ABSTRACT

Title of Dissertation: MODERNIZATION, LIFE COURSE, AND MARRIAGE
TIMING IN INDONESIA

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Past research on marriage timing in Asia has found the modernization framework
to be insufficient for explaining and understanding the processes of marriage and non-
marriage. Using insights provided by research on marriage timing in Western societies,
we examine the determinants of marriage and non-marriage for Indonesian men and
women using the 1993 and 1997 waves of the Indonesian Family Life Survey dataset.
Using a logit and a hierarchical model we examine the characteristics of unmarried men
and women at time 1 who had married by time 2. We find that the basic correlates of the
process of industrialization – education and work-force participation have counter-
intuitive associations with marriage. While level of education does nothing to delay
marriage, being enrolled in school keeps people away from marriage. Work force
participation in contrast increases the odds of people's marriage while earnings from
work have no effect. Based on our results we argue that the processes of marriage and
non-marriage are best understood using a life course perspective. The life course

perspective examines how the social context that people live in influences their lives, and determines their life trajectories, and the choices they make. Seen from this perspective, events such as marriage are a part of a person's life course that follows a normative sequence. People get married at that stage in their life when they are considered ready for it. When they are in school they are viewed as minors who are not suited to starting and raising a family whereas people who are working are viewed as adults who have the stability to take on the responsibilities of a married life.

Modernization, Life course, and Marriage Timing in Indonesia

By

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MODERNIZATION, LIFE COURSE, AND MARRIAGE TIMING IN INDONESIA

Chapter I

<u>**Introduction:**</u>

The age at marriage has been rising steadily in Asia. For example, in Southeast Asia, the singulate mean age at marriage for women in Indonesia increased from 19 in 1961 to 21 in 1991 (U.N. Demographic Yearbook 1995). An examination of tables 1 and 2 shows substantial declines in the proportions of married Indonesian women between 1993 and 1997. For example, 49.41% of the Indonesian women aged 20-21 were married in 1993. By comparison, in 1997, this number had reduced to 43.44% - a decline of 6.97 percentage points. Similarly, declines in the proportion married can be seen for Indonesian men after age 24.

----Tables 1 and 2 about here----

In South Asia too, the singulate mean age at marriage for women in India increased from 16 in 1961 to 19 in 1991 (Das and Dey 1996). In the Middle East also, the average age at marriage has been increasing. In Jordan, the singulate mean age at marriage for women increased by a year in the single decade of the 90s (DHS 1990, 1997). Such rapid changes contradict the impression that age at marriage is a slow moving variable.

A shift in marriage timing that increase the length of the celibate period has the potential to bring about wide ranging changes in society. It spawns new adolescent and youth cultures (Xenos and Gultiano 1992), changes fertility patterns (Dixon 1971, Rindfuss and Morgan 1983), can modify the relationship between spouses, and between spouses and affinal kin, and can change the age and life course sequencing at sexual initiation as well.

The last aspect is increasingly becoming relevant in the study of HIV/AIDS. Since delays in marriage may lead to a change in the sequence of sexual initiation and marriage (Feng and Quanhe 1996; Blanc and Way 1998), the likelihood of young people having multiple sexual partners increases thereby increasing the likelihood of the spread of HIV/AIDS (Caldwell and Caldwell 1993; Meekers and Klein 2002).

There has been surprisingly little recent research on this trend of increasing age at marriage in Asia despite the fact that it indicates a rapid change in the value systems of Asian societies (Mensch et al. 2005). In the past, there was more research on this topic for Asia but it was done mostly because age at marriage is a proximate determinant of fertility. However, with the decline in Asian fertility, research interest in age at marriage declined. It is now occasionally mentioned as part of a cluster of variables relating to gender inequality and women's status, since lower ages at marriage are associated with low status of women (Mason 1986). A trend towards delaying marriage may be associated with increasing status of women in society, which may be tied to their growing role as economic agents (United Nations Commission on Population and Development 2002, cited in Mensch et al. 2005). Very little research however has focused on it.

Current research on age at marriage focuses more on the West, since delayed marriages and non-marriages are a part of a larger set of changes taking place in the Western family. These changes have been called "the second demographic transition" (Lesthaeghe 1995; Van de Kaa 1987) and include an increase in cohabitation, childlessness, and non-marital childbearing. Since these correlates of changes in marriage timing have significant policy relevance for the West, the body of literature on this topic is fairly large.

With regard to Asia, only Japan has received attention in the area of delayed marriage (see Raymo 2003), since here too the social changes accompanying delayed marriage mirror those in the West and have policy relevance for Japanese society. The lack of research on this topic for other Asian countries has meant that the social changes occurring in several Asian countries have not been adequately documented.

This dissertation is a step towards filling this research gap. We will be examining the changes in marriage timing specifically for Indonesia and will consider the role played by increasing labor force participation and education in Indonesia. Additionally, we will examine the changes in the odds of marriage in a cross-sectional and a dynamic perspective, that is, we will look at the correlates of odds of marriage among Indonesian men and women in 1993 and at the correlates of becoming married between 1993 and 1997.

Increased education and labor force participation are widely seen as consequences of the process of industrialization and modernization. Since Indonesia has witnessed rapid economic growth for several decades, this is often assumed to be the reason for the changes occurring in the area of marriage and the family (Xenos and Gultiano 1992). The reasoning often is that as non-Western societies industrialize, they resemble Western societies more closely. Sociologists call this line of thinking the modernization paradigm (Rostow 1963; Kuznets 1955). However, past research on divorce for Malaysia (Jones 1981) and on marriage timing in Central Java, a province in Indonesia (Malhotra 1997) shows that we need to be cautious with such reasoning. Jones' research shows that divorce rates in Malaysia actually declined with the onset of industrialization, while Malhotra's research shows that traditional gender norms in Indonesia were often reinforced with the process of modernization.

The literature on marriage timing for the United States and countries in Western Europe often investigates marriage timing as an issue about the life course. The relationship between life course events like education, workforce participation, and marriage is one of compatibility. Research indicates that education and marriage are often seen as incompatible life events, while workforce participation and marriage are usually seen as compatible. The former delays marriage, while the latter increases the probability of its occurrence.

In this dissertation we will examine how the two theories – modernization and the life-course – help us understand the relationship between education, workforce participation, and marriage timing in Indonesia.

We will examine these changes for both men and women. Often in the demographic literature the focus with regard to age at marriage is on women. However, since marriage timing has changed for men and women (Xenos and Gultiano 1992), a one-sided focus on only women may lead us to neglect important differences between the sexes. Moreover, research on the United States indicates that a lot of the shifts in marriage timing may be driven by men's circumstances compared to women's, making it necessary to examine this question for both sexes.

Chapter II

Prior research:

Marriage timing in developing countries:

Discussion of age at marriage and marriage timing in developing countries has focused on its role in fertility decline and in enhancing women's status. Since age at marriage is a proximate determinant of fertility in societies where entry into marital unions coincides with entry into a sexual union (Davis and Blake 1956; Bongaarts 1978), it has been a key variable in the fertility studies on pre-transition Asia. These studies were largely country level analyses that focused on women. These published works examined various aspects of marriage and fertility like contraceptive use, length of the first birth interval, and completed fertility.

In this review I will examine the literature on marriage timing for both developed and developing countries. There are important differences in the literature. For developing countries the literature focuses on fertility and women's status, while for developed countries the literature examines shifts in marriage timing as a function of the life course. I will examine each in turn and discuss their implications for this research.

Studies on the relationship between marriage and fertility in Asia include Ruth Dixon's (1971) work on cross-national variations in age at marriage, which she links to variations in marriage markets (measured as the ratio of males 25-29 to females 20-24, and males

20-44 to females 15-39), socio-economic circumstances of couples (measured as GNP per capita, percent males in the labor force, and percent males in agriculture), and the availability of economic and social security outside marriage (percent of women in the labor force, percent women who are educated, and the number of children per married women). Her finding that while celibacy and delayed marriages occurred in the poorer countries of the west, they occurred in the richer countries of the East, indicate that socioeconomic development does not always lead to delays in marriage timing. They are linked with the values of the society's elite on one hand compared to the affordability of children and a family on the other.

Other important works include Hirschman's (1985) research that found that contrary to expectations, the later marriages were associated with shorter intervals between marriage and the first birth. Rindfuss and Morgan (1983) explained this anomaly by stating that a large proportion of late marriages in Asia were based on romantic love that led to an increase in coital frequency leading to the shortening of the first birth interval.

Once the demographic transition got underway however, interest in this area diminished. As a result, there is very little literature on Asian marriage trends and determinants after the 1970s and the early 1980s. Some of this neglect was covered by the women's status literature that used age at marriage as an indicator for women's status since low ages at marriage are associated with the low status and lack of autonomy of women.

Jones (1981) for instance talks of how in the 1950s, Malaysian women were not allowed to decide when they would get married or to whom, as they were not expected to know anything about such matters. They accepted, and were expected to accept, whatever their parents arranged for them. This is true for women in the Indian subcontinent as well. For this reason, Mason (1986) has listed age at marriage for women as a useful indicator of their status in developing countries, as a part of her larger thesis on the variables that serve as indicators of women's status, women's empowerment, and women's autonomy in developing countries. The variable has also been used by Kishor (2000) as one of the indicators of women's status in her examination of the association between women's empowerment and child health in Egypt.

While examining the association between women's empowerment and age at marriage, we need to be cautious about the element of reverse causality. Mason (Mason 1987 cited in Balk 1994) points out, that increasing levels of women's labor force participation may actually be a result of their delayed marriage instead of the other way around as is usually hypothesized. Sathar et al. (1988) also recognize this problem and state that a delay in marriage for extraneous reasons such as an inability to find a suitable alliance at a particular time, may lead to women being gainfully employed, or continuing their education till such a time that they get married.

Sathar et al's. analysis of women's status and marriage age in Pakistan found that a delay in marriage allows women to "formulate opinions and develop an independent personality" (Sathar et al. 1988, pp 418). Such women were less likely to be dominated

by their elders and less vulnerable to the "opinions, orders, and sanctions of their in-laws, and husbands" (Sathar et al. 1988, pp. 418).

While most of the literature shows positive associations between marriage age and women's status, there are some studies, like Balk's (1994) study of Bangladesh, that show counter-intuitive trends. Her analysis found that Bangladeshi women who married later were significantly *less* likely to be able to move freely outside their home, and were *less* likely to hold progressive attitudes. Balk's explanation for such results is that increases in age at marriage alone do not improve women's autonomy. It is only when other correlates also change that autonomy is increased. These findings are however rare instances. In general, a delay in marriage by Asian women is seen to be indicative of their increasing levels of empowerment and autonomy which may show up through their increasing labor force participation, their levels of education, and their ability to choose their own spouses, as well as to dissolve marriages that don't work out.

From the point of view of this analysis, the women's status literature provides useful insights into the relationship between marriage timing and modernization theory. Before we examine this link in more detail, it is useful to get an understanding of the elements of modernization theory.

The classic modernization theory links economic development, indexed by industrialization and urbanization, to a whole range of changes occuring in developing countries. Some of its key proponents were Rostow (1963), Hoselitz (1960), and Kuznets

(1955). Rostow's (1963) theory links the modernization of society to technological change, and states that the evolution of modern industrial society from pre-industrial society is essentially an evolution of science and technology. Hoselitz's (1960) ideas are based on Talcott Parson's theories and articulates the idea that pre-modern societies are characterized by personal relationships, ascribed statuses, and an orientation to the collective. In contrast modern societies are said to be characterized by impersonal relationships, achieved statuses, and self-interest. Kuznet's (1955) theory of modernization argues that economic development will ultimately lead to a more equitable society. Using mathematical models he demonstrates that development eventually leads to reductions in income inequality. While all of these theories differ in their details, their main point is the same: economic development is the key reason why social structures and value systems change.

Gender theorists like Boserup (1970) have borrowed the ideas of the modernization theorists and have argued that as levels of economic development increase, gender inequality decreases, since economic development raises the status of women by increasing their participation in the industrial economy, and by improving their levels of education. It is from this idea that the link between modernization and age at marriage emerges. Researchers have argued that a delay in marriage for women is linked to their growing role as economic agents, which gives them economic independence from men, and through it, leads to their emancipation from the institution of marriage (Malhotra, 1997; United Nations Commission on Population and Development 2002, cited in

Mensch et al. 2005). Consequently, as their education levels improve and their workforce participation levels increase, women's ages at marriage also increase.

The link that modernization theories draw between economic development and women's marriage timing has been criticized by Malhotra (1997). Her research on the Indonesian province of Central Java (one of the few works on marriage timing in Indonesia) found that economic development had a different impact on urban women's lives depending on which dimension of their life was being examined. While western education (measured by levels of education) improved an urban woman's ability to choose her spouse, it led to lower workforce participation and encouraged the adoption of norms that supported the economic dependence of women on men. In this case, education lowered the likelihood that women would delay marriage, while workforce participation did nothing to either delay or advance the age at marriage. In contrast, in rural areas, where the exposure to western education was lower, increased labor force participation increased the likelihood that women will delay marriage.

Similarly, Malhotra and Tsui's (1996) work on Sri Lanka found that traditional marriage norms coexist with increased access to schooling and participation of women in the labor force. They found that increased education and participation in the labor force is primarily a means of increasing a woman's chances in the marriage market. It is also a means of allowing her to collect her own dowry. In Sri Lanka, participation in the labor force increased the likelihood of late marriage only for those women who valued it as a source of income, and did not have an impact on those women who considered jobs

unimportant. Similar findings, that labor force participation doesn't have an empowering association with women's marriage timing, has been reported by Caldwell, Reddy, and Caldwell (1982) for girls in South India.

Research on Malaysia by Jones (1981) provides support for the modernization theory. Jones found that women's ages at marriage increased sharply from 17 in the 1950s to 21.4 in the 1970s, with increased urbanization, expansion of education for women, and women's participation in the "modern" sector of the economy (quotes in original). Although he doesn't explicitly test for it, Jones also mentions "vast changes in the attitudes of parents and children" as having increased the age at marriage[1] (Jones 1981).

Very recently Mensch et al. (2005) published a paper where they discuss the trends in age at marriage in the developing world. Their macro level analysis compares the declines in the proportion of young people who marry early across different regions of the developing world. The authors have found that with the exception of men and women in South America and men in South and South East Asia, substantial declines have occurred across the world in the proportion of young people who are married.

