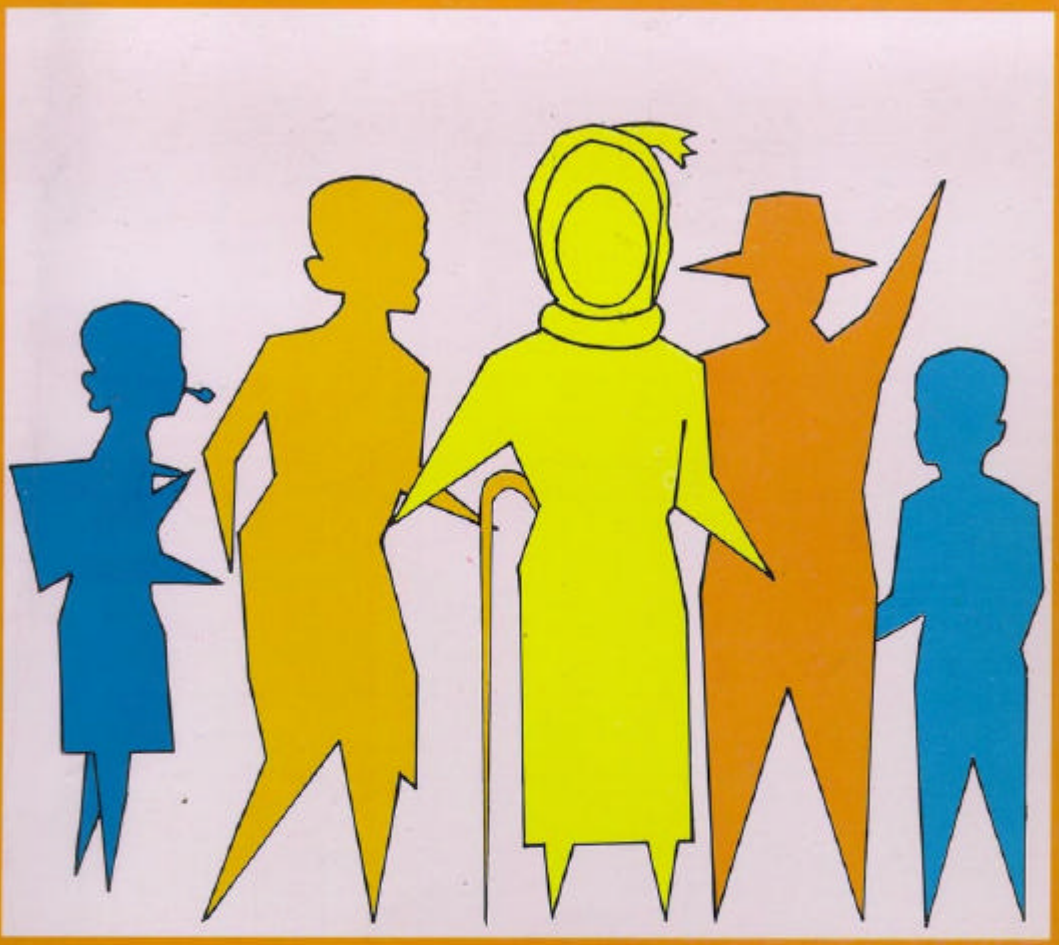

Cambodia Human Development Report 1997

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CAMBODIA

HUMAN

DEVELOPMENT

REPORT 1997

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FOREWORD

It gives me great pleasure to launch the first National Human Development Report for Cambodia. While UNDP has been publishing the *Human Development Report* (HDR) annually since 1990 to review the state of human development around the world, we have begun to see a number of countries producing national HDRs since 1995. These national HDRs have focused on trends in human development and poverty within a country, and highlighted intra-national disparities in human development across regions, economic groups, and gender.

The Cambodia Human Development Report 1997 is the result of a collaboration between the Royal Government of Cambodia and UNDP. The National Institute of Statistics, Ministry of Planning, completed the second Socioeconomic Survey of Cambodia (SESC) last year with support from the Asian Development Bank, UNDP and other UN agencies. This is the second multipurpose household survey with national coverage to be undertaken in the country. UNDP provided consultancy to use the SESC 1996 data as the basis for preparing the Cambodia HDR 1997. I would like to take this opportunity to thank UNDP for its many contributions in producing the first Cambodia HDR.

The objective of the Cambodia HDR is to provide a factual overview of the state of human development, in all its various dimensions, in Cambodia. It provides a benchmark or baseline against which future changes in poverty and human development can be measured. In addition, by highlighting problem areas and gender, economic, and regional disparities in human development, the report will be extremely useful to government ministries and departments, donor agencies, and NGOs in planning and targeting poverty and socioeconomic interventions in the country. As we all know, reliable household-based information is one of the key bottlenecks to policy planning and programming in our country. There has not been a census in Cambodia in more than three decades. Until 1993-94, there had never been a multipurpose household survey covering the entire population. The Cambodia HDR 1997 will hopefully be a major contribution to filling this information gap.

I hope that this report will initiate a national debate and dialogue on poverty and human development in Cambodia. We need such a debate to formulate our development strategies and to define the issues and priorities for action.

Let me finally take this opportunity to reiterate the commitment of the Royal Government of Cambodia in continuing the fine work that UNDP has initiated. The Ministry of Planning will strive to produce a national HDR on a regular basis in the future. The Ministry, in collaboration with UNDP and the World Bank, have just completed another national socioeconomic survey (1997), as part of the work program of the Project on Capacity Development for Socioeconomic Surveys. With assistance from UNFPA and other donors, the Ministry is also set to undertake the first population census in the country in over three decades in early 1998. We plan to use the data from the survey and the Census to assist in the preparation of the next Cambodia Human Development Report.

Chea Chanto
Minister of Planning
Royal Government of Cambodia

Phnom Penh
November 1997

PREFACE

This is a propitious time to launch the first national human development report (NHDR) for Cambodia. The country is emerging from a period of reconstruction and rehabilitation, and is now ready to begin the difficult and challenging process of economic and human development. It is important that this process be guided by reliable information – information on the state of human development and poverty in the country, the main problem areas, and the regional, economic and gender disparities in socioeconomic indicators within the country.

The NHDR is a descriptive and analytical document that highlights the major empirical findings on human development from household survey and other data. While it deliberately refrains from making any explicit policy recommendations, it represents a powerful policy tool, since most of the empirical findings it presents have direct implications for policy. The NHDR can guide policy-makers in their resource allocation, priority-setting, and targeting decisions. In addition, it can serve as a useful benchmark against which to evaluate and monitor the impact of policy interventions in future years.

I would like to acknowledge the assistance of several agencies and individuals in bringing out the current NHDR. First and foremost, the report would not have been possible had the Ministry of Planning not made available to UNDP an advance copy of the raw data from the Socioeconomic Survey of Cambodia 1996. As the reader will see, the current NHDR relies heavily on this high-quality data base. We are particularly indebted to Mr. Hou Taing Eng, Mr. Raja Korale and their colleagues at the National Institute of Statistics in successfully undertaking this large and complicated survey and making the data from this survey available to us in a timely fashion. We would also like to express our thanks to the Asian Development Bank for sponsoring the Socioeconomic Survey of Cambodia 1996.

Second, I would like to acknowledge the professionalism of our consultant, Dr. Anil Deolalikar, who while preparing the report had extensive consultations with line ministries, U.N. and donor agencies, and NGOs to understand their needs for information.

Having taken the initiative to launch this first NHDR for Cambodia, let me conclude by saying that UNDP very much hopes that the ownership of the Human Development Report will be transferred fully into Cambodian hands. We look forward to future NHDRs being produced by Cambodians for Cambodians.

Paul Matthews
Resident Representative
UNDP

Phnom Penh
November 1997

EXECUTIVE SUMMARY

A. Introduction

Cambodia is a country in transition. But, unlike other transitional economies that are moving from being command economies to market economies or from a socialist system to a capitalist system, Cambodia is making the transition from reconstruction to development. The country has been mired in conflict and civil war for so long that it has had to initiate reconstruction and rehabilitation of physical and human capital before embarking on economic and human development. However, after nearly five years of reconstruction and rehabilitation, it now appears poised to begin the next phase of development.

This is the first in what is hoped will become a series of human development reports on the country. The objective of this report is to provide a factual overview of human development in Cambodia. Reliable, household survey-based information is one of the key bottlenecks to planning for development in the country. There has not been a census in Cambodia in more than three decades. Until 1993-94, there had not been a nationally-representative, multipurpose household survey for even longer. Thus, there is little information on social and economic indicators that can be used for planning, programming and resource allocation purposes.

A central objective of this report is to fill these lacunae. The report uses data from the Socioeconomic Survey of Cambodia 1996 -- one of the few nationally-representative, multipurpose household survey conducted in more than three decades -- to profile poverty and human development -- including health, nutrition, schooling and basic services -- in the country. The report is poverty-sensitive in that it disaggregates all analysis by poverty status, and explicitly considers human development of the poor in Cambodia. The reader should be forewarned that the concept of human development is much broader than is covered in this report. The concept of human development includes political freedom, guaranteed human rights, social choices, personal self-respect and the expansion of human, social, and economic capabilities. This report primarily focuses on the social sectors and poverty. Hopefully, future reports will address the other issues.

An important caveat concerns the fragile nature of the data available in Cambodia. Unlike other developing countries, Cambodia does not have a long history of -- and experience at -- administrative and household data collection. While every attempt has been made in this report to cross-check data from multiple sources, the statistics presented should not be interpreted as definitive estimates for the Cambodian economy. Rather, they should be seen as tools for describing and understanding broad patterns of human development and poverty in the country. Hopefully, better utilization of currently-available data will increase the demand for and availability of more reliable information in the future.

B. Cambodian Context

There are two unique features of Cambodian history that have a bearing on its economic and human development record. First, it is probably the only country in the world that experienced (during the Khmer Rouge years of 1975-79) not merely genocide on a scale hitherto unseen, but deliberate state-sponsored destruction of economic, social and human capital. Anywhere from

one to two million people lost their lives due to torture, execution, disease, and starvation. Two consequences of the Khmer Rouge period are (i) a very low sex ratio (i.e., ratio of males to females), especially in the age group 40-44 years -- individuals who would have been 21-25 in 1977 (midpoint of the Khmer Rouge period), and (ii) a 'deficit' of individuals aged 35-39 years, especially males, with post-primary schooling. The former is indicative of the hundreds of thousands of young males who lost their lives during the Pol Pot era, while the latter is indicative of the vast numbers of young adults who permanently lost the opportunity of acquiring secondary or tertiary education owing to the abolition of formal education during the 1975-79 period.

The second unique characteristic of Cambodia is its very long history of political conflict. This has had three consequences. First, the armed conflict and the insecurity it has produced among the population have led to a large displacement of people. Second, the armed conflict -- in particular, the landmines -- have resulted in a relatively large proportion of the population being disabled. The third consequence of the long period of conflict has been a high rate of female headship of households. Cambodia has one of the highest proportions of households headed by women in the world. Each of these factors has implications for poverty and human development in Cambodia.

C. Poverty

Freedom from poverty is an essential component of human development, because poverty prevents people from enjoying long, healthy and enriched lives. It restricts people's choices and robs them of dignity and self-respect.

There are many different ways of measuring poverty, resulting from the fact that poverty has so many dimensions and equally large number of causes. Poverty is simultaneously caused by and manifested in low incomes, low consumption, lack of physical assets, landlessness, poor health and disability, high rates of morbidity and mortality, low levels of education, and physical isolation, among other things. Each of these can be used to define poverty.

The standard definition of *absolute poverty* that is used widely is a consumption-based definition. According to this approach, poverty is the inability to attain a minimal standard of living – typically taken to imply adequate income to consume a food basket that provides at least 2,100 calories of energy per person per day (with a small allowance for nonfood consumption, like clothing and shelter).

Absolute poverty is pervasive in Cambodia, with nearly four out of ten Cambodians living below the poverty line of about Riels 35,500 per person per month. Although these rates are high, they are comparable to those found in neighboring Laos and Vietnam. In addition, the *poverty gap*, which measures the shortfall between the expenditures of poor households and the poverty line, is relatively small in Cambodia (9.2%). What this means is that, although nearly 40% of the Cambodian population lives below the poverty line, most of them have incomes that are *just* below the poverty line. Indeed, if perfect targeting were possible, an *annual* income transfer of only about Riels 40,000 (or $18) per capita -- or $190 million for the country -- would be required to eliminate poverty. This constitutes approximately 40% of the overseas development assistance that Cambodia received in 1995.

As one would expect, most of the poor in Cambodia live in the rural areas of the country. The incidence of poverty is greatest among farmers. On the other hand, poverty rates are relatively small for civil servants and public employees. Thus, any poverty alleviation strategy has to focus on the agricultural sector.

The limited evidence surveyed suggests that consumption inequality in the rural areas may have increased between 1993-94 and 1996, with the richest 20% of individuals experiencing an increase in their relative share of national consumption at the expense of the poorest 80%. This trend, which is typical of that found in most transitional economies, occurs because liberalization creates new income opportunities that the rich are better able to exploit, thanks to their better physical and human capital base. However, there are policy instruments available to arrest or reverse such a trend, and it is the responsibility of the government to use these instruments.

Although there was an increase in consumption inequality in the rural areas between 1993-94 and 1996, the evidence suggests that Cambodian economic growth was strong enough to actually improve the absolute consumption of the poor. The poorest 20% of the population reduced their share of food in total consumption, and significantly increased their ownership of such consumer durables as radios, television sets, bicycles and motorcycles. This experience supports the widely-held view that economic growth is often the strongest determinant of poverty reduction.

D. Human Development Indices

Human development is much more than the ability to attain a certain level of consumption. While freedom from poverty is an important -- indeed, essential -- means of improving individual welfare, it remains only a means to an end. The ultimate goal of human development is for people to live long and healthy lives, to be educated, and to have access to resources needed for a decent standard of living.

One way in which human development can be measured is by the human development index (HDI). The HDI is a composite measure of longevity, as measured by average life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and combined primary, secondary and tertiary enrolment ratios (one-third weight); and standard of living, as measured by real GDP per capita (expressed in purchasing power parity-adjusted exchange rates). While the HDI does not capture the full diversity and significance of the concept of human development, it goes farther than the traditional per capita GNP indicator in measuring a country's or community's development performance, especially when used in conjunction with other information. It can be a useful policy tool for setting priorities, allocating public resources, and targeting interventions.

The global *Human Development Report 1997* reports an HDI value of 0.348 for Cambodia. However, this is based on dated data, especially on adult literacy. When the HDI is recalculated using current household survey-based data, a revised estimate of 0.427 is obtained for the HDI, which raises Cambodia's rank from 153 to 140 -- just below that of India and Pakistan. Although Cambodia's HDI score is very low in absolute terms, regression analysis shows that Cambodia has an HDI score that is consistent with its level of per capita GDP (based on the observed relationship between HDI and per capita GDP across 21 Asian countries).

Disaggregated HDI scores show that the HDI for urban areas is significantly (by about 65%) higher than that for rural areas. However, the score for males is only about 2% higher than that for females. The reason for the relatively small gender difference is that the higher life expectancy for women relative to men offsets the higher rates of adult literacy and school enrollment that males enjoy over females. The provinces of Phnom Penh (0.865) and Sihanoukville (0.75) have the highest HDI scores in the country, while the provinces of Prey Veng (0.277), Kampong Speu (0.280) and Kepville (0.295) have the lowest HDI scores. When the HDI scores of provinces are statistically associated with per capita consumption expenditure, the provinces of Kratie, Kampong Chhnang, and Phnom Penh emerge as 'positive outliers', i.e., their HDI scores are better than what would be expected at their level of per capita expenditure. On the other hand, Mondul Kiri, Ratanak Kiri, Kampong Speu and Koh Kong have HDI scores that are significantly less than what would be expected at their level of per capita expenditure. These provinces are the ones that lag significantly behind others in terms of human development, in some part perhaps because of their small populations and remote location (with the exception of Kampong Speu).

Another human development indicator used by the *Human Development Report 1997* is the gender-related development index (GDI). The GDI uses the same variables as the HDI, with the only difference being that the GDI adjusts the average achievement of each country in life expectancy, educational attainment, and income in accordance with the disparity in achievement between women and men. In other words, the greater the gender disparity in any of the three indicators, the more heavily discounted is the achievement of that country by the index.

The *HDR 1997* does not report a GDI value for Cambodia, presumably because of unavailability of data needed to calculate the GDI. Upon using data from the SESC 1996 and the DSC 1996, Cambodia's GDI score is estimated at 0.423 -- very similar to its HDI score -- and places Cambodia just above India and Pakistan -- countries whose real GDP per capita are 25-100% higher than Cambodia's.

Disaggregation reveals that the rural-urban difference in GDI scores mirrors the rural-urban disparity in HDI scores. Most provinces also have the same HDI and GDI ranking, with the only exceptions being the provinces of Kampong Speu, Ratanak Kiri and Phnom Penh, whose GDI ranking is higher than their HDI ranking, and the provinces of Koh Kong and Sihanoukville, whose performance on the GDI is worse than their performance on the HDI.

The standard HDI includes four components: life expectancy, adult literacy, child schooling enrollment, and per capita consumption expenditure. However, there are many other variables that have a strong influence on the quality of life in a community; these include child malnutrition and health outcomes and access to basic services (e.g., drinking water, sanitation, electricity), health services, housing, and entertainment and information. These variables are particularly important in the context of a poor country like Cambodia.

In addition to the HDI, this report has computed a Cambodia-specific human development index (CHDI) that aggregates ten different indicators of living standards: percentage of population using safe drinking water (i.e., water from public or private tap, protected well, rain, or tanker truck); percentage of population with access to a public or private toilet; percentage of population using electricity (either publicly- or privately-provided) as the main source of lighting; percentage

of population owning a transistor radio; average housing space (in square meters) per person; proportion of children under 5 years of age who are *not* moderately or severely stunted (i.e., who are above the height expected for their age and sex); net primary enrollment rate (i.e., the percentage of children aged 6-11 years who are enrolled in primary school); difference between average age at entry into primary school and 6 years (which is the recommended age for entry into primary school) (this variable is entered into the CHDI with a negative sign, so that smaller discrepancies between average age at entry and 6 years are more desirable than larger discrepancies); percentage of children under 5 years of age who did *not* suffer a diarrheal episode during the two-week reference period preceding the household survey; percentage of children suffering a diarrheal episode in the two-week reference period who were treated for this episode by a non-traditional health provider (viz., physician, nurse, pharmacist or primary health center).

Thus, the CHDI covers a much wider and richer range of social, human and economic measures than the standard HDI. Another significant advantage of the CHDI over the HDI is that all of its components are more readily influenced by policy interventions in the short run. The use of the CHDI does not change the ranking of the three top-ranking three provinces (viz., Phnom Penh, Sihanouk Ville and Kratie). However, there is significant change at the bottom and in the middle. The three provinces with the lowest HDI score – Mondul Kiri, Siem Reap and Kampong Thom – are not the same provinces with the lowest rank on the CHDI score (viz., Prey Veng, Kampong Speu and Kepville). Indeed, Kampong Speu experiences the biggest change in ranking with the use of the CHDI; it falls from a rank of six on the HDI to a rank of 20 on the CHDI!

E. Nutrition and Food Security

At first glance, the rates of child malnutrition in Cambodia are extremely large. About one-half of all children aged 0-5 years are either stunted or underweight. However, two facts temper this observation. First, the extent of 'wasting' (i.e., underweight relative to height, not age) is much smaller, with only 12% of children aged 0-5 being wasted. Thus, Cambodia's major child nutrition problem appears to be stunting from longer-term, chronic undernutrition rather than wasting from short-term, acute food deficits.

Second, while there is an inverse relationship between the extent of child malnutrition and economic status, the association is not strong, and even in the richest economic group in the country -- viz., the richest 20% of the urban population -- as many as a third of all children aged 0-5 are underweight and 40% are stunted. If anything, this suggests that, while poverty is certainly a contributing factor in child malnutrition in Cambodia, it is not the only factor; indeed, cultural and social factors may play a more important role than economic status in causing child malnutrition.

Unlike countries in South Asia, there are few gender differences in malnutrition rates. Indeed, if anything, the evidence suggests that girls experience less malnutrition than boys.

Child malnutrition is concentrated in certain parts of the country, with four (out of a total of 21) provinces accounting for nearly one-half -- and 9 provinces accounting for three-quarters -- of all severe malnutrition in Cambodia. The four provinces accounting for one-half of all child malnutrition in the country are Kampong Cham, Kandal, Takeo, and Prey Veng.

Part of the malnutrition problem arises because of inadequate food intake combined with local dietary and breastfeeding customs. Average energy intake per person is 2,300 calories per day in the rural areas and only 2,150 calories in the urban areas. The poorest 20% in the urban areas consume, on average, only 1,900 calories per person per day -- 200 fewer calories than the minimum daily calorie requirement proposed by the FAO. The predominance of rice in the Cambodian diet may be a contributing factor, especially in the case of young children and pregnant and breastfeeding women, as the caloric density of rice is very low and these individuals may thus be unable to consume enough calories to meet their special energy needs.

Breastfeeding customs in Cambodia also may be a contributing factor in child malnutrition. As in other countries of the region, such as Vietnam, there is a strong cultural tradition in Cambodia against feeding colostrum from the mother's breast to newborn infants. The taboo against colostrum means that most mothers wait until 36 hours, and some as long as three days, before initiating breastfeeding. Not only does the withholding of colostrum deprive the newborn infant of rich nutrition, the delay in initiating breastfeeding immediately after birth generally means that the process of undernutrition in the infant sets in soon after birth.

Finally, while the country is, on the whole, self-sufficient in rice, large numbers of Cambodians and a number of provinces in Cambodia remain food-insecure owing to lack of *access* to food. This lack of access is related to inadequate purchasing power (in turn caused by poverty), transport and marketing constraints (that prevent the rapid movement of food from food surplus to food deficit regions), and seasonal and annual fluctuations (caused by the dependence of Cambodian agriculture on the vagaries of rainfall). In addition, the internal security problem in Cambodia has created special groups that are vulnerable to food insecurity, such as internally displaced or disabled households.

F. Access to basic services

Access to primary schools and passable roads does not appear to be a major problem in Cambodia, with the vast majority of Cambodians being within one kilometer of an operational primary school or a passable road. However, access to health services is another matter, with only one-fifth of the population having an operational health clinic or facility in the village of residence and another fifth having to travel more than 5 kilometers to reach the nearest health facility.

Although roads, health clinics and primary schools are public goods, and as such available to all households residing in a region, the data suggest that the rich have better physical access to these facilities than the poor. For instance, a larger proportion of the poor relative to the nonpoor live more than 5 kms. away from health clinics and roads. Obviously, such socioeconomic differences in distances to roads and clinics arise because of systematic differences in proximity across backward and prosperous communities and provinces. It is not clear which way the causality goes in the relationship -- i.e., whether remoteness (e.g., longer distances to a passable road) causes poverty or whether poverty results in an inadequate supply of social services and infrastructure.

There are sharp differences across rural and urban areas, across economic groups, and across provinces in access to safe water, sanitation, fuel and housing. Piped water and toilets in

the home are a luxury in Cambodia. Most poor Cambodians, whether in rural or urban areas, use water from unprotected wells and springs and have no access to toilets of any kind. They use kerosene for lighting purposes and firewood for cooking, and have no more than 5 square meters of housing space available per person. On the other hand, the richest quintile of individuals, especially in the urban areas, have piped water and flush toilets within their premises and use electricity for lighting and charcoal for cooking. They enjoy nearly 12 square meter of housing space per person.

G. Schooling and Literacy

Adult literacy rates in Cambodia are much higher (of the order of 65-69%) than previously thought. Of course, there are marked differences across gender, economic groups, provinces, and rural/urban areas. The regional differences are perhaps the most striking. For example, only 16.3% of the adults in the province of Mondul Kiri in the Northeast and 26.4% of adults in Siem Reap are literate! On the other hand, Phnom Penh boasts a literacy rate of 82.1%. It is important to remember, however, that these literacy rates are based on survey respondents' own assessments of their ability to read or write a simple sentence in any language – not on any objective test of reading or writing skills.

Average schooling among adults is generally low, with an average Cambodian adult having only 3.5 years of schooling. The socioeconomic disparities in average length of schooling closely mirror those in literacy rates.

Discrepancy in Calculated Enrollment Rates

The Ministry of Education, Youth and Sports (MOEYS) has an education information management system that generates data on enrollments from each school in the country. Using these administrative data, the MOEYS (1997) has calculated a gross primary enrollment rate of 94.5% and a net primary enrollment rate of 84.7% for the 1996-97 school year in Cambodia. However, the household survey data from SESC 1996 indicate a gross primary enrollment rate of 108.8% and a net primary enrollment rate of 61.8%for the same period. The discrepancy arises because the household survey data show much larger rates of overage enrollments (i.e., children older than 11 years of age enrolled) in primary school than the MOEYS data. It is not clear which set of estimates is more reliable. Fortunately, none of the conclusions of this report are changed by using one or the other set of estimates. Newer data sets (including a 1997 household survey that has just been completed) will help resolve the discrepancy.

The *gross* primary enrollment rate in Cambodia is significantly higher than the *net* primary enrollment rate (109% versus 62%), indicating that huge numbers of overage children are enrolled in school. The same pattern holds for the lower and upper secondary enrollment rates. The *net* enrollment rate drops precipitously with the level of schooling, being 13.6% for lower secondary, 5.4% for upper secondary, and only 1.3% for post-secondary education.

Cambodian children start school late (around 8 years of age). They also face high rates of repetition and drop-out. This leads to enormous wastage in the educational system; of 1,000 pupils that enter primary school, only 27 manage to successfully graduate from upper secondary school. The high drop-out and repetition rates also mean, of course, that many students leave school unable to read or write.

The problems of low enrollment rates and late entry into school are worse for poorer groups than for the nonpoor. They are also worse in low human-development provinces like Mondul Kiri and Siem Reap. Interestingly, both of these provinces have the lowest adult literacy rates and school enrollment rates in the country, suggesting that school enrollment rates in these provinces have essentially remained unchanged for several decades.

Girls have higher drop-out rates and lower enrollment rates, especially at the post-primary levels, than boys. However, they have lower repetition rates and lower ages at entry into school, suggesting that the girls that make it to secondary school perform better than boys.

While primary schooling is officially free in Cambodia, parents typically have to pay significant amounts for their children's primary schooling. In addition to expenditure on school uniforms and textbooks, there are admission charges and various kinds of miscellaneous supplements. Private tutoring is a major expense as well. Indeed, one study suggests that, of the nine countries in the Asia-Pacific Region, Cambodia has the smallest government share (25%) and the largest household and community share (75%) in the total cost of public primary education.

H. Fertility and Population

While fertility is strictly not an indicator of human development, it is an important proximate determinant of human development. Numerous studies from around the world have shown that there is a strong inverse relationship between child *quantity* and child *quality*. Children in high-fertility households typically have lower levels of human development -- schooling, nutrition, health, and parental attention.

Fertility rates are estimated to be around 5 in Cambodia. This means that, next to Laos, Cambodia has the highest fertility rate in the East Asia region. Only 13% of currently-married women use contraception to limit births, with 7 per cent were using a modern method of contraception.

The data suggest that fertility rates, especially of women aged 30-45 years, fall sharply with economic status, with women in the richest quintile having only one-half as many children as those in the poorest quintile. This trend, observed elsewhere in the world, occurs as couples switch from the "quantity" of children to their "quality" (for example, emphasizing their schooling, nutrition and health) with an improvement in their economic status. In addition, with economic status, the child survival rate improves, and this means that couples need to have fewer births in order to ensure a certain number of surviving children. Finally, higher incomes free parents from the worry of their old-age security, and this reduces the "insurance" motive to have children. The net result of these factors is that higher-income couples have lower fertility rates than lower-income couples.

There are large provincial differences in fertility rates. Fertility rates are highest in the provinces of Mondul Kiri, Koh Kong, Kampong Chhnang, Ratanak Kiri, Kratie and Svay Rieng, and lowest in the provinces of Kampong Speu and Phnom Penh.

I. Health

While infant mortality rates (IMR) have declined considerably in Cambodia in the last two decades, the country still has an IMR of 90, earning it the dubious distinction of being, along with Laos, the country with the highest infant mortality in East/Southeast Asia. What is unusual about Cambodia is a very wide gender variation in the IMR, with the IMR being only 71.8 for females and 106.7 for males. This also means that average life expectancy at birth varies greatly across gender, with Cambodian women on average surviving to age 58.6 years and Cambodian men surviving to age 50.3 years. It is unclear why the mortality situation of Cambodian men is significantly worse than that of Cambodian women.

HIV/AIDS deserves special attention since Cambodia has one of the most serious HIV epidemics in Asia, and the economic and human implications of HIV/AIDS for the country in the near future could be staggering. The cumulative number of people infected with the HIV virus is estimated to be between 70,000 and 120,000. Under current projections, anywhere from one-half to one million people could be cumulatively infected with HIV/AIDS by the year 2006. Since the disease affects individuals in their prime working and earning ages, it can have extremely high costs. It is estimated that the indirect costs alone (comprising the opportunity cost from lost earnings) of HIV/AIDS will add up to $1.97 - $2.82 billion over the period 1997-2006. These staggering amounts indicate how seriously the AIDS epidemic could affect the Cambodian economy in the absence of serious intervention.

There are large provincial differences in HIV prevalence rates. The provinces along the Thai border to the west, such as Banteay Meanchey and Battambang, and in the south, such as Koh Kong, Kampong Speu, and Sihanouk Ville, have among the highest prevalence rates. Province, such as Takeo, Stung Treng, and Kratie, have among the lowest rates in the country.

Other leading causes of *mortality* in Cambodia are malaria, acute respiratory infections and tuberculosis. Road accidents and mine accidents also figure prominently in the list. The leading causes of *morbidity* are also malaria, ARI and diarrhea. Thus, Cambodia's disease profile is like a typical developing country's, with preventible diseases accounting for most of the morbidity and mortality. As is well known, these diseases can be managed by known (and relatively inexpensive) public health interventions, including vector control, health education, environmental health, and screening.

Cambodia has one of the lowest rates of utilization of health services in the world. Government health facility-based data suggest that, on average, a Cambodian has only 0.35 medical contacts with the organized health services each year. The low rate of contact is confirmed by other data, such as the proportion of deliveries taking place in hospitals or health centers (only 16%). The poor typically have much low rates of utilization than the nonpoor. Limited household survey data show that, especially in the rural areas, the poor tend to rely more on drug vendors and traditional healers, and less on private practitioners and health centers. The latter finding is surprising, and contrary to the generally perceived role of government health centers and hospitals serving the poor. In the urban areas, the middle consumption quintiles tend to be the heaviest users of government health centers.

There is very little information on what people actually pay for health services. Today, there are few -- if any -- health services that people can obtain for free, even at government health facilities. In addition, because there has been an enormous growth in private health facilities in the last 4-5 years, it is likely that individuals are spending a lot more on health than they used to earlier. The data indicate that household health expenses constitute nearly 11% of total monthly household consumption expenditure.

J. Child Labor

An important issue in Cambodia is the large numbers of children engaged in child labor and in prostitution. According to one report, as many as 35% of the commercial sex workers in the country are minors. Since 1991, there has been an explosion in the extent of commercial sex activity -- a good deal of it involving children -- in the urban areas of the country. By some accounts, thousands of underage Cambodian girls are trafficked into Thai brothels every year, where they are subject to harsh working conditions. Unfortunately, there is little hard information on this important topic, with much of the discussion being based on casual empiricism and perception.

