietnam, World Bank 1994; Lao PDR, World Bank 1995.

Table 4.4 Distribution of enrolled students and school-age population by consumption quintile, 1997
(percentage of total population in each quintile)

	1–poorest	*2*	*3*	*4*	*5–richest*
Enrolled students					
Primary	21.0	21.4	21.2	19.5	16.9
Lower-secondary	8.	12.3	19.0	22.6	38.2
Upper-secondary	4.1	4.2	14.4	21.1	56.3
Post-secondary	2.3	0	6.1	15.2	76.4
Age-specific population					
Ages 6–11	25.1	21.6	20.0	17.9	15.4
Ages 12–14	20.5	21.0	20.6	19.8	18.2
Ages 15–17	19.4	19.3	21.0	19.9	20.4
Ages 18–24	16.1	19.1	19.3	22.3	23.3

Source: NIS 1998.

Table 4.5 Male and female enrollment rates, 1997

	Gross enrollment		*Net enrollment*		*Age-specific*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*
Primary	119.5	106.0	68.3	65.7	69.2	66.7
Lower-secondary	40.9	27.7	15.5	12.5	84.2	69.8
Upper-secondary	15.2	8.2	8.4	5.0	54.4	30.4
Post-secondary	2.2	0.4	1.2	0.3	13.3	7.0

Source: NIS 1998.

Gender Disparity

At the primary level net enrollment for boys is only 3.5 percent greater than net enrollment for girls (table 4.5). The discrepancy in lower-secondary education is much larger, but the biggest disparity is in higher schooling. Roughly 69 percent more boys are in upper-secondary school and 430 percent more are in post-secondary school. Although

these are large relative differences, both males and females have low net enrollment ratios in absolute terms (0.3–8.4 percent).

Role of the Public Sector

Until 1991 the state ran all schools. Since then, there has been some growth in private schools, although they still account for less than 1 percent of all students at all levels (table 4.6). Among post-secondary students in the 1997 survey sample, there is a generally strong, positive relationship between private schooling and per capita expenditure (the sample size is quite small, however). This means that the proportion of students in private school can be expected to increase significantly with economic growth and rising incomes, especially from families in the richest quintiles. To satisfy the enormous growth in demand for secondary schooling that will surely come with economic prosperity, the Cambodian government will have to look increasingly to the private sector to expand secondary school coverage.

As in other developing countries, there are many explicit and hidden restrictions on private sector participation in education in Cambodia. These need to be recognized and rationalized or removed if partnership with the private sector is to be of benefit. Even in private schools, the government has an obligation to ensure the quality of education. It needs to set appropriate curriculum standards, ensure that they are upheld through school inspections, and institute national standardized primary- and secondary-leaving examinations.

Determinants of Enrollment among the Poor

Identifying the causes for low enrollment among the poor is the first step in tackling the problem. School enrollment is influenced by several factors, including schooling costs, proximity to schools, quality of schools, parents' schooling, and returns to education.

High Private Costs of Schooling

The public sector runs all but a handful of schools in Cambodia but private spending accounts for a large share of schooling expenditures. Total annual spending of the Ministry of Education in 1996–97 was CR 81.95 billion ($33 million), of which CR 8.91 billion ($3.6 million) was financed through school fees paid by parents. So the public subsidy to education was CR 72.35 billion ($28.9 million). Moreover, donors and NGOs spent CR 143.15 billion ($57 million) in the education sector in 1996–97. The 1997 survey data indicate that household spending on schooling (books, materials, transportation, uniforms, and so on) was CR 141.06 billion ($56 million) in 1997 (table A4.13). This means that the government provides

Table 4.6 Private schooling enrollment by consumption quintile and region, 1997
(percentage of all students)

	Consumption quintile					*Nation-wide*	*Phnom Penh*	*Other urban areas*	*Rural areas*
	1–poorest	*2*	*3*	*4*	*5–richest*				
Primary	0.0	0.4	0.5	0.6	2.1	0.7	3.7	0.7	0.3
Lower-secondary	1.2	0.0	0.0	0.8	1.5	0.8	3.3	0.4	0.0
Upper-secondary	0.0	0.0	0.0	2.0	2.6	1.9	3.2	0.0	1.0
Post-secondary	0.0		0.0	0.0	1.5	1.2	1.5	0.0	0.0
All	0.1	0.4	0.4	0.7	2.0	0.7	3.5	0.6	0.3

Note: There are only 62 post-secondary students represented in the 1997 survey sample (61 in public and one in private institutions).
Source: NIS 1998.

only a fifth of all education resources in Cambodia. Households finance about two-fifths, and donors and NGOs account for the rest.

Though primary schooling is officially free in Cambodia, most parents have to pay a considerable amount for their children's primary education. In addition to the cost of school uniforms and textbooks, there are admission fees and various supplements. Private tutoring, often by the same teacher as at school, is a major expense. It is frequent and nearly obligatory, because it is seen as a favor to teachers, who have to supplement their low salaries. Finally, students and their families have to contribute almost the entire costs of school construction, equipment and furniture, and maintenance. The household survey collected information on expenditures in 12 months (to June 1997) on tuition, school improvement fees, books and other supplies, school uniforms, private tutoring, transportation, and lodging (for boarding students) for each child between the ages of 6 and 24 currently in school (tables A4.1–A4.10).

Total household schooling costs. Per student household costs, even in public schools, are significant, amounting to an average of CR 48,328 ($19) in primary schools, CR 142,466 ($57) in lower-secondary, CR 267,055 ($107) in upper-secondary, and CR 210,163 ($84) in post-secondary institutions.[5] At all levels tuition fees and school improvement fees amount to only about 8–10 percent of household schooling costs, with uniforms, books, school supplies, transportation, and other costs accounting for 90 percent or so.

Household spending per student increases sharply with per capita consumption spending, but this may indicate that better-off households are purchasing better quality schooling inputs than the poor.

Affordability of public schooling can best be assessed by looking at the ratio of average schooling expenditure per student to household nonfood spending per capita, with the latter serving as a proxy for discretionary household income (table 4.7). For example, the quintile-specific affordability ratio of 26 percent for primary schools for the poorest 20 percent of Cambodians is calculated by dividing their average schooling cost per student of CR 23,925 ($9.50) by nonfood expenditure per capita of CR 91,200 ($36).

Two things are clear. First, schooling is simply unaffordable for the poor. The cost of one child in primary school takes up a quarter of all nonfood spending per capita in the poorest quintile, while a child in lower-secondary school takes 57 percent of nonfood spending.

Second, schooling costs are much higher relative to discretionary consumption for the poor than for the better-off. Average schooling cost per student in primary schools amounts to 26 percent of nonfood consumption spending per capita for the poorest quintile, but only 12 percent for the richest quintile. Differences in affordability ratios across the poorest and richest quintiles are even greater at the secondary level.

What is the budget share of actual schooling expenses? Although average household schooling costs per student relative to nonfood consumption may be higher for the poor, the share of total schooling expenditure in total household consumption expenditure could well be lower for the poor because of their lower rates of enrollment. Across all quintiles only 1–1.5 percent of total consumption expenditure is devoted to education (table 4.8). The budget shares of education spending increase directly (but not dramatically) with per capita consumption, from 1.05 percent for the poorest quintile to 1.46 percent for the richest. The absolute differences in expenditures are much larger.

Composition of schooling costs. Virtually all school expenditures—fees, uniforms, books, supplies, and so on—increase

Table 4.7 Affordability of public schooling by consumption quintile and region, 1997
(ratio of schooling cost to nonfood expenditure)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Quintile average cost									
Primary	26.2	21.0	18.9	17.7	11.9	14.6	12.6	16.1	15.4
Lower-secondary	56.9	50.2	41.5	34.0	26.2	43.7	26.0	37.5	40.4
Upper-secondary	83.2	86.3	66.5	66.0	38.4	80.9	33.7	80.8	75.1
Post-secondary	0.0		38.9	8.3	28.2	63.7	20.4	152.3	0.0
Cambodia average cost									
Primary	52.8	34.2	23.5	15.7	5.3	14.6	5.1	11.9	20.0
Lower-secondary	155.5	100.9	69.4	46.4	15.7	43.2	14.9	35.0	59.0
Upper-secondary	291.5	189.1	130.0	86.9	29.5	80.9	27.9	65.6	110.5
Post-secondary	229.4	148.8	102.3	68.4	23.2	63.7	22.0	51.6	87.0
Memorandum item:									
Per capita nonfood consumption spending (thousands of riel)	91.2	141.2	205.4	307.4	905.5	330.1	956.7	407.1	241.6

Source: NIS 1998.

Table 4.8 Budget shares devoted to education, by consumption quintile and region, 1997
(thousands of riel)

	Annual household expenditure on schooling	Annual household consumption	Share of education in consumption expenditure (percent)
Consumption quintile			
1-poorest	24.8	2,356.8	1.05
2	33.6	3,220.1	1.04
3	44.5	3,871.8	1.15
4	64.6	5,192.5	1.24
5-richest	162.1	11,113.7	1.46
Nationwide	67.9	5,150.6	1.32
Phnom Penh	179.9	9,933.6	1.81
Other urban areas	92.9	6,976.0	1.33
Rural areas	44.3	4,308.2	1.03

Source: NIS 1998.

sharply with per capita consumption spending for all schooling levels (tables A4.1–A4.9). For example, the richest 20 percent of Cambodians spend more than twice as much as the poorest 20 percent on books, uniforms, and other school supplies. While the average primary student in the poorest quintile spends next to nothing on private tutoring, the average student in the richest quintile spends CR 19,946 ($8) a year. All of this suggests that students belonging to the poorest quintile face disadvantages in access to essential school inputs. To the extent that these inputs lead to better student learning and performance, test scores of poor students would be expected to be worse than those of better-off students.

It is surprising that school fees diverge widely between rich and poor groups even in public schools (table A4.1). This could reflect informal fees and other supplements (say, for running electricity generators or paying a supplement to teachers) over which schools have more discretion than they do over official tuition fees.

School uniforms, which are obligatory, are one of the biggest schooling costs, especially for poor households. The poorest quintile spends CR 8,354 ($3) a year on school uniforms for children in public primary schools—much more than the CR 2,924 ($1.20) they spend on tuition and CR 2,851 ($1.15) for books. Whether abolishing compulsory school uniform rules in public schools will reduce costs to the poor, however, depends upon the extent to which school uniforms simply substitute for other clothes that would have been purchased anyway.[6]

School fees. Exempting the poor from public school fees could improve school access for poor children. Households reported paying no fees for only about 9 percent of primary school students (there are no official fees at this level). Most fees paid by primary school students in public schools were likely voluntary contributions and other special supplements. While more primary school students from the poorest quintile (12 percent) were exempted than those from the richest quintile (7.3 percent), the difference is small. In lower- and upper-secondary schools a higher percentage of the students from the poorest quintile pay no fees compared to all other quintiles. But, then, many from the richest quintile also pay no fees. Clearly there is no systematic pattern of fee exemptions.

School improvement fees appear to be more discretionary, particularly at primary and upper-secondary levels. Almost 40 percent of primary school students in Cambodia reported paying no school improvement fees, with a much larger percentage coming from the poorest quintile (49 percent) and rural areas (43 percent). In upper-secondary schools 34 percent of students paid no improvement fees (79 percent in the poorest quintile).

Moreover, almost 23 percent of Cambodian primary school students paid nothing for school books. This, of course, could mean that students used no textbooks, not that they received them free. There does not appear, however, to be a link between payment for books and economic status.[7]

Proximity to Schools

Another reason for the lower enrollment among Cambodia's poor children may be the distance they have to travel to schools. There are two measures of physical access to schools: the percentage of the population having a school in their home village and average distance to the nearest school for those without a village school. A little more than half of Cambodians have a village primary school, but only 5 percent have lower-secondary schools and less than 2 percent have upper-secondary schools in their village. Only 20 percent of provincial Phnom Penh's residents have a primary school in their village, compared with 60 percent in other urban areas and 54 percent in rural areas. Overall, half of the rural population does not have a primary school in their village, and more than 95 percent have no secondary school.

Average distance to the nearest schools outside the village increases with education level; this distance is 1.2 km to the nearest primary school, 5.6 km to the nearest lower-secondary school, and 10.8 km to the nearest upper-secondary school. These distances are longer for children from the poorest quintile, who, on average, walk 6.9 km to the nearest lower-secondary school and 11.9 km to the nearest upper-secondary school. (Children from the riches quintile walk an average of 4.3 km to the nearest lower-secondary school and 8.4 km to the nearest upper-secondary school.) With such long travel distances, it seems scarcely feasible for day students from the rural population, 95 percent of which is without a village secondary school, to attend secondary school. Physical access to schools is also affected by the poor quality and limited availability of roads. Most rural roads are impassable in the rainy season (chapter 6).

School Quality

Assessing school quality is more difficult both because the notion of quality is more complex and because data on quality indicators are not readily available. There is an extensive literature on school effectiveness, which suggests that inputs (quality of curriculum, availability of learning and instructional materials, pupil-teacher ratios, availability of trained teachers, and so on) are critical in determining educational effectiveness and student learning.[8]

Village data can be merged with household data from the 1997 survey to analyze the quality of school inputs available to the population by consumption quintile and region (table 4.9). On one widely accepted indicator of school quality, pupil-teacher ratios, Cambodia's average of 63 students for each primary school teacher is much higher than for other countries in the region.[9] There is also a big rural-urban difference in primary school pupil-teacher ratios—35 in Phnom Penh and 39 in other urban areas, but 69 in rural areas.

This indicator also varies significantly across consumption quintiles. In primary schools attended by the poorest quintile, the ratio is 98.6—more than twice as high as in primary schools attended by the richest 20 percent.[10] Secondary school pupil-teacher ratios are much lower—19 nationwide at both lower- and upper-secondary levels. Ratios generally increase with per capita consumption at the lower-secondary school level and decline at the upper-secondary level. For primary schools, other quality indicators (such as the percentage of trained teachers) show less stark differences between quintiles and regions. The Ministry of Education reports that most Cambodian teachers have pedagogy training. Similarly, there is no clear pattern in the number of schools with enough books. The highest grade taught increases with consumption levels and is higher in urban areas, but the differences are not dramatic.

Despite the lack of discernible patterns in some indicators on school quality, the evidence suggests that Cambodia's poor and rural children are worse off in the quality of schools available to them (particularly in availability of teachers). This may be a factor in lower enrollment rates among the poor. Given the high costs of schooling, parents might not consider it worthwhile to send their children to poor-quality schools. Moreover, poor-quality schools mean poor student performance, increasing the likelihood of repeated grades and dropouts and reducing the likelihood that poor children will be able to move on to higher education.

Parents' Schooling

Evidence from around the world shows that parents (especially mothers) with

Table 4.9 School quality indicators by consumption quintile and region, 1997

	Consumption quintile					*Nation-*	*Phnom*	*Other urban*	*Rural*
	1-poorest	*2*	*3*	*4*	*5-richest*	*wide*	*Penh*	*areas*	*areas*
Average pupil-teacher ratios									
Primary	98.6	64.4	55.90	54.30	45.60	63.40	38.70	35.10	68.80
Lower-secondary	16.6	15.1	17.90	19.40	25.90	18.70	27.90	14.80	18.70
Upper-secondary	22.0	21.4	18.70	18.10	16.20	19.00	21.40	15.00	20.30
Percent of teachers trained									
Primary	88.1	87.9	89.50	88.7	90.7	89.0	92.0	93.7	88.10
Lower-secondary	98.1	96.	93.1	94.6	94.4	95.4	81.2	100.0	95.90
Upper-secondary	97.4	97.7	99.3	98.8	99.0	98.4	100.0	98.5	98.3
Highest grade taught[a]									
Primary	4.7	5.1	5.0	5.1	5.1	5.0	5.2	5.4	4.9
Lower- secondary	8.4	8.9	8.9	8.8	8.8	8.7	9.4	9.1	8.6
Upper-secondary	10.9	11.7	11.6	11.9	12.0	11.6	12.0	12.0	11.5
Percentage in schools with "enough" books									
Primary	18.3	18.7	16.9	17.8	22.2	18.7	25.0	31.6	16.4
Lower-secondary	12.8	14.5	16.0	8.6	17.7	14.0	14.3	9.7	14.8
Upper-secondary	43.3	39.7	30.3	21.4	10.7	31.1	18.7	21.8	33.7

a. Many Cambodian primary schools are annex or satellite schools that do not offer the full six years of schooling. Some secondary schools do not offer all grades at either the lower- or upper-secondary levels.
Source: Merged village data and household survey data from the Cambodia Socioeconomic Survey of 1997.

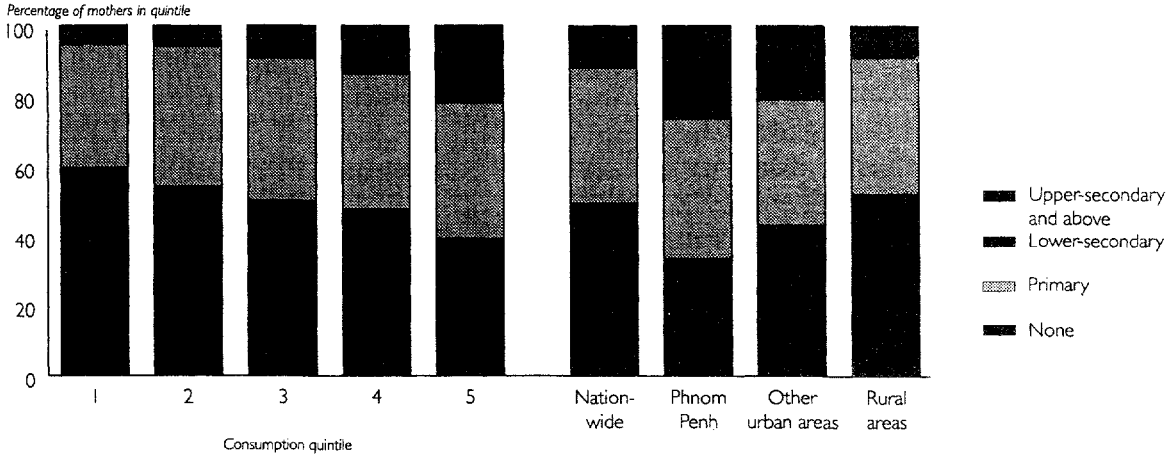
more schooling are more likely to send their children to school and keep them there longer.[11] A larger proportion of mothers in the poorest quintile (60 percent) have no schooling, compared with those in the richest quintile (39 percent; figure 4.1). And, not surprisingly, fewer women in the poorest quintile have secondary or post-secondary schooling. There is a strong positive link between mothers' schooling and enrollments at most levels (table 4.10). In particular, children with mothers who have had post-primary education are much more likely than other children to attend secondary and post-secondary schools. This is to be expected since secondary school enrollment is more discretionary in Cambodia. For instance, while the gross post-secondary enrollment rate is a meager 1 percent for children whose mothers have no schooling, it runs as high as 8 percent for children whose mothers have upper-secondary (and above) education. Likewise, gross lower-secondary enrollment is 24 percent for children whose mothers have no schooling, 39 percent for children whose mothers have primary education, 72 percent for children whose mothers have lower-secondary schooling, and 90 percent for those whose mothers have upper-secondary (or above) schooling. So, as elsewhere, maternal education is strongly associated with child enrollment in Cambodia.

Returns to Schooling

If wages do not reward people according to their levels of education, enrollments will likely be low, since substantial economic benefits are needed to justify the high costs of schooling. In Cambodia men with primary schooling earn a 15 percent premium over those with no schooling, and women a premium of 36 percent (table 4.11). For lower-secondary schooling the premium over primary schooling is 18 percent for men and 24 percent for women. And the wage premium for upper- and post-secondary education (over lower-secondary) is 21 percent for men and 15 percent for women. Earnings initially increase with age, then flatten (or even fall) at older ages. This is typical and reflects positive but diminishing returns to education up to age 50 or so followed by negative effects on earnings in later life.

Women earn less than men at all ages and all schooling levels. However, the wage premium for primary and lower secondary education (over no schooling and

Figure 4.1 Mothers' level of completed schooling, by consumption quintile and region, 1997



Source: NIS 1998.

Table 4.10 Net, gross, and age-specific enrollment rates, by mothers' level of schooling, 1997
(percentage at each level)

	Mothers' schooling			
	None	Primary	Lower-secondary	Upper-secondary and above
Net enrollment rates				
Primary	60.8	71.5	76.8	90.5
Lower-secondary	8.0	18.3	30.7	31.9
Upper-secondary	2.2	8.0	19.8	37.3
Post-secondary	0.4	0.3	2.8	3.6
Gross enrollment rates				
Primary	110.0	115.4	111.8	137.7
Lower-secondary	23.6	39.3	73.4	89.8
Upper-secondary	4.9	11.1	34.8	72.9
Post-secondary	0.7	0.7	4.1	8.1
Age-specific enrollment				
Ages 6–11	61.4	72.3	80.1	95.4
Ages 12–14	71.4	83.1	85.9	95.1
Ages 15–17	35.5	45.2	58.8	77.2
Ages 18–24	9.4	9.5	10.8	25.5

Source: NIS 1998.

Table 4.11 Real monthly earnings, by gender, age, and schooling level, 1997
(riel)

	None	Primary	Lower-secondary	Upper- and post-secondary	All levels
Men					
Ages 15–29	91,660	103,755	136,259	171,610	114,623
Ages 30–39	112,221	130,363	130,465	157,361	127,788
Ages 40–49	117,896	153,880	200,691	306,764	167,247
Ages 50 +	119,386	128,677			131,693
All ages	110,554	127,495	149,938	180,825	132,266
Women					
Ages 15–29	52,351	86,861	103,866	136,136	84,668
Ages 30–39	71,175	101,687	121,281	134,320	93,790
Ages 40–49	79,744	111,543	126,500		102,018
Ages 50 +	74,115	80,741	140,679	182,188	81,877
All ages	70,422	95,814	119,067	137,097	90,059

Source: NIS 1998.

primary schooling, respectively) is greater for women, especially at younger ages. This should make it easier to target schooling opportunities to women.

Multivariate Analysis of School Enrollment

The results of multivariate regression analysis of determinants of school enrollment (appendix D) broadly confirm that most of the factors described above are significant determinants of school enrollment. The probability of school enrollment is significantly related to age, increasing steadily up to age 11, but declining continuously from ages 13 to 17.

There are also strong gender effects on school enrollment probabilities. At virtually all ages male children are more likely to be enrolled in school than female children. The male-female disparity is relatively small at younger ages but larger at older ages. During the primary school years (ages 6–11) males are only 3–4 percent more likely than females to be enrolled in school. However, this difference increases to 14 percent among children ages 12–14 and to 25 percent among children ages 15–17.

Household standard of living, as proxied by household consumption spending per capita, also has a strong positive effect on school enrollment. School enrollment is more income-elastic for older children than for younger ones. For example, the elasticity of school enrollment with respect to per capita spending is 0.10 for children ages 12–14, but 0.18 for children ages 15–17. Interestingly, for the 6–11 age group the association between per capita spending and school enrollment is reduced substantially when primary school quality indicators are introduced in the equation. This suggests that part of the positive correlation between per capita spending and school enrollment observed in cross-tabulations is due to a positive association between school quality and per capita expenditure (that is, better-off households live in communities with higher-quality schools). Indeed, since the equations for children ages 12–14 and 15–17 do not include school quality indicators, it is possible that the higher estimated income effects on enrollment for these age groups simply reflect an unobserved school quality effect.

The education of adults in a household is also among the most significant factors

affecting children's school enrollment. Female adult education seems to be more important than male adult education in explaining enrollment for children ages 12–14, but the reverse is true at older ages. Household size is not a significant determinant of the probability of school enrollment for children ages 6–11, but has a surprising *positive* association with the probability of enrollment for children ages 12–14 and 15–17. This positive effect is large in magnitude; the elasticity of school enrollment with respect to family size is 0.33 for children ages 15–17. This result may reflect the fact that older children, especially girls, are often kept from attending school because they are responsible for household chores, including the care of younger siblings. In larger households there are likely to be other adult members who can take care of younger children, relieving secondary-school-age children of these responsibilities.

Distance to school has the expected negative effects on school enrollment, although the numerical magnitude of the effects is quite small. For instance, an increase of one kilometer in the distance to the nearest primary school is associated with a decline of only 0.2 percent in enrollment for children ages 6–11. The effects are even smaller for older children.

The results indicate no significant effect of primary school fees on the enrollment of children ages 6–11. However, it is unlikely that these results indicate the true price responsiveness of schooling demand because of the conceptual difficulty of calculating the "price" of schooling. The amount actually paid by parents for their children's schooling includes both the true price of schooling and the quality of schooling chosen by parents. For this reason, the primary school fees reported by village leaders were used as the relevant price variables. For villages where no such fees were reported, the median fee reported by parents was used. Thus the primary school fee variable used in this analysis varies across villages, but not across households. There were too few cases to calculate meaningful village-specific fees for lower- and upper-secondary school.

Quality variables are statistically significant and suggest that children ages 6–11 are much more likely to be enrolled when village schools have more teachers and a larger proportion of trained teachers. The estimated elasticity of school enrollment for children ages 6–11 is 0.09 with respect to the number of teachers per primary school and 0.18 with respect to the proportion of trained teachers in primary schools.

Raising Enrollment of the Poor

The results of the analysis of determinants of school enrollment suggest that effective policies to increase school enrollment among the poor need to focus on both supply- and demand-side interventions.[12] Improving physical access to schools by constructing more schools in poorer areas and by improving rural infrastructure will be critical to raising enrollments, but policy must also address issues of price and quality. Relative costs of schooling for the poor will need to be reduced. School fee exemptions alone are inadequate in this regard since fees constitute only 8–10 percent of total schooling costs. A clearly established and transparent system of need-based scholarships for the poorest students will be needed to raise enrollment for this group. Such a system would ensure that poor students could purchase essential inputs, such as textbooks. Another option is for the government to provide (or insure) loans to needy students to help them cover education costs. The advantage of a loan program is that it relies on private resources in a situation in which government funds are severely limited. Funds for scholarships and loans could be obtained by reducing high levels of public subsidies to post-secondary education, a practice that benefits mainly the rich.

Along with reducing schooling costs, a pro-poor schooling policy should address the problem of school quality.[13] The extraordinarily high pupil-teacher ratios in rural areas (80 and above) need to be brought down at least to the national average (around 60)—and probably lower.[14] This will require a more rational policy of deploying teachers across provinces and villages. One way to do this is to pay teachers a premium to work in underserved areas (a policy used with some success in Indonesia and elsewhere). Funds to finance these quality improvements could also be obtained, at least in the short run, from savings generated by reducing subsidies to post-secondary education.

Targeting at least some additional schooling subsidies to poor girls would raise efficiency and equity in the sector by promoting female enrollment. Some other developing countries (Bangladesh and India, for instance) have found scholarship and stipend programs targeted to girls an effective means of raising female enrollments.

Female enrollment could also be increased by creating night schools for secondary-school-aged girls. This would allow girls ages 12–17 who are normally responsible for household chores, including care of younger siblings, to attend school without depriving their families of their labor.

The role of the private sector in schooling is still limited in Cambodia. Fewer than 1 percent of students are enrolled in private institutions, with most private enrollments in post-secondary schools (typically vocational training). The support of the private sector will be needed to expand secondary school coverage in Cambodia. One strategy would be for the government to target its limited education spending to providing primary and secondary education to poor students and to let the affluent turn to the emerging private sector for schooling needs.

Alternatively, vouchers could be used to provide the poor with access to private schools. Broader use of vouchers might increase efficiency in education by fostering competition between public and private schools. Household survey data already show a strong shift of upper-income groups to private schools. This should be encouraged, so that the government can better target its expenditures to the poor. First, however, it would be useful to identify constraints and problems, including any formal or hidden restrictions imposed by the government, that may put a brake on the private sector from expanding its role in the provision of schooling in Cambodia.

Notes

1. The gross primary enrollment ratio is the total enrollment in primary schools, regardless of age, divided by the population age 6–11. The net enrollment ratio is the enrollment of children ages 6–11 in primary schools divided by the population ages 6–11. Enrollment ratios for other levels of education are defined similarly, using different age groups. The age groups corresponding to the official school ages in Cambodia are 6–11 years for primary, 12–14 for lower secondary, 15–17 for upper secondary, and 18–24 for post-secondary.

2. Of all children ages 6–11, 76 percent live in rural areas, 12 percent in other urban areas, and 12 percent in Phnom Penh; the share of the rural areas in the non-school-going child population is much greater than its population share.

3. The poor are still underrepresented relative to their share of the primary-school-age population, while the rich are overrepresented.

4. According to the most recent estimates, about 36 percent of the Cambodian population is poor (Cambodia Ministry of Planning 1998)—corresponding roughly with the bottom two quintiles.

5. Since there were only 62 post-secondary students in the 1997 survey sample (61 in public institutions and 1 in a private institution), the mean expenditures shown in table A4.12 for post-secondary schools are unlikely to be representative of the true population of those students.

6. The household expenditure data collected in the 1997 survey show no relationship between levels of household expenditure on clothing and household expenditure on school uniforms (with other factors, such as household size, composition, and total expenditure held constant), suggesting that there is no (or little) substitution of uniforms for other clothing expenditure.

7. The 1997 village questionnaire asked whether schools in the village provided books free to students. Free books were provided in primary schools attended by 75 percent of students from the poorest quintile, and 90 percent of students from the richest quintile.

8. Student learning is also affected by the amount of time that a student invests in schoolwork, as well as a student's innate abilities and socioeconomic background.

9. For instance, in 1995 the primary school pupil-teacher ratio was 24:1 in China, 23:1 in Indonesia, 30:1 in Lao PDR, 25:1 in Mongolia, 48:1 in Myanmar, 39:1 in Nepal, 35:1 in the Philippines, 28:1 in Sri Lanka, 20:1 in Thailand, and 25:1 in Vietnam. India was the only Asian country with a pupil-teacher ratio as large as Cambodia's (UNESCO 1998).