Using census data from the United Nations and the Demographic and Health Surveys, the authors analyze ages at marriage in the Latin American and Caribbean countries (henceforth LAC countries) and countries in sub-Saharan Africa. Their primary variables of interest are education and urbanization, which are key correlates of the process of modernization. While improved education accounts for about half or more of the declines

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[1] Jones does not specify what these changes are.

in marriage for women in about 60% of the countries, it does not explain the entire

decline. The variable was not significant for men. Similarly, increased urbanization was

not significantly associated with declines in marriage for either men or women. The

authors argue that it is possible that other factors like declines in arranged marriage,

changes in the laws regarding marriage age, and difficulty in paying bride-price/dowry,

may also account for these declines in the proportion of married persons. They don't

however test for the association between these variables and the declines in the

proportion of young married persons due to data limitations.

Marriage timing in developed countries:

While the treatment of marriage in the developing country context centers on either

fertility or women's status, the treatment of this variable in the developed countries is

rather different. The fertility aspect of marriage and family formation in developed

countries is by and large limited to the literature that discusses pre-transition Europe

(Coale and Treadway 1986 cited in Hirschman 1994). Most studies, however, concentrate

on understanding the nature of the western family and the changes that have come about

in it from the 19th century to the modern times, particularly in response to

industrialization and its correlates.

Some early classics include works by Hajnal (1953, 1954, and 1982) and Goode (1963)

and their focus is on the changing nature of the Western family with the onset of

industrialization. The major contribution of these early works is that they destroyed the

myth that Western societies in pre-industrial times had low ages at marriage like the

developing countries in Asia. As Thornton (2001) argues, there is a tendency in the marriage and the family literature to assume that Western society once resembled the developing countries in Asia, and that the past of the Western societies can be understood through an understanding of present day Asia. These early works indicated that having an evolutionary perspective may not necessarily aid in understanding modern Europe or America.

Goode (1963) found that age at marriage was high in Western societies in pre-industrial times since attaining financial stability at an early age was a problem for farmers, servants, and apprentices. Financial problems increased the age at marriage, and early marriage was possible only for the landed and the aristocracy. With the onset of industrialization, the attainment of financial stability at a younger age became possible, and the age at marriage declined. In the mid 20th century, the average age at marriage for both men and women was in the early twenties (Goode 1963).

Hajnal (1954) explains that while industrialization led to a decline in the age at marriage on one hand, it also led to an increase in the rate of marriage on the other. Different socio-economic classes contributed differentially to this marriage boom (Hajnal 1954a, 1954b). Marriage rates were higher amongst urban, educated persons (Hajnal 1954a). They were also high amongst people employed in the industrial labor force compared to those in agriculture. These are counter-intuitive trends since we would expect people in the industrial era to postpone marriage because of "the lengthening period of education

and training, the emancipation of women, and the increase in the proportion of people engaged in middle class "white collar" occupations…" (Hajnal 1954b pp. 300).

Hajnal (1982) also argues that the high ages at marriage in the West in pre-industrial times were the basis for the formation of a family system that was very different from the family system in Asia. While the Asian societies, especially India and China, were characterized by joint household patterns, the Northwest European societies were characterized by simple households. According to Hajnal, the reason for the difference between the two household systems was the late age at marriage (over 26 for men and over 23 for women), since a higher age at marriage allowed young people to be physically mobile and take up work as servants in order to become financially stable. After marriage, the couples were able to set up their own household instead of relying on their parents for support (Hajnal 1982).

More recently, the trend in Western societies has been towards postponing marriage. Much has been written about this trend because of its association with the other changes in the Western family structure such as increased cohabitation, divorce, childlessness, and out of wedlock childbearing. Lesthaeghe (1995) and Van de Kaa (1987) have called this trend the second demographic transition. They argue that the growing secularization and individualism in Europe has led to people postponing marriage. Young people want their autonomy, and they are unwilling to adjust to the stresses and demands of marriage. According to them, the first demographic transition, i.e., the shift from a regime of high fertility to one of low fertility came about because of the increased emphasis on quality of

children as opposed to the quantity of children (Van de Kaa 1987). Van de Kaa (1987) calls this the "king child with married parents" model. In contrast, the second demographic transition refers to the shift from this to the "king pair with child" model, which points to the trend towards growing individualism.

Apart from these more sociological theories that try to explain the decline of marriage in the West, studies with a more economic orientation have examined if marriage has lost its economic significance. Timothy Guinnane (1991) examined non-marriage in Ireland at the turn of the 20th century, and he concludes that marriage had lost its economic significance in Ireland. One reason why people marry is to have children who provide security in the parents' old age and provide labor to work on farms. However, as farmlands provided more economic security to people, and local labor became more abundant, people did not need to rely on children to provide economic support or labor. Many farmers entered long-term relationships with young people that provided surrogate heirship for their farms. Guinnane argues that such effective economic substitutes for marriage and children led to the decline of the institution in Ireland at the turn of the 20th century.

Easterlin's (1978) relative income, relative cohort-size theory is also an economic theory of marriage postponement. The focus of this thesis is mainly fertility, but it also discusses marriage timing. Easterlin argues that if a person's economic prospects are not good enough to provide them with their expected standard of living in their adulthood, then they will postpone marriage and postpone childbearing.

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A concept that has been gaining importance in the Western marriage literature is that of marriage markets. This has been getting a lot of attention primarily because there are differentials in marriage rates along the dimensions of race and class.

Edin's (2000) research on poor single mothers in the United States shows that the low rates of marriage for this group of women is linked to the scarcity of marriageable men in their networks. In this case being marriageable is defined as someone who has a job that brings in a regular income. In most cases, this group of women perceived the men in their networks as being dependent on their (the women's) own income, and therefore being a burden on them rather than a helpmate. Her research also provides a contrary view to that proposed by Lesthaeghe and Van de Kaa since she argues that marriage rates are low not because these women value marriage too little, but because they value it too highly. They don't want to settle for anything less that an ideal married life. This makes men who are unable to provide such a quality of life poor candidates in the marriage market.

Some of the most influential research on marriage markets has been done by Valerie Oppenheimer (1977, 1988, 1994, and 2003). Oppenheimer (1988) argues that marriage timing depends on when each spouse gets a stable job, since this determines a couple's lifestyle and socioeconomic status. If a society has highly segregated gender roles, then men can be expected to marry later, and women earlier. Conversely, when women's economic roles converge with men's, their age at marriage can be expected to rise (Oppenheimer 1988).

Expanding on this theme, Oppenheimer introduces the concept of assortative mating. Assortative mating recognizes the idea that people don't marry just anyone, but instead evaluate similarity of their potential mates in terms of current and future characteristics, before committing to marry that person. Future expectations are evaluated in terms of a person's job prospects, and poor prospects for many people may lead to a squeeze in marriage markets. She argues when adult male and female work roles converge, and financial stability before marriage is required of both, the future prospects of both sexes become more uncertain, leading to an increase in the female age at marriage. In such cases, the idea of "double income" families becomes key to understanding the delay in marriages especially for women. As Oppenheimer (1977) states, in such cases maintenance of status may require that the wife have a highly regarded and well paying job.

Research on marriage for developing countries also often includes marriage markets. For instance in his article on marriage in Malaysia, Jones says that there was a "marriage squeeze" (quotes in original) in Malaysia in the 1960s because of a paucity of men of marriageable age. The abundance of women of marriageable age (15-19 and 20-24) meant that women had to wait longer to get married, thereby increasing the average age at marriage. An additional adjustment the Malays made in response to the marriage squeeze was to narrow the spousal age gap. However, the main adjustment was the increase in ages at marriage for women (Jones 1981).

The role of women's economic independence in bringing about the decline in marriage rates is a key theme in the Western marriage literature. In particular people have focused on the increasing levels of education and workforce participation among women, which are significant outcomes of industrialization and modernization (for a review of this literature see Oppenheimer 1994). The theoretical pathway that linked women's economic independence to marriage timing was outlined by Becker (Becker 1981 cited in Oppenheimer 1994).

Becker argued that with increasing women's workforce participation, marriage becomes less desirable for two reasons: one, children become more expensive since they pose challenges to women's time use. Women find it increasingly difficult to take care of children as they need to spend their time working. This leads to a reduced desire for children and consequently marriage since Becker feels that a major reason for marriage is having children. Empirical support for this hypothesis was found by Barber and Axinn (1998) in their research on the United States. Using data from the Detroit metropolitan area they show that in choosing between marriage and cohabitation young women who want children are more likely to choose marriage compared to cohabitation[2].

Another reason for the declines in marriage according to Becker is the lack of distinction in the roles of the husband and wife with increasing women's labor-force participation. Becker argues that a major gain from marriage is the mutual dependence between husband and wife that results from each specializing in a different role. There existed an

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[2] In contrast, men who wanted children entered in any type of co-residential union, whether marriage or cohabitation (Barber and Axinn 1998)

understanding that the husbands would be the earners while the women took care of the home and children. However, as more women join the labor force, their economic dependence on men is reduced thereby reducing the incentive to get married. Becker further argues that welfare payments to women similarly reduce their incentive to getting married. The implication of this theory is that women's workforce participation reduces the rates of marriage.

Empirical research by Oppenheimer revealed that this theory was problematic. Her data show that non-marriage rates in the mid 1990s were similar to the rates at the turn of the 20th century. Further, her research shows that women's labor force participation either has no impact on marriage or it has a positive impact. This is supported by other studies (Cherlin 1980, Goldscheider and Waite 1986, Bennet et al 1989, and Lichter et al 1992 cited in Oppeheimer 1994). Similarly, a rise in school leaving age resulting from an increase in their educational attainment did not have an impact on their late age at marriage.

Oppenheimer's explanation for the finding that women's workforce participation increases marriage rates is linked to her concepts of assortative-mating and marriage markets. She argues that a woman's earnings may have an impact on her marriage by offsetting the low earnings of her husband. Further, a serious work involvement may provide her with greater access to marriage markets and thereby promote assortative mating. Work also provides funds for leisure activities, which can expand women's marriage market boundaries. Further, women with a regular career may be able to afford

to marry men who don't have good economic prospects, but have other desirable qualities. She further argues that a distinction has to be made between delayed marriage and non-marriage, and there is need to look at *when* people marry, not just, *if* they ever marry. Delayed marriage doesn't mean non-marriage. It only means postponing marriage till much later. Therefore, as the cohorts grow older the rates of never married decline.

Further, unlike Becker, who locates such shifts in marriage timing in the economic independence of women, Oppenheimer locates it in the deteriorating economic position of men (Oppenheimer 1994). Since young men's transition to an adult role is signified by their ability to provide a certain standard of living, marriage can be delayed as they take more time acquiring this level of economic independence. This can happen especially when the economy is not favorable and wages are low.

Recent research on marriage timing in Europe and America also finds that workforce participation increases the odds of marriage while school enrollment decreases it (Blossfeld and Huinink 1991; Thornton et al. 1995; Liefbroer and Corijn 1999; Xie et al. 2003; Copolla 2004). These studies however locate their explanation of these patterns in the life course framework (Blossfeld and Huinink 1991; Thornton et al. 1995; Xie et al. 2003; Copolla 2004). The life course perspective was pioneered by Glen Elder and refers to the "age graded, socially embedded sequence of roles that connect the phases of life" (Mortimer and Shanahan 2003, pp xi), or "the social pathways of human lives" (Elder, Johnson, and Crosnoe 2003, pp 4). Essentially, the life course perspective examines how

the social context that people live in influences their lives, determines their life trajectories, and the choices they make throughout their life.

This perspective has relevance for the study of marriage since marriage is a life event and its timing and occurrence is determined by other life events. With regard to marriage timing and its links with education and workforce participation, the life course perspective articulates that idea that these processes are linked because the decisions made with regard to one affect the decisions made with regard to the other processes (Copolla 2004).

In 1991, Blossfeld and Huinink showed that in the former West Germany, women who were enrolled in school had low rates of entry into marriage. Their variable on current school enrollment was significant, while levels of education had no effect on marriage. The authors concluded that the delays were not occurring because women were increasing the time spent in acquiring human capital, but because they had postponed their transition from youth to adulthood. Since being in school was associated with economic dependence on parents, the women were still regarded as youths. Once they left school however, they transitioned to adulthood.

Similarly research on the Netherlands and Flanders – the Dutch speaking part of Belgium (Liefbroer and Corijn, 1999), also shows that educational enrollment has a negative association with entry into a first union. This research also found that while

unemployment retarded men's marriage chances, it helped women's chances since the incompatibility between work and family roles was not there.

Thornton et al.'s (1995) research on the United States also showed similar patterns for school enrollment. They measure school enrollment two ways: full time and part-time. Their results suggest that while both types of enrollment reduce the risk of entry into marriage for both men and women, full time enrollment reduced the risk even more. They too conclude that the increased risk of marriage when a person is enrolled part-time is probably because of the reduced time demands of part-time enrollment, which reduces incompatibility with marriage. Further, unlike Blossfeld and Huinink (1991) Thornton et al. found that in the United States, different levels of educational attainment also reduced the risk of marriage for men and women.

More recent research on the United States by Xie et al. (2003) and on Italy and Spain by Copolla (2004) shows that when people are in school, their odds of marriage decrease considerably, while workforce participation increases the odds. Educational attainment levels had no association with odds of marriage in both studies. Further, the odds of marriage increase when earnings increase. Copolla explains this in two ways, both of which are linked to the life course perspective. She argues that education is incompatible with marriage since the ability to get married and start a family requires financial independence. Since being enrolled in school affects a person's ability to earn and the fact that education often requires an economic investment, it leads to a postponement of

marriage. In contrast, exit from education and work force participation provides people with economic independence, and increases the odds of marriage (Copolla 2004).

It has further been found that higher levels of income help increase men's odds of marriage while they have a less important, or no association with women's marriage odds (Copolla 2004; Xie et al. 2003; Oppenheimer 2003). This supports Oppenheimer's thesis that men's economic position matters more for the occurrence of marriage than women's.

In contrast to this economic explanation for the incompatibility between marriage and education, Copolla's second explanation is more normative and echoes the findings of Blossfeld and Huinink (1991). She states that when people are in school and they are getting an education, they are still viewed as being youths and therefore incapable of handling the adult responsibilities of marriage. In contrast, when people join the workforce, they are viewed as adults and therefore ready for marriage. Oppenheimer hints at this when she talks in terms of "young men's transition to an adult economic role" which determines their ability to marry (Oppenheimer 1994, pp 322). In the developing country context, Malhotra and Tsui (1996) found this to be true for Sri Lanka as well.