Household survey data suggest that about 18.2% of children aged 5-17 years work for pay or in family enterprises. The average age at which a working child first starts working is 10.4 years. The extent of child labor is greater in the rural areas than in the urban areas, reflecting the use of child labor on family farms. It is also more common for girls than for boys to work. There are some differences in the extent to which child labor is used by different economic groups, but these differences are surprisingly small. Indeed, the absence of a strong inverse relationship between child labor and economic status suggests that what the household survey has primarily captured is assistance by children on the family farm or in family enterprises -- the kind of assistance that is commonplace in most developing countries. If the child labor captured by the survey was hard wage labor on other people's farms or in factories, a sharp inverse relationship between this type of work and household expenditure per capita would surely have been observed.

K. Returns to Human Development and Interactions Among the Various Components of Human Development

Although human development is something that needs to be pursued for its own sake, not for the sake of pecuniary or other returns, it is the case that many components of human development, such as nutrition, health and education, have large economic returns to individuals and society. This makes the case for a human development-based strategy even stronger.

In Cambodia, there is direct evidence that education has high pecuniary returns. Monthly earnings for salaried employees are nearly 45% higher for individuals with primary or post-primary education than with no education. In addition, age profiles of earnings are generally much steeper for men and women with some schooling than those without any schooling, implying that, as these individuals move from their 20s to their 40s, earnings increase much more rapidly for schooled than for non-schooled persons.

Estimation of standard earnings equations indicates that the private economic rate of return to primary schooling is 33% for men and 40% for women. However, the marginal return to post-primary schooling is significantly higher for women than for men (19.9% versus 5.7%). One reason for the higher return to post-primary education for women might be in the nature of jobs men and women perform. If most salaried men are in occupations where physical strength is important, the wage premium for men in unskilled factory positions (and with low schooling) would be considerable. The estimated returns to post-primary schooling would then be higher for females than for males. Another explanation for the higher observed returns to schooling for females may have to do with selection. The rate at which women are selected out of the paid labor force means that, at higher education levels, earners are more heavily selected towards the more talented. Whatever the reason, the fact that the pecuniary returns to post-primary schooling are significantly greater for women than for men suggests that the opportunity cost to Cambodia of keeping girls from obtaining secondary education may be considerable.

There appear to be other social benefits from female education. Household survey data indicate that Cambodian women with schooling have lower levels of fertility than women with no schooling. In addition, the children of schooled women are less likely to be malnourished and much more likely to be enrolled in primary and secondary schools than the children of women with no schooling.

There is a synergestic interaction among the different components of human development that is often ignored in the literature. For instance, there is compelling evidence from a number of countries that suggests that malnourished children are slow learners and perform poorly in school. Thus, simultaneous improvements in child nutrition and child schooling will have a joint effect that is greater than the sum of the two individual effects.

Similarly, there is a 'virtuous' circle between income on the one hand and schooling, health and nutritional outcomes on the other hand. Improvements in income increase the resources available to households and individuals for investing in themselves (i.e., their schooling, health and nutrition). But, in turn, these human capital investments increase the productivity of individuals and workers, thus enabling them to earn more income. This sets in a 'vicious' circle of higher incomes, better health, more schooling and improved nutrition. Again, the synergy between the various dimensions of human development – i.e., per capita income, literacy and life expectancy – means that it is possible to get higher payoffs from policy interventions that *simultaneously* address all aspects of human development than those that address only one component at a time.

L. Conclusions

It is beyond the scope of this report to make concrete policy recommendations for poverty reduction and human development in Cambodia. Rather, the intention of the report has been to describe the human development situation in the country, highlighting differences across economic groups, rural and urban areas, provinces, and men and women. However, it may be useful to conclude by pointing out some salient aspects of human development and poverty in Cambodia that might be of interest to policy makers.

There is no doubt that the level of human development in Cambodia is very low. Even with the revised HDI score, Cambodia still ranks among the lowest 20% of countries in terms of its HDI ranking. However, Cambodia is also a very poor country -- among the poorest 20 countries in the world, according to the World Bank (1997b). Indeed, the analysis in this report suggests that Cambodia's level of human development is consistent with its low per capita income. Since many components of human development, such as literacy, school enrollment, longevity, nutrition and lack of poverty, are strongly related to per capita GDP, it is likely that robust, broad-based economic growth arising out of labor-intensive production will, on its own, improve the human development situation in the country.

However, the experience of other developing countries suggests that economic growth alone can take an inordinately long time to improve social and human indicators, and that it is possible to short-circuit the process by selective and targeted human development and anti-poverty interventions. As these interventions are planned, it may be useful to keep in mind three findings that have emerged from the analysis undertaken in this report.

First, there are large differences in social and human outcomes across economic groups. Whether it is literacy or school enrollments, access to basic services or health outcomes, fertility or child nutrition, the poorest 20% of the population has the worst possible indicators.

Second, there are large provincial differences in social and human indicators. The provinces of the Northeast, such as Ratanak Kiri and Mondul Kiri, as well as the provinces of Kampong Cham, Siem Reap and Prey Veng are very low on the human development score. In addition, malnutrition, poor health, and illiteracy are concentrated in certain provinces in the country. For example, four provinces -- Kampong Cham, Kandal, Takeo, and Prey Veng -- alone account for one-half of all the severely malnourished children aged 0-5 years in the country. This means that targeting nutritional and other interventions to these provinces could be cost-effective.

Third, there are marked gender differences in social outcomes. While primary enrollment rates for boys and girls are similar, girls have much lower enrollment rates than boys in lower and upper secondary school. Not only is this inequitable, the analysis of labor market returns suggests that this may be highly inefficient. The estimated rate of return to secondary schooling is significantly higher for females than for males (20% versus 6%), implying that Cambodia may be foregoing a great deal of earnings and productivity from not sending more girls to lower- and upper-secondary schools.

Not all observed gender differences favor boys. In Cambodia, the infant mortality rate for boys is nearly 40% greater than that for girls. The reasons for this large gender difference are unclear. Whatever the reasons, such a huge difference is inequitable (and probably unsustainable).

I. INTRODUCTION AND MOTIVATION

Cambodia is a country in transition. But, unlike other transitional economies that are moving from being command economies to market economies or from a socialist system to a capitalist system, Cambodia is making the transition from reconstruction to development. The country has been mired in conflict and civil war for so long that it has had to initiate reconstruction and rehabilitation -- of physical and human capital -- before seriously planning for economic and human development. However, after nearly five years of reconstruction and rehabilitation, it now appears poised to begin the next phase of development.

This is the first in what is hoped will become a series of human development reports on the country. The objective of this report is to provide a factual overview of human development in Cambodia. Reliable, household survey-based information is one of the key bottlenecks to planning for development in the country. There has not been a census in Cambodia in more than three decades. Until 1993-94, there had not been a nationally-representative, multipurpose household survey for even longer. Thus, there is little information on social and economic indicators that can be used for planning, programming and resource allocation purposes.

A central objective of this report is to fill these lacunae. The report uses data from the Socioeconomic Survey of Cambodia 1993-94 and 1996 -- two of the few nationally-representative, multi-purpose household surveys conducted in more than three decades -- to profile poverty and human development -- including health, nutrition, schooling and basic services -- in the country. The report is poverty-sensitive in that it disaggregates all analysis by poverty status, and explicitly considers human development of the poor in Cambodia.

A goal of this report is to initiate a national debate on poverty and human development in Cambodia. Such a debate is useful not only to define the issues and priorities for action, but to also create the demand for more and better data on economic, social and human development indicators in the country. Better data can, in turn, lead to more informed debates and decision-making.

A. Human Development

The traditional focus among development economists and policy makers in developing countries has been on economic growth and economic development. While these are important -- indeed, essential -- means of improving people's welfare, they remain only that -- means to an end. The end is for people to enjoy long, healthy and creative lives. Since 1990, the United Nations Development Programme (UNDP) has been bringing out an annual *Human Development Report* (HDR) to review the state of human development around the world. The first *HDR* in 1990 summed up the concept of human development succinctly:

> "People are the real wealth of a nation.... Human development is a process of enlarging people's choices. The most critical of these wide-ranging choices are to live a long and healthy life, to be educated and to have access to resources needed for a decent standard of living. Additional choices include political freedom, guaranteed human rights and personal self-respect.... These may appear

to be simple truths. But they are often forgotten in the immediate concern with the accumulation of commodities and financial wealth."

The concept of human development is distinct from that of human resource development. The latter looks upon the expansion of people's capabilities largely as a human capital input into increasing production. The former, however, views the expansion of human capabilities as both the means and objective of development. The reader should be forewarned that the coverage of human development by the current report is narrower -- limited mainly to the social sectors and poverty. This was necessitated not only by the availability of data but also by the immediate planning needs of government and international agencies working in Cambodia. Hopefully, future reports will address some of the other aspects of human development.

In recent years, UNDP has encouraged individual countries to produce national human development reports. The objective of these reports is to review the state of human development within a country and to focus on intra-national disparities in human development across economic and social groups and across geographical regions.

B. Poverty

Freedom from poverty is an essential component of human development, because poverty prevents people from enjoying long, healthy and enriched lives. It restricts people's choices and robs them of dignity and self-respect.

There are many different ways of measuring poverty, resulting from the fact that poverty has so many dimensions and equally large number of causes. Poverty is simultaneously caused by and manifested in low incomes, low consumption, lack of physical assets, landlessness, poor health and disability, high rates of morbidity and mortality, low levels of education, and physical isolation, among other things. Each of these can be used to define poverty.

The standard definition of *absolute poverty* that is used widely is a consumption-based definition. According to this approach, poverty is the inability to attain a minimal standard of living – typically taken to imply adequate income to consume a food basket that provides at least 2,100 calories of energy per person per day (with a small allowance for nonfood consumption, like clothing and shelter).

Another definition of poverty that is sometimes used is the proportion of households whose incomes fall below the mean income for the poorest 40% of the population. Because the poverty line in this approach is defined in relation to the consumption levels of the poorest two quintiles of the population, the approach measures *relative poverty*. While parsimonious in its data requirements (the poverty line is defined by simply observing the distribution of consumption expenditure in the population), this definition of poverty is not very useful. Since it is relative poverty that is measured, a country can never eliminate poverty by this definition.

Yet another way of looking at poverty – one that has some appeal – is to define poverty not in terms of income or consumption, but in terms of its direct consequences or manifestations, such as poor nutrition, ill health, or low levels of schooling. The argument here is that consumption is a poor proxy for living standards, and that the latter can be directly measured by

observable indicators like housing, health, and nutrition, among other things. By this definition, poverty becomes synonymous with human development.

Whatever the definition of poverty that is used, the most important rule for a policy maker should be *to continue with the same definition over time and to stay with the same absolute poverty line established at an earlier point in time* (after adjusting it for changing price levels). One of the most important reasons for defining poverty is to be able to monitor its growth or reduction over time. For the purpose of monitoring, the *level* of the absolute poverty rate at any given point in time does not matter; what matters is the *change* in the level of absolute poverty *over time*. Changing the definition of poverty or altering the real poverty line from year to year can easily wreak havoc on poverty monitoring efforts.

C. Elements of a Poverty Strategy

It is now widely recognized that a successful attack on poverty needs to be mounted simultaneously on *three* fronts (World Bank 1990, UNDP 1997). First and foremost, *economic growth is a necessary* -- although not sufficient -- *solution to the problem of poverty*. Rapid economic growth, especially based on labor-intensive production and exploitation of a country's inherent advantages, can go a long way toward alleviating poverty. In large part, the success of countries such as Indonesia, Thailand and China in dramatically reducing poverty over the last 2-3 decades can be attributed to their extraordinarily high rates of broad-based economic growth.

However, many of the poor are often ill-equipped to take full advantage of the opportunities created by economic growth. In order for them to be able to take advantage of these opportunities, they need to invest in their 'human capital.' Thus, *human resource development, especially targeted to the poor, forms the second element* in the three-pronged attack on poverty. A human resource-based strategy is one of the most effective methods of combating poverty, as human capital enhances the productivity of the poor's most abundant and often only asset -- labor. While the development of human resources has long been recognized as an essential part of a 'basic needs' approach to economic development, the awareness that human capital investment are also critical components of a strategy of *economic growth* is relatively recent. Virtually no country that has achieved rapid economic growth has done so without investing heavily in human resources.

Both of the measures discussed above are somewhat long-term in nature. In the short run, the poor need to be targeted by interventions designed to address the immediate cause of their poverty, such as lack of access to credit (for purchasing income-generating assets) or involuntary unemployment. Thus, *short-term safety-net programs for the poor form the third element of the poverty alleviation strategy*.

D. Poverty Alleviation and Human Development in Cambodia's Plans

The Royal Government of Cambodia (RGC) has declared poverty alleviation as its most important goal. This commitment has been declared in several RGC documents, including the *First Socioeconomic Development Plan 1996-2000*, *Implementing the National Programme to Rehabilitate and Develop Cambodia*, and *Socioeconomic Development Status, Requirements and Proposals*. For instance, the *First Socioeconomic Development Plan* 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."

The Socioeconomic Development Plan correctly recognizes that economic growth is a *sine quo non* of poverty reduction. It therefore goes on to state that "... the Royal Government is seeking a relatively high real rate of GDP growth (7-8% per year) in the next decade or so and ... one which (i) optimises the utilization of the country's domestic resource base in the generation of that growth, and (ii) allows wider and more equitable access among people and regions to the fruits of that growth."

At the same time, the Plan recognizes that "... the design of projects and programmes that explicitly aim at poverty reduction and human resource development, or that target specific social groups, is essential in a Cambodian context." The Plan argues that a rural development strategy based on a participatory, "bottom-up" approach in which communities have greater decision-making responsibilities can greatly facilitate poverty alleviation. This approach is to be commended, because communities often have more and better information than the central or provincial governments on who the poor are, where they reside, and what type of assistance they need.

As far as specific areas of poverty intervention are concerned, the Plan notes that poverty is closely linked to poor human resources and lack of productive employment opportunities. It argues that the heavy emphasis on social development in the Plan is consistent with the strong commitment to poverty alleviation of the RGC. In employment creation, the Plan targets the informal sector as one where poverty is concentrated, and recommends both vocational training and provision of credit to enable the poor to purchase income-generating assets. For self-employed individuals in the agricultural sector, low yields and small landholding are identified by the Plan as constraints to income expansion. Finally, there is a passing reference in the Plan to "... further employment creation through the adoption of labour-intensive public works in road construction and maintenance, irrigation, land reclamation and afforestation, building on experience which already exists."

E. Unique Features of Cambodia That Have a Bearing on Poverty and Human Development

There are two unique features of Cambodian history that have a bearing on its economic and human development record. First, it is probably the only country in the world that experienced (during the Khmer Rouge years of 1975-79) not merely genocide on a scale hitherto unseen, but deliberate state-sponsored destruction of economic, social and human capital. Anywhere from one to two million people lost their lives due to torture, execution, disease, and starvation. While larger numbers of people have perished in other genocides around the world, the number of dead in Cambodia constituted a huge *proportion* of the population (and an even larger proportion of the working-age population). Nearly one in six or seven Cambodians lost his or her life during the short period of four years. To make matters worse, people with any human capital -- intellectuals, teachers, even individuals wearing glasses and hence presumed to be literate -- were targeted for executions. Not only did this destroy an enormous fraction of the human capital stock of the nation, it created strong and lasting disincentives among people for acquiring

education. Even after the overthrow of the Pol Pot regime, people were wary of acquiring higher education for fear of being targeted by another extremist group coming back to power. The scars left by the Khmer Rouge era on the national psyche run deep.

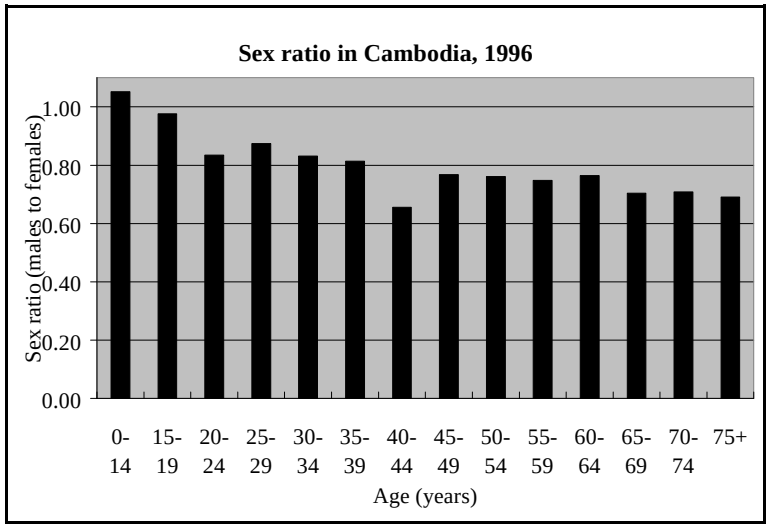

Figure I.1
Source: Demographic Survey of Cambodia, 1996.

The Khmer Rouge period has left an indelible mark on the structure of the Cambodian population. Figure I.1 shows the sex ratio -- i.e., the ratio of males to females -- by age group in Cambodia in 1996. In the demographic group aged 40-44 years -- individuals who would have been 21-25 years old in 1977 (midpoint of the Khmer Rouge period) -- there are only 66 males per 100 females. Since these are not ages at which men die of natural causes at a greater rate than women (such as at ages past 65), the extremely low sex ratio for this demographic group is a testimony to the hundreds of thousands of young males who perished in the Pol Pot years.[1]

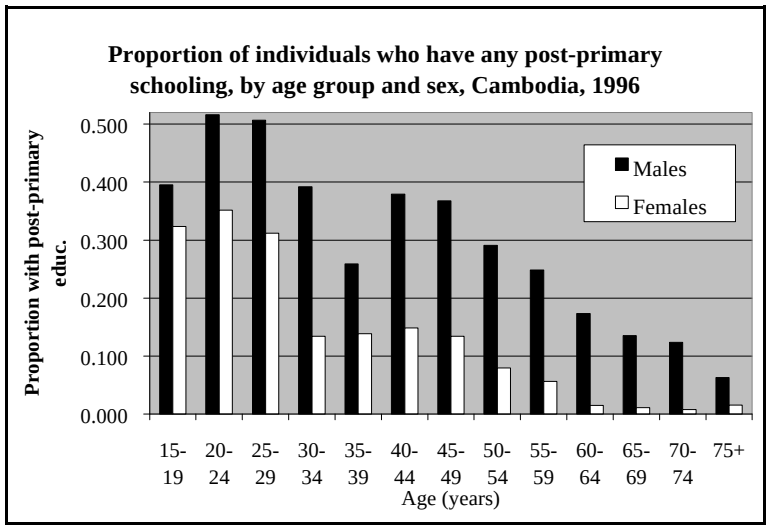

Figure I.2
Source: Socioeconomic Survey of Cambodia 1996.

Another legacy of the Khmer Rouge period is evident in Figure I.2, which shows the proportion of males and females with some post-primary schooling by age group. A discontinuity is observed, especially among males, for the age group 35-39 years. While the proportion of males having post-primary schooling in the age groups 30-34 years and 40-44 years in nearly 40%, only 25% of the males in the age group 35-39 years have post-primary schooling. These individuals would have been aged 14-22 years during the Khmer Rouge period. Thus, the "deficit" of post primary-schooled persons evident for this age group is indicative of the vast

[1]Of course, the data are also consistent with selective outmigration of males aged 40-44 years out of Cambodia. However, this possibility does not appear likely.

numbers of young adults who permanently lost the opportunity of acquiring secondary or tertiary education owing to the abolition of formal education during the 1975-79 period.[2]

The second unique feature of Cambodia that has a bearing on its development is its history of political turbulence. It is a country that has been mired in armed conflict for the better part of the last three decades. There are at least three consequences of this history of conflict that have important effects on development. First, the armed conflict and the insecurity it has produced among the population have led to a large displacement of people. Nearly 350,000 Cambodians fled the Khmer Rouge and the civil war that ensued between resistance factions and government forces the period 1979-89. These "displaced" persons, who lived in camps along the Thai border, were returned to Cambodia in 1992-93. Of the refugees who returned, nearly 60% decided to relocate in the northwestern provinces. Of these, approximately a quarter relocated in the provinces of Battambang and Banteay Meanchey alone. As a result, these provinces experienced a massive increase in population for which they were unprepared. It is estimated that nearly a quarter of the population in these two provinces is made up of refugees. The resettlement is ongoing and not yet complete. As of August 1995, there were still close to 100,000 internally displaced people in Cambodia, of whom about one-half had been displaced for over a year (WFP, 1995). Displacement creates numerous problems for development. In addition to the cost of relocating displaced refugees, there is the opportunity cost from not engaging these individuals in productive activities. Since most of these individuals have typically lost their livelihoods and all their possessions, they depend almost entirely on relief and emergency aid for their survival.

Second, the armed conflict -- in particular, the landmines -- have resulted in a relatively large proportion of the population being disabled. Even today, landmines continue to kill Cambodians of all ages indiscriminately. It is estimated that one in 236 Cambodians has lost a limb, or part of a limb, giving the country one of the highest proportions of people with amputations (UNICEF, 1996). Data from the Socioeconomic Survey of Cambodia (SESC) 1996 show that the disability rate in Cambodia is nearly 30 disabilities per 1,000 persons (Figure I.3). While the rate is lower for the poor than for the better-off population, there is a higher concentration of amputees -- generally the victims of war and landmines -- among the poor than the rich (Figure I.4). The high human and economic

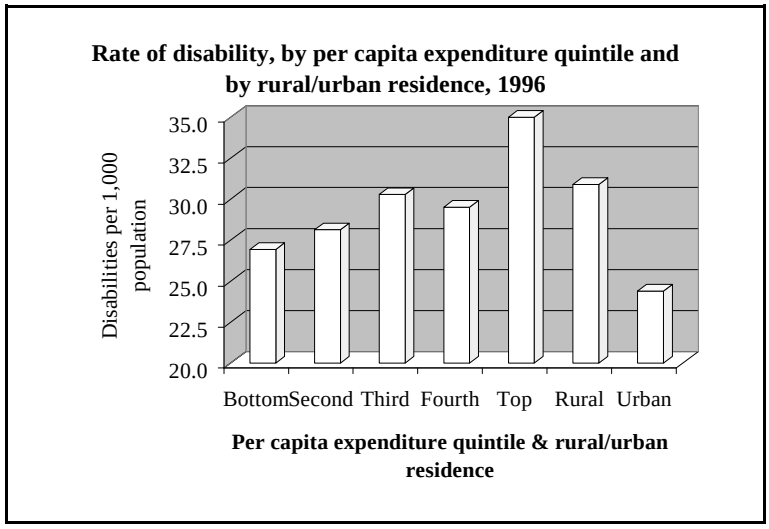

Figure I.3
Source: Socioeconomic Survey of Cambodia, 1996.

[2]A sharp discontinuity is also observed for women aged 35-39 years. However, since post-primary schooling rates were low for women even before the Khmer Rouge period, the proportion of women with post-primary schooling is sharply lower for all ages above 35.

cost of landmine-inflicted disabilities, especially on the poor, is an important consequence of Cambodia's tumultuous political history.

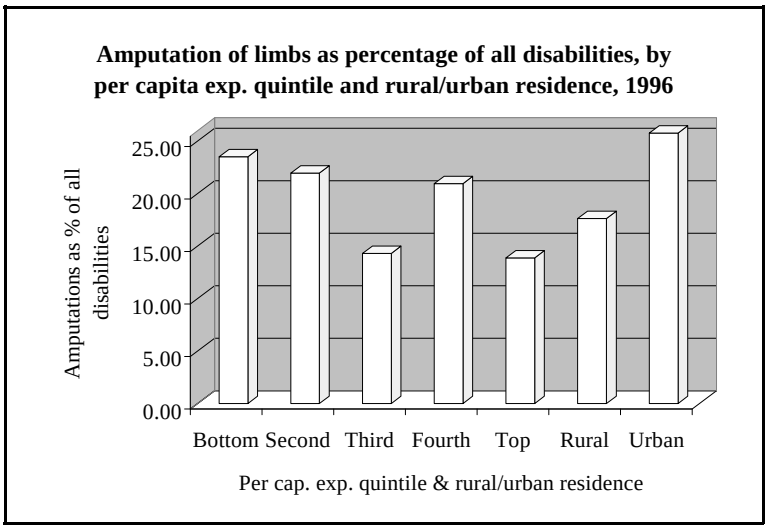

Figure I.4
Source: Socioeconomic Survey of Cambodia, 1996.

The third consequence of the long period of conflict has been a high rate of female headship of households. Overall, a quarter (25.3%) of Cambodian households are headed by women, with the proportion increasing to 29.8% for urban households (Rao and Zaan, 1997). There are marked regional differences in the proportion of households headed by women, with provinces in the Northwest, such as Beanteay Meanchey and Battambang, and the South (e.g., Kampot and Kampong Speu) having much higher rates than those in the Northeast. While some of this difference could be cultural (the population of the Northeastern provinces is composed largely of hill tribes with different cultural and family patterns), a lot could be explained by the fact that provinces in the Northwest have witnessed longer occupation by the Khmer Rouge and consequently greater civil strife.

F. Data Limitations and Caveats

It is important to note some limitations of the data used in this report. Unlike other developing countries, Cambodia does not have a long history of -- and experience at -- administrative and household data collection. The report makes extensive use of two recent household surveys in Cambodia -- the Socioeconomic Survey of Cambodia (SESC) 1993-94 and the SESC 1996. The SESC 1993-94 was a stratified survey of 6,000 households undertaken in four rounds, while the SESC 1996 was a stratified survey of 9,000 households undertaken in two rounds. The SESC 1993-94 did not cover large parts of the country -- accounting for about 35% of the population -- that were inaccessible owing to poor security. However, the survey was representative of Cambodia as a whole. The SESC 1996 had much wider coverage, since it excluded only two provinces (accounting for about 10% of the country's population) for security reasons. While both surveys were large and nationally representative, they were not designed for provincial disaggregation. Provincial estimates obtained from the two surveys may not always be precise (in terms of their statistical validity) because of inadequate numbers of sampled households in some provinces. In addition, because the two surveys had different population coverage, comparisons between 1993-94 and 1996 indicators may not always be statistically valid.

It is therefore important that the statistics presented in this report not be interpreted as definitive estimates for the Cambodian economy. Rather, they should be seen as tools for describing and understanding broad patterns of human development and poverty in the country. Hopefully, better utilization of currently-available data will increase the demand for and availability of more reliable information in the future.

II. POVERTY IN CAMBODIA

A. Poverty Levels

The most reliable poverty estimates for Cambodia are based on the Socioeconomic Survey of Cambodia (SESC) 1993/94. Since this was a detailed household consumption survey, based on a nationwide sample of 6,000 households, it is ideally suited for an analysis of poverty. While the SESC 1996 also obtained information on household monthly expenditures, these expenditures were too highly aggregated to be reliable in measuring poverty.[3] However, as will be seen below, the aggregate 1996 data are suitable for ranking households in terms of their welfare levels. They can also be used to measure inequality in consumption expenditures. Another reason for not being able to measure the level of poverty in 1996 is that reliable regional or provincial price deflators that would permit comparison of 1993 and 1996 expenditures in real terms are simply not available at this time.

1. Incidence of Poverty. In 1993-94, the minimum income necessary to purchase food yielding an average energy intake of 2,100 calories per person per day and a minimum quantity of nonfood items was estimated to be Riels 47,340 (US$21.52) per person per month in Phnom Penh, Riels 37,920 ($17.24) in other urban areas, and Riels 33,510 ($15.23) in the rural areas of Cambodia.[4] Going by these poverty lines, the headcount index of poverty (that is, the percentage of persons whose incomes fall below the poverty line) was estimated at 11.4% for Phnom Penh, 36.6% for the other urban areas, and 43.1% for the rural areas of the country (Table II.1).[3] The incidence of poverty for the country as a whole was estimated at 39%. Thus, somewhat less than one-half of Cambodia's population lives below the poverty line. While this may seem like a very large number, it is

Table II.1: Poverty Indices by Region, Cambodia, 1993-94

Stratum	Population share (%)	Headcount index (%)	Poverty gap (%)	Severity index (%)
Phnom Penh	10.7	11.4	3.1	1.2
Other Urban	11.0	36.6	9.6	3.6
Rural	78.2	43.1	10.0	3.3
Total*	100.0	39.0	9.2	3.1

* "Total" refers to the sampled regions only.

Source: Prescott and Pradhan (1997).

[3]For instance, there was only one question on all food expenditures incurred by the respondent household during the week preceding the survey.

[4]For a detailed discussion of how the food and overall poverty lines were derived, see Prescott and Pradhan (1997).

[3]All estimates reported in this section are from Prescott and Pradhan (1997).

probably much lower than the proportion of individuals living below the poverty line during the difficult years of the late 1970s and 1980s.

Any estimate of poverty is sensitive to the choice of the poverty line. In the Cambodian context, if the poverty line is reduced drastically to the level that would merely provide 2,100 calories per person per day and nothing else, poverty rates fall to 6% in Phnom Penh, 20% in other urban areas, and 22% in the rural areas. Nationally, the incidence of poverty falls to about 21%, indicating that one-fifth of the population in Cambodia is food-poor in the sense of being unable to meet even basic calorie requirements.

2. Depth of Poverty. A shortcoming of the head-count ratio is that it does not say anything about the depth of poverty, viz., the extent to which the incomes of the poor are below the poverty line. The *poverty gap index* fills this shortcoming by measuring the shortfall between the expenditures of poor households and the poverty line. The sum of all individual poverty gaps in a sample can be interpreted as the minimum amount of income transfers needed to bring all of the poor just up to the poverty line in the presence of perfect targeting.[4] The SESC 1993-94 data indicate that, although the total proportion of the Cambodian population in poverty is large -- 39% of the total -- the poverty gap is relatively small (9.2%). In other words, if perfect targeting were possible, an income transfer of Riels 3,261 (or $1.50)[5] per person per month would be required to eliminate poverty. This corresponds to 5.9% of mean consumption expenditure per capita in 1993-94. Blowing up these figures nationally, one would obtain a minimum transfer amount for complete poverty eradication of about $190 million per annum.[6] In comparison, the actual amount of donor assistance to Cambodia was $340 million in 1993-94.

The regional variations in the depth of poverty mirror those in the headcount index. The depth of poverty is greatest in the rural areas (10%), followed by the urban areas outside Phnom Penh (9.6%) and Phnom Penh (3.1%).

3. Severity of Poverty. Neither the headcount index nor the poverty gap index are sensitive to the distribution of income among the poor and hence to the severity of poverty. A redistribution of income from a destitute individual to someone much better off (but still under the poverty line) will leave both indices unchanged, although it is clear that this redistribution will have increased the severity of poverty in the population. The poverty severity index is sensitive to the distribution of income among the poor, since it weights the shortfall between an individual's income and the poverty line more heavily the further below the poverty line that individual's income falls. A shortcoming of this index is that, unlike the head-count and the poverty gap

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[4]Perfect targeting implies that each individual below the poverty line would receive a transfer that would permit his or her consumption to reach the level of the poverty line and that no one above the poverty line would receive any transfers.

[5]This is calculated as 9.2% of the national poverty line of Riels 35,441.40 (i.e., 0.092 x 35,441.40) per month per person.

[6]It should be realized that these are hypothetical numbers. Besides the fact that perfecting targeting is rarely possible in practice, few governments would ever undertake transfers on this scale to eradicate poverty.

indices, it does not lend itself to an easy interpretation. Its use, therefore, lies mainly in comparing the severity of poverty across different subgroups in the population.[7] The severity index is estimated at 3.1% for all of Cambodia, with large regional variations.

