Marriage and Socioeconomic Change in Contemporary Indonesia

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Abstract

This study examines the relationship between economic trends and entry into marriage in a rapidly developing setting. We analyze Indonesian marriage trends in the 1990's, a decade of substantial economic growth followed by a sudden financial collapse in 1998. We use discrete-time hazard models to analyze information on 4,078 women and 4,496 men from the Indonesia Family Life Survey. While previous research has shown that marriages may be postponed after economic downturn, we find no evidence of such delays at the national level following the 1998 financial crisis. In contrast, we use regional wage rate data to show that entry into marriage is inversely related to economic growth throughout the decade for all women and for men from lower socioeconomic strata.

Key words: development, economic change, marriage, Southeast Asia

A rising age at first marriage, particularly for women, is a hallmark of broader demographic transition in rapidly developing economies. Many studies document the marital delays that accompany education gains and increases in women's labor force participation in resource-constrained settings (see Mensch, Singh, & Casterline, 2005 for a review). Few studies, however, have explicitly linked changes in marital behavior to measures of local economic shifts. Given the high degree of volatility of many modern developing economies, characterizing family formation amidst socioeconomic change requires attention to these types of dramatic swings. In settings with less developed credit and insurance markets, marriage may provide a means of navigating economic uncertainty (Rosenzweig & Stark, 1989); yet, little is known about how marriage behavior responds to dramatic economic downturn.

Indonesia is an ideal setting in which to examine relationships between socioeconomic change and entry into marriage. For three decades between the late 1960's and the late 1990's the Indonesian economy prospered, and was accompanied by large population gains in education and health. Then, in 1998, Indonesia suffered a macroeconomic collapse similar in magnitude to the Great Depression in the United States. Previous literature has identified significant changes in many facets of Indonesian life following the economic crisis (e.g., Poppele et al., 1998; Thomas & Frankenberg, 2005). We build on this literature by exploring how a period of economic growth followed by a dramatic economic decline manifests itself in marriage trends.

This study has three goals. First we describe Indonesian marriage trends in the 1990's and look for a temporal association between the economic trends during the decade and patterns of entry into first marriage. We pay particular attention to whether the 1998 economic crisis reversed a trend toward later marriage. Next, we use regional wage rates to explicitly relate temporal economic trends to marriage patterns during the 1990's, extending previous research on

marriage after the 1998 crisis (Rukumnuaykit, 2003). Finally, we assess whether socioeconomic background and premarital behaviors, such as schooling, employment, and migration moderate the relationship between economic change and entry into marriage.

By combining two rich data sets, the Indonesia Family Life Survey and the Indonesian National Labor Force Survey, we can independently measure region-specific economic change and relate it to recent marriage behavior. Our findings speak to the growing interest in the relationship between macroeconomic trends and family formation. Understanding how individuals respond to dramatic economic change sheds light on broader issues of the stability of nuptial regimes during development and modernization. Indonesia's contemporary economic experience mirrors recent macroeconomic downturn in Mexico, Russia, Brazil, the Philippines, and Ecuador. Because nuptial regimes in the developing world are central to a number of other demographic processes (including household formation and fertility), shifts in marriage timing have far-reaching implications (Hajnal, 1982; Mensch et al., 2005).

THE INDONESIAN CONTEXT

Until recently, early marriage was common in Indonesia and marriage was near universal. In many ethnic groups, particularly the Javanese, young adults reside in the parents' home before marriage, and newly married couples frequently remain in a parental residence (usually the bride's parents) for a period of months or years after marriage (Williams, 1989, 1990). Coresidence facilitates labor pooling in agricultural households and also gives young couples time to accumulate assets before forming an independent household (Malhotra, 1997). Even when young adults leave their natal village after marriage, continued parental contact is frequent.

Interestingly, several aspects of Indonesian marriage regimes resemble patterns in developed settings. Divorce has always been common in Indonesia, particularly among couples

married at a very young age, and carries little social stigma. Indonesian women enjoy a comparatively high status and financial independence within marriages, relative to other Islamic countries and other neighboring countries in Southeast Asia. Married Indonesian women often own land, operate businesses, and hold assets separately from their husbands (Williams, 1990).

The last quarter-century in Indonesia has witnessed notable delays in marriage. In 1971, 37% of Indonesian women aged 15 to 19 were ever married. By 2003, this fraction fell to less than 10%. These delays may translate into the first Indonesian cohort that will age through fecund years with a significant proportion never marrying. In 2000, almost one-sixth of 30 to 34 year old women living in Jakarta were still single (Jones, 2002). These are substantial changes for a population traditionally characterized as one with universal marriage (Hull, 2003), and are perhaps best understood in the context of Indonesia's changing socioeconomic landscape.

As in many transitioning countries, Indonesia's increases in age at marriage occurred alongside sustained economic growth and significant improvements in educational attainment. From 1965 to 1997, the Indonesian GNP grew at over 5% per year. This rate was substantially faster than GNP growth in other economies during the same period (1.8% in Latin America and the Middle East; 2.5% in OECD countries). During this time, expansions in education and health care reached most of the country. The proportion of women aged 15 to 19 who completed primary education increased from 17% in the mid 1960's to more than 50% by 1997. Both the infant mortality rate and the under 5 child mortality rate dropped by two-thirds between 1971 and 1997 (Badan Pusak Statistik, 2007). Female labor force participation of 25 to 54 year old women increased slightly from 51% in 1980 to 58% in the late 1990's (Lim, 2005).