The various theories on marriage timing in industrial and less developed societies have relevance for this research as they provide plausible reasons for delays in marriage. Theoretically the process of modernization is supposed to foster increased individualism which in turn may mean that people value their autonomy more and want more in life

than just marriage and a family. In this case, delayed marriages may be an obvious outcome of the growing individualism and other value changes in Asia. As an extension of this, individuals may also want their marriages to be kept distinct from the pressures of the extended family norms and may be increasingly unwilling to marry only to satisfy the wishes of their extended families. They may give primacy to the conjugal bond and may choose to wait till they find a person who will provide them with an ideal family and married life. Increased economic independence brought about by improved levels of education and workforce participation enables these shifts to occur.

The life course perspective could also provide insights into marriage timing in Indonesia. Since marriage is virtually universal in Asian societies, delays in marriage may be an outcome of delays in transition from a youth role to an adult role. This can be furthered by the process of industrialization since with the increased emphasis on education people take longer to transition to the workplace.

Chapter III

<u>The Indonesian context:</u>

Indonesia is in Southeast Asia and is the largest archipelago and the fourth most populous nation in the world. The 17,000 islands that make up Indonesia are divided into 27 provinces for administrative purposes (CIA World Fact Book 2005). The capital city Jakarta is in the island of Java.

----Table 3 about here----

----Figure 1 about here----

Today Indonesia is a democratic republic. It became a government of elected representatives after intense political turmoil in 1998, when protests against government inefficiency and high levels of corruption turned violent. This brought to an end four decades of authoritarian rule. However, corruption remains a major issue in Indonesia (CIA World Fact Book 2005).

Indonesia also witnessed a major economic slump in 1997 (after the data used in this dissertation had been collected) because of the larger Asian economic crisis. The rising unemployment and poor economic prospects also added to the unrest in Indonesia, which eventually turned violent in the following year. Indonesia is now undergoing IMF mandated reforms in the banking sector to recover from the economic downturn. Before the economic slump, it was regarded as one of the Asian tiger economies. It witnessed

over three decades of economic growth and prosperity, and was on the brink of joining the middle-income countries. The size of its economy was comparable to that of Malaysia, the Philippines, and Thailand combined. However, the Asian economic crisis slowed economic growth. However, there are wide variations across Indonesia with regard to how much the economic crisis affected each region, and how much economic development took place in the three decades of economic growth. As can be seen from figure 3, the province of Jakarta benefited disproportionately from the economic growth in Indonesia compared to the other provinces.

----Figures 2 and 3 about here----

There is also variation between the provinces in the level of education and labor force participation rates. Additionally, these vary by sex and rural-urban residence. Over time there has been some fluctuation in the rates of enrollment and labor force participation. These are a reflection of the changes taking place in the economy.

----Figures 4, 5, 6, and 7 about here----

Indonesia is a member of the Association of Southeast Asian Nations (ASEAN), an economic organization of Southeast Asian countries, which keeps the member nations as one common economic market. Almost ten years after the economic crisis, the Indonesian economy is financially stable, but still has problems of unemployment, a

fragile banking sector, and inadequate infrastructure. It is also less able to pull in foreign

investment (CIA World Fact Book 2005).

Indonesia is ethnically and religiously very diverse. There are about 300 different

recognized ethnic groups in Indonesia. Of these, the major ethnic groups are the

Javanese, the Sundanese, the Madurese, the Balinese, and the coastal Malays. The

Javanese are the largest ethnic group in Indonesia and make up about 45% of the total

Indonesian population (CIA World Fact Book 2005; Peacock 1973). They are the

inhabitants of central Java and they are culturally the most influential ethnic group in

Indonesia. The majority of the Indonesian population claims descent from the Malays, the

original inhabitants of Malaysia. Historically, the Malays dispersed throughout Indonesia

and split into smaller sub-groups with widely varying family structures and language.

Because of the diversity in language, the government of Indonesia adopted Bahasa

Indonesia as the country's official language after independence from the Dutch in 1945.

The native Indonesians are known as "bumiputras", or "pribhumi", or "asli", terms

derived from Sanskrit that literally mean "sons of the soil", or "the true natives". The

"bumiputras" are distinguished from the non-native Indonesians like the Chinese and

people of mixed Indonesian and Dutch parentage.

Indonesia is a largely Muslim country. About 88% of the country's population is Muslim,

making it the largest Muslim population in the world. About 8% is Christian, and 2% is

Hindu. The Hindu population is concentrated almost entirely in the island of Bali, where

Hinduism is the religion of the majority (CIA World Fact Book 2005).

However, the nature and character of Islam in Indonesia is very different from the nature and character of Islam found in the Middle East (Geertz 1960; Peacock 1973; Koentjaraningrat 1975). Islam spread to Indonesia with the growth of trade and commerce with the Arab world in the Middle Ages (Peacock 1973; Koentjaraningrat 1975). However, since Indonesia was a Hindu-Buddhist country before the spread of Islam, Islam in Indonesia retains many elements of its Hindu-Buddhist past. This manifests itself in the religious rites and rituals of the people (Peacock 1973; Koentjaraningrat 1975). While one group of the Javanese and the Sundanese, called the "Santris" are orthodox Muslims, the rites and rituals of rest of the community combine Islam with aspects of Hinduism and Buddhism.

Indonesia also has a formal program that encourages internal migration. The Dutch originally started the program during the colonial period, and the government of independent Indonesia carried it on. The idea behind the transmigration program is to alleviate the population pressure on the islands of Java, Madura, and Bali by relocating the poor people from these islands to the outer islands of Indonesia. The island of Java alone has over 60% of Indonesia's population, while accounting for only 6% of the total land area. Therefore, the transmigration program was designed to alleviate the population pressure on these islands. The outer islands to which people were relocated are Sumatra, Sulawesi, Kalimantan, and West Papua (also known as Irian Jaya).

Most of Indonesia has a nuclear family type. The conjugal unit is given primacy over the extended kin. The only exceptions are the Minangkabau, an ethnic group who originally lived in Sumatra, who have an extended family system.

Descent is generally bilateral, that is, all individuals trace descent from both their mother and their father. The Balinese, the Toba Batak of Sumatra, and the Minangkabau are however an exception to this. The Balinese and the Toba Batak are both patrilineal and trace descent only from their father's side. The Minangkabau are matrilineal and trace descent only from their mother's side.

While a couple is expected to set up their own home after marriage, in the event of a housing shortage, the couple can initially live with the wife's natal family. The parents traditionally arrange marriages, and traditionally people are expected to marry within their own social class. Amongst the Balinese, the people are expected to marry within their own caste (Peacock 1973). Traditionally, the "santris" married within their own group since marriage outside the group was seen as a threat to the manner in which Islamic religious rituals and rites were conducted.

Marriage is practically universal, and traditionally men and women married at very young ages (Malhotra 1997). The young age at marriage is more pronounced for women than men. Further, while men might have been given some choice in their spouse, women's marriages were traditionally arranged almost entirely by the parents. This was because of a concern with parental status and their daughter's virginity. Therefore,

marriages were timed around the attainment of puberty for women. Men married a little later – in their late teens or early twenties (Malhotra 1997).

----Figure 8 about here----

Traditionally, Indonesia has also had high divorce rates. In the 1950s, the divorce rates in Islamic Southeast Asia were the highest in the world (Jones 1997). While Malaysia had the highest divorce rates, Indonesia had the next highest. Divorce rates were generally higher amongst lower socioeconomic groups than amongst the higher socioeconomic groups (Jones 1997). Peacock (1973) writes that amongst the poorer Indonesians, parents took it for granted that their daughter's first marriage will end in divorce. Divorce is allowed under Islamic law. While the law allows both men and women to seek divorce, generally the men take the steps towards divorce. However, here too, Islamic Southeast Asia is different from the Middle East. Indonesian women have had recourse to divorce and have often sought it (Jones 1997). According to Jones (1997), the wives initiated a substantial number of divorce cases. Jones argues that there is a cultural predisposition in Islamic Southeast Asia towards divorce. A lot of emphasis is placed on compatibility of couples. If compatibility is found to be lacking in a marriage, then couples seek divorce. The ease of divorce under Islamic law only facilitates the process (Jones 1997).

The Western countries overtook the divorce rates of Islamic Southeast Asia in the 1960s and 1970s. In the 1990s, the divorce rates in the West were about 4 times as high as the divorce rates in Indonesia (Jones 1997). Paradoxically, although one might expect

increased urbanization and industrialization to increase divorce rates, the divorce rates in Islamic Southeast Asia have been declining throughout the 60s and 70s (Jones 1997). Jones (1997) attributes this to the rising age at marriage for women, increased ability to choose your own spouse, and the expansion in education.

Polygyny is also allowed under Islamic family law and there is some evidence of polygynous unions in Indonesia (Jones 1981, 1997). However, the rates of polygyny seem to be declining across Islamic Southeast Asia. According to Jones (1997), this is also one reason why divorce rates have declined in the region.

The status of women in Indonesia is similar to the status of women in other countries in Southeast Asia, but higher than that of women in South Asia and the Middle East. Compared to the other regions in Asia, Indonesian women have property and inheritance rights, participate economically, and are active in public affairs. This is true also even among the orthodox Muslims, the "santris" (Peacock 1973).

<center>**Chapter IV**</center>

<u>Research question and hypotheses:</u>

Research question:

Most South East Asian countries including Indonesia underwent structural adjustment programs in the early 1970s to encourage economic growth. The integration into the global economy increased the presence of the Western and Japanese private sector in the country which in turn reinforced middle class western values and lifestyles. These cultural changes were associated with social structural changes like increased levels of educational attainment and labor force participation especially for women but also for men (Malhotra 1997). Changes in the economic sphere of society have the potential to change the dynamics in other social domains. Marxian sociologists would call this the influence of the economic structure on the infrastructure of society. While we are not prioritizing among the different social domains as the Marxian sociologists do, we realize that major changes in one area of society can lead to changes elsewhere in society. In this specific case, we are interested in understanding how economic changes affect more traditional social systems like marriage and family formation. This is our research question.

As discussed in the previous chapter these associations were the subject of Malhotra's (1997) research on marriage timing in Central Java, and Mensch et al's. (2005) analysis on developing countries.

Our research differs from Mensch et al's. and Malhotra's research in several critical ways. Mensch et al. do a macro level analysis comparing declines in the proportion of married persons in different regions of the developing world, especially the LAC countries and sub-Saharan Africa. In contrast our analysis is a micro-level analysis that specifically examines the case of Indonesia. Additionally, in their analysis, Mensch et al. are primarily interested in examining the association of marriage delays with education and urbanization. While urbanization is controlled for in our analysis, we focus more on education and work force participation since the research for the developed world identifies these variables as key to understanding changes in marriage timing.

Another major difference between the Mensch et al. paper and our analysis is in our respective analysis strategies. As they recognize some of the difficulty in explaining the association between education and marriage delays could be due to their cross-sectional analysis strategy. They have compared married and unmarried women's current characteristics (such as their current level of education) to see if these differences are associated with whether a person is currently married or not. We feel that this analysis is limiting. For example any cross-sectional relationship between marriage and more education might be explained by a causal effect of later marriages encouraging more schooling. We too include a cross-sectional analysis that compares the characteristics of married and unmarried persons at time 1, but in addition we include another model (we call this the dynamic model) that examines the determinants of marriage by tracking the unmarried persons over a four year time span. This gives us a truer picture of what kinds

of people were more likely to get married between time 1 and time 2. Our analysis is therefore longitudinal and prospective in nature and this helps avoid some of the problems faced by Mensch et al. in their analysis, especially the difficulty in understanding the causal processes underlying the association between education and delayed marriage.

Similarly, our research differs from Malhotra's analysis in several ways. Like Malhotra's analysis, this analysis also examines the association of the societal level changes on marriage timing. Compared to her research that focused only on the province of Central Java, we are looking at most of Indonesia. Our data is also more recent compared to Malhotra's (which was collected in 1982) and exists for two time points in the 1990s. Our methods of analysis are also different from hers. Since we have longitudinal data over two time points, we are able to look at determinants of marriage within a single cross-section and also look at the determinants of change over time prospectively. In contrast Malhotra's dataset though it was collected at a single point in time had life history data which allowed her to examine the research question retrospectively. One area of continuity between her analysis and ours is that we too want to keep the focus equally on men and women. Like her, we believe that the fertility literature's exclusive focus on women with regard to marriage in developing countries is limiting since an understanding of how the process of family formation is affected requires an analysis of men's marriage patterns as well.

Our research differs from Malhotra's in other critical ways. The purpose of her analysis was to examine if the process of industrial change and its concomitant social changes had resulted in egalitarian family formation processes for women as well as men in rural as well as urban areas. Specifically she asks if industrialization has led to increased spousal choice and less economic dependence on men for the women in Central Java. In contrast, we want to examine if the occurrence of the marriage event itself has been affected by the large scale economic changes. Our purpose in focusing on men and women equally is to get a comparative picture of the two significant players in the marriage process rather than to see if the changes benefit both equally. Our lack of focus on the latter is guided primarily by the fact that some benefits of delayed marriages like more stable marriages benefit both sexes, while others like increased women's autonomy benefit women more (Hull 1987).

Our analysis focuses primarily on whether increased levels of educational attainment and increased levels of labor force participation have resulted in changes in the timing of marriage for young Indonesians. Prior research (Kishor 1993; Murthi, Guio, Dreze 1995) shows that both education and labor force participation are powerful agents of change. They are simultaneously the causes and the consequence of the process of industrialization and modernization. Both have been documented as being correlated with processes as diverse as economic growth, social mobility, women's empowerment, and increased political participation. In research on marriage timing in developing countries like Malhotra's research, they are the key variables for explaining the timing of marriage.

Research on Western countries also uses these variables but locates the results in a life course framework. The causal pathways by which the two variables are likely to be associated with marriage timing are described below. We provide the causal directions using both the modernization and the life course perspective. There are fewer pathways in the modernization framework for the hypotheses on men since the theory has traditionally been associated with women's outcomes and almost never with men's outcomes. We have used human capital theory and gender role theory instead to capture the effects of economic development for men (Malhotra 1997). The life course perspective in contrast provides pathways linking education and work to marriage, for both men and women.

Primary independent variables:

Education: In our analysis we measure education in two ways. First, we include a variable that measures whether the person is currently enrolled in school or not. Second, we include a variable that measures the highest level of education attained by a person. Two hypotheses guide our choice of variables:

Hypothesis 1: Being enrolled in school will decrease the odds of marriage for both men and women.
Hypothesis 2: Higher levels of educational attainment will be associated with lowered odds of marriage for women but higher odds for men.