Again, the regional variations in the severity of poverty mirror those in the headcount index and the poverty gap. The severity of poverty is greatest in the urban areas outside Phnom Penh (3.6%), followed by the rural areas (3%) and Phnom Penh (1.2%).

B. Who are the Poor?

Answering this question can lead to better targeting of the poor by poverty alleviation programs. In Cambodia, it is easy to target the poor by sector of employment and education. The highest incidence of poverty is found among individuals living in households headed by someone working in agriculture and fishing (46%), followed by those in construction and mining (37%) and transport sectors (31%). Among government workers, the incidence of poverty is only 20%. Looking at the same data differently, one finds that nearly three-quarters of the poor are in agriculture and fishing. This is not surprising, given the large numbers of Cambodians working in this sector and the very low productivity in this sector.

The incidence of poverty also varies greatly by the educational level of the household head. Not surprisingly, while 47.1% of individuals living in households headed by someone with no schooling are poor, the corresponding rate is 30.1% for household heads with higher secondary education and 0% for those with a college/university degree.

Another important targeting mechanism might be the sex of the household head. This might be expected to be a major concern in Cambodia where a large share of the population lives in households headed by women. However, the SESC 1993-94 suggest that female-headedness is not a good targeting variable. While female-headed households accounted for nearly 23% of the population (surveyed by the SESC 1993-94), they accounted for only 15% of the poor. The incidence of poverty among male-headed households was greater than that

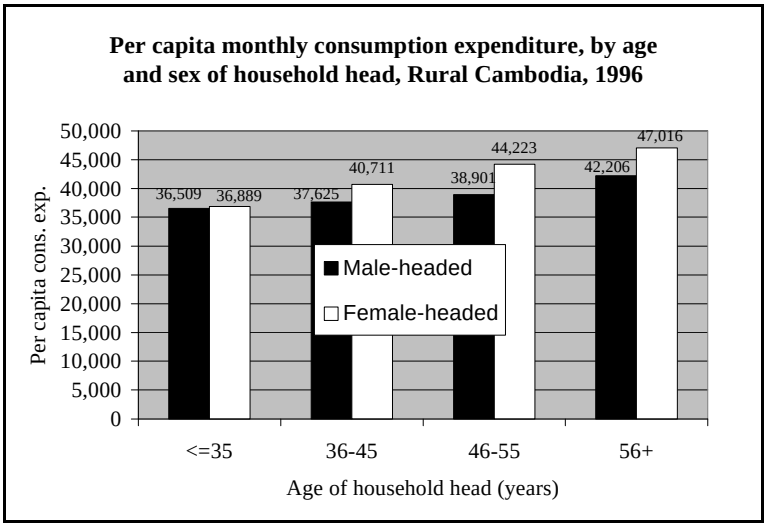

Figure II.1
Source: Socioeconomic Survey of Cambodia, 1996.

[7]All of the three measures discussed here -- viz., the headcount ratio, the poverty gap index, and the severity index -- are fully decomposable across different subgroups in the population.

among female-headed house holds (40% versus 35%). This is a puzzling result, as it is contradicts the general perception of female-headed households being poorer than male-headed households.

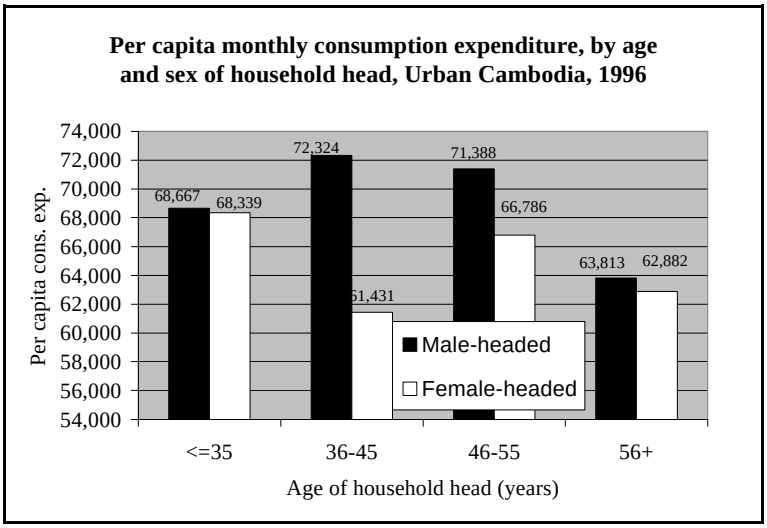

Figure II.2
Source: Socioeconomic Survey of Cambodia, 1996.

The SESC 1996 data can cast further light on this issue. In the rural areas, per capita expenditure is observed to be greater (albeit only slightly) in female- than in male-headed households for all ages of the household head (Figure II.1). However, in the urban areas, female-headed households are worse off than male-headed households, especially among households where the head is 36-55 years of age (Figure II.2). This occurs because extended (or joint) households are more common in the rural areas, and there are often several male earners (such as sons, sons-in-laws, and other younger male relatives) residing in a rural female-headed household (and making up for the income loss associated with a missing husband). However, in the urban areas, female-headed households, especially where the female head is middle-aged (i.e., 36-55 years old), often do not have the additional male earners to make up for the income loss associated with a missing husband. What this means is that female-headedness is a useful targeting variable only in the urban areas and among female heads aged 36-55 years old.

C. Changes over Time

As noted earlier, unlike the SESC 1993-94, the SESC 1996 data cannot be used to measure the head-count, depth or severity of poverty. However, they can be used to estimate the inter-personal distribution of expenditure and proxies for poverty. For these variables then, it is possible to compare changes over time. The two and one-half years between the two surveys were a period of rapid economic growth in Cambodia, with per capita GDP growing at 6% rates (World Bank,

Table II.2: Shares of expenditure quintiles in national, rural and urban consumption expenditure, 1993-94 and 1996

Total exp. quintile	Rural		Urban		Total	
	1993-4	1996	1993-4	1996	1993-4	1996
Bottom	8.94	6.21	4.60	5.32	6.97	5.76
Second	13.27	10.49	8.27	9.77	10.55	9.91
Third	17.18	14.62	12.91	14.03	14.03	14.10
Fourth	22.44	21.06	20.75	20.64	19.43	20.65
Top	38.17	47.61	53.46	50.24	49.01	49.58

Notes: Quintiles are constructed on the basis of *total* household consumption expenditure per month; aggregation of the quintile distribution is done over *individuals* (as opposed to households) and is based on sample weights. Quintiles are stratum-specific; thus, the bottom *rural* quintile refers to the lowest 20% of individuals in the rural consumption distribution.

Source: Socioeconomic Survey of Cambodia, 1993-94 and 1996.

1997a). Did rapid economic growth in Cambodia reduce disparities in consumption and reduce poverty? Or did it have the opposite effects?

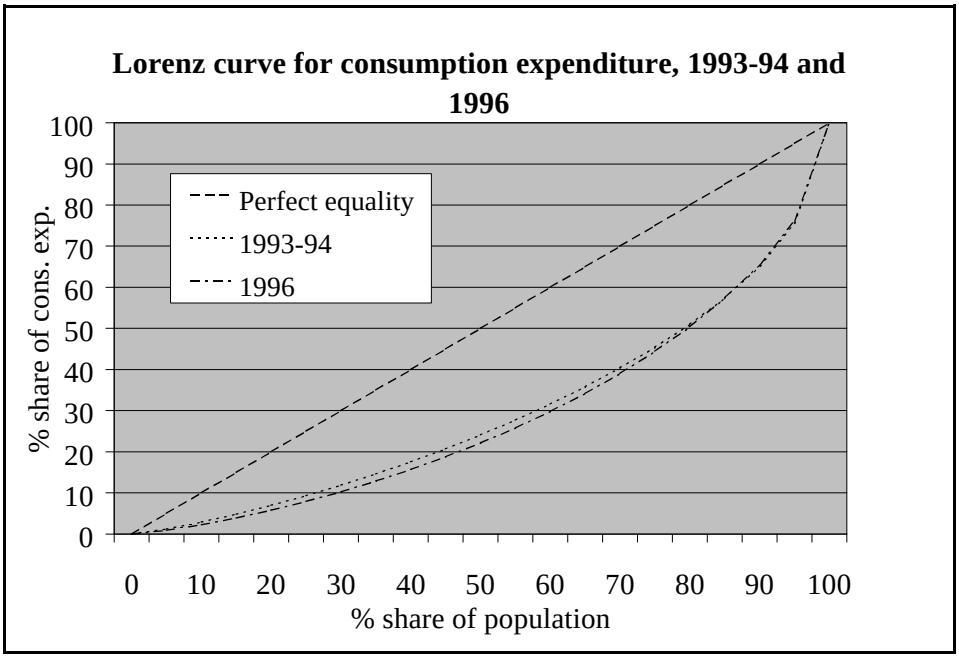

Figure II.3
Source: Socioeconomic Survey of Cambodia, 1993-94 and 1996.

1. Distribution of Consumption Expenditure. Table II.2 shows the distribution of consumption expenditure in the country, separately by rural and urban strata, for 1993-94 and 1996, while Figure II.3 displays the Lorenz curves for consumption expenditure for both period. While the shares of the top four quintiles (i.e., the richest 80% of the population) remained almost the same over the two periods, the poorest 20% of the population appear to have lost ground. Their relative share in national consumption fell from about 7% to 5.8% -- a decline of 17.4%. However, the situation in rural and urban areas was very different. In the rural areas, there was a sharp increase in inequality, with the poorest 80% of the population losing ground, and the richest 20% improving their share in total consumption expenditure markedly. In contrast, the urban areas saw a decline in inequality, with the poorest 60% of the population gaining ground at the expense of the richest 40%. Thus, the distribution of consumption appears to have changed in Cambodia, with the rural poor having experienced large relative declines in their share of consumption expenditure and the urban poor having improved their position relative to the urban nonpoor.

The increase in inequality, although disconcerting, is not surprising. Most economies in transition have experienced such rising inequalities, as liberalization typically creates new income opportunities which the rich are better able to exploit, thanks to their better physical and human capital base. What is not easily explained is the divergence of experience between the rural and urban areas of Cambodia. It is not clear why (and how) the urban areas of the country were able to narrow consumption inequality, while the rural areas were experiencing widening disparity.

2. Food Shares. An indicator of poverty that is widely used in the absence of data on poverty lines is the share of total consumption expenditure that is spent on food by households ("food share"). Poor households in developing countries typically spend much larger shares of their total expenditure on food than nonpoor households. This is true in Cambodia as well, as Table II.3 below shows. In 1996, the poorest quintile of the population had a food share of about 66%, while the corresponding figure for the richest quintile was less than 50%. However, there was a marked decline in the share of total expenditure being spent on food by all households between 1993-94 and 1996. The food share of the poorest quintile declined from 72.6% to 65.6% -- a decline of nearly 10%. These data suggest that the absolute (real) incomes of the poorest quintile of the population had improved during the period. The decline was approximately similar in the rural and urban areas, suggesting an equivalent decline in poverty in both strata.

Table II.3: Share of food in total monthly expenditure, by total monthly expenditure quintile and rural/urban residence, Cambodia, 1993-94 and 1996

Total exp. quintile	Rural		Urban		Total	
	1993-4	1996	1993-4	1996	1993-4	1996
Bottom	72.74	65.48	70.86	64.22	72.55	65.60
Second	71.91	66.87	67.95	63.56	71.74	66.76
Third	71.54	65.53	62.28	59.03	71.12	64.04
Fourth	69.57	56.75	56.34	55.18	67.20	56.03
Top	63.64	48.23	48.25	45.34	57.64	48.18
Total	69.88	60.57	61.15	57.47	68.05	60.12

Notes: Quintiles are constructed on the basis of *total* household consumption expenditure per month; aggregation of the quintile distribution is done over *individuals* (as opposed to households) and is based on sample weights. Quintiles are stratum-specific; thus, the bottom *rural* quintile refers to the lowest 20% of individuals in the rural consumption distribution.

Source: Socioeconomic Survey of Cambodia, 1993-94 and 1996.

How is the evidence that the food shares of the poorest quintile declined consistent with the finding that the relative share of the same group in national consumption declined between 1993-94 and 1996? What the data suggest is that even though the poor received a somewhat smaller share of the total pie in 1996 than in 1993-94, the absolute amount they received was still greater because the pie had grown substantially between the two periods. Economic growth, which leads to growth in household consumption, is often the strongest determinant of poverty reduction.

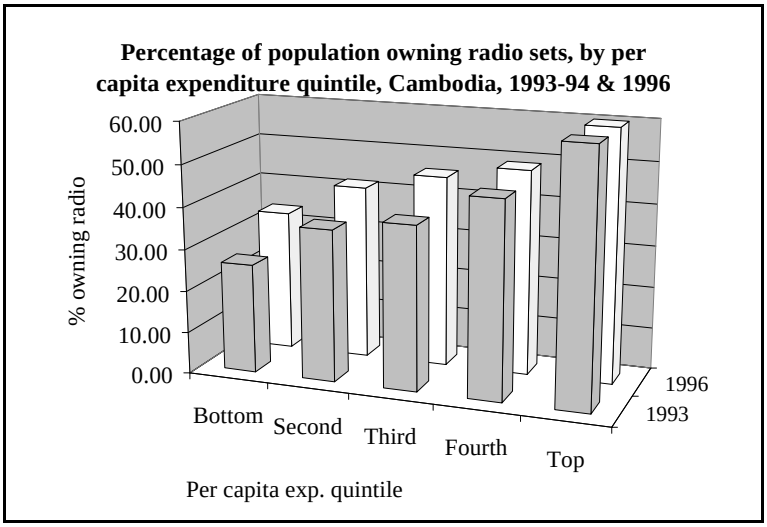

Figure II.4
Source: Socioeconomic Survey of Cambodia, 1996.

3. Ownership of Durables. Another useful indicator of welfare that could be compared for the two periods, 1993-94 and 1996, is the ownership of consumer durables by the poorest 20% of the population. Both the SESC 1993-94 and SESC 1996 collected data on household ownership of a dozen consumer durables. Figures II.4-II.6 display the proportion of the population owning three different durables -- radio, television set, and either motorcycles or cars -- in 1993-94 and 1996, by per capita expenditure quintile. What is immediately noticed is that there was a significant increase in ownership of all three durables -- but especially of television sets -- among the poorest and the second poorest 20% of the population. Appendix Tables II.1 and II.2 show that the poorest 20% of the population, *even in the rural areas*, increased their ownership rate of radios from 26% to 34% and of television sets from 2% to 11% between 1993-94 and 1996. This is hardly the behavior of a group that would have experienced an absolute decline in its living standards. Thus, data on consumer durable diffusion rates suggest quite strongly that absolute poverty declined between 1993-94 and 1996 in both urban and rural areas.

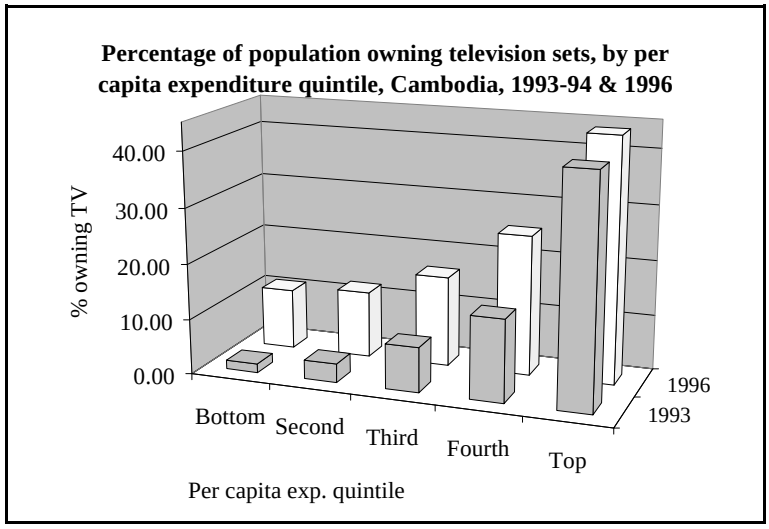

Figure II.5
Source: Socioeconomic Survey of Cambodia, 1996.

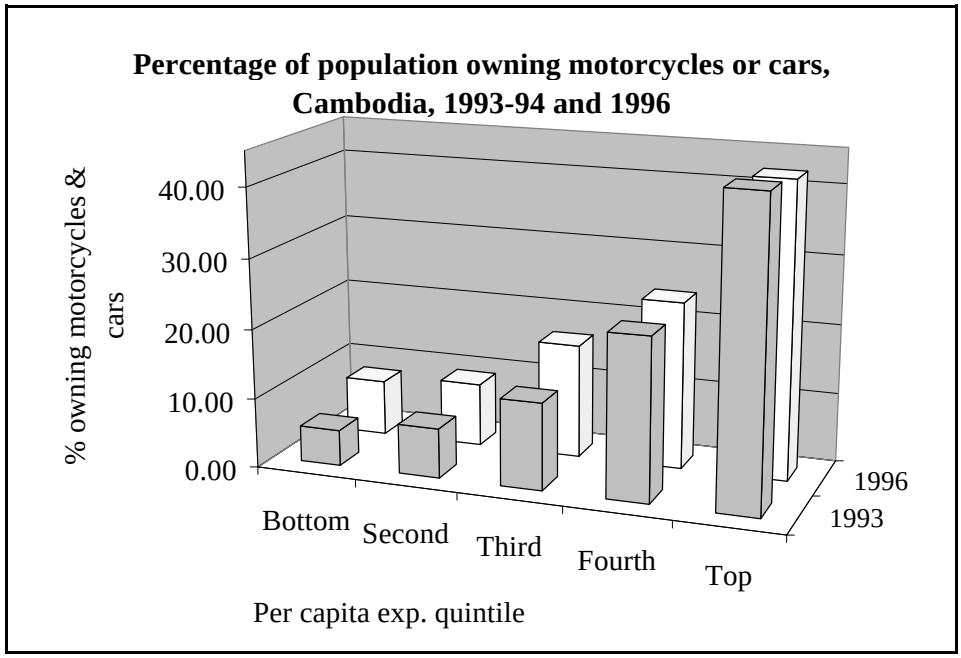

Figure II.6
Source: Socioeconomic Survey of Cambodia, 1996.

D. International Comparisons of Poverty

How do poverty rates in Cambodia compare with those of its immediate neighbors and with those observed elsewhere in Southeast Asia? Figure II.7 shows poverty rates obtained for other countries using the same methodology as that employed in Cambodia. Cambodia is observed to fall somewhere between Laos and Vietnam in terms of poverty incidence. The depth and severity of poverty are, however, lower in Cambodia than in its two immediate neighbors. Of course, poverty, as measured by any indicator, is much worse in the three Indochina countries than in Indonesia.

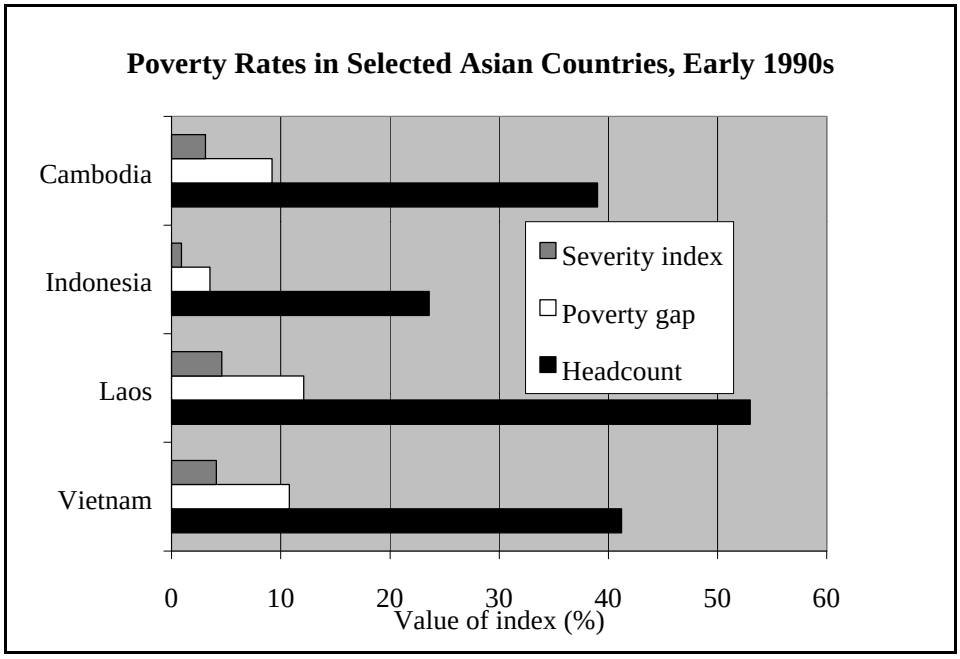

Figure II.7
Source: Socioeconomic Survey of Cambodia, 1996, and Prescott and Pradhan (1997).

III. HUMAN DEVELOPMENT IN CAMBODIA

The previous chapter has reviewed the performance of Cambodia in terms of per capita consumption levels, distribution of consumption, and poverty. However, human development is much more than the ability to attain a certain level of consumption. While consumption is an important -- indeed, essential -- means of improving individual welfare, it remains only a means to an end. The ultimate goal of human development is for people to live long and healthy lives, to be educated, and to have access to resources needed for a decent standard of living.

One way in which human development can be measured is by the human development index (HDI). The HDI is a composite measure of longevity, as measured by average life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and combined primary, secondary and tertiary enrolment ratios (one-third weight); and standard of living, as measured by real GDP per capita (expressed in purchasing power parity-adjusted exchange rates). Each component is scored on a scale of 0 to 1, and the HDI is a simple average of the individual component scores. Thus, the HDI can vary from a low of 0 (indicating an extremely low level of human development) to a high of 1 (indicating a very high level of human development). However, in practice, the index ranges from 0.176 (for Sierra Leone) to 0.960 (for Canada) for 1994.

It should be realized that in no way does the HDI capture the full diversity and significance of human development. Like all summary indicators, it has several shortcomings. However, when used in conjunction with other information, it goes farther than the traditional per capita GNP indicator in measuring a country's or community's development performance. It can be a useful policy tool for setting priorities, allocating public resources, and targeting interventions.

A. Human Development Index

The global *Human Development Report 1997* (HDR 1997) reports an HDI value of 0.348 for Cambodia. Going by this value, Cambodia ranks 153 out of a total of 175 countries for which HDIs are reported. It is the country with the lowest HDI score in East and Southeast Asia (and, with the exception of Bhutan and Nepal, the lowest HDI score in all of Asia). However, the data used by the *HDR 1997* are dated, and, in one case, seriously inaccurate. The *HDR 1997* uses an adult literacy figure of 35% for Cambodia, which is significantly at variance with the estimates of 65-69% adult literacy as reported by three recent household surveys in the country. Upon recalculating the HDI for Cambodia with newer

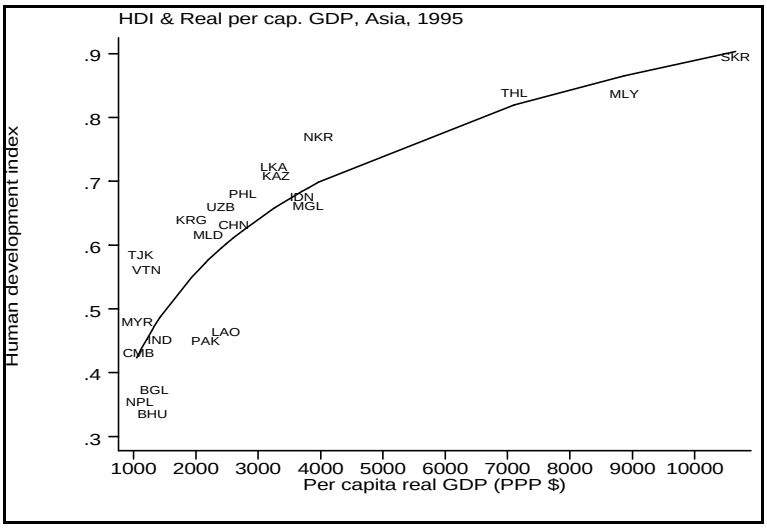

Figure III.1
Source: Socioeconomic Survey of Cambodia, 1996 and UNDP, 1997.

estimates of adult literacy, life expectancy at birth, and combined first-, second- and third-level gross enrolment ratio, a revised HDI of 0.427 is obtained, which raises Cambodia's HDI ranking from 153 to 140 -- just below that of India and Pakistan.

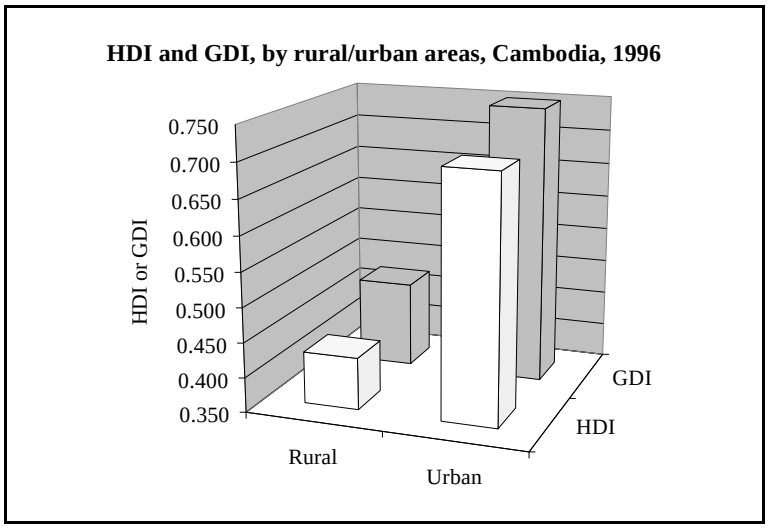

Figure III.2
Source: Socioeconomic Survey of Cambodia, 1996.

However, since there is a strong relationship between HDI and per capita income (indeed, real GDP per capita is one of the components of the HDI), looking at Cambodia's *absolute* HDI rank is not very meaningful. It is much more interesting to examine how Cambodia ranks on HDI *relative to its per capita income*. Figure III.1 plots the HDI scores of several countries in East, Southeast and South Asia against their real GDP per capita (in purchasing power parity terms). The figure also shows an estimated regression line for the relationship between HDI and real GDP per capita for the sample of 21 countries in Asia considered here. What is immediately noticed in Figure III.1 is that Cambodia (CMB) is right on the regression line. In other words, although Cambodia has an HDI score that is very low in absolute terms, it does not have a lower (or higher) HDI score than would be expected at its level of per capita GDP (based on the observed relationship between HDI and per capita GDP across Asia).

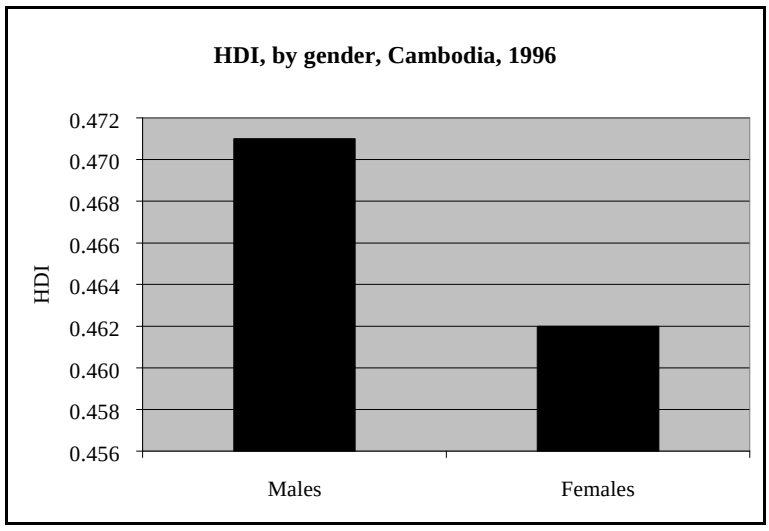

Figure III.3
Source: Socioeconomic Survey of Cambodia, 1996.

Under certain assumptions, the HDI can be calculated for various subgroups of the Cambodian population. Data on adult literacy and school enrollment are, of course, available at the individual level from the SESC 1996. However, in the absence of a census, it is impossible to estimate average life expectancy separately for each of the Cambodian provinces. In addition, there are no available estimates of provincial domestic product in Cambodia. In the absence of these data, it is necessary to assume that interprovincial and rural/urban variations in life expectancy mirror those in child malnutrition, since severe child malnutrition is an important contributing factor in causing infant mortality -- which in turn is an important component in the calculation of average life expectancy. The exact variable used in adjusting national life

expectancy for each province or for rural/urban areas is the proportion of children aged 0-5 years who are *not* severely stunted in a particular province or stratum relative to the proportion of children not severely stunted nationally.

It is assumed that total consumption expenditure per capita averaged for each province -- available from the SESC 1996 -- is a good proxy for provincial domestic product per capita.

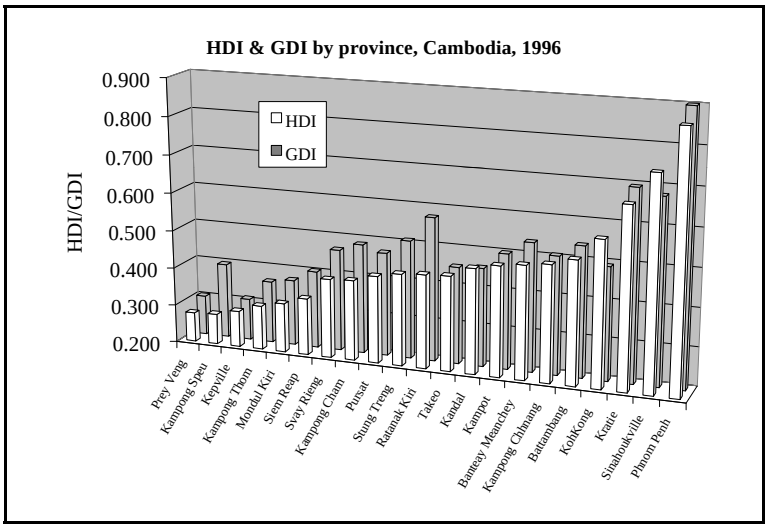

Figure III.4
Source: Socioeconomic Survey of Cambodia, 1996.

The values of the disaggregated HDI are shown in Figure III.2 for rural and urban areas and in Figure III.3 for males and females. (The calculation of HDI for males and females is based on the assumption that consumption per capita varies across males and females proportionately to the variation in the earnings of salaried males and females.) The HDI score for urban areas is significantly (by about 65%) higher than that for rural areas. However, the score for males is only about 2% higher than that for females. The reason for the relatively small gender difference is that the higher life expectancy for women relative to men offsets the higher rates of adult literacy and school enrollment that males enjoy over females.

The provincial HDI scores are shown in Figure III.4. Not surprisingly, Phnom Penh (0.865) and Sihanoukville (0.75) have the highest HDI scores in the country. Prey Veng (0.277), Kampong Speu (0.280) and Kepville (0.295) have the lowest HDI scores.