These developments stalled at the end of 1997, when Indonesia experienced macroeconomic collapse. The Indonesian currency, the Rupiah, fell sharply against the U.S.

dollar. Prices rose dramatically, particularly for food and clothing. For most workers, real

wages declined (Smith et al., 2002) and the poverty rate increased by roughly 30% in both urban

and rural regions (Thomas & Frankenberg, 2005). Concerns about food security were high,

particularly among poorer households. While many communities were severely strained by this

event, the crisis was not experienced equally by everyone. The collapse of the Rupiah and the

increase in food prices may have initially conferred substantial benefits to producers and

exporters of cash crops, resulting in considerable regional heterogeneity in the effects of the

crisis. Regions in which food production served as a large source of household income fared

better than more urban, industrialized areas (Poppele et al., 1998).

  The overall uncertainty faced by Indonesians in this period is difficult to overstate. The

currency swings created considerable instability in the banking sector and other formal credit

markets (Frankenberg et al., 2003). Previous research suggests that households employed

informal coping strategies to attenuate the impact of the crisis. Data from the Indonesia Family

Life Survey reveal that households increased time spent working, changed living arrangements

to exploit economies of scale, sacrificed educational costs of younger children, delayed spending

on certain goods, including ceremonies, and spent down savings to smooth welfare through the

crisis (Frankenberg et al., 2003; Strauss et al., 2004a; Thomas & Frankenberg, 2005).

  Figure 1 describes Indonesia's economic trends during the 1990's using per capita GDP

(in constant Rupiah) and the average district-level male and female wage rate (in 1997 Rupiah).

We calculate the wage estimates using Indonesia's National Labor Force Survey, which we

describe in more detail below. The steady growth in GDP through 1997 is visible, followed by a

steep decline in 1998 and little change in 1999. Wages for both men and women declined

slightly in 1994 and fell sharply in 1998. The absolute change between 1997 and 1998 real

wages was larger for men, but the percentage change was larger for women.

Figure 1 about here

MARRIAGE AND SOCIOECONOMIC CHANGE

To assess how economic changes may alter marriage timing, we draw from the theoretical literature on cost-benefit marriage models (e.g., Becker, 1973) and marital search models (e.g., Oppenheimer, 1988). The former asserts that individuals will marry when the calculated benefits (including risk sharing and labor specialization) of marriage exceed the calculated costs (including ceremonies, impending fertility, and foregone education). The latter maintains that individuals marry when the search for an appropriate partner is complete. Both models predict that marriage timing norms will change with economic development.

Development changes the costs and benefits associated with marriage as industrialization and urbanization generate new economic opportunities that provide an attractive alternative to early marriage. This is particularly true when women enter the labor force and reduce the specialization benefits of marriages marked by traditional gender roles (Oppenheimer, 1997). Modernization may raise expectations for an adequate standard of living after marriage, delaying marriage by extending the search for an adequately resourced spouse. Increased educational attainment also lengthens search times and may reduce the benefits to marriage because of the additional time spent in school (since formal schooling is not compatible with marriage in Indonesia), increased economic independence, or new ideals and norms for marriage (Blossfield & Huinink, 1991). Evidence relating economic development to marriage timing suggests that economic growth will be associated with delays in marriage. Thus, we expect to see a general decline in the odds of marriage entry throughout the 1990's. Similarly we expect marriage entry to be inversely related to regional measures of economic growth. Specifically, increases in local

wage rates should reduce entry into marriage.

Interestingly, previous theoretical work suggests that a crisis could hasten *or* delay marriage. On the one hand, economic crisis may increase the benefits to marriage, since marriage provides a mechanism to pool resources and share risk: married adults can realize economies of scale, and alliances formed through marriage can extend family networks and facilitate income and consumption smoothing (Fussell & Palloni, 2004; Rosenzweig & Stark, 1989). This may be particularly true when confidence in local institutions decline, as it did during the 1998 crisis. If real wages decline more for women than for men as they did in Indonesia, then specialization into market labor for men and home-based labor for women is also more efficient. If the crisis prompts young adults to withdraw from school, and current schooling is incompatible with marriage, then marriage rates may increase.

Alternatively, there are several reasons why an economic crisis could delay marriages. Uncertainty can also contribute to the length of the search if desirable attributes (like economic prospects) are difficult to measure or may change in the future (Oppenheimer, 1988). Additionally, young adults may delay marriage in order to postpone childbearing; in Indonesia, first births often follow soon after marriage (Williams, 1990). If cultural norms related to marriage costs and standard of living do not quickly adjust to high inflation rates, then marriage becomes more expensive given real income and will be delayed.

