Demographic Responses to Economic Crisis:
Determinants of Marriage and Fertility for Indonesian Youth 1993-2000

Jenna Nobles and Alison Buttenheim
University of California, Los Angeles

Changes in age at marriage and age at first birth are generally characterized by modernization theories which suggest that industrialization and urbanization promote marital and fertility delays for young adults through increased educational and employment opportunities and ensuing ideational change (Caldwell, 1982; Goode, 1970). Our study analyzes a setting in which a dramatic economic shock disrupted several decades of "modernization" and economic development. We assess shifts in age at marriage and time to first birth in Indonesia following the 1998 South-East Asian economic crisis. We hypothesize that long-term trends in marriage and fertility were altered by changing access to and incentives for employment and education among adolescents and young adults following the crisis.

Over the last 40 years, Indonesia has generally followed the path predicted by modernization theories. Increases in age at marriage and increases in schooling rates have accompanied a significant rise in GDP per capita. From 1965 to 1997, per capita GDP in Indonesia increased at about 5 to 6 percent a year, marking the period as one of strong sustained economic growth. Female age at marriage also increased notably. In 1971, 37 percent of women aged 15-19 were ever-married. This proportion declined to 30 percent by 1980 and to 18 percent by 1994, though with nontrivial regional and ethnic variation (DHS Report, 1995; Jones, 1994). From 1965 to 1997, the percent of women aged 15-19 with no education decreased from 33 to 4 percent, while the percent of women in the same age group who completed primary education increased from 17 percent to more than 50 percent during that time period (DHS Report, 1998).

However, at the end of 1997, Indonesia experienced a large and unexpected economic downturn. During 1998 alone, GDP decreased by nearly 15 percent. During the first 6 months of 1998, the value of the rupiah declined by about 700 percent. The dramatic price increase in most goods and services that followed was not nearly matched by wage increases. Following this decline in the purchasing power of wages, two different household responses are hypothesized. Unemployed household members may take on paid jobs and unpaid household work to increase household resources. On the other hand, the decreased opportunity cost of education may result in extending education tenure for adolescents. Recent analyses suggest that the crisis may have prompted families to adopt different employment and education strategies (Strauss, Beegle, Dwiyanto et al., 2004); less examined in the literature are shifts in marital and fertility timing among youth.

Our study assesses the role of the economic crisis in changing the demographic behaviors of young men and women. We choose to study this age group both because youth may have been particularly important in the coping responses of Indonesian families during the crisis (Frankenberg, Thomas, & Beegle, 1999) and because they

experienced the crisis during a "demographically dense" (Rindfuss, 1991) period of life. This study seeks to answer the following questions:

1. Did the economic crisis foster changes in marital and fertility timing for young adults?
2. Were the effects of the crisis on marital and fertility timing mediated by shifts in educational and employment opportunities for youth?

DATA

We use four waves of panel data from the Indonesia Family Life Survey (IFLS) for this study. IFLS1 was fielded in 1993 and interviewed over 7,200 households representing 83 percent of Indonesia's population. IFLS2, fielded in the second half of 1997, immediately preceding the crisis, successfully re-interviewed over 94 percent of IFLS1 households. In the fall of 1998, a 25 percent sub-sample of IFLS respondents were interviewed to assess the immediate effects of the crisis. The sub-sample, IFLS2+, re-interviewed 98 percent of targeted households. IFLS3, a third full sample interview, was fielded in the second half of 2000 and includes interviews with over 95 percent of IFLS households. IFLS data include information on over 32,000 individuals, more than 6,000 of whom are young men and women aged 15-24 (Frankenberg & Thomas, 2000; Strauss, Beegle, Sikoki et al., 2004).

Among other data, IFLS contains detailed histories of employment, education, marriage, and fertility, as well as fertility preferences and contraceptive use. IFLS also captures extensive information at the community level through interviews with village leaders, the head of the village women's groups, and local authorities on cultural norms. Among many other benefits, community-level data will help us to clarify regional variation in the extent of the crisis as well as ethnic norms that drive marriage and fertility behaviors.

DEMOGRAPHIC TRENDS AMONG INDONESIAN YOUTH 1993 - 2000

Figure 1 displays proportion ever-married for young Indonesian women from 1964 to 2000. A downward trend is visible in the proportion of young women who are married from 1964 to 1990, from more than 80 percent for the 20-24 year old group in the 1960s to less than 70 percent in 1990. For the younger age group, proportion ever-married declined from over 40 percent to less than 20 percent, with a noticeable flattening of the trend after 1985. However, cross-sectional results of proportion ever-married from 1993 to 2000 from IFLS data indicate that the economic crisis may have disrupted these trends.