10. Many Cambodian schools faced with such high pupil-teacher ratios operate in two (or even three) shifts. Although this reduces class size to more manageable levels, it reduces children's time spent in class and undoubtedly compromises schooling quality.

11. Mothers of children over 5 years of age cannot be identified directly in the household survey. Most children are identified as children of the household head. Where mothers are listed either as household head or as the spouse of the head, mothers can be identified for most children (97.1 percent; although in a few cases the mother so identified may be a stepmother).

12. As noted earlier, it is possible that the insignificance of school fees in the enrollment regressions may simply reflect substantial measurement errors, since the school fee data were not collected directly from schools.

13. Although the multivariate analysis does not provide strong evidence of the importance of school quality, it is possible that the limited (and possibly unreliable) information on schools in the 1997 household survey may be responsible for these findings. Better and more extensive Ministry of Education data are available on the characteristics of schools throughout Cambodia; these data should be merged with the household survey data to facilitate a more complete analysis.

14. The national average pupil-teacher ratio for primary schools (not weighted for population) is about 44.

5. Access to Health Services

As in education, Cambodia has made impressive progress in improving the health status of its population since the end of the Khmer Rouge period. The health status of Cambodians is, however, still among the worst is the region. There are still no health facilities in several parts of the country, and in other areas health facilities are too dilapidated to be of any use.

Since 1996 the Ministry of Finance, with the assistance of donors and NGOs, has been implementing a health services plan to expand access to health facilities. The Ministry of Health has also been instrumental in developing and expanding programs to tackle infectious diseases—such as the National Tuberculosis Program and the National Malarial Program—and in vastly increasing coverage of child immunization programs.

Some Improvements in Health Status

Between 1992 and 1997 immunization of infants up to 12 months old against polio, measles, diphtheria, pertussis, and tetanus more than doubled, from 32–33 percent to 70–72 percent (table 5.1). Immunization of pregnant women against tetanus increased sixfold, from 6 percent to 36 percent. Coverage of immunization against tuberculosis also rose, from 50 percent to 80 percent. The increase in immunization coverage is reflected in big declines in the number of reported cases of tuberculosis, polio, diphtheria, measles, pertussis, and neonatal tetanus between 1992 and 1997 (table 5.2).[1]

Because the 1998 census was the first in more than 30 years, and because the vital statistics registration system in Cambodia is virtually nonexistent, it is difficult to get consistent estimates of infant mortality over time. The limited evidence, however, suggests that infant mortality has declined sharply since 1980 (figure 5.1). However, it is still the highest in the region at 90–115 deaths per 1,000 live births (Cambodia Ministry

Table 5.1 Immunization coverage, 1992–97
(percent)

Vaccine	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*
Tuberculosis (BCG)	50	57	78	95	88	80
Poliomyelitis (OPV3)	32	36	54	80	75	72
Diphtheria, pertussis, tetanus (DPT3)	32	35	53	79	74	72
Measles	33	37	53	75	71	70
Tetanus for pregnant women (TT2+)	6	22	28	36	36	30

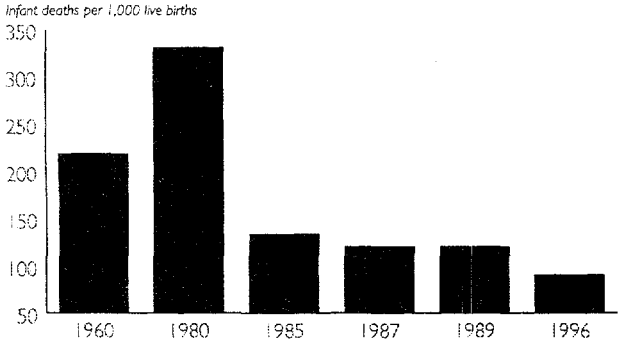
Note: Percentage of children immunized before the age of one and pregnant women immunized against tetanus.
Source: Cambodia Ministry of Health 1997.

Table 5.2 Cases of disease reported to the Expanded Program of Immunization, 1992–97

Vaccine	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*[a]
Tuberculosis	4306	nr	73	55	25	6
Poliomyelitis	146	135	296	103	50	8[b]
Diphtheria	13	22	5	nr	nr	3
Measles	2,759	1,226	946	2,038	697	134
Pertussis	995	611	63	nr	nr	nr
Neonatal tetanus	nr	88	147	8	2	3

nr Not reported.
a. January–September.
b. The last confirmed case was in March 1997.
Source: Cambodia Ministry of Health 1997.

Figure 5.1 Infant mortality rate, Cambodia, 1960–96



Source: Cambodia Ministry of Health 1997.

of Health 1997; Huguet 1997). It is estimated that 40 percent of such deaths occur in the first month of life due to maternal health and delivery conditions, including low birth weight (USAID 1996).

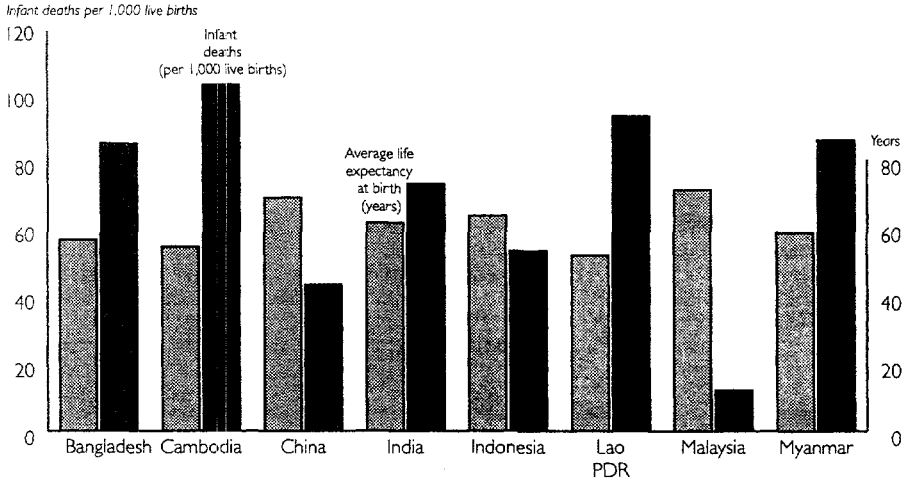
Average life expectancy at birth is estimated at 54.4 years. Men can expect to live an average of 50.3 years and women 58.6.[2] The more than eight year difference between these figures may reflect both the incomplete reporting of female deaths (relative to male deaths) in the Demographic Survey of Cambodia 1996 and the higher mortality of males because of civil war and strife. More critical than this difference is the fact that life expectancy remains very low for both men and women in Cambodia relative to other countries in Asia (figure 5.2).

High mortality and low life expectancy are partly the result of low levels of health service use by Cambodians. The health ministry estimates that the annual number of outpatient consultations in all health facilities was a meager 0.35 per capita in 1996 (Cambodia Ministry of Health 1996)—well below both the World Health Organization (WHO) standard of 0.60 for rural areas and the yearly contact rates elsewhere in the region. Only 15.9 percent of births (measured using a crudely estimated birth rate) took place at hospitals or health centers (Cambodia Ministry of Health 1996). Most deliveries took place at home, probably with the assistance of traditional birth attendants.

The Growing HIV/AIDS Epidemic

Increasing rates of HIV/AIDS infection is also a major concern. Cambodia has

Figure 5.2 Life expectancy and infant mortality in Asia, 1995



Note: Estimates for infant mortality in Cambodia range from 90 to 115 per 1,000 live births.
Source: UNDP 1997, except Cambodia, Cambodia Ministry of Health 1997.

among the highest infection rates in the region, with an estimated 130,000 to 150,000 Cambodians—between 2 and 3 percent of all Cambodian adults—infected with HIV in all 19 provinces where populations have been tested. The Cambodian epidemic is primarily heterosexual, spreading first among commercial sex workers and their clients, then outward to the clients' spouses and other partners. The infection rate among brothel-based sex workers is more than 40 percent and about half that rate in indirect sex workers. Infection rates among the police in the 19 provinces surveyed range from 1 to 26 percent.

The vast majority of those infected are asymptomatic. However, the epidemic is already affecting Cambodia's fragile health system. The cost of treatment per AIDS case in 1999 has been estimated at about US$291—more than 10 times per capita health expenditures. An estimated 6,689 Cambodians died of AIDS in 1998, but the number of annual deaths will increase dramatically as the HIV-infected population develops full-blown AIDS. This will set back efforts to raise living standards and reduce poverty. In particular, life expectancy will fall and infant mortality rates will rise as increasing numbers of infants are infected at birth. The loss of prime-age adults to AIDS will plunge many households into poverty as they loose their main breadwinners and spend scarce resources on health care. A major effort is needed to educate the public on HIV/AIDS and to promote safe sexual practices in order to stem the epidemic. This has to be an essential part of the government's health and overall poverty reduction strategy.

Patterns of Use and Access of the Poor

But to what extent do the broad statistics mask disparities in health service use across economic groups and regions? Do poor people and poor regions have significantly lower contact rates with health services than other groups? Are the mortality and health outcomes of the poor worse than those of the general population?

Use of health care services in Cambodia is low, estimated by the health ministry at 0.35 annual contacts per capita in 1996 (in the public health service), and 0.39 annual contacts per capita in the 1997 household survey.[3] The survey also shows that public providers account for roughly 30 percent of the average annual 1.2 contacts per capita, private providers for 46 percent, and drug venders for 21 percent.

Curative Services

Is an annual contact rate of 1.2 adequate? The short answer is probably not. While the appropriate number of per capita contacts varies with age and gender, as well as rates of illness, an average of three to four annual contacts a year is considered necessary for basic preventive health care (Gish, Malik, and Sudharto 1988; Gish 1989). For mothers and children, for example, this level of contact generally ensures proper monitoring of pregnancies and deliveries and greater immunization coverage for children. A few developing countries (China and Sri Lanka, for example), average four to five contacts a year (Gish 1989). But most average around two contacts per person per year.[4] Cambodia's neighbor, Vietnam, has an annual rate of 3.2 (Prescott 1997).

Contact rates vary considerably between rural and urban areas and across economic groups (table A5.12). Surprisingly, Phnom Penh Province has the lowest contact rate (1), followed by rural areas (1.2) and other urban areas (1.5). Not surprisingly, higher consumption quintiles have more contact with health services than do lower consumption quintiles, with the richest 20 percent of the population having an annual contact rate of 1.51, two and a half times that of the poorest quintile.

Moreover, 27 percent of Cambodians who were ill during the month before the June 1997 household survey did not seek medical help or self-medicate (table A5.13). This rate of nontreatment is much higher than figures gleaned from household surveys in neighboring countries—Lao PDR, 13 percent, and Vietnam, 2 percent (World Bank 1995; Prescott 1997). As might be expected, nontreatment is more common among poor Cambodians than rich ones; the rate was almost 39 percent for the poorest quintile, and 20 percent for the richest.

Only 15.6 percent of Cambodians who were ill self-medicated. Apart from saving on clinic or doctor's charges, the poor self-medicate because public health facilities often lack basic drugs and medical supplies and, generally, provide low-quality health care. Indeed, the public sector is not the provider of choice for most Cambodians. Only 24 percent of ill Cambodians sought care from a public provider (table A5.13). Almost a third visited private providers—private doctors or nurses, clinics, hospitals, and traditional healers. If self-medication is included with private provision, this figure rises to 50 percent.

Traditional healers (*khru khmer*) are used by only 4 percent or so of the population—a much lower rate than is generally believed. (These low rates of usage could indicate a reluctance to admit to visiting a traditional healer.) The choice of other health providers varies enormously across economic groups. As income increases, there is a marked shift toward private providers and a small increase in use of public providers—and an overall shift away from self-medication and nontreatment. For instance, the poorest quintile sought treatment from private and public providers in equal proportions (18 percent for each). Of the richest quintile, 42 percent used private providers and 23 percent used public providers—surprisingly, an increase from the numbers recorded in earlier household surveys.

People use commune clinics and district health centers (outpatient services) less as income increases. For other public health services—especially inpatient and outpatient care at provincial hospitals and those in Phnom Penh—demand rises sharply with income.[5] This is in line with a general shift to more expensive hospital care (whether publicly or privately provided) as incomes increase. For instance, while only 2.2 percent of people in the poorest quintile sought outpatient treatment from public hospitals, about four times as many (9.3 percent) from the richest quintile did. Likewise, the proportion of people who were outpatients at private hospitals was less than 1.9 percent in the poorest quintile, but 3.8 in the richest quintile. With rising incomes there was also a marked preference for higher-quality private doctors, nurses, and clinics; while less than 15 percent of the poorest used these providers, 30 percent of the richest used them.

Preventive Services

The 1997 household survey shows widespread coverage for vaccinations against polio, but less against measles (table 5.3). These numbers differ greatly from those published by the Ministry of Health, which show national coverage for 1996 of 90 percent for tuberculosis, 76 percent for polio, 75 percent for diphtheria, pertussis, and tetanus (DPT), and 72 percent for measles. Why the difference? Different target groups. The household survey (June 1997) obtained immunization data for children born in the previous 24 months, and only where the parent could produce a vaccination certificate.

In Cambodia vaccines for the Expanded Program of Immunization are provided mainly by international donors and UN agencies such as UNICEF. In principle, immunization drives are supposed to reach every child in the country, irrespective of where they live or their

Table 5.3 Percentage of children born in the previous 24 months who where immunized, by consumption quintile and region, 1997

Vaccine	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1-poorest	2	3	4	5-richest				
Polio	55.70	60.19	58.89	64.31	72.20	61.91	81.72	65.14	59.85
Tuberculosis (BCG)	43.59	46.87	47.68	53.12	50.93	48.29	64.95	53.44	46.24
Measles	20.11	17.95	25.68	22.86	27.76	22.67	44.53	25.63	20.49
DPT	42.64	42.46	43.33	50.75	52.15	46.03	65.72	55.33	43.17

Source: NIS 1998.

economic background. In practice, immunization depends strongly on income. The most glaring example is the case of immunization against measles. For children up to 24 months old only 19 percent in the poorest quintile are vaccinated whereas 32 percent in the richest quintile are vaccinated.

Hospital Admissions

Hospitalization is relatively rare in Cambodia, with about 20 admissions a year for every 1,000 people (61 percent of these to public hospitals and the rest to private hospitals). This is greater than the 13.6 per 1,000 people for Indonesia (World Bank 1989), but much lower than estimates for Sri Lanka (161), Vietnam (104), and Sichuan Province in China (50; World Bank 1988; Prescott 1997). The poorest 20 percent of Cambodians are hospitalized at a rate of only 9 per 1,000, and the richest 20 percent at 20 per 1,000 (table 5.4). There is, however, no discernible relationship between rising income and the average length of an inpatient stay. Nor is there any particular relationship between income and choice of a private or public hospital.

Role of the Public Sector

Until 1991 the state was—at least officially—the sole provider of all health services. Since

Table 5.4 Inpatient admissions in the previous 12 months by consumption quintile and region, 1997

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1-poorest	2	3	4	5-richest				
Public hospitals									
Share of all admissions	68.27	50.45	66.21	58.92	62.36	61.22	54.71	62.26	61.94
Number of admissions per 1,000 population	6.32	8.14	16.89	13.27	17.77	12.48	11.77	12.08	12.62
Average length of inpatient stay (days)	14.07	13.34	19.94	15.26	16.29	16.45	11.31	12.61	17.54
Private hospitals									
Share of all admissions	31.73	49.55	33.79	41.08	37.64	38.78	45.29	37.74	38.06
Number of admissions per 1,000 population	2.94	7.99	8.62	9.26	10.73	7.90	9.74	7.32	7.75
Average length of inpatient stay (days)	10.33	6.74	6.72	5.61	6.80	6.76	5.71	6.36	6.97
All hospitals									
Share of all admissions	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number of admissions per 1,000 population	9.26	16.13	25.50	22.53	28.49	20.38	21.51	19.40	20.37
Average length of inpatient stay (days)	12.88	10.07	15.47	11.30	12.72	12.69	8.77	10.25	13.52

Source: NIS 1998.

then there has been tremendous growth in private sector health care, which now accounts for 68 percent of all health services (table 5.5). The private sector's role in inpatient care, however, is relatively small (35 percent), partly because the public sector has more provincial hospitals and central specialty hospitals maintained by the health ministry. As people's incomes rise, they increasingly switch from public to private providers for their outpatient treatment. For instance, while the public sector accounts for 45 percent of outpatient services used by the poorest quintile of the population, the share is only 34 percent for the richest quintile.

Switching to the private sector (at least for outpatient care) at higher income levels could help the government concentrate its resources on providing curative services to the poor (and preventive and primary health services to all), leaving the emerging private sector to provide curative health services to higher-income groups.

Public health facilities are used by better-off Cambodians for inpatient care to a greater extent than by the poor (see tables 5.4 and 5.5 and table A5.12). This suggests that public investment in secondary and tertiary care is benefiting primarily the wealthier segments of society. The new Health Coverage Plan, which will form the basis of all public investment in the health sector over the next five years, calls for a network of district health centers and referral hospitals to provide universal access to basic health and referral services. Under the plan, 65 referral hospitals and 8 national hospitals (and 909 health centers) will be opened in 72 districts. Data from the household survey suggest that the investments in referral and national hospitals may disproportionately benefit the rich. This could be rectified if better-off Cambodians are required to pay more for services in these facilities.

While the government is the largest provider of health services, it finances only about 4 percent of all health spending; households finance an overwhelming 82 percent and donors and NGOs the remaining 14 percent. In 1996 annual expenditure of the Ministry of Health was CR 43,178 million ($17.3 million), compared with CR 148,896 million ($59.5 million) spent by donors and NGOs. The 1997 household survey data show that total household health expenditure in 1996–97 was CR 895,689 million ($358.3 million).

What Determines Health Service Use?

Why do poorer Cambodians use health services less? Key reasons could include high private costs, low quality of care, low household income, and low levels of parental education.

Table 5.5 Public and private sector shares of health service utilization by consumption quintile and region, 1997
(percentage of total)

	Consumption quintile					Nation-	Phnom	Other urban	Rural
	1-poorest	2	3	4	5-richest	wide	Penh	areas	areas
Inpatient									
Public	66.15	57.59	68.76	66.48	63.22	64.75	54.91	66.10	65.80
Private	33.85	42.41	31.24	33.52	36.78	35.25	45.09	33.90	34.20
Outpatient									
Public	45.45	41.28	38.62	37.27	33.67	38.08	38.38	45.34	36.87
Private	54.55	58.72	61.38	62.73	66.33	61.92	61.62	54.66	63.13
All services									
Public	33.70	32.79	32.94	32.06	31.28	32.36	34.49	34.39	31.78
Private	66.30	67.21	67.06	67.94	68.72	67.64	65.51	65.61	68.22

Source: NIS 1998.

Private Costs of Health Service Use

Outpatient health services at commune clinics and district health centers are (officially) free in Cambodia, but patients typically have to pay relatively high out-of-pocket costs for treatment. At least until quite recently, drugs have rarely been provided free because of a general shortage in all public health facilities.[6] Drugs usually must be bought from (private) pharmacies and drug vendors. In addition, various informal payments are often required to obtain "quality" care from public facilities.

The 1997 household survey showed that a visit to a health provider costs an average of CR 80,345 ($30), with wide variations for different health providers, types of service, and economic groups (table A5.7). Not surprising, inpatient care costs 2–4 times more than outpatient care. Self-medication, used extensively by the poor, is generally the least expensive option, costing an average of CR 27,293 ($10).

Outpatient services at commune clinics and district health centers (the second most common health provider used by the poor after pharmacy visits) are cheaper than outpatient services offered by private doctors, nurses, and clinics. On average, an outpatient visit to a commune clinic or district health center costs CR 52,968 ($21), while similar private care costs 30.8 percent more. Outpatient services cost 108.7 percent more at a public hospital and 158.5 percent more at a private hospital.

Average out-of-pocket spending per health service contact increases with income even with the same category of provider. For instance, a person in the poorest quintile pays CR 38,281 ($15) for publicly provided health care, while a person in the richest quintile pays almost five times as much, CR 177,146 ($71). The disparity in spending across economic groups is greatest in self-medication, again suggesting that the rich buy more and better-quality drugs than the poor. The cost of inpatient services at public and private hospitals is more or less the same—CR 298,100 ($119) for public hospitals and CR 304,401 ($122) for private hospitals—indicating that both are considered high-quality providers, with people willing to pay more for treatment from either.

A breakdown of out-of-pocket expenditures shows that fees account for the lion's share of health expenses—61 percent of the total (tables A5.1–A5.6). Drugs account for another 34 percent, and transport accounts for 5 percent. Fees also make up most of household spending for outpatient services at commune clinics and district health centers, which are supposed to be free. Surprisingly, this is even true for the outpatient services purchased by the poorest quintile at commune clinics and district health centers. This is strikingly different from patterns in other formerly socialist countries. In Vietnam, for instance, less than 7 percent of all private spending on health goes to fees, with the remaining 93 percent going to drugs (Prescott 1997).

If the health ministry could internalize these unofficial payments, revenue gains from cost sharing could be substantial.

The affordability of public health facilities is best assessed by looking at health care costs in relation to income—that is, the ratio of average spending on health to household nonfood expenditure per capita (a proxy for discretionary household income). For example, the affordability ratio for inpatient admission to a public hospital for those in the poorest quintile—109 percent—is calculated by dividing their average public hospital inpatient health visit cost of CR 99,206 ($37) by their average annual nonfood spending of CR 91,190 ($38) per capita.

Health care is thus extremely expensive for the poor. Just one outpatient visit to a commune clinic or district health center takes up a third of a year's nonfood spending for those in the poorest

quintile, while an inpatient visit to a public hospital costs more than twice as much as one year's nonfood spending.

Health care costs in relation to discretionary consumption are significantly higher for the poor than for the well off. Average spending on health is 42 percent of nonfood consumption expenditure per capita for the poorest quintile, but only 20 percent for the richest (table 5.6). For services of identical quality, Cambodia's poorest pay 121 percent of their nonfood expenditure for a single visit to a public facility, while the richest pay only 12 percent. There is a similar pattern even for outpatient services at commune clinics and district health centers, which are intended for the poor. These huge differences could explain part of the differences in health service usage rates for the poor and the rich.

A final question is: What is the average household budget share of health-related expenses, and how do household shares vary across income groups? Nationwide, 10.3 percent of total consumption expenditure is devoted to medical care (figure 5.3). There is no systematic pattern of the share varying with economic status. But the third quintile has the highest budget share for health care (13.5 percent), while both the poorest and the richest quintiles have among the lowest budget shares (8.2 percent and 9.4 percent, respectively). Rural Cambodians spend a significantly larger share of their total consumption expenditure on medical care (11.8 percent) than do Phnom Penh residents (4.5 percent).

Cost of Hospital Admission

Nationwide, inpatient admission costs an average of CR 376,659 ($145) for a public hospital and CR 226,808 ($87) for a

Table 5.6 Affordability ratios for health services by consumption quintile and region, 1997
(total out-of-pocket expenditure per contact as percentage of nonfood spending per capita)

	Consumption quintile					Nation-	Phnom	Other urban	Rural
	1-poorest	2	3	4	5-richest	wide	Penh	areas	areas
Quintile average cost									
All public providers	42	62	46	35	20	34	13	23	47
Hospital inpatient	109	113	145	121	39	88	24	39	134
Hospital outpatient	36	49	42	25	18	33	14	23	47
Commune clinic or health center inpatient	53	445	59	81	18	67	19	76	91
Commune clinic or health center outpatient	33	36	23	17	9	16	4	13	22
Other inpatient									
Other outpatient	43	9	135	3	11	18	2	4	35
Cambodia average cost									
All public providers	121	78	54	36	12	34	12	27	46
Hospital inpatient	319	206	142	95	32	88	30	72	121
Hospital outpatient	121	78	54	36	12	33	12	27	46
Commune clinic or health center inpatient	241	156	107	72	24	67	23	54	91
Commune clinic or health center outpatient	58	38	26	17	6	16	6	13	22
Other inpatient	829	535	368	246	83	229	79	186	313
Other outpatient	65	42	29	19	7	18	6	14	24
Memorandum item									
Annual nonfood consumption spending (thousand of riel)	91.19	141.22	205.35	307.39	905.53	330.08	956.66	407.12	241.59

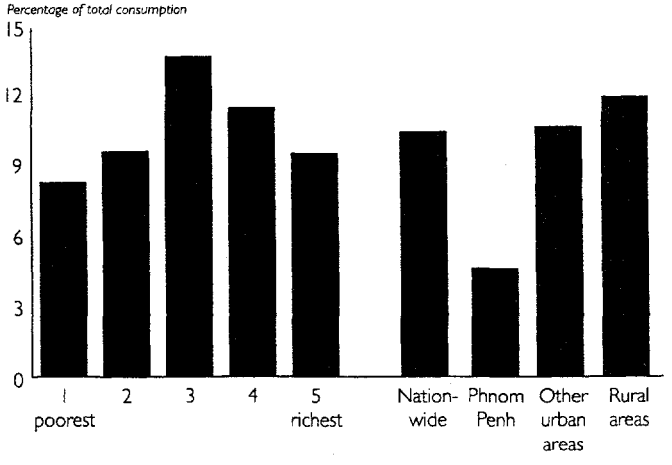
Source: NIS 1998.

private hospital (table 5.7). These costs are significant in a country with a per capita GDP of less than $350. The difference in cost does not necessarily mean that the price of inpatient care is greater at public hospitals than at private hospitals, since their case mix may be different. It is likely that people visit public referral hospitals for more serious illnesses, while they visit private hospitals for treatment of less serious ailments. Since treatment of serious medical conditions costs more, the average cost of inpatient admission to a public hospital would be higher. The average length of an inpatient admission is 16.5 days for a public hospital and only 6.8 days for a private hospital (see table 5.4).

Following the pattern of other spending on health, average expenditure for an inpatient stay increases with income, reflecting the purchase of higher quality services by the rich. Moreover, the disparity in average spending per stay across consumption quintiles is greater at public hospitals than at private hospitals, suggesting that private treatment is of higher quality.

There is one caveat. The 1997 household survey, with a four-week recall period for respondents, showed an average cost per inpatient admission at public hospitals of CR 291,149 ($116). But the estimate is significantly higher, CR 376,659 ($151), when 12-month recall data are used (table 5.7). There is a similar discrepancy for the average cost of inpatient care at private hospitals. It is unclear which estimates are more reliable. Much respondent accuracy is lost when the recall period is as long as 12 months. But since hospitalization is a rare event in most people's lives, there are relatively few reported inpatient admissions within the four-week period, which is likely to reduce the statistical precision of estimates based on that period. Whether increased precision from extending the recall period to 12 months more than off-

Figure 5.3 Budget shares devoted to medical care, by consumption quintile and region, 1997



Source: NIS 1998.

Table 5.7 Average out-of-pocket spending on inpatient admissions in the previous 12 months by consumption quintile and region, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1-poorest	2	3	4	5-richest				
Public hospitals									
Per inpatient stay	142,274	267,425	396,768	346,498	513,543	376,659	261,017	258,446	405,351
Per inpatient day	10,115	20,048	19,900	22,709	31,522	22,899	23,080	20,498	23,108
Private hospitals									
Per inpatient stay	284,128	187,759	168,782	178,222	328,757	226,808	236,708	350,193	209,562
Per inpatient day	27,493	27,864	25,108	31,745	48,328	33,568	41,453	55,055	30,062
All hospitals									
Per inpatient stay	187,288	227,950	319,736	277,363	443,985	318,541	250,008	293,069	330,829
Per inpatient day	14,539	22,640	20,665	24,554	34,905	25,102	28,496	28,590	24,473

Source: NIS 1998.

sets the loss of respondent accuracy cannot be determined.

Fee Exemptions

Only 17.7 percent of users are exempt from fees for health services, while 45.4 percent pay nothing for drugs (table A5.14). But since it is not possible to distinguish between people who obtained drugs for free and people who were not given drugs, drug costs may be misleading. It may be that many people treated at public health facilities receive no medicine—not that they receive free drugs.

Data on fee exemptions are more reliable—and striking. There is a consistent pattern of higher income households being exempted from fees at public health facilities to a much greater extent than the poor. For instance, only 12.2 percent of people in the poorest quintile obtaining treatment from public health facilities paid no fees, while an astonishing 26.2 percent of people in the richest quintile paid no fees. What is even more startling is that this pattern holds true for virtually every public health facility. Even at commune clinics and district health centers the differences found were enormous: 15.7 percent of Cambodia's poorest citizens and 42.2 percent of its richest citizens were exempted.

These findings are so disturbing and unexpected that they require further investigation. What type of policy or provider behavior would generate such a finding? Field visits and on-the-ground assessments reveal that the only types of fee exemptions granted by public providers are to patients who are politically important or well connected in the village, such as village heads, district officials, party dignitaries, and their relatives. Since such individuals are also likely to be the most affluent, the data on exemptions show a positive relationship between fee exemptions and economic status. A transparent system of fee exemptions and free medicines targeted exclusively to the poor seems warranted.

Physical Access to Health Providers and Facilities

Another reason that poorer Cambodians use health services less than wealthier Cambodians could be that geographical access to health facilities is more difficult for the poor.

More than half of rural Cambodians have a traditional birth attendant (64 percent) or a *khru khmer* (traditional healer, 58 percent) in their village (table 5.8). Seventeen percent of rural Cambodians have a commune clinic in their village, 14 percent have a trained midwife, and 18 percent have a nurse. These figures compare unfavorably with neighboring countries. In Vietnam, for instance, 95 percent of rural people have in-village access to a clinic, 99 percent to a physician, and 71 percent to a drug vendor (Prescott 1997).

The rich have much greater local access to the four most frequently used health providers—drug vendors, commune clinics, private clinics, and trained midwives. For example, 18.1 percent of people in the poorest quintile and 23.5 percent of people in the richest quintile have a commune clinic in their village. Likewise, 6.5 percent of Cambodia's poorest people and 17.3 percent of its richest people have a drug vendor in the village. Nationwide the rich have greater access to providers such as provincial hospitals, private hospitals, private doctors, traditional birth attendants, and the *khru khmer*. And health providers and facilities are not locally available for most Cambodians living in rural areas.