We hypothesize that Indonesian marital trends will shift during the economic crisis, though the findings characterizing the effects of the Indonesian crisis on other facets of life do not generate clear *a priori* hypotheses about which direction this shift may take. There is evidence in Latin America of postponement of first marriages immediately after economic downturns, followed by higher-than-normal marriage rates (Palloni et al., 1996). Palloni and

colleagues find that the crisis effect is sensitive to the nature, duration, and extent of the crisis, and to the degree to which marriage is associated with the requirement to form a new household. Other studies find similar positive correlations between economic conditions and marriage rates in sub-Saharan Africa (Hill et al., 1993) and in pre-industrial Europe (Galloway, 1988).

Socioeconomic Background, Premarital Behavior, and Gender Roles

Research on marriage in developing country settings suggests that several factors may mediate the relationship between economic change and entry in to marriage. This framework is motivated by the classic literature on family structure and modernization (Goode, 1963) as well as by economic models that emphasize the cost-benefit calculations that women make when allocating time to productive vs. reproductive roles (Schultz, 1981). Hirschman (1985) tests a model of family formation in several Asian countries and finds that cohort, educational attainment, urban residence, and employment all predict marriage timing for women, with education the most important. A series of studies in Nepal also identifies socioeconomic roles as key determinants of variations in marriage timing across cohorts (e.g., Yabiku, 2004).

In this study we extend the discussion of premarital socioeconomic roles to two other important characteristics of young adults: the socioeconomic status of parents (as measured by mother's education) and premarital coresidence with parents. Parental status influences how costs and benefits of marriage are calculated. For example, a poorer rural household may be more eager to keep adult children in the household to take over agricultural duties. Parental status also shapes the perception of suitability of potential partners and the degree to which nuptial regimes will be adhered. We expect that socioeconomic background will condition the relationship between economic growth and marriage for both men and women in Indonesia. While very few studies have investigated the relationship between socioeconomic disadvantage

and marriage timing in the developing world (Mensch et al., 2005), we expect that individuals from the least advantaged homes are more likely to be affected by small, marginal changes in economic opportunities that occur across the socioeconomic distribution.

Similarly, parental coresidence before marriage (and the expectation for postnuptial coresidence) will affect marriage costs and benefits. For example, a young man who does not live with his parents may feel pressure to establish a new, larger residence after marriage, requiring him to wait until he has the financial resources to do so before he can marry. On the other hand, a young man who will bring his bride into his parents' household does not experience the same hurdle. We expect that migration away from natal village will increase the association between economic change and marriage. Individuals who have spent time apart from the natal environment will be less likely to rely on immediate kin during periods of economic change and more likely to consider other risk-sharing avenues, such as marriage.

Much of the literature on entry into marriage in the developing world has focused specifically on women's marriage timing (see Malhotra and colleagues for several exceptions). The discussion above points to several reasons why premarital socioeconomic roles, cost-benefit considerations, and search models may generate gender differences in the determinants of marriage timing. In many developing country settings, women are more likely to experience role conflict between work and marriage than are men, suggesting that premarital work experience will be a stronger predictor of marriage timing for women. Similarly, if increases in educational attainment across cohorts occur more rapidly for women than for men, then education may be a stronger predictor of marriage timing for women. Because women tend to marry at a younger age than do men, tertiary education in particular may delay marriage for women in settings where the average age at marriage for women is young.

Given the nature of gender-based economic roles in Indonesia, we do not expect to see as large a gender difference in the association between previous employment and education experience and entry into marriage as has been found in other settings. Similarly, because of very small gender differences in educational opportunities and women's comparable economic independence in Indonesia, we do not expect the association between economic growth and entry into marriage to differ substantially by gender.

METHODS

We use data from the Indonesia Family Life Survey, which comprises three waves spanning 1993 - 2000. The first wave sampled households in thirteen Indonesian provinces in 1993. The sample contains information on over 7,200 households, representing over 83% of Indonesia's population. The second and third waves, fielded in 1997 and 2000, each successfully reinterviewed over 95% of initial survey households. The survey collects detailed individual and household level data, including histories of marriage, fertility, education, work, and migration for both women and men (Frankenberg & Thomas, 2000; Strauss et al., 2004b).

To construct the most representative sample possible, we start with all wave one household members age 8 - 42 in 1993, and follow them through 2000 at age 15 - 49. We use the marriage histories to construct data on the year of entry into marriage. We then generate person-year records for each respondent from age fifteen until the first marriage occurs or until the respondent is censored in 1999.

To evaluate changes in recent marriage trends, the expanded dataset is restricted to person-year observations from 1990 to 1999. This decision also provides two methodological advantages. Respondents typically recall with more accuracy the dates of recent marriage events rather than those occurring many years earlier (e.g., Peters, 1988). Additionally, the respondents

exposed to marriage in each year represent the age distribution of actual entry into marriage for Indonesian women. If the analysis includes years much earlier in time, the probability of marrying in these years will be lower, simply because the distribution of women contributing observations to those years will be limited to the very young.

Of the resulting 18,124 person-years contributed by women, the average age is 19.6 years (standard deviation = 5.1 years). For the 22,256 person-years contributed by men, the average age is 20.3 years (standard deviation = 4.9 years). Among this sample, the average education attained is 9.5 years for women and 9.4 years for men.