The first hypothesis is tied to the life course perspective and we use school enrollment as a variable that will capture the effect of the life course (Blossfeld and Huinink 1991;

Liefbroer and Corijn 1999; Xie et al. 2003; Copolla 2004). According to the life course perspective, school enrollment influences marriage timing directly. Since attaining even basic education (at least high school) takes time and takes an individual well past the traditional age of marriage, a delay in marriage could occur simply by being in school longer. A life course perspective suggests that people in school or those who are still students may still be considered "children" or "minors" even if they are in their late teens or early twenties. People at this stage in their life may be regarded as being unprepared for taking on the challenges of raising a family. Studies on Sri Lanka (Malhotra and Tsui 1996) and on Western societies (Blossfeld and Huinink 1991; Thornton et al. 1995; Copolla 2003) shows that this reasoning, that the youth role of a student is incompatible with the adult role of marriage, is widespread and is found in very different types of societies. By this logic, a person could delay their marriage by simply being in school longer.

We use educational levels as our measure of modernization (Malhotra 1997). The link between modernization theory and delayed marriage for women has been articulated in prior research. Some education is considered useful or even necessary for women since education equips them with basic knowledge and skills to negotiate the world. This way education becomes a legitimate alternative to early marriage for women (Malhotra 1994).

When education is prolonged women become more autonomous and empowered. They are more able to take decisions regarding their lives including when (and even to whom) they will get married (Murthi et al. 1995). Discussing the case of Malaysia, Gavin Jones

(1981) writes that women in Malaysia were traditionally not felt to know enough about the matter to make a wise choice. However, this attitude changed with the expansion of women's education, and Malaysian women are now allowed the freedom of choosing their own spouse (Jones 1981).

The marriage market too may force women to seek higher levels of education. As more men receive higher levels of education, they are likely to want educated wives. This in effect forces parents to educate their daughters more. This is also an economically rational decision for upwardly mobile families since better educated women attract men who have more education and consequently better income prospects. Sathar et al. (1988) also point out that the causal direction can work in the other way: in the event a suitable match cannot be found immediately, parents may continue educating their daughters till such a time they are able to find a match.

For men, the link between education and marriage timing is guided by a combination of the human capital theory and gender role theory. Higher levels of education may affect men's marital prospects positively. Higher levels of education will ensure that they get well paying jobs in an economy that is booming. A man who has a good education and is earning well becomes more marketable in the marriage market since men have the social role of the breadwinner. Therefore for men, more education attainment may be associated with higher marriage chances.

Aside from the more direct relationships between levels of educational attainment and marriage timing, there are also more subtle associations between the two variables. While we have no direct measure for values and norms in a society, it is possible that the course curriculum in modern industrial societies, which is virtually standard across the world, promotes western norms and values the longer a person is exposed to it (Caldwell 1980, Malhotra 1997). The adoption of western norms and values is one way by which education could lead to a delay in marriage. Since late marriage is a western norm, a delay in marriage in Asian countries could come about by making early marriage "unfashionable".

Societal level changes in marriage timing may be brought about by the increase in educated men and women in each province. In this case, it would not matter if an individual man or woman does not have a lot of education. If there are a large number of educated persons in the province, all of whom are postponing their marriage, then it may be everyone in that province will delay their marriage as well. Dharmalingam and Morgan (1996) found a similar process to be true with regard to women's empowerment in South India. In villages where many women worked outside the home and through it gained autonomy and decision making powers, it did not matter whether an individual woman worked outside the home or not. Since her peers were autonomous, she also gained autonomy as a consequence of residing in that village. This leads to our third hypothesis related to education:

Hypothesis 3: As the proportion of educated men and women in the province increases, the odds of marriage for both men and women will decrease.

Malhotra's (1997) findings on Central Java show that the education and marriage timing relationship may not be as straightforward as these hypotheses suggest. As mentioned earlier, her research showed that increasing educational attainment might not have an impact on marriage timing since it sometimes reinforces traditional gender norms. It is therefore entirely possible that our analysis will produce results contrary to what we have hypothesized.

Labor force participation: The relationship between men's labor force participation and their marriage timing is easier to predict, and is captured by the following hypothesis:

Hypothesis 4: As men's labor force participation increases, their odds of marriage will increase.

The reasoning behind our hypothesis is straightforward. It is guided by the logic of the marriage market and gender role theory. Men who are working are attractive marriage partners since they have financial resources to raise and provide for a family. As Liefbroer and Croijn (1999), Copolla (2003), and Xie et al. (2004) point out, economic circumstances are vital to family formation. Since men have traditionally had the role of the breadwinner in society, better paying jobs that result from an economic boom can only serve to make them more attractive marriage partners.

Apart from the fact that raising a family is expensive, Indonesia also has a system where dowry[3] is generally given by the groom to the bride (RAND IFLS newsletter). This would also make men who work and earn attractive marriage partners. The ability to pay dowry has been pointed out as being an important cause for declines in marriage by Mensch et al. (2005).

From the perspective of the life course, men's labor force participation may indicate economic independence from their parents and a marker of their entering adulthood. This too should increase their odds of marriage.

A logical extension of our hypothesis for men would be that for men with higher levels of income, the odds of marriage are higher. This can be expected given that men who make more money would be even more attractive marriage partners compared to low earning men. We therefore frame our fifth hypothesis as follows:

Hypothesis 5: High earning men will have higher odds of getting married compared to men with lower incomes.

The relationship between work force participation and marriage timing is harder to predict for women. This is because there are several plausible associations between these two variables in the case of women. Using the modernization framework, one could

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[3] The practice of the groom giving gifts of money and kind to the bride's family is called dowry in Indonesia, even though it is called bride-price in some other parts of the world.

argue that women in the labor force derive their economic security from work and no longer need to marry in order to be economically stable.

Similarly, there may be an incompatibility between work and family roles. Lehrer and Nerlove (1986) have highlighted the incompatibility between women's labor force participation and fertility along the dimensions of time use. Their argument can be extended to marriage timing. While marriage signifies the entry into family roles, labor force participation and also education are economic activities that are generally conducted outside the home, thereby reducing the time available for carrying out family roles. In this case marriage would decline. This is similar to Becker's thesis on why marriage rates have declined in the West and is consistent with Cherlin's (1992) findings on women and the family in the United States. Cherlin argues that a major reason why women are postponing marriage in the U.S is because they are no longer reliant on their husbands for financial security and stability. He argues that earlier there was an incentive for women to marry early since they derived their financial stability from their husbands. However, with the increased participation of women in the labor force, the need for women to marry to achieve financial stability has declined. While this hypothesis may predict non-marriage rather than its postponement for the United States, in the Asian context it is more likely to be associated with late marriage, since non-marriage is not an option for most Asian women.

It is equally possible however that women's labor force participation will increase their odds of marriage. This scenario was outlined by Oppenheimer (1994) who found that

women's economic roles actually facilitated their family roles since it led to an expansion of their marriage markets. The life course perspective also hypothesizes a positive association between work force participation and women's odds of getting married. Like in the case of men, the odds may increase because entry into the workforce signifies a woman's entry into an adult economic role (Blossfeld and Huinink 1991; Copolla 2003). This argument may however be a little less likely in the Indonesian context since women don't traditionally have the role of the economic provider in a family. Instead it may be possible that being out of the workforce helps women's marriage odds as in the case of the Netherlands and Flanders (Liefbroer and Corijn 1999).

A third possibility is that women's labor force participation has no effect on marriage timing. This reasoning is the reverse of both the modernization and the life course theories. This can happen in cases where women's labor force participation prior to marriage is a stop-gap arrangement till such a time that her parents are able to find a suitable match for her (Sathar et al 1988). In such cases work force participation is not an avenue for empowerment or autonomy and will probably be discontinued after marriage. Malhotra and Tsui (1996) found that employment for Sri Lankan women who did not value jobs or who did not look upon it as a source of income did not affect their marriage timing. Malhotra's findings for Central Java show that marriage timing was not affected at all by women's pre-marital work force participation. If this is true for Indonesia as a whole in the 1990s, then labor force participation may not affect marriage timing.

We favor the reasoning that labor force participation will not be significantly associated with women's odds of marriage as this lack of association seems to be true for Asian countries. The negative and positive relationships between work force participation and marriage timing seem to be true for Western countries.

Hypothesis 6: Increases in women's labor force participation will not be associated with their odds of marriage.

Control variables:

In the following section we have outlined the relationship between marriage timing and other variables which are not our primary variables of interest, but which may confound the association between education and labor force participation with marriage timing. These variables may be associated directly with the marriage timing of an individual or they may affect their education and labor force participation and through them indirectly affect marriage timing. It is necessary to control for these variables and in the following section we have outlined some of the reasons.

Socioeconomic status: We included a variable on socioeconomic status in order to separate out the effect of economic attractiveness of a person due to their earnings compared to their economic attractiveness because of their family's socioeconomic status. A person's family background could have a significant effect on their marriage chances by increasing their odds of marriage.

For both men and women we would expect that if they came from wealthy families they would have higher odds of marriage. This can be, in part, a consequence of the dowry system. By and large men give dowries to their wives, except in the case of the Minang of West Sumatra where the bride gives dowry to the husband's family (RAND IFLS newsletter). Wealthier families are able to give more dowries compared to poorer families and this would increase the odds of marriage for its members. Further, wealthier families may also have property or businesses that are inherited by each successive generation. The need to provide heirs could lead to higher odds of marriage for men and women from wealthy families.

Urban Residence: Urbanization is a correlate of the process of modernization. We will be using the urban dummy variable as a control variable. Urban areas are the arena for most industrial sector work and for higher levels of education. It is therefore necessary to control for place of residence in order to estimate the effect of labor force participation and education net of the place of residence.

Additionally, being in a rural area may increase the odds of marriage for reasons of inheritance of land. Parents are more likely to exercise control over their children's marriage when they control inter-generational transfers of land and other resources. These are less important in urban areas where employment in the modern sector of the economy is important. This may lead to a delay in marriage for urban men and women compared to people in rural areas.

Malhotra (1991) findings for Central Java confirm that rural women were less likely to be able to choose their spouse since in rural areas wealth and farm background mattered, and this strengthened parental concerns of preservation and transmission of social status. Consequently, families preferred to retain their hold over deciding whom their daughter married. In contrast, in urban areas wealthy "white collar" (quotes in original) families allowed their daughters greater independence and decision-making capabilities in whom they married. This enabled urban middle class women to delay marriage.

Family Structure: In Indonesia as in most Asian countries, family structure variables like birth order and co-residence with parents may determine the odds of marriage. Birth order matters in that older siblings are likely to be married first and younger siblings may have to wait until older siblings have married. Therefore a person's odds of marriage are likely to be associated with whether they have older and younger siblings. Higher order birth children, that is, those children who have older siblings, will have lowered odds of marriage since they are lower in the queue for getting married.

The relationship between co-residence with parents and marriage timing is difficult to predict for Indonesia because of its unusual post-marital residence patterns. Unlike most of Asia (and more like the West), Indonesia has neo-local residence, meaning that the bride and the groom set up their own establishment after they marry. In the event that they are unable to do so, the couple lives with either the wife's family or the husband's family depending on who can support them till such a time that they can set up their own home (Wolf 1992).

This would mean that households would decide on the marriage timing of their unmarried members depending on whether they find them a drain on the household's resources or an asset. A girl's family may want her to marry since there is the additional incentive of getting dowry from the groom's family.

Co-residence with parents may reduce the odds of marriage for men since the money he earns from his job may be useful to the household and because paying dowry would increase a household's financial burden.

Age, religion and province: Our model also includes additional controls for age of the respondent, province of residence, and for the respondent's religion. Controlling for age is necessary since odds of marriage peak at certain ages and decline gradually thereafter. Controlling for religion is also useful since different religious systems may have different prescriptions for marriage and family formation, which in turn may lead to differences in marriage timing. Province of residence is similarly useful since different provinces may have different levels of socioeconomic development and may be culturally different, which may lead to differences in marriage timing. We don't have any specific measures for culture due to data limitations and region of residence is the closest approximation we have in our models to control for any cultural differences between groups of people.

Chapter V

<u>**Data and methods:**</u>

Our analysis mainly utilizes the Indonesia Family Life Survey (IFLS) data collected by

RAND in collaboration with various organizations in Indonesia. IFLS is a longitudinal

dataset that has been done in 3 waves. The first wave of the IFLS (IFLS1) was fielded in

1993, the second (IFLS2) in 1997, and the third (IFLS3) in 2000. When the Indonesian

economy collapsed during the Asian Economic Crisis in 1997, RAND carried out another

shorter survey, called IFLS2+, on a 25% sub-sample of IFLS2 in order to measure the

impact of the crisis on people's lives. This survey was done in 1998. The available

datasets therefore span the period before the economic and the political crisis, and the

period during the crisis. Only the first two waves are analyzed in this dissertation

(Frankenberg and Karoly 1995; Frankenberg and Thomas 2000).

The IFLS sample covers thirteen out of twenty seven Indonesian provinces and is

representative of 83% of the total Indonesian population. In the first wave the survey

sampled 30,000 people from 7,224 households. The response rate was approximately

93%. The provinces included in this study are: North Sumatra, West Sumatra, South

Sumatra, Lampung, DKI Jakarta, West Java, Central Java, Yogjakarta, East Java, Bali,

West Nusa Tenggara, South Kalimantan, and South Sulawesi. Since the survey is

longitudinal the second and third waves tracked the respondents from the first wave to

collect information on how their lives had changed in the intervening years.

In IFLS2, 94% of the IFLS1 households and 93% of the individual respondents (known as target respondents) were re-interviewed. In the second wave of the IFLS, 7600 households were covered. This increase occurred because respondents who had split from their original household were followed.

The IFLS1 survey has multiple components and the data in each component was collected with a different purpose. There is a household questionnaire that has detailed information on each member of a household including their current marital status, current income, education, and current work force participation. There is a child anthropometry module that has information on the health of two children in each household. A life history module contains detailed retrospective data on the education, workforce participation, migration, and fertility information for a sub-sample of working age people. The survey also has an aging questionnaire and a community questionnaire.

For each component, information was obtained from different groups of people. The information on the household and its members was collected from the heads of the households and their spouses. Two children between the ages of 0-14 were sampled to get the child anthropometry information. One member over the age of 50 and their spouse were sampled to get information for the aging module. For a sub-sample of 25% of the households, one individual between the ages of 15-49[4] was sampled to get information for the life history module. The community questionnaire was completed by the community leader and the staff of schools and health facilities.