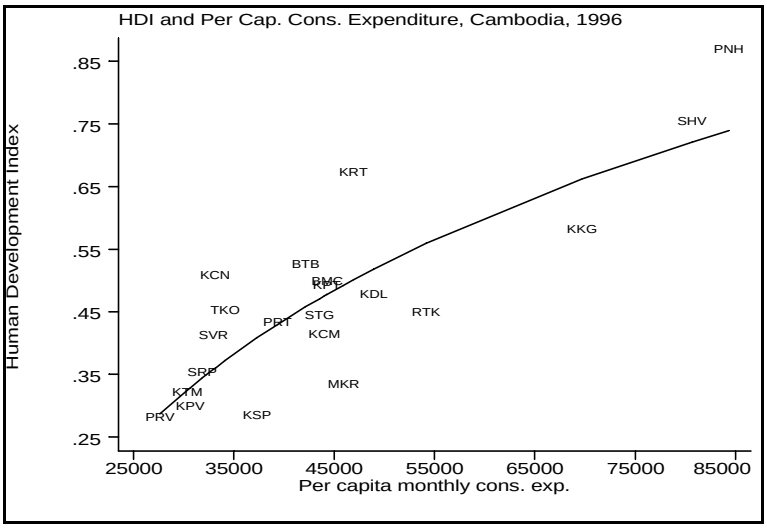

Figure III.5
Source: Socioeconomic Survey of Cambodia, 1996 and UNDP, 1997.

The HDI score of each province is plotted against its per capita consumption expenditure in Figure III.5. It is apparent that, based on the regression relationship between HDI and per capita consumption expenditure observed across all 21 provinces, Kratie, Kampong Chhnang, and Phnom Penh are 'positive outliers', i.e., their HDI scores are better than what would be expected at their level of per capita expenditure. On the other hand, Mondul Kiri, Ratanak Kiri, Kampong Speu and Koh

Kong have HDI scores that are significantly less than what would be expected at their level of per capita expenditure. These provinces are the ones that lag significantly behind others in terms of human development.

B. Gender-Related Development Index

Another human development indicator that is used by the *Human Development Report* is the gender-related development index (GDI). The GDI uses the same variables as the HDI. The only difference is that the GDI adjusts the average achievement of each country in life expectancy, educational attainment, and income in accordance with the disparity in achievement between women and men. In other words, the greater the gender disparity in any of the three indicators, the more heavily discounted is the achievement of that country by the index.

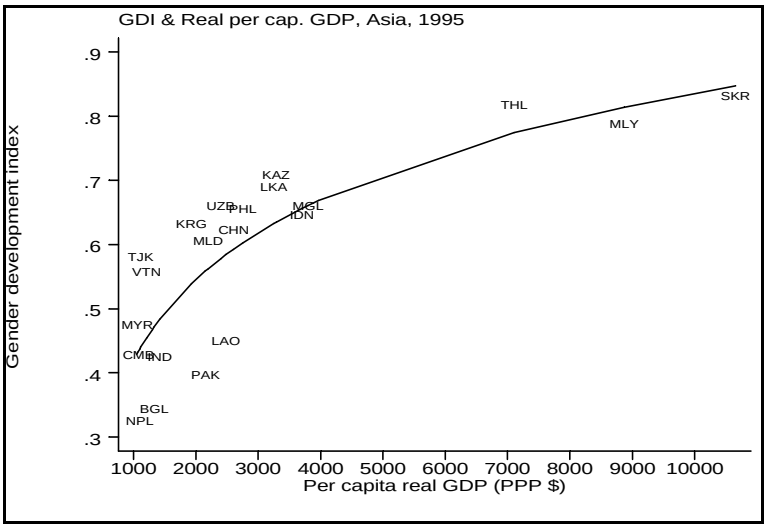

Figure III.6
Source: Socioeconomic Survey of Cambodia, 1996 and UNDP, 1997.

The *HDR 1997* does not report a GDI value for Cambodia, presumably because of unavailability of data needed to calculate the GDI. However, using data from the SESC 1996 and the DSC 1996, a GDI score of 0.423 -- very similar to the HDI score -- is obtained for Cambodia, and places Cambodia just above India and Pakistan -- countries whose real GDP per capita are 25-100% higher than Cambodia's.

Figure III.6 shows the position of Cambodia on the GDI relative to the same group of 21 Asian countries considered earlier. Again, Cambodia (CMB) is observed to be right on the regression line of GDI against per capita real GDP, implying that its GDI score is about what would be expected at its level of per capita GDP, given the relationship between GDI and per capita GDP observed in the group of 21 Asian countries.

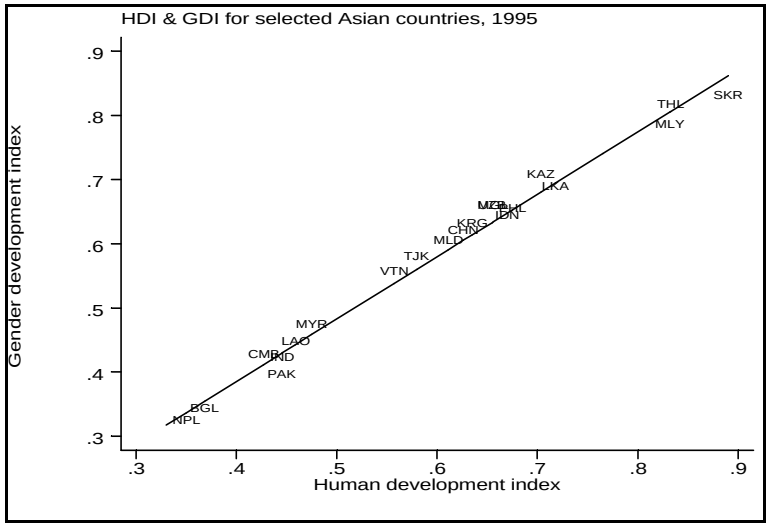

Figure III.7
Source: Socioeconomic Survey of Cambodia, 1996 and UNDP, 1997.

Another way of evaluating Cambodia's GDI score is to see how it compares to its HDI score. Figure III.7 plots GDI scores against HDI scores for the same group of 21 Asian countries. The fact that GDI and HDI scores of almost all 21 countries are almost along the 45-degree line indicates that there is high degree of congruence between HDI and GDI in this group of countries. It also implies that Cambodia's GDI score is about what would be expected at its level of (general) human development, given the relationship between human and gender development.

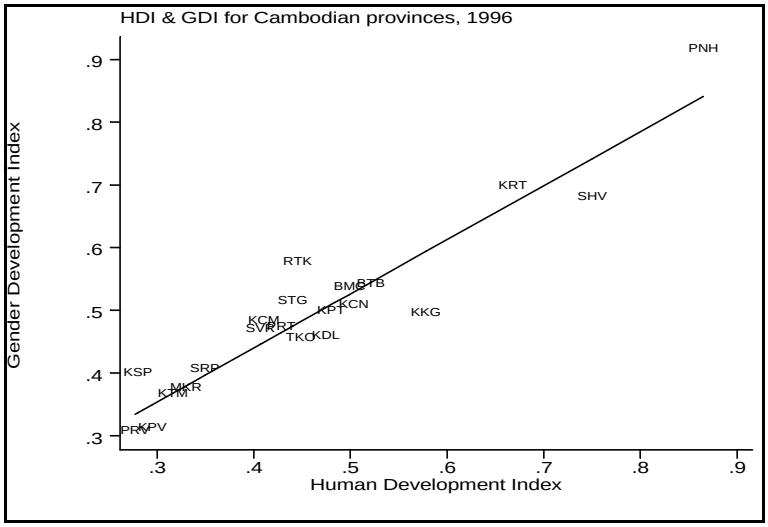

Figure III.8
Source: Socioeconomic Survey of Cambodia, 1996 and UNDP, 1997.

The GDI scores for rural and urban areas and for each province have already been displayed in Figures III.2 and III.4 above. The rural/urban disparity in GDI scores closely follows that in HDI scores. To see how the different provinces of Cambodia differ in their GDI and HDI rankings, Figure III.8 plots the GDI score of each province against its HDI score. The provinces of Kampong Speu, Ratanak Kiri and Phnom Penh are observed to be positive 'outliers', implying that their GDI ranking is higher than their HDI ranking. On the other hand, Koh Kong and Sihanoukville perform worse on the GDI score than on the HDI score.

C. Cambodia-specific Human Development Index

The standard HDI includes four components: life expectancy, adult literacy, child schooling enrollment, and per capita consumption expenditure. However, there are many other variables that have a strong influence on the quality of life in a community; these include child malnutrition and health outcomes and access to basic services (e.g., drinking water, sanitation, electricity), health services, housing, and entertainment and information. These variables are particularly important in the context of a poor country like Cambodia.

Since the SESC 1996 provides information on most of these variables, this report calculates a Cambodia-specific human development index (CHDI) that aggregates ten different indicators of living standards:

- Percentage of population using safe drinking water (i.e., water from public or private tap, protected well, rain, or tanker truck)
- Percentage of population with access to a public or private toilet
- Percentage of population using electricity (either publicly- or privately-provided) as the main source of lighting

- Percentage of population owning a transistor radio
- Average housing space (in square meters) per person
- Proportion of children under 5 years of age who are *not* moderately or severely stunted (i.e., who are above the height expected for their age and sex)
- Net primary enrollment rate (i.e., the percentage of children aged 6-11 years who are enrolled in primary school)
- The difference between average age at entry into primary school and 6 years (which is the recommended age for entry into primary school) (this variable is entered into the CHDI with a negative sign, so that smaller discrepancies between average age at entry and 6 years are more desirable than larger discrepancies)
- Percentage of children under 5 years of age who did *not* suffer a diarrheal episode during the two-week reference period preceding the household survey
- Percentage of children suffering a diarrheal episode in the two-week reference period who were treated for this episode by a non-traditional health provider (viz., physician, nurse, pharmacist or primary health center).

Thus, the CHDI covers a much wider and richer range of social, human and economic measures than the standard HDI. Another significant advantage of the CHDI over the HDI is that all of its components are more readily influenced by policy interventions in the short run. The HDI has been criticized on the grounds that its components (viz., adult literacy and life expectancy) are not amenable to policy intervention in the short run.

The computation of the CHDI is identical to that of the HDI; viz., each province is given a score based on the maximum and minimum values of each individual component. The final index is a simple average of the individual component scores. As such, the CHDI, like the HDI, can range from a low of 0 to a high of 1, with higher values reflecting higher standards of living.

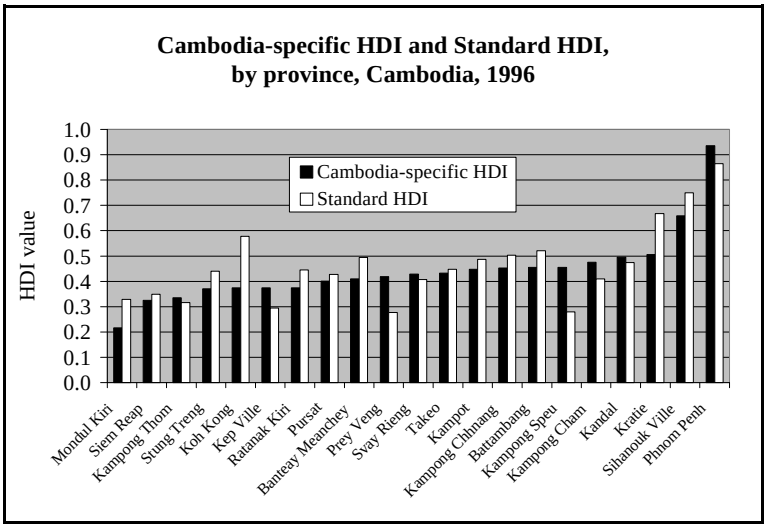

Figure III.9
Source: Socioeconomic Survey of Cambodia, 1996.

Since the data requirements for the CHDI are significantly more exacting than those for the HDI, it is not possible to calculate it for every country in the world. However, using

household survey data from the SESC 1996, it is possible to calculate the CHDI for each province in Cambodia. The results (Figure III.9) indicate that the ranking of the top three provinces does not change whether one uses the standard HDI or the Cambodia-specific HDI. Phnom Penh, Sihanouk Ville and Kratie rank as the provinces with the highest human development score irrespective of the index used. However, there is significant change at the bottom and in the middle. The three provinces with the lowest HDI score – Mondul Kiri, Siem Reap and Kampong Thom – are not the same provinces with the lowest rank on the CHDI score (viz., Prey Veng, Kampong Speu and Kepville). Indeed, Kampong Speu experiences the biggest change in ranking with the use of the CHDI; it falls from a rank of six on the HDI to a rank of 20 on the CHDI!

D. The Use of HDI

The HDI can be useful as a planning and programming tool. Since it is a summary measure of human, economic and social development, it indicates which provinces and regions are worse off in terms of development outcomes -- and would benefit from targeted policy interventions -- than other regions.

In the following chapters, this report takes up each one of the components and sectors subsumed in the HDI – nutrition and food security, access to basic services, schooling and literacy, fertility and population, health, and child labor. In addition, the report examines interactions among the various components and between social/human indicators and economic indicators.

IV. NUTRITION AND FOOD SECURITY

The nutritional status of a population is an important indicator of overall well-being in a society. In addition, it represents a significant source of a country's human capital. A number of recent studies in such varied settings as Sierra Leone, Sri Lanka, India and the Philippines, have convincingly demonstrated the large agricultural productivity gains (losses) from nutritional improvements (deterioration) among rural households.[8] The effects of chronic malnutrition on children are even worse, since they are more lasting. Malnutrition adversely affects cognitive development and schooling performance, both of which in turn depress well-being and future economic productivity. All of these effects have been well documented in the literature.

A. Child Nutritional Outcomes

Until recently, there were few estimates of child malnutrition, and almost no national estimates of malnutrition, for Cambodia. There is no systematic follow-up of children's weight in primary health facilities in the country. Most of the estimates were based either on small "spot" surveys in selected provinces or villages conducted in the context of donor projects or from the records of provincial hospitals. As is well known, such estimates are inherently biased, because the samples are preselected on the basis of a systematic criterion, such as participation in a poverty-alleviation project or a visit to a provincial hospital for a severe illness. The SESC 1996 was the first national household survey to have measured the heights and weights of all children under 5 years of age. Therefore, in what follows, the SESC 1996 data are used exclusively to analyze levels and patterns of malnutrition among children.

1. Estimates of Malnutrition

The SESC 1996 indicate that, among children under five years of age, the percentages of moderately malnourished children are 49.3% for weight-for-age, 56.1% for height-for-age, and 12.2% for weight-for-height.[9] Thus, Cambodia's major child nutrition problem appears to be

[8]See Strauss (1986), Deolalikar (1988), and Sahn and Alderman (1988).

[9]The reference that is used for child malnutrition here (as in the entire nutrition literature) are the standards developed by the United States National Center for Health Statistics (NCHS). The percentage of children whose anthropometric indicators are more than minus two standard deviations from the NCHS median levels are considered moderately malnourished, while those indicators are more than minus three standard deviations from the NCHS median are considered severely malnourished.

stunting from longer-term, chronic undernutrition rather than wasting from short-term, acute food deficits.[10]

Malnutrition rates are much lower in the first year of life, but increase sharply in the second year of life, after which they remain more-or-less constant (Figure IV.1).[11] Of course, malnutrition for a relatively significant proportion of children begins in the first year of life. Reasons for this may be low-birth weights (data from the National Maternal and Child Health Center show that 18% of the birthweights reported there in 1993 were below 2,500gms), sustained and nurtured by inadequate breast-feeding and complementary feeding (Ministry of Health/National MCH Center, 1993). For many children, malnutrition sets in during weaning when breast milk intakes decline sharply and adequate complementary feeding is crucial for growth. That problem may be further complicated by premature introduction of weaning foods.

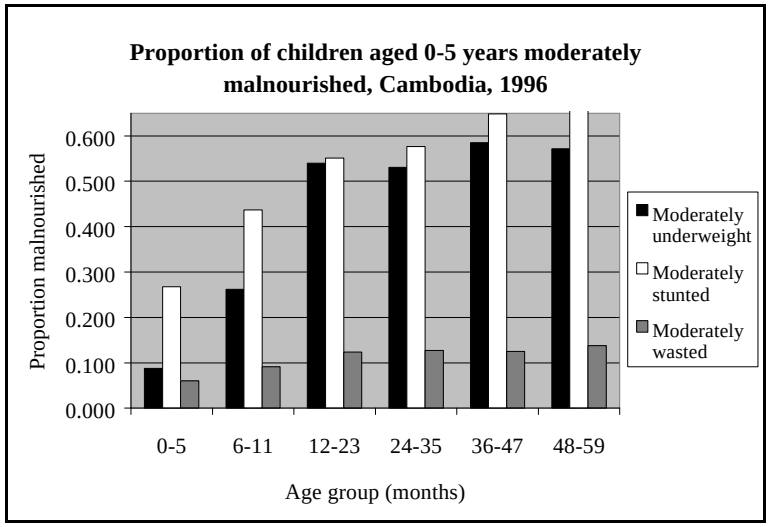

Figure IV.1
Source: Socioeconomic Survey of Cambodia, 1996.

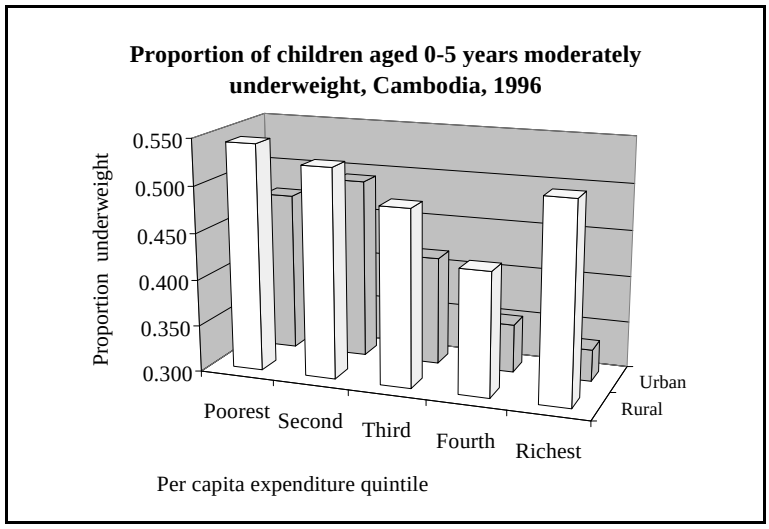

Figure IV.2
Source: Socioeconomic Survey of Cambodia, 1996.

The SESC data show pronounced differences in malnutrition rates across rural/urban areas and across economic groups, with the poor in the rural areas typically showing the highest rates of malnutrition (Tables IV.2 and IV.3). For instance, the prevalence of moderate stunting is as high as 61%, and that of moderate underweight is 54.4%, among the poorest 20% of the rural

[10]Of course, this could also reflect the fact that the NCHS standards for height (but not for weight) are overly capacious for Cambodian children owing to ethnic differences between American and Cambodian children.

[11]These trends are similar to those found in malnourished children elsewhere (WHO, 1986), although height-for-age usually levels off after 3 years.

population.[12] However, what is unusual is that even among the richest 20% of the urban population -- a group that must be considered well-off -- the rates of child malnutrition rates are relatively large. Nearly 34% of the children aged 0-5 in this economic group are moderately underweight and 21% are severely stunted. This suggests that the reasons for child malnutrition may have more to do with cultural and social factors than with economic status and income.

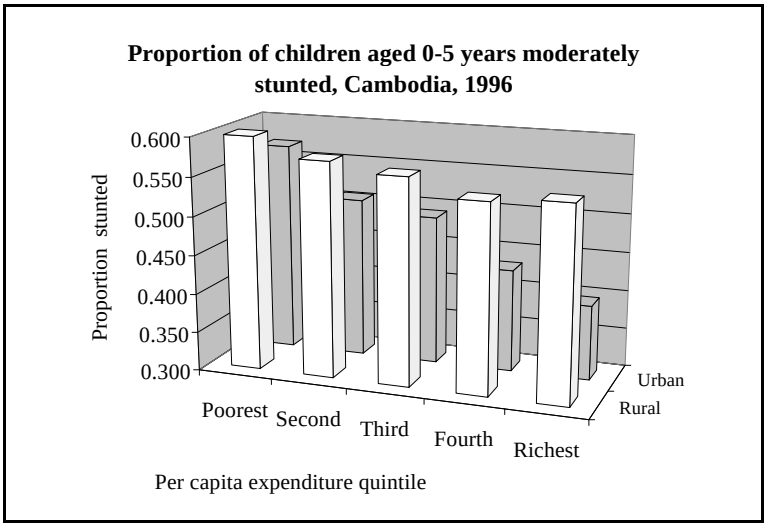

Figure IV.3
Source: Socioeconomic Survey of Cambodia, 1996.

There is other evidence to indicate that there exists a strong seasonal pattern to malnourishment, especially in the rural areas. A survey undertaken by UNICEF in 1993-94 in 12 selected villages in Cambodia found that a larger proportion of the children under 5 years of age were underweight in the middle of the year, when rice stocks are at their lowest point, than in February, soon after the harvest (when rice stocks are at their highest) (UNICEF, 1994).

2. Gender Differences

There appear to be small gender differences in child malnutrition, especially in the rural areas, with girls aged 0-5 having lower rates of underweight, stunting and wasting than boys aged 0-5 (Annex Table IV.2). In the urban areas, the gender differences are very small and, in the case of stunting, favor boys. Thus, rural Cambodia appears to be more like the rest of Southeast Asia, where gender differences in nutrition are generally small, if not nonexistent, and less like South Asia, where there are pronounced gender differences favoring boys.[13] It is unclear whether the Cambodian results reflect active parental discrimination (in the allocation of food) in favor of girls or better "innate" health (leading to lower rates of infection) among female infants and children.

[12]Throughout this report, per capita consumption expenditure is used as a basic indicator of economic status. This is not only necessitated by data requirements (complete data on household income were not collected as part of the SESC 1996 survey), but also by the widely-accepted notion in the development literature that current consumption is a less variable and more reliable indicator than current income of an individual's or household's "permanent" income.

[13]The significantly higher rates of child malnutrition among female children in Bangladesh, India and Pakistan are thought to be the result of parental discrimination against girls (and adult women) in the intrahousehold allocation of food and medical care.

3. Provincial Differences

There are strong regional differences in child malnutrition rates. For instance, the prevalence of severe underweight ranges from 10.7% in Kratie to 30.6% in the province of Kampong Speu (Annex Table IV.3). Likewise, the prevalence of severe stunting ranges from a low of 16.9% (also in Kratie) to a high of 48.1% in Kampong Speu. The four provinces having the highest proportion of severely underweight children are Kampong Speu, Stung Treng, Kandal, and Koh Kong, while the provinces having the highest proportion of severely stunted children are Kampong Speu, Prey Veng, Kandal, and Pursat.

However, for targeting purposes, it is often more important to know which provinces have the largest *absolute* number of malnourished children, so that nutritional interventions targeted to these provinces can benefit the largest number of children. These data are reported in Annex Table IV.4, which shows the contribution of each province to national malnutrition (i.e., the number of children who are severely underweight or stunted in the country). What is remarkable is that 4 provinces (out of a total of 21 considered here) account for nearly one-half of all severe malnutrition in Cambodia. These are the provinces of Kampong Cham, Kandal, Takeo, and Prey Veng. A total of 9 provinces account for three-quarters of all severe malnutrition. Thus, targeting nutritional interventions to these provinces can deliver the greatest impact in terms of reaching the maximum number of malnourished children.

As is obvious, the ranking procedure in Annex Table IV.4 considers both the severe malnutrition rate (i.e., the proportion of children severely underweight or stunted) in a province as well as the *total population* of children aged 0-5 years in that province. Therefore, provinces like Kampong Cham and Kandal, which do not have as high a malnutrition rate as, say, Kampong Speu, but which have large child populations, rank high by this criterion.

4. International Comparisons

Table IV.4 shows that child underweight and stunting levels in Cambodia are similar to those in Vietnam, Myanmar and Bangladesh, but significantly higher than those in Thailand, Philippines and Sri Lanka.

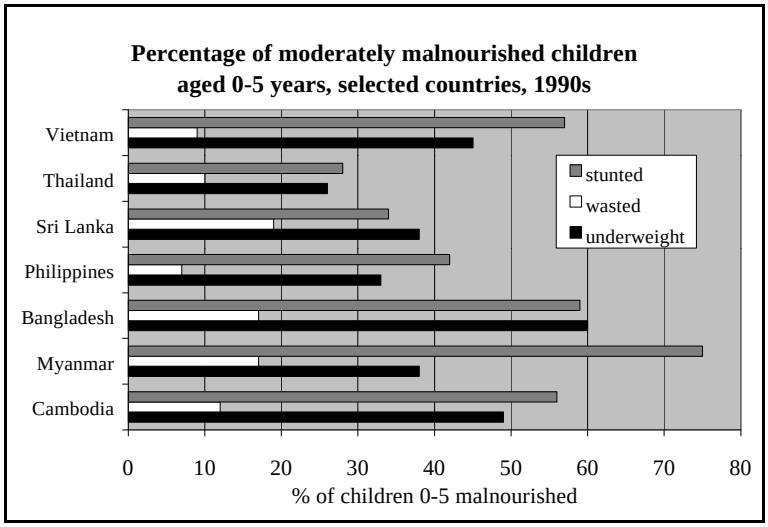

Figure IV.4
Source: World Bank (1992).

B. Nutritional Inputs

1. Food Consumption and Energy Intakes

The Cambodian diet is dominated by rice, which supplies nearly two-thirds of caloric intake. Consumption of milk and milk products is minimal even among young children. Fish and aquatic foods substantially add to dietary quality, except in the mountainous regions of the Northeast. Consumption of vegetables and of fat, especially by the rural population, is low.

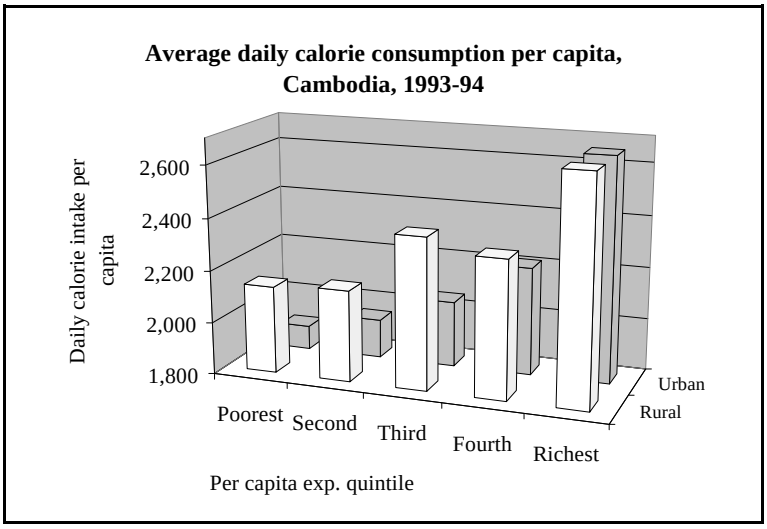

Figure IV.5
Source: Socioeconomic Survey of Cambodia, 1993-94

The predominance of rice in the Cambodian diet is of particular concern, especially in the case of young children and pregnant and breastfeeding women, as the caloric density of rice is very low and these individuals may thus be unable to consume enough calories to meet their special energy needs. In addition, since rice alone is deficient in several important nutrients, such as iron, thiamine, Vitamin A and fats (lipids), women and young children are especially susceptible to diseases associated with these deficiencies, such as anemia, beriberi, and xerophthalmia (which can ultimately lead to blindness). Iodine deficiency is a problem, especially at high elevations where iodine-depleted soils prevail, such as in the provinces of Ratanak Kiri, Mondol Kiri, Kratie and Kampong Cham.

Since the SESC 1993-94 was a consumption expenditure survey, it is possible to derive average calorie intake from the data on quantities of food consumed. Average calorie consumption per capita per day is estimated at 2,293 calories, with calorie consumption being greater in rural than in urban areas (2,330 versus 2,153 calories). Figure IV.5 shows large differences in calorie consumption across economic groups, with daily per capita calorie consumption increasing from only 1,892 calories for the poorest urban quintile to 2,657 calories for the richest urban quintile. The variation across economic groups is slightly smaller in the rural areas. The fact that the poorest three quintiles in the urban areas consume, on average, fewer than 2,100 calories per person per day -- the minimum calorie daily requirement proposed by the FAO -- is a cause for concern. It suggests that the urban poor might not even be obtaining an adequate level of energy intake.

While an adequate consumption of calories is an essential indicator of nutritional well-being, the *variety* of the diet is important as well for two reasons. First, a varied diet is needed to provide a mix of noncalorie nutrients and micronutrients that are essential for the human body. Second, individuals consume food not merely for meeting their nutritional requirements but also for the utility (in the form of taste, aroma, and variety) it provides them. Since -- as the old saying goes -- "variety is the spice of life," food variety must be considered as an element of human development.

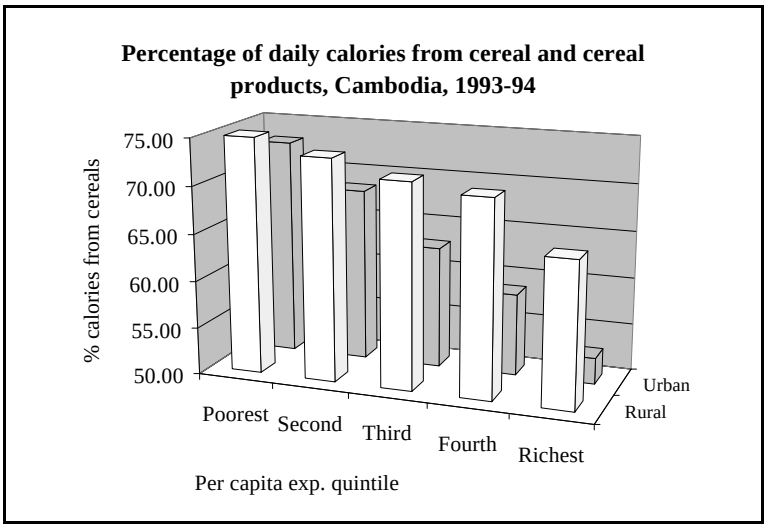

Figure IV.6
Source: Socioeconomic Survey of Cambodia, 1993-94

Figures IV.6 and IV.7 show the percentage of calories that are obtained by the Cambodian population from two sources: "cereal and cereal products" and "meats, poultry and fish." In the rural areas, between two-thirds and three-quarters of calories, depending upon the economic group, are obtained from cereal and cereal products (mainly rice). There is more variation across economic groups in the urban areas, with the richest urban quintile obtaining 53% of its calories from cereals and the poorest quintile obtaining 73% of calories from cereals. Likewise, urban dwellers seek greater food variety, in the form of obtaining a larger percentage of daily calories from meat, poultry and fish, with improved economic status (Figure IV.7). Thus, poverty, especially in the urban areas, is identified not only with a low calorie intake per person per day but also with a less varied diet composed mainly of cereals (rice).