The Indonesia Family Life Survey has remarkably high recontact rates; very few households attrit from the study. With the exception of a few cases, demographic data are available for our sample through 2000. Nevertheless, some individuals were not present to answer more in-depth marriage histories in 2000. About 16% of women (795 cases) and 21% of men (1,214 cases) in our 1993 sample are missing complete history data through 2000 (either marriage, employment, migration, or parental education) and must be excluded from the analysis. To assess how these missing cases relate to the retained sample, we compare the retained and lost cases on information collected during the first survey wave in 1993 (results not shown). We find that the men who attrit have similar education levels and live in households with similar expenditure levels as the men retained in the sample, but are 0.5 years older on average and live in households that have, on average 0.4 fewer members. The women who attrit from the sample have similar education values, but are slightly older (0.7 years) and come from households with higher average per capita expenditures than the retained women. We discuss the implications of the missing data for our results in the final section of this study.

Economic Change

To assess how entry into marriage responds to economic change, we use annual wage data from the National Labor Force Survey collected by the Indonesian Statistical Agency. Economic development has a number of dimensions and the most appropriate way to measure regional and temporal variation in the experience of economic change is debated. In this case, wages are a preferable measure to expenditures or consumption because wages should not respond to changes in living arrangements, the outcome we are attempting to predict.

Using the annual data from 1990 to 1999, we calculate the median hourly wage for market work at the district level by urbanicity and by gender. To account for the significant regional variation in inflation over the decade, we adjust the wage data to 1997 Rupiah, using consumer price index data collected by the Indonesian Statistical Agency on large cities in each province. This adjustment allows us to appropriately compare wage rates over time.

The average district-level hourly wage rate during the 1990's was 1,025 Rupiah for men and 849 Rupiah for women, which is roughly equivalent to 0.54 and 0.45 2007 U.S. dollars, respectively. To facilitate interpretation of the relationship between local wage rates and entry into marriage, we standardize the district-level measure relative to the above mentioned means of the 1990's, capturing regional and temporal deviation from the national average of the decade under observation. Using the migration histories in the Indonesian Family Life Survey data, we locate the Indonesian districts in which the respondents lived during each year of the 1990's. We then merge on the district-level wage data from the National Labor Force Survey to the 152 districts represented by the sample. On average, our sample includes 26 women and 29 men per district and, aggregated, 311 women and 344 men per province.

Controls

We use the survey history data to create time-invariant and time-varying controls. To

capture variation in socioeconomic background, we use data on respondents' mothers' completed education. We use a series of dichotomous indicators capturing whether the respondent's mother completed no education (0 years), partial or full primary education (1-6 years), or any secondary education (7+ years). It is extraordinarily rare for Indonesian women to acquire additional education after marriage; thus maternal education levels are fixed before our respondents are born and are time-invariant in our specifications. Of the person-years contributed by women to our sample, 23% have a mother with no education, 56% have a mother with partial or full primary education, and 21% have a mother with at least some secondary education. For the person-years contributed by men, the respective percentages are 24%, 59%, and 18%.

We create time-varying measures of respondents' age, schooling, work, and migration behavior. To address time ordering concerns, we capture schooling behavior with a lagged measure: whether the respondent was in school the previous year. Employment is measured by a dichotomous indicator capturing whether, in any given year, the respondent has ever been employed, versus never having worked. Previous work experience is reported in 43% of female person-years and 61% of male person-years. Because we have limited employment data on individuals before age 15, this measure is not lagged. Nevertheless, only 1.6% of men and 2.8% of women in our sample initiate employment in the same year that they marry.

We use a measure of migration to capture the respondents' familial independence. This measure assesses the number of years since a respondent first moved out of his or her parents' village, without his or her parents. By measuring the years *since* migration, only migration *prior* to the year of first marriage will contribute to the odds ratios estimates. For respondents who have never moved, the value of this measure is zero. Within the person-year sample, the average number of years since leaving a parents' natal village is 0.7 (standard deviation = 2.4) for those

contributed by women and 1.0 (standard deviation = 3.1) for those contributed by men.

Using a discrete-time hazard framework, we estimate logistic binary regression models on pooled person-year observations (Allison, 1982). Let P_{it} be the conditional probability that individual i marries at time t, given that individual i was not married earlier than time t. Then, we estimate:

$$\ln\left(\frac{P_{it}}{1 - P_{it}}\right) = \alpha_t + \beta X_{it} + \gamma Y_i$$

where X is the vector of time-varying covariates, Y is the vector of time-invariant covariates, and α, β and γ are estimated parameters. The data are weighted using probability weights included in the Indonesian Family Life Survey data to account for the sampling design. Because individuals within communities are subject to the same wage rates (and economic conditions more broadly), we adjust the standard error estimation for clustering at the community level.

We estimate separate models by gender because of previous research demonstrating important differences in the process of marriage entry for men and women in Indonesia (e.g., Malhotra, 1997). This also addresses the issue that some respondents are married to each other.

We begin our analysis by describing marriage trends over the decade while paying particular attention to whether a discrete shift occurred in 1998. We extend this description by relating marriage trends to region-specific wage change over the period, while controlling for socioeconomic background, schooling, employment, and migration and then ask whether the relationship between these behaviors and entry into marriage changed during the shifting economic climate of the 1990's.