In contrast, the proportion of the rural population reached by public health campaigns appears to be much greater. Almost 97 percent of rural Cambodians reported having a child immunization campaign in their home village in the previous 12 months. More than half had a mothers health education campaign.

Village malaria control (33.4 percent) and leprosy control (24.9 percent) campaigns were less common. But there appear to be no major differences in availability of these health programs across economic groups. This finding demonstrates the greater success of public health campaigns relative to primary health care in rural Cambodia (at least in terms of reaching a larger share of the population)—which is perhaps due to the better funding provided to these programs by international donors.

Where there is no health provider locally, people often have to travel long distances to reach one. These distances vary in different income groups. Household in the poorest quintile have to travel an average 5 km to reach the nearest commune clinic, while households in the richest quintile travel 4 km (table 5.9). The distance to the nearest drug vendor is 10.6 km for people in the poorest quintile and 8.6 km for people in the richest quintile. The nearest provincial hospital is on average 40 km away for Cambodia's poorest people and 34 km away for its richest.

A distance of 4–5 km to the nearest commune clinic or 8–11 km to the nearest drug vendor is not especially long compared with distances in other developing countries in the region. Even in Vietnam, which has an excellent network of health facilities, the average distance to pharmacies, dispensaries, and clinics is around 6–8 km (Prescott 1997). It is, therefore, unlikely that limited physical access to health facilities is primarily responsible for the low health care use among Cambodia's poor. More likely health care use is low because the poor cannot afford health services.

Other Determinants of Health Service Use

Quality could also be an important determinant of health service use. In general, the higher the quality, the greater the demand. Unfortunately, little information is available from the 1997 household survey on the quality of health services.

Table 5.8 Availability of health facilities and programs in rural areas by consumption quintile, 1997
(percent)

	Consumption quintile					
	1-poorest	*2*	*3*	*4*	*5-richest*	*Average*
Facility in village						
Commune clinic	18.1	13.1	12.8	20.3	23.5	17.1
Private clinic	5.1	6.3	7.3	9.3	10.4	7.5
Pharmacy or drug vendor	6.5	11.4	14.2	18.0	17.3	13.1
District health center	8.8	5.4	5.8	4.3	8.9	6.6
Provincial hospital	8.3	3.5	2.2	1.3	2.4	3.7
Private hospital	4.0	1.0	1.4	0.5	2.6	1.9
Doctor	7.5	2.5	4.0	4.8	5.0	4.7
Nurse	16.3	16.4	18.6	18.6	19.3	17.7
Trained midwife	12.0	11.2	13.0	16.3	21.5	14.3
Traditional birth attendant	66.3	65.4	65.3	62.6	59.5	64.2
Khru khmer	59.9	62.5	60.8	52.1	55.1	58.4
Other traditional healer	29.4	31.2	36.6	37.6	39.0	34.4
Other provider	10.9	21.0	26.3	25.2	11.1	19.4
Living in village with a health campaign (during past 12 months)						
Child immunization	95.5	95.7	96.5	96.7	98.3	96.4
Malaria control	35.2	34.7	33.1	30.1	33.4	33.4
Leprosy control	27.9	26.9	23.4	23.0	22.3	24.9
Health education for mothers	52.4	59.3	55.5	58.4	50.8	55.5
Other	1.1	1.8	2.9	4.5	3.8	2.7
Proportion of villages with piped water	3.7	5.9	8.7	11.9	11.0	8.3

Source: NIS 1998.

Table 5.9 Average distance to health facilities for the rural population by consumption quintile, 1997
(kilometers)

	Consumption quintile					
	1-poorest	*2*	*3*	*4*	*5-richest*	*Average*
Commune clinic	4.9	5.5	4.4	5.0	4.0	4.8
Private clinic	11.1	11.1	12.0	12.4	10.8	11.5
Pharmacy or drug vendor	10.6	9.0	9.1	9.4	8.6	9.4
District health center	13.6	12.4	11.7	12.1	10.9	12.2
Provincial hospital	39.9	37.5	36.7	34.8	34.2	36.7
Private hospital	28.9	25.5	26.5	22.6	22.7	25.5
Doctor	21.9	17.4	17.3	17.3	20.4	18.7
Nurse	12.1	11.2	11.2	9.8	11.0	11.1
Trained midwife	10.3	11.6	10.2	9.4	9.6	10.3
Traditional birth attendant (TBA)	4.5	4.2	3.2	4.7	5.5	4.4
Khru khmer	3.4	3.5	3.7	3.5	4.9	3.8
Other traditional healer	8.9	8.3	6.9	6.4	6.7	7.5
Other provider	10.9	6.7	3.1	3.7	11.9	6.4

Note: To nearest facility if there is none in the village.
Source: NIS 1998.

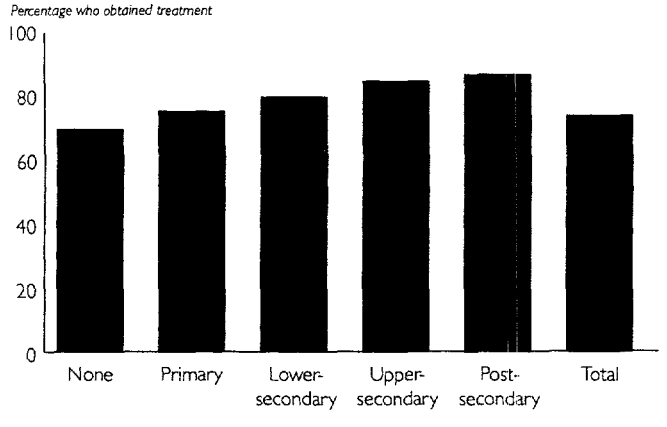
Impressionistic and anecdotal evidence suggests that most public health services (with the possible exception of central hospitals) are indeed of low quality. In many cases they are not even housed properly. And given the enormous shortage of qualified medical personnel in Cambodia, most commune clinics and district health centers are not staffed by trained doctors or nurses and do not have basic drugs and medical supplies on hand. So it is easy to understand why the poor are reluctant to seek treatment, especially when they have to pay the equivalent of 50 percent of their annual nonfood spending for a single visit.

In Cambodia there is a positive association between schooling and use of health services (figure 5.4). Only 69 percent of people with no schooling obtained some treatment for their illness, whereas 79 percent of people with lower-secondary schooling and 86 percent of people with post-secondary schooling obtained treatment. This association suggests that the less frequent use of health services by Cambodia's poorer quintiles could be partly explained by their lower levels of schooling.

There is also a strong, positive association between a mother's education and her child's immunization (table 5.10). While only 42 percent of the children of women with no schooling obtained immunization against diphtheria, pertussis, and tetanus in the first 24 months of life, 90.6 percent of children of post-secondary-educated mothers were vaccinated. Even breastfeeding in the first 24 months is significantly more common among post-secondary educated mothers than among mothers with no schooling.

Mothers in the poorest consumption quintile typically have less schooling than those in the richest (see table 4.2). The lower rates of child immunization among the poorest quintiles (see table 5.3) may be partially explained by the disparity in girls' schooling.

Figure 5.4 Treatment of illness in previous four weeks, for people 15 or older, by level of schooling, 1997



Source: NIS 1998.

Table 5.10 Mothers' schooling and child immunization, 1997
(percent)

Mothers' schooling	Child immunized against				Are exclusively breastfed
	Polio	Tuberculosis	Measles	DPT[a]	
None	59.0	43.5	18.6	42.0	80.6
Primary	59.1	45.4	20.9	42.7	85.4
Lower-secondary	74.9	66.5	38.2	61.1	84.0
Upper-secondary	80.4	68.0	29.8	77.7	83.8
Post-secondary	93.2	87.1	44.1	90.6	97.5
Total	61.9	48.3	22.7	46.0	83.5

a. Diphtheria, pertussis, and tetanus.
Source: NIS 1998.

Multivariate Analysis of Health Services Utilization

Results of multivariate analysis confirm that both demand- and supply-side variables have important effects on health services utilization. Wealthier and better educated individuals are more likely to use health services and to use private health services rather than public providers and drug vendors. And health facilities and providers are more often locally available to wealthier individuals.

Household consumption expenditure per capita is strongly positively associated with the probability of treating an illness episode among both adults and children, with the income elasticity of treatment estimated at 0.15 for adults and 0.18 for children. There is also a shift in utilization of health services from public providers and drug vendors to private

providers as household living standards improve. Among children under age 15, a 1 percent increase in consumption expenditure per capita reduces the probability of using a public medical provider by 0.11 and reduces the probability of using a drug vendor by 0.04, but increases the probability of using a private health provider by 0.17. This is in line with evidence from other countries that suggests that as people's incomes increase, they shift from self-treatment and treatment in the public sector to private sources of health care. This implies that demand for private health care can be expected to increase substantially with economic growth in Cambodia.

Schooling is significantly and positively associated with the probability of adults obtaining treatment. For children, only the schooling of adult males (typically the father) in the household has a significant positive effect on the probability of obtaining treatment. Surprisingly, the schooling of adult females appears to have no effect. Better educated adults are more likely to use private providers, and children in households with better educated adult males are less likely to be treated by drug vendors. Female children are less likely than male children to obtain treatment from private providers.

Among supply-side variables, the presence of a doctor or nurse in a village significantly increases the probability that individuals will use health facilities. This effect is stronger for children than for adults. Children are 19 percent more likely to get their illnesses treated if they live in a village that has a doctor than if they live in a village without one, while the corresponding number for adults is 7 percent. The availability of a *khum* clinic in a village significantly increases the probability of adults and children in that village obtaining medical treatment from public providers and reduces the probability of their obtaining care from private providers and drug vendors. Correspondingly, the availability of a private clinic in a village increases the probability of individuals in that village obtaining treatment from private clinics and reduces their utilization of public health facilities.

Affordability is also an important factor. The price of a medical consultation has a significant negative effect on both adults' and children's probability of obtaining medical treatment. The price elasticity of demand for health care is estimated to be –0.07 for adults and –0.05 for children. However, estimated drug price effects are insignificant, possibly reflecting the substantial measurement error that exists in the price proxies used (see appendix F).

What Government Can Do to Improve the Health of the Poor

The analysis of the preceding section suggests that efforts to increase use of health services by Cambodia's poor should include both demand-side interventions and interventions that improve the availability of health facilities and workers (notably, more *khum* clinics, doctors, and nurses). Increased usage needs to occur in parallel with improvements in quality of health services, to ensure improved health status of the poor.

Reducing out-of-pocket costs of health services for the poor will be critical. As noted above, the cost of a single medical consultation at a commune clinic or district health center represents, on average, a third of nonfood expenditures of the poorest quintile. Fee exemptions at public facilities are also heavily skewed in favor of wealthier Cambodians. Less than 1 percent of the poorest are exempted from user fees at commune clinics and district health centers and none are exempted from inpatient fees at public hospitals. Existing fees for use of health services must be enforced and cost recovery expanded, in parallel with a transparent and effective system of fee exemptions and a free supply of drugs targeted exclusively to Cambodia's poorest. This will help reverse

current inequities in access to health services and increase affordability for the poor. This needs to be implemented alongside greater cost recovery in secondary and tertiary health facilities such as provincial and central hospitals.

Several of Cambodia's existing health facilities need rehabilitation, but in the long run additional primary health facilities are needed to increase access. Unlike other developing countries, Cambodia does not have a nationwide network of primary health care facilities. Locations of the new facilities under the government's Health Coverage Plan will have to be carefully selected to ensure that the objective of providing equitable access to basic health and referral services for the entire population is met. Special emphasis will need to be put on providing facilities in remote and underserved regions. In the short to medium term increased access in such areas can be provided through mobile health posts.

Low quality of health care in public facilities needs to be addressed. This cannot be solved overnight, but an important first step is to raise staffing standards to ensure that commune clinics and district health centers used by the poor have trained medical workers. Improvements in health workers' salaries and benefits could also provide increased incentives for quality service. In addition, stocks of drugs and medical supplies in commune clinics and district health centers need to be increased. Allowing health facilities to retain a share of fees collected could also promote quality improvements.

These efforts will entail a pro-poor restructuring of public health expenditures. The concentration of health service contacts in Cambodia (table 5.11) illustrates that public subsidies to outpatient services at commune clinics and district health centers will be more pro-poor than subsidies to any other type of facility since the share of the poorest quintile among all users of that facility is greatest—almost twice this quintile's share in national consumption. This would suggest that public expenditures need to focus more on increasing and adequately funding quality care in such primary health facilities. The government is already moving in this direction. Since 1996 there has been a major shift away from spending on hospitals and toward better financing of primary health care. This trend should allow more resources for preventive health interventions (such as communicable disease control programs) and curative services targeted to the poor. This shift also represents more efficient use of public resources given both the substantial positive externalities of preventive health care and private underspending on such care.

There are, however, important efficiency arguments for providing subsidies to hospital-based services. For example, market failure in the insurance market is a major problem for households at all income levels facing high-cost treatment for serious diseases. Subsidies for hospital-based services might also be justified on political economy grounds, providing some benefit to the middle-income voter. The government should weigh carefully both efficiency and equity

Table 5.11 Concentration of monthly health service contacts at public health facilities by consumption quintile, 1997
(cumulative percentages)

	Consumption quintile				
	1-poorest	2	3	4	5-richest
All public providers	12.7	29.3	51.0	74.0	100
Hospital inpatient	10.7	23.4	47.2	67.8	100
Hospital outpatient	5.6	16.1	37.0	60.9	100
Commune clinic or health center inpatient	11.3	23.9	55.7	84.4	100
Commune clinic or health center outpatient	17.0	37.3	59.1	81.5	100
Other inpatient	0.0	7.8	7.8	19.8	100
Other outpatient	6.9	29.5	35.5	64.8	100
Memorandum items					
Aggregate consumption expenditure	9.2	21.7	36.7	56.9	100
Aggregate population	20.0	40.0	60.0	80.0	100

Source: NIS 1998.

arguments for health care subsidies to determine the right balance between subsidies for different levels and forms of health care services.

Private sector provision should be encouraged to complement government efforts and to ensure adequate access to health services as living standards improve with growth. Appropriate government regulation will be important in setting quality standards that ensure public safety. This is especially important in the case of private drug vendors, who are mainly unregistered and used heavily by poorer groups for self-treatment.

Notes

1. While it is certainly possible that other factors, such as increasing incomes, may also have caused a decline in the number of reported cases of diseases covered by the Expanded Program of Immunization, the dramatic declines are most likely the direct result of increases in immunization coverage.

2. Huguet (1997) reports that the male-female difference in life expectancy at birth is 6 years in Thailand, 7 years in Korea, and 6–10 years in Central Asia.

3. It is important to bear in mind the bias in health care data caused by self reporting. In particular, poorer groups tend to underreport disease and illness incidence relative to better-off groups.

4. For example, Indonesia has a mean outpatient contact rate with the organized health sector of no more than 1.5 contacts per person per year (Berman, Ormond, and Gani 1987; Gish, Malik, and Sudharto 1988; World Bank 1988; Deolalikar 1990). Deolalikar and Vashishtha (1992) have estimated mean curative contact rates of 1.8 for the urban areas and 2.1 for the rural areas of India.

5. This trend has been seen elsewhere—in Vietnam, for example (Prescott 1997).

6. An essential drug distribution system financed largely by donors and UNICEF has been relatively successful in ensuring the supply of basic drugs to the public health system.

6. Issues in Rural Poverty

Close to 8.4 million of Cambodia's 10.4 million inhabitants live in rural areas. Not surprisingly, rural poverty accounts for almost 90 percent of total poverty. Poverty is also more pervasive in rural areas, where its incidence is over three times as high as in Phnom Penh and some 10 percentage points higher than in other urban areas. In addition, both the depth and severity of poverty are significantly higher in rural areas. Efforts to reduce poverty in Cambodia will thus need to focus on reducing rural poverty. Accelerating growth in rural areas would yield the biggest reduction in poverty because the incidence of poverty is the highest in rural areas and inequalities are the lowest.

Rural poverty in Cambodia is simultaneously caused by and manifested in low incomes and a related lack of physical and human capital assets and in food insecurity. Low rural incomes are caused in part by and in turn contribute to a lack of education and poor health; food insecurity is a factor in poor health outcomes and is due in part to low rural incomes. Raising rural incomes, ensuring food security, and improving access to education and health services thus need to figure prominently in Cambodia's efforts to reduce rural poverty. This chapter focuses on the first two issues—raising rural incomes and ensuring food security.

Raising Rural Incomes

Rural incomes in Cambodia derive predominantly from small-scale agriculture (including crop farming, livestock, fisheries, and forestry). Close to 89 percent of rural respondents to the 1997 socioeconomic survey identified agriculture as their major area of activity. Other income generating activities include hunting and gathering (income in-kind), the provision of labor, and nonagricultural activities such as processing, trade, and transport.

Despite the dominance of agriculture in rural incomes overall, there is significant variation in the importance of agriculture in rural incomes across different areas and classes (box 6.1). Poorer groups, whose access to productive assets—land, credit, and animals—is more limited, rely more on access to common property resources (water bodies and forests) and on provision of labor as an income source than do better-off groups. However, opportunities to earn farm wages (which vary from 1,500 to 3,000 riels a day) are limited. Small and landless farmers can find work during the rice-planting season, but jobs are scarce outside the farming season and some family members are forced to migrate seasonally to find labor. Furthermore, recent research (Murshid 1998) suggests that in some parts of Cambodia access to common property resources is being cut off. A key example is the leasing of water bodies to powerful business interests. This could lead to diminishing income for poorer rural households. Poorer groups are also more likely to engage in more risky income activities such as hunting, gathering, or even farming in known land mine-infested areas.

Box 6.1 Income structure in three rural villages

The relative importance of agriculture was found to vary dramatically across three study villages: one in a rice surplus area of Prey Veng Province, another in a drought-prone area of Kompong Speu Province, and a third, a fishing village in Kandal Province. In Prey Veng, agriculture accounts for the dominant share of income (more than half if vegetable garden production is included). This is followed by labor earnings (from both agricultural and nonagricultural work), nonagricultural income, and income in kind from hunting and gathering activities. In Kompong Speu agriculture's share in income is less than 16 percent, which is only slightly higher than the share from hunting and gathering and lower than the contribution of women's labor earnings. Nonagricultural activities account for about 45 percent of total income. A similar pattern is evident in Kandal, with nonagricultural shares at around 50 percent and agriculture and hunting and gathering each accounting for about 18–19 percent.

Income inequalities are sharp, particularly in the case of agricultural incomes. In Kandal, nonagricultural incomes appear to be well distributed across class groups (though the poorest are clearly at a great disadvantage), but distribution remains unequal in Kompong Speu. Similarly, home garden or nonagricultural incomes in Prey Veng reveal significant inequality, with gathering activities relatively more important for the poor. In Kompong Speu the poor appear to have less access to this important source of income (which requires oxcarts to go into the forest to collect firewood), while in Prey Veng class differences appear small. Only in Kandal do the poorest appear to depend critically on access to common property resources (water bodies). Labor incomes are truly the "monopoly" of the poor—especially poor women, whose participation in the labor market is high. Differences between male- and female-headed households are broadly consistent across sectors, with incomes of male-headed households higher than those of female-headed households. In Kompeng Seu there is a slight variation from this pattern, with female-headed households depending more heavily on labor incomes and gathering activities.

Source: Murshid 1998.

Earlier research tended to discount the contribution of nonfarm activity to rural incomes and development. More recent research findings suggest that growth in nonfarm activity and incomes is an important component of rural development (Reardon 1997; Ranis and Stewart 1993). This supports the hypothesis of important positive linkages between farm and nonfarm income growth. Gains in agricultural productivity and incomes will help generate demand for consumer goods and services, creating opportunities for off-farm employment. Public investments in rural infrastructure and support services can greatly strengthen these farm-nonfarm linkages. The recent experience of returnees—among the poorest groups in Cambodia—also illustrates the importance of having diversified sources of rural income. Returnees who have succeeded in acquiring a diversified portfolio of income generating activities have done better than those with fewer income sources. Greater diversification of income sources can also help stabilize rural incomes and help households cope in times of poor harvest.

The most important contributors to the low rural incomes in Cambodia are low agricultural productivity, inadequate rural infrastructure, poor marketing and distribution systems, and inadequate access to credit and land. Raising rural incomes will require successful action on each of these fronts.

Agricultural Productivity

Cambodian agriculture is typically small scale. The average farm size of Cambodia's estimated 2 million farm households is about 1 hectare, but it is as small as 0.75 hectare in some areas. Rice is the major crop, accounting for 90 percent of the cultivated area, nearly a third of agricultural output, and more than 80 percent of agricultural labor input. Boosting rice production is thus critical for achieving improvements in agriculture as a whole. But increasing rice production alone is insufficient for achieving rapid growth in agricultural incomes. Production needs to be diversified into crops with high value-added per hectare, such as maize, soybean, vegetables, mung beans, and sesame. Production of most of these nonrice crops has declined slightly in recent years, leading to significant dependence on imports for domestic needs. Increased diversification into such crops will not only enhance income earning opportunities in rural areas, but will also help improve nutritional status.

Agricultural production recovered somewhat during the 1980s, but pro-

ductivity levels remain lower than in other countries in the region, indicating significant scope for improvement (table 6.1).

Low productivity is explained by war-related and natural factors. The displacement of rural communities, widespread contamination by land mines, and lingering insecurity have contributed to a substantial decline in cultivated areas. In 1967 paddy cultivation covered an estimated 2.5 million hectares. In 1998, despite some recovery, paddy area was only an estimated 1.9 million hectares. In addition to these war-related constraints, natural factors such as low soil fertility, irregular rainfall, and vulnerability to pest infestation add to low agricultural productivity (box 6.2). Productivity is not uniformly low, however, and there are important success stories (box 6.3). The policy challenge is how to achieve more widespread success.

Government efforts to improve crop productivity should focus on three areas:

- Improving water management and control through investments in small-scale irrigation infrastructure.
- Expanding research in better technologies for rice and other crops, including seed multiplication, and on improving farmers' access to these technologies.
- Accelerating demining operations to allow the expansion of farm lands over the medium and longer term. In the shorter term the emphasis should be on intensification of production on existing cultivated land.

Table 6.1 Rice paddy yields in selected Asian countries, 1990–98
(kilograms per hectare)

Country	*Average yield*
Cambodia	**15,533**
Thailand	22,325
Lao PDR	25,487
Philippines	28,823
Myanmar	30,224
Vietnam	35,489
Indonesia	43,400

Source: World Bank staff estimates.

Box 6.2 Some natural causes of low agricultural productivity in Cambodia

Low natural fertility of soils. Most of Cambodian rice soil is poorly drained and waterlogs easily after the monsoons. Centuries of rice monoculture, poor plant nutrient management, and low consumption of mineral fertilizers have contributed to the depletion and degradation of soils. The use of chemical fertilizers to correct for known mineral deficiencies is well below technically optimal levels, but the economic return is high only for high-yielding varieties grown with irrigation or partial water control.

Irregular rainfall patterns. Rainfall is seasonal and variable across the country, ranging from 3,000 millimeters in the highlands to 1,200–1,500 millimeters in the lower Mekong valley and Tonle Sap lake basin. Precipitation varies greatly from year to year: rains can start late, end early, or both, subjecting farms to extremes of drought and flooding. The irregular rainfall pattern makes rainfed rice cultivation especially risky. Excessive flooding, for example, can lead to declines in paddy yield of at least 30 percent. Access to irrigation infrastructure is generally limited, and most farmers identify lack of water control (leading to both too little and too much water) as a key constraint to family food production.

Vulnerability to pests. Traditional crop varieties are highly susceptible to infestation by pests, but the availability of high-quality seeds and high-yielding varieties is low. Farmers rely mainly on their own seeds or the purchases of uncertified seeds from private traders. Although a Cambodian International Rice Research Institute–Australia Project has been successful in breeding improved varieties and strains of high-quality rice seed, seed availability at the village level is low—enough to cover just 10,000 hectares or 0.5 percent of cultivated area. Availability of high-quality seed is even lower for other crops.

Animal production (both livestock and fisheries) is an important part of Cambodian agriculture, contributing about 20 percent of the sector's value added. Raising the productivity of animal production should thus be an important component of improving agricultural productivity. Some progress has recently been made. The number of pigs increased an estimated 17 percent from 1993 (2 million) to 1998 (2.3 million). Poultry production increased about 39 percent, and output from aquaculture rose by close to 50 percent. Nevertheless, there is still significant room for further production increases. Efforts need to concentrate on reducing the abnormally high levels of animal mortality through improved access to vaccination and veterinary services. Improved animal health

Box 6.3 Some agricultural successes

There are important success stories in Cambodian agriculture. With improved water management, some farmers have achieved spectacular production gains. There are examples of farmers who, after installing tubewells, pipes, and pump, have shifted from single to double or even triple cropping. With adequate water and fertilizer, these farmers have been able to boost production per hectare severalfold, enabling them to repay within a year their $700 loans for tubewells (at 60 percent yearly interest). The Program for Agricultural Rehabilitation and Support project financed by the European Union has had similar successes. The primary canals are financed by the project, but the secondary canals are constructed by farmers who also have to purchase the pumps and pipes needed to water their plots. Participating farmers have been able to repay their loans on schedule. The gains are even greater when the canals surrounding the plots are used for raising fish.

will also contribute indirectly to increasing agricultural productivity by providing draft animals for plowing and transportation. Harvests from fisheries can be increased while maintaining environmental balance by instituting an effective management regime to control access. In addition, deforestation of the watersheds of rivers and streams linked to the Tonle Sap Lake—the most important fishery in Cambodia—should be controlled to prevent increased sedimentation, which could be harmful to acquatic life.

Inadequate Rural Infrastructure

Cambodia's basic rural infrastructure is severely limited and in need of rehabilitation. The transportation network was severely damaged by the protracted conflict. The current network consists of only 3,200 kilometers of national (primary) roads, about 3,100 kilometers of provincial (secondary) roads, and about 28,000 kilometers of rural (tertiary) roads. Most rural roads are impassable during the rainy season, and an estimated two-thirds of railway lines need repair. In addition, illegal road taxation by groups who levy tolls on road users is widespread, a consequence of the general absence of law and order in parts of the country and lingering insecurity. All of these factors contribute to the extreme physical difficulty and high costs of transporting agricultural output. Over the longer term, considerable network expansion is needed to improve marketing and distribution. The ongoing Rural Infrastructure Improvement Project, funded by the Asian Development Bank, is rehabilitating more than 600 kilometers of secondary roads and about 8,000 kilometers of tertiary roads. This and other government efforts to repair and expand road infrastructure, by engaging the services of vulnerable groups in rural areas who are able to work, can also contribute to a strengthening of safety net systems.

Significant rehabilitation and expansion of existing irrigation infrastructure is also needed. Only an estimated 16 percent of total cultivated area in Cambodia is under irrigation. The emphasis here should be on promoting small-scale irrigation infrastructure in order to avoid the problems often associated with large-scale irrigation works—negative environmental and social effects, including waterlogging and salinization of soils, and the increased incidence of water-borne diseases. Consideration should also be given to dismantling some of the irrigation schemes constructed in the 1970s, most of which were technically unsound.

Marketing and Distribution

Agricultural marketing has been restructured from a largely regulated and centrally controlled system to an open and unregulated private market system. However, high transportation costs and inadequate access to credit impede the efficient marketing and distribution of output. Rural producers have poor access to larger urban markets. In some border provinces, markets are better integrated with markets in neighboring countries than with local markets (Food and Agriculture Organization–World Food Programme Crop and Food Supply Assessment Mission to Cambodia, February 1999). Furthermore, because of

food security concerns, rice export policy has varied from year to year despite the government's declared commitment to liberalize rice exports. Such policy changes send conflicting signals to farmers and limit their ability to increase incomes through access to export markets. Government policy should focus on finding other mechanisms to address food security concerns, including promoting the purchase of local rice surpluses for internal transfers to deficit areas or for triangular transactions, and should avoid a return to direct intervention in markets. Control of weights and measures and of safety and quality standards for food and agricultural materials such as fertilizers, veterinary drugs, and pesticides is also needed.

Access to Credit and Land

International experience shows that making formal rural financial services (credit and savings) accessible to farmers with minimal assets can be an important mechanism for facilitating voluntary investments in crop productivity and land improvements and fostering agricultural service industries and rural microenterprise. Impact studies have also shown that providing financial services, particularly to women, not only increases incomes but also leads to higher household expenditures on food, education, and health, with associated improvements in household wellbeing. But institutional financial intermediation is close to nonexistent in rural areas in Cambodia. The banking system is centered in Phnom Penh—of the 30 commercial banks in Cambodia, only 3 have provincial offices—and directed largely to urban sector investments. Rural households are forced to rely on informal credit markets, usually moneylenders, in order to purchase essential inputs and meet short-term exigencies. The cost of credit in these markets is normally high, with interest rates of 10–30 percent per month.

Besides the informal market, the institutional infrastructure for making credit available to rural residents is limited to small NGO and external donor financed programs. At the end of 1998, a total of $23.8 million had been lent under these programs to about 470,000 clients. Microcredit loans (loans of less than $50,000) to about 30,000 customers accounted for only $228,000 (under 1 percent) of this total. This suggests that these program reach a limited proportion of the rural population and that the credit needs of the poorest of the poor are not being met. There is also evidence that the quality of service is mixed. It is estimated that only a few of the NGO programs have the potential to become financially viable. In 1996 the best programs covered only about 30 percent of their operating costs, while the majority probably covered less than 10 percent.

Government efforts to improve access to rural credit should focus first on pursuing sound macroeconomic policy and establishing a favorable policy, regulatory, and incentive framework for microfinance institutions, especially rural financial services. To be effective, laws covering the operations of commercial banks and nonbank financial intermediaries should balance prudence with flexibility in a framework that encourages entry and growth of a range of agricultural credit institutions that serve the poor. Efforts to standardize or regulate savings and lending instruments should also be avoided in favor of actions to encourage diversity of approach. However, standardization in measurement of performance is useful. Interest rates should remain liberalized, so that all financial intermediaries can charge rates that enable them cover financial and operating costs and risk provisions. Entry thresholds such as minimum capital requirements should also be set low enough that strong performers can qualify.