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[4] The IFLS documentation does not state whether they focuses specifically on any sex, so it can be assumed that the sampling was done randomly for sex.

This dataset is well suited to this analysis since it has marital status, education, and work force participation information for 30,000 people. It also has basic background information on each respondent such as their age, province of residence, region of residence, and religion.

This analysis depends mostly on the sample from the first wave of the IFLS data. However, the marital status information contained in the second wave of the IFLS data is also relevant to this analysis since it provides us with information on how the marital status of the IFLS1 respondents changed over time. The unit of analysis for both samples is the individual. We restricted this sample to respondents who were between the ages of 12 and 30 at the time of the first survey.

We are using a logit model for most of our analysis and we will use this model on two samples. The first sample comprises everyone 12 to 30 in IFLS1. Using a logit model we will compare the people who are married in IFLS1 with those who have never been married to understand the differences in the characteristics of these two groups. Our second sample is restricted to those who were never married in IFLS1, and we track this group of respondents to IFLS2 to see if they married in the intervening four years. Using a logit model, we then compare the characteristics of those who married to those who did not. In the analysis on the first sample, we will mainly examine the association between education and marriage. It is not possible to include work status in this model since we don't have data on pre-marital work. In the analysis on the second sample we will look at

both work and education. Further, we do both sets of analyses separately on men and women.

In analyzing the association between marriage and education, we are also including a multi-level analysis using hierarchical linear modeling. For this section we will use the 1991 Indonesian Census data in addition to the IFLS data. The unit of analysis for the census data is the province and data exists for all twenty seven Indonesian provinces. We are, however, using the information for those 13 provinces that are a part of the IFLS sample. The census data includes counts of the number of people in each province who have an education. We will use this variable in our hierarchical analysis.

Dependent variable:

Marital status: The dependent variable was coded as a dummy variable where married respondents were coded as 1 and the never married 0. However the variable was slightly different depending on the sample on which the analysis was conducted. In the case of the first sample – our cross-sectional sample of only IFLS1 respondents, the marital status dummy was assigned the value of 1 if the respondent was ever married and 0 if they weren't. The persons coded as 1 include those who are ever-married (this includes people who are currently married and those who are widowed, separated, or divorced). In the second sample, our dynamic sample, we need a measure that examines whether people who were never married during IFLS1 were ever married by IFLS2. Our dummy variable in this case is coded as zero in the event that they remained unmarried, while a value of one was assigned to those cases where the respondents married between the two

waves. This sample was further restricted by age to those between the ages of 12 and 30 in IFLS1.

Independent variables:

Education: Our models include two sets of variables on education. In keeping with the theory that people who are still in school are less likely to marry, we have constructed a dummy variable where being in school is coded as 1 and everyone else is coded as zero. This variable is obtained from a categorical variable in the IFLS1 dataset that asks the respondent about their primary activity last week. Apart from "attending school", the other choices were "working/earning income", "job searching", "housekeeping", "retired", and "other". The zero on this variable includes everyone else.

We also created multiple dummy variables for the highest level of education attained by the respondent. According to the codebook, a respondent can attain one of the following levels of education: no schooling, kindergarten, grade school (primary school), junior high general, junior high vocational, senior high general, senior high vocational, diploma, university, and other. Each level was coded a different dummy variable. In the model, the omitted category included everyone who was below primary, which includes the uneducated.

Labor force participation: The variable for labor force participation is a dummy variable where the value of one is assigned to those who are working, while the value of zero is assigned to those who are not. The variable is coded out of a base variable that asks the

respondents whether they worked for a wage in the previous year or not. If they answered

yes, then the respondents were assigned a value of one. They were assigned a zero if they

said they did not. We did not use the same variable as for schooling since we also control

for earnings in a subsequent model. Information on earnings is available only for those

people who worked in the previous year. Therefore, we preferred to use the worked last

year variable throughout our analysis.

Control variables:

Socioeconomic status: The household module in IFLS1 contains a set of questions on the

household's assets ownership. The question asks if a household has a phone, land, cattle,

a vehicle, electrical appliances, savings and stocks, jewels, and gifts. It also asks about

ownership of buildings and houses. Another question asks about the number of rooms in

the household, whether the household has a ventilator, electricity, water supply, and a

flush toilet, and about the floor, walls, and roof quality in the house.

Of these items, ownership of vehicles, phones, electrical appliances, savings, gifts,

jewels, buildings, plus households with ventilators, water supply, electricity, flush toilets,

and good quality floors create a scale with a high Cronbach's alpha reliability coefficient

(0.699). We created an SES index by adding these items together (Bartholomew et al.

2002).

Earnings of respondent: An earnings variable was created out of a question that asks the

monthly earnings of the respondent in the previous year. This variable was logged. This

variable was normally distributed with a minimum value of 3.68 and a maximum value of 20.55.

Rural/ urban residence: The dataset contains basic information on rural urban residence of a respondent. We created a dummy variable where urban residence was coded as one and rural residence as zero.

Sibling information: The dataset has information on the siblings for each respondent and their sex. We used this information to create separate dummy variables for whether the respondent has an older brother, an older sister, a younger brother, and a younger sister.

Co-residence with parents: The dataset has information on the household head. If the head of the household was a parent of the respondent, then we assumed that the child was co-residing with their parents. We created a dummy variable where co-residence with parents was coded as one and the rest as zero.

Age/religion/province: the dataset has information on the age of the respondent, the religion of the respondent, and on their province of residence. We created dummy variable for each religion (Islam, Hindus, Buddhists, and Christians) and the 13 provinces. Dummies for each two year age groups were created for the age of the respondent. In the final model, Islam was the omitted category for religion, while Jakarta was the omitted category for province. Islam is the majority religion, while Jakarta is the richest province in Indonesia. The age group 20-21 was the omitted category for age groups.

Province variables:

For our contextual hierarchical models, we divided the 13 provinces in Indonesia into their rural and urban components. Our aim in doing this was to minimize error due to differences in rural and urban areas, which would have biased our estimates had we used each province as a single macro level unit in the model. Our macro level units consequently increased to 25. Since the province of Jakarta does not have a rural area, it counted as one province.

At the province level we mainly used a variable that measured the percent of men and women in the province who had post primary education. We aggregated all men and women who had above primary education and included it in our hierarchical model. This variable is continuous. There are on average 42.3% women and 50.1% men with above primary education in the 25 macro units.

We created a rural dummy variable to enable us to control for those units which were rural. If a macro unit was rural, the dummy variable took the value of 1 and zero if it was urban.

For our exploratory descriptive analyses we created several other variables, especially a variable to measure the singulate mean age at marriage (SMAM) in the province. We used the technique outlined by Hajnal (1953) and Shryock and Seigel (1976) to compute this statistic. An assets variable was also created. For rural areas we created this by

summing the proportion of households that used piped water for washing and drinking; that had a television, a motorcycle, and a septic toilet. For urban areas this variable was created by summing the proportion of households that a car, a radio, a sideboard, a cooking stove, a television, a multiple dwelling unit, that used gas for cooking, that had kerosene, electricity, a septic toilet, a private bath, and that used piped water for washing. The SMAM variable and the assets variable were not, however, used in the multivariate multi-level model.

We also created a variable that measured the proportion of men and women in each province who were in the labor force. We used data on the total number of men and women above the age of 10 who were economically active in each province to create this variable. We did not however use this variable since there is no correlation between marriage and labor force participation at the province level (see Figures 11 and 12).

Chapter VI

The base age pattern:

The cross-sectional model:

In the cross sectional model we examine which age group is most likely to be married in 1993. The results for women show that the numbers of married women increase steadily with age—at ages 20-21, 32.43% of the IFLS1 women are married; at ages 28-30, 87.08% are married. Similar patterns can be observed for men as well. However, in each age group men are less likely to be married than women. At ages 20-21, only 13.68% are married and among the 28-30 year olds, 83.81%.

----Table 1 and 4 about here----
----Figure 9 about here----

The dynamic model:

Several models were analyzed that examine the odds of getting married by 1997 for men and women who were single in 1993. The base model including only the age dummies examines which age group was most likely to get married by 1997. The results indicate that the odds of marriage for women increase throughout the early years and peak at around age 24-25. It begins to decline gradually thereafter and decreases sharply at ages 28 to 30. For men too the odds of marriage increase throughout the early years and peak at ages 26-27. It declines gradually for the 28-30 year olds but not by much. The results indicate that there is a difference by gender in the odds of marriage. Societal norms seem

to prefer a younger age at marriage for women and a slightly older age at marriage for men. This may have to do with societal ideals of having an older husband and a younger wife. In the analyses that follow we examine the extent to which people's educational attainments, the province in which they live, and their work force participation affects their chances of marriage controlling for these basic age patterns.

<center>----Table 5 and 6 about here----</center>
<center>----Figure 10 about here----</center>

Chapter VII

Results on education:

Individual level cross-sectional models:

The cross-sectional model examines the probability that men and women are already married in the first interview in 1993. The sample size for this analysis is 11,229 persons, who are all the persons in the IFLS sample between the ages of 12 and 30. The variables in this model take into account those current characteristics of a person that are likely to have been the same at the time of their marriage. For this reason, the variables used in this model are restricted to a person's educational attainment, their religion, their current age (that proxies their birth cohort), and their province of residence. Variables such as work-force participation and their current school attendance are not utilized in this model.

Educational attainment of women: More educational attainment is significantly associated with lowered odds of being married for women. Women with junior high general lower their odds of being married by –0.355 and women with senior high general reduce their odds of being married by a factor of –1.803, compared to women of the same age with primary education or less. Women who have been to college reduced their odds of marriage the most. Having a university degree is associated with a –2.813 reduction in the odds of marriage for women compared to those with primary or less education.

----Table 7 about here----

Educational attainment of men: For men too, higher levels of education are associated with lower odds of marriage. The only exceptions are men with junior high vocational degrees. Their odds of marriage are not significantly different from men with primary education or less. Men with junior high general lower their odds of marriage by a factor of –0.291, and men with senior high general reduce their odds of being married by –0.845 compared to men of the same age with primary education or below. Men with diplomas reduce their odds of marriage more than men with any other level of education. Their marriage odds reduce by a factor of -2.043.

Age-education interaction model: Since there is no variable that measures the time elapsed between leaving school and getting married, we examine a model that interacts the respondent's current age by their level of education. This will give us an idea of the relative odds of men and women's marriage at different ages by their level of education. The results for both men and women show that the education-age interaction terms are not significant. Age and its quadratic term are however significant. This indicates that each year's increase in the age of a person increases their odds of marriage. However, the rate of increase slows with increasing age. Their age pattern is independent of educational attainment.

----Table 8 about here----

When we plot these values into a graph, we can see that women who have higher education are not only more likely to postpone their marriage, but they are also less likely

to have married by age 30. The slope of the curves for all levels of education is the same, but the curve for higher education (diploma and university) is to the right and reaches an asymptotic maximum somewhat lower.

----Figure 11 about here----

For men the results are more complex. While more education delays marriage for men, higher levels of education results in somewhat less marriage for men at age 30. The latter statement needs to be qualified. For a given time spent in school, a slightly higher level of education increases men's odds of marriage. For instance, although men who completed junior high general and those who completed junior high vocational spent approximately the same amount of time in school, the former are more likely to get married compared with the latter. Similarly, men with university education improve their odds of marriage compared to men who have diplomas. The curve for the junior high general is above that for primary and junior high vocational, while the curve for university education is above that for diploma. Further, the curve for university educated men hasn't reached its asymptotic maximum by age 30.

----Figure 12 about here----

Individual level dynamic models:

While the cross-sectional analysis of the first wave of the IFLS data gives us a picture of what types of men and women are married, it doesn't tell us much about the factors that

lead to these men and women getting married in the first place. In order to understand this, we need to analyze a model that follows single persons at time 1 to see which of them get married by time 2. We call this model the dynamic model. The dynamic model examines the probability of men and women getting married in the period between 1993 and 1997 (the first and the second waves of IFLS). In this model, unlike the previous one, it is possible to include variables like school attendance, work force participation, and co-residence with parents at the time of the first survey, in addition to basic background characteristics of individuals like their educational attainment and religion. Addition of variables that are likely to change over time helps us understand the differences between the people who married in the 4 years between 1993 and 1997 and those who did not. The sample size for this model is 6375 which is much smaller compared to the cross sectional model. The smaller size of the sample is due to the fact that many of the respondents in IFLS1 were married before the survey and therefore cannot be a part of this analysis. The sample for the dynamic model includes only those persons who were never married at the time of the first survey.

School attendance for women: School attendance at the time of the first survey is significantly associated with lowered odds of marriage for both men and women. Even after controlling for age, if a woman is in school, she is less likely to get married in the next four years than a woman who is working or who is "at home". Her odds of getting married are lowered by a factor of –1.253 compared to "at home" women.

----Table 9 about here----

School attendance for men: As in the case of women, men who are in school also have lower probability of getting married; their odds are reduced by a smaller margin: men who are in school have –1.149 lower odds of getting married compared to "at home" men.

Educational attainment for women: Unlike the cross-sectional model, higher levels of educational attainment are not significantly associated with a reduced probability of marriage for women. The only exceptions to this are women who have completed senior high vocational (10.3% of the sample) and university (3.95% of the sample). In both cases, their education level increases their odds of marriage compared to women with primary or less education. The other coefficients are also positive but are not statistically significant. So, in general, educational attainment levels are not especially important for the odds of getting married. It is more important whether you are in school or not, but not what level of school you are in.

Educational attainment for men: For men, completing junior high general is significantly associated with a lower probability of getting married than completing only primary education or less. Men with junior high general reduce their odds of marriage by a factor of –0.339 compared to equivalent men who have primary education or less. This coefficient is smaller than the in school coefficient; so for men too levels of educational attainment matter less than whether you are in school or not.

No other educational category has a significant association with the odds of marriage for either men or women.

Age-education interaction: Although educational attainment has no simple main effect on marriage probabilities perhaps higher education has differential effects depending on age. If higher educational attainment is associated with later marriage it might decrease the probability of marriage among the young and increase the probability of marriage among the old. The age-education level interaction model tells us how likely men and women are to delay marriage depending on how much education they receive[5]. The interaction effects may also tell us something about the importance of time since leaving school.

