

(2) Descriptive Statistics

- 36% of Cambodians are considered poor (World Bank, 1999)
- 130th out of 173 countries in HDI (UNDP, 2002)
- GNP per capita (World Bank Atlas method) was \$260 in 1999
- Lowest PPP per capita GDP and second lowest life expectancy in region
- Total fertility is high at 5.2% per year (1995-2000) and 55% of population is under 20 years of age (Census, 1998)

(3) Regional Comparison of HDI

Human Development Index for Selected Countries (*Source: UNDP, 2002*)

Country	Adult Literacy in 2000 (%)	Life Expectancy	Total Fertility, 1995-2000 (%)	GDP per Capita, 2000 (PPP US\$)	HDI Rank
Thailand	95.5	69.6	2.1	6,402	70
Viet Nam	93.4	67.2	2.5	1,996	109
Laos	48.7	52.5	5.3	1,575	143
Cambodia	67.8	56.5	5.2	1,446	130

- Human Development Index is low in the region
 - Plus public sector employment is large (152,166 in gov't and 138,506 in military)
- Education is essential for Cambodia

Education in Cambodia

(1) Gender Disparity in Education

- Literacy– 83% for male and 61% for female
- More than 1/3 aged 25+ not attended school, 73% of which are women (MoEYS, 2000)
- Gap in enrollment rate grows as education level increases (Almost equal at first, but male enrollment rate is 50% higher than female by age 15, and nearly three times larger by age 18)
- Education of women **is and will be** especially important

(2) A Literature Review– General

- Ayres (2000) on history of education since independence in 1953
- Dykstra and Kucita (1997) since 1900
- Fiske (1995) on women and education in Cambodia
- Bray (1996, 1999) looks at the (private) cost of (public) education financing
- Sloper (1999) examines the reconstruction of higher education

(3) From an Economic Perspective

- Prud'homme (1969) was the first study from an economic perspective
- Ear (1995) also took issue with the French system of education (emphasis on creation of civil servants: *fonctionnaire/muntreye reachaka*)
- ADB (1996) was an excellent first attempt at assessing the sector strategically
- These were authored before any major survey results were available and, as a result, both relied heavily on anecdotal evidence
 - A very **limited** literature from an economic perspective

(4) Recent Quantitative Studies

- DATA: Socio-Economic Surveys of Cambodia (SESC 1993/94, 1996) and the Cambodia Socio-Economic Surveys (CSES 1997, 1999)
- Randomly sampled approximately 6,000 households and offered important, nationally representative, findings
- Analysis is done by Prescott and Pradhan (1997) and World Bank (1999a)
- UNDP/Ministry of Planning *Cambodia Human Development Reports* (UNDP 1997, MoP 1998, MoP 1999, MoP 2000)

Methodology

(1) Human Capital Approach

$$\begin{array}{c}
 \text{Ex post income} \quad \quad \quad \text{Ex ante income} \\
 \# \text{ Time Periods} \rightarrow \sum_{t=1}^T \frac{Y - X}{(1+r)^t} = \sum_{t=1}^T \frac{k(C, X)}{(1+r)^t} \\
 \text{Education Expenses } C \rightarrow \quad \quad \quad \text{Extra income from Education} \\
 \text{IRR of Education (Implicitly defined)}
 \end{array}$$

Let $T \rightarrow \infty$ to get $r \approx k/C$. Household maximizes r . F.O.C.

gives $C^* k_C - k = 0$. Assume $k_C, k_{CX} > 0, k_{CC}, k_X < 0$

$$\frac{dC^*}{dX} = \frac{k_X - k_{CX} C^*}{k_{CC} C^*} < 0$$

This simple model shows interdependence between education decision & income

(2) Data Used in Study

- CSES 1999 Data: 6000 households that are nationally representative, but with some known data problems
- WFP Protracted Emergency Survey 1998 Data: 1040 households in targeted group, with some detailed questions about training received
- Comparison of results from both datasets allows us to control for problems unique to each dataset

Results

(1) Determinants of Consumption

Variable ¹ (OLS)	Coef	t-stat	P-value
CONS (constant term)	28735	1.61	0.107
SICK* (household head sick in 98)	68747	7.63	0.001
PRI1 (men mainly earn prim income ²)	-15788	-1.56	0.118
PRI2**(women mainly earn prim income ²)	-37406	-2.75	0.006
HHSIZE**(household size)	14712	6.87	0.000
NCLNC1**(nearest clinic in settlement ³)	40378	2.51	0.012
NCLNC2 (elsewhere in the commune ³)	10904	1.01	0.314
SPEDU**(spousal education)	7642	3.66	0.000

N=900, F=22.06, P-value=0.000, R²=0.1900

1 Four zone dummy variables also included in the model (Not reported here), 2 Controlled for "Both",
3 Controlled for "In another commune", * Significant at 5%, ** Significant at 1%

- WFP data is used
- SPEDU was found to be an important determinant of consumption
- This is true not only in this model; using Akaike Information Criteria (AIC) or P-value, we have run several stepwise regressions. SPEDU was always significant and positive whereas HHEDU (household head's education) was not.
- Contrast this to PRI1 and PRI2. Highly educated women need not participate in primary income earning.

(2) Comparison of WFP & CSES

Variable	WFP (OLS)		CSES(WLS)	
	Coef	t-stat	Coef	t-stat
CONS (constant term)	75441	(2.52)	214267	(4.04)
HHSEX (household head male)	-6198	(-0.26)	-100980	(-2.24)
HHAGE (household head's age)	1770	(3.25)	4220	(7.19)
HHLIT (household head's literacy)	13790	(1.28)	80671	(3.99)
SPLIT (spousal literacy)	41178	(4.36)	108422	(6.42)
Number of Observations		900		4767
F_o (model specification)		9.11		30.64
P-value		0.000		0.000

- WFP & CSES data are used for the same model
- To make things comparable, we used literacy instead of education level
- First notice the sign of HHSEX
- $SPLIT = HHLIT$ rejected for WFP data, but not for the CSES data
- $DIFF = SPLIT - HHLIT$ is not significantly different between WFP & CSES data. The joint test of equivalence between WFP and CSES fails.
- Effect of spousal literacy, therefore, may not be different between WFP and CSES data

(3) More results

- In probit model of school attendance (details omitted), SPEDU has a significant and positive coefficient while HHEDU is not significant. HHSEX was negative, though not significant.
- Spousal education and literacy seems to be **important in determination of earnings** and, moreover, **the effects may persist through decision on education.**

Discussion & Conclusion

- Educating girls in Cambodia is critically important in shaping the future of Cambodia. We used consumption as a convenient indicator of welfare, but we expect similar effects on food security and natural resources management. It goes without saying that, problems due to poverty can be avoided by increasing consumption. But enhanced human capital is likely to lead to better food security and natural resource management. (Look at the WFP results in (2). The sample in WFP is poorer).
- To break the generational cycle of poverty, education of girls in Cambodia is of particular importance.