Government should aim to increase incentives for expanding formal banking

services into rural areas. Village banks have an important role to play in providing services to those who otherwise would be unable to obtain loans from formal banks. But they cannot substitute for formal banking. Along with banks that provide basic financial services in rural areas, second tier institutions will eventually be needed to provide financial and institutional support to NGOs and village banks. Finally, government must also promote outreach and training on the financial sustainability of community-initiated development funds and other financial services to the poor. This could be achieved, for example, by handing over microfinance operations to local entities, whether local NGOs or village banks, and by establishing second tier institutions that can provide both financial and technical assistance to village banks and other retail intermediaries. There is strong consensus, however, that governments should not deliver microfinance services directly, but rather promote private sector provision.

Cambodia has undertaken fairly comprehensive land reform, so that most Cambodians have access to land. According to the World Food Programme's (WFP) 1996 poverty mapping, only 8 of 100 communes surveyed had a landlessness rate of 20 percent or greater. However, access to land has become increasingly difficult for the poor. Some were left out in the land redistribution, while some have been forced to sell whatever land they own to meet pressing needs. Yet other rural households have been displaced by land disputes, which have been on the rise since 1993. There is also evidence that over the past five years wealthier Cambodians have been net buyers of land while poorer groups have been net sellers. Thus in some districts lack of agricultural land is becoming a critical factor in rural poverty, particularly in returnee communities. The landless are also particularly vulnerable to food insecurity.

Military land holding is a major constraint to improving access to land for the poorest. By virtue of its control on the ground in areas where fighting and land mines have displaced the local population, the Cambodian military is de facto landholder for large tracts of forest and potentially productive land, particularly in the northwest but also in other parts of the country. The extent of this control is evident in the decisive role played by military leaders in determining who receives land that has been demined. Any examination of options for restoring currently unused land to production or addressing claims of landless farmers is likely to confront the problem of military land holding.

Lack of tenure and title to land is also an important factor. Title to land plays a key role as collateral for formal credit and security for investment in land improvements. Titles also increase a farmer's willingness to invest in soil conservation, tree planting, and other measures to protect the long-term productivity of the land. The fact that Cambodian farmers in the northwest provinces have been willing to pay for land titles confirms their value to framers. The current effort in rural land titling focuses on peri-urban areas and includes some areas where land speculation is high, such as Sihanoukville and parts of Kompong Speu and Kandal Provinces. Security problems in some areas, lack of technical skills and experience, limited administrative capacity, and lack of funds are key impediments to the land titling process. Lack of clarity in the 1992 land law is also a factor.

The government should focus efforts on providing access for groups—including returnees—that are currently landless by addressing the problem of military landholding and by intensifying demining activities to provide more useable land. In addition, rural land titling efforts should be sped up to provide security and tenure for rural landowners. This should be part of a broader effort to promote the creation of a transparent and

secure land market by adopting a revised land law that protects the rights of small-scale producers and other residents with customary rights to land use.

Ensuring Food Security

Food security requires adequate and reliable access to food supplies. In Cambodia, where rice accounts for an estimated 75 percent of daily calorie intake, rice availability is a critical element of overall food security. But access to other food crops is also important, particularly from a nutritional standpoint. Overall food and rice availability has improved in recent years. Rice yields have grown from about 1.3 metric tons per hectare in 1993/94 to 1.8 metric tons per hectare in 1997/98. There has been an overall rice surplus each year since 1995 for the first time in Cambodia's history (table 6.2). As noted above, production of livestock and fisheries has also increased.

Yet food insecurity remains a major aspect of poverty in Cambodia, especially in rural areas, because significant numbers of households do not have adequate or reliable access to food supplies. An estimated one in five rural inhabitants is unable to secure enough food to meet the nutritional norm of 2,100 calories a day. There is also evidence of widespread malnutrition, particularly among women and children under five. National stunting rates are estimated at 56 percent, underweight at 52 percent, and wasting at 13 percent. A 1998 UNICEF–WFP survey found wasting rates for children under five years as high as 20 percent in some parts of the country. These indicators compare poorly with underweight prevalence rates of 40 percent in Lao PDR and 35 percent in Myanmar. Furthermore, one in every two children in Cambodia is malnourished (UNDP 1997), the highest rate in Southeast Asia. In rural areas, anemia in children is estimated at 80 percent.

Table 6.2 Rice supply, 1993/94 to 1998/99
(metric tons per hectare)

Crop year	Gross production	Net available	Requirements	Surplus or deficit
1993/94	2,383	1,356	1,539	−183
1995/96	3,448	1,817	1,588	229
1996/97	3,458	1,779	1,618	162
1997/98	3,414	1,757	1,653	104
1998/99	3,516	1,809	1,780	29

Source: Ministry of Agriculture, Forestry, and Fisheries.

The most important contributors to food insecurity in Cambodia are low incomes and high levels of indebtedness, high variation in food production over time and across regions, and inadequate distribution and marketing infrastructure linking food deficit and surplus areas. Low incomes limit purchasing power and effective access to adequate food supplies. As a coping strategy, some rural households go into debt to rice lenders at very high interest rates requiring large repayments in rice against current crop production. In some cases this practice has evolved from a short term coping strategy into longer-term borrowing (box 6.4). Community rice banks, established in many areas with NGO assistance, have enabled farmers to borrow rice in lean months without going heavily into debt, but they do not address the root problem of the lack of viable livelihoods.

Also contributing to food insecurity is the high variability in agricultural production resulting from extreme vulnerability to floods, drought, and insect infestation and regional differences in performance. This has been aggravated by ineffective use of external trade and inadequate internal distribution and marketing systems. A number of regions (Kandal, Kompong Cham, Kompong Speu, and Koh Kong) have perennial food deficits, while others (Prey Veng, Takeao, Svay Rieng, Siem Reap, and Battambang) generally have surpluses. But even communes in rice surplus regions sometimes have food deficits. The Food and Agriculture Organization

Box 6.4 Rice indebtedness in rural communities

A serious problem among the rural poor is indebtedness for rice supplies during the year. In WFP-targeted communes, some 30 percent of families were found to be in debt for daily rice needs for more than three months of the previous year. A joint UNICEF-WFP baseline survey (1996) found that 59 percent of the women who were moderately to severely malnourished reported using some of their rice harvest to pay back loans; rates were 38 percent for the mildly malnourished and 35 percent for the well nourished. In addition, more than 60 percent of moderately malnourished women also borrowed from moneylenders (with interest rates of up to 100 percent or greater), while only 50 percent of the other women reported borrowing in the previous year. While serving as a short-term coping strategy, this practice of longer-term borrowing often carries with it unacceptable risks.

Source: Special Report. FAO/WFP Crop and Food Supply Assessment Mission to Cambodia 15 February 1999.

(FAO) and the WFP estimate that fewer than 25 percent of rice growing communes produced about 75 percent of the rice surplus in 1999. And even within the five rice surplus regions analyzed, an estimated 17 percent of communes suffered from significant rice deficits. Poor transport and marketing facilities make it difficult for households in food deficit areas to access supplies in food surplus areas.

Assistance to households to meet emergency food needs is generally provided thorough aid agencies and NGOs. The WFP, for example, operates a program to meet the food security needs of particularly vulnerable groups (people in chronically food insecure communes, members of poor families receiving training through NGOs and the Ministry of Women's Affairs, groups affected by short-term emergencies, and social support beneficiaries including tuberculosis patients, illiterate women, street children, amputees, and lone elderly people). While important, such efforts can only be part of a broader effort to achieve food security that tackles the underlying causes mentioned above. The main elements of this strategy should include:

- Increasing rural incomes through improved agricultural production and greater diversification of income sources.
- Improving access to agricultural land for the rural landless, who are among the most vulnerable to food insecurity.
- Improving the access of rural households to well-functioning markets through the provision of transportation infrastructure and through policies to promote the development of stronger markets.
- Providing adequate transfers and safety nets to groups that are most vulnerable to food insecurity and that are unlikely to benefit from actions on other fronts. For Cambodia's rural population, policies that are likely to work include well-designed rural public employment schemes that can provide insurance against agricultural uncertainties. For those unable to work, options include food-based interventions such as food distribution and feeding programs and interventions to provide basic food supplies to remote and other high-risk areas during times of heightened food insecurity.

7. Achieving Cambodia's Poverty Reduction Goals

The Royal Government of Cambodia's First Socioeconomic Development Plan 1996–2000 states that "eradicating poverty is the single most important long-term objective of the Royal Government, and reducing it is the central thrust of the Plan for 1996–2000." This message is repeated in several other official government documents. The Socioeconomic Development Requirements and Proposals presented at the Consultative Group meeting in February 1999 also identifies specific targets for progress on key poverty indicators such as maternal and child mortality rates, child enrollment rates, and access to health services and to safe water and sanitation (table 7.1).

How can these objectives be achieved? This chapter pulls together the policy recommendations of earlier chapters into a broad strategy for achieving the government's poverty reduction objectives. It also provides suggestions on operationalizing a poverty strategy in Cambodia.

Table 7.1 Major targets for social development by 2000

Indicator	*Target*
Maternal mortality	300 per 100,000 live births
Infant mortality	80 per 100,000 live births
Under five mortality	120 per 100,000 live births
Children's nutritional status	Less than 25 percent malnourished
Access to safe water	65 percent of rural, 90 percent of urban population
Improved sanitation	100 percent of urban, 20 percent of rural population have access to improved toilet facilities

Source: Royal Government of Cambodia, "Socioeconomic Development Requirements and Proposals," January 1999.

Elements of a Poverty Reduction Strategy for Cambodia

Discussion in previous chapters has shown that inadequate income earning opportunities—particularly in rural areas—poor education and health outcomes, and increased vulnerability resulting in part from Cambodia's war legacy are important factors in poverty in Cambodia.

A strategy for reducing poverty in Cambodia thus needs to be mounted simultaneously on at least three fronts: creating income earning opportunities through economic growth and expansion, helping the poor access economic opportunities by building human and physical assets, and reducing risk and vulnerability by providing an adequate program of transfers and safety nets. The root causes and manifestations of poverty in Cambodia are also tied closely to the country's history of protracted conflict.

Thus the first step toward appreciable progress in poverty reduction in Cambodia is establishing durable peace and security and rebuilding social cohesion. The end of fighting in 1998, the installation of a new coalition government, and the effective end of the Khmer Rouge movement early in 1999 are all important steps toward realizing this objective. But beyond this, efforts are needed to rebuild social cohesion and bring together previously warring factions under one strong national identity. This is a long-term process, but efforts must begin now. Given

the significant poverty implications of the growing HIV/AIDS epidemic, extensive public education and funding for preventive measures will need to be fully integrated into the government's poverty reduction strategy.

Expanding Economic Opportunities

The analysis in chapter 3 illustrates that growth can support significant poverty reduction in Cambodia given the shallow depth of poverty. To do so, however, growth must be rapid and must encompass all key sectors of the economy to ensure that opportunities are widespread. For a country like Cambodia growth must also provide opportunities for employment of its abundant labor resource. There are an estimated 250,000 low-skilled unemployed people in Cambodia, and an estimated 135,000 Cambodians enter the job market each year. Public sector restructuring will likely displace about 30,000 workers, over and above those thrown onto the labor market by military demobilization. Growth will need to create sufficient jobs to absorb this large labor pool.

During 1992–96 Cambodia achieved average annual growth of about 6 percent as peace returned and market reforms took hold. But growth was not broad enough. It was concentrated in urban areas and was more modest in the large rural economy. As discussed in chapters 2 and 6, to achieve rapid and broad-based growth, Cambodia needs to provide a sound macroeconomic environment, tackle remaining constraints to private sector growth, and promote growth of the rural sector.

Ensuring Macroeconomic Stability

Fiscal policy has been the main anchor of macroeconomic stability in Cambodia. The key objective of policy should continue to be maintaining reasonably low deficits that avoid recourse to potentially destabilizing financing methods and loss of monetary control. This requires fiscal adjustment through both revenue and expenditure measures. On the revenue side the main issues are addressing poor governance in the management of forestry revenues and strengthening tax administration. On the expenditure side the main issues are rationalizing spending and restructuring it away from military and defense toward the provision of social services and economic infrastructure. Such expenditure management is critical for efficiency and for helping the government achieve the dual objectives of macroeconomic stability and socioeconomic progress. (The January 1999 "Cambodia Public Expenditure Review" provides more detailed policy recommendations on needed revenue and expenditure measures.)

Over time, the efficiency of monetary policy should also be enhanced by a gradual reduction in the degree of dollarization of the economy. To achieve this, the government will need to ensure that exchange rate policies are market based, eliminate the spread between the official and the market rate, and promote confidence in the banking sector and the economy.

Promoting Private Sector–Led Growth

Earlier reforms formally recognized the private sector and removed some of the impediments to its activities. These steps have led to a boom in private, particularly foreign, investment. But several other obstacles remain, including public sector inefficiency and weak governance, inadequate regulations governing private sector activity and poor enforcement of regulations, a weak financial sector, and inadequate infrastructure. Measures are needed to tackle these constraints and create an environment conducive to rapid private sector–led growth.

Specific measures could include identifying and taking a tough stand against all forms of corruption; improving public sector efficiency by completing the privatization program and commercializing enterprises remaining in the state portfolio, adopting a comprehensive commercial code, and strengthening the rule of law through better enforcement of existing laws and modernization of the judiciary. To improve banking and financial services, the government needs to enact adequate regulations on provisioning for loans, on taking and enforcing collateral, and on bankruptcy. This must go hand in hand with improvements in the central bank's supervisory capacity. Policy efforts need to be complemented with appropriate investments in transport and other economic infrastructure.

Prudent macroeconomic and sectoral policy will also be key to reducing (to the degree possible) the economy's vulnerability to adverse macroeconomic shocks.

Promoting Agriculture and Rural Sector Growth

Accelerating growth in rural areas would result in the biggest reduction in poverty, because the incidence of poverty is highest there and inequalities are lowest. Agricultural growth and rural growth more broadly will thus need to be an important component of future growth.

The fundamental objectives of policy should be to increase agricultural productivity and to diversify income earning opportunities for rural households. Progress in achieving these objectives will also be critical for addressing food security concerns. Crop productivity, particularly for rice, will need to be increased through greater access to improved seed varieties, better water control (specifically through small-scale irrigation facilities), and appropriate soil and pest management. Livestock and fisheries production would benefit from stronger technical services for animal health and fisheries research, conservation, and management. Rural infrastructure needs to be expanded and upgraded through investments in secondary and tertiary roads. To give framers access to credit, formal rural finance institutions need to be developed. And to improve access to land, appropriate land laws are needed, along with acceleration of land titling. Together, this will foster the development of a transparent and secure land market. These efforts should also help reduce variability in agricultural incomes.

Building Human Assets of the Poor

To benefit from growth, the poor need to acquire assets that will allow them to take advantage of economic opportunities. Development of human assets requires adequate educational attainment and health outcomes. Key physical assets include land and financial capital. A broad strategy for improving education and health services should be guided by the need to address both demand and supply issues and issues of quality, affordability, and effective service delivery. While the government has major responsibility for investing in these areas, encouraging private sector participation is also important, whether through public-private partnerships or purely private initiatives. And considering all that we now know about the well-established positive externalities associated with female education and the significant disparities between female and male enrollment rates in Cambodia, it is important to place special emphasis on girls' education.

Specific actions in education could include reducing schooling costs for the poor through exemptions for school fees and a clearly established and transparent system of need-based scholarships for the poorest students. Government could also consider providing (or insuring) loans to

needy students to help them cover education costs. Subsidies and scholarships targeted toward girls and evening and night schools could be useful tools for increasing female enrollment. Training programs to upgrade the skills of the unemployed in line with labor demand would also be important for poverty alleviation. Finally, building more primary and secondary schools in remote and disadvantaged regions that have very low enrollment rates will increase accessibility to education services for poorer groups.

As with education, reducing out of pocket costs of health services for the poor will be critical. A clearly defined and transparent system of fee exemptions and free supply of drugs targeted exclusively to Cambodia's poorest will be important in reducing affordability constraints. This needs to be implemented in parallel with greater cost recovery in secondary and tertiary health facilities, such as provincial and central hospitals. In the short run efforts to improve access to health by the poor need to focus on rehabilitating existing health facilities. Over the medium and longer term additional primary health facilities are needed. In deciding on the location of new facilities under the Government's Health Coverage Plan special emphasis should be placed on providing facilities in remote and underserved regions. In the interim increased access in such areas could be provided through mobile health posts.

In both education and health the quality of service can be enhanced by addressing staff incentive issues and providing adequate funding for complementary inputs, such as drugs, textbooks, and school uniforms, and by ensuring better training of education and health staff. These efforts will entail restructuring public expenditures in favor of education and health and restructuring expenditures within these sectors in favor of pro-poor services such as basic education and primary health. Private sector provision should also be encouraged to complement government efforts. Government needs to play a role in providing the right incentives for such participation and setting and enforcing acceptable service standards.

Providing Safety Nets

Cambodia's war past has contributed to significant vulnerability in society. In addition, adverse macro-level shocks (such as occurred in 1997) and shocks from adverse climatic conditions increase the vulnerability of those who are already poor as well as those just above the poverty line. The vulnerable include those who are unable to participate in growth as well as some that may be temporarily in danger if events take an unfavorable turn. Both can benefit from the protection offered by a well-functioning system of transfers and safety nets. NGOs and other aid agencies are active in this area, but there is very little in the way of a functioning government system.

A strategy for developing such a system should emphasize timely delivery of assistance and effective and efficient targeting to ensure that resources reach only the intended beneficiaries. Given Cambodia's largely rural population and low level of development, policies that are likely to work include well-designed rural public employment schemes that can provide insurance against agricultural uncertainties. For those unable to work, food-based interventions such as food distribution and feeding programs, special operations to provide basic food items to the poor in remote and other high risk areas during times of insecurity, and feeding programs and transfer schemes administered through public health systems need to be considered. While the need for safety nets is great, the effectiveness and successful targeting of such a system in addressing poverty will depend on further progress in identifying indictors of poverty in Cambodia that have strong predictive ability.

The Government's Socioeconomic Development Plan

The Socioeconomic Development Plan (1996–2000) recognizes all the broad elements of the poverty strategy described above. It notes the importance of broad-based labor-intensive growth and targets 7–8 percent annual growth over the next decade. It also stresses human resources development and rural development based on a participatory, bottom-up approach in which communities have greater decisionmaking responsibilities. The plan recommends vocational training, credit provision to enable the poor to purchase income-generating assets, and employment creation through labor-intensive public works programs.

While the general thrust of the plan for poverty reduction is appropriate, much more emphasis is needed on building a strong system of transfers and safety nets and on effectively operationalizing Cambodia's poverty strategy. A lack of detail on operationalization is evident in the allocation of public investment and in the sectoral development programs proposed for 1996–2000, which show lists of projects and facilities needed in each sector without any clear links to stated objectives. Still needed is a clearer translation of broad strategic objectives into concrete interventions and outcomes.

A first step would be to develop strong support for poverty reduction within the government, perhaps through the establishment of a high-level interministerial committee with direct responsibility for outlining and monitoring implementation of the government's poverty reduction strategy. An interminsterial committee can foster consistency in objectives across sectors and cooperation among agencies in reducing poverty. Aside from defining strategy, its mandate should reflect the following important elements for ensuring the effective operationalization of a poverty strategy for Cambodia:

- *Identifying policy instruments for poverty alleviation and the mechanisms for targeting the poor.* Policy interventions should be selected that are likely to be most cost-effective in reaching the poor and reducing poverty in both the short and long run, based on experience in other countries and Cambodia's own situation. The relative merits of such poverty-alleviating interventions as rural public works, group lending-based credit programs, small farmer development programs, scholarships for poor students (especially girls), and mechanisms for exempting the poor from health facility user fees should be examined.
- *Implementing poverty reduction interventions on a phased, pilot basis.* Initially, some of the special poverty interventions could be tried out in selected provinces and districts, to give the government a better understanding of which interventions work best.
- *Developing performance indicators to monitor poverty and to evaluate the impact of the poverty alleviation package.* Performance indicators could include the incidence, depth, and severity of poverty, as well as the direct consequences of poverty for child nutrition, health, school enrollment, and discrimination against girls.
- *Developing a household- and community-based information system on poverty.* Development of a poverty information system would greatly improve the quality of decisionmaking on poverty. The Ministry of Planning, in conjunction with the United Nations Development Programme and the World Bank, is exploring the possibility of establishing an Interministerial Technical Taskforce on Poverty Monitoring and Analysis. The task force would direct national surveys of households and communities at regular intervals and oversee analysis of the results.
- *Reviewing procedures for the development of national five-year plans, public invest-*

ment plans and budgets, annual plans of line ministries, and provincial and district plans. Successful implementation of a poverty alleviation strategy will require increased coordination between programming, planning, and budgeting at all levels. The reviews would lead to a series of recommendations on how to coordinate and harmonize these separate activities.

Appendix A. Statistical Tables

Table A1.1 Social indicators by per capita consumption quintile

		Consumption quintile[a]					
		1–poorest	*2*	*3*	*4*	*5–richest*	*Total*[b]
Demographic characteristics							
Household size	1993–94	6.6	6.0	5.7	5.0	4.9	5.6
	1997	5.8	5.4	4.9	4.6	4.2	4.9
Children per family	1993–94	3.4	2.8	2.5	1.9	1.8	2.4
(up to age 14)	1997	2.8	2.4	1.9	1.7	1.4	2.0
Elderly per family	1993–94	0.3	0.3	0.3	0.4	0.4	0.3
(age 60+)	1997	0.3	0.3	0.3	0.3	0.3	0.3
Dependency,	1993–94	0.78	0.93	0.93	0.91	0.68	0.84
disabled (percent)[c]	1997	2.32	2.17	2.00	2.38	2.58	2.30
Age of head of household	1993–94	44.1	43.0	44.1	45.2	46.1	44.6
	1997	42.9	43.1	44.0	44.9	45.1	44.1
Female head of	1993–94	18.6	17.3	18.9	23.3	26.6	21.2
household (percent)	1997	20.7	21.7	21.0	25.6	26.1	23.3
Education							
Literacy (percentage	1993–94	57.7	64.3	66.2	67.9	77.1	66.6
15 years and older)[d]	1997	56.2	61.9	66.2	70.5	74.4	65.9
Years of education	1993–94	3.1	3.7	3.8	4.2	5.3	4.0
(average, age 15 and	1997	2.7	3.2	3.7	4.2	5.0	3.8
older)[d]							
Years of education	1993–94	4.1	4.7	4.8	5.4	6.6	5.1
(average male, age 15	1997	3.5	4.1	4.6	5.2	6.2	4.7
and older)[d]							
Years of education	1993–94	2.4	2.9	3.0	3.3	4.3	3.2
(average female, age	1997	2.1	2.4	2.8	3.3	4.1	3.0
15 andolder)[d]							
Housing characteristics							
Access to piped water	1993–94	4.3	3.4	3.5	5.5	16.7	7.1
(percent)	1997	19.5	18.6	18.5	22.8	32.6	22.9
Toilet in house (percent)	1993–94	8.7	11.3	13.9	21.1	48.7	22.1
	1997	4.0	10.4	13.0	22.5	37.3	18.7
Electricity from line or	1993–94	1.3	2.1	5.5	10.4	36.8	12.4
generator (percent)	1997	3.3	6.5	10.8	19.1	35.6	16.3

(Table continues on next page.)

Table A1.1 Social indicators by per capita consumption quintile (continued)

		Consumption quintile[a]					
		1–poorest	*2*	*3*	*4*	*5–richest*	*Total*[b]
Consumer durables							
Radio (percent)	1993–94	23.0	25.1	25.8	29.8	33.0	27.7
	1997	27.7	32.9	36.9	43.8	56.1	40.7
TV (percent)	1993–94	3.0	4.8	7.0	12.7	35.9	13.8
	1997	7.9	11.6	16.3	24.1	36.9	20.6
Bicycle (percent)	1993–94	57.7	65.3	63.6	61.6	56.8	60.9
	1997	55.4	60.4	58.0	58.9	54.1	57.3
Car, jeep, or	1993–94	6.4	6.7	11.7	18.8	40.5	18.0
motorcycle (percent)	1997	8.7	13.0	16.4	25.6	38.8	21.8

a. Quintiles defined on the basis of real per capita consumption using the food poverty line as a price deflator (base: 1993–94 Phnom Penh prices).
b. Total refers to sampled areas only.
c. Dependency defined as number of disabled in household divided by number of household members multiplied by 100.
d. Averages for all people age 15 or more. All other variables are averages across households.
Source: 1993–94 estimates, Prescott and Pradhan 1997; 1997 estimates, NIS 1998.

Table A1.2 Quantitative poverty indicators, June 1997

	Sample means			
	Poor below food poverty line	*Between food poverty line and poverty line*	*Nonpoor*	*Total*
Demographic characteristics				
Household members age 60 and over (percent)	4.4	4.7	6.9	6.1
Household members age 5 and under (percent)	16.9	15.6	12.9	14.1
Household members who migrated to another district during the past 5 years (percent)	12.9	12.6	12.0	12.3
Household members who are female (percent)	47.9	47.7	47.5	47.6
Housing characteristics				
Floor area per household member (meters)	4.66	5.69	8.40	7.24
Distance to the household's main source of drinking water (meters)	257.4	161.6	155.5	174.8
Employment and income				
Household members who have worked during the past week (percent)	39.4	43.6	46.6	44.8
Number of jobs per household member during the past week	0.5	0.6	0.7	0.6
Average monthly wage from primary occupation (riel)	65,948	99,706	103,438	98,401
Children under age 15 who were employed during the past week (percent)	5.8	5.8	4.5	5.0
Education				
Gross primary school enrollment rate	90.9	107.5	110.6	105.6
Net primary school enrollment rate (ages 6–11)	53.6	62.9	71.5	65.8
Gross secondary school enrollment rate	5.4	11.6	27.4	20.1
Net secondary school enrollment rate	4.9	9.1	23.1	16.9
Health				
Number of outpatient visits per person per year	0.8	1.2	1.6	1.4
Number of hospital admissions per 1,000 population per year	63.7	72.8	137.8	113.1
Children ever born to women ages 1–49	4.8	4.7	3.9	4.2
Percent of children who have died	3.3	5.3	6.0	5.3
Percent of children under age two who have vaccination card	61.4	64.9	69.0	66.5

Table A1.2 Quantitative poverty indicators, June 1997 (continued)

	Sample means			
	Poor below food poverty line	*Between food poverty line and poverty line*	*Nonpoor*	*Total*
Assets and liabilities				
Value of land owned (residential + farm, in millions of riel)	5.6	8.8	10.2	9.2
Number of livestock owned (rural households only)				
Pigs	1.6	1.5	2.4	7.4
Buffaloes	1.6	1.1	2.5	8.0
Cows	1.8	0.9	2.3	8.6
Poultry	1.7	1.0	2.4	8.3
Value of loans outstanding (thousands of riel)	129.8	136.9	266.7	218.5

Source: NIS 1998.

Table A1.3 Qualitative poverty indicators

	Sample means			
	Poor below food poverty line	*Between food poverty line and poverty line*	*Nonpoor*	*Total*
Head of household characteristics				
Head of household belongs to ethnic minority	3.7	5.0	4.7	4.6
Head of household speaks a foreign language fluently (French, English, Chinese, or Thai)	0.1	0.6	3.8	2.6
Employment and income				
Household's main source of income during the previous 12 months other than agriculture	22.2	26.2	44.8	37.4
Household's consumption expenditure during the previous 12 months was unusually				
Lower than normal	21.1	19.5	15.5	17.2
Same as normal	19.1	22.4	27.8	25.2
Higher than normal	59.8	58.1	58.1	57.6
Housing characteristics				
Household's main source of lighting is electricity (either publicly or privately generated)	3.6	5.9	24.9	17.6
Household's main source of drinking water is piped, public tap, or tanker	3.8	5.9	20.4	14.8
Toilet located in dwelling	3.5	11.5	27.4	20.2
Household uses fuel other than firewood as its primary cooking fuel	1.2	1.8	13.0	8.9
Wall of dwelling made of either concrete or plywood	13.0	23.5	46.0	36.0
Roof of dwelling made of material other than thatching or mixed thatch material	30.3	45.2	64.3	54.8
Floor of dwelling made of material other than earth or wood	4.7	10.2	27.0	20.0
Assets and liabilities				
Household owns the following livestock (rural only):				
Pigs	9.9	88.7	82.1	85.3
Buffalos	61.9	49.3	34.6	42.1
Cows	91.6	91.3	80.7	84.9
Poultry	93.1	90.6	88.6	89.9
Household has a fish pond (rural only)	0.9	1.6	2.3	1.9
Household has at least one outstanding loan	43.1	42.8	37.1	39.2

(Table continues on next page.)

Table A1.3 Qualitative poverty indicators (continued)

	Sample means			
	Poor below food poverty line	*Between food poverty line and poverty line*	*Nonpoor*	*Total*
Household owns				
Radio or casette recorder	29.4	35.9	49.3	43.3
Television set	9.1	13.1	30.5	23.5
Bicycle	57.1	63.4	60.3	60.3
Boat	6.4	11.7	10.7	10.1
Motorbike or scooter	10.3	13.0	30.9	24.0
Car or truck	0.0	0.5	2.9	1.9
Cart (rural only)	34.7	43.6	38.8	38.7
Tractor or other agricultural implements(rural only)	2.0	2.4	3.0	2.7

Source: NIS 1998.

Table A1.4 Comparison of CPI and Socioeconomic Survey retail prices in Phnom Penh, June 1997

(riel)

Item	*CPI*	*1997 Socioeconomic Survey*
Rice #1, kg.	1,041.3	1,000
Rice #2, kg.	858.8	800
Chicken egg, piece	209	200
Duck egg, piece	280	300
Pork without fa, kg.	7,960	8,000
Fresh beef (Quality #1), kg.	6,880	7,000
Fresh chicken (Quality #1, dressed), kg.	6,060	5,650
Sea fish (small), kg.	4,225	3,000
Fresh water mudfish (large), kg.	4,965	4,000
Salt (white, powder), kg.	575	600
Sugar (granulated, refined), kg.	1,540	1,600
Potatoes (medium size), kg.	1,932.5	2,000
Sweet potatoes (medium size), kg.	685	500
Onions (white, medium size), kg.	1,710	1,750

Sources: NIS 1997, 1998.