2. Breastfeeding Patterns

Breastfeeding is almostuniversal in Cambodia, with between 90-97% of children under 5 having been ever breastfed. According to the SESC 1996, breastfeeding is somewhat more common in rural areas than in urban areas, and, within rural areas, among poorer mothers than among richer mothers, but differences between these groups are small (Figure IV.8). The mean duration of breastfeeding is 14.8 months, with distinct differences across

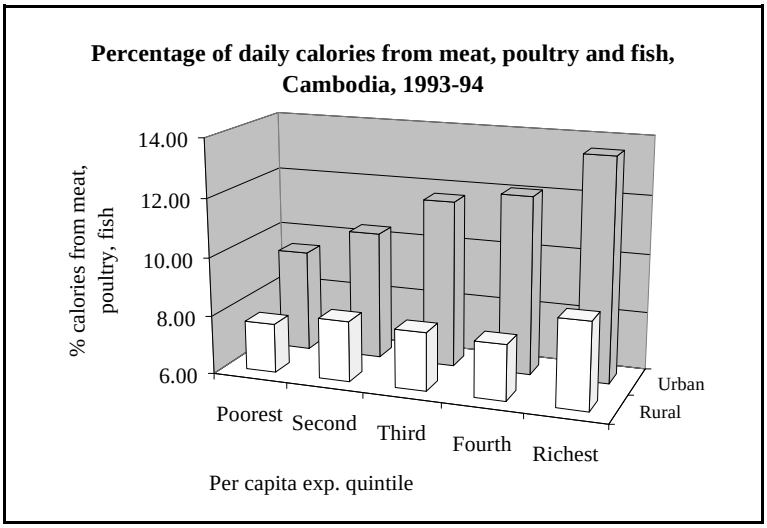

Figure IV.7
Source: Socioeconomic Survey of Cambodia, 1993-94

rural-urban strata and across economic status (but not across gender). For example, the richest 20% of urban children aged 0-5 are breastfed an average of only 11.8 months, while the poorest 20% of rural children are breastfed an average of 15.2 months.

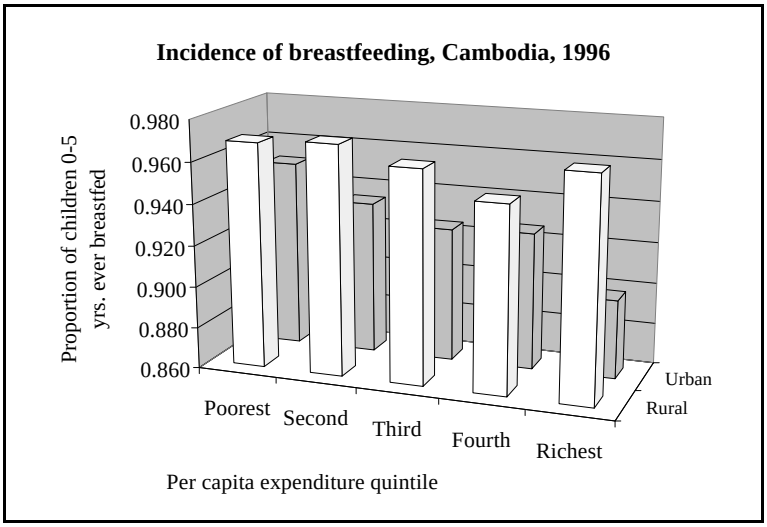

Figure IV.8
Source: Socioeconomic Survey of Cambodia, 1996.

There are also marked regional differences in the extent and duration of breastfeeding. The lowest rate of breastfeeding is observed in the province of Kratie, where only 75% of children 0-5 years of age are ever breastfed, while breastfeeding is universal in the provinces of Stung Treng, Mondul Kiri and Kep Ville. The duration of breastfeeding varies from a low of 11.26 months in Mondul Kiri to a high of nearly 20 months in the province of Takeo.

Exclusive breastfeeding is, however, limited to only the first 4.5 months after birth. The duration of exclusive breastfeeding also varies significantly across economic status, particularly in the urban areas. For example, in the urban areas, the richest quintile of children aged 0-2 years are breastfed exclusively for only 3.8 months, while the poorest quintile are breastfed for 5.2 months. The difference is much smaller in the rural areas. Regionally, the province of Kratie has the longest mean duration of exclusive breastfeeding (6.3 months), while the province of Kampot has the shortest duration (2.6 months). Since infant formula is not available widely (indeed, only in the urban areas) and is quite expensive, breastfeeding is typically not supplemented with bottle-feeding but instead with solid foods consisting initially of rice gruel or rice porridge. The premature introduction of supplemental foods greatly increases the risk of infection in small infants.

As in other countries of the region, such as Vietnam, there is a strong cultural tradition in Cambodia against feeding colostrum from the mother's breast to newborn infants. A UNICEF study showed that more than three-quarters of the mothers in the sample did not provide colostrum to the baby immediately after birth (UNICEF, 1994). The taboo against colostrum means that most mothers wait until 36 hours, and some as long as three days, before initiating breastfeeding. Not only does the withholding of colostrum deprive the newborn infant of rich nutrition, the delay in initiating breastfeeding immediately after birth generally means that the process of undernutrition in the infant sets in soon after birth.

C. Food Production and Security

Rice production in Cambodia has increased impressively at an annual rate of 11.7% per annum since 1979 (Figure IV.9). As a result, Cambodia is now not only self-sufficient in rice, but enjoys a surplus of about 225,000 tonnes in paddy production (FAO/WFP, 1996). Despite the

overall surplus, however, large numbers of Cambodians and a number of provinces in Cambodia remain food insecure owing to lack of *access* to food that is available in the country. The lack of access is related to income, transport and marketing constraints, and seasonal and annual fluctuations. In addition, the internal security problem in Cambodia has created special groups that are vulnerable to food insecurity, such as internally displaced or disabled households.

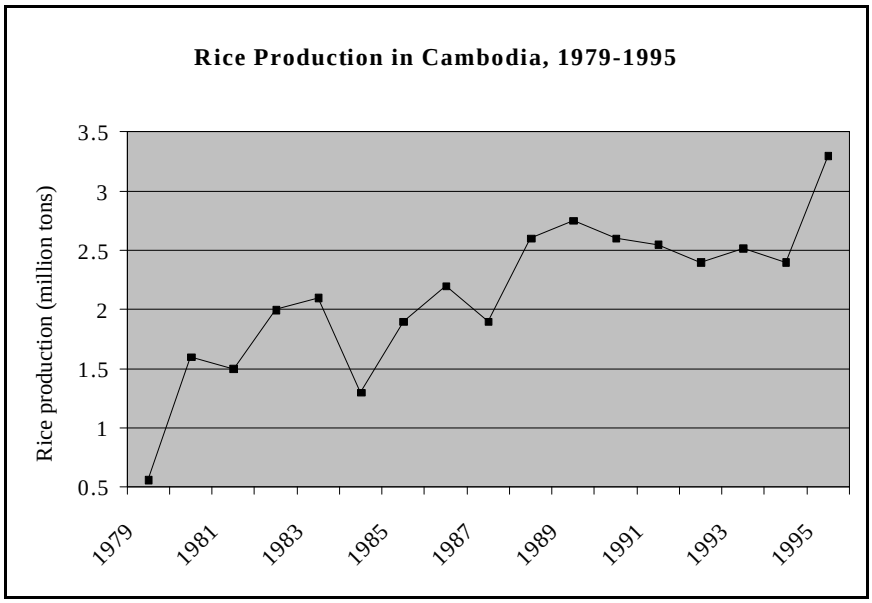

Figure IV.9
Source: Ministry of Agriculture, 1997.

1. Income and Access to Food

At the household level, clearly, income is an important determinant of food consumption. Even in a situation of food surplus, poor households, especially households not having access to the means of producing food (viz., landless and displaced households and households headed by disabled persons), may not have the purchasing power to afford adequate amounts of rice for consumption. In addition, as noted earlier, the predominance of rice in the Cambodian diet creates special problems, especially for young children and pregnant and lactating women, since the caloric density of rice is low and these individuals may thus be unable to consume enough calories to meet their special energy needs.

The SESC 1996 data examined in Chapter II.C.2 showed that the share of total consumption expenditure spent on food by the poorest 20% of the population had declined appreciably -- from 72.6% to 65.6% -- between 1993-94 and 1996. Since this is the economic group most likely to suffer from food insecurity and inadequate consumption, the fact that this group experienced a decline in its food share suggests that the food consumption of the poorest Cambodians was probably not inadequate to begin with (or that at least these individuals did not perceive themselves to be undernourished). This suggests that food insecurity is not widely common among the poor but that it is a problem for specially vulnerable groups, such as displaced or disabled households or pregnant women within households.

2. Fluctuations in Food Supply

While the overall production of rice is adequate, there are wide fluctuations in supply (Figure IV.9 above), depending on the weather (including natural calamities like typhoons) and the flood regime from the major rivers. The reason for this is that there are very few irrigation

facilities in Cambodia and much of paddy production comes from wet season rainfed areas. Almost all of the other crops, with the exception of vegetables, are also grown without irrigation and therefore subject to the same wide fluctuations. In the absence of good buffer stocks at the regional level, these fluctuations create periods of food insecurity for people in certain regions.

3. Transport and Marketing Constraints

Perhaps, the single most important source of food security comes from rigidities, inherent in the system, that prevent the rapid movement of food from food surplus to food deficit regions. There are provinces in the country that consistently run surpluses of rice, such as Prey Veng, while there are other provinces, like Kompong Cham, that have rice deficits. In the past, restrictions on private trade effectively meant that there was little movement of rice (or other foods) from surplus to deficit areas to reduce food insecurity in the deficit regions. Since the introduction of market liberalizing reforms, all regulatory constraints affecting private trade and movements of goods within the country as well across borders have been removed. However, both the movement of food within the country and export of food are still constrained by a very poor transport and marketing system. The transport and marketing bottlenecks effectively isolate some parts of the country and compound the problem of access to food for people living in those regions.

V. ACCESS TO BASIC AND SOCIAL SERVICES

Access to basic services, such as water and sanitation, and to social services, such as health and nutrition, is an essential aspect of human development for two reasons. First, *physical* access (in the form of availability or proximity) reduces the time cost of utilizing basic services for households, while *economic* access (in the form of greater affordability) reduces the direct costs of utilization, both of which improve household welfare. The welfare improvement is particularly great for the poor, since the only asset they often have is their own labor, and the time they spend in, say, collecting water or taking their children to school has a high opportunity cost to them.

Second, physical and economic access to basic and social services, in large part, determine human development outcomes (via their effects on utilization). For instance, access to safe water results in greater utilization of uncontaminated water for drinking and cleaning, which in turn reduces the probability of infections and improves nutritional and health outcomes. Proximity to primary health facilities improves the utilization of curative health services and reduce the duration of illness episodes. Likewise, proximity to schools and lower schooling fees increase enrollment and attendance, thereby improving educational attainment.

A. Access to social services and infrastructure

The SESC 1996 survey obtained information from households on the availability of and proximity to social services and a passable road. Nearly 62% of the Cambodian population reports having an operational primary school in the village, and 82% of the population reports to be within one kilometer of a primary school. Thus physical access to primary schools does not appear to be a significant problem for the vast majority of Cambodians.

However, only 21% of the population reports having an operational health clinic or facility in the village, with only 52% of individuals living within one kilometer of a health facility. Another 28% have access to a health clinic within 1-5 kilometers of their residence, while as many 20% of individuals have to travel more than 5 kilometers to reach the nearest health facility. Thus, physical access to health services, but not primary education, appears to be an important problem in Cambodia.

The SESC 1996 data also obtained information on availability and proximity of roads passable by a motor vehicle. Although roads cannot be considered a social service, they are an important part of the social infrastructure. Roads facilitate access to social services. In addition, of course, they are an important determinant of economic activity and commerce, including trade with other villages and provinces. Again, the SESC data do not indicate lack of access to roads as a major problem for most Cambodians. Nearly three-quarters of the population report having a passable road within the village. About 86% of the population report being within one kilometer of a passable road.

1. Differences Across Economic Status

Although roads, health clinics and primary schools are public goods, and as such available to all households residing in a region, it is possible that the placement or location of these services and infrastructure varies systematically across rich and poor communities. This can have the effect of increasing the distance to these facilities for the poor. The SESC 1996 data do suggest such a possibility, especially for health clinics, to which access is generally limited in the country. For instance, in the rural areas, while only 19.1% of individuals in the poorest per capita expenditure quintile report having a health clinic in the village, the ratio for the richest quintile is as large as 27.7%. More importantly, a larger proportion of the poor than the rich (21% versus 14%) report having to travel 5 kilometers or more to reach a health clinic (Figure V.1). Surprisingly, this trend occurs even in the urban areas, where economic differences in distance to health clinics are even greater. In the urban areas, nearly 14% of the poor, but only 4% of the richest 20%, report a distance to the nearest health facility of 5 kilometers or more.

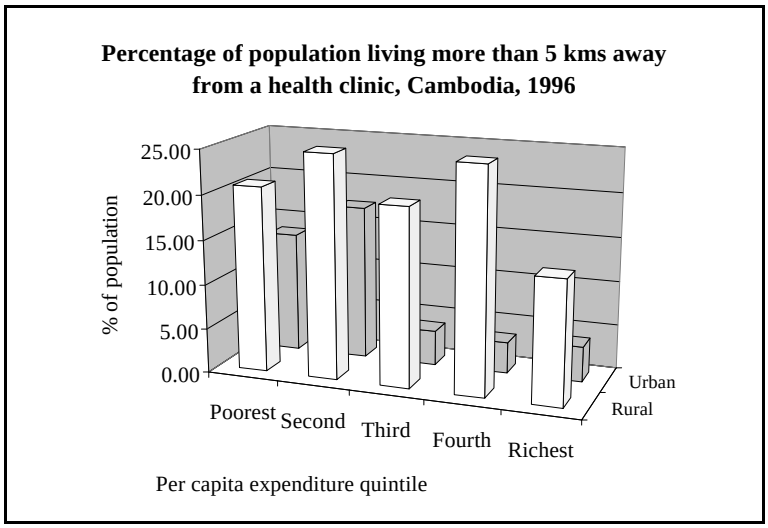

Figure V.1
Source: Socioeconomic Survey of Cambodia, 1996.

The same pattern holds for roads, which are often perceived as the most public of public goods. In the rural areas, nearly 6% of the poorest two per capita expenditure quintiles report being more than 5 kilometers away from the nearest passable road. However, among the richest rural quintile, only 1.4% have to travel such a long distance (Figure V.2).

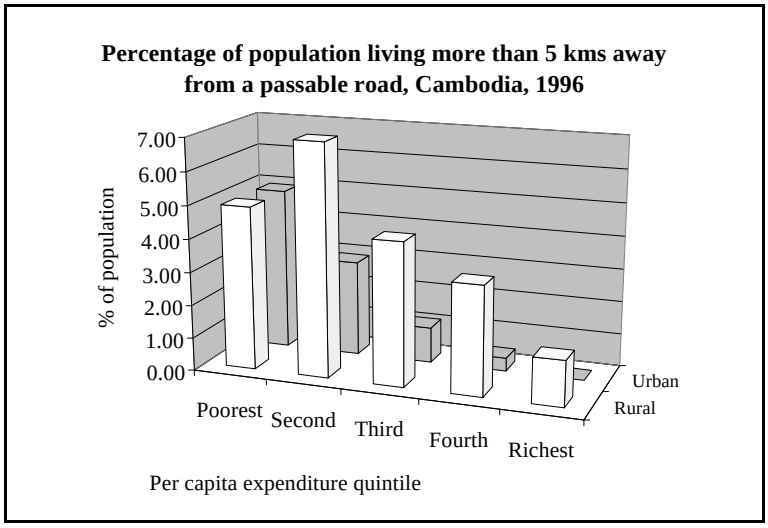

Figure V.2
Source: Socioeconomic Survey of Cambodia, 1996.

Obviously, the socioeconomic differences in distances to roads and clinics observed in the sample arise because of systematic differences in proximity across backward and prosperous communities and provinces. It is not clear which way the causality goes in the relationship -- i.e.,

whether remoteness (e.g., longer distances to a passable road) causes poverty or whether poverty results in an inadequate supply of social services and infrastructure.

2. Regional Differences

The regional differences in access, especially to health clinics, are striking. In the provinces of Kampong Chhnang, Kampot, Kratie, Mondul Kiri, and Stung Treng, fewer than 5% of the residents report having a health clinic in the village (Annex Table V.2). In Kampot, nearly two-thirds of the population report having to travel more than 5 kilometers to reach the nearest health clinic. On the other hand, in provinces such as Kampong Speu, Kampong Thom, Kandal, Koh Kong, Ratanak Kiri, Siem Reap, Sihanouk Ville, and Svay Rieng, more than two-thirds of the population are within one kilometer of a health clinic. With the sole exception of Mondul Kiri, most provinces seem adequately endowed with primary schools and roads. Of course, the quality of these roads and primary schools is another matter, which unfortunately cannot be addressed by the survey data.

B. Access to Water

A large proportion of the diseases in Cambodia are water-borne and caused by lack of access to safe drinking water and sanitation. Piped water (to the dwelling) or water from public taps is a luxury for a very small segment of the population. The SESC 1996 data show that nearly one-third of the country's population obtains water from unprotected wells and another one-third from ponds, rivers or streams. Water from these sources is often contaminated. Only 5.5% of the population obtains water from private or public taps, and another 15.6% obtains it from a tubewell, piped well or borehole. Physical proximity to water sources does not appear to be a major problem, with nearly 75% of the population being within 100 meters of a water source and 97.5% being within 500 meters.

As one would expect, there are marked differences in the sourcing of water across rural and urban areas. While less than 2% of the rural population obtains its water from public or private taps, as much as 23% of the urban population obtains its water from this source. Nearly two-thirds of the rural population obtains its water from unprotected wells or ponds and rivers, while only about a third of the urban population does. Another important source of water in the urban areas is the tanker truck or water vendor, with close to 13% of the

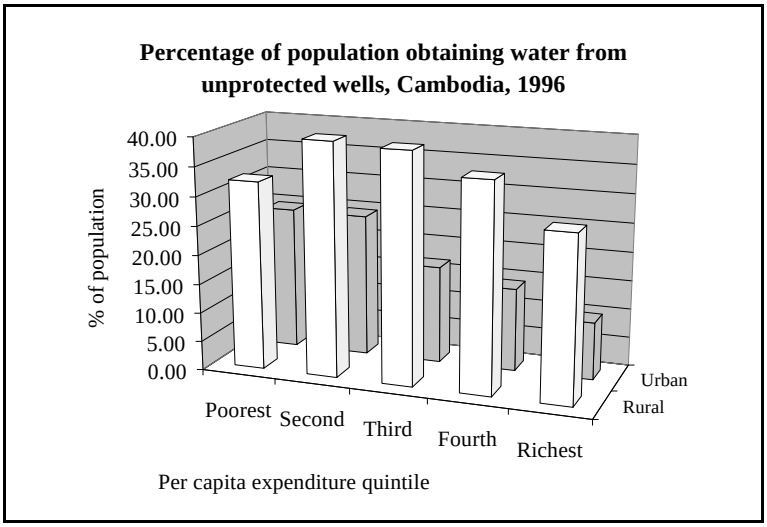

Figure V.3
Source: Socioeconomic Survey of Cambodia, 1996.

population obtaining its water from this source. Unlike other developing countries in Asia, public taps are not a common source of water even in the urban areas of Cambodia.

Interestingly, there are few differences among economic groups in the rural areas in their sources of water. However, the water sources of urban dwellers are sharply divided along economic lines (Figure V.3). The poorest quintile of urban dwellers is not very different from rural dwellers in terms of its reliance on unprotected wells and ponds. However, nearly 40% of the richest quintile in the urban areas obtains its water from private (in-house) taps. Another 18% of this group obtains its water from water vendors.

C. Access to Other Facilities

1. Sanitation

The SESC 1996 obtained information on the types of toilet facilities that households had. Close to three-quarters of the overall population, but only 37% of the urban population, report having no toilet facilities, with sharp differences across economic groups. Over 90% of the poorest per capita expenditure quintile in the rural areas, as opposed to 66% of the richest rural quintile, report no toilet facilities (Figure V.4). Flush toilets are a rarity in rural Cambodia, except among the richest 20% of the population (about 14% of whom reported having a private flush toilet). However, in the urban areas, nearly one-fifth of the poorest quintile -- and 62% of the richest quintile -- had a private flush toilet. Surprisingly, few alternatives other than the private flush toilet seem to be common in Cambodia. The proportion of the population having closed or open latrines or shared toilets is quite small, even in the urban areas. As a result, people either have a flush toilet or no toilet of any type.

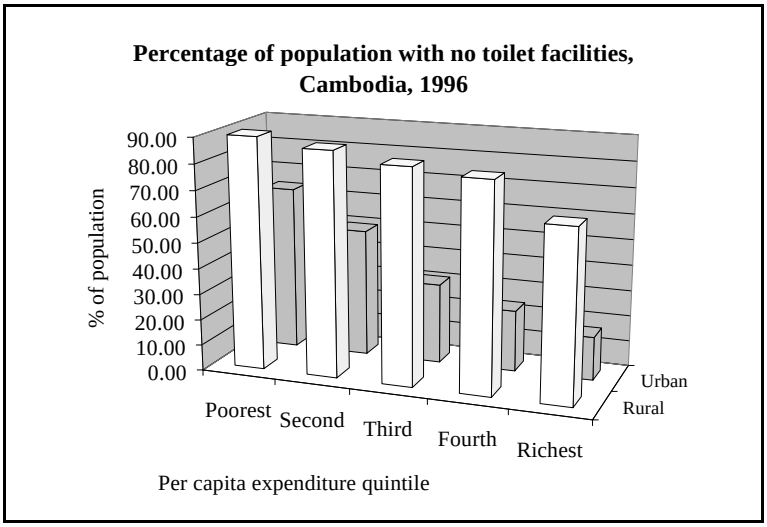

Figure V.4
Source: Socioeconomic Survey of Cambodia, 1996.

Provincial disparities in the proportion of population with no toilets is large as well. In Kampong Speu, Sihanouk Ville and Svay Rieng, more than 90% of the population are without any toilet facilities. On the other hand, only 18% of Phnom Penh's population is without toilet facilities.

2. Fuel

In Cambodia, the dominant sources of lighting at home are kerosene, which is used by nearly 80% of the population, and publicly-provided electricity, which is used by 13% of the pop-

ulation. The choice of fuel for cooking is also limited, with 92% of the population using firewood, and another 5% using coal, for cooking. Of course, there are huge differences across rural and urban areas and across economic groups in the choice of fuels for lighting and cooking. Slightly more than one-half of the urban population uses electricity as the main source of lighting, while this proportion is only 7% in the rural areas. For cooking, the use of coal and, to a smaller extent, liquid petroleum gas is much more widespread in the urban areas. However, firewood is almost exclusively the cooking fuel of choice for the rural population.

There are large differences in the choice of fuel across economic groups as well. As per capita expenditure increases, there is a strong tendency for people in both rural and urban areas to substitute electricity for kerosene for lighting their homes. Nearly three-quarters of the richest per capita expenditure quintile in the urban areas use electricity for lighting their homes, compared to only 17% of the poorest urban quintile. In the rural areas, the relative difference between the poorest and the richest quintiles is even greater (19.5% and 0.6%) (Figures V.5 and V.6).

Cooking fuel, however, presents a different picture. In the rural areas, there is hardly any variation across economic groups in the near-total reliance

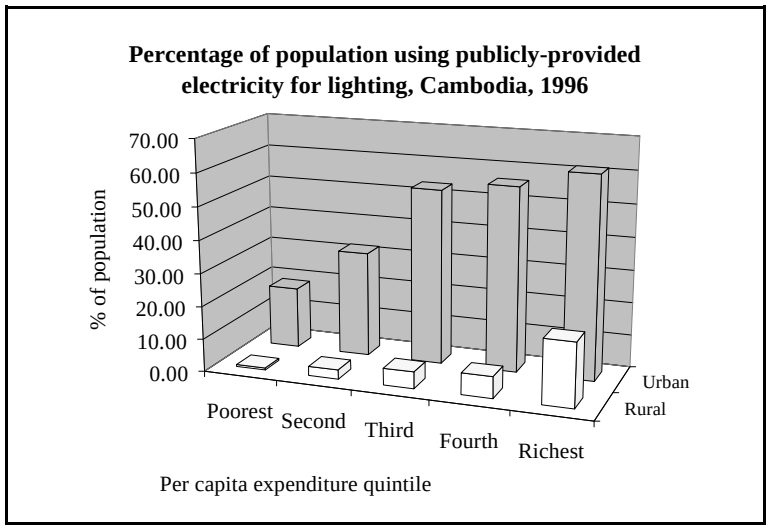

Figure V.5
Source: Socioeconomic Survey of Cambodia, 1996.

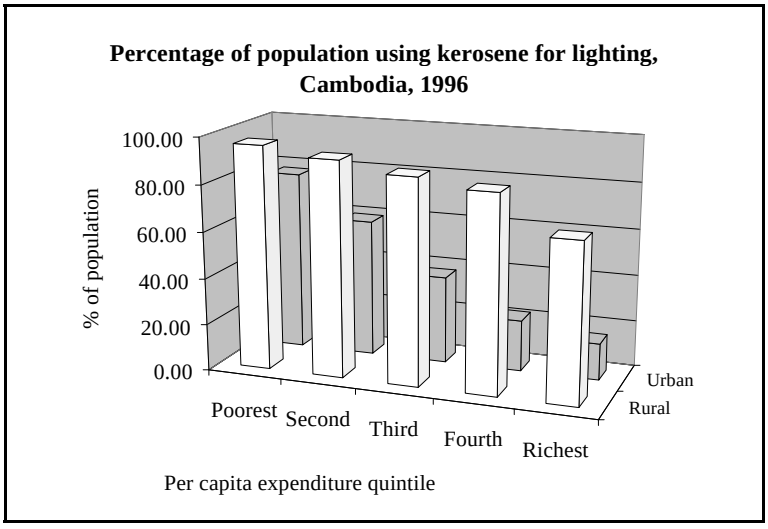

Figure V.6
Source: Socioeconomic Survey of Cambodia, 1996.

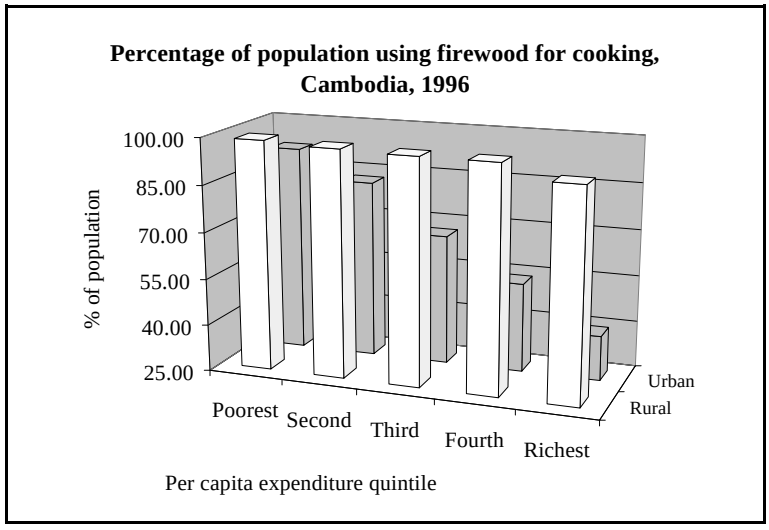

Figure V.7
Source: Socioeconomic Survey of Cambodia, 1996

on firewood for cooking purposes. Even among the richest quintile, 92.5% of individuals use firewood. But, in the urban areas, as per capita expenditures increase, there is a sharp switch from firewood to coal and liquid petroleum gas (Figures V.7 and V.8).

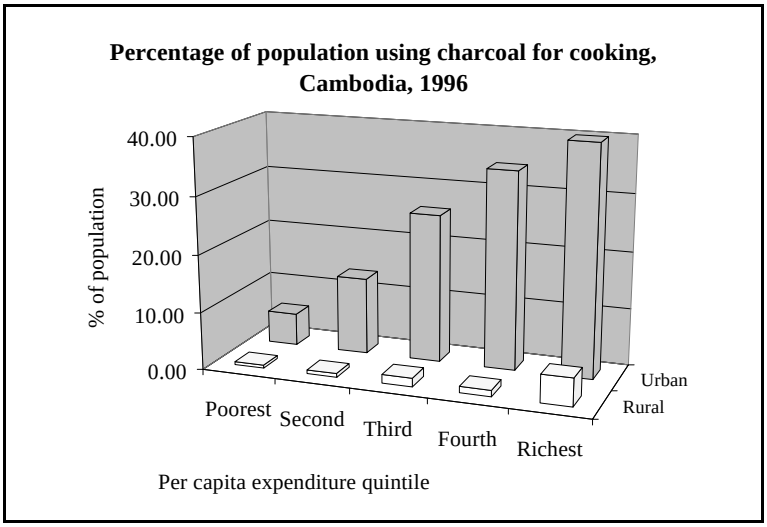

Figure V.8
Source: Socioeconomic Survey of Cambodia, 1996.

Across provinces, only a few areas, such as Phnom Penh, Stung Treng, Siem Reap and Koh Kong have any appreciable use of electricity for lighting. Most of the other provinces rely almost exclusively on kerosene for lighting purposes. In terms of cooking fuel, too, with the exception of Phnom Penh, Stung Treng and Koh Kong (which have appreciable amounts of coal use), there is hardly any variation across provinces in fuel choice.

3. Housing

Housing and shelter are an essential human need. As in other developing countries, the vast majority of people in Cambodia live in their own (as opposed to rented) homes. However, the amount of housing space available to each person varies significantly across rural and urban areas and across economic groups. Surprisingly, housing is more cramped in the rural areas than in the urban areas, with the rural dweller having an average of 6.2 sq. meters and the urban dweller, 8.3 sq. meters. In the rural areas, housing space per capita ranges from 4.8 sq. m. for the poorest per capita expenditure quintile to 8.1 sq. m. for the richest quintile. In contrast, the range for urban areas is 5.5 sq. m. to 11.6 sq. m. (Figure V.9).

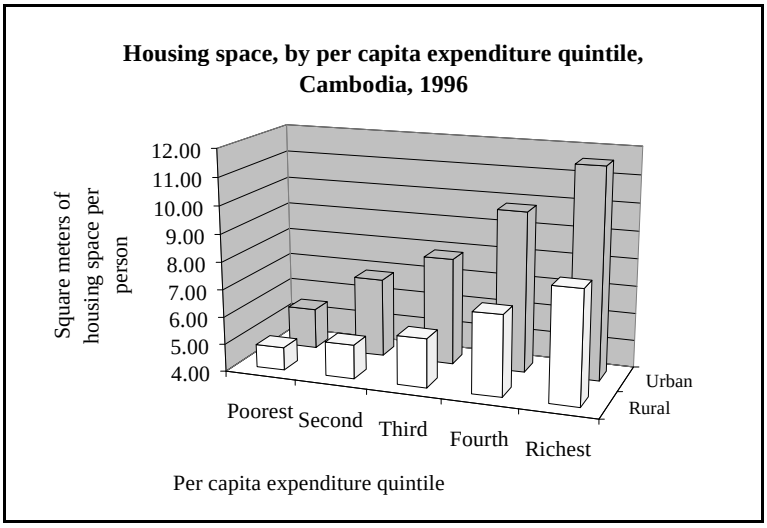

Figure V.9
Source: Socioeconomic Survey of Cambodia, 1996.

The province with the least amount of housing space per person is Pursat (5.1 sq. m.), while Sihanouk ville has the maximum amount of housing space per person (9.4 sq. m.). Surprisingly, Phnom Penh also ranks high in terms of housing space availability, with an average of 8.4 sq. m. per person.

VI. LITERACY AND SCHOOLING

Literacy and schooling are key components of the human development concept. Not only do they open up new cultural and social vistas for individuals, they also allow individuals to realize their full potential. Literacy and schooling also create strong externalities in the form of a better governed, more tolerant society. In addition, schooling has strong economic returns in the form of higher earnings for wage employees and greater productivity for farmers. There is overwhelming evidence from around the world that literate women have lower levels of fertility and better schooled and healthier children. The list of documented effects of schooling and literacy in developing countries is almost endless.

