[Handout] Dept meeting on 20 May, 2008. M. Umezaki.
Heuveline P and Poch B. (2007) The Phoenix Population: Demographic Crisis and Rebound in Cambodia. Demography, 44: 405-426.

1. Introduction

- Unknown: demographic trends during or just after Pol Pot's Kumer Rouge regime.
- Puzzle for demographers: Relationship between mortality and fertility (reproductive behaviors) in the process of "demographic transition"
  Review by Montgomery and Cohen (1998) provided little evidence for the issue; mortality decline is not observable, and thus fail to generate behavioral changes.
- The data that were collected for the specific purpose should be analyzed.
- Target: Fertility trends before, during and after a mortality crisis; 3000 birth histories of Cambodian women aged 15 and 74, collected in 2001-2002, as part of and on-going demographic surveillance system.

2. Background: (1) Demographic Theory and Mortality-Fertility Interactions (Fig 1)

- Malthusian Paradigm
- Classic demographic transition theory (DTT)
- Late-demographic transition model (Davis's model, Population Index [1963])
- DDT was shattered later (Alter, 1992); more emphasis on specific demographic components and their proximate determinants (e.g., relationship between IMR and fertility). Preston (1978) presented four direct mechanisms that link IMR and fertility; empirical analysis did not fully accord with the framework of Preston (1978).

3. Background: (2) Cambodia, 1970 to the Present

- 1953 Independence from France
- 1970 Civil war, Vietnam border was bombed by US, refugees moved to Phnom Penh
- 1975 (April 17) Kumer Rouge seized Phnom Penh; 1.5 to 2.0 million excess deaths (1/4 of Cambodian population in 1975) from political violence, malnutrition, exhaustion from overwork, lack of medicine, and increased exposure to malaria. Arranged marriages were prohibited; marriages were forced by KR; 32.4% of marriages in 1975-78 were not consented by the bride.
- 1979 January KR lost their control in Phnom Penh
- Until 1991 political instability, yet gradual improvement of public health and education
- 1993 UN sponsored election

4. Data and Methods: (1) Data

- Mekong Island Population Laboratory (MIPopLab), December 2000+, Kandal district (adjacent to PP), demographic events for N=10,000 updated twice/year
- All women aged 15 to 74 years in MIPopLab in December 2001 (N=2843)
- Marriage (start, end) and birth histories

5. Data and Methods: (2) Methods

- Age-specific rates of fertility, marriage, and marital fertility
- Period and cohort trends
- 1976-78: Main KR period, 1979-80: just after KK fall
- 1962 census, CDHS (Cambodia Demographic and Health Survey) 2000
- Possible bias by targeting only the alive women: unmarried females tended to die?; mothers with more children survived?

6. Results: (1) Mortality during the Khmer Rouge Regime and Subsequent Sex Ratio

- 20% of respondents with a mother alive at the time of KR takeover reported her death during KR
- Corresponding death proportion for father was 35%
- Among respondents whose parents were both alive at the KR takeover, 8% lost only their mothers, 21% only their father and 16% both during KR.
- 45% of marriage union in 1975 disrupted
- est. 75 males to 100 females (15 years+) in 1980, 1 single male: 2 single female in 1980

7. Results: (2) Period Fertility (Fig 2)

- First evidence of fertility decline (by 29%) during the KR
- Fertility rebound (by 91%) after the KR regime is striking
- Post-KR fertility (until 1985) was higher than pre-KR fertility

*****Union disruption did not affect the fertility level?********

8. Results: (3) Period and Cohort Nuptiality (Fig 3, 4 & 5)

- CMR declined (by 35%) during the KR (Fig 3)
- CMR rebounded after the KR regime (Fig 3)
- Nonnegligible contribution of remarriages only in 1978-79 (Fig 3)
- 1978-79 CMR (=0.26) is impressive when a prevailing sex ratio (1 single male : 2 single females) was taken into account (Fig 4)
- Birth cohort that reached the corresponding age (Fig4):

(1) just before KR, (2) at KR takeover, (3) toward the end of KR, (4) after KR fall

At the same age, proportion ever-married were: (1)=(4)>(2)>(3) (Fig 4)

- Imbalance in sex ratio due to KR, which made the female older than 25 years difficult to find the partner (Fig 5)
- Marriage rebound was prominent in the age group <25 years (Fig 5)

9. Results: (4) Period and Cohort Marital Fertility (Fig 6 & 7)

- Marital fertility declined (by 15%, half of TFR decline); TFR decreased because of the disruption in marriage union and decrease of marriage formation in the KR (Fig 6)
- Marital fertility rebounded dramatically; the percentage of increase was more than that of TFR (Fig 6)
- Post-KR marital fertility decreased, but moderately (Fig 7)
- Each cohort had a peak of marital fertility at the age the respondents were just after the KR fall (Fig 7)
- Marital fertility boom was a period effect rather than a cohort effect (Fig 7)

10. Summary and Discussion

- During the KR, excess deaths of 1/4 population in four years.
- During the KR, fertility declined (by 29%) due to marriage disruption and lowered marital fertility; cf. fertility declined by 33% during Bangladesh famine (1974-75), and by 28-31% during China famine (1958-61).
- After the KR, fertility rebounded and remained high in the early 1980s.

- Cambodia Characteristics: (1) fertility declined due to marriage disruption and lowered marital fertility (20% of women who survived to the end of the KR were widowed, the marriage rate dropped during the KR); (2) marriage boom explained some part of fertility increase after the KR; (3) marital fertility remained high for 7 years after the KR, though marriage rate decreased gradually due to imbalanced sex ratio at the end of the KR.

- Post-KR fertility increase: marriage boom and increased marital fertility.

Mechanisms? ** Density effect: migrants to thinly populated area have higher fertility than the sedentes in highly populated area (19th century US, 17th century St Lawrence valley)

- Marital fertility remained high for 7 years after the end of KR

Mechanisms? No modern birth control ="Natural fertility" population until the late 1980s. That is, the increase of marital fertility was probably due to shortened birth interval. "Younger couples" effect? Shortened breastfeeding? Erosion of traditional social control? All of them are just speculative.

- Because of KR experiences, the parents considered the prewar fertility level insufficient that used to guarantee robust family, social, and population reproduction?
- Cost of raising children remained comparatively low because abolished educational system was restored very slowly.