In the model with the age and education level interaction for the women the interaction terms are not significant but age and its quadratic term are. Since the linear and quadratic age terms are significant, we conclude that each year's increase in a woman's age increases their odds of marriage. However since neither the education terms nor the interaction terms are significant, the results imply that education has no additional effect on the odds of marriage above what a persons' age has. This means that the age effects are basically the same for each level of education, and the lack of education effects are the same for the young and the old. That is, being 30 doesn't change the odds of marriage for a primary school woman compared to a university graduate woman, even despite the fact the former has been out of school longer. This suggests that time since leaving school is not an important aspect of marriage chances.

----Table 10 about here----

[5] In a subsequent model we analyzed the interaction between school enrollment and education level. This tells us whether it is the education level that is associated with the odds of marriage, or if it is the fact of being in school that keeps a person out of the marriage market.

For the men, some interaction terms are significant specifically those for senior high general and senior high vocational. For these two educational categories, there is an additive effect of education over and above that for age. Age and its quadratic term are significant for men too and the interpretation is the same as that for women: each years increase in a man's age, increases his odds of marriage.

Because the interaction effects necessarily involve a quadratic in age, we plotted the coefficients from our interaction model in a graph to get a clearer picture of their association with the odds of marriage. On plotting the values in a graph, we can see that for both men and women, different education levels reach a peak marriage rate at slightly different times. After the peak has been reached, the odds of marriage begin to decline for the men and women. People with primary education reach a peak marriage rate at somewhat earlier ages, while people with university degrees reach a peak marriage rate at later ages. The marriage rates begin to peak for women between the ages of 18 and 25 and taper off subsequently, though the rates for university educated women has not reached its asymptotic maximum. The different peaks represent the (additive) effects of educational levels – effects that are not statistically significant. For women, the curves have a similar shape which reflects the lack of any significant interaction between age and education in marriage chances.

----Figure 13 about here----

For men, the age-education interaction curves are more dramatically different for the different levels of education indicating significant interaction terms. Some of these curves, like the one for diploma holders, need to be interpreted with caution since they indicate high rates of marriage at younger ages. This may be due to low cell frequencies for young people with a diploma. But the diploma curve for higher ages resembles the shape of secondary school curves. For these groups, there is little evidence of declining marriageability at older ages. Educated Indonesian men seem to pay no penalty for delaying marriage: their marriage rates only increase with age. However, university graduates fit the more usual bell shape curve, but there are only 4 % (168 men) of them in the sample so our estimates may be less reliable for them

----Figure 14 about here----

Education and current school enrollment: In order to understand the relative effects of education levels and school enrollment, we examine a model that interacts currently enrolled in school and education level. Although educational level showed no strong effects in Table 8, that sample included men and women still in school for whom educational attainment is not yet complete. Perhaps more education affects the marriage chances of only those who have completed their schooling. The results are presented in Table 10 and Figures 7 and 8. No interaction terms are significant for men, while the interaction terms for junior high general and university are significant for women. On plotting the values into a graph, we can see that for both men and women, it is the fact of being currently enrolled in school that keeps people away from marriage more than the

level of education. The bars for the currently enrolled in school are associated with lower

levels of marriage regardless of education level. The interaction effect for female junior

high and university students reflects the fact that being in school has an especially

negative effect on marriage chances for these women. Junior high and graduate women

who have finished school have the best marriage chances of all women while junior high

and graduate women still in school have the worst chances of all women. Overall

however, the differences among educational levels are small and not systematic for either

women who had finished school in wave 1 or those still in school. The differences among

educational levels for men (Figure 8) are similarly small and unpatterned.

----Table 11 about here----

----Figures 15 and 16 about here----

Comparisons of individual level cross-section and dynamic models:

Our results on education so far show that in the 1993 cross-sectional model there is late

and less marriage for both men and women with higher levels of education. The dynamic

model indicates that the late marriage is due to school enrollment. The dynamic model

also shows in addition that higher education for men and women are not associated with

marriage rates in any systematic pattern.

So, on the one hand, there are the differences in the results, but on the other hand, the

results from the cross-section seem to indirectly support the results from the dynamic

model. One reason why higher levels of education may reduce the odds of being married

in 1993 is because the more educated have stayed in school longer. But, once their school attendance is controlled for, the levels of education don't seem to matter for the subsequent probability of getting married. By this interpretation the cross-section results show education effects mainly because the highly educated spend more years in school and out of the marriage market. But, once they have finished school, well educated women have neither better nor worse chances for getting married than less educated women. Their later ages at marriage reflect only their longer time in school.

Further, since the dynamic model also controls for age at the time of survey, we have three sets of variables in the model that are a linear combination of each other: current school enrollment, level of schooling, and age at time of survey. Indirectly, this means that level of schooling measures the time since leaving school. Since in the dynamic model, the education level variables are not significant, it suggests that the time since leaving school does not explain the odds of marriage for either men or women in Indonesia. The lack of significant interaction effects between age and education level also supports this interpretation for women.

Another possible interpretation of the results of the dynamic model is that there may be a selection effect in the 1993 sample of single men and women. Since the more marriageable of the less educated people would have already married prior to the first survey, the sample we have for the dynamic model may include the less marriageable of the less educated and all of the better educated persons. We are therefore left with a sample of persons all of whom have postponed their marriage for one reason or the other, and whose lower "marriagability" may offset or counterbalance the effects of education

on marriage. It is however difficult to control for this phenomenon in our analysis since our data do not provide us with the variables that could help us measure "marriageability". Mensch et al. (2005) also encountered this problem in their analysis.

Contextual models:

In addition to running logit models, we also ran several two level hierarchical models. The logit models that regressed the odds of marriage on province level education showed that higher proportions of educated men and women in the province would reduce the odds of marriage for each respondent in IFLS (models not shown). However, it is necessary to examine this in a hierarchical framework since a logit model cannot control for the problem of lack of independence of units that occurs in such a situation. The hierarchical models incorporate the province level education data from the 1991 Indonesian Census. Hierarchical models help us understand whether marriage chances are largely due to the variations in the characteristics of the individuals (compositional factors), or if they are also a function of the area where they reside (contextual factors), such as the educational or developmental levels of the areas. If province characteristics play a role in the odds of a person's marriage, it is likely that even less educated people in a province with an overall high level of education will marry late, while well educated people in a province with an overall low level of education will marry early. This helps us identify whether marriage chances are because of individual characteristics alone, or if others in the same area are subject to similar odds of getting married.

Since rural areas within a province are likely to be different from the urban areas, we divided each province into rural and urban areas and treated them as different macro level units. Consequently, instead of 13 provinces, we have 25 macro level units in our model[6].

Descriptive statistics from the 1991 Indonesian census data show a fair amount of variation across the provinces in the average age at marriage and in the percent of people who are currently married. The singulate mean age at marriage for women ranges from 19 years (in rural west Java) to 25 years (in urban south Sulawesi) for women and between 23 years (in rural west Java) to 29 years (in urban Yogjakarta) for men. Similarly, the percent of women ages 10-35, who are married varies from 36% (in urban south Sulawesi) to 59% (in rural east and west Java), while the percent of men ages 10-35, who are married varies from 29% (in urban south Sulawesi) to 45% (in rural west Java).

----Table 12 about here----

----Figures 17 and 18 about here----

Similarly, there is a lot of variation across provinces in education levels. While rural East Java has the lowest proportion of women receiving above primary education (27%), urban west Sumatra has the highest percentage of women receiving above primary education (approximately 62%). Rural east Java also has the lowest percentage of men receiving above primary education (33%), while urban west Sumatra has the highest percentage of men receiving above primary school education (66%). Since education

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[6] The province of Jakarta does not have a rural area and counts as only one macro level unit

levels are consistently higher in urban areas this close association will make it difficult to jointly estimate the effects of urban and education.

Marriage, whether measured by the average age at marriage or by the percent of persons who are currently married, is strongly correlated with provincial education but is weakly correlated with labor force participation. As more women are educated above the primary level, the average age at marriage in the province also increases. There is a positive correlation of 0.83 between the average age at marriage for women and their being educated above primary school level. This is true for the men as well. There is a positive correlation of 0.88 between the average age at marriage for men and the percent of men who have received an education above the primary level.

In contrast, women's labor force participation has a weak but negative correlation with the singulate mean age at marriage ($r = -0.27$). This pattern is negative and somewhat stronger for men ($r = -0.50$).

Cross-sectional hierarchical models:

We examine four different sets of two level hierarchical models: a cross-sectional and a dynamic model each for women and men separately. The cross-sectional model utilizes the 1993 IFLS data at the individual level and the 1991 Indonesian Census Province data at the macro level. The dependent variable in the cross-sectional model is whether the respondent was married in 1993 or not. The dynamic model utilizes the 1993 and 1997 IFLS data at the individual level and the 1991 census data at the province level.

Consequently, the dependent variable in the dynamic models is whether the respondent got married between 1993 and 1997.

Two different models were analyzed using the cross-sectional data. In a reduced model, we include at the individual level only the basic controls like age categories and the religion of the respondents. At level 2, we include education and a rural-urban dummy. The education variable measures the percentage of men and women who have received above primary education. The rural-urban dummy measures the influence of being in a rural versus urban area on the odds that a person will be married in 1993.

In a second step we also ran a model that added education attainment at level 1 in addition to the other controls to see how much of the regional educational difference can be explained by individual level education.

Model without individual education controls: Like the provincial census data, the cross-sectional IFLS results show that women's odds of being married in 1993 is inversely correlated with the proportion of educated women in the province. As the proportion of women with above primary school education increases, women in the province reduce their odds of being married by a factor of -0.048. A similar pattern can be seen for the men as well. For each percentage point increase in the proportion of educated men, men's odds of being married declined by a factor of –0.043.

----Tables 14 and 15 model 1 about here ----

Differences in marriage odds between rural and urban areas are entirely explained by these educational differences. Marriage odds are not affected by urbanization once education is held constant.

Model with individual education controls: Some of this provincial relationship is due to the individual effects of more education on reduced marriage odds. In the second cross-sectional model (the full model), we add the respondent's own educational attainment at level one, in addition to the basic controls included in the first model. In this model too we find that the province level effects of education exist even after controlling for an individual's personal educational attainment. Thus, men and women of the same educational attainment, who live in a province with a high proportion of educated people, reduce their odds of marriage by a factor of -0.046. For men, this represents a slight increase (7% increase) in the magnitude of the coefficient; while for women it represents a slight decrease (4% decrease). But this difference is negligible.

----Tables 14 and 15 model 2 about here ----

In addition, a person's individual educational attainment remains important. For women, all educational categories reduce their odds of marriage relative to women with primary education or less. For men, all education categories except junior high vocational reduce their odds of marriage relative to men who have primary education or less. The magnitude of the coefficients is however reduced in the hierarchical model compared to the simple logit models (Table 14 model 2).

The analysis for the 1993 cross-sectional data therefore shows that there is both a contextual and a compositional effect of education on the odds of marriage for Indonesian men and women in 1993. The odds of being married are affected not only by a person's own education, but also by the education of others around them.

Dynamic hierarchical models:

The dynamic models examine the relative contribution of individual characteristics and province characteristics on the odds of a single person getting married between 1993 and 1997.

Collinearity of provincial education and urbanism: In the dynamic hierarchical model we were not able to jointly estimate the effects of provincial education and urbanism. In a reduced model for men (not reported here), where rural residence and province and province education were included, the results showed that neither variable has a significant effect on the odds of men's marriage between 1993 and 1997. Even in the full model where individual controls for a respondent's education, their work status, and their current school attendance were introduced, provincial factors were not associated with the odds of men's marriage.

However, in a model where province education alone was included (without individual controls), the magnitude of the coefficient for provincial education was not much different from the model where rural residence was included, although the coefficient in

the latter model was not significant while the coefficient in the former was. An examination of the associated standard errors shows that the error associated with province education in the model where both variables are included, is approximately 2.5 times the size of the error in the model where only education is included. This indicates that the dummy for rural residence and provincial education may be collinear. An examination of figure 10 shows us why this is a problem. Since the regions with low education and low age at marriage are rural areas, and regions with high education and high age at marriage are urban areas, there isn't enough variation in the rural dummy variable to indicate whether the provincial effects on age at marriage are due to the overall level of education or because of the region being rural. Therefore the only models reported here are the ones where the rural dummy variable and the province education were included separately in the model.

Model with no individual level controls: Our initial HLM models suggest that without controls for men's own education, higher levels of provincial education reduce the odds of men's marriage by a factor of –0.017.   Living in a highly educated area reduces the chances that men will get married in the next four years. Similarly, living in an urban area reduces the chances of marriage.

Model with individual level controls: Once a man's own characteristics are controlled for, the effect of province level education reduces and is no longer statistically significant. The results at level 1 in the full model mirror the results for men in the logit models. This indicates that the odds of marriage for single men between 1993 and 1997

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are not dependent either on individual educational attainment or on the proportion of men in the province who have completed post primary education, but on whether the men are enrolled in school or not. The effect of higher provincial levels of education appears to be mediated through this school retention effect. In provinces with high levels of education, more men remain in school and this lowers the chances of marriage over the next four years.

----Table 16 about here----

The dynamic models for women show that in the models where only province education is included at level 2 (regardless of whether this is the reduced or the full model), the coefficients for education are significant. We could therefore interpret these results as meaning that a percentage point increase in the proportion of women with post primary education at the province level reduces the odds of marriage for single women in the province by a factor of -0.025. This is smaller than in the model without individual controls (-0.033) so some of the association with provincial education is because in better educated provinces more women remain in school and this lowers their chances of marriage over the next few years. But as with cross-sectional results, a significant contextual education effect remains. When a girl stays in school longer that not only lowers her own chances of early marriage, it has a spillover effect on other women in the area who are also less likely to marry early probably because of the changes in the normative climate about expectations when women get married.

The results at level one in the model where a respondent's own characteristics are controlled for mirror the results in the logit model. Therefore, as in the case of men, a woman's own education matters less for her chances of getting married, than being in school does. However being in a province with a high proportion of educated women continues to have a depressing effect on women's odds of marriage.

Conclusions from the logit and hierarchical models:

The picture that emerges by examining the micro level logit models and the hierarchical models that situate the individual level results in the context of what is happening in the province, is that compared to the level of education of an individual, it is the fact of being enrolled in school that makes the most difference to a person's odds of becoming married. Levels of education are relatively unimportant compared to current enrollment status. More educated men and women do marry later but only because they have spent more time in school – time that lowers their chances of marrying over the next few years.