Table A1.5 Comparison of Consumer Price Index and Ministry of Agriculture retail prices in Phnom Penh, June 1997

(riel)

Item	*CPI*	*Ministry of Agriculture*
Rice #1, kg.	1,041.3	1,500
Rice #2, kg.	858.8	850
Chicken egg, piece	209	183
Duck egg, piece	280	293
Sugar (white, refined), kg.	1,540	1,363
Potatoes (medium size), kg.	1,932.5	1,800
Sweet potatoes (medium size), kg.	685	325
Bean sprouts, kg.	917.5	1,000
Cabbage, kg.	1,290	1,500
Cauliflower, kg.	3,817.5	3,500
Lettuce, kg.	1,625	2,000
Tomatoes, kg.	1,770	1,500
Cucumbers, kg.	872.5	800
Bananas, hand	950	800
Oranges, dozen	4,767.5	2,800

Sources: NIS 1997, Cambodia Ministry of Agriculture 1997.

Table A1.6 Distribution of poverty by region, 1993–94 and June 1997

	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)[a]	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
1997							
Food poverty line							
Phnom Penh	9.9	3.4	1.9	0.5	1.4	0.1	1.1
Other urban	10.7	15.4	9.2	3.3	10.1	1.1	10.4
Rural	79.4	20.0	88.9	3.9	88.5	1.2	88.5
Total	100.0	17.9	100.0	3.5	100.0	1.1	100.0
Poverty line							
Phnom Penh	9.9	11.1	3.1	2.2	2.5	0.6	1.9
Other urban	10.7	29.9	8.9	7.5	9.2	2.7	9.5
Rural	79.4	40.1	88.1	9.7	88.3	3.4	88.6
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0
1993–94							
Food poverty line							
Phnom Penh	10.7	6.2	3.3	1.3	3.7	0.4	4.0
Other urban	11.0	19.6	10.8	4.4	13.1	1.4	14.8
Rural	78.2	21.9	85.9	4.0	83.2	1.1	81.2
Total	100.0	20.0	100.0	3.7	100.0	1.1	100.0
Poverty line							
Phnom Penh	10.7	11.4	3.1	3.1	3.6	1.2	4.1
Other urban	11.0	36.6	10.4	9.6	11.6	3.6	12.6
Rural	78.2	43.1	86.5	10.0	84.9	3.3	83.3
Total	100.0	39.0	100.0	9.2	100.0	3.1	100.0

a. The entries in this column are the individual region frequencies (N) in column one multiplied by the ratio of the individual region index to its total (that is, the index for all sampled areas).
Source: Computed based on NIS 1998.

Table A1.7 Distribution of poverty by employment of household head, June 1997

	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
Agriculture	59.1	43.6	71.3	10.8	73.1	3.8	73.8
Manufacturing and mining	4.7	28.9	3.8	4.9	2.6	1.6	2.5
Construction and utilities	2.0	37.8	2.1	7.1	1.6	2.1	1.4
Trade	6.8	18.7	3.5	4.4	3.4	1.6	3.5
Transportation and communications	3.6	19.9	2.0	4.3	1.8	1.5	1.7
Government services	4.7	18.0	2.4	3.9	2.1	1.2	1.8
Education and health services	3.0	17.0	1.4	2.5	0.9	0.6	0.6
Other services	1.8	26.5	1.3	7.1	1.5	2.8	1.6
Employed, industry not reported	2.3	33.6	2.1	7.2	1.9	2.1	1.6
Unemployed	0.4	27.0	0.3	9.8	0.4	4.4	0.6
Not in labor force	9.7	31.2	8.4	8.3	9.2	3.0	9.6
Not reported	1.9	27.1	1.4	6.5	1.4	2.1	1.3
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A1.8 Distribution of poverty by employer of household head, June 1997

Employer of head of household	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
Self-employed	66.9	40.1	74.3	9.8	74.8	3.5	75.6
Public sector	9.7	19.7	5.3	4.2	4.7	1.3	4.2
Unpaid family worker	1.4	15.9	0.6	3.9	0.6	1.6	0.7
Private sector	5.0	29.1	4.0	6.2	3.6	2.0	3.3
Household work	0.9	42.5	1.1	11.8	1.2	4.5	1.3
Employed, employer not reported	4.3	39.0	4.6	8.2	4.1	2.4	3.4
Unemployed	0.4	27.0	0.3	9.8	0.4	4.4	0.6
Not in labor force	9.7	31.2	8.4	8.3	9.2	3.0	9.6
Not reported	1.7	29.1	1.3	7.0	1.3	2.3	1.2
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A1.9 Distribution of poverty by education of household head, June 1997

Education of head of household	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
None	30.9	41.7	35.7	10.3	36.4	3.6	36.5
Primary	43.3	39.7	47.6	9.7	48.0	3.4	48.3
Lower-secondary	16.6	23.8	10.9	5.4	10.3	1.8	9.9
Higher-secondary	5.1	12.4	1.8	2.5	1.5	0.8	1.4
Graduate	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Other (including vocational and technical)	1.5	40.1	1.6	6.6	1.1	2.1	1.0
Not reported	2.2	38.7	2.4	10.4	2.6	4.1	2.9
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A1.10 Distribution of poverty by literacy of household head, June 1997

Literacy of head of household	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
Literate	68.1	33.5	63.3	8.0	62.3	2.8	61.7
Illiterate	31.6	41.7	36.5	10.3	37.4	3.7	38.0
Not reported	0.2	35.7	0.2	11.5	0.3	4.3	0.3
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A1.11 Distribution of poverty by gender of household head, June 1997

Gender of head of household	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
Literate	68.1	33.5	63.3	8.0	62.3	2.8	61.7
Male	81.6	36.7	83.0	8.9	82.9	3.1	82.5
Female	18.4	33.4	17.0	8.1	17.1	2.9	17.5
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A1.12 Distribution of poverty by household size, June 1997

Size of household	Frequency (percent)	Head count index (percent)	Head count index (contribution to total, percent)	Poverty gap (percent)	Poverty gap (contribution to total, percent)	Severity index (percent)	Severity index (contribution to total, percent)
1	0.4	2.4	0.0	0.3	0.0	0.0	0.0
2	3.4	11.2	1.0	1.9	0.7	0.5	0.6
3	9.9	21.3	5.9	4.0	4.6	1.2	3.8
4	15.2	25.3	10.7	5.4	9.5	1.8	8.9
5	18.0	35.0	17.5	8.5	17.6	3.0	17.6
6	17.6	38.8	18.9	10.4	21.1	4.0	22.7
7	14.9	43.0	17.8	10.7	18.2	3.8	18.3
8	11.2	48.0	14.9	11.0	14.1	3.7	13.5
9	5.5	49.1	7.5	12.1	7.7	4.3	7.8
10	2.6	58.1	4.3	15.0	4.6	5.4	4.7
11	0.7	46.8	0.9	12.8	1.1	4.5	1.1
12+	0.5	48.2	0.6	15.9	0.8	6.7	1.0
Total	100.0	36.1	100.0	8.7	100.0	3.1	100.0

Source: Computed based on NIS 1998.

Table A4.1 Average out-of-pocket expenditures on school fees per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	2,924	2,961	3,081	3,714	5,275	3,515	5,081	5,558	3,043
Lower-secondary	8,012	7,617	8,376	7,348	8,579	8,091	7,392	7,114	8,619
Upper-secondary	10,315	16,952	7,809	9,335	10,433	10,063	8,453	10,858	11,640
Post-secondary	0		1,532	1,036	30,601	24,406	30,194	3,543	0
Private schools									
Primary		2,639	4,122	18,067	56,698	34,083	55,270	26,431	2,778
Lower-secondary	3,000			93,967	90,609	81,216	87,431	0	
Upper-secondary				131,170	25,973	49,356	25,973		131,170
Post-secondary					0	0	0		
All schools									
Primary	2,924	2,960	3,087	3,804	6,380	3,728	6,975	5,717	3,043
Lower-secondary	7,947	7,617	8,376	8,024	9,939	8,762	10,157	7,084	8,619
Upper-secondary	10,315	16,952	7,809	11,891	10,863	10,857	9,043	10,858	13,000
Post-secondary	0		1,532	1,036	30,129	24,108	29,732	3,543	0

Source: Computed based on NIS 1998.

Table A4.2 Average out-of-pocket expenditures on school improvement fees per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	792	862	1,175	1,318	1,700	1,142	1,600	1,612	1,022
Lower-secondary	942	1,644	2,343	1,963	2,256	2,025	2,106	1,786	2,054
Upper-secondary	522	1,675	1,795	3,391	2,680	2,580	2,379	1,900	3,053
Post-secondary	0		153	414	835	720	903	0	0
Private schools									
Primary		2,689	54	272	408	639	249	1,146	1,085
Lower-secondary	2,000			0	1,366	1,166	1,255	0	
Upper-secondary				0	2,526	1,965	2,526		0
Post-secondary					0	0	0		
All schools									
Primary	792	870	1,169	1,312	1,672	1,139	1,549	1,609	1,022
Lower-secondary	955	1,644	2,343	1,948	2,242	2,017	2,077	1,778	2,054
Upper-secondary	522	1,675	1,795	3,320	2,675	2,568	2,384	1,900	3,018
Post-secondary	0		153	414	822	711	889	0	0

Source: Computed based on NIS 1998.

Table A4.3 Average out-of-pocket expenditures on school uniforms per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	8,354	8,586	9,998	12,338	18,642	11,256	17,549	13,928	10,121
Lower-secondary	15,557	16,372	20,941	20,000	29,101	22,814	29,065	22,428	20,423
Upper-secondary	13,706	23,940	28,698	25,066	38,117	32,451	26,109	38,736	37,546
Post-secondary	0		12,339	6,216	25,812	21,949	25,193	20,884	0
Private schools									
Primary		8,104	3,440	14,671	26,431	18,157	18,207	18,135	18,083
Lower-secondary	7,000			6,445	46,266	33,793	36,379	0	
Upper-secondary				72,872	29,247	38,944	29,247		72,872
Post-secondary					50,000	50,000	50,000		
All schools									
Primary	8,354	8,584	9,963	12,352	18,810	11,304	17,573	13,960	10,144
Lower-secondary	15,446	16,372	20,941	19,895	29,386	22,915	29,318	22,333	20,423
Upper-secondary	13,706	23,940	28,698	26,069	37,872	32,583	26,215	38,736	37,948
Post-secondary	0		12,339	6,216	26,185	22,292	25,573	20,884	0

Source: Computed based on NIS 1998.

Table A4.4 Average out-of-pocket expenditures on school books per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	2,851	2,895	3,479	4,446	6,190	3,864	6,326	4,274	3,507
Lower-secondary	6,178	8,185	9,925	8,456	14,373	10,744	13,114	8,217	10,449
Upper-secondary	8,182	13,265	13,683	16,071	17,397	16,052	12,639	13,332	20,957
Post-secondary	0		8,468	1,243	17,653	14,648	16,648	15,430	0
Private schools									
Primary		262,220	1,228	3,438	28,045	51,400	27,330	300,922	2,398
Lower-secondary	5,700			12,113	9,520	9,599	8,420	25,009	
Upper-secondary				14,574	34,236	29,866	34,236		14,574
Post-secondary					10,000	10,000	10,000		
All schools									
Primary	2,762	3,971	3,384	4,316	6,513	4,091	6,988	6,291	3,430
Lower-secondary	5,741	7,918	9,306	8,145	13,203	10,074	12,724	7,894	9,581
Upper-secondary	7,370	10,961	12,373	15,389	17,172	15,446	13,132	12,740	18,896
Post-secondary	0		8,468	947	17,535	14,064	16,547	15,430	0

Source: Computed based on NIS 1998.

Table A4.5 Average out-of-pocket expenditures on school supplies and materials per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	2,684	3,614	4,121	4,984	6,196	4,224	5,043	5,093	4,005
Lower-secondary	4,507	6,407	9,912	8,910	10,083	8,887	6,723	9,636	9,557
Upper-secondary	5,983	6,831	9,740	14,357	12,061	11,776	7,381	16,744	15,091
Post-secondary	0		1,532	1,036	5,358	4,459	5,229	3,238	0
Private schools									
Primary		1,867	2,905	2,952	2,988	2,815	2,096	4,755	3,288
Lower-secondary	6,500			7,957	6,521	6,806	5,891	18,757	
Upper-secondary				29,149	11,775	15,637	11,775		29,149
Post-secondary					30,000	30,000	30,000		
All schools									
Primary	2,684	3,606	4,114	4,971	6,127	4,214	4,932	5,091	4,002
Lower-secondary	4,533	6,407	9,912	8,902	10,023	8,868	6,695	9,675	9,557
Upper-secondary	5,983	6,831	9,740	14,667	12,053	11,854	7,529	16,744	15,250
Post-secondary	0		1,532	1,036	5,739	4,771	5,608	3,238	0

Source: Computed based on NIS 1998.

Table A4.6 Average out-of-pocket expenditures on transport per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	2,060	4,138	4,984	6,335	17,416	6,540	13,508	13,691	4,710
Lower-secondary	3,375	10,483	9,816	7,471	37,032	19,067	31,517	35,580	9,865
Upper-secondary	152	22,868	8,506	18,683	69,447	45,274	62,476	52,986	22,682
Post-secondary	0		23,953	0	34,089	28,487	35,194	4,575	0
Private schools									
Primary		1,769	1,777	13,910	42,979	25,623	46,756	0	714
Lower-secondary	0			28,672	105,919	78,306	79,514	62,523	
Upper-secondary				0	105,208	81,823	105,208		0
Post-secondary					300,000	300,000	300,000		
All schools									
Primary	2,060	4,128	4,967	6,383	17,965	6,673	14,762	13,587	4,698
Lower-secondary	3,331	10,483	9,816	7,637	38,174	19,610	33,175	35,694	9,865
Upper-secondary	152	22,868	8,506	18,291	70,435	46,013	63,916	52,986	22,424
Post-secondary	0		23,953	0	38,191	31,808	39,240	4,575	0

Source: Computed based on NIS 1998.

Table A4.7 Average out-of-pocket expenditures on private tutoring per student, 1997
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	316	683	2,061	6,727	19,946	5,314	37,190	8,567	967
Lower-secondary	2,012	6,247	10,118	26,885	75,336	37,503	94,123	51,844	11,266
Upper-secondary	5,166	25,174	42,215	74,983	127,867	95,419	136,297	113,986	41,646
Post-secondary	0		0	7,252	14,255	12,144	13,530	15,250	0
Private schools									
Primary		0	24,284	16,658	30,388	22,868	42,126	0	0
Lower-secondary	4,500			111,135	71,880	71,989	53,576	312,613	
Upper-secondary				0	389,947	303,271	389,947		0
Post-secondary					1,080,000	1,080,000	1,080,000		
All schools									
Primary	316	680	2,181	6,790	20,171	5,437	37,376	8,501	964
Lower-secondary	2,044	6,247	10,118	27,542	75,278	37,820	92,723	52,946	11,266
Upper-secondary	5,166	25,174	42,215	73,411	135,114	99,621	144,843	113,986	41,172
Post-secondary	0		0	7,252	30,698	25,206	29,827	15,250	0

Source: Computed based on NIS 1998.

Table A4.8 Average out-of-pocket expenditures on accommodation costs per student, 1997

(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	0	0	44	250	881	206	589	1	187
Lower-secondary	0	389	146	1,445	1,097	827	1,530	178	713
Upper-secondary	0	0	0	9,862	3,967	4,349	1,250	6,800	7,059
Post-secondary	0		0	0	1,461	1,155	1,447	0	0
Private schools									
Primary		0	0	0	0	0	0	0	0
Lower-secondary	0			0	0	0	0	0	
Upper-secondary				0	0	0	0		0
Post-secondary					0	0	0		
All schools									
Primary	0	0	43	248	862	205	567	1	187
Lower-secondary	0	389	146	1,433	1,078	819	1,477	177	713
Upper-secondary	0	0	0	9,655	3,857	4,261	1,208	6,800	6,979
Post-secondary	0		0	0	1,439	1,141	1,425	0	0

Source: Computed based on NIS 1998.

Table A4.9 Average out-of-pocket expenditures on other schooling costs per student, 1997

(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public schools									
Primary	3,923	5,932	9,726	13,982	31,254	12,133	33,368	11,788	9,580
Lower-secondary	11,317	13,396	13,736	19,538	58,284	31,637	63,375	10,223	24,495
Upper-secondary	31,844	11,167	24,227	30,982	58,719	44,947	65,272	44,344	21,696
Post-secondary	0		31,869	8,288	125,444	102,194	66,374	556,883	0
Private schools									
Primary		16,455	0	21,569	11,135	11,861	9,018	14,557	15,475
Lower-secondary	18,000			13,336	26,752	23,064	21,958	37,514	
Upper-secondary				43,723	120,282	103,265	120,282		43,723
Post-secondary					0	0	0		
All schools									
Primary	3,923	5,978	9,674	14,030	30,821	12,131	32,449	11,809	9,598
Lower-secondary	11,404	13,396	13,736	19,490	57,761	31,558	61,945	10,339	24,495
Upper-secondary	31,844	11,167	24,227	31,249	60,422	46,126	67,125	44,344	21,946
Post-secondary	0		31,869	8,288	123,508	100,944	65,360	556,883	0

Source: Computed based on NIS 1998.

Table A4.10 Average non-zero expenditures for students in public schools, 1997
(riel per year)

	Consumption quintile					Nation-	Phnom	Other urban	Rural
	1–poorest	2	3	4	5–richest	wide	Penh	areas	areas
Rural areas									
Primary	25,336	31,939	40,015	56,148	113,531	51,012	125,862	70,885	38,629
Lower-secondary	59,164	77,215	85,314	106,646	244,215	148,362	254,116	156,204	101,499
Upper-secondary	98,145	126,987	146,886	208,800	375,926	289,080	345,311	347,469	198,060
Post-secondary			115,124	246,000	574,565	518,407	418,866	2,096,960	

Source: Computed based on NIS 1998.

Table A4.11 Average number of students, 1997

	Consumption quintile					Nation-	Phnom	Other urban	Rural
	1–poorest	2	3	4	5–richest	wide	Penh	areas	areas
Public schools									
Primary	359,371	364,461	355,729	327,245	285,606	1,692,412	164,556	183,776	1,344,080
Lower-secondary	19,422	28,449	45,234	56,518	90,328	239,951	57,744	37,239	144,967
Upper-secondary	2,955	2,774	10,537	15,706	41,393	73,364	33,760	10,362	29,242
Post-secondary	273		740	1,388	9,043	11,444	9,132	1,012	1,301
Private schools									
Primary		1,623	1,930	2,059	6,272	11,885	6,451	1,412	4,021
Lower-secondary	255			445	1,524	2,224	2,066	158	
Upper-secondary				336	1,177	1,514	1,177		336
Post-secondary					142	142	142		
All schools									
Primary	359,371	366,083	357,659	329,304	291,878	1,704,296	171,008	185,188	1,348,101
Lower-secondary	19,677	28,449	45,234	56,962	91,852	242,175	59,810	37,398	144,967
Upper-secondary	2,955	2,774	10,537	16,042	42,570	74,877	34,937	10,362	29,578
Post-secondary	273		740	1,388	9,185	11,586	9,273	1,012	1,301

Source: Computed based on NIS 1998.

Table A4.12 Average private expenditure on education, 1997
(millions of riel per year)

	Consumption quintile					Nation-	Phnom	Other urban	Rural
	1–poorest	2	3	4	5–richest	wide	Penh	areas	areas
Public schools									
Primary	8,598	10,826	13,793	17,805	30,768	81,791	19,788	12,063	49,939
Lower-secondary	1,008	2,018	3,859	5,913	21,387	34,185	14,375	5,679	14,131
Upper-secondary	224	338	1,440	3,184	14,406	19,592	10,879	3,409	5,304
Post-secondary	0		59	35	2,311	2,405	1,778	627	0
Private schools									
Primary		480	73	188	1,249	1,990	1,297	517	176
Lower-secondary	12			122	547	680	608	72	
Upper-secondary				98	846	945	846		98
Post-secondary					209	209	209		
All schools									
Primary	8,598	11,306	13,866	17,993	32,016	83,780	21,086	12,579	50,116
Lower-secondary	1,020	2,018	3,859	6,034	21,934	34,865	14,983	5,751	14,131
Upper-secondary	224	338	1,440	3,282	15,252	20,537	11,726	3,409	5,402
Post-secondary	0		59	35	2,519	2,613	1,986	627	0

Note: These estimates include cases where total expenditure was reported but individual components were not; hence totals are slightly different from those in table A3.13 which is based on individual components only.
Source: Computed based on NIS 1998.

Table A4.13 Sources and uses of private education expenditure, 1997
(millions of riel)

Uses	Fees	Improvement fee	Uniforms	Books	Supplies, materials	Transport	Private tutoring	Accom-odation	Other costs	All sources
Public schools										
Primary	5,949	1,933	19,050	6,539	7,149	11,068	8,993	349	20,534	81,564
Lower-secondary	1,941	486	5,474	2,578	2,132	4,575	8,999	198	7,591	33,976
Upper-secondary	738	189	2,381	1,178	864	3,321	7,000	319	3,297	19,288
Post-secondary	279	8	251	168	51	326	139	13	1,170	2,405
Total Public	8,907	2,616	27,156	10,463	10,196	19,290	25,131	879	32,592	137,233
Private schools										
Primary	405	8	216	611	33	305	272	0	141	1,990
Lower-secondary	181	3	75	21	15	174	160	0	51	680
Upper-secondary	75	3	59	45	24	124	459	0	156	945
Post-secondary	0	0	7	1	4	43	153	0	0	209
Total Private	661	14	357	678	76	646	1,044	0	348	3,824
All schools										
Primary	6,354	1,941	19,265	7,151	7,182	11,373	9,266	349	20,675	83,557
Lower-secondary	2,122	488	5,549	2,599	2,148	4,749	9,159	198	7,643	34,656
Upper-secondary	813	192	2,440	1,223	888	3,445	7,459	319	3,454	20,233
Post-secondary	279	8	258	169	55	369	292	13	1,170	2,613
Total	9,568	2,629	27,512	11,142	10,273	19,936	26,176	879	32,942	141,059

Source: Computed based on NIS 1998.

Table A4.14 Public sector gross enrollments per capita, 1997

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Private sector share (pecent)									
Primary	0.0	0.4	0.5	0.6	2.1	0.7	3.7	0.7	0.23
Lower-secondary	1.2	0.0	0.0	0.8	1.5	0.8	3.3	0.4	0.0
Upper-secondary	0.0	0.0	0.0	1.0	2.6	1.9	3.2	0.0	1.01
Post-secondary	0.0		0.0	0.0	1.5	1.2	1.5	0.0	0.0
Gross enrollment rate (percent)									
Primary	94.0	112.1	119.5	122.9	124.2	112.8	118.3	109.2	112.7
Lower-secondary	13.5	20.4	31.8	39.6	72.9	34.7	76.5	48.2	27.1
Upper-secondary	2.4	2.5	8.1	12.3	32.0	11.6	49.4	15.1	6.1
Post-secondary	0.2	0.0	0.4	0.8	4.0	1.2	10.7	1.1	0.2
Public gross enrollment rate[a]									
Primary	94.0	111.6	118.9	122.3	121.6	112.1	114.0	108.4	112.4
Lower-secondary	13.4	20.4	31.8	39.3	71.8	34.4	73.9	48.0	27.1
Upper-secondary	2.4	2.5	8.0	12.1	31.2	11.4	47.8	15.1	6.0
Post-secondary	0.2		0.4	0.8	4.1	1.2	10.6	1.1	0.2
Target school-age fraction[b]									
Primary	21.4	18.4	17.0	15.3	13.1	17.0	16.12	17.8	17.0
Lower-secondary	8.3	8.6	8.4	8.1	7.4	8.2	8.8	8.1	8.1
Upper-secondary	7.2	7.2	7.8	7.4	7.6	7.5	8.0	7.4	7.4
Post-secondary	8.5	10.1	10.2	11.7	12.3	10.5	9.4	9.4	10.8
***Public sector* gross enrollments per capita (percent)[c]**									
Primary	20.1	20.5	20.2	18.6	15.9	19.1	18.4	19.3	19.1
Lower secondary	1.1	1.7	2.7	3.6	5.3	2.8	6.5	3.9	2.2
Upper secondary	0.2	0.12	0.6	0.9	2.4	0.9	3.8	1.1	0.4
Post secondary	0.01		0.0	0.1	0.5	0.1	1.0	0.1	0.0

a. Gross enrollment rate x (100 – private sector share).
b. Percent school age population/total population.
c. Public gross enrollment rate x target school age fraction.
Source: Computed based on NIS 1998.

Table A4.15 Budget of Ministry of Education, Youth, and Sports, 1996–97
(millions of riel)

Function	Salaries	Examinations	O&M expenditure	Other	Total
Sector policy	3,189	0	7,410		10,599
Primary	36,597	1,762	3,398		41,757
Lower-secondary	14,621	5,085	1,371		21,077
Upper-secondary	3,149	1,545	376		5,070
Post-secondary		1,142		1,622	2,764
Other				687	687
Total	57,555	9,534	12,555	2,310	81,953

Note: The figures in this table were obtained from a preliminary analysis of the education ministry's budget. Only general education expenditures have been broken down by economic category.
Source: Cambodia Ministry of Education 1997.

Table A4.16 Public subsidies and cost recovery for public education, 1996–97

	Millions of riel				Riel per student			
	Enrollment	Cost	Fees	Subsidy	Unit cost	Unit fee	Unit subsidy	Cost recovery (percent)
Primary	1,963,799	47,960	5,949	42,011	24,422	3,029	21,392	12.4
Lower-secondary	265,895	24,208	1,941	22,267	91,043	7,300	83,743	8.0
Upper-secondary	61,671	5,823	738	5,085	94,422	11,967	82,455	12.7
Post-secondary	13,300	3,175	279	2,896	238,689	20,977	217,711	8.8

Note: Cost estimates include pro-rated share of sector policy expenditure.
Source: Enrollment, Ministry of Education 1997; fees, NIS 1998.

Table A4.17 Public subsidies by quintile, 1996–97
(riel per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Primary	4,298	4,381	4,321	3,985	3,399	4,077	3,936	4,122	4,088
Lower-secondary	938	1,457	2,236	2,655	4,447	2,346	5,466	3,273	1,832
Upper-secondary	148	148	511	742	1,954	701	3,150	917	365
Post-secondary	31	0	86	212	1,054	277	2,150	219	52
All levels	5,415	5,987	7,155	7,594	10,855	7,401	14,703	8,531	6,338
Per capita consumption (000)	364.2	524.5	687.5	953.6	2,127.1	931.2	1,694.7	1,190.7	801.1

Source: Computed based on NIS 1998.

Table A4.18 Effectiveness of targeting public subsidies for education, 1996–97
(percentage of per capita consumption)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Primary	1.18	0.84	0.63	0.42	0.16	0.44	0.23	0.35	0.51
Lower-secondary	0.26	0.28	0.33	0.28	0.21	0.25	0.32	0.27	0.23
Upper-secondary	0.04	0.03	0.07	0.08	0.09	0.08	0.19	0.08	0.05
Post-secondary	0.01	0.00	0.01	0.02	0.05	0.03	0.13	0.02	0.01
All levels	1.49	1.14	1.04	0.80	0.51	0.79	0.87	0.72	0.79
Per capita consumption (000)	364.2	524.5	687.5	953.6	2,127.1	931.2	1,694.7	1,190.7	801.1

Source: Computed based on NIS 1998.

Table A4.19 Efficiency of targeting public subsidies for education, 1996–97
(percentage of total public subsidies)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Primary	21.1	21.5	21.2	19.6	16.7	100.0	9.6	10.8	79.6
Lower-secondary	8.0	12.4	19.1	22.6	37.9	100.0	23.1	14.9	62.0
Upper-secondary	4.2	4.2	14.6	21.2	55.8	100.0	44.5	14.0	41.4
Post-secondary	2.4	0.0	6.2	15.4	76.0	100.0	76.7	8.5	14.90
All levels	14.6	16.2	19.3	20.5	29.3	100.0	19.7	12.3	68.0
Percentage of aggregate consumption	7.8	11.23	14.8	20.5	45.7	100.0	18.0	13.7	68.3

Source: Computed based on NIS 1998.

Table A5.1 Average out-of-pocket expenditure on fees per health service contact, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	23,027	47,914	61,605	62,045	2,373	65,122	86,068	43,678	66,644
Hospital inpatient	57,462	64,162	4,681	9,916	4,898	4,785	9,458	0,169	191,030
Hospital outpatient	20,299	37,171	52,398	31,552	98,785	62,186	4,653	29,769	64,653
Commune clinic or health center inpatient	32,554	2,749	83,444	2,467	7,764	8,904	42,834	0,202	137,748
Commune clinic or health center outpatient	18,550	31,463	34,311	31,968	43,896	32,305	19,824	34,138	32,707
Other inpatient		6,664		4,362	3,810	9,232	2,800	3,341	445,684
Other outpatient	13,925	3,678	1,170	6,183	54,947	30,788	8,563	4,197	43,688
Private providers	41,449	33,532	49,371	50,463	67,324	51,912	39,391	71,238	50,690
Hospital inpatient	6,073	8,401	37,514	78,687	8,505	6,982	0,705	79,355	306,532
Hospital outpatient	50,943	59,618	41,977	70,833	89,673	69,168	44,653	55,358	76,129
Doctor, nurse, clinic inpatient	6,160	34,937	91,479	95,891	8,827	87,035	95,106	2,814	76,943
Doctor, nurse, clinic outpatient	37,293	30,758	44,383	47,032	58,056	46,743	28,753	71,476	44,917
Traditional healer	17,907	22,395	59,288	36,778	71,192	44,837	36,463	50,175	44,639
Other inpatient	72,872		35,629	89,853	60,047	56,411	85,324	50,018	53,846
Other outpatient	20,518	72,143	2,209	19,516	24,505	42,899	34,933	8,662	45,648
Self-medication	6,045	8,851	18,213	14,682	38,518	17,787	12,678	35,508	14,214
Total	24,905	32,430	46,425	46,783	73,679	48,920	51,559	51,992	48,108

Source: NIS 1998.