A. Literacy

Until recently, it was assumed that literacy rates in Cambodia were very low -- of the order of 35% or so.[14] However, three independent and recent national household surveys -- the Socioeconomic Survey of Cambodia 1993-94, the Demographic Survey of Cambodia 1996, and the Socioeconomic Survey of Cambodia 1996 -- all indicate that the proportion of adults who are literate in Cambodia is in the range of 65-69%.

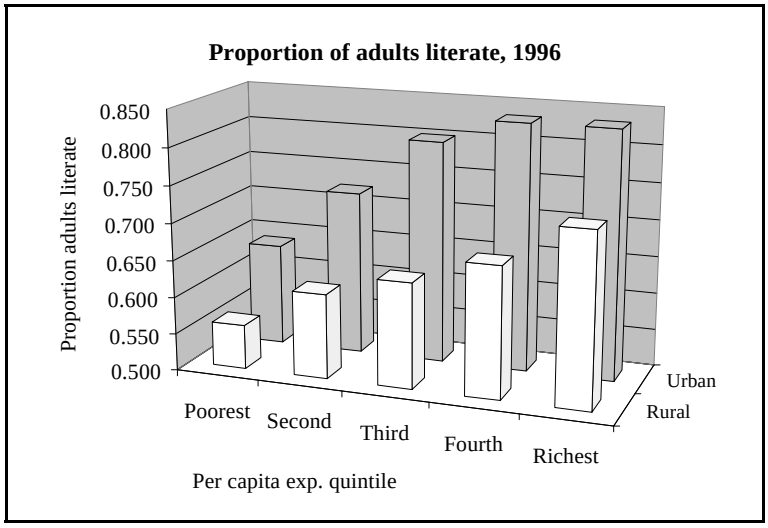

Figure VI.I
Source: Socioeconomic Survey of Cambodia, 1996.

There are, however, marked regional, urban/rural, economic and gender differences in literacy. Adult literacy rates are significantly higher in the urban areas (74.3%) than in the rural areas (61.8%).[15] Within each of these strata, there are strong differences across economic groups. For instance, the poorest 20% of adults in the rural areas have a literacy rate of only 52.3%, while the richest 20% have a literacy rate of 69.7%. Among urban areas, the disparity is even wider, with the poorest quintile having a literacy rate of 60% and the richest having a rate of nearly 80% (Figure VI.1). In addition, there is a gender dimension to literacy. At one end are rural females, of whom only 50.9% are literate. At the other end are urban males, of whom as many as 85.1% are literate.

[14]Indeed, the *Human Development Report 1997* assumes a literacy rate of 35% in its calculation of the human development index for Cambodia.

[15]Adult literacy rates here are computed as the proportion of adults aged 15 years and over.

The regional differences are perhaps the most striking (Annex Table VI.3). Only 16.3% of the adults in the province of Mondul Kiri in the Northeast and 26.4% of adults in Siem Reap are literate! On the other hand, Phnom Penh boasts a literacy rate of 82.1%.

Average schooling among adults is generally low, with an average Cambodian adult having 3.5 years of schooling. The socioeconomic differences in average length of schooling closely mirror those in literacy rates. Average schooling years range from 2.6 for the poorest per capita expenditure quintile in the rural areas to 5.7 years for the richest quintile in the urban areas. On average, rural dwellers have about 35% less schooling than urban dwellers, and women have nearly 40% less schooling than men. Regionally, adults in Mondul Kiri and Siem Reap have an average of 0.9 and 1.3 years of schooling, respectively, while those in Phnom Penh have 5.7 years.

B. School Enrollment Rates

While there is a management information system that has been employed by the Ministry of Education, Youth and Sports (MOEYS) to track enrollments in school, the calculation of enrollment *rates* requires information not only on the number of children enrolled in school but also on the total number of all eligible users, viz., the entire school-aged population of the catchment area served by the school facilities. Because there has not been a census in Cambodia for nearly three decades, information on the catchment population -- viz., the population of school-aged children -- is not reliable. However, because the SESC 1996 was a random household survey that sampled both children in school and those not enrolled in school, it can offer unbiased estimates of school enrollment rates.

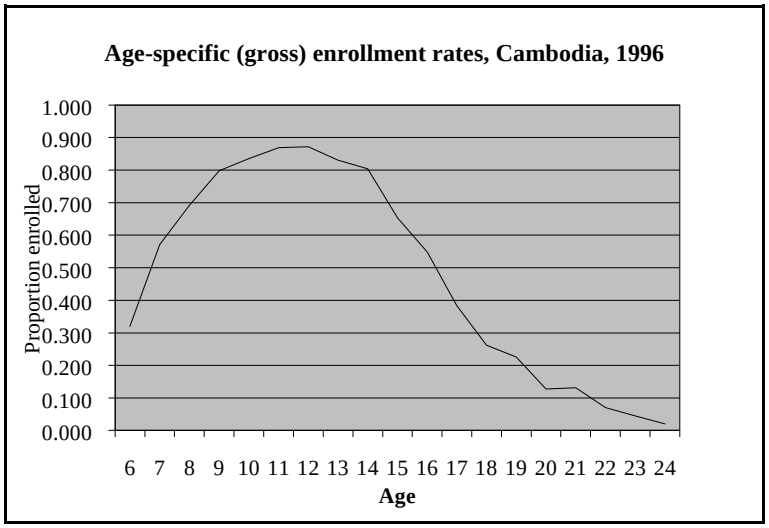

Figure VI.2
Source: Socioeconomic Survey of Cambodia, 1996.

Figure VI.2 shows the age-specific gross enrollment rates for Cambodia, using the SESC 1996 data. Enrollment increases through age 11 or 12, approaching a figure of 85%, and then falls off sharply. By age 17, when students are expected to graduate from secondary school, enrollment is less than 40%.

According to the SESC 1996, the *gross* primary enrollment rate in Cambodia is 108.80%, implying that the number of children enrolled in primary school (irrespective of age) is greater than the total number of children aged 6-11 years. This obviously suggests that a great many children older than 11 years are enrolled in primary. This is confirmed by the *net* primary enrollment rate, which is only 61.8% (Table VI.1). The same pattern holds for the lower and upper secondary enrollment rates. The *net* enrollment rate drops precipitously with the level of

schooling, being 13.6% for lower secondary, 5.4% for upper secondary, and only 1.3% for post-secondary education.

Table VI.1: Gross and primary enrollment rates from the SESC 1996 and the MOEYS, 1996-97

	SESC 1996		MOEYS	
	Gross	Net	Gross	Net
Primary	108.8	61.8	94.5	84.7
Lower Sec.	36.5	13.6	30.5	23.2
Upper Sec.	11.4	5.4	7.2	6.3

Notes: MOEYS data are for 1996-97 school year and are from school records. SESC 1996 estimates are based on two rounds of household survey data.

Source: Socioeconomic Survey of Cambodia, 1996, and Ministry of Education, Youth and Sports (1997).

The fact that huge numbers of over-aged children are enrolled in primary school is confirmed by both the average age of students enrolled in primary school (which is 10.9 years) as well as the average age at entry into primary school (which is 8 years, against the recommended age of 6 years). The average age at entry into lower secondary school is 14.4 years (against the recommended age of 12 years), with the average age of all students enrolled in lower secondary levels being 15.2 years. The extent of overage enrollment declines somewhat at the upper secondary and post-secondary levels.

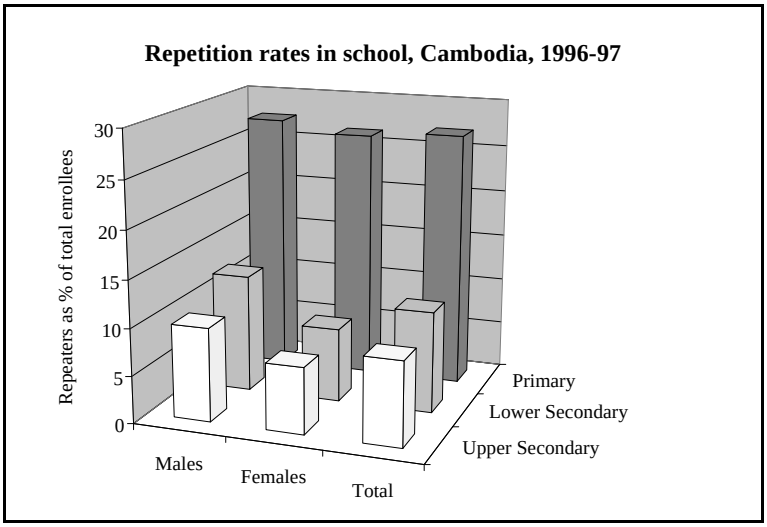

Figure VI.3
Source: Ministry of Education, Youth and Sports, 1997

How do these rates compare to those reported by the MOEYS based on school-level data?[16] Table VI.1 reports both sets of estimates (MOEYS and SESC) for each level of schooling. Although the patterns across levels of education and across net and gross rates are broadly similar in both sets of estimates, the MOEYS figures clearly underestimate gross primary enrollment and overestimate net primary enrollment. What this means is that the MOEYS data have substantially underestimated (relative to the SESC 1996 data) the extent of overage enrollment at all levels. For instance, the MOEYS reports the extent of overage enrollment as only 10.4%, 23.9% and 12.4% in primary, lower secondary and upper secondary school, respectively. The actual amount of overage enrollment is likely to

[16]Ministry of Education, Yourth and Sports, *Education Statistics 1996-97*, Planning and Aid Coordination Unit, April 1997.

be at least 2-3 times this number. However, the estimate of the net upper secondary enrollment rate is very similar across the two data sets.

Irrespective of which data one uses, it is clear that Cambodian students start school late (around 8 years of age) and complete schooling late (around 19 years of age). Planning data from the Ministry indicate very high rates of class repetition in the country. On average, 19.2% of all students enrolled in urban areas are repeaters, while the repetition rate is as high as 26% in the rural areas. Repetition rates are highest in primary school (27%), followed by lower secondary school (10.7%) and upper secondary school (8.9%) (Figure VI.3).

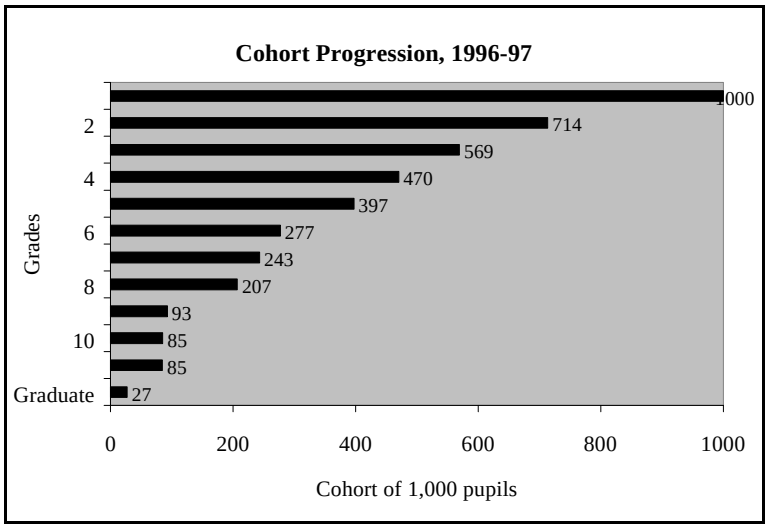

Figure VI.4
Source: Ministry of Education, Youth and Sports, 1997.

It is possible that repetition in primary schools is deliberately encouraged as a matter of school policy, as there are just not enough spaces in the secondary schools to accommodate all primary school-leavers. This would also explain why repetition rates are so low in secondary school. Irrespective of their academic performance, secondary schools need to promote students in order to make space for new arrivals.

Drop-out rates are high as well. In Grades 5, 8 and 11, the drop-out rates are extraordinary high, viz. 19.2%, 37.6% and 51.4%, respectively. The combination of high rates of repetition and drop-out means that there is enormous wastage in the educational system. Of 1,000 pupils that enter primary school, only 27 manage to successfully graduate from upper secondary school (Figure VI.4). The high drop-out and repetition rates also mean, of course, that many students leave school unable to read or write.

C. Disparities across Economic Status, Gender and Regions

1. Economic Disparities

What the MOEYS data cannot indicate, because they are based on aggregate information supplied by schools, are differences in enrollment rates across economic groups. These are shown in Annex Table VI.4, based on the SESC 1996 sample. Figure VI.5 charts the age-specific (gross) enrollment rates of two extreme groups -- the poorest 20% of the rural population and the richest 20% of the urban population. The wide disparity between the two groups, especially at very young ages (6-9 years), suggests that poor children start school late. Annex Table VI.4 shows marked differences across economic groups, with the poor, especially in the rural areas,

having the lowest net and gross enrollment rates and greatest extent of overage enrollment. In the rural areas, the poorest 20% of the population is observed to have a net primary enrollment rate of only 50.4%, while the richest 20% has a rate of 75.5%. At higher schooling levels, the disparity between economic groups is even greater. For instance, only 4.7% of children aged 12-14 in the poorest per capita expenditure quintile in the rural areas are enrolled in lower secondary school; the ratio for the richest rural quintile is five times as large (24.5%). The difference in net upper secondary enrollment rates between the richest and the poorest quintile is of the order of 10:1 (4.7% versus 0.4%).

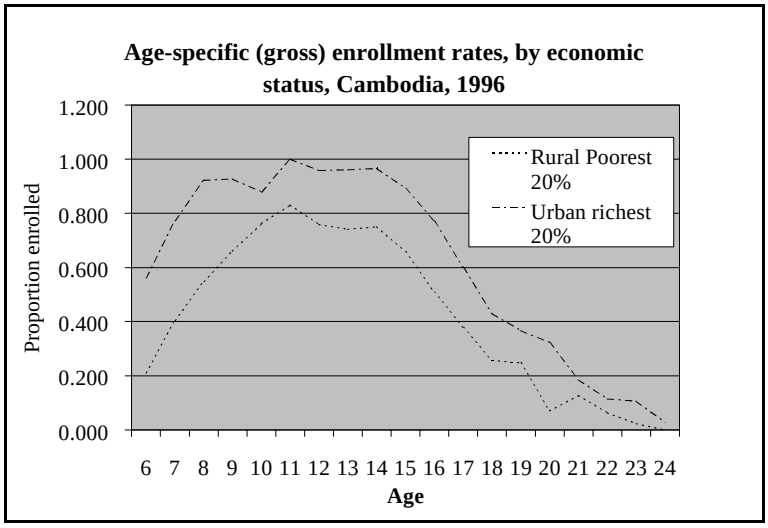

Figure VI.5
Source: Socioeconomic Survey of Cambodia, 1996.

The disparities in the urban areas are proportionately smaller, since there is much greater access to schooling, especially secondary schooling, in the urban areas than in the rural areas. However, in absolute terms, the disparities across economic status in the urban areas are also quite large.

Not only do the children of the poor have lower rates of enrollment, they tend to start school much later than the children of richer households. Average age at entry into primary school is 8.3 years for the poorest rural quintile of children, as compared with 7.5 years for the richest rural quintile. In the urban areas, the corresponding numbers are 7.8 years and 7.6 years, respectively.

The fact that disparities in enrollment and age at entry across economic groups are somewhat smaller in the urban areas than in the rural areas indicates that the urban poor benefit from the generally greater availability of school spaces in urban areas. Because the school enrollment of poor children tends to be constrained by capacity (or availability of spaces in school), an aggregate expansion of schooling opportunities typically improves the enrollment of poor children to a greater extent than the enrollment of nonpoor children.

2. Gender Disparities

There are also large gender disparities in enrollment rates. Up until age 11, the age-specific enrollment rates of boys and girls are remarkably similar (Figure VI.6); however, female enrollment rates begin trailing those of males beyond that age, and the gap keeps widening until about age 21 years. Net enrollment rates show a similar picture (Annex Table VI.5), with the net primary enrollment rate being roughly similar for both sexes, but the net secondary enrollment rates being larger for males than females, especially in the rural areas. Average age at entry into primary school is virtually identical for both sexes, but, surprisingly, the average age at entry into

lower and upper secondary schools is lower for girls than for boys. Thus, although fewer girls aged 12-17 years are enrolled in secondary school, those that are typically start both lower secondary and upper secondary school somewhat earlier than boys.

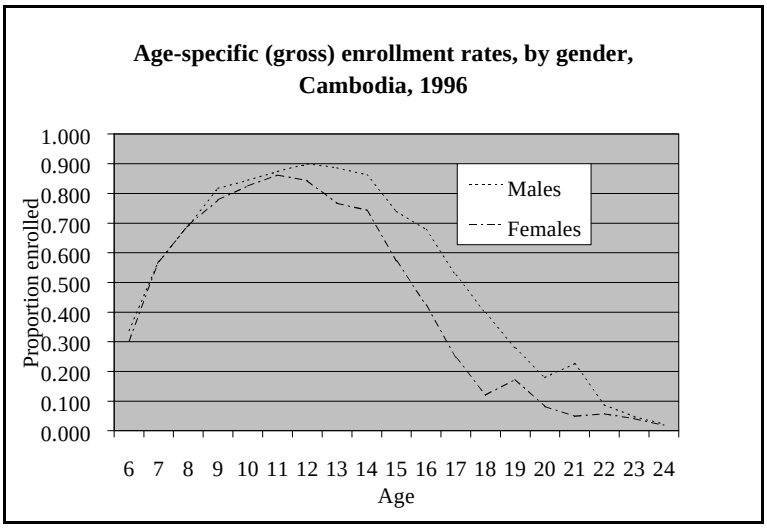

Figure VI.6
Source: Socioeconomic Survey of Cambodia, 1996.

Data from the MOEYS indicate that while girls have higher drop-out rates than boys, they have lower repetition rates. Figure VI.3, shown earlier, indicates that the repetition rates of girls is about 38% and 30% lower than that of boys in lower and upper secondary school, respectively. However, drop-out rates are higher. For instance, while the aggregate drop-out rate (for boys and girls combined) in Grade 5 is 19.2%, that for girls is 22.8%. In Grade 8, girls drop-out at a rate of 42.9%, while the aggregate drop-out rate is much less (37.6%).

Thus, while boys and girls start off on a more-or-less equal footing, important differences start emerging between them past age 11. Female enrollment rates in secondary school lag substantially behind male rates. This phenomenon, common to most developing countries, occurs because the opportunity cost of girls' time (relative to the cost of boys' time) increases with age, as older girls have responsibilities at home, such as helping with household chores and taking care of younger siblings. Another important reason for lower secondary enrollment rates for girls is the perception among parents that secondary education for girls is less likely to pay off in terms of higher future earnings. However, this is an incorrect perception. Indeed, if anything, the evidence seems to indicate that the pecuniary returns to female education are higher than those to male education.

Indeed, if a lower age at entry and a lower repetition rate are considered as indicators of performance in school, there is already a hint in the limited data analyzed here that, while girls may have lower probabilities of enrollment in secondary school and higher rates of dropping-out (perhaps reflecting parental decisions), those that make it to secondary school perform better than boys.

3. Regional Disparities

There are large differences in enrollment rates across provinces (Annex Table VI.6). In general, the provincial disparities in enrollment mirror those in adult literacy rates (see Section A of this chapter). The province of Mondul Kiri, which has an adult literacy rate of 16.3%, has the lowest enrollment rates (a net primary enrollment rate of only 17.6% and zero rates of net lower and upper secondary enrollment) and an average age at entry into primary school of 12 years. Likewise, Siem Reap, which has the second lowest adult literacy rates, also has the second lowest

enrollment rates. While this should not come as a surprise, it implies that school enrollment rates in Mondul Kiri and Siem Reap have essentially remained unchanged for several decades. It is disturbing to see, from Annex Table VI.6, that six provinces (out of a total of 21) have net primary enrollment rates of less than 50% and 11 provinces have net primary enrollment rates of less than 60%.

D International Comparisons

How do enrollment rates in Cambodia compare to those in neighboring Asian countries? Table VI.2 below compares net and gross enrollment rates, by level and by rural/urban residence, for Vietnam, Laos and Cambodia. The advantage of using Vietnam and Laos for comparison is that (i) they are Cambodia's immediate neighbors, (ii) like Cambodia, they are economies in transition, (iii) their income levels are broadly similar to those of Cambodia, and (iv) the

Table VI.2: Net and gross enrollment rates, by level, for Vietnam, Laos and Cambodia.

	Vietnam (1992-93)			Laos (1992-93)			Cambodia (1996)		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Net primary	76.7	85.8	78.2	54.0	78.0	60.0	60.2	72.1	61.8
Gross primary	101.1	99.3	100.8	104.0	133.0	110.0	108.1	113.4	108.8
Net lower secondary	31.9	55.7	36.1	11.0	26.0	15.0	11.4	26.2	13.6
Gross lower sec.	42.5	74.8	48.2	26.0	52.0	32.0	32.1	62.2	36.5
Net upper secondary	6.9	29.2	11.2				3.7	15.7	5.4
Gross upper sec.	9.3	38.1	15.0				8.6	28.6	11.4
Net post-secondary	1.2	6.6	2.4				0.7	4.6	1.3

Source: Data for Vietnam are from World Bank (1994) and for Laos are from World Bank (1995). Data for Cambodia are from the SESC 1996. All estimates are based on household survey data (as opposed to school-based information).

methodologies and data used in calculating the enrollment rates in these countries are similar to those employed here (i.e., the estimates are household survey-based, and not based on information supplied by school facilities). The enrollment rates for Cambodia and Laos look remarkably similar. Vietnam has higher net enrollment rates at all schooling levels, but especially at the secondary levels where the rates are 2-3 times as large as those in Cambodia.

E. Cost of Schooling

While primary schooling is officially free in Cambodia, parents typically have to pay significant amounts for their children's primary schooling. In addition to expenditure on school uniforms and textbooks, there are admission charges and various kinds of miscellaneous supplements. Private tutoring is a major expense as well. Private tutoring, often by the same

teacher at school, is frequent and somewhat obligatory, both because it is seen as providing a favor to teachers, who have to supplement their extremely low salaries through private tutoring, but also because the quality of teaching in schools is so poor. Finally, students and their families have to contribute almost entirely toward the construction costs of school buildings, equipment and furniture and their maintenance. As Tilak (1994: 165) puts it, "... it may appear that students are willing to pay for item-specific activity, such as for running the generator for the computer centre. However, it does not mean that all the students who pay have the ability to pay. At least some of them have no choice, and they are just compelled to pay the fees. Those who cannot, opt out of the schools."

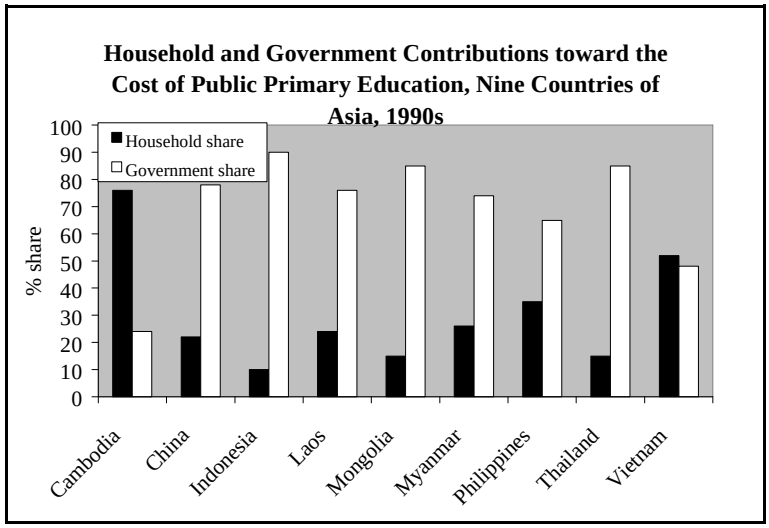

Figure VI.7
Source: Bray (1996).

Indeed, of nine countries in the Asia-Pacific Region, Cambodia appears to have the lowest share of government contribution (about 25%) and the highest share of household and community contribution (about 75%) to the total recurrent cost of public primary education in Cambodia. Even in Vietnam, which has the second lowest rate of government contribution, the government and households share equally in the recurrent cost of public primary education. In other countries, the share of households in total cost ranges from about 10% to 35%. (These comparisons are based on data from small, nonrepresentative surveys in individual countries. As such, these findings should be treated with caution.)

Based on a small sample household survey, Tilak (1994) has calculated that, in 1994, average annual household expenditures per student ranged from Riels 47,300 for preprimary education to Riels 689,300 for higher education (Table VI.3). On average, primary education cost Riels 123,000 per student. For an average household having school-age children, these costs amounted to nearly one-fifth of total household consumption expenditures.

The SESC 1996 data, however, indicate otherwise. Household expenditure on education is observed to constitute only 4% of total expenditure, with no strong relationship across economic status (Figure VI.8).

Table VI.3: Household Education Expenditures per Student, Cambodia, 1994

Schooling level	Fees & other charges	Books and stationery	Private tuition	Uniforms	Transport	Others	Total
Preprimary	5.8	1.5	0.0	2.5	0.0	37.5	47.3
Primary	50.4	9.9	18.6	31.0	6.1	7.4	123.4
Lower sec.	102.5	25.3	46.0	58.9	6.7	8.3	247.7
Upper sec.	213.9	28.8	82.1	63.3	35.6	0.1	423.8
Higher	112.5	214.3	82.9	230.8	48.8	0.0	689.3
All	77.4	27.2	32.9	51.1	11.4	6.9	207.0

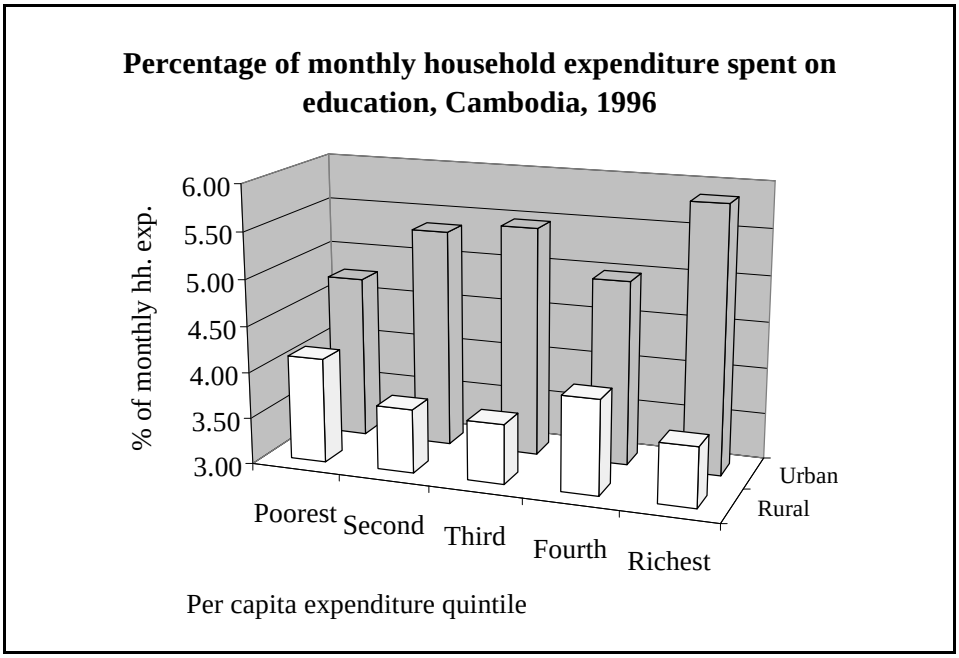

Figure VI.8
Source: Socioeconomic Survey of Cambodia, 1996.

VII. FERTILITY AND POPULATION

While fertility is strictly not an indicator of human development, it is an important proximate determinant of human development. Numerous studies from around the world have shown that there is a strong inverse relationship between child *quantity* and child *quality*. Children in high-fertility households typically have lower levels of human development -- schooling, nutrition, health, and parental attention. Conversely, children in smaller families enjoy superior indicators of human development.

A. Fertility Estimates

Since there has been no population census in Cambodia in the last 34 years, the demographic data in Cambodia can only be estimates. Reportedly, there was a baby boom in the early 1980s following the ouster of the Khmer Rouge (Desbarats, 1995). Fertility levels were flat during most of the 1980s, and declined only slightly later in the decade. A KAP survey on fertility and contraception in Cambodia in 1995 estimated the total fertility rate in Cambodia to be 4.9. The Demographic Survey of Cambodia (DSC) 1996 estimated fertility to be 5.2. These rates mean that Cambodia has the second highest fertility rate (next to Laos) in East and Southeast Asia. The KAP survey found that the majority of Cambodian women of reproductive age were not using contraception to limit their births; only 13% of currently-married women were using contraception and only 7 per cent were using a modern method of contraception.

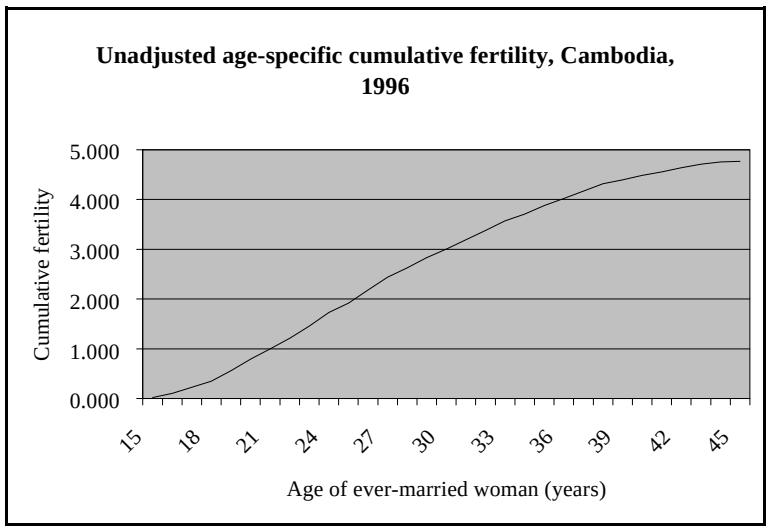

Figure VII.1
Source: Socioeconomic Survey of Cambodia, 1996.

Neither the KAP nor the DSC surveys report variations in fertility across economic groups. However, the SESC 1996 can be used to analyze patterns of fertility across socioeconomic groups in Cambodia. The SESC 1996 asked currently-married women aged 15-45 years if they had a live birth during the last two years. It is this variable that is used in the analysis that follows.

About 35.3% of women reported having a live birth during the two years preceding the survey, with large variations across age groups. Women aged 20-29 years had the highest two-year fertility rate, followed by women aged 15-19, 30-39, and 40-46, in that order. These two-year fertility rates are roughly consistent with a fertility rate of 5 (without any adjustments) (Figure VII.1). Thus, the SESC 1996 estimates are close to those of the DSC 1996 and the KAP Survey of 1995.

B. Differences across Economic Groups

One of the most pervasive empirical findings from the large literature on the determinants of fertility is that fertility rates fall with an increase in the economic status of households. There are several reasons for this: as incomes increase, couples switch from the "quantity" of children to their "quality" (for example, emphasizing their schooling, nutrition and health). In addition, as economic status improves, the child survival rate improves, and this means that couples need to have fewer births in order to ensure a certain number of surviving children. Finally, higher incomes free parents from the worry of their old-age security, and this reduces the "insurance" motive to have children. The net result of these factors is that higher-income couples have lower fertility rates than lower-income couples.