Previous research on response to the economic crisis in Indonesia indicates that households with women aged 15-24 were better able to avoid falling into poverty than households without young women (Frankenberg et al., 1999). This evidence suggests that young women may have increased their unpaid and paid labor to aid their households. The IFLS sample demonstrates an increase in proportion employed for both young men and young women in between 1997 and 1998 (Figure 2). At the same time, there appears to be a downward shift in percent of young men and women in

school at the time of the 1998 survey. These descriptive statistics suggest that educational and employment behaviors for Indonesian youth shifted following the crisis.

PRELIMINARY RESULTS

To assess changes in marriage behaviors before and after the period of economic decline, we fit a logistic regression model to predict ever-married status by IFLS survey year for a pooled cross-sectional sample of men and women aged 15 to 24. Results are shown in Table 1. In the absence of a shock like the economic crisis, we would expect a secular decline in proportion ever-married in the youngest adult age cohorts. However, the regression results tell a different story. Controlling for age and gender, we find the odds of being ever-married are not significantly different in 1997 (pre-crisis) relative to the reference year of 1993. In 1998, the odds of being married are eleven percent higher than in 1993, significant at the ten percent level. For 2000, the effect is also an eleven percent increase in the odds of being ever-married relative to 1993, significant at the five percent level. These results contradict the longer-term trend in increased age at marriage and declining proportion of ever-married youth, and are consistent with our hypothesis that the economic crisis in 1998 may have played a role in changing time to first marriage.

FUTURE WORK

Preliminary results suggest that the economic crisis may have disrupted trends in the timing of marriage for Indonesian youth, and that education and employment may have been two important mechanisms in that disruption. We will further assess the connection between these trends in several ways. First, we will use hazard rate models with lagged education and employment covariates to compare how education and employment status differentially affected both age at marriage and time to first birth before and since the crisis. Second, we will use comparative panel studies, comparing coefficients from a fixed-effects model on determinants of transition to first marriage and transition to first birth from 1993 to 1997 with a second model covering 1997 to 2000. Third, we will exploit the rich community-level data in IFLS in multilevel models of the determinants of marriage and fertility timing in order to assess how different coping strategies changed demographic behavior depending on the severity of the economic crisis and urbanicity. Finally, we will use data on traditional ethnic laws and customs to determine the role that costs of marriage to the couple and to the couple's families played in marriage timing before and since the crisis.

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Figure 1. Percent Ever-Married by Year and Age, Indonesian Women, 1964-2000.

IFLS Sample

IFLS Sample

15-19   20-24
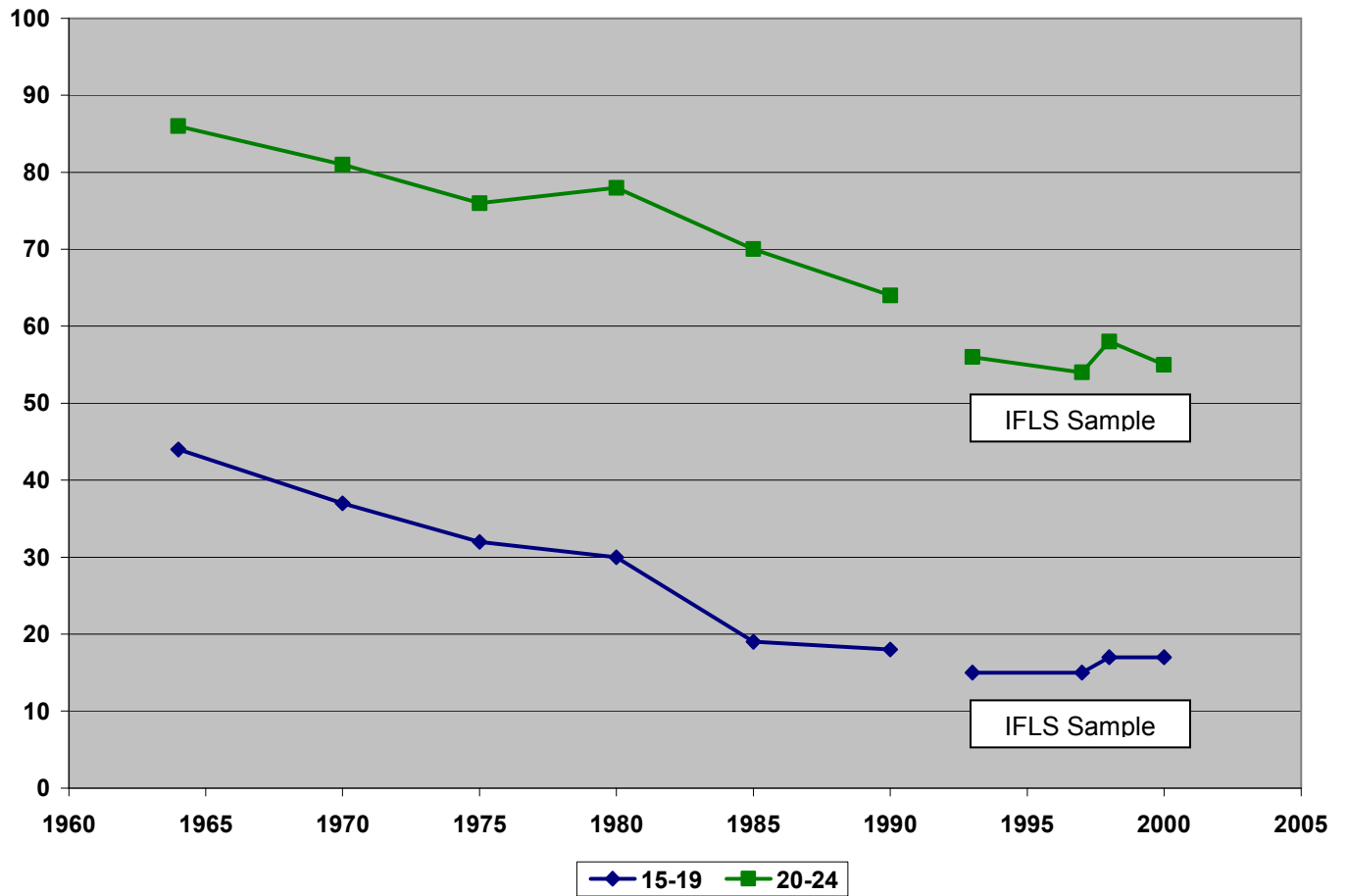
Source: Indonesia Family Life Survey 1993, 1997, 1998, 2000; Jones 1994