Table A5.2 Aggregate out-of-pocket expenditure on fees, 1997
(millions of riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	10,583	28,583	48,371	51,405	95,975	234,916	27,943	22,432	184,542
Hospital inpatient	2,467	3,284	17,611	19,052	27,793	70,207	6,752	5,720	57,735
Hospital outpatient	1,010	3,477	9,719	6,673	34,325	55,203	16,960	7,401	30,843
Commune clinic or health center inpatient	761	8,392	5,502	9,648	4,452	28,755	198	1,220	27,336
Commune clinic or health center outpatient	6,261	12,694	14,866	14,227	16,149	64,198	1,648	6,510	56,040
Other inpatient	0	0	.	0	11,591	11,591	2,167	1,558	10,180
Other outpatient	83	71	674	156	1,664	2,649	217	23	2,408
Private providers	20,973	26,613	52,567	61,647	106,413	268,214	18,860	40,711	208,659
Hospital inpatient	0	366	72	938	7,586	8,963	2,613	1,150	8,475
Hospital outpatient	2,199	3,164	2,879	8,929	12,883	30,055	3,396	1,583	25,117
Doctor, nurse, clinic inpatient	1,266	1,943	3,664	4,538	7,410	18,821	1,740	3,335	13,746
Doctor, nurse, clinic outpatient	11,878	16,235	32,113	40,343	66,225	166,793	9,197	31,449	126,148
Traditional healer	1,598	2,786	10,966	4,995	9,769	30,114	916	3,066	26,132
Other inpatient	323	.	1,115	1,327	1,378	4,144	526	72	3,546
Other outpatient	435	2,119	1,758	545	1,162	6,019	466	57	5,496
Self-medication	2,406	3,796	9,720	7,842	18,463	42,227	1,747	14,496	25,984
Total	33,962	58,992	110,659	120,899	220,851	545,363	48,532	77,639	419,186

Source: NIS 1998.

Table A5.3 Average out-of-pocket expenditure on drugs per health service contact, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	12,610	35,458	28,392	39,055	63,137	39,029	30,874	47,845	38,350
Hospital inpatient	30,440	63,106	96,604	6,095	1,017	92,767	66,544	52,036	4,137
Hospital outpatient	11,238	28,456	29,180	42,211	61,019	43,666	23,217	61,178	41,487
Commune clinic or health center inpatient	11,235	2,401	29,359	49,264	23,136	66,345	9,019	-	66,433
Commune clinic or health center outpatient	10,473	17,726	12,196	20,263	36,152	19,268	13,483	17,936	19,697
Other inpatient		67,999		8,617	3,258	8,820	2,088	0,245	2,420
Other outpatient	21,970	2,411	87,447	1,890	26,821	17,289	4,358	10,491	23,916
Private providers	23,250	8,041	20,860	27,779	44,840	28,097	19,157	30,912	28,749
Hospital inpatient	57,652	9,159	18,757	40,443	35,544	41,146	47,276	20,997	47,272
Hospital outpatient	29,342	7,274	11,641	7,031	79,461	63,115	18,471	29,236	76,548
Doctor, nurse, clinic inpatient	7,947	11,482	29,810	64,236	0,009	71,371	55,675	1,007	52,496
Doctor, nurse, clinic outpatient	18,895	6,877	13,186	17,790	31,997	19,883	16,826	24,122	19,567
Traditional healer	8,159	11,822	42,217	6,917	71,495	30,906	10,011	5,473	34,458
Other inpatient	87,447		89,836	19,869	9,584	94,283	17,595	5,136	95,302
Other outpatient	21,743	7,681	1,484	10,964	1,088	7,594	4,776	-	8,319
Self-medication	2,140	4,453	13,740	7,114	6,951	7,256	5,897	4,339	8,010
Total	13,501	16,186	21,747	27,123	44,504	27,196	21,253	29,471	27,449

Source: NIS 1998.

Table A5.4 Aggregate out-of-pocket expenditure on drugs, 1997
(millions of riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	5,795	21,152	22,293	32,357	59,192	140,789	10,023	24,572	106,194
Hospital inpatient	1,307	3,230	9,212	10,449	13,065	37,262	2,818	2,971	31,473
Hospital outpatient	559	2,662	5,412	8,927	21,202	38,762	3,762	15,209	19,791
Commune clinic or health center inpatient	263	7,863	1,936	2,926	748	13,734	551	0	13,184
Commune clinic or health center outpatient	3,535	7,152	5,284	9,018	13,300	38,289	1,121	3,420	33,748
Other inpatient	0	0		0	0	0	0	0	0
Other outpatient	131	47	449	48	812	1,487	110	59	1,318
Private providers	11,764	6,382	22,211	33,935	70,876	145,167	9,172	17,666	118,342
Hospital inpatient	0	31	36	482	935	1,484	945	304	1,307
Hospital outpatient	1,267	386	798	13,492	11,416	27,360	1,405	836	25,255
Doctor, nurse, clinic inpatient	1,831	638	1,194	3,040	8,731	15,434	1,018	5,037	9,379
Doctor, nurse, clinic outpatient	6,018	3,630	9,541	15,260	36,500	70,948	5,382	10,613	54,953
Traditional healer	728	1,471	7,809	939	9,811	20,757	251	334	20,171
Other inpatient	388		2,812	294	3,432	6,926	108	542	6,276
Other outpatient	460	226	21	306	52	1,065	64	0	1,002
Self-medication	852	1,910	7,333	3,800	3,332	17,226	813	1,771	14,642
Total	18,412	29,443	51,837	70,092	133,399	303,184	20,005	44,009	239,179

Source: NIS 1998.

Table A5.5 Average out-of-pocket expenditure on transport per health service contact, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	2,644	4,844	4,499	6,254	11,636	6,578	3,349	3,198	7,583
Hospital inpatient	11,304	32,952	15,596	16,101	34,677	23,597	6,237	7,821	29,010
Hospital outpatient	1,671	3,741	4,444	3,413	6,313	4,701	2,022	2,560	6,727
Commune clinic or health center inpatient	4,939	3,322	7,755	38,484	1,971	14,793	21,519		14,929
Commune clinic or health center outpatient	1,514	1,544	947	1,418	1,624	1,395	2,010	487	1,466
Other inpatient		2,547		43,723	2,839	87,923	26,042	59,233	6,934
Other outpatient	3,393	7,002	58,298	431	15,304	10,813	1,665	2,308	15,876
Private providers	3,168	1,602	3,468	3,992	4,194	3,498	2,303	3,051	3,699
Hospital inpatient	7,731	1,832	1,250	5,213	20,718	12,222	5,662	4,832	20,837
Hospital outpatient	3,493	2,573	1,690	3,323	8,251	4,615	2,176	976	5,504
Doctor, nurse, clinic inpatient	2,799	1,484	2,785	18,048	21,179	11,095	7,288	6,758	11,953
Doctor, nurse, clinic outpatient	3,446	1,953	2,734	2,568	2,778	2,656	1,897	1,871	2,866
Traditional healer	1,295	125	7,126	5,178	1,736	3,559	1,549	10,736	2,896
Other inpatient	14,574		5,206	40,964	6,487	13,364	3,233	25,009	14,056
Other outpatient			228	1,101	469	401	1,916		256
Self-medication	1,054	317	7,053	693	1,364	2,251	804	338	2,787
Total	2,374	2,362	4,610	4,035	6,069	4,229	2,444	2,360	4,742

Source: NIS 1998.

Table A5.6 Aggregate out-of-pocket expenditure on transport, 1997
(millions of riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	1,215	2,890	3,532	5,181	10,909	23,727	1,087	1,642	20,998
Hospital inpatient	485	1,687	1,487	1,334	4,485	9,478	264	447	8,768
Hospital outpatient	83	350	824	722	2,194	4,173	328	636	3,209
Commune clinic or health center inpatient	115	86	511	2,285	64	3,062	100	0	2,963
Commune clinic or health center outpatient	511	623	410	631	597	2,773	167	93	2,513
Other inpatient	0	0	.	0	3,106	3,106	186	454	2,671
Other outpatient	20	136	299	11	464	930	42	13	875
Private providers	1,603	1,272	3,692	4,876	6,629	18,072	1,103	1,744	15,228
Hospital inpatient	0	6	2	62	545	616	113	70	576
Hospital outpatient	151	137	116	419	1,185	2,008	165	28	1,816
Doctor, nurse, clinic inpatient	31	82	112	854	1,321	2,399	133	130	2,135
Doctor, nurse, clinic outpatient	1,097	1,031	1,978	2,203	3,169	9,478	607	823	8,048
Traditional healer	116	16	1,318	703	238	2,391	39	656	1,696
Other inpatient	65	.	163	605	149	982	20	36	926
Other outpatient	0	0	3	31	22	56	26	0	31
Self-medication	420	136	3,764	370	654	5,344	111	138	5,095
Total	3,238	4,297	10,988	10,428	18,192	47,143	2,301	3,524	41,320

Source: NIS 1998.

Table A5.7 Average out-of-pocket expenditure on fees, drugs, and transport per health service contact, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Public providers	38,281	88,216	94,497	107,353	177,146	110,729	120,290	94,721	112,577
Hospital inpatient	99,206	160,221	296,882	372,111	350,592	291,149	232,240	160,026	324,177
Hospital outpatient	33,208	69,369	86,022	77,177	166,117	110,552	129,892	93,506	112,866
Commune clinic or health center inpatient	48,728	628,472	120,558	250,216	162,871	220,042	183,372	310,202	219,110
Commune clinic or health center outpatient	30,537	50,733	47,454	53,649	81,672	52,968	35,317	52,560	53,870
Other inpatient	.	297,210	.	626,703	819,908	755,976	560,930	642,820	855,038
Other outpatient	39,289	13,090	276,915	8,504	97,072	58,890	14,586	16,996	83,480
Private providers	67,867	43,175	73,699	82,234	116,358	83,507	60,852	105,202	83,139
Hospital inpatient	241,455	119,391	57,521	124,343	344,767	250,350	183,643	105,184	374,641
Hospital outpatient	83,778	69,465	55,308	181,186	177,385	136,898	65,300	85,570	158,182
Doctor, nurse, clinic inpatient	286,906	47,902	124,074	178,174	280,015	169,501	158,069	440,579	141,392
Doctor, nurse, clinic outpatient	59,634	39,588	60,303	67,391	92,831	69,282	47,476	97,469	67,349
Traditional healer	27,361	34,341	108,631	48,873	144,423	79,302	48,022	66,384	81,993
Other inpatient	174,894	.	130,672	150,686	216,117	164,058	106,152	450,163	163,205
Other outpatient	42,261	79,823	123,921	31,580	26,062	50,894	41,625	8,662	54,223
Self-medication	9,239	13,621	39,006	22,489	46,833	27,293	19,379	40,185	25,011
Total	40,781	50,978	72,782	77,941	124,252	80,345	75,257	83,823	80,299

Source: NIS 1998.

Table A5.8 Aggregate out-of-pocket expenditure on fees, drugs, and transport, 1997
(millions of riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	17,593	52,624	74,197	88,942	166,076	399,432	39,053	48,646	311,733
Hospital inpatient	4,260	8,200	28,310	30,835	45,343	116,948	9,834	9,138	97,976
Hospital outpatient	1,652	6,488	15,955	16,322	57,722	98,139	21,050	23,246	53,843
Commune clinic or health center inpatient	1,139	16,341	7,949	14,859	5,264	45,551	849	1,220	43,482
Commune clinic or health center outpatient	10,308	20,469	20,560	23,876	30,046	105,260	2,937	10,023	92,300
Other inpatient	0	0	.	0	24,761	24,761	4,014	4,924	19,530
Other outpatient	235	254	1,422	214	2,940	5,066	369	95	4,602
Private providers	34,340	34,267	78,470	100,459	183,917	431,453	29,136	60,121	342,230
Hospital inpatient	0	404	111	1,483	9,065	11,062	3,671	1,524	10,358
Hospital outpatient	3,617	3,687	3,793	22,840	25,485	59,422	4,966	2,446	52,187
Doctor, nurse, clinic inpatient	3,128	2,664	4,970	8,431	17,461	36,653	2,892	8,502	25,260
Doctor, nurse, clinic outpatient	18,993	20,895	43,631	57,807	105,894	247,220	15,185	42,885	189,149
Traditional healer	2,441	4,273	20,093	6,638	19,818	53,262	1,206	4,057	47,999
Other inpatient	776	.	4,090	2,226	4,959	12,051	654	650	10,747
Other outpatient	895	2,344	1,783	883	1,236	7,141	555	57	6,529
Self-medication	3,678	5,841	20,817	12,012	22,449	64,798	2,671	16,405	45,722
Total	55,612	92,732	173,484	201,419	372,442	895,689	70,838	125,171	699,685

Source: NIS 1998.

Table A5.9 Average out-of-pocket expenditure on fees, drugs, and transport per health service contact, 1997
(riel)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	40,054	88,768	99,737	111,234	182,496	114,595	123,481	100,043	116,184
Hospital inpatient	99,206	160,221	296,882	372,111	371,017	296,403	232,240	167,477	329,164
Hospital outpatient	33,208	69,369	88,118	81,081	172,193	114,001	132,108	96,111	117,138
Commune clinic or district health center inpatient	48,728	628,472	120,558	273,908	162,871	225,641	183,372	310,202	224,932
Commune clinic or district health center outpatient	32,495	51,204	51,864	55,338	82,468	55,133	36,617	57,442	55,787
Other inpatient		297,210		626,703	819,908	755,976	560,930	642,820	855,038
Other outpatient	39,289	13,090	276,915	8,504	114,247	62,181	16,341	25,322	83,48

Source: NIS 1998.

Table A5.10 Total number of monthly health service contacts by quintile, 1997

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	38,298	49,712	65,432	69,042	78,125	300,609	6,337	2,382	27,493
Hospital inpatient	3,578	4,265	7,946	6,905	10,778	33,473	1,524	1,608	14,888
Hospital outpatient	4,145	7,794	15,456	17,624	28,956	73,976	26,655	36,666	234,041
Commune clinic or health center inpatient	1,948	2,167	5,495	4,949	2,693	17,251	2,093	5,092	48,783
Commune clinic or health center outpatient	28,129	33,622	36,106	37,087	30,658	165,602	513	120	5,488
Other inpatient		244		377	2,517	3,138	1,111	547	10,034
Other outpatient	498	1,620	428	2,099	2,524	7,169	11,485	34,020	152,337
Private providers	42,167	66,139	88,729	101,802	131,718	430,554	78,440	124,441	726,125
Hospital inpatient	1,550	282	161	994	2,191	5,177	1,666	1,207	1,895
Hospital outpatient	3,598	4,423	5,715	10,505	11,973	36,213	6,456	2,568	27,414
Doctor, nurse, clinic inpatient	908	4,634	3,338	3,943	5,196	18,020	1,400	1,419	13,480
Doctor, nurse, clinic outpatient	26,542	43,984	60,294	71,482	95,059	297,362	25,775	35,687	227,640
Traditional healer	7,434	10,368	15,414	11,318	11,435	55,969	1,966	4,200	45,796
Other inpatient	370		2,608	1,231	1,912	6,121	513	120	4,719
Other outpatient	1,765	2,448	1,199	2,329	3,952	11,692	984	359	10,426
Self-medication	33,174	35,738	44,475	44,510	39,946	197,842	11,390	32,885	144,439
Total	113,639	151,588	198,635	215,353	249,789	929,005	77,201	119,959	705,709

Source: NIS 1998.

Table A5.11 Sources and uses of private health expenditure, 1997
(in millions of riel)

	Fees	Drugs	Transport	Total
All public providers	234,916	140,789	23,727	399,432
Hospital inpatient	70,207	37,262	9,478	116,948
Hospital outpatient	55,203	38,762	4,173	98,139
Commune clinic or health center inpatient	28,755	13,734	3,062	45,551
Commune clinic or health center outpatient	64,198	38,289	2,773	105,260
Other inpatient	11,591	0	3,106	14,697
Other outpatient	2,649	1,487	930	5,066
Private providers	268,214	145,167	18,072	431,453
Hospital inpatient	8,963	1,484	616	11,062
Hospital outpatient	30,055	27,360	2,008	59,422
Doctor, nurse, clinic inpatient	18,821	15,434	2,399	36,653
Doctor, nurse, clinic outpatient	166,793	70,948	9,478	247,220
Traditional healer	30,114	20,757	2,391	53,262
Other inpatient	4,144	6,926	982	12,051
Other outpatient	6,019	1,065	56	7,141
Self-medication	42,227	17,226	5,344	64,798
Total	545,363	303,184	47,143	895,689

Source: NIS 1998.

Table A5.12 Utilization rates for health services by quintile, 1997

(annualized rates per person per year)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	0.246	0.319	0.420	0.443	0.502	0.386	0.351	0.513	0.373
Hospital inpatient	0.023	0.027	0.051	0.044	0.069	0.043	0.046	0.057	0.041
Hospital outpatient	0.027	0.050	0.099	0.113	0.186	0.095	0.175	0.249	0.064
Commune clinic or district health center inpatient	0.012	0.014	0.035	0.032	0.017	0.022	0.005	0.004	0.027
Commune clinic or district health center outpatient	0.180	0.216	0.232	0.238	0.197	0.213	0.090	0.191	0.231
Other inpatient	0.000	0.002	0.000	0.002	0.016	0.004	0.008	0.008	0.003
Other outpatient	0.003	0.010	0.003	0.013	0.016	0.009	0.027	0.006	0.007
Private providers	0.270	0.425	0.569	0.654	0.846	0.553	0.517	0.571	0.555
Hospital inpatient	0.010	0.002	0.001	0.006	0.014	0.007	0.022	0.014	0.004
Hospital outpatient	0.023	0.028	0.037	0.067	0.077	0.046	0.082	0.029	0.044
Doctor, nurse, clinic inpatient	0.006	0.030	0.021	0.025	0.033	0.023	0.020	0.019	0.024
Doctor, nurse, clinic outpatient	0.170	0.282	0.387	0.459	0.610	0.382	0.346	0.440	0.378
Traditional healer	0.048	0.067	0.099	0.073	0.073	0.072	0.027	0.061	0.079
Other inpatient	0.002	0.000	0.017	0.008	0.012	0.008	0.007	0.001	0.009
Other outpatient	0.011	0.016	0.008	0.015	0.025	0.015	0.014	0.007	0.016
Self-medication	0.213	0.229	0.285	0.286	0.256	0.254	0.149	0.408	0.246
Total	0.729	0.973	1.274	1.383	1.604	1.193	1.017	1.493	1.174

Source: NIS 1998.

Table A5.13 Distribution of people reported ill in the last month by health care provider and expenditure quintile, 1997

(percentage of people reporting ill last month)

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
All public providers	20.67	23.03	24.30	23.97	25.02	23.65	27.04	28.94	22.57
Hospital inpatient	1.93	1.98	2.95	2.40	3.45	2.63	3.53	3.22	2.46
Hospital outpatient	2.24	3.61	5.74	6.12	9.27	5.82	13.49	14.01	3.89
Commune clinic or district health center inpatient	1.05	1.00	2.04	1.72	0.86	1.36	0.39	0.22	1.62
Commune clinic or district health center outpatient	15.18	15.58	13.41	12.87	9.82	13.03	6.92	10.75	13.96
Other inpatient	0	0.11	0	0.13	0.81	0.25	0.60	0.43	0.19
Other outpatient	0.27	0.75	0.16	0.73	0.81	0.56	2.11	0.31	0.45
Private providers	22.76	30.64	32.95	35.34	42.17	33.88	39.85	32.21	33.55
Hospital inpatient	0.84	0.13	0.06	0.34	0.70	0.41	1.66	0.82	0.23
Hospital outpatient	1.94	2.05	2.12	3.65	3.83	2.85	6.33	1.61	2.69
Doctor, nurse, clinic inpatient	0.49	2.15	1.24	1.37	1.66	1.42	1.52	1.09	1.46
Doctor, nurse, clinic outpatient	14.33	20.38	22.39	24.81	30.44	23.4	26.63	24.8	22.88
Traditional healer	4.01	4.80	5.72	3.93	3.66	4.40	2.09	3.44	4.77
Other inpatient	0.20	0	0.97	0.43	0.61	0.48	0.51	0.08	0.54
Other outpatient	0.95	1.13	0.45	0.81	1.27	0.92	1.11	0.37	0.98
Self-medication	17.91	16.56	16.51	15.45	12.79	15.57	11.47	23.01	14.89
No treatment	38.66	29.77	26.25	25.24	20.02	26.90	21.64	15.84	29.01
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: NIS 1998.

Table A5.14 Percent of users who pay zero per public sector contact, 1997

	Consumption quintile					Nation-wide	Phnom Penh	Other urban areas	Rural areas
	1–poorest	2	3	4	5–richest				
Percent paying zero in fees									
All public providers	12.2	17.3	16.5	12.5	26.2	17.7	18.9	15.7	17.9
Hospital inpatient	3.5	0.0	1.4	0.0	21.2	7.5	6.7	7.7	7.6
Hospital outpatient	3.1	13.7	16.7	14.7	15.9	14.9	18.4	15.3	13.5
Commune clinic or health center inpatient	0.0	0.0	0.0	8.7	0.0	2.3	0.0	0.0	2.6
Commune clinic or health center outpatient	15.7	18.4	22.3	13.3	42.2	22.1	12.1	18.2	23.0
Other inpatient	.	.	.	.	.	.	.	.	.
Other outpatient	0.0	74.8	0.0	32.2	25.1	35.2	67.2	66.4	17.3
Percent paying zero for drugs									
All public providers	53.7	40.3	50.7	45.2	40.5	45.4	24.6	53.4	46.4
Hospital inpatient	45.2	27.7	27.8	21.3	38.8	31.8	3.5	40.4	34.2
Hospital outpatient	18.2	35.7	32.6	39.4	47.0	39.4	18.5	41.4	45.4
Commune clinic or health center inpatient	18.3	33.6	49.8	34.7	46.9	39.4	0.0	100.0	39.1
Commune clinic or health center outpatient	63.4	40.9	64.2	52.2	39.4	52.1	36.2	74.8	50.3
Other inpatient	.	.	.	.	.	.	.	.	.
Other outpatient	0.0	90.4	0.0	81.5	20.3	51.4	66.7	32.9	46.3

Source: NIS 1998.

Appendix B. Delayed Entry into School and Ministry of Education and Survey Data Differences

Delayed Entry

The wide discrepancies in net and gross enrollments in Cambodia are due to delayed entry into school. Officially children should begin at age 6, but they often start much later. Indeed, the mean age for starting school in the household survey sample is almost 8 years (table B3.1). Moreover, age at entry tends to vary across consumption quintiles, being higher for the poorest quintiles. The main problem with delayed enrollment in Cambodia, as in most developing countries, is that the opportunity cost of children's time typically increases with age, at least up to age 17–18 years. And delayed entry into school may be associated with lower student performance and higher grade repetition.[1]

There is a positive association between age at entry and grade repetition.[2] Students who start primary school at age 5 or 6 generally have the lowest rates of grade repetition (the exception is lower-secondary school repetition rate for those starting at age 9 and above; table B3.2). The relationship between age at entry and grade repetition, however, is only an association and does not necessarily reflect a causal relationship.[3]

There is an inverse relationship between age at entry and performance on examinations (table B3.3). Students who start primary school at age 5 or 6

Table B3.1 Age at entry into first grade, 1997
(years)

	As calculated[a]	*As reported*[b]
Consumption quintile		
1-poorest	8.0	7.8
2	7.9	7.8
3	7.8	7.7
4	7.3	7.5
5-richest	7.1	7.1
Area		
Cambodia	7.7	7.6
Phnom Penh	6.6	7.0
Other urban areas	7.4	7.3
Rural areas	7.8	7.7
Gender		
Males	7.7	6.7
Females	7.6	7.6

a. Calculated by taking the mean age of students currently enrolled in first grade who are not repeaters (n = 1,251).
b. As reported in household survey for same subsample of students.
Source: NIS 1998.

Table B3.2 Repetition rates of currently enrolled students by school level and by age at entry into grade one, 1997

	Age at entry into school			
	5–6 years	*7–8 years*	*9+ years*	*All students*
Primary	0.20	0.28	0.29	0.26
Lower-secondary	0.25	0.29	0.24	0.27
Upper-secondary	0.15	0.29	0.47	0.23
All levels	0.20	0.28	0.28	0.26

Source: NIS 1998.

Table B3.3 Average comprehensive scores of currently enrolled students by current grade level and by age at entry into grade one, Cambodia, 1997

	Age at entry into school			
	5–6 years	*7–8 years*	*9+ years*	*All students*
Primary	5.02	4.84	4.82	4.87
Lower-secondary	5.41	5.32	5.31	5.34
Upper-secondary	5.73	5.61	4.86	5.61
All levels	5.14	4.94	4.85	4.96

Source: NIS 1998.

Table B3.4 Gross and primary enrollment according to the 1997 survey and the Ministry of Education, Youth, and Sports, 1996–97

	1997 survey		*1996 survey*		*Ministry of Education*	
	Gross	*Net*	*Gross*	*Net*	*Gross*	*Net*
Primary	112.8	67.0	108.8	61.8	94.5	84.7
Lower-secondary	34.7	14.1	36.5	13.6	30.5	23.2
Upper-secondary	11.6	6.6	11.4	5.4	7.2	6.3

Source: Ministry data are from school records. Survey estimates are for the 1996/97 school year, based on household responses in June 1997.

generally have the highest comprehensive scores on examinations. Again, this is only an association, not necessarily a causal relationship.

Thus delayed entry into school appears to have a high cost in terms of students' subsequent performance in school, with those starting school late showing higher rates of grade repetition and poorer academic performance.

Comparison with Ministry of Education Data

Since 1996 the Ministry of Education, Youth, and Sports, with assistance from UNESCO, has developed an educational management information system to track schooling enrollments in Cambodia. The first reports—*Education Statistics 1997* and *Education Indicators 1997*—have already been published. Two household surveys—Cambodia Socioeconomic Survey—in 1996 and 1997 also estimated net and gross enrollment rates for three levels of schooling.

The two household surveys showed broadly similar enrollment rates. These, however, were at odds with the estimates made by the education ministry, especially for net enrollments. The ministry estimated net primary enrollment at 85 percent, compared with findings of only 67 percent in the household survey and 23 percent for lower secondary school, against 14 percent according to the household survey.[4]

It is unclear why net enrollment rates differ; gross enrollment rates are broadly similar (table B3.4). If the ministry's data are correct, the problem of overage enrollment (which the two surveys suggest is serious) is relatively minor.

Notes

1. Other problems include shorter time spans in which to recoup benefits of education investments and, for girls, an increased likelihood that early marriage (or pregnancy) will prevent their continuing school.

2. It is not possible to do a similar analysis of drop-out rates, as the household survey's findings on age at entry into school covered only students currently enrolled in school (and not for students who dropped out).

3. The relationship may, for example, reflect the likelihood that more intelligent children are enrolled in school at a younger age because they are perceived by their parents to be "ready" for school. Maybe offsetting this (and perhaps evident in the repetition rates for children starting at age 9 and above) is a natural tendency for teachers to consider a child's age in deciding whether to promote a student.

4. There is a difference in timing between the Cambodia Socioeconomic Survey (June 1996) and the Ministry of Education's data, which refers to the start of the school year 1996/97 (September 1996). To make the two data sets comparable, all enrollment rates (and data on age at entry) from the 1997 survey are based on the age of children in September 1996 (that is, all reported ages were reduced by 9 months).

Appendix C. Multivariate Analysis of Schooling Outcomes

The 1997 Cambodia Socioeconomic Survey, like many contemporary multiobjective household surveys, is designed to allow multivariate analysis of key variables. Such analysis can be extremely helpful in disentangling complex relationships between variables, such as those between school enrollments and such possible determinants as distance traveled to school, quality of schooling, household income, parents' schooling, age, and gender.[1]

Although two-way tables can show intriguing relationships, they can never answer the key question as to whether those relationships are valid when other factors are held constant. For example, there is a clear relationship between school enrollment and income in Cambodia. But is this due to other factors that are also highly correlated with income, distance to schools, pupil-teacher ratios, or mothers' education. The answer has obvious policy implications for efforts to increase schooling among the poor; this is exactly the kind of question multivariate analysis answers.[2]

Although the report focuses on current enrollment, other measures of schooling outcomes need to be considered:

- Whether the child is currently enrolled in school.
- Whether the child has ever been enrolled in school.
- The age at which the child began school.
- Whether the child has dropped out of school before completing grade 9.
- Whether the child has ever repeated a grade.
- Whether the child has attained literacy.
- The child's cognitive achievement (performance in the most recent grading period).
- The highest grade completed.