The specifications using the district-level wage measures include province-level controls so that our wage measures capture *temporal* change in the wage rate *within respondents' regions*. Because our wage measure varies at the district level (a subdivision of provinces), we would

ideally include district-level controls to create within-region comparisons and, thus, to force the estimation of the coefficient for wages to rely on temporal change. Unfortunately using district-level controls substantially reduces the degrees of freedom and hampers our capacity to estimate these models. Districts are a subset of provinces in Indonesia and, as such, the estimated odds ratios on the wage measures in our analysis could be incorporating both the effects of temporal change and the effects of the small regional variation within provinces. To assess whether our findings are being driven by small regional variation, we re-estimate each of following tables, using a province-level wage measure instead of the district-level wage rate measure. The results are virtually identical, suggesting to us that the relationship between wage rates and entry into marriage presented our estimates is driven entirely from temporal variation in wage rates. We choose to present the results using the more precise district-level wage measure.

RESULTS

We begin by describing temporal patterns of entry into marriage during the 1990's. We first predict the probability of marriage entry with dichotomous indicators for each year, controlling for age and the survey sampling design. Model 1 in Table 1 presents odds ratios for these analyses separately for women and men. The year immediately preceding the economic crisis, 1997, is the omitted category.

Table 1 about here

In the absence of a shift in marriage odds due to the crisis, we would expect significantly higher probabilities of entry into marriage in the years prior to 1997 and significantly lower probabilities of entry into marriage in the years after 1997. For both women and men, the results confirm a secular decline in the odds of marriage across the early 1990's. Yet we do not observe a continuing decline in the probability of marrying after 1997. Instead the odds appear to flatten

in the late 1990's for both women and men.

We use the results from Model 1 to inform tests of several potential parameterizations of time during the 1990's (not shown) and compare the relative fit of the non-nested models using a Bayesian Information Criterion, *BIC*. Smaller values of *BIC* indicate better fit; differences of 10 or more are strong evidence of difference in model fit (Raftery 1996). The results from Model 1 suggest a significant decline in the odds of marrying between 1990 and 1994 that largely flattened after 1994, with the possible exception of an uptick in marriage entry for men in 1998. Indeed, the best-fitting model includes a piecewise linear spline with knots at 1994 and 1998. The spline allows the slope of the fitted line to shift between the three periods 1990 - 1994, 1994 -1998, and 1998 - 1999. Odds ratios from this estimation are presented in Model 2 of Table 1 by gender. These results suggest that on average, the odds of entry into marriage between 1990 and 1994 decline by about 18% each year for women and by 20% each year for men. After 1994, no significant change in entry into marriage appears to exist for either women or men either before or after the 1997 financial crisis.

 The parameterization of temporal shifts over the decade is blunt for two reasons. First, a number of changes took place in Indonesia over the period; temporal variation may not reflect only economic growth and collapse. Second, the average effect at the national level masks potential regional heterogeneity in the experience of economic trends during this period. To extend the analysis, we relate entry into marriage to a regional measure of economic change.

We replace the time parameters in Models 1 and 2 in Table 1 with a standardized time- and region-varying measure of the gender-specific hourly wage rate at the district level and include province-level controls. We control for several potential predictors of marriage entry, including age, maternal education, as well as premarital schooling, employment, and migration.

The results from these estimations are shown in Model 1 of Table 2 for women and Table 3 for men. Shifts in the local wage rate are inversely associated with the odds of entry into marriage. An increase of one standard deviation in the local female wage rate is significantly associated with a 22% decrease in the odds of marrying for women (Table 2) and a similar shift in the local male wage rate is significantly associated with a 31% decrease in the odds of marrying for men (Table 3). This finding suggests that during economic decline, as measured by changes in wage rates, women and men are *more* likely to enter into marriage.

Table 2 about here

We also test for several different temporal nonlinearities in the relationship between our wage measures and marriage entry over time (results not shown). For example, during a dramatic economic downturn, such as the 1998 crisis, we may expect the relationship between economic conditions and marriage entry to shift due to the uncertainty and loss of confidence in local institutions that accompanies an economic crash, but that may not accompany a smaller recession. In tests for temporal nonlinearities, we find that the models displayed in Tables 2 and 3 are better fitting according to the *BIC* goodness of fit measure. The relationship between wage rates and entry into marriage appears to be similar in times of economic growth and collapse.

For women, socioeconomic background is negatively associated with entry into marriage; women with mothers who have completed elementary education or less have 45% greater odds of marrying than women with mothers who have completed at least some secondary education. The measures for premarital behavior are all significantly associated with entry into marriage for women. School enrollment in the year prior to observation is associated with 75% lower odds of marrying. Previous employment is associated with 16% lower odds of marrying. Each year that passes between a respondent's first move out of her parents' village is associated with a 6%

increase in the odds of marrying.