For women, the proportion of women in the province with post primary education matters as well, while for men it is only school enrollment that matters. Therefore delays in marriage for both men and women are partly a result of being enrolled in school. For women alone, having more women in the province with post primary education also delays marriage.

Results on workforce participation:

Since we are examining the association of economic development on traditional
institutions like marriage, the next logical step at the micro level is to examine the
relationship between the odds of marriage and three types of individual labor force
activity and wealth that are associated with periods of vigorous economic growth: 1.
workforce participation, 2. earnings and wage rates, 3. household wealth.

In this chapter we will first examine the basic association between marriage odds and
work force participation. Since research on the U.S., Italy, and Spain show that different
levels of income are associated with different marriage odds, we refine the relationship
further to see if differences in income contribute to differentials in marriage odds in
Indonesia. Finally, we examine if differences in household socioeconomic status leads to
differentials in marriage odds.

Research on the United States by Cherlin (1980, cited in Oppenheimer 1994),
Goldschieder and Waite (1986, cited in Oppenheimer 1994), Lichter et al. (1992, cited in
Oppenheimer 1994), Oppenheimer (1994), and Xie et al (2003) shows that people's
economic independence increases their odds of marriage. This finding is corroborated by
Copolla's research on Spain and Italy. Copolla argues that since union formation is a
costly process, labor force activity increases the odds of entry into marriage.

About 62% of the total sample of 32900 persons (includes all ages) in IFLS 1 stated that they had worked in the previous year, while about 40% stated that they had worked in the previous week. In the reduced sample of 7425 single men and women ages 12 to 30, that was used in the dynamic model, the percentage of persons who worked in the previous year and the percentage of those who worked in the previous week is almost identical at approximately 30%. Further, in the reduced sample 26% of the women indicated that they had worked last year and an equal number said they had worked last week. In contrast 33% of the men had worked last year and an equal number had also worked last week.

At the province level, labor force participation rates for both men and women above age 10 vary across Indonesia. Both rural and urban south Sulawesi has the lowest women's labor force participation (approximately 18%), while rural Yogjakarta has the highest percentage of women in the labor force (54%). Urban south Sulawesi also has the lowest percentage of men in the labor force. About 43% of its men are in the labor force. Rural Yogjakarta has the highest proportion of men in the labor force (63%). An examination of the graph on the province level relationship between labor force participation of men and women and marriage shows however, that there is little correlation between the two variables.

----Table 13 about here----

----Figures 19 and 20 about here----

The basic results on work:

Basic bivariate cross-tabulations of the number of people who got married between waves one and two and those were in the labor force shows that 53.5% of those who got married between 1993 and 1997 were also those who had been working. In contrast only 17% of those who had been enrolled in school got married between waves one and two. This indicates that being in school is incompatible with marriage while labor force participation may facilitates it.

This hypothesis is borne out by our multivariate analysis. As in the case of education, the basic results on workforce participation are obtained from a model that includes all the variables in the analysis. Unlike, education which had a negative association with the odds of marriage, the results on workforce participation indicate that for both men and women, all else being equal, working (versus neither working nor being enrolled in school) increases the chances of marriage. Women improve their odds of marriage by a factor of 0.362, while men increase their chances by a factor of 0.571[7]. While this effect is not as strong as the negative association of school enrollment on marriage, it clearly highlights the compatibility between work and marriage and the incompatibility between school enrollment and marriage.

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[7] This model used the "worked last year" variable. In a similar model that used the worked last week variable, the odds for women increased by a factor of 0.216 while that for men increased by a factor of 0.562, which is more than twice the odds for women.

It appears from these results that in a society where marriage is universal, working makes a person a better prospect on the marriage market. This could be for several reasons: 1. Work force participation is an event in the life course that shows readiness to enter married life. 2. Work force participation makes a person economically attractive as a marriage partner. 3. There is a selection effect. That is, people who are more successful in their work are also successful in attracting marriage partners.

If selection or economic attractiveness explains better marriage prospects, then if we looked at the levels of economic success we should find better marriage odds at each higher level. For example, higher wages from work or a family's higher socioeconomic status should increase a person's marriage chances even more. Therefore as a next step we analyzed two models that examined the association of a person's wages from work on their marriage prospects, and another that examined the association of a family's socioeconomic status on the marriage prospects for its unmarried members.

----Table 9 about here----

Results on earnings:

A logged earnings variable was created out of a question that asks respondents about their monthly income for the work they did in the previous year. Logged earnings was included in the basic model in order to determine the association between income and odds of marriage. This model was restricted to only those men and women who worked last year since our hypothesis states that it is the differentials in their pay that will lead to

a difference in their marriage prospects. However, this is not the case. The log of the earnings variable is not significant for either men or women[8] in predicting subsequent marriage prospects.

Therefore what appears to matter for marriage prospects is simply whether you are working or not, not how successful you are at work – at least as indexed by earnings level. So, these results suggest more of a life course model than an economic success model to explain marriage rates. It would appear that joining the labor force is a life course event that serves as a social marker of a person's ability to enter into married life. A life course perspective to marriage timing would also explain why being in school keeps both men and women from marriage. While explaining marriage patterns in Sri Lanka, Malhotra and Tsui (1996) suggest that when people are in school – regardless of their actual ages, they are still viewed as being children rather than as adults. Similarly Copolla (2004) writes that in Italy and Spain, being enrolled in school is viewed as being incompatible with the more adult role of being married. People in school are not viewed as being ready to take on the responsibilities of adult life, like marriage, and education typically reduces marriage odds. In contrast, in Italy, Spain, and the United States, being in the workforce is associated with higher odds of marriage since working and earning signifies readiness to take on familial responsibilities. A similar trend seems to be apparent for Indonesia as well.

----Table 18 about here----

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[8] A separate model (not shown here) was analyzed which omitted the different education variables (to remove any potential collinearity problems) to check if the logged earnings variable is significant. However, here too the earnings variable is non-significant.

The results on household wealth:

Next, we analyzed models that examine the effects of household wealth (a composite measure of a household's asset ownership) on people's chances of marriage. Wealthier households could improve their children's marriage prospects because they make more economically attractive partners. On the other hand household wealth is also associated with several factors that inhibit marriage odds: 1. co-residence with parents, 2. the number of siblings in the household, and 3. education.

In the first model we examine the association of household socioeconomic status on the odds of marriage without the mediating influence of family structure variables, workforce participation, and education (school enrollment and level of education). Family structure may be related to the household wealth index since the number of people in a household can affect the distribution of resources. Similarly, both work force participation and education being human capital measures can also influence the total household resources. Excluding them from the model will provide us with a clearer picture of how household wealth is associated with the odds of marriage.

As can be seen from table 18, household socioeconomic status has a negative and significant relationship with the odds of marriage. It reduces the odds of marriage by a factor of 0.066 for women and 0.077 for men. This implies that a shift in the family's status from the 10th to the 90th percentile will reduce the odds of marriage for women by a factor of about 0.399 and for men by a factor of 0.462.

In the next model we included the family structure variables but continued to exclude workforce participation and education. In this model too household socioeconomic status has a negative and significant relationship with marriage odds. It reduces women's odds of marriage by a factor of about 0.061 and men's odds of marriage by a factor of 0.068. This is only a marginal reduction compared to the previous model and here too a shift in the family's status from the 10th to the 90th percentile reduces the odds of marriage for its unmarried women by a factor of 0.366 and for men by a factor of 0.408.

In the final step we included both education and work force participation (this is the same as the basic model, Table 9, in our analysis). In this model the coefficient associated with family socioeconomic status is not significant. This suggests that much of the effect of family SES operates on marriage chances through their continued school enrollment. Children from better off households are more likely to stay in school and therefore less likely to marry. But once these educational consequences are held constant, then household wealth neither helps nor hinders. Men and women from wealthy households may be more economically attractive but that does not give them any advantage in getting married earlier.

----Table 19 about here----

The consequences of economic factors on marriage are mixed. On one hand economic development leads to more jobs and through it more marriage. On the on the other hand,

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it increases household wealth, which then leads to more time spent in school and consequently less marriage. There is however little evidence that wealth per se has much effect on marriage rates.

Results on control variables:

Cross-sectional model:

Our results on the other control variables are not unusual. Not surprisingly, urban residence has a negative association with the odds of marriage for both men and women. Being in an urban area reduces the odds of marriage for women by a factor of -0.792 in 1993, while for men it reduces the odds of marriage by a factor of -0.518.

----Table 7 about here----

Religion has no particular association with odds of marriage unless the person is Christian. Christian women reduce their odds of marriage by a factor of -0.519 while Christian men reduce their odds of marriage by a factor of -0.861.

Living in Lampung, West Java, Central Java, East Java, and South Kalimantan increases a woman's odds of marriage. For men, living in West Java, East Java, West Nusa Tengarra, South Kalimantan, and Sulawesi increases the odds of marriage, while living in West Sumatra reduces their odds of marriage.

Dynamic model:

The results for the control variables on the dynamic model are different from the results in the cross-sectional model. The urban variable is not significant for men. It appears that the other controls have explained the effects of urban residence for men. However, for women residence in an urban area reduces the odds of marriage between 1993 and 1997 by a factor of -0.465.

----Table 9 about here----

Being Christian continues to have a negative association with the odds of marriage for both men and women. Being Christian reduced the odds of marrying between 1993 and 1997 by a factor of -0.577 for women and a factor of -0.462 for men.

For women, having older brothers and older sisters has a depressing effect on their odds of marriage. Women with older brothers reduce their odds of marriage by a factor of -0.180, while women with older sisters reduce their odds of marriage by a factor of – 0.193. It appears therefore that for women the queuing effect of marriage is quite strong. For men, having older sisters reduces the odds of marriage by a factor of -0.539, while having younger brothers increases their odds of marriage by a factor of 0.069. This indicates that for men too the queuing effect is quite strong.

Additionally, for men, co-residence with parents reduced their odds of marriage between 1993 and 1997 by a factor of -0.263. For women this variable had no significant association with their odds of marriage.

Unlike the cross-sectional model, residence in certain provinces is associated with negative odds of marriage for women. Living in North Sumatra, West Sumatra, Central Java, Yogjakarta, Bali, and Sulawesi reduced the odds of women's marriage between 1993 and 1997. For men in comparison, residence in South Sumatra, Lampung, West Java, and West Nusa Tengarra increased their odds of marriage between 1993 and 1997.

Chapter X

<u>**Conclusion:**</u>

The average age at marriage has been thought not to change very easily since it is grounded in the normative structure of a culture. In Asia however age at marriage is increasing rapidly. In this dissertation we proposed to examine the determinants behind this change. We specifically examined the case of Indonesia using two waves of the Indonesian Family Life Survey data. The aim of our analysis was to examine the influence of two key correlates of industrialization – education and labor force participation to see how they influence marriage timing. Both variables have been associated with increased empowerment and increased economic independence. This is particularly important for women since traditionally marriage has been a means of acquiring economic stability for women. For men too these two variables are important since they are linked to acquiring the economic resources to support a family, which in an industrial society could take time since completing even basic education means that a person will be in their late teens.

From a life course perspective too these two variables are important. Completing schooling, getting a job, then getting married seems to be the preferred sequence in Indonesia.

Our analysis examined the influence of these two structural variables in two ways: one by examining the characteristics of those who were married at IFLS1 compared to those who

were not. In another model we examined the determinants of who gets married between 1993 and 1997 compared to who does not. The first model examines the first wave of IFLS cross-sectionally, while the second analysis examines a sample of people who were never married at time 1 to see if they got married by time 2 or not. We conducted both analyses for men and women since an understanding of marriage patterns requires an understanding of both parties in the marriage contract.

The results from our analyses are interesting and we will summarize them here by linking them up with our hypotheses.

Interpretation of the results on education: Using the life course perspective as a hook, we had included a variable on school enrollment. Our hypothesis stated that:

Hypothesis 1: Being enrolled in school will decrease the odds of marriage for both men and women.

Our results confirm our hypothesis and show that school enrollment does reduce the odds of marriage for both men and women. This result is in line with what has been found previously for Western Europe and the United States (Blossfeld and Huinink 1991; Thornton et al. 1995; Xie et al. 2003; Copolla 2004).

Our second hypothesis stated that:

Hypothesis 2: Higher levels of educational attainment will be associated with lowered odds of marriage for women but higher odds for men.

We had included educational attainment because of its association with modernization theory in the developing country literature. While our results on the cross-sectional model indicated that educational levels reduced the odds of marriage for both men and women, our dynamic model shows that once school enrollment is controlled for, the effect of educational levels on the odds of marriage disappears for both men and women. This is contrary to our hypotheses. We conclude from this result that it is really the amount of time spent in school that keeps people away from marriage rather than the accumulation of education. While this result is contradictory to what Malhotra (1997) found in her analysis of Central Java (her results showed that educational attainment lowered the likelihood of women's marriage), it is again similar to what has been found for Western societies (Blossfeld and Huinink 1991; Xie et al. 2003; Copolla 2004). We can interpret these results the same way as it has been interpreted for the West: while people are in school, they are viewed as minors or youths, who are not capable of taking on the responsibilities of married life. This interpretation is linked to the life course perspective.

We used our third hypothesis to test whether the social context in which people live has an effect on their marriage odds.

Hypothesis 3: As the proportion of educated men and women in the province increases, the odds of marriage for both men and women will decrease.

Our results show that for men it is still only individual characteristics that matter and context has no effect. So, even if a less educated man lives in a province where most men

are educated, it is still only his own characteristics that are going to matter for his marriage chances. For women, however, context has some effect in reducing their marriage odds, above their own personal characteristics. This means that if a less educated woman is living in a province where most women are educated, then her marriage chances will also reduce, as in the case of her better educated peers.

The contextual results reinforce the results we obtained on education in our individual level logit models, but in the case of women, they show that contextual characteristics have some effect on their marriage chances.

Interpretation of the results on work and earnings: We had the following hypotheses on workforce participation:

Hypothesis 4: As men's labor force participation increases, their odds of marriage will increase.

Hypothesis 5: High earning men will have higher odds of getting married compared to men with lower incomes.

Hypothesis 6: Increases in women's labor force participation will not be associated with their odds of marriage.

If we take hypothesis 4 and 6 (for men and women respectively), we can see that our results confirm the hypothesized relationship between men's work and their marriage chances, but is contrary to our hypothesis on women. The latter is surprising since no previous research on developing countries has found a positive association between

women's work and their marriage odds. Malhotra (1997) found that women's work had no association with their risk of marriage. Even in the Western literature, Liefbroer and Corijn (1999) had found that unemployment actually helped women's marriage odds in the Netherlands and Flanders, although Copolla (2004) found that for Italy and Spain women's work did help their marriage chances.