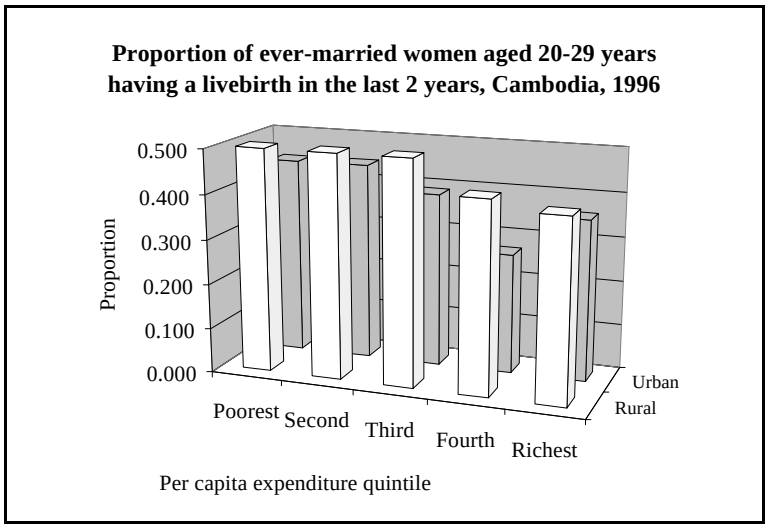

Figure VII.2
Source: Socioeconomic Survey of Cambodia, 1996.

The SESC 1996 data confirm the universal pattern noted above. On average, two-year fertility rates decline with economic status, with the decline being relatively steeper in the urban areas. However, when the fertility rates are disaggregated by age group, a different pattern emerges. It appears that the inverse relationship between fertility and economic status is largely the result of 30-45 year old women sharply reducing their fertility with economic status (Figure VII.3). In both rural and urban areas, the fertility rates of women in their prime reproductive ages -- viz., 20-29 years -- does not vary much across per capita expenditure quintiles (Figure VII.2).

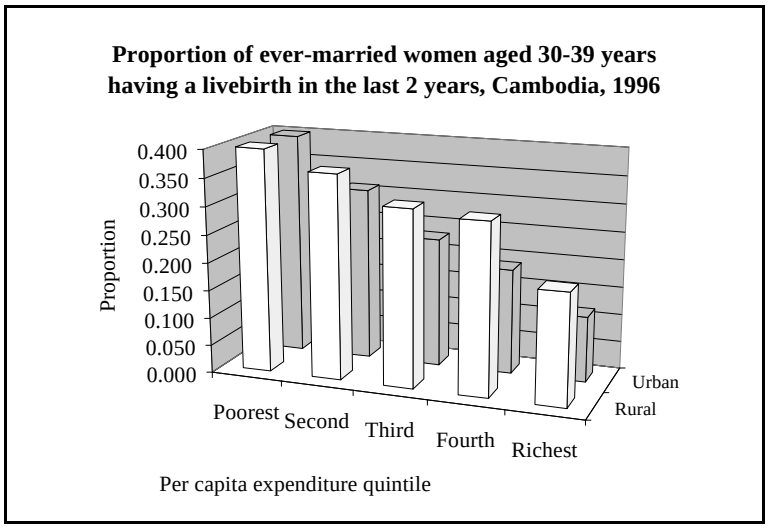

Figure VII.3
Source: Socioeconomic Survey of Cambodia, 1996.

The absence of marked fertility differentials among younger women is not surprising, since women at these ages are mostly involved in spacing children, not limited their number. It is only at older ages (past 30 years) that fertility differentials reflecting different preferences for family size are typically found.

C. Provincial differences

There are large provincial differences in two-year fertility rates as well (Annex Table VII.2). Fertility rates are highest in the provinces of Mondul Kiri, Koh Kong, Kampong Chhnang, Ratanak Kiri, Kratie and Svay Rieng. On the other hand, Kampong Speu and Phnom Penh have the lowest fertility rates in the country.

VIII. HEALTH

Health is a key component of human development. Both the longevity of life, as measured by life expectancy at birth, and the quality of life, as measured by healthiness and lack of illnesses and disease, are important indicators of human welfare. In addition, both have significant effects on economic output. Mortality, especially among young individuals in their prime working ages, results in a substantial loss to society of the economic output that these individuals would have produced. Morbidity inhibits labor productivity and thereby lowers the contribution of workers to economic output.

A. Mortality

Since there has been no census in Cambodia for the last 34 years, estimates of the infant mortality rate (IMR) can only be indirect estimates. Figure VIII.1 shows the trend in IMRs as estimated by UNICEF. The most recent estimate of the IMR (for 1996) comes from the Demographic Survey of Cambodia (DSC) 1996. These data suggest that there was a sharp drop in the IMR from 1980 (just after the Khmer Rouge period) to 1985, with another drop in the last 7-8 years.

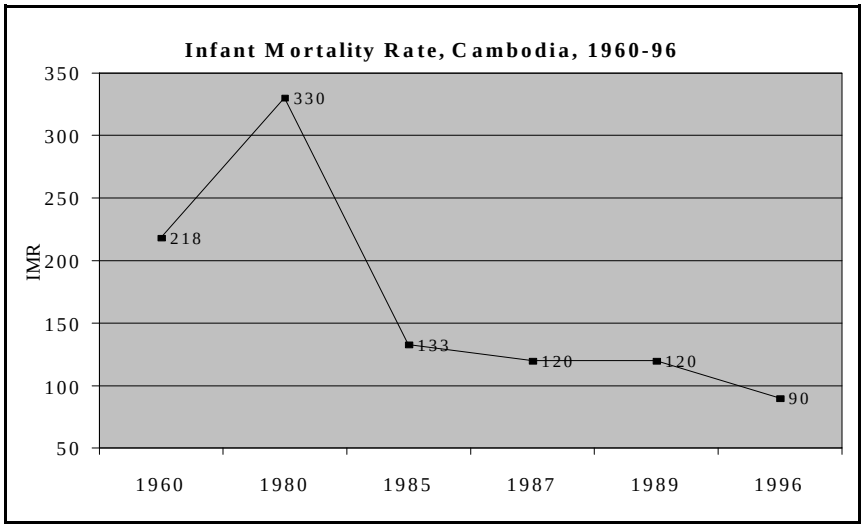

Figure VIII.1
Source: Ministry of Health (1994) and Huguet (1997).

An IMR of 90 in 1996 places Cambodia, along with Laos, as the country with the highest infant mortality in East/Southeast Asia (Figure VIII.2).

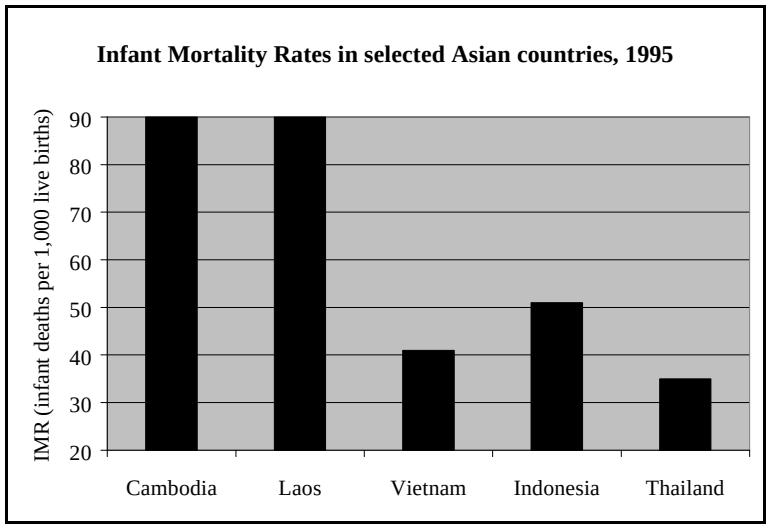

Figure VIII.2
Source: Human Development Report, 1997, and Demographic Survey of Cambodia, 1996.

A very wide gender variation in the IMR is observed in Cambodia, with the IMR being only 71.8 for females and 106.7 for males (Huguet 1997). A gender difference of nearly 50%

in the IMR for boys and girls is almost unprecedented in the world, and warrants further investigation.

Average life expectancy at birth has been estimated by the DSC 1996 at 54.4 years, with the rate being 50.3 years for men and 58.6 for women. The difference of 8.3 years in life expectancy between males and females arises in large part because of the huge difference between male and female IMRs. Although not unprecedented,[17] this difference is large, and suggests that the health situation of Cambodian males is significantly worse than that of Cambodian females.

Another area of concern in Cambodia is the very high maternal mortality rate (MMR) in the country. Maternal mortality is notoriously difficult to measure, requiring extremely large samples to estimate with any degree of precision. Using an innovative method that is parsimonious in its data requirements (the sisterhood method), the National Maternal and Child Health Center has estimated an MMR of 473 per 100,000 live births for 1995 (NMCHC, 1996). This compares with MMR estimates of 160 in Vietnam, 200 in Thailand, and 650 in Laos (UNFPA, 1996).

B. HIV/AIDS

HIV/AIDS deserves special attention since Cambodia probably has the most serious HIV epidemic in Asia and the economic and human implications of HIV/AIDS for the country in the near future could be staggering. The cumulative number of people infected with the HIV virus was estimated to be between 70,000 and 120,000 as of late 1996. Estimates suggest that anywhere from 17,000-25,000 new infections are occurring each year in the country, with 40% of these infections occurring in individuals aged 20-29 years old. More than 90% of infections are thought to occur through heterosexual transmission. Figure VIII.3 shows that, at current rates, anywhere from one-half to one million Cambodians will be infected with the virus by the year 2006 (MOH, 1997).

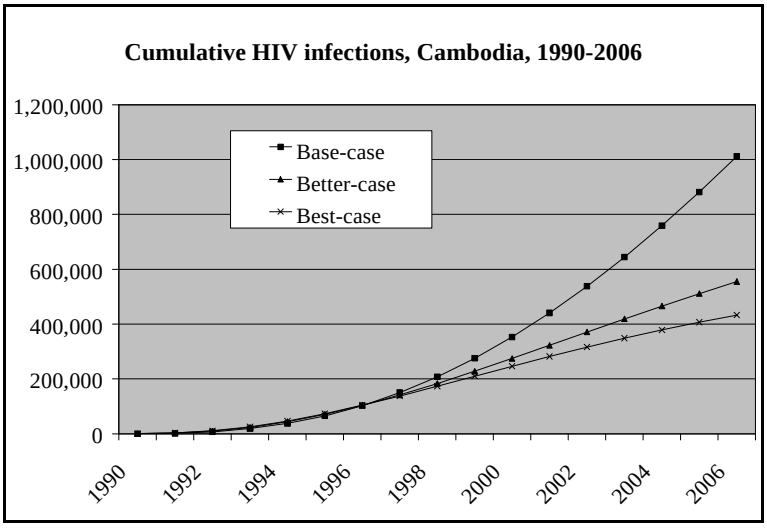

Figure VIII.3
Source: Myers, Sotharith and Calabria, 1997.

[17]Huguet (1997) reports that the male-female difference in life expectancy at birth is 6 years in Thailand, 7 years in Korea, and between 6 and 10 years in each of the Central Asian states.

Sentinel surveillance of four population groups -- brothel-based commercial sex workers (CSWs), police, military, and pregnant women attending antenatal clinics -- in 18 provinces shows disquietingly large prevalence rates. Mean prevalence rates for the country were 40.9%, 5.5%, 6% and 1.7% among CSWs, police, military, and pregnant women, respectively. These rates place Cambodia with the highest prevalence rate for CSWs in Asia and the second-highest rate (after Thailand) for pregnant women (Figure VIII.4).

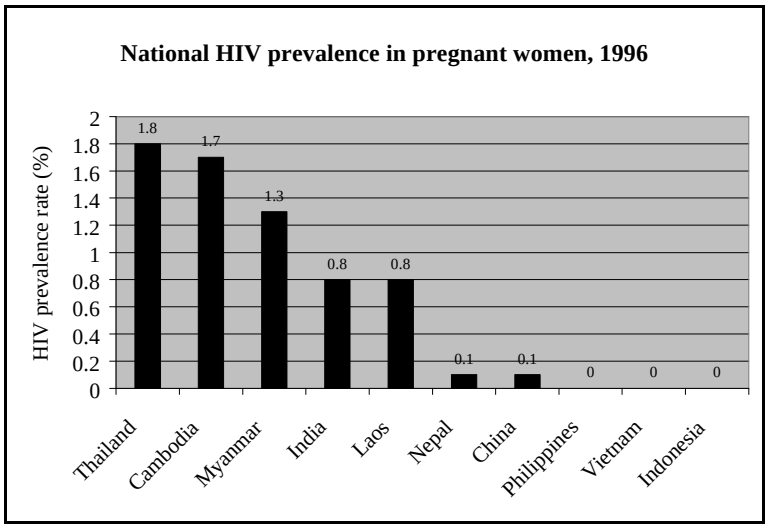

Figure VIII.4
Source: Ministry of Health, 1997.

What is worse is that, among provinces for which sentinel surveillance data are available for both 1995 and 1996, mean prevalence rates of female CSWs increased from 37% to nearly 50% within a year. The seroprevalence of pregnant women increased from 2.5% to 3%. Thus, the epidemic is not only growing rapidly, but is also beginning to affect the general population.

There are large provincial differences in HIV prevalence rates. The provinces along the Thai border to the west, such as Banteay Meanchey and Battambang, and in the south, such as Koh Kong, Kampong Speu, and Sihanouk Ville, have among the highest prevalence rates. Province, such as Takeo, Stung Treng, and Kratie, have among the lowest rates in the country.

Although data on prevalence rates are not available by socioeconomic group, it is likely that HIV/AIDS is a disease of the poor and the illiterate. The latter typically have less awareness of and access to condoms and other HIV-prevention products than the rich. For instance, it is difficult to imagine that the thousands of underage girls who are sold by their parents to brothels either know anything about safe sex or are able to insist that their customers wear condoms.

In addition to the enormous human cost of HIV/AIDS in terms of suffering, loss of livelihood and disruption of families, the disease has a very real economic cost. The direct costs of AIDS include the public and private costs of (i) prevention (including testing the blood supply), (ii) treatment and care, (iii) funerals, and (iv) caring for AIDS orphans. The indirect cost of AIDS is the value of output lost by society because of the premature mortality of AIDS victims. The indirect cost is large because AIDS mostly affects young adults of prime working (and earning) age.

Preliminary estimates of only the indirect economic cost of AIDS in Cambodia, combined with projections of the spread of the disease are staggering (Figure VIII.5). (Myers *et al.*, 1997). They range from a low estimate of $1.97 billion to a high estimate of $2.82 billion over the period

1997-2006. If direct costs are added, these figures would increase even more. These colossal amounts indicate how seriously the AIDS epidemic could affect the Cambodian economy in the absence of serious intervention. HIV/AIDS is a case where human development and economic development considerations converge almost perfectly.

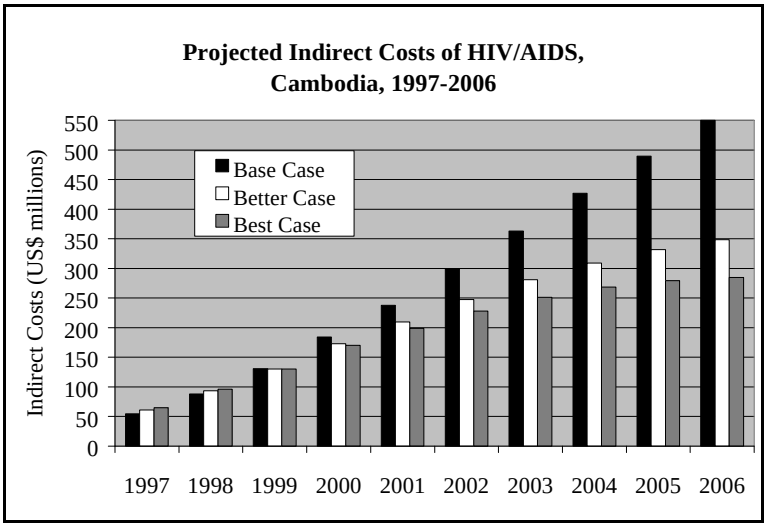

Figure VIII.5
Source: Myers, Sotharith and Calabria, 1997.

C. Morbidity

There are no official estimates of morbidity for Cambodia. However, based on deaths reported by government hospitals, the leading causes of mortality are malaria (accounting for 20% of hospital deaths), acute respiratory infections (14.6%), and tuberculosis (6%). Road accidents and mine accidents each accounted for 3-4% of hospital deaths in 1996. Based on outpatient caseload data reported by government health centers, the leading causes of morbidity are acute respiratory infections (accounting for 21.5% of all outpatient cases), diarrhea (17.2%), and suspected malaria (4.4%) (MOH, 1996). Thus, the leading causes of morbidity and mortality in the country appear to be preventible diseases, all of which can be managed by known (and relatively inexpensive) public health interventions, including vector control, health education, environmental health, and screening.

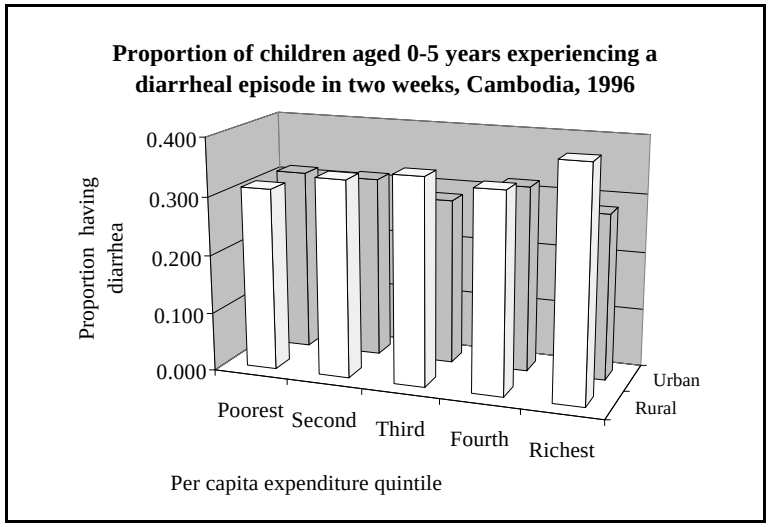

Figure VIII.6
Source: Socioeconomic Survey of Cambodia, 1996.

The SESC 1996 data can be used to estimate morbidity rates for a specific age group. For children under the age of 5 years, the SESC 1996 obtained information on whether the child had an episode of diarrhea in the two weeks preceding the household interview. The data show a very high reported incidence of diarrhea among 0-5 year olds. Over one-third of all children in this age group suffered a diarrhea episode in the two-week reference period. This translates into an annual rate of nearly 9 diarrhea episodes per child, and suggests that diarrhea is extremely endemic in Cambodia. The reported incidence of diarrhea is somewhat greater in the rural areas than in the urban areas, but the difference is relatively small. In the rural areas, the richest per capita expenditure quintile of children reportedly have a higher incidence of diarrhea than the

poorest quintile, perhaps reflecting the greater extent of reporting by high-income mothers. In the urban areas, there are no differences across economic groups (Figure VIII.6).

Provincial differences in the incidence of diarrhea are wider (Annex Table VIII.3). The provinces of Phnom Penh, Kampong Speu, Kampot and Battambang have the lowest reported incidence of diarrhea among 0-5 year olds (with 22-29% of children reporting an episode). At the other extreme is Mondul Kiri, where 51.3% of children under 5 are reported to suffer a diarrhea episode in the two-week reference period.

There are small gender differences in reported diarrhea incidence, with the incidence of an episode being slightly greater among male children than among female children.

D. Utilization of Health Services

A measure of overall health-services utilization that is often used in the literature is the *annual average number of contacts per capita with the health services*. While the appropriate number of annual per capita contacts varies with the age and sex distribution of the population as well as on the general incidence of morbidity, it is thought that an average of three to four annual contacts with the health services are adequate in achieving basic preventive health care goals (Gish *et al.*, 1988; Gish, 1989). For instance, this level of contact with mothers and children generally assures a high level of immunization of the child population and proper monitoring of pregnancies and deliveries. Government health facility-based data suggest an extremely low annual contact of the Cambodian population with the organized health services -- only 0.35 contacts per year per inhabitant (MOH, 1996), which is the lowest contact rate in the region (Figure VIII.7).

The low rate of contact is confirmed by other data, such as the proportion of deliveries taking place in hospitals or health centers. Only 15.9% of deliveries that occurred (based on the estimated crude birth rate) took place at hospitals or health centers. This means that the vast majority of deliveries typically take place at home, probably with the assistance of traditional birth attendants. Only about one-third of women are immunized against tetanus.

However, reported child immunization coverage is wide, thanks to vertical immunization programs. National coverage for 1996 is estimated at 90% for BCG, 76% for polio, 75% for DPT, and 72% for measles.

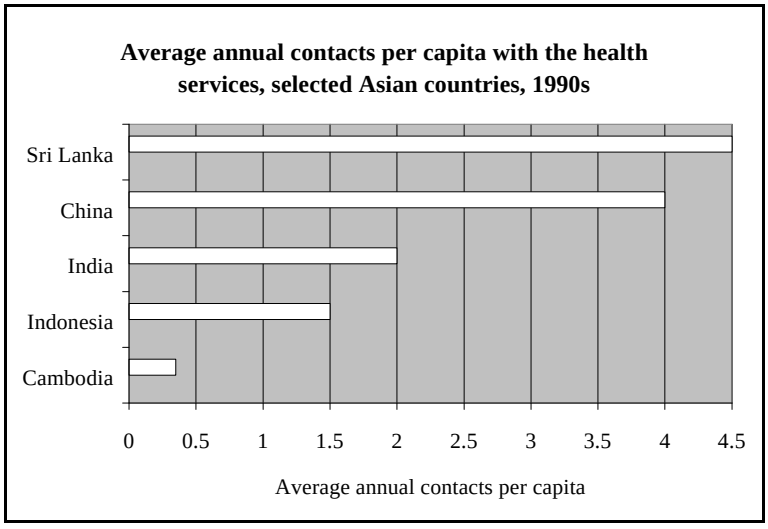

Figure VIII.7
Source: Ministry of Health, 1997, and Deolalikar and Vashishtha, 1992.

1. Treatment of Diarrheal Episodes Among Children 0-5 Years of Age

The SESC 1996 data indicate that 86.1% of the diarrhea episodes afflicting children aged 0-5 years are treated. However, 39% of the treatments take place at home or from a traditional healer. Drug vendors or chemists are also a provider of choice, with nearly one-third of the children receiving some treatment obtaining it directly from a drug vendor. Only 15.9% of the cases are treated at a health center or hospital. This again confirms that the utilization of public health facilities is quite low.

The probability of a diarrhea episode being treated increases with per capita expenditure, but not very much. For instance, in the richest per capita expenditure quintile in the rural areas, nearly 92% of diarrhea cases among children 0-5 years of age are treated. However, in the poorest quintile, only 75% are treated (Figure VIII.8). There are also important economic differences in the choice of provider. Especially in the rural areas, the poor tend to rely more on drug vendors and traditional healers, and less on private practitioners and health centers (Figure VIII.9). The latter finding is surprising, and contrary to the generally perceived role of government health centers and hospitals serving the poor. In the urban areas, the middle quintiles tend to be the heaviest users of government health centers.

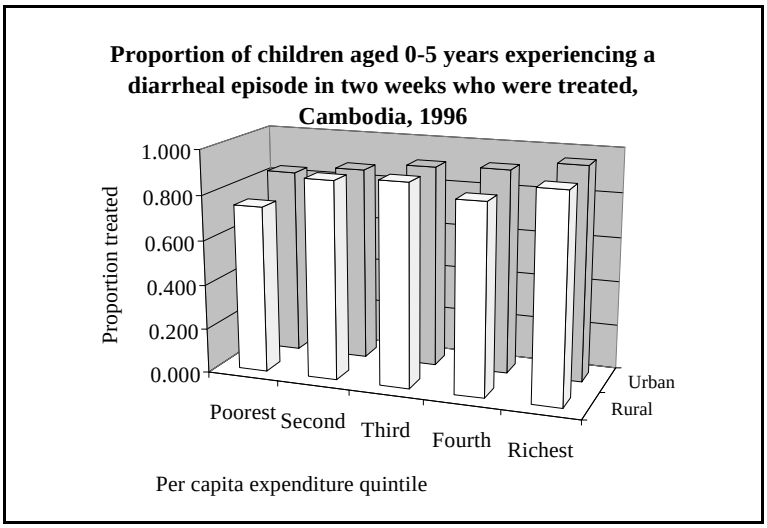

Figure VIII.8
Source: Socioeconomic Survey of Cambodia, 1996.

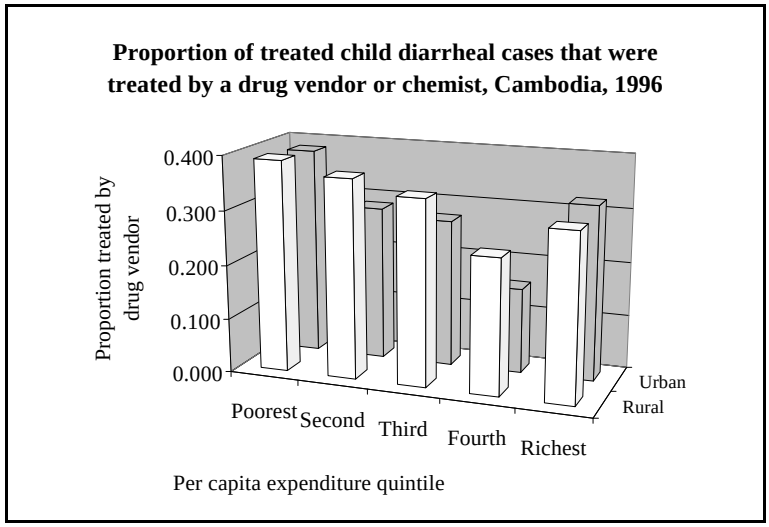

Figure VIII.9
Source: Socioeconomic Survey of Cambodia, 1996.

Provincial differences are shown in Annex Table VIII.3. With the exception of Siem Reap, the majority of children's diarrhea episodes are treated. The proportion of sick children treated at home or taken to traditional healers varies substantially -- from a low of 9.5% in Takeo to a high of 90.6% in Kratie. On the other hand, Phnom Penh, Svay Rieng, Kampot and Stung Treng have the highest percentages of sick children treated at health centers and hospitals.

There are interesting gender differences in the treatment of children suffering from diarrhea. While the proportion of sick children who are treated is the same for boys and girls, the choice of provider does vary across gender. In the rural areas, male children are much more likely than female children to be taken to drug vendors, while female children are more likely to be treated at home or with a traditional healer. On the other hand, in the urban areas, girls have a much greater likelihood of being treated at health centers and hospitals, while boys have a higher probability of being treated at home or by a traditional healer.

2. Delivery Location and Tetanus Immunization

The SESC 1996 data on pregnancies and deliveries confirms the Ministry of Health data reported earlier that the vast majority of deliveries take place at home. Only 10% of the deliveries take place at clinics, health centers or hospitals. Only 30.6% of the deliveries are assisted by a midwife, doctor or nurse, with the remainder receiving assistance from traditional birth attendants. Finally, only about one-half of the pregnant women report receiving a tetanus shot.

As one would expect, delivery location varies significantly with residence and per capita expenditure. Compared to rural areas, urban areas tend to have a higher proportion of deliveries taking place in clinics, health centers or hospitals, and a higher proportion of deliveries that are assisted by a midwife, nurse or doctor. Tetanus coverage is also wider in the urban areas than in the rural areas. Within urban or rural areas, all three variables are also related to per capita expenditure. For instance, as many as 43% of the deliveries in the richest urban quintile of women take place in clinics, health centers or hospitals. At the other extreme, only 4.5% of deliveries in the poorest rural quintile take place in these facilities (Figure VIII.10). Tetanus coverage varies from a low of 49% for the poorest rural quintile to a high of 72.3% for the richest urban quintile (Figure VIII.11).

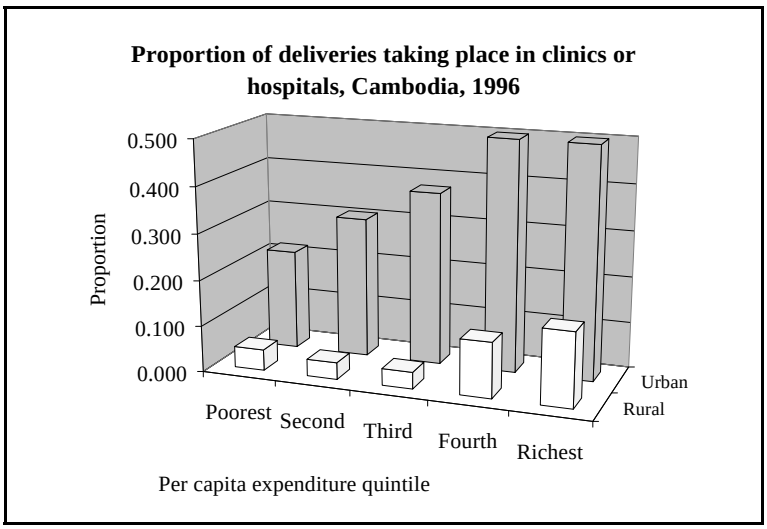

Figure VIII.10
Source: Socioeconomic Survey of Cambodia, 1996.

Of all the provinces, Phnom Penh has the largest proportion of deliveries taking place in clinics or hospitals (66.7%), while as many as 9 provinces (out of a total of 21) have less than 5% of the deliveries taking place in health facilities (Annex Table VIII.5). In the provinces of Mondul Kiri, Ratanak Kiri and Stung Treng, fewer than a fifth of all pregnant women receive a tetanus shot. In contrast, 85% of pregnant women in Phnom Penh report receiving a tetanus shot during pregnancy.

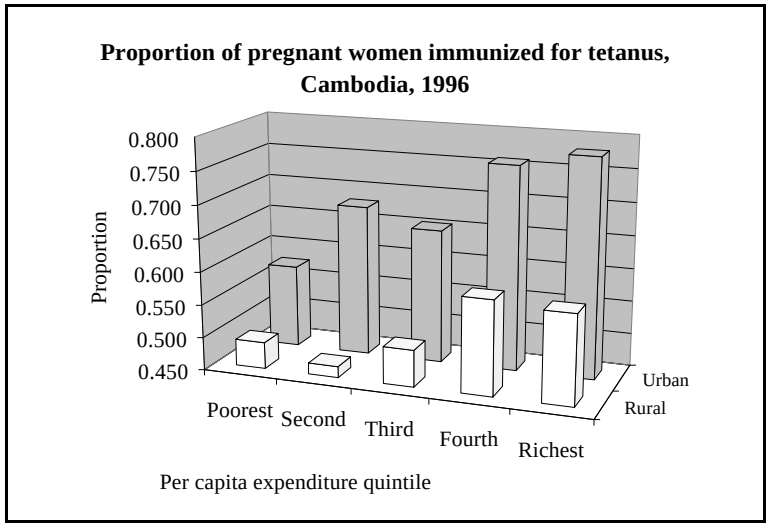

Figure VIII.11
Source: Socioeconomic Survey of Cambodia, 1996.

E. Cost of Health Services

There is very little information on what people actually pay for health services. But what is clear is that there are few -- if any -- health services that people can obtain for free, even at government health facilities. In addition, because there has been an enormous growth in private health facilities in the last 4-5 years, it is likely that individuals are spending a lot more on health than they used to earlier.