In Table 2, Models 2, 3, 4, and 5 include interactions between the female wage rate measure and each of the four controls individually. Results from these models suggest that the relationship between changes in the economy (as measured by female wage rates) and entry into marriage do not differ between women from different socioeconomic backgrounds, between women with varying schooling behavior, or between women with different migration histories. The relationship between temporal change in wage rates and entry into marriage does differ by whether a woman has ever worked. For women who have never worked, the relationship between temporal wage rate change and entry into marriage is more slightly more negative (odds ratio = 0.67) than for women who have previously worked (odds ratio: 0.67 x 1.32 = 0.88). This finding is somewhat counterintuitive and we discuss it further in the next section.

Table 3 presents the results from the same specifications for men. Several results mirror the findings for women. Men with less educated mothers have higher odds of marrying in any given year than men with more educated mothers. Being in school in the previous year is associated with 45% lower odds of marrying during the year in question. Each year since a man has migrated from his parents' village is associated with slightly larger (4%) odds of marrying. In contrast to the findings for women, previous employment is positively associated with entry into marriage for men. Men who have previously worked are 3.72 times more likely to marry in a given year than men who have not previously worked.

Table 3 about here

In Models 2, 3, 4, and 5 in Table 3, we individually interact the male wage rate measure with maternal education, schooling, employment, and migration behavior. The results suggest that changes in the relationship between the local wage rate and entry into marriage do not vary

by employment behavior (as they do for women) or by schooling or migration. The relationship between economic change and entry into marriage does vary by socioeconomic background. For men with highly educated mothers, no significant relationship between changes in the wage rate and entry into marriage exists (odds ratio: 0.96). For men with less educated mothers, the relationship between wage rate change and entry into marriage is significant and negative. For men with uneducated mothers (0 years of school), a one standard deviation increase in the wage rate is associated with a 39% decrease in the odds of marrying (odds ratio: 0.96 x 0.64 = 0.61).

DISCUSSION

Indonesia provides an ideal setting in which to examine how families respond to economic growth and unexpected financial decline. We examine single young adults through the 1990's and assess whether their entry into marriage shifted with regional economic change. We extend previous research on marriage in the developing world by explicitly measuring economic change using regional data on gender-specific wage rates and demonstrating a link between wage change and entry into marriage. We also extend previous work by examining heterogeneity in marital response to economic growth by individual characteristics and behaviors.

Our results suggest that entry into marriage is inversely related to economic growth, as measured by temporal changes in real wages at the regional level. In times of prosperity, both men and women delay marriage. In times of economic downturn, men and women enter into marriage at higher rates. We find that the negative relationship between economic changes and entry into marriage is weakest for men from socioeconomically advantaged families. The finding is consistent with theory suggesting that economic growth across the socioeconomic distribution may provide more alternatives to marriage for less advantaged men than for men from advantaged families. Counter to our hypothesis, we do not find variation by socioeconomic

background in the relationship between economic growth and entry into marriage for women. Instead we find that women's entry into marriage has a larger negative association with wage rate change when they have not previously worked. This finding is somewhat counterintuitive, as one might expect women with labor market experience to have more substantial behavior responses to wage change. In this case, we speculate that the finding may reflect the behavior of women who are choosing between entering the labor force and marriage; for this group, wages may be a larger incentive to marriage than for women already in the labor force.

Our findings support a cost-benefit theory of marriage entry to the extent that economic growth provides important alternatives to marriage and, as we demonstrate, is associated with delays in marriage timing. Additionally, in accordance with labor-specialization theories, we find that men clearly play a key economic role in the household. Men with employment experience have nearly four times the probability of marriage entry than men without such experience. Alternatively, while the association between previous employment experience and marriage entry for women is negative, it is relatively small in magnitude. This departure likely emerges from a key contextual difference between gender-based economic roles in contemporary Indonesia and such roles in Western settings many decades ago.

Similarly, we would expect that if labor specialization in the household were substantial, women's marriage behavior should respond more to macroeconomic growth and the accompanying wage and education opportunities than should men's behavior. Instead we find strong similarity in the relationship between wage rate change and entry into marriage for both men and women for most of the socioeconomic distribution (as measured by mother's education). We conclude that economic opportunities are important in shaping the individual choice to marry in Indonesia, but that women enjoy a different role in the household than in other

developing settings today and other developed settings historically.

The gender roles observed by others (e.g., Williams, 1990) and supported by the results in this study set Indonesia apart from some other developing settings, and thus the gender differences in our findings may be less applicable in places where dowry, exogamy, and kinship systems play a much greater role in the marriage process, such as India (e.g., Malhotra, Vanneman, & Kishor, 1995). In other ways, however, the Indonesian experience of macroeconomic growth during much of the 1990's mirrored education and health expansions in neighboring countries. Our finding that female marriage entry declined during this period is consistent with evidence relating entry into marriage with educational expansions in other developing settings (see Mensch et al., 2005).

We find no evidence of exacerbated marriage delay after the 1998 economic crisis, either at the national level or when considering regional wage-rate fluctuations. This finding stands in contrast to theory suggesting that economic uncertainty may complicate the ability of individuals to identify the economic characteristics of potential marriage partners and thus, leads to a longer marital search. Interestingly, this finding also contradicts findings from other studies on marriage during economic upheaval (e.g., Palloni et al., 1996). The difference in findings may reflect variation in the nature of the crises experienced by Latin America and Indonesia. The Latin American economic crises have been remarkably cyclical in nature (e.g., Kaminsky & Reinhart, 1998); individuals may shift behavior in expectation of future economic decline and delay costly marriage celebrations until after the economy improves.