Before we drew any conclusions from these results, we also checked for those who work, if their earnings had an association with their odds of marriage. Here again our results were unusual. Earnings had no association with marriage chances for either men or women. Our hypothesis had predicted a positive association for men, and no relationship for women, given the evidence from previous studies (Liefbroer and Corijn 1999; Xie et al. 2003; Copolla 2004). When our results on workforce participation and earnings are seen in conjunction with each other, we conclude that being in the workforce matters for a person's marriage chances, only because at this stage in their life they have transitioned to being adults who are capable of taking on the responsibilities of married life. The actual economic resources a person has don't really matter. This conclusion is also linked to the life course perspective.

Previous research has found the modernization paradigm inadequate for understanding delayed marriages in developing countries, but alternative frameworks within which results could be located don't exist. Our interpretation of the results on both education and work draws heavily from the Western literature and underscores the utility of the life course perspective in understanding marriage timing. Events such as marriage are a part

of a person's life course that follows a normative sequence. People get married at that stage in their lives when they are considered ready for it. Our research shows that marriage is connected with what people are doing at specific stages of their lives in addition to their actual ages. If they are students, they are less likely to be married compared to when they are working. We argue that the life course perspective provides the best framework for understanding the process of marriage and non-marriage in Indonesia.

Limitations of study:

This analysis is not without its limitations. One drawback in this analysis was the lack of availability of complete retrospective data on work force participation and age at leaving school. This data would have helped us identify the exact timing of marriage relative to entry into the labor force and time since leaving school. It would also help us identify whether the results we are getting on education are being driven in part by a selection effect. As these retrospective data become available it should be possible to study marriage timing with event history methods.

An analysis on marriage timing also requires an understanding of the cultural changes in a society. In most datasets cultural variables are not available since the focus is on structural variables. Data on cultural change are typically obtained from attitudinal data. Shifts in people's attitudes on different issues generally reflect changes in cultural norms and values. On the issue of marriage, shifts in how people view late marriage, spousal self selection, and sexual relations outside of marriage could be indicative of the cultural

context in which changes in marital patterns are taking place. However, IFLS, like many datasets does not as yet collect data on people's attitudes. This prevented us from understanding the cultural component of changes in marriage timing.

Future research:

Changes in marriage timing indicate fundamental changes in the social and cultural structure of a society. It can be associated with a shift from arranged marriages to one where people choose their own spouses; a shift from sexual relations within marriage to sexual relations prior to marriage; a shift in fertility patterns; shifts in marriage duration; and changing gender relations. Of all these changes mainly the shifts in fertility patterns have been analyzed in any detail. Changes in gender relations and spousal choice have been examined by Malhotra (1991 and 1997) and Gavin Jones (1981) has looked at changes in marriage duration. Otherwise, other correlates of changes in marriage timing, such as changes in age at sexual initiation have been ignored for Indonesia and indeed for most Asian countries.

More research could also be done on how changes in the process of spouse selection and marriage duration are affecting children's, men's, and women's educational and health outcomes. Research on Western societies shows that marriage timing and marriage duration are linked to educational and health outcomes for men, women, and children (see Waite 1995 and Cherlin 1990 for more on this). More research on this is needed for developing countries.

For my own research I would like to explore the possibility of age at sexual initiation becoming de-linked from the age at marriage. When sexual initiation occurs prior to marriage, there is a possibility of more complex sexual networks being set up in society. This becomes especially relevant given the spread of HIV/AIDS in Asia.

Importance of this research:

From a policy perspective this analysis has direct relevance for fertility limitation. The link between entry into marriage and fertility is well established, and our findings that men and women who are in school are less likely to be married indicates that keeping people in school longer would help in limiting fertility in a country that has fairly high fertility levels. From the perspective of HIV/AIDS, this research lays the ground for an exploration of the link between delays in marriage and disease transmission[9].

We believe however that this thesis' contribution to sociology and social knowledge is a theoretical one. Most previous analyses have found the modernization framework to be insufficient in gaining a proper understanding of marriage in Indonesia. To the best of our knowledge, no other analysis on developing countries has located their analysis of marriage in the life course perspective. The incorporation of this perspective into our research question is a unique contribution of this thesis.

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[9] This research may also have direct policy relevance for HIV/AIDS. According to Mensch et al, (2005), delaying marriage as long as it delays sexual intercourse reduces the risk of HIV infection. There is evidence from sub-Saharan Africa to suggest that when marriage is delayed, there is lowered probability of sexual contact which reduces the prevalence of HIV. Additionally, research from sub-Saharan Africa suggests that unmarried sexually active adolescents have lower HIV risk since their married counterparts were less likely to use condoms and more likely to have older sexual partners (their husbands) who were more likely to be HIV positive. But as Mensch et al. state, these conclusions need to be approached cautiously since unmarried persons are also at greater risk of having multiple sexual partners, which would increase the risk of HIV infection.

Figures

1. Political map of Indonesia, 2005

Source: CIA World Fact Book, 2005

2. Economic growth in Indonesia
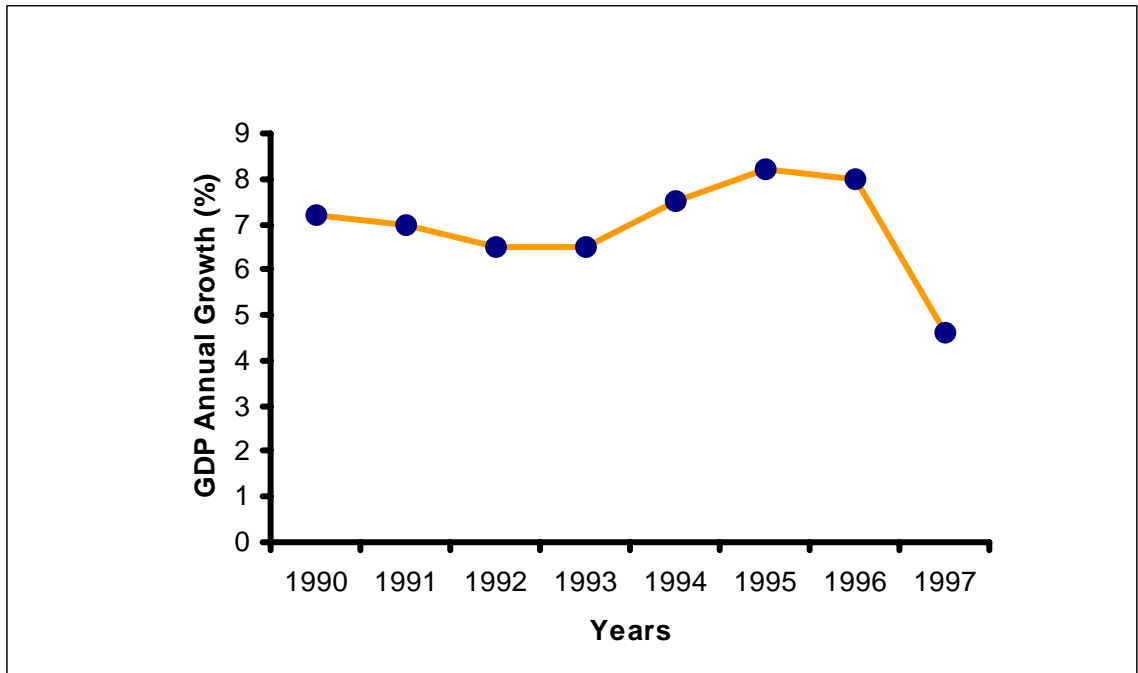
Source: International Finance Statistics, IMF

3. GDP Per Capita in different provinces: Indonesia 1991
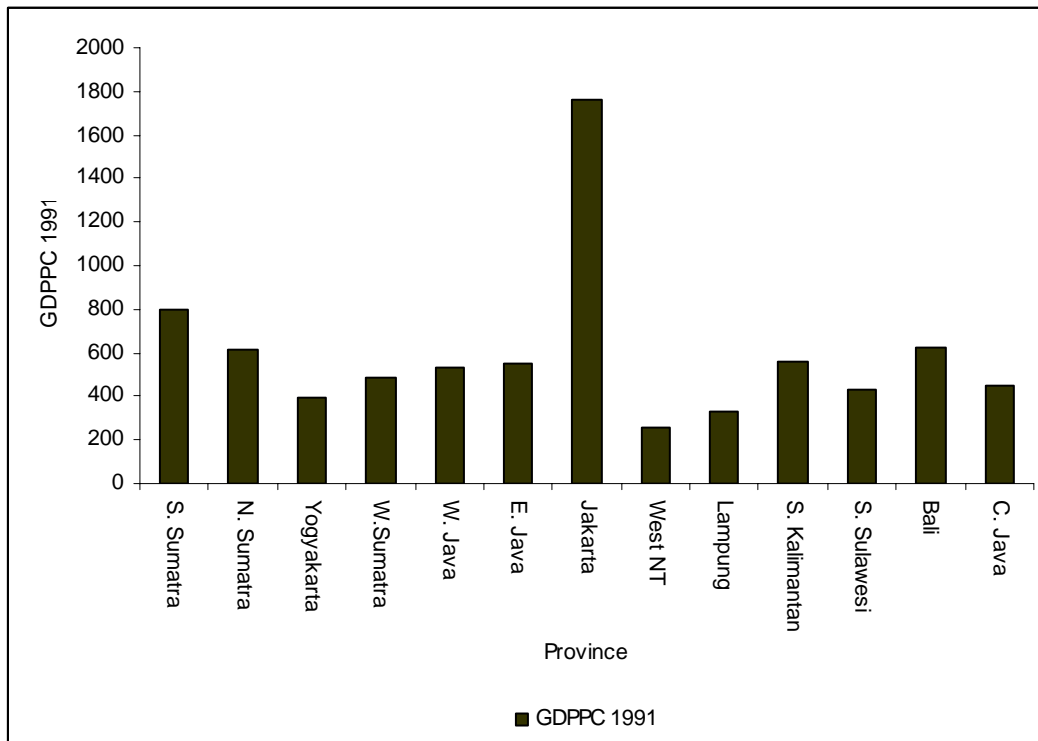
Source: 1991 Indonesia census province data

4. Sex ratios in primary and secondary school enrollment over time: Indonesia 1995-2002
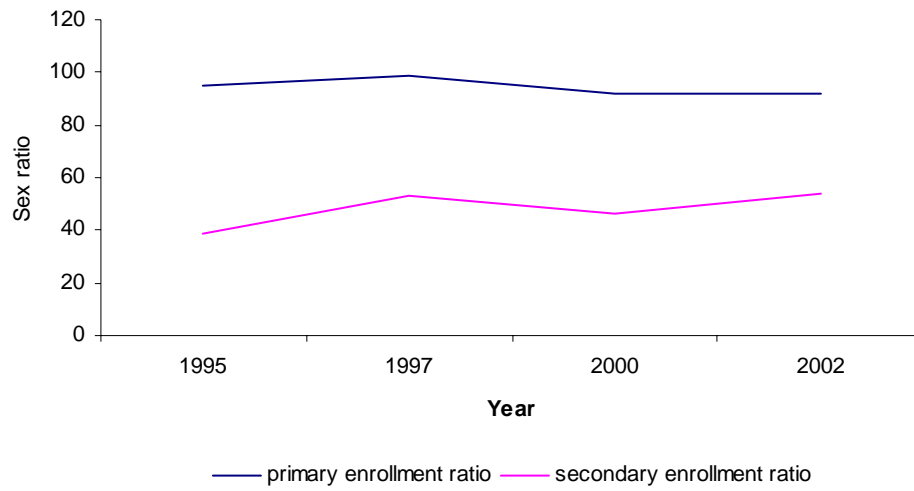
Note: Ratios are for women per 100 men

Source: United Nations Development Programme. Human Development Report. 1998, 2000, 2001, 2002, 2003, 2005

5.   Percent economically active men and women, ages 15 and over: Indonesia 1990-1999
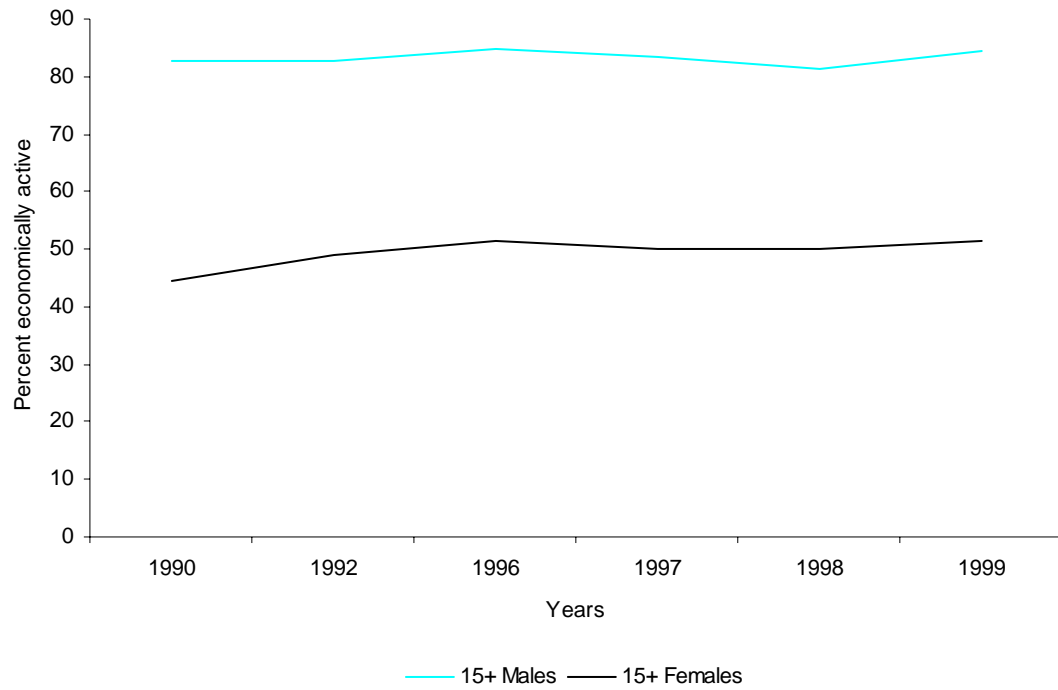
Source: Retrieved from http://laborsta.ilo.org/ on October 21, 2005. International labor organization, 2005

6.   Percent of males and females with above primary education: Indonesia, 1991