The SESC 1996 indicate that urban households spend more than 61% more on health than on education (as a proportion of their total consumption expenditure) (Figure VIII.12). In the rural areas, the difference is as high as 180%, and health expenses constitute nearly 11% of total monthly household expenditure. Thus, private spending on health is substantial. The data also suggest that household spending on health is progressive, with the proportion of total expenditure spent on health care increasing with economic status. For example, while the poorest 20% of the rural population spends an average of 5.7% of their total monthly expenditure on health care, the richest 20% spends as much as 18.8%. In the urban areas, the variation across economic groups is much smaller (6.8% for the poorest 20% versus 11.2% for the richest 20%).

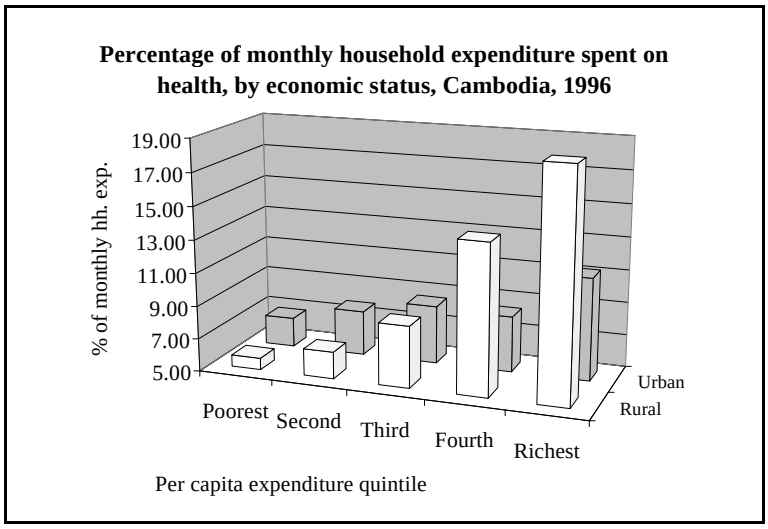

Figure VIII.12
Source: Socioeconomic Survey of Cambodia 1996

IX. CHILD LABOR

One important issue in Cambodia is the large numbers of children engaged in child labor and in prostitution. According to one report, as many as 35% of the commercial sex workers in the country are minors.[18] Since 1991, there has been an explosion in the extent of commercial sex activity -- a good deal of it involving children -- in the urban areas of the country. By some accounts, thousands of underage Cambodian girls are trafficked into Thai brothels every year, where they are subject to harsh working conditions. Unfortunately, there is little hard information on this important topic, with much of the discussion being based on casual empiricism and perception.

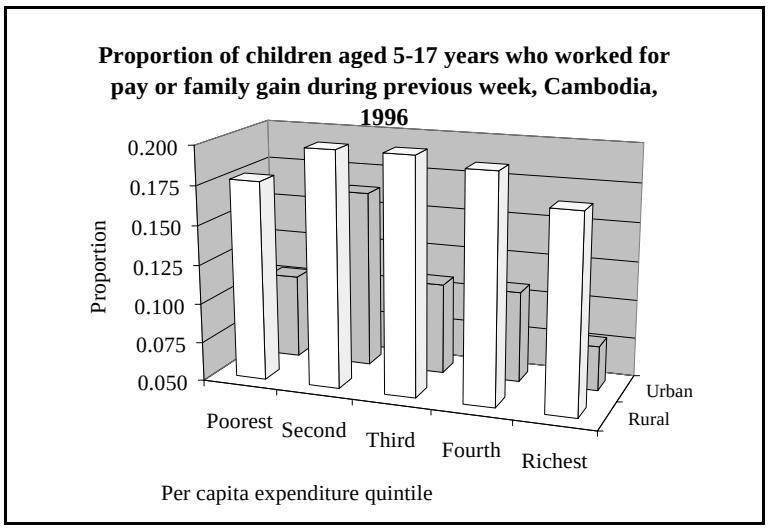

Figure IX.1
Source: Socioeconomic Survey of Cambodia, 1996.

Fortunately, the SESC 1996 obtained information on the number of children aged 5-17 years of age who "... worked during the week preceding the interview for pay or family gain or helped on own farm or in family business with or without pay." On average, 18.2% of children in this age group reported working in this manner. The average age at which a working child first started working is 10.4 years.

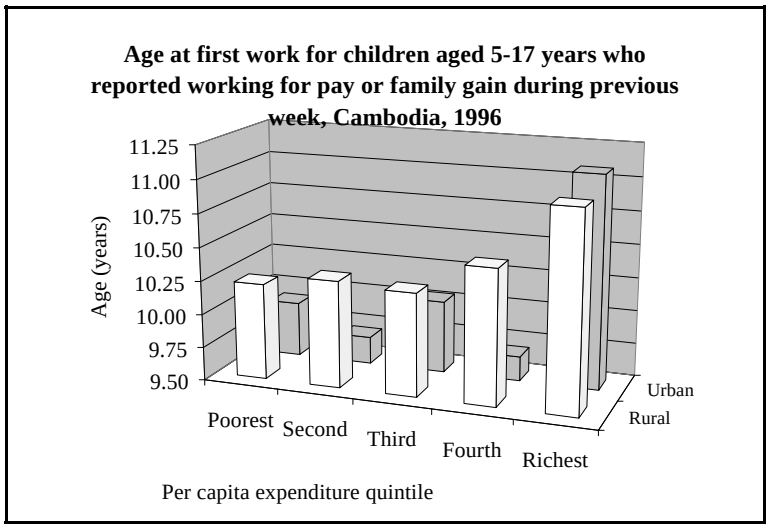

Figure IX.2
Source: Socioeconomic Survey of Cambodia, 1996.

The extent of child labor is greater in the rural areas (19.3% of children) than in the urban areas (11.3%), reflecting perhaps the use of child labor on family farms. However, age at first work is slightly lower in the urban areas (10 years) than in the rural areas (10.4 years) and among higher per capita consumption households (Figure IX.2).

[18]UNICEF, *The Trafficking and Prostitution of Children in Cambodia: A Situation Report*, report prepared for the Regional Workshop on Trafficking of Children for Sexual Purposes, Phnom Penh, 1995, mimeo.

There are some differences in the extent to which child labor is used by different economic groups, but these differences are surprisingly small (Figure IX.1). Indeed, the absence of a strong inverse relationship between child labor and economic status suggests that what the SESC 1996 has primarily captured is assistance by children on the family farm or in family enterprises -- the kind of assistance that is commonplace in most developing countries. If the child labor captured by the survey was hard wage labor on other people's farms or in factories, a sharp inverse relationship between this type of work and household expenditure per capita would surely have been observed.

Some provincial differences are observed in the extent of child labor. In the provinces of Kratie and Siem Reap, as many as 41-42% of children aged 5-17 years are reported to be working for pay or family gain. On the other hand, the proportion of children working is lowest in Phnom Penh (7.8%) and Kandal (12.5%). Age at first work also varies a great deal, from a low of 7.3 years in Svay Rieng to a high of 11.5 years in Phnom Penh.

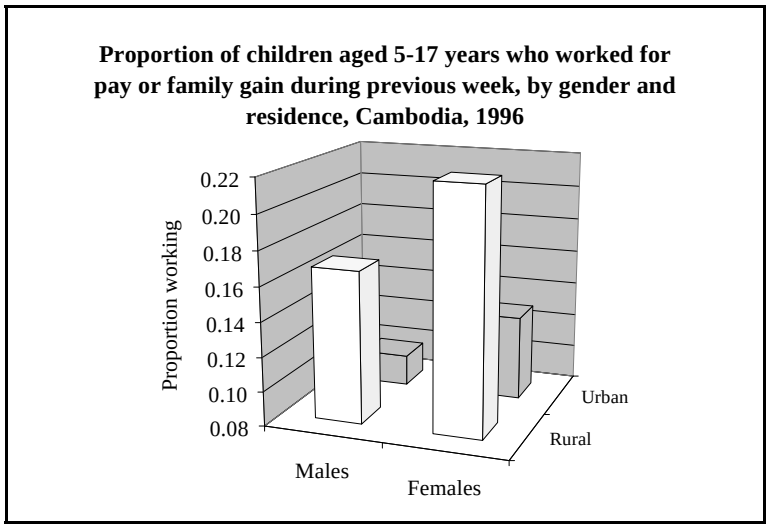

Figure IX.3
Source: Socioeconomic Survey of Cambodia, 1996.

Interestingly, a larger proportion of girls aged 5-17 years are reported working in both urban and rural areas. For instance, in the rural areas, 16.8% of male children, but 22% of female children, are reported to work. In the urban areas, 9.8% of male children and 12.9% of female children work (Figure IX.3). In an earlier chapter, it was noted that, although the school enrollment rates of young boys and girls are quite similar, female school enrollments start falling behind boys after age 11 or 12. The data on child labor suggests one more reason why girls might be pulled from school -- viz., to go to work and contribute to family income.

X. RETURNS TO HUMAN DEVELOPMENT AND INTERACTIONS AMONG THE VARIOUS COMPONENTS OF HUMAN DEVELOPMENT

A. Pecuniary Returns to Schooling

The very concept of human development is that "... it is the lives that human beings lead that is of intrinsic importance, not the commodities or income that they possess" (Anand and Sen 1993). Thus, human development is something that needs to be pursued for its own sake, not for the sake of pecuniary or other returns. However, it is also the case that many components of human development, such as nutrition, health and education, have large economic returns to individuals and society. This makes the case for a human development-based strategy even stronger.

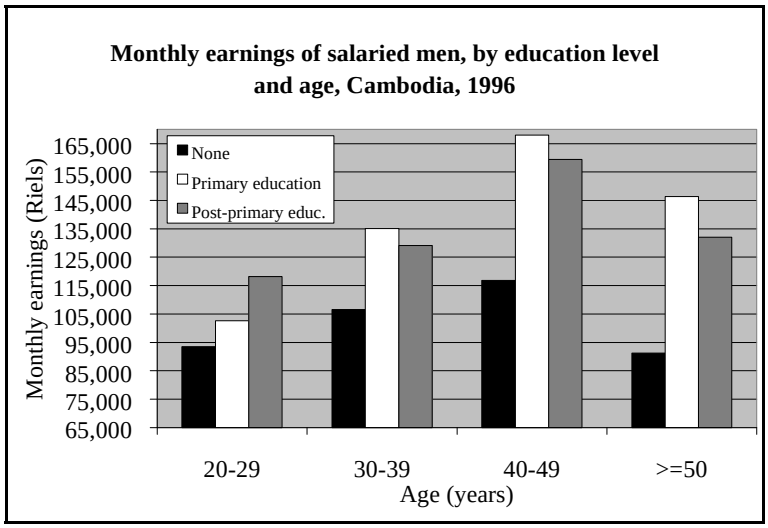

Figure X.1
Source: Socioeconomic Survey of Cambodia, 1996.

In Cambodia, there is direct evidence that education has high pecuniary returns. Monthly earnings for salaried employees are nearly 45% higher for individuals with primary or post-primary education than with no education. Since there are numerous difference across gender and age, Figures X.1 and X.2 show the monthly earnings of salaried men and women, by age group and educational level.

There are four observations that can be made with these data. First, age profiles of earnings are generally much steeper for men and women with some schooling than those without any schooling. In other words, as these individuals move from their 20s to their 40s, earnings increase much more rapidly for schooled than for non-schooled persons. (Indeed, among women with no schooling, monthly earnings decline as they move from their 30s to their 40s.)

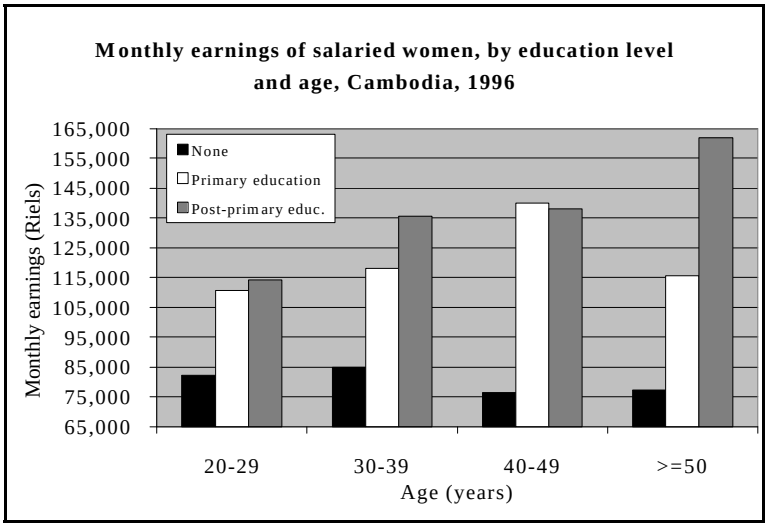

Figure X.2
Source: Socioeconomic Survey of Cambodia, 1996.

Second, men earn more than women at all ages and for all educational levels, with few exceptions (such as post-primary-educated women aged 30-39 years and 50 years and over).

Third, there is generally greater earnings difference between primary and post-primary-educated women than among primary and post-primary-educated men. This suggests that the incremental (pecuniary) returns to post-primary education (over primary education) are greater for women than for men.

Upon estimating standard earnings equations with the SESC 1996 earnings data, the above observation is confirmed. The private economic returns to primary schooling are estimated to be 33% for men and 40% for women. (This implies that, after controlling for age and disability, individuals with primary schooling earn 33-40% more in wages than individuals with no schooling.) However, the additional returns to post-primary schooling are significantly higher for women than for men (19.9% versus 5.7%).[19] These results are strikingly similar to those reported by Deolalikar (1993) and Behrman and Deolalikar (1995) for Indonesia. The results also suggest that disability is associated with a reduction in monthly earnings of 24.5% for men and 39.1% for women.

What could account for the large gender difference in the returns to secondary and tertiary schooling? Two explanations can be offered. First, if most salaried men are in occupations where physical strength is important (such as manufacturing or construction), the wage premium for men in unskilled factory positions (and with low schooling) would be considerable. The estimated returns to post-primary schooling would then be higher for females than for males. The data provide some evidence for this conjecture. For example, the finding that earnings growth, although larger in magnitude for men early in the life cycle, falls off more rapidly beyond age 49 years for men than for women (see Figures x and xi above), suggests that physical strength matters more for men. Schooling is often the only vehicle by which women can move out of low-paid, physically-demanding jobs. This is what happened in the United States from about 1880 to 1920, when women acquired secondary schooling and moved into clerical occupations in large numbers (Goldin, 1992). This trend appears to be already underway in Cambodia. Although secondary school enrollment rates are lower for girls than for boys, secondary school enrollments have been rising faster for females.

Another explanation for the higher observed returns to schooling for females may have to do with selection. The rate at which women are selected out of the paid labor force means that, at higher education levels, earners are more heavily selected towards the more talented.

B. Nonpecuniary Returns to Female Schooling

In addition to higher lifetime earnings, schooling, especially of women, has numerous socially-desirable consequences, such as lower levels of fertility, improved child health and nutrition, and greater schooling of children. These effects have been well-documented for other countries. It is possible to explore these effects for Cambodia with the SESC 1996 data.

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[19]This is obtained as the difference between the coefficients on post-primary schooling and on primary schooling (i.e., 0.6025 - 0.4039 = 0.1986 and 0.3876 - 0.3304 = 0.0572).

1. Fertility

The SESC 1996 indicate that, for women aged 30-39 and 40-45, fertility rates are significantly lower for women with some schooling than for those without any schooling. However, for women in their teens and twenties (who have just begun their child-bearing period), there is no significant difference in fertility between women with schooling and those without (Figure X.3). Thus, over the entire child-bearing period, women with schooling typically have 8% fewer live births than women with no schooling. This is not as large a difference as is typically observed in other developing countries.

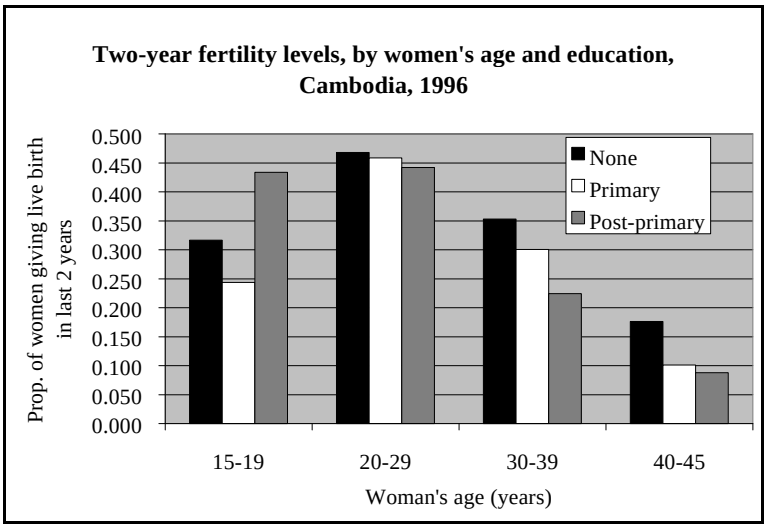

Figure X.3
Source: Socioeconomic Survey of Cambodia, 1996.

2. Child Nutrition

Not only are better-schooled mothers observed to have fewer children, there is a great deal of evidence from many developing countries that educated mothers are more likely than mothers with no education to invest in the health, nutrition, and education of each of their children. Figure X.4 shows the proportion of children aged 0-5 years in Cambodia who are moderately underweight and moderately stunted, by the educational level of their mothers. It is immediately obvious that maternal education, especially beyond the primary level, is associated with sharply lower levels of child malnutrition.

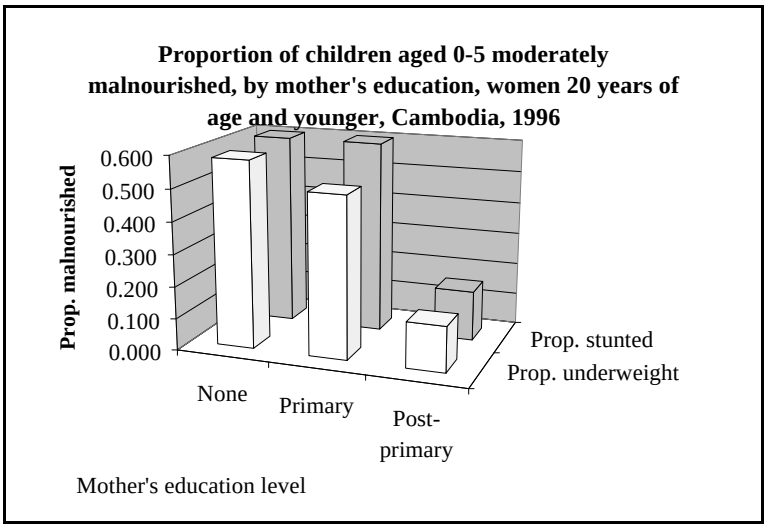

Figure X.4
Source: Socioeconomic Survey of Cambodia, 1996.

3. Child Schooling

Figures X.5-X.7 show the proportion of children of three age groups -- 6-11, 12-14 and 15-17 years (corresponding to primary, lower secondary and upper secondary levels of schooling) -- enrolled in school in 1996, by sex and by the educational level of their mothers. In all three age groups, children with mothers who have primary or post-primary schooling are much more likely to be enrolled in school than children whose mothers have no schooling. Although this trend is

true for both boys and girls, the relative impact (on schooling enrollment) of having an educated mother is much greater for girls than for boys.

It is thus obvious from the Cambodian data that there are significant social benefits from female education. Women with schooling have fewer children than women with no schooling. Their children are less likely to be malnourished and more likely to go to school.

C. Interactions among Human Development Components

In the previous chapters, Cambodia's performance on each of the individual components of human development has been assessed. However, what the discussion so far has missed is the synergy that occurs between the different components. For instance, there is compelling evidence from a number of countries that suggests that malnourished children are slow learners and perform poorly in school. Thus, simultaneous improvements in child nutrition and child schooling will have a joint effect that is greater than the sum of the two individual effects.

Similarly, there is a 'virtuous' circle between income on the one hand and schooling, health and nutritional outcomes on the other hand. Improvements in income increase the resources available to households and individuals for invest-

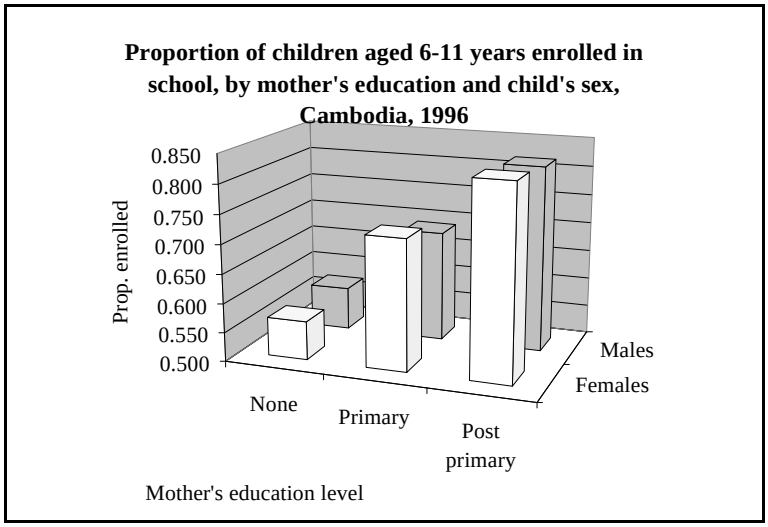

Figure X.5
Source: Socioeconomic Survey of Cambodia, 1996.

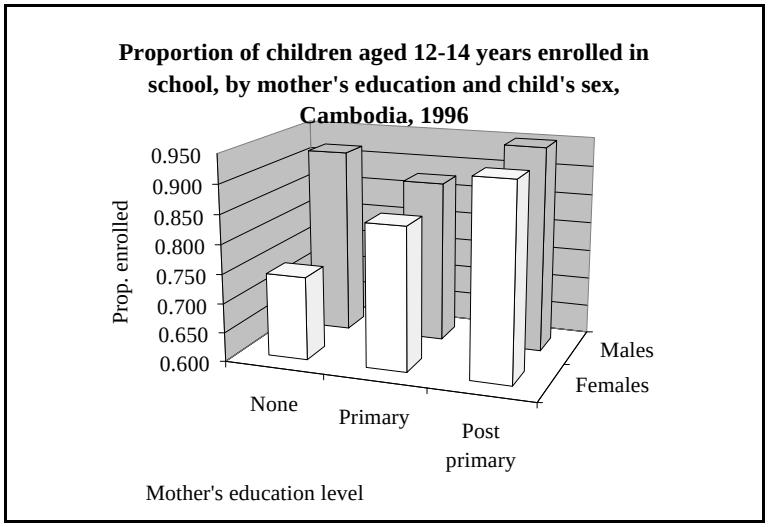

Figure X.6
Source: Socioeconomic Survey of Cambodia, 1996.

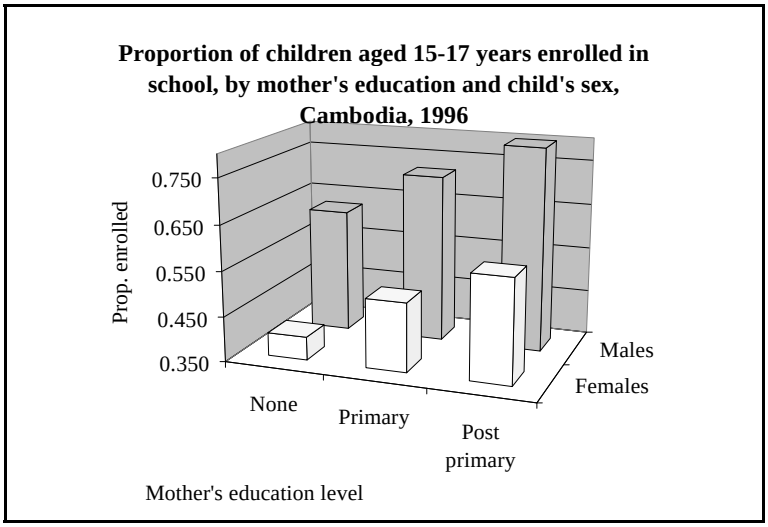

Figure X.7
Source: Socioeconomic Survey of Cambodia, 1996.

ing in themselves (i.e., their schooling, health and nutrition). But, in turn, these human capital investments increase the productivity of individuals and workers, thus enabling them to earn more income. This sets in a 'vicious' circle of higher incomes, better health, more schooling and improved nutrition. Again, the synergy between the various dimensions of human development – i.e., per capita income, literacy and life expectancy – means that it is possible to get higher payoffs from policy interventions that *simultaneously* address all aspects of human development than those that address only one component at a time.

XI. CONCLUDING REMARKS

It is beyond the scope of this report to make concrete policy recommendations for poverty reduction and human development in Cambodia. Rather, the intention of the report has been to describe the human development situation in the country, highlighting differences across economic groups, rural and urban areas, provinces, and men and women. However, it may be useful in this chapter to simply point out some salient aspects of human development and poverty in Cambodia that might be of interest to policy makers.

There is no doubt that the level of human development in Cambodia is very low. Even with the revised HDI score, Cambodia still ranks among the lowest 20% of countries in terms of its HDI ranking. However, Cambodia is also a very poor country -- among the poorest 20 countries in the world, according to the World Bank (1997b). Indeed, the analysis in this report indicates that Cambodia's level of human development is consistent with its low per capita income. Since many components of human development, such as literacy, school enrollment, longevity, nutrition and lack of poverty, are strongly related to per capita GDP, it is likely that robust, broad-based economic growth will, on its own, improve the human development situation in the country.

However, the experience of other developing countries suggests that economic growth alone can take an inordinately long time to improve social and human indicators, and that it is possible to short-circuit the process via selective and targeted human development and anti-poverty interventions. As these interventions are planned, it may be useful to keep in mind three findings that have emerged consistently from the analysis undertaken in this report. First, there are large differences in social and human outcomes across economic groups. Whether it is literacy or school enrollments, access to basic services or health outcomes, fertility or child nutrition, the poorest 20% of the population has the worst possible indicators.

Second, there are large provincial differences in social and human indicators. The provinces of the Northeast, such as Ratanak Kiri and Mondul Kiri, as well as the provinces of Kampong Cham, Siem Reap and Prey Veng are very low on the human development score. In addition, malnutrition, poor health, and illiteracy are concentrated in certain provinces in the country. For example, four provinces -- Kampong Cham, Kandal, Takeo, and Prey Veng -- alone account for one-half of all the severely malnourished children aged 0-5 years in the country. This means that targeting nutritional and other interventions to these provinces will be cost-effective.

Third, there are marked gender differences in social outcomes. While primary enrollment rates for boys and girls are similar, girls have much lower enrollment rates than boys in lower and upper secondary school. Not only is this inequitable, the analysis of labor market returns suggests that this may be highly inefficient. The estimated rate of return to post-primary schooling is significantly higher for females than for males (20% versus 6%), implying that Cambodia may be foregoing a great deal of earnings and productivity from not sending more girls to lower- and upper-secondary schools.

Not all observed gender differences favor boys. In Cambodia, the infant mortality rate for boys is nearly 40% greater than that for girls. The reasons for this large gender difference are unclear. Whatever the reasons, such a huge difference is inequitable (and probably unsustainable).

REFERENCES

Sudhir Anand and Amartya Sen, "Human Development Index: Methodology and Measurement," background paper for *Human Development Report 1993*, UNDP, New York, 1993.

Jere R. Behrman and Anil B. Deolalikar, "Are There Differential Returns to Schooling by Gender? The Case of Indonesian Labor Markets," *Oxford Bulletin of Economics and Statistics* 57(1), February 1995: 97-118.

Mark Bray, *Counting the Full Cost: Parental and Community Financing of Education in East Asia*, World Bank, Washington, 1996.

Anil B. Deolalikar, "Nutrition and Labor Productivity in Agriculture: Wage Equation and Farm Production Function Estimates for Rural India," *The Review of Economics and Statistics* 70(3), August 1988.

_____, "Gender Differences in the Returns to Schooling and in Schooling Enrollments in Indonesia," *Journal of Human Resources* 28(4), Fall 1993: 899-932.

FAO/WFP, *Report of the FAO/WFP Crop and Food Supply Assessment Mission to Cambodia - 14-27 January 1996*, Rome, Italy, 1996.

Jacqueline Desbarats, *Prolific Survivors: Population Change in Cambodia, 1975-93*, Arizona State University, Arizona, 1995.

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

Martin Godfrey, "Cambodia: Skill Development for Sustainable and Competitive Livelihoods," UNDP, Phnom Penh, 1997.

Ministry of Agriculture, "Food Security in Cambodia: A Country Position Paper," presented at the World Food Summit, Rome, November 1996.

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

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

Ministry of Health/National MCH Center, *Summary of Maternal and Child Health Statistics 1993*, Phnom Penh, 1993.

Ministry of Health, *National Health Development Plan 1994-96*, Phnom Penh, 1994

Ministry of Health, *National Health Statistics Report 1996*, Planning and Statistics Unit, Phnom Penh, April 1996, mimeo.

Ministry of Health, *National Review of the HIV/AIDS Response in Cambodia*, Phnom Penh, Cambodia, April-June 1997.

Charles N. Myers, Chap Sotharith and Michael Calabria, "Economic Costs of AIDS in Cambodia: Some Preliminary Estimates," paper prepared for UNAIDS, Phnom Penh, Cambodia, 1997 (mimeo).

National Institute of Statistics, *Demographic Survey of Cambodia 1996: General Report*, Phnom Penh, October 1996.

National Maternal and Child Health Center, "Estimating the Magnitude of Maternal Mortality in Cambodia: An Application of the Sisterhood Method," Phnom Penh, July 1996.

Prescott, N. and M. Pradhan, "A Poverty Profile of Cambodia," World Bank Discussion Paper No. 373, Washington, D.C., 1997.

Huguet, J. W., *The Population of Cambodia, 1986-96, and Projected to 2020*, National Institute of Statistics, Ministry of Planning, Phnom Penh, May 1997.

Rajalakshmi Rao and Binie Zaan, *An Analysis of Female-Headed Households in Cambodia*, National Institute of Statistics, Phnom Penh, 1997.

David Sahn and Harold Alderman, "The Effect of Human Capital on Wages, and the Determinants of Labor Supply in a Developing Country," *Journal of Development Economics*, 1988.

William Shawcross, *Cambodia's New Deal*, Carnegie Endowment for International Peace, Washington, D.C., 1994.

John Strauss, "Does Better Nutrition Raise Farm Productivity?" *Journal of Political Economy* 94 (2): 297-320, 1986.

Vincent Tickner, "Food Security in Cambodia: A Preliminary Assessment," United Nations Research Institute for Social Development, Geneva, October 1996.

J.B.G. Tilak, *Financing Education in Cambodia: Education Sector Study*, Asian Development Bank, Manila, July 1994.

UNICEF, *Nutritional Status and Food Practices in Rural Areas: Food and Nutrition Surveys in 12 Villages of 4 Provinces in 1993-94*, Phnom Penh, 1994.

UNDP, *Human Development Report 1997*, Oxford University Press for the United Nations Development Programme, 1997.

United Nations Population Fund, *The State of the World Population*, New York, 1996.

UNICEF, *Towards a Better Future: An Analysis of the Situation of Children and Women in Cambodia*, Phnom Penh, 1996.

World Bank, *Vietnam: Population, Health and Nutrition Sector Review*, Report No. 10289-VN, 1992.

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

_____, *Laos: Poverty Assessment*, East Asia and Pacific Region, Washington, D.C., 1995.

_____, *Cambodia: Progress in Recovery and Reform*, East Asia and Pacific Region, Washington, D.C., 2 June 1997a, mimeo.

_____, *World Development Report 1997*, Oxford University Press for the World Bank, 1997b.

WFP-Cambodia, *Monthly Newsletter*, August 1995.

ANNEX TABLES