It is important to note methodological limitations to this study. As mentioned, 16% of the women and 21% of the men in our sample are missing data on either marriage behavior or the socioeconomic controls. A comparison of wave 1 characteristics of the retained and non

retained cases (described in the Data section of the paper) suggests that individuals who must be excluded from the analysis are slightly older and come from families with fewer financial resources. Our analyses do include controls for age and socioeconomic status; attrition selective on these characteristics should not affect the other estimated parameters if these characteristics are additive. Alternatively, if these characteristics are interactively related to other parameters, the estimated odds ratios could be biased.

Secondly, our data provide little information on the meaning of marriage for our respondents from their own perspective. This limitation forces us to rely on previous theoretical work that interprets marriage delay (or hastening) as a series of cost/benefit or search decisions. Development studies on family formation would benefit from rich data that detail how decision making surrounding demographic behavior changes during periods of economic or political instability. Additionally using data collected shortly before and shortly after a substantial economic downturn increases our confidence in its quality, but it limits our interpretation of the longer term demographic shifts that may result from economic shocks. When future data become available, it will be valuable to investigate whether the cohort of respondents experiencing economic change as adolescents continue to exhibit behavior in the future aimed at managing uncertainty.

Our findings reveal the importance of using regional economic indicators to understand heterogeneity masked at the national level. Individuals' decisions about marriage do appear to be influenced by local economic conditions, and somewhat differentially so by gender and socioeconomic background. We also conclude that our understanding of marriage changes during abrupt, dramatic economic change can be explained within a more generalizable rule about macroeconomic conditions.

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Table 1

Results from Logistic Regressions Predicting Entry into First Marriage for Indonesian Women

(n=4,456) and Men (n=4,078) Aged 15-49 in 2000

		Women		Men	
		1	2	1	2
Year:	1990	2.05		1.98	
		(5.85)**		(4.51)**	
	1991	2.06		2.47	
		(4.83)**		(5.77)**	
	1992	1.60		1.66	
		(3.37)**		(3.41)**	
	1993	1.41		1.36	
		(2.61)**		(2.02)*	
	1994	0.85		0.90	
		(1.16)		(0.66)	
	1995	1.02		1.09	
		(0.13)		(0.59)	
	1996	1.07		0.92	
		(0.52)		(0.56)	
	1997	-		-	
	1998	0.96		1.23	
		(0.35)		(1.48)	
	1999	1.12		0.94	
		(0.88)		(0.47)	
Spline:	1990-1994		0.82		0.80
			(7.56)**		(7.21)**
	1994-1998		0.99		1.03
			(0.47)		(0.84)
	1998-1999		1.13		0.84
			(1.16)		(1.27)
Observations (person-years)		18124	18124	22256	22256
BIC		11735	11688	9284	9240

Note: Odds ratios with z-scores (in parentheses) estimated to address community-level clustering.

Controls for age and age squared are included in each model but are not shown.

[a]1997 is the reference category for the year dummy variables in Model 1.

p < .05. **p* < .01.

Table 2

Correlates of Entry into First Marriage for Indonesian Women Aged 15-49 in 2000 (n=4,078)

	1	2	3	4	5
District-level female wage rate	0.78	0.79	0.80	0.67	0.77
	(2.95)**	(1.57)	(2.48)*	(3.90)**	(2.85)**
Mother's education: 0 years	1.45	1.46	1.45	1.45	1.45
	(2.89)**	(2.84)**	(2.89)**	(2.89)**	(2.87)**
1-6 years	1.44	1.43	1.44	1.44	1.44
	(3.87)**	(3.42)**	(3.86)**	(3.86)**	(3.87)**
7 or more years	-	-	-	-	-
In school the previous year	0.25	0.25	0.24	0.26	0.25
	(12.76)**	(12.78)**	(11.22)**	(12.80)**	(12.77)**
Ever worked	0.84	0.84	0.84	0.95	0.84
	(2.04)*	(2.04)*	(2.05)*	(0.58)	(2.03)*
Number of years since respondent	1.06	1.06	1.06	1.06	1.06
moved from parent's village	(4.28)**	(4.29)**	(4.28)**	(4.31)**	(4.11)**
Interactions:					
Wage rate x Mother 0 years education		1.02			
		(0.09)			
Wage rate x Mother 1-6 years education		0.98			
		(0.11)			
Wage rate x Mother 7 + years education		-			
Wage rate x In school previous year			0.89		
			(0.65)		
Wage rate x Ever worked				1.32	
				(2.51)*	
Wage rate x Years since migrating					1.01
					(0.53)
Observations (person years)	18124	18124	18124	18124	18124
Province Level Controls	Yes	Yes	Yes	Yes	Yes
BIC	11250	11270	11259	11252	11260

Note: Odds ratios with z-scores (in parentheses) estimated to address clustering at the

community level. Controls for age and age squared are included in each model but are not

shown. The omitted category for mother's education is 7 or more years. Wald tests (not shown)

suggest that the first order terms for mother's education are jointly significant in each model.