Some of these outcomes are qualitative (whether currently enrolled, ever enrolled, ever repeated a grade, dropped out, and whether literate).[3] These variables are represented as binary variables assigned a value of either one or zero and are modeled statistically using probit analysis. The predicted values obtained from this analysis may be interpreted as probabilities (for example, the probability that a given child is currently in school). The remaining outcomes (age at entry to school, cognitive achievement, highest grade completed), though not continuous variables, are modeled statistically as though they were, using multiple linear regression analysis.[4] The same basic behavioral model (that is, a set of right-hand side variables) is hypothesized to apply to all schooling outcomes; the models are estimated using data on children ages 6–24 from the 1997 household survey.[5] The right-hand side variables in the model include:

- Child's age (dummy variables referring to single-year ages).
- Child's gender.
- Residence (Phnom Penh, other urban area, rural area).
- Adults' education (average number of grades completed by male and female

household members ages 15 and older).[6]

- Household size and composition (number of children under age 15, number of adults ages 60 and older).
- Widowhood (whether a widow or widower is part of the household).
- Per capita household consumption (adjusted for regional price differences).
- Household's main source of income (whether self-employed in agriculture, including fisheries, livestock, and forestry; whether household-owned nonagricultural business).[7]
- Distance to nearest school (primary, lower-secondary, upper-secondary).
- Primary school fees.[8]
- Whether books are provided free in primary schools.
- Primary school quality indicators (highest grade taught, teacher-pupil ratio, percent of teachers trained, whether students have "enough" books).[9]
- Province of residence (dummy variables refer to 20 provinces).[10]

The same basic model was estimated for each of the schooling outcomes. Because primary school quality measures were available only in cases where the school was located in the village, however (about half the observations), the model was estimated both with these indicators included and excluded. Separate estimates were also done for girls, for rural children, and for children age 12 or older. The results of these additional analyses are mentioned below when they differ from those obtained with the full sample. The results are summarized briefly in this annex. (A more detailed technical report may be available in the future.) In interpreting the results it is important to keep in mind that each estimated relationship refers to the effect of the variable on a schooling outcome after the effects of all other variables have been removed (for example, the estimated effect of income, net of adult schooling, urban residence, and school characteristics).

Whether the Child Is Currently Enrolled

The probability that a given child is enrolled in school is significantly[11] related to the following variables:

- Child's age (increasing up to age 11 and then declining almost to zero by age 20).
- Child's gender (males are 18 percent more likely to be currently enrolled in school, after controlling for other factors),[12] Phnom Penh residence (about 9 percent more likely than rural residents and 11.5 percent more likely than residents of urban areas outside Phnom Penh).
- Adults' education (2.2 percent more likely for each additional average year of males' schooling, 2.8 percent more likely for each additional average year of females' schooling).[13]
- Household size and composition (positive, three percent higher for each adult household member and one percent higher for each child).
- Per capita consumption (25 percent more likely for a child with the same per capita consumption as the average for the richest quintile compared to a child from the poorest quintile).[14]
- Distance to the nearest upper-secondary school (a child living in a village 100 kilometers from the nearest upper-secondary school is 2.3 percent less likely to be enrolled).[15]
- Province of residence (evidence of significant unobserved factors at the province level).[16]

Variables not significantly related to the probability of enrollment include (surprisingly): distances to the nearest primary and lower-secondary schools, primary school fees, whether books are provided free to primary students, all primary school quality indicators,[17] widowhood and widowerhood, and whether the household's main source of income is self-employed farming or a household-owned non-agricultural business.[18]

Whether the Child Was Ever Enrolled

The probability that a child has ever been enrolled in school is significantly related to the following variables:

- Child's age (highest among children ages 11–14).[19]
- Child's gender (male children are 5.7 percent more likely to have enrolled in school).
- Parents' education (1.8 percent higher for each additional average year of males' schooling, 3 percent higher for each additional average year of females' schooling).[20]
- Per capita consumption (difference between richest and poorest quintiles implies an almost 9 percent higher probability of ever enrolling).[21]
- Household size and composition (2.2 percent higher for every adult ages 60 or more in the household).
- Distance to the nearest lower-secondary school (about 1.1 percent lower when the nearest lower secondary school is 50 kilometers away from the village).[22]

Statistically insignificant variables include: primary school fees, whether books are free to primary students, distances to the nearest primary and upper-secondary schools (although the estimated effect of both distances is negative and the latter is marginally significant, p=0.13), all primary school quality indicators (whether considered individually or as a group), region, widow or widowers in the household, and whether the main source of household income is self-employed agriculture or a household-owned nonagricultural business.

Again, these results point to the importance of the demand side (notably income and adults' education) and suggest that supply-side interventions would not be effective in raising enrollment rates. The results also suggest that much of the demand-side effect of income and adults' education operates merely to delay entry into school, not prevent it completely. This suggests that focusing on differentials in current enrollment alone as an education outcome indicator may give a misleading impression. The results reported for whether a child was ever enrolled are also interesting because they seem to suggest a positive role of older household members (also encountered with some other outcomes, as reported below).

Age at Entry

Variables estimated to be significantly related to the age at which the child entered school include:

- Percent of primary school teachers with training (age at entry is 0.07 years lower for each 10 percent increase in the percent of teachers trained).
- Child's age (positive).[23]
- Per capita consumption (negative, a child with per capita consumption equal to the average for the richest quintile is estimated to enter at an age about 0.53 years younger than a child from the poorest quintile).
- Adult education (negative, the estimated effects of an additional average year of schooling among males and females is approximately equal, that is, age at entry is about 0.06 years younger for each additional year of adult education.[24]
- Region (children from Phnom Penh enter school on average 0.27 years younger than rural children; those from other urban areas enter about 0.34 years younger than rural children).
- Whether the household's main source of income is self-employed agriculture (children from such households enter school on average 0.28 years older).
- Province of residence.

Insignificant variables include: distances to the nearest primary, lower-secondary, and upper-secondary schools,

primary school fees, whether books are provided free to primary school students; students' gender, household size and composition, whether the household's main source of income is from a household-owned nonagricultural business, and widow or widower in the household.

These results again suggest that school-related variables have only a very small effect on schooling outcomes. Children from richer and urban households with more educated male and female adults enter school at younger ages; children from farming households tend to enter school about one-half year later than other children (other factors equal).

Whether the Child Has Dropped Out

This variable refers to whether or not the child has dropped out of school before completing grade 9. It is significantly related to the following variables:

- Child's age (dropout rates are low until age 11, when they begin to increase by about 10 percent per year until age 16–17, beyond which they increase only slightly).
- Child's gender (males are 14 percent less likely to drop out before completing grade 9, other factors equal).
- Per capita consumption (children with per capita consumption equal to the average for the richest quintile are 13 percent less likely to drop out than children from the poorest quintile).
- Adult education (children are 1.3 percent less likely to drop out for each additional average year of male education and 2.1 percent less likely to drop out for each additional average year of female education).[25]
- Region (children in Phnom Penh are 8.3 percent less likely to drop out than rural children and 9.4 percent less likely to drop out than children from urban areas outside Phnom Penh).
- Household size and composition (each additional adult is associated with a decrease of 2.8 percent in the probability of dropping out; each additional child under age 15 is associated with an increase of 1.8 percent).[26]
- Whether the household's main source of income is from self-employed agriculture (associated with a 3.4 percent higher probability of dropping out).
- Province of residence.

Variables insignificantly related to the probability of dropping out include distances to the nearest primary, lower-secondary, and upper-secondary schools, primary school fees, whether books are provided free to primary school students, all school-quality indicators, whether the household's main source of income is from a household-owned nonagricultural business, and widow or widower in the household.[27]

Again, these results are consistent with the conclusion that it is mainly individual and household characteristics that are significantly related to important schooling outcomes in Cambodia. The estimated effects of these socioeconomic characteristics are particularly strong in the case of this outcome, if one is willing to assume the relationships are causal.

Whether the Child Has Repeated a Grade

The model performs relatively poorly in explaining variations in the probability that a child has repeated a grade (the proportion of total variation explained by the model is only 0.06, compared to 0.41 for current enrollment). The repetition rate, however, is an ambiguous indicator at best. Although high repeater rates may signify poor quality (of schools, students, or both), it may also signify the strict maintenance of minimal quality standards. In addition, there is a tendency in many poor countries not to permit female students to repeat a grade (pre-

ferring instead to take them out of school and put them to work in the home or in a family business). Variables significantly related to the probability of repeating a grade include:

- Child's age (positive, but mainly reflecting "risk of exposure").
- Child's gender (males are 4.3 percent more likely to have repeated a grade).
- Adult male education (about 0.7 percent lower probability of repeating for each additional average year of schooling among the household's adult males).[28]
- Widowhood (about 3.4 percent less probable if a widow is present in the houshold; the probability is 4.8 percent lower if the sample is restricted to female students).
- Highest grade taught in a primary school located in the village (negative, 3 percent lower for each additional grade taught).
- Province of residence.

In addition, when the sample is restricted to girls, the following variables become significant: household size and composition (the probability of repeating increases by 1.9 percent for each additional household member but decreases by 2.6 percent for each additional child under age 15) and per capita consumption (negative). The result for household size and composition is particularly interesting, as it is consistent with the interpretation that parents are more likely to pull girls out of school (rather than let them repeat a grade) if there are children to care for and if there are fewer adults in the household to act as alternative caretakers.[29]

Variables insignificantly related to the probability of repeating a grade include: distances to nearest primary, lower-secondary, and upper-secondary schools, primary school fees, whether books are provided free to primary students, quality indicators (other than the highest grade taught in primary school), region (there is no difference in repetition rates between students residing in Phnom Penh, other urban areas, and rural areas when other factors are held constant), education of adult female household members (even when the sample is limited to girls), household size and composition (except when the sample is restricted to girls, as noted above), and whether the household's main source of income is from self-employed agriculture or from a household-owned nonagricultural business.

It is difficult to draw many firm conclusions from the estimation results for the probability of repeating a grade. For example, although it is clear that repeater rates are significantly higher among males, it is unclear whether this represents a preference to invest in male education or relatively poor performance of male students (although the absence of significant cognitive achievement differentials by gender, as discussed below, suggests the former as the most likely interpretation). The other significant variables, with the exception of widowhood, suggest that more socioeconomically advantaged children are less likely to repeat a grade. Again, the absence of significant effects for most of the school-related variables (distance, fees, most quality indicators) suggests once more the need for demand-side interventions.

Literacy

This is an important schooling outcome, although the 1997 survey measure is based on household assessments rather than objective measurement (for example, the administration of a literacy test to each child).[30] For the analysis of literacy the sample is restricted to children under 15 years of age (although estimates were also obtained using the full sample for comparison purposes), and the sample includes children who have never attended school.[31] The results indicate that the probability the child is literate is significantly related to the following variables:

- Child's age (positive, with the probability rising about 10 percent per year up to age 9, and at a declining rate thereafter).
- Region (surprisingly, and possibly reflecting reporting bias, child literacy in urban areas other than Phnom Penh is about 20 percent higher than in Phnom Penh and about 15 percent higher than in rural areas).
- Per capita consumption (children with the same per capita consumption as the average for the richest quintile are 22 percent more likely to be literate than children from the poorest quintile).
- Education of adult males and females (about 1.7 percent higher for each additional average year of schooling among adult males and 2.1 percent higher for each additional average year of schooling among adult females).[32]
- Household size and composition (about 2.7 percent lower for each additional child under age 15 in the household).
- Highest grade offered in the primary school located in the village (positive, about 3.8 percent higher for each additional grade offered).
- Province of residence.

Insignificant variables include: distances to the nearest primary, lower-secondary, and upper-secondary schools, primary school fees, whether books are provided free to primary school students, school quality indicators (other than the highest grade offered), child's gender, widowhood (male and female), and whether the household's main source of income is from self-employed agriculture or from a household-owned nonagricultural business.[33]

The results here again point to the dominant role played by socioeconomic characteristics of the household (especially per capita consumption and adult schooling levels) and the insignificant role apparently played by most school-related characteristics (notably distance and quality indicators, apart from the highest grade offered).

Cognitive Achievement

This schooling outcome is the school's performance rating of the child during the most recent grading period, as reported by the household. In most cases the information is only supplied for children currently in school. The rating scale is from 1 (very poor) to 6 (excellent), with a sample mean of 3.02 (average). The estimation results were not very satisfactory (only about 7 percent of the variation in performance ratings was explained by the model). They indicate that school performance is significantly related to only the following variables:

- Pupil-teacher ratio (about 8 percent lower for a child whose primary school has a pupil-teacher ratio of 100, compared to one with a pupil-teacher ratio of 50).
- Per capita consumption (about 10 percent higher for a child with per capita consumption equal to the average for the richest quintile as compared to the poorest quintile).
- Education of adult household members (0.8 percent higher for each additional average year of schooling among adult males and 0.5 percent higher for each additional average year of schooling among adult females).[34]
- Widowhood (about 1.7 percent higher for children from households with a widow present).[35]
- Province of residence.

The performance rating is insignificantly related to the following variables: distance to the nearest schools, primary school fees, whether books are provided free to primary school students, most primary school quality indicators (the exception is the pupil-teacher ratio, as mentioned above), child's age, child's

gender, region, household size and composition, and whether the household's main source of income is self-employed agriculture or a household-owned nonagricultural business.[36]

The results for this measure of cognitive achievement provide additional evidence of the strong association between individual and household characteristics. However, one school-related variable (the pupil-teacher ratio) is also strongly related to cognitive achievement.

Highest Grade Completed

This particular outcome is probably the most important schooling outcome, since it is a measure of total schooling investment in the child and since it reflects most of the other schooling outcomes (such as enrollment, age at entry, drop-out and repetition rates, and cognitive achievement). The model also performs rather well, explaining about 59 percent of the total variation in the number of grades completed. Many variables are significantly related to the highest grade completed, including:

- Distances to the nearest lower-secondary and upper-secondary schools (number of grades completed decreases by 0.09 if the nearest lower-secondary school is 50 kilometers from the child's village of residence; it decreases by 0.06 if the nearest upper-secondary school is 100 kilometers from the child's village of residence).
- Highest grade offered in primary school (an increase of 0.08 grades completed for each additional grade offered).
- Primary school pupil-teacher ratio (however, an increase from 50 to 100 is associated with a decrease of 0.35 grades completed).
- Child's age (increases up to about age 16, after which it increases only slightly).[37]
- Child's gender (males complete about 0.55 more grades than females, other factors equal).
- Per capita consumption (children with per capita consumption equal to the average of the richest quintile complete about 0.75 more grades compared to those in the poorest quintile).
- Adult education (children have an additional 0.23 and 0.26 grades completed for each additional average year of schooling completed by adult males and females respectively).[38]
- Region (children in Phnom Penh complete about 0.36 more grades than rural children and about 0.26 grades than children in other urban areas).
- Household size and composition (number of grades completed increases by about 0.06 for each additional household member; however, it decreases by about 3.6 percent for each additional household member under age 15 and increases by an additional 0.29 for each household member age 60 and older).
- Province of residence.

Variables insignificantly related to the number of grades completed include: distance to the nearest primary school, primary school fees, whether books are provided free to primary students, percent of primary school teachers trained, whether the primary school in the child's village has "enough" books, widow or widower in the household, and whether the household's main source of income is self-employed agriculture or a household-owned nonagricultural business.[39]

The results for this important schooling outcome are unambiguous. It is mainly individual and household characteristics (the demand side) that determine the number of grades of schooling completed by children in Cambodia. Although several school-related variables (the supply side) are significantly related to the number of grades completed, the estimated effects are small when compared to those of the individual and household charac-

teristics. When the sample is limited to children age 12 and older (so that the dominant effect of age is reduced while the effects of other schooling outcomes, such as drop-out and repeater rates and late entry, have more chance to come into play), the estimated effects of the school-related variables are largely unchanged, whereas the estimated effects of the household and individual characteristics increase in magnitude by 50–100 percent. These results provide unequivocal evidence suggesting the need for demand-side interventions to increase the enrollment of poor children.

Notes

1. Multivariate techniques do this by examining the correlation between a dependent variable (for example, a school outcome such as current enrollment) and an explanatory variable (say, household income) by using only that part of the variation in the explanatory variable that is independent of the other explanatory variables.

2. Unfortunately, the equally important question as to whether the relationship is causal, or merely due to the operation of some unknown factor, is more difficult to answer with multivariate analysis. The best way to do so is through a randomized experiment (that is, using the same methodology used to test the effectiveness of a new drug). Randomized experiments have often been used to answer important policy questions, such as in the health insurance experiment conducted by RAND Corporation in the United States. It is also possible sometimes to use special types of data (such as longitudinal data) to obtain better estimates of causal structures, but the answers are seldom conclusive.

3. Some outcomes are clearly interrelated. For example, the probability of current enrollment is equal to the product of the probability of ever being enrolled and one minus the probability of having dropped out. Similarly, highest grade completed for a child of a given age is a function of age at entry, whether ever repeated, and whether subsequently dropped out. In addition, some outcomes (age at entry, whether ever repeated or dropped out, highest grade completed, and cognitive achievement) are conditional on having entered school. It is useful (but not easy) to keep these relationships in mind while reviewing the findings reported in this annex.

4. The implicit assumption is that the conditional distribution of these outcomes (the left-hand-side variable in the regression model) is approximately normally distributed. Alternatively, such discrete outcomes can be modeled as Poisson-distributed variables (a distribution closely related to the binomial distribution), but the results are usually quite similar when the dependent variables have an approximately symmetric distribution, as in this case.

5. In all cases estimated standard errors are Huber-adjusted to reflect the clustered sampling in the 1997 household survey.

6. In most cases, these education variables refer to mothers and fathers.

7. In addition, preliminary analysis included average wage rates reported for children in the Cambodia Socioeconomic Survey village questionnaire for several agricultural activities (such as paddy planting and transplanting, harvesting, crop tending, and unskilled construction work). These variables were consistently found to be statistically insignificant, however, without affecting the other estimates, and were subsequently dropped from further analysis.

8. In about half the cases (that is, when a primary school was located in the village), this fee was reported by village leaders; in the remaining cases, the median primary school fee reported by parents was used.

9. Quality indicators were collected only for schools located in the village and are therefore available for only about half of the sample. Quality measures for secondary schools were only available for about 5 percent of the sample and were therefore not used in the model.

10. The province dummy variables are included in an effort to control for some "fixed effects" (unobserved factors) that may be correlated with some of the other specified right-hand side variables and that therefore would bias estimated coefficients.

Unfortunately, the analysis is unable to control for such factors at the village (cluster), household or individual levels (as that would require longitudinal data).

11. The technical term "significantly" means that the nonzero estimated effect of the variable (whether positive or negative) is unlikely (that is, less than once in twenty samples of the same size) to have been observed by chance. In other words, significant variables are factors that are very likely to have an effect on a particular schooling outcome. Because of the large sample sizes (typically 5–10,000 for most of the regressions), a variable that is statistically insignificant is unlikely to have much effect on any schooling outcome.

12. The term "after controlling for other factors" can be equally said (but will not) of all the results in this annex.

13. Interestingly, but perhaps not surprising, in a patriarchal society such as Cambodia's, when the sample is limited to girls, the estimated effect of adult males's schooling (although still positive and significant) is only about a fourth that of adult females'.

14. The effect of per capita consumption is lower for girls (about 20 percent compared to 25 percent for boys and girls together). This same tendency is present with most of the other schooling outcomes.

15. The effect of distance is a bit higher for girls, about 3 percent, against 2.3 for both the two sexes combined.

16. The province dummy variables are jointly significant in all cases, suggesting the presence of "fixed effects" at least at the province level.

17. These primary school quality indicators are statistically insignificant, both individually and as a group.

18. Whether the household derives most of its income from agriculture is insignificant (though the estimated effect is negative) when the sample is limited to rural children. Interestingly, in this case the household's main source of income is positively and significantly related to the probability of current enrollment among rural children.

19. Two factors explain the peaking of ever enrollment at ages 11–14—the fact that few children enter school at later ages and a cohort effect due to rising enrollment rates during the recent past.

20. Again, when the sample is limited to girls, the effect of adult females' education becomes more than 5 times stronger than that of adult males (although both are positive and significantly related to the probability that the child was ever enrolled).

21. Surprisingly, both the "income effect" and adults' schooling effects are smaller in magnitude when the sample is limited to children 12 or older, suggesting that much of the effect of these demand-side factors operates simply to delay entry into school, rather than preventing it completely. Such an interpretation is also consistent with the finding that these same variables are more closely related to current enrollment than whether the child was ever enrolled.

22. The negative estimated effect of this distance variable is about 50 percent stronger for girls.

23. Since the sample is limited to children in school, younger children are more likely to have entered at a younger age (however, this relationship has no policy significance).

24. Again, when the sample is limited to girls, however, the estimated effect of adult female schooling becomes about 50 percent stronger than that of males.

25. When the sample is limited to girls, adult male education becomes insignificant while the effect of adult female education increases from 2.1 percent per additional average year to 5.2 percent.

26. When the sample is limited to girls, these effects become much stronger; that is, each additional adult household member is associated with an decrease of 4 percent in the probability of a girl dropping out, while each additional child is associated with an increase of 3.3 percent.

27. However, when the sample is limited to girls, the presence of a male widow is significantly associated with an increase of 9.4 percent in the probability of a girl dropping out.

28. The effect of males' education remains significant (and that of females' insignificant) even when the sample is limited to girls.

29. This effect is even stronger when the sample is restricted to girls age 12 and older.

30. In the 1997 household survey there was typically only one respondent per household (although other household members were often present during the interview), so the literacy measure is not even "self-reported," strictly speaking.

31. The function analyzed is therefore a "reduced form," with some of the effects operating through raising the likelihood that a child will receive schooling (assuming that schooling promotes literacy).

32. When the sample is limited to girls, the effect of adult female education becomes almost twice as large as that of adult male education (that is, about 2.4 percent versus 1.3 percent), although both variables remain significant.

33. The estimated effect of all distance variables is negative, and when the sample is restricted to girls, the effect of distance to the nearest lower secondary school becomes significant (surprisingly, since literacy is a skill taught in primary school).

34. Again, when the sample is limited to girls, however, the estimated effect of adult female education becomes more than three times that of male adult education (about 1.1 percent higher for each additional average year of adult female education, compared to about 0.3 percent for each additional year of adult male education).

35. When the sample is limited to girls, however, the estimated effect of widowhood increases to 3.8 percent. This suggests that widowhood provides strong motivation for girls to obtain education.

36. However, males have about 2 percent lower performance when the sample is limited to rural children. Furthermore, there is probably a selectivity factor operating here, since the relatively few girls who remain in school are probably allowed to do so because they have done relatively well in school.

37. The lack of sensitivity of grades completed to age 16 reflects both low enrollments at the upper-secondary level and the fact that all past enrollment rates were even lower than they are presently (since those presently age 16 and above entered primary school, if they entered at all, about 10 years ago, there is a negative cohort effect).

38. Although the estimated effects of both male and female adult education are roughly equal for all children, when the sample is limited to girls the estimated effect of adult female education becomes seven times larger than that of males, (that is, 0.50 additional grades completed by girls for each additional average year of adult female schooling, compared to a 0.07 increase for each additional year of adult male schooling).

39. When the sample is limited to girls, however, both widowhood and widowerhood becomes almost significant, with the estimated effect of widowhood being positive (0.13 grade completed) and that of widowerhood negative (-0.26 grade completed). It is possible that the different sign of the effect of these two variables, as well as their significance in the sample limited to girls, reflects the strong lesson that widowhood provides to girls—that women have to be prepared to manage on their own, thereby enhancing the value of schooling to such girls and their widowed mothers.

The estimated effects of both main sources of income variables are consistently positive; when the sample is limited to rural children, the estimated effect of the household having a household-owned nonagricultural business as its main source of income becomes significantly positive (0.55 more grades completed for children from such households).

Appendix D. Multivariate Analysis of School Enrollment

The 1997 Cambodia Socioeconomic Survey, like many contemporary multiobjective household surveys, is designed to allow multivariate analysis of key variables. Such analysis can be extremely helpful in disentangling complex relationships between variables, such as those between school enrollments and such possible determinants as distance traveled to school, quality of schooling, household income, parents' schooling, age, and gender.

Although two-way tables can show intriguing relationships, they can never answer the key question as to whether those relationships are valid when other factors are held constant. For example, there is a clear relationship between school enrollment and income in Cambodia. But is this due to other factors that are also highly correlated with income, distance to schools, pupil-teacher ratios, or mothers' education. The answer has obvious policy implications for efforts to increase schooling among the poor; this is exactly the kind of question multivariate analysis answers.

Because current enrollment is a dichotomous variable, the equation explaining enrollment is estimated using maximum likelihood probit analysis. The predicted values obtained from the probit analyses may be interpreted as the probability that a given child is currently in school. The models are estimated using data on children ages 6–11, 12–14 and 15–17—ages that roughly correspond to primary, lower-secondary, and upper-secondary levels of schooling. The right-hand side variables in the model include:

- Child's age (dummy variables referring to single-year ages).
- Child's gender.
- Residence (Phnom Penh, other urban area, rural area).
- Adults' education (average number of grades completed by male and female household members age 15 and older).[1]
- Household size.
- Per capita household consumption (adjusted for regional price differences).
- Distance (in kilometers) to nearest school (primary, lower-secondary, upper-secondary) in the village of residence.
- Primary school fees.[2]
- Primary school quality indicators (number of teachers per school and proportion of teachers who are trained).[3]

Although the same basic model is estimated for each of the three age groups (6–11, 12–14, and 15–17), the primary school quality measures were included only in the equation for the 6–11 years age group, as these indicators apply only to primary schools. In addition, since these indicators are available only in cases where a primary school was located in the village (about half the observations), the enrollment equation for children ages 6–11 was estimated both with these indicators included and excluded. In interpreting the results, it is important to keep in mind that each estimated relationship refers to the

effect of the variable on schooling enrollment, while controlling for the effects of all other variables.

Table D.1 shows the results for children ages 6–11, while table D.2 summarizes the results for the older age groups. Two separate equations are shown in table D.1, as the inclusion of the primary school quality measures substantially reduces the sample size. The main findings of the analysis are:

- As would be expected, the probability of school enrollment is significantly related to age. The probability increases steadily with age up to 11 years, but then declines continuously from ages 13 to 17 years. For instance, children age 11 have a 35 percent higher probability of being enrolled in school relative to children age 6. However, children age 14 are 23 percent less likely than those age 12 to attend school, while children age 17 are 34 percent less likely than those age 15 to attend school.
- There are strong gender effects on school enrollment probabilities. While male children are more likely to be enrolled in school relative to female children at virtually all ages, the male-female disparity is relatively small at younger ages but is large at older ages. For instance, during the primary-school years (ages 6–11) males are only 3–4 percent more likely than females to be enrolled in school. However, this difference increases to 14 percent among children ages 12–14 and to 25 percent among children ages 15–17.
- A household's standard of living, as proxied by household consumption spending per capita, has a strong positive effect on school enrollment. School enrollment is more income-elastic for older children than for younger ones. For example, the elasticity of school enrollment with respect to per capita spending is 0.10 for children ages 12–14 but 0.18 for children ages 15–17. Interestingly, for the 6–11 age group the association between per capita spending and school enrollment is reduced substantially when primary school quality

Table D.1 Maximum likelihood probit equations for the probability of children ages 6–11 being currently enrolled in school, 1997

	Equation 1			*Equation 2*		
Independent variable	*Coefficient*	*z-ratio*	*Elasticity*	*Coefficient*	*z-ratio*	*Elasticity*
Whether age is 7 years?	**0.1729**	6.11	**0.039**	**0.1528**	7.81	**0.034**
8 years?	**0.2301**	8.54	**0.048**	**0.2220**	11.96	**0.046**
9 years?	**0.3282**	13.54	**0.089**	**0.3002**	17.77	**0.078**
10 years?	**0.3134**	12.30	**0.056**	**0.3027**	17.28	**0.056**
11 years?	**0.3541**	14.67	**0.093**	**0.3478**	20.99	**0.088**
Whether male?	**0.0380**	1.83	**0.026**	**0.0307**	2.16	**0.021**
Whether resident in Phnom Penh?	–0.0117	–0.19	–0.001	**0.1009**	3.66	**0.013**
Whether resident in other urban?	0.0145	0.43	0.003	0.0132	0.56	0.002
Log of real per capita consumption expenditure	**0.0500**	2.32	**0.069**	**0.0863**	5.74	**0.119**
Household size	–0.0055	–0.90	–0.051	–0.0007	–0.18	–0.007
Average grades completed by male adults in household	**0.0172**	4.29	**0.104**	**0.0169**	6.32	**0.104**
Average grades completed by female adults in household	**0.0109**	2.67	**0.044**	**0.0188**	6.34	**0.076**
Distance to nearest primary school (kms.)	**0.0105**	2.74	**0.012**	**–0.0025**	–3.75	**–0.022**
Median primary school fee in village (riels)	0.0000	–0.62	–0.015	0	0.27	
Number of teachers in village primary school	**0.0051**	4.72	**0.091**			
Proportion of trained teachers in village primary school	**0.1426**	3.05	**0.176**			
Predicted value of dependent variable	0.721			0.727		
Number of observations	2,171			4,510		
Chi-square statistic	493.8			1015.5		
Log-likelihood ratio	–1,105			–2,285		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.
Source: NIS 1998.

Table D.2 Maximum likelihood probit equations for the probability of children ages 12–14 and 15–17 being currently enrolled in school, 1997

	Ages 12–14 years			Ages 15–17 years		
Independent variable	*Coefficient*	*z-ratio*	*Elasticity*	*Coefficient*	*z-ratio*	*Elasticity*
Whether age is 13 years?	**–0.0838**	–3.52	**–0.031**			
14 years?	**–0.2342**	–10.20	**–0.102**			
16 years?				**–0.1685**	–6.24	**–0.150**
17 years?				**–0.3378**	–12.51	**–0.295**
Whether male?	**0.1386**	8.05	**0.090**	**0.2546**	10.86	**0.342**
Whether resident in Phnom Penh?	**–0.0761**	–2.14	**–0.010**	**0.1728**	3.98	**0.050**
Whether resident in other urban areas?	–0.0346	–1.13	–0.004	–0.0337	–0.84	–0.009
Log of real per capita consumption expenditure	**0.0864**	4.59	**0.104**	**0.0671**	2.66	**0.176**
Household size	**0.0087**	1.79	**0.070**	**0.0198**	3.18	**0.333**
Average grades completed by male adults in household	**0.0163**	4.79	**0.090**	**0.0301**	6.68	**0.390**
Average grades completed by female adults in household	**0.0312**	7.00	**0.109**	**0.0142**	3.09	**0.120**
Distance to nearest lower- and upper-secondary school (kms.)[a]	**–0.0004**	–2.53	**–0.021**	–0.0002	–1.48	–0.044
Predicted value of dependent variable	0.829			0.381		
Number of observations	2151			2008		
Chi-squared statistic	366.31			489.85		
Log likelihood ratio	–945.6			–11.07		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.

a. Distance to nearest lower-secondary school is used for the age group 12–14 years, while distance to the nearest upper-secondary school is used for the age group 15–17 years.