Figure 2. Education and Work Participation by Year and Sex, Indonesian Men and Women Aged 15-24
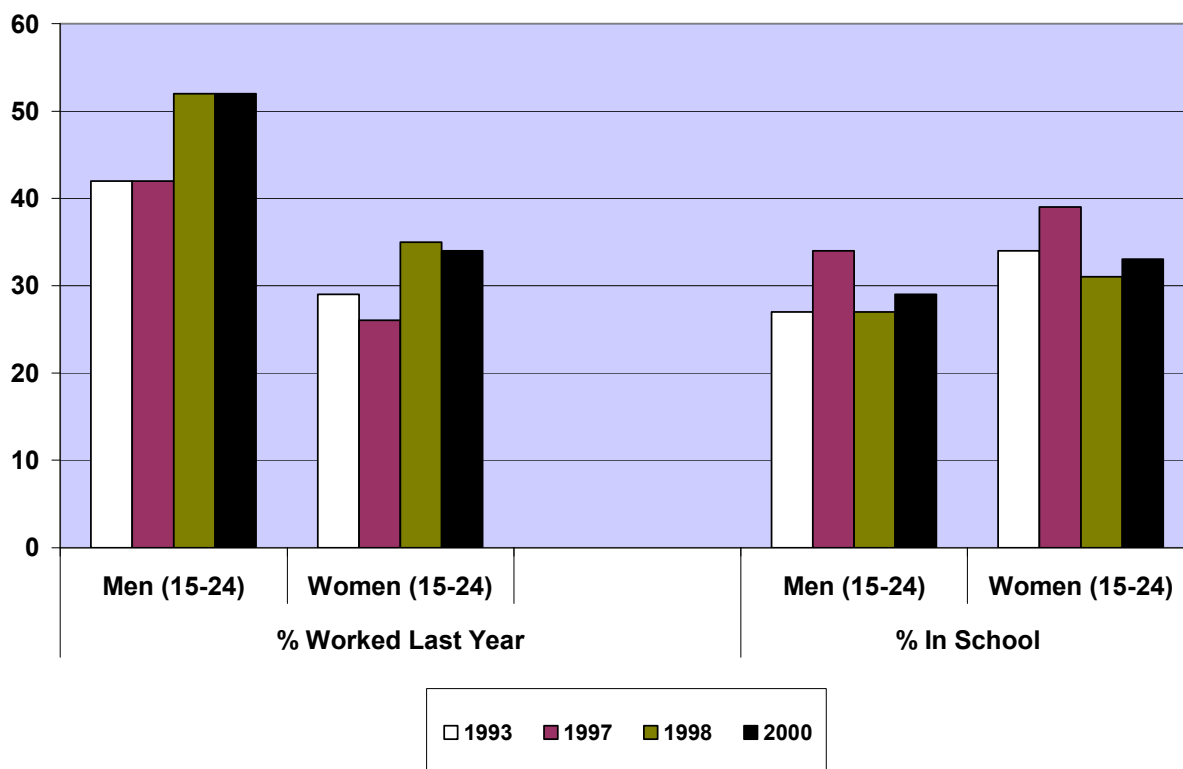
Source: Indonesia Family Life Survey

Table 1. Odds Ratios of Being Ever-Married, Indonesian Youth Aged 15-24.

Year	Odds Ratio
1997	0.955
1998	1.112*
2000	1.106**
Observations	26,936

Omitted year is 1993.
Controls for age and gender not shown.
*p<0.1 **p<0.05