$*p < .05. **p < .01.$

Table 3

Correlates of Entry into First Marriage for Indonesian Men Aged 15-49 in 2000 (n=4,496)

	1	2	3	4	5
District-level male wage rate	0.69	0.96	0.68	0.65	0.70
	(4.14)**	(0.29)	(3.97)**	(1.69)	(3.65)**
Mother's education: 0 years	1.59	1.47	1.59	1.59	1.59
	(3.98)**	(3.13)**	(3.97)**	(3.96)**	(4.00)**
1-6 years	1.19	1.13	1.19	1.19	1.19
	(1.75)	(1.19)	(1.75)	(1.74)	(1.75)
7 or more years	-	-	-	-	-
In school previous year	0.55	0.55	0.56	0.55	0.55
	(5.23)**	(5.23)**	(4.64)**	(5.24)**	(5.22)**
Ever worked	3.72	3.71	3.72	3.83	3.72
	(8.40)**	(8.40)**	(8.40)**	(6.95)**	(8.41)**
Number of years since respondent	1.04	1.04	1.04	1.04	1.04
moved from parent's village	(4.50)**	(4.64)**	(4.51)**	(4.50)**	(4.15)**
Interactions:					
Wage rate x Mother 0 years education		0.64			
		(2.71)**			
Wage rate x Mother 1-6 years education		0.68			
		(2.73)**			
Wage rate x Mother 7 + years education		-			
Wage rate x In school previous year			1.06		
			(0.38)		
Wage rate x Ever worked				1.07	
				(0.25)	
Wage rate x Years since migrating					1.00
					(0.37)
Observations (person years)	22,256	22,256	22,256	22,256	22,256
Province Level Controls	Yes	Yes	Yes	Yes	Yes
BIC	9049	9057	9058	9059	9058

Note: Odds ratios with z-scores (in parentheses) estimated to address clustering at the

community level. Controls for age and age squared are included in each model but are not

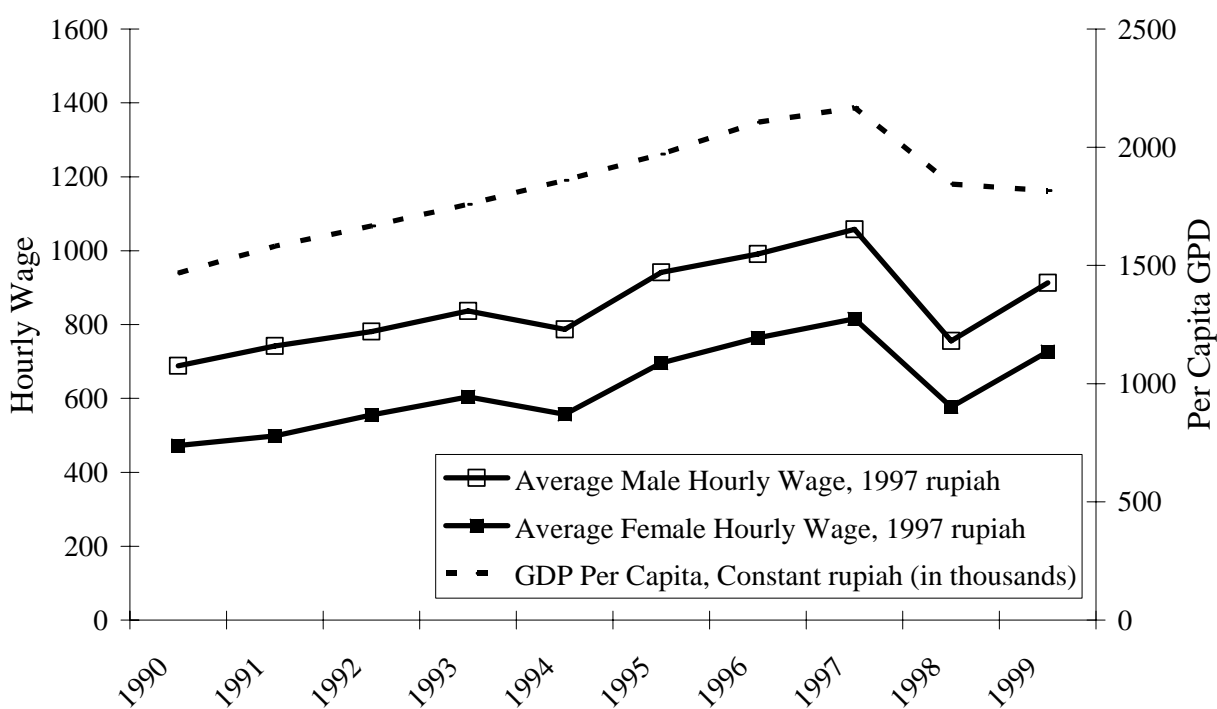shown. The omitted category for mother's education is 7 or more years. Wald tests (not shown)

suggest that the first order terms for mother's education are jointly significant in each model.

p < .05. **p* < .01.

Figure 1

Average Hourly Wages by Gender, and Per Capita Gross Domestic Product,

Indonesia, 1990-1999

Note: Data from the Indonesian National Labor Force Survey, and the International Monetary

Fund, World Economic Outlook.