Source: NIS 1998.

indicators are introduced into the equation. This suggests that part of the positive correlation between per capita spending and school enrollment observed in cross-tabulations is due to a positive association between school quality and per capita expenditure (that is, better-off households live in communities with higher-quality schools). Indeed, since the equations for children ages 12–14 and 15–17 do not include school quality indicators, it is possible that the higher estimated income effects on enrollment for these age groups simply reflect an unobserved school quality effect.

- The education of adults in a household is among the most significant factors affecting children's school enrollment. At ages 12–14 a year of female adult education has larger effects on child enrollment probabilities than a year of male adult schooling. However, at older ages (15–17) the pattern is reversed. For instance, a year of adult female schooling in the household increases the probability of a child age 12–14 being enrolled in school by 3.1 percent, while a year of male adult schooling increases the probability by only 1.6 percent. However, for children ages 15–17, the probabilities are reversed, with the marginal effect of a year of adult female schooling being 1.4 percent and that of adult male schooling 3 percent.
- Household size is not a significant determinant of the probability of school enrollment for children ages 6–11, but it has a surprising *positive* association with the probability of enrollment for children ages 12–14 and 15–17. This positive effect is large in magnitude; the elasticity of school enrollment with respect to family size is 0.33 for children ages 15–17. This may reflect the fact that older children, especially girls, are often constrained from attending school because they are responsible for household chores, including the care of younger siblings. In larger households, there are likely to be other adult members who can take care of younger children, relieving secondary-school-age children of these responsibilities.

- Distance to school has the expected negative effects on school enrollment, although the numerical magnitude of the effects is quite small. For instance, an increase of one kilometer in the distance to the nearest primary school is associated with a decline of only 0.2 percent in enrollment for children ages 6–11. The effects are even smaller for older children.
- The results in table D.1 indicate no significant effect of primary school fees on the enrollment of children ages 6–11. However, it is unlikely that these results indicate the true price responsiveness of schooling demand because of the conceptual difficulty of calculating the "price" of schooling. The amount actually paid by parents for their children's schooling includes both the true price of schooling and the quality of schooling chosen by parents. The primary school fees reported by village leaders were used as the relevant price variables for this reason. For villages where no such fees were reported, the median fee reported by parents was used. Thus the primary school fee variable used in this analysis varies across villages, but not across households. There were too few cases to calculate meaningful village-specific fees for lower- and upper-secondary school.
- The final set of variables included in the enrollment equation for children ages 6–11 refers to school quality. The quality variables are statistically significant and suggest that children ages 6–11 are much more likely to be enrolled when village schools have more teachers and a larger proportion of trained teachers. The estimated elasticity of school enrollment for children ages 6–11 is 0.09 with respect to the number of teachers per primary school and 0.18 with respect to the proportion of trained teachers in primary schools.

Summarizing these results, it appears that individual traits (such as age and gender) and household characteristics (including adults' education, household size, and per capita consumption expenditure) have strong effects on current school enrollment in Cambodia. In addition, the limited evidence considered suggests that school quality, as represented by the availability of teachers, especially trained teachers, is important in determining primary school enrollment rates. Measures of school access and school fees appear not to be significant (either statistically or numerically) in explaining enrollment. Taken at face value, the results suggest that effective policies to increase school enrollment among the poor need to focus on demand-side interventions (for example, scholarships, loans, alternative arrangements for the care of younger siblings, and so on) and interventions that improve the quality of schooling (notably, trained teachers).[4] Simply providing more schools and improving geographical access to schools will have limited effects on enrollment.

Notes

1. In most cases these education variables refer to mothers and fathers.

2. In about half the cases (that is, when a primary school was located in the village) this fee was reported by village leaders; in the remaining cases the median primary school fee reported by parents was used.

3. Quality indicators were collected only for schools located in the village and are therefore available for only about half of the sample. Quality measures for secondary schools were only available for about 5 percent of the sample and were therefore not used in the model.

4. It is possible that the insignificance of school fees in the enrollment regressions may simply reflect substantial measurement errors, since the school fee data were not collected directly from schools. Given these possibilities, it is wise not to consider the results reported in this annex as definitive but rather to regard them as indicative.

Appendix E. Health Outcomes

The Cambodia Socioeconomic Survey of June 1997 provides data on two kinds of health outcome—morbidity and mortality. Differences across economic groups are pronounced.

Morbidity Patterns

The proportion of respondents reporting an illness in the four weeks before the survey, at 15 percent of the population, is comparable to other countries (table E.1). If annualized, it suggests self-reported illness of about 1.8 episodes per person each year.[1]

Not surprisingly, there is a general positive association between reported illness and per capita spending, reflecting a greater propensity among higher expenditure quintiles to report ill-health. This is common and does not imply that the rich are more prone to illnesses than the poor.[2] By age and gender, illness episodes are concentrated among children up to 5 years old and people 46 years or older (table E.2). Of all people age 61 years or older, almost a third reported illness in the four-week reference period. With the exception of children up to 5 years old, males have higher reported rates of illness incidence than females in all age groups. Again, it is not clear whether the higher reported rate for males reflects inherently greater risk of morbidity or simply a greater propensity to report illnesses. The highest reported morbidity is among people 61 years and older.

Table E.1 Persons reporting ill in previous month by consumption quintile and area, 1997

	Percent
Consumption quintile	
1-poorest	10.22
2	11.86
3	14.88
4	15.76
5-richest	16.78
Nationwide	13.90
Phnom Penh	10.55
Other urban areas	14.57
Rural	14.23

Source: NIS 1998.

Table E.2 Percent of individuals reporting ill in the previous month by age group and gender, 1997

	Females	*Males*	*All*
0–5	19.88	18.59	19.25
6–15	7.46	8.92	8.18
16–25	7.11	8.16	7.67
26–45	13.63	15.77	14.80
46–60	21.80	23.25	22.64
61 and over	30.51	31.56	31.11
All ages	13.06	14.66	13.90

Source: NIS 1998.

Mortality Patterns

For all women ages 15–49 years, the 1997 survey obtained information on the number of children born to them, and how many are still alive. Since deaths were not limited to infancy or under the age of 5, it is not possible to construct an infant or under-5 mortality measure with the data.[3] A combined measure of child and young adult mortality can be constructed, however, and by restricting the sample to women ages 15–35 years, a mortality mea-

sure that is heavily weighted toward children can be obtained (table E.3).

Table D.3 shows child mortality for women ages 15–49 years, as well as for those ages 15–35 years. The estimated mortality rate is 16 percent or 160 child deaths per 1,000 live births. This is not too different from the under-5 mortality rate of 181 per 1,000 live births estimated for the whole country (Cambodia Ministry of Health 1997).[4] The data in table D.3 do not reveal any systematic pattern of mortality across consumption quintiles. If anything, the poorest quintile is seen to have the lowest mortality of any group. As in the case of the morbidity data, it is likely that the results in table D.3 reflect reporting biases and undercounting of child deaths among poorer groups.

Access to Water and Sanitation

Access to potable water and adequate sanitation are likely to be important determinants of health outcomes, especially in a country such as Cambodia that has a disease profile dominated by water- and food-borne infections. The data shown in table E.4 show that almost three quarters of Cambodians does not have access to toilet facilities. Most of these are in rural areas; 85 percent of the population in Phnom Penh and 44 percent in other urban centers have access to toilet facilities. There is also a large variation in access across consumption quintiles. In the poorest quintile, 93 percent do not have toilet facilities, in the richest, it is 49 percent.

At 2 km, average distance to the nearest potable water source is also rather long; and there is a systematic pattern, with the poorest traveling farther to collect water (2.7 km) than the better-off (1.7 km).

Thus, as with health services, physical access to water and sanitation facilities is more limited for the poor than for wealthier Cambodians. This suggests that the true (as opposed to self-reported) prevalence of water-borne diseases must be higher among the poor than the rich.

Table E.3 Mortality of children, 1997

	Percent of children born who died to	
	Mothers ages 15–49 years	*Mothers ages 15–35 years*
Consumption quintile		
1-poorest	11.87	5.80
2	17.52	13.00
3	15.78	10.45
4	17.23	12.80
5-richest	13.67	9.80
Nationwide	15.34	10.77
Phnom Penh	10.66	5.52
Other urban areas	14.82	10.58
Rural	15.89	11.28

Source: Cambodia Ministry of Health 1997.

Table E.4 Access to drinking water and sanitation by consumption quintile, 1997

	Percent with no toilet facility	*Distance to nearest drinking-water source*
Consumption quintiles		
1-poorest	91.28	2.66
2	85.14	1.94
3	81.03	1.87
4	70.82	1.56
5-richest	52.05	1.62
Nationwide	76.07	1.93
Phnom Penh	14.48	1.15
Other urban areas	56.42	1.60
Rural	86.43	2.06

Source: NIS 1998.

Notes

1. For example, Berman, Ormond, and Gani (1987) report, on the basis of various sample surveys, an annual prevalence rate of 2.5 illness episodes per person each year in Indonesia.

2. See Chernichovsky and Meesook (1986) and Deolalikar (1997) for Indonesia and Deolalikar and Vashishtha (1992) for India.

3. In any case, the sample size of the survey is too small to yield a precise estimate of infant or child mortality.

4. Of course, the mortality measure derived here will include deaths of children up to age 34 years. Since mortality falls significantly beyond age 5, however, it is likely that most child deaths reported in the 1997 survey took place in infancy and early childhood.

Appendix F. Multivariate Analysis of Health Services Use

An analysis similar to that in annex D was carried out to examine the determinants of use of health services in Cambodia. We first consider the probability of an individual seeking any type of treatment for an illness episode. We then consider the probability of obtaining treatment from a specific type of provider (namely, public and private and drug vendor).

As in the case of school enrollment, the equations for treatment are estimated using maximum likelihood probit analysis. All models are estimated separately for children (under age 15) and adults (individuals age 15 or older). The right-hand side variables in the models include:

- Age.
- Gender.
- Region of residence (Phnom Penh, other urban area, rural area).
- Individual's education (highest grade completed) (used only for adults).
- Education of adults in the household (average number of grades completed by male and female household members age 15 or older) (used only for children).
- Household size.
- Per capita household consumption (adjusted for regional price differences).
- The presence of a *khum* clinic, drug vendor, private clinic, private doctor, and private nurse in the village.
- Average fee for a health consultation or visit (used only in the equation for the probability of seeking any treatment).[1]
- Average expenditure on drugs per health visit (used only in the equation for the probability of seeking any treatment).

Overall Use of Health Services

Table F.1 reports the probit estimates for the probability of an individual obtaining any treatment for an illness episode during the four weeks preceding the survey. Among the individual characteristics, age is a significant determinant of treatment probability. Controlling for other factors, older individuals have a lower probability of seeking treatment for their illness than younger individuals. However, among children ages 0–14, age is insignificant. Gender has no significant effect on treatment probabilities either among adults or children.

Household size is observed to have a positive effect on overall utilization, but only for adults. The positive effect of size on utilization is surprising, and, as in the case of schooling, may reflect a lower opportunity (time) cost of obtaining treatment. In Cambodia, a visit to a health provider typically involves a substantial time investment. Perhaps larger households mitigate this cost by allowing other members to undertake the chores and responsibilities of a sick member seeking medical treatment.

Household consumption expenditure per capita is strongly positively associated with the probability of treating an illness episode among both adults and

Table F.1 Maximum likelihood probit equations for the probability of an individual obtaining any medical treatment for an illness episode during the preceding month, 1997

Independent variable	Adults (age 15 or older)			Children (under age 15)		
	Coefficient	z-ratio	Elasticity	Coefficient	z-ratio	Elasticity
Whether resident in Phnom Penh?	–0.0425	–1.40	–0.012	–0.0059	–0.12	–0.001
Whether resident in other urban areas?	**0.1315**	4.76	**0.030**	0.0505	1.24	0.011
Log of real per capita consumption expenditure	**0.1154**	5.37	**0.149**	**0.1400**	4.16	**0.175**
Whether female?	–0.0293	–1.48	–0.023	–0.0286	–1.01	–0.017
Age	**–0.0012**	–2.12	**–0.069**	–0.0013	–0.34	–0.008
Whether khum clinic available in village?	–0.0163	–0.60	–0.004	0.0316	0.85	0.008
Whether drug vendor available in village?	0.0309	1.13	0.011	–0.0318	–0.71	–0.009
Whether private clinic available in village?	–0.0480	–1.40	–0.010	–0.0218	–0.39	–0.004
Whether doctor available in village?	**0.0698**	2.01	**0.015**	**0.1898**	3.31	**0.030**
Whether nurse available in village?	0.0191	0.72	0.006	**0.0874**	2.31	**0.027**
Highest grade completed	**0.0069**	2.68	**0.036**			
Average grades completed by male adults in household				**0.0093**	1.78	**0.057**
Average grades completed by female adults in household				0.0024	0.41	0.009
Household size	**0.0173**	3.49	**0.119**	–0.0052	–0.64	–0.039
Log of consultation price per health visit in village	**–0.0546**	–4.52	**–0.070**	**–0.0401**	–2.38	**–0.050**
Log of medicine/drug price per health visit in village	0.0051	0.53	0.007	–0.0128	–0.87	–0.016
Predicted value of dependent variable	0.775			0.798		
Number of observations	1,706			851		
Chi-squared statistic	136.16			90.03		
Log likelihood ratio	–1000			–420		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.
Source: NIS 1998.

children, with the "income" elasticity of treatment being 0.15 for adults and 0.18 for children.

As would be expected, an adult individual's schooling is significantly and positively associated with the probability of his or her obtaining a treatment. In the case of children, only the schooling of adult males (typically the father) in the household has a significant positive effect on the probability of obtaining treatment. Mother's or female education appears to have no effect—a result that is inconsistent with most of the findings in other countries.

Among the access variables, the presence of a doctor or nurse in a village significantly increases the probability of individuals treating their illnesses. These effects are much stronger for children than for adults. For instance, children are 19 percent more likely to get their illnesses treated if they live in a village that has a doctor than if they live in a village without one. The presence of a nurse increases the probability of child treatment by about 9 percent. The corresponding numbers for adults are 7 percent and 2 percent (not significant). The presence of other health facilities, such as khum clinics, private clinics, and drug stores, appears to have no significant effect on treatment probabilities.

The final set of variables represent the price of medical care (both consultations and drugs) in a village. The price of medical consultation has a significant and negative effect on the probability of obtaining medical treatment among both adults and children. The price elasticity of demand for health care is estimated to be –0.07 for adults and –0.05 for children. Neither of the estimated drug price effects are statistically significant. The lack of significance of the latter may, however, reflect the substantial measurement error that exists in the price proxies that are used here.

Use of Provider-Specific Health Services

Tables F.2–F.4 report the probit estimates for the probability of an individual obtaining treatment from public providers, private providers, and drug vendors for an illness episode during the four weeks preceding the survey. The strongest result from these tables is that, with an increase in household standard of living (that is, consumption expenditure per capita), there is a shift in utilization of health services from public providers and drug vendors to private providers. For instance, among children under the age of 15, a 1 percent increase in consumption expenditure per capita reduces the probability of using a public medical provider by 0.11 and of using a drug vendor by 0.04, and increases the probability of using a private health provider by 0.17.[2] This is in line with evidence from other countries that suggests that individuals shift to private sources of health care from self-treatment and treatment in the public sector as their incomes increase.

The empirical results also suggest that the availability of health facilities increases utilization. This is seen in both the effect of public khum clinics and private clinics. The availability of a khum clinic in a village significantly increases the probability of adults and children residing in that village obtaining medical treatment from public providers and reduces the probability of their obtaining care from private providers and drug vendors. Correspondingly, the availability of a private clinic in a village increases the probability of individuals obtaining treatment from private clinics and reduces their utilization of public health facilities. Surprisingly, the presence of a nurse in the village reduces the probability of using both public and private providers and increases the probability of using drug vendors for treatment.

The results also indicate that female children are less likely than male children to obtain treatment from private providers and more likely to obtain treatment from drug vendors (although the latter effect barely approaches statistical

Table F.2 Maximum likelihood probit equations for the probability of an individual obtaining treatment from a public provider for an illness episode during the preceding month, 1997

	Adults (age 15 or older)			*Children (under age 15)*		
Independent variable	*Coefficient*	*z-ratio*	*Elasticity*	*Coefficient*	*z-ratio*	*Elasticity*
Whether resident in Phnom Penh?	0.0299	0.81	0.020	0.0759	1.27	0.034
Whether resident in other urban areas?	0.0349	1.14	0.025	**0.0853**	1.90	**0.058**
Log of real per capita consumption expenditure	**–0.0590**	–2.45	**–0.193**	**–0.1115**	–3.10	**–0.360**
Whether female?	0.0248	1.08	0.047	–0.0363	–1.12	–0.057
Age	0.0003	0.39	0.037	–0.0051	–1.18	–0.088
Whether khum clinic available in village?	**0.1359**	4.36	**0.084**	**0.1477**	3.26	**0.090**
Whether drug vendor available in village?	**0.0770**	2.29	**0.063**	0.0479	0.92	0.034
Whether private clinic available in village?	**–0.1160**	–3.10	**–0.062**	–0.0684	–1.10	–0.034
Whether doctor available in village?	–0.0242	–0.58	–0.014	0.0737	1.04	0.033
Whether nurse available in village?	**–0.0548**	–1.91	**–0.050**	0.0381	0.91	0.035
Highest grade completed	–0.0019	–0.64	–0.025			
Average grades completed by male adults in household				0.0078	1.35	0.126
Average grades completed by female adults in household				–0.0052	–0.84	–0.055
Household size	–0.0017	–0.29	–0.030	–0.0087	–0.96	–0.165
Predicted value of dependent variable	0.306			0.310		
Number of observations	1,706			842		
Chi-squared statistic	50.96			35.95		
Log-likelihood ratio	–1031			–507		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.
Source: NIS 1998.

Table F.3 Maximum likelihood probit equations for the probability of an individual obtaining treatment from a private provider for an illness episode during the preceding month, 1997

	Adults (age 15 or older)			*Children (under age 15)*		
Independent variable	*Coefficient*	*z-ratio*	*Elasticity*	*Coefficient*	*z-ratio*	*Elasticity*
Whether resident in Phnom Penh?	0.0039	0.10	0.002	–0.0195	–0.34	–0.009
Whether resident in other urban areas?	–0.0383	–1.16	–0.020	–0.0053	–0.12	**–0.004**
Log of real per capita consumption expenditure	**0.1253**	4.87	**0.309**	**0.1659**	4.66	**0.540**
Whether female?	–0.0097	–0.39	–0.014	–0.0689	–2.12	**–0.109**
Age	–0.0007	–1.00	–0.077	–0.0036	–0.83	–0.063
Whether khum clinic available in village?	**–0.1108**	–3.38	**–0.052**	–0.0572	–1.28	–0.035
Whether drug vendor available in village?	–0.0320	–0.91	–0.020	0.0409	0.76	0.029
Whether private clinic available in village?	**0.1447**	3.50	**0.058**	0.0841	1.30	0.043
Whether doctor available in village?	0.0316	0.71	0.014	–0.0850	–1.29	–0.038
Whether nurse available in village?	**–0.0708**	–2.28	**–0.048**	**–0.1306**	–3.17	**–0.121**
Highest grade completed	**0.0064**	2.07	**0.066**			
Average grades completed by male adults in household				0.0010	0.17	0.016
Average grades completed by female adults in household				0.0052	0.85	0.056
Household size	**0.0179**	2.89	**0.240**	–0.0022	–0.24	–0.041
Predicted value of dependent variable	0.406			0.307		
Number of observations	1706			842		
Chi-squared statistic	98.79			52.86		
Log-likelihood ratio	–1105			–500		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.
Source: NIS 1998.

Table F.4 Maximum likelihood probit equations for the probability of an individual obtaining treatment from a drug vendor for an illness episode during the preceding month, 1997

	Adults (age 15 and over)			*Children (under age 15)*		
Independent variable	*Coefficient*	*z-ratio*	*Elasticity*	*Coefficient*	*z-ratio*	*Elasticity*
Whether resident in Phnom Penh?	–0.0185	–0.25	–0.022	–0.0306	–0.54	–0.015
Whether resident in other urban areas?	0.0376	1.23	0.047	–0.0226	–0.52	–0.017
Log of real per capita consumption expenditure	**–0.0597**	–2.88	**–0.347**	–0.0379	–1.09	–0.132
Whether female?	0.0065	0.35	0.021	0.0464	1.47	0.079
Age	–0.0004	–0.87	–0.091	**0.0088**	2.12	**0.164**
Whether khum clinic available in village?	0.0137	0.49	0.015	**–0.0709**	–1.68	**–0.047**
Whether drug vendor available in village?	–0.0262	–1.11	–0.039	–0.0170	–0.33	–0.013
Whether private clinic available in village?	0.0203	0.87	0.019	0.0224	0.36	0.012
Whether doctor available in village?	–0.0113	–0.25	–0.011	–0.1026	–1.60	–0.050
Whether nurse available in village?	**0.1046**	4.31	**0.168**	**0.1199**	2.86	**0.118**
Highest grade completed	–0.0020	–1.57	–0.051			
Average grades completed by male adults in household				**–0.0139**	–2.35	**–0.240**
Average grades completed by female adults in household				0.0054	0.89	0.063
Household size	**–0.0138**	2.02	**–0.420**	0.0059	0.68	0.122
Predicted value of dependent variable	0.172			0.287		
Number of observations	1706			842		
Chi-squared statistic	47.32			30.94		
Log-likelihood ratio	–777			–494		

Note: All coefficients shown are marginal effects (that is, dF/dX). *Elasticity* refers to elasticities evaluated at the sample mean of the dependent and independent variables. Estimates in bold are statistically significant at the 10 percent level.
Source: NIS 1998.

significance). There is also some evidence to suggest that more-educated adults are more likely to use private providers, and that children in households with more-educated adult males are less likely to be treated by drug vendors.

Summarizing these results, it appears that both demand-side variables, such as consumption expenditure per capita and education, and supply-side variables, such as local availability of health facilities, have important effects on health-services utilization. Better-off and more-educated individuals are not only more likely to use health services than poorer and less-educated individuals, but they are also more likely to use private health services as opposed to public providers and drug vendors. At the same time, the local availability of health facilities and health providers has significant effects on utilization. There is also limited evidence to suggest that the "price" of health care has a significantly negative effect on utilization. Taken at face value, the results suggest that effective policies to increase health utilization rates among the poor need to focus on demand-side interventions (for example, fee exemptions) and interventions that improve the availability of health facilities and workers (notably, more doctors, nurses, and khum clinics). The results also predict that the demand for private health care will increase substantially with economic growth in Cambodia.

Notes

1. This was the fee paid for a single health visit, averaged over all individuals reporting such a fee in a village. It is thus a village-level variable that reflects the price of medical care across all providers. It was not possible to generate such a price variable for each type of provider, as there were typically too few observations within each village to calculate a meaningful village- and provider-specific price.

2. The estimates for the equation for "other provider use" (namely, providers other than public and private providers and drug vendors) are not shown in Tables D.2 and F.1. Thus the three coefficients discussed here (-0.11, -0.04 and +0.17) do not add up to 0.

References

Ahuja, Vinod, Benu Bidani, Franciso Ferreira, and Michael Walton. 1997. *Everyone's Miracle? Revisiting Poverty and Inequality in East Asia.* Washington, D.C.: World Bank.

Asian Development Bank. 1996. "Cambodia: Education Sector Strategy Study." Manila.

Berman, Peter, Barbara A. Ormond, and Ascobat Gani. 1987. "Treatment Use and Expenditure on Curative Care in Rural Indonesia." *Health Policy and Planning* 2 (4): 289–300.

Cambodia Ministry of Agriculture, Forestry and Fisheries, Department of Planning and Statistics. 1997. "Bulletin of Agricultural Prices, 1st Semester 1997." Phnom Penh.

Cambodia Ministry of Economy and Finance. "First Five Year Socioeconomic Development Plan, 1996–2000." Phnom Penh.

Cambodia Ministry of Education, Planning and Aid Coordination Unit, Youth and Sports. 1997. *Education Statistics 1997.* Phnom Penh.

Cambodia Ministry of Health, Department of Planning and Health Information. 1994. National Health Development Plan 1994–96. Phnom Penh.

———. 1996. *National Health Statistics Report 1996.* Phnom Penh.

———. 1997. "Health Consultative Group Position Paper." Phnom Penh.

Cambodia Ministry of Health, National Public Health and Research Institute. 1998. "The Demand for Health Care in: Concepts for Future Research." Phnom Penh.

Cambodia Ministry of Planning, General Directorate of Planning. 1998. "A Poverty Profile of Cambodia, 1997." Phnom Penh.

Davenport, Paul, Joan Healy, and Kevin Malone. 1995. *Vulnerable in the Villages A Study of Returnees in Battambang Province.* Phnom Penh: Overseas Service Bureau and World Vision.

Deaton, Angus. 1997. *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy.* Baltimore, Md.: Johns Hopkins University Press.

Deaton, Angus, and Margaret Grosh. 1997. "The Consumption Module in the Living Standards Measurement Study." World Bank, Development Research Group, Washington, D.C.

Deolalikar, Anil B. 1990. "The Provision and Utilization of Primary Health Services in Indonesia: A Survey of the Literature." Prepared for the Center for Policy and Implementation Studies, Jakarta.

———. 1998. "The Demand for Health Services in Indonesia: The Role of Prices, Service Quality, and Reporting of Illnesses." In Aman Ullah and David E.A. Giles, eds., *Handbook of Applied Economic Statistics.* New York: Marcel Dekker.

Deolalikar, Anil B., and Prem S. Vashishtha. 1992. "The Utilization of Government and Private Health Services in India." Prepared for the Options Project, Washington, D.C.

Gish, Oscar. 1989. "Some Links Between Successful Implementation of Primary Health Care Interventions and the Overall Utilization of Health Services." *Social Science and Medicine* 30 (4): 401–05.

Gish, Oscar, Ridwan Malik, and Paramita Sudharto. 1988. "Who Gets What? Utilization of Health Services in Indonesia." *International Journal of Health Planning and Management* 3: 185–96.

Huguet, J. W. 1997. *The Population of Cambodia, 1986-96, and Projected to 2020.* Phnom Penh:

National Institute of Statistics, Cambodia Ministry of Planning.

ICRC (International Committee of the Red Cross). 1997. "Briefing Paper on ICRC's Orthopedic Program." Phnom Penh.

Knowles, James C. 1997. "Capacity Development for Socioeconomic Surveys and Planning Project." Technical Report. Ministry of Planning, Cambodia, Phnom Penh.

———. 1998. "An Updated Poverty Profile for Cambodia." Cambodia Ministry of Planning, Phnom Penh.

Murshid, K. A. S.1998. "Food Security in an Asian Transitional Economy: The Cambodian Experience." Cambodian Development Resource Institute Working Paper 6. Phnom Penh.

NIS (National Institute of Statistics), Cambodia, Ministry of Planning. 1995. "Report on the Socioeconomic Survey of 1993–94." Phnom Penh.

———. 1996. *Consumer Price Index.* Phnom Penh.

———. 1997. *Consumer Price Index.* Phnom Penh.

———. 1998. *Report on the Cambodia Socioeconomic Survey 1997.* Phnom Penh.

Parker, Andrew N. 1995. "Decentralization: The Way Forward for Rural Development?" Policy Research Working Paper 1475. World Bank, Sector Policy and Water Resources Division, Agriculture and Natural Resources Department, Washington, D.C.

Pendleton, Andrew, and Martha Teas. 1998: "Cycles of Return: Displaced Persons, Returnees and Northwest Cambodia." *Watershed People's Forum on Ecology* 4 (1).

Pradhan, Sanjay. 1996. *Evaluating Public Spending: A Framework for Public Expenditure Reviews.* World Bank Discussion Paper 374. Washington, D.C.

Prescott, Nicholas. 1997. *Poverty, Social Services, and Safety Nets in Vietnam.* World Bank Discussion Paper 376. Washington, D.C.

Prescott, Nicholas, and Menno Pradhan. 1997. *A Poverty Profile for Cambodia.* World Bank Discussion Paper 373. Washington, D.C.

Ranis and Stewart. 1993. "Rural Nonagricultural Activities in Development: Theory and Application." *Journal of Development Economics* 40: 75–101.

Rao, Govinda M. 1998. "Accommodating Public Expenditure Policies in Fast Growing Asian Economies." *World Development* (April): 1–22.

Reardon. 1997 "Using Evidence of Household Income Diversification to Inform Study of the Rural Nonfarm labor Market in Africa." *World Development* 25 (5).

Robinson, Court. 1994. *Rupture and Return.* Bangkok: Indochinese Refugee Information Center.

Studdert, Lisa. 1995. "Making It from Nothing in Phnom Penh." World Food Programme, Phnom Penh. UNDP

UNDP (United Nations Development Programme). 1996. "Viet Nam Public Expenditure Review."

———. 1997. "Cambodia Human Development Report, 1997." Phnom Penh.

———. 1998. *Human Development Report 1998.* New York: Oxford University Press.

USAID (U.S. Agency for International Development). 1996. *Maternal and Child Health Strategy.* Phnom Penh.

———. "Viet Nam Public Expenditure Review."

UNESCO. 1998. *World Education Report 1998.* Paris.

World Bank. 1988. "Indonesia: Poverty Assessment and Strategy Report." Report. 8034-IND, Country Department V, Asia Region, Washington, D.C.

———. 1989. "Indonesia: Issues in Health Planning and Budgeting." Report of Country Department V, Asia Region, Washington, D.C.

———. 1994. *Vietnam: Poverty Assessment.* East Asia and Pacific Region. Washington, D.C.

———. 1995. *Laos: Poverty Assessment.* East Asia and Pacific Region. Washington, D.C.

———. 1997. "Cambodia: Progress in Recovery and Reform. East Asia and Pacific Region." World Bank, Country Department I, Washington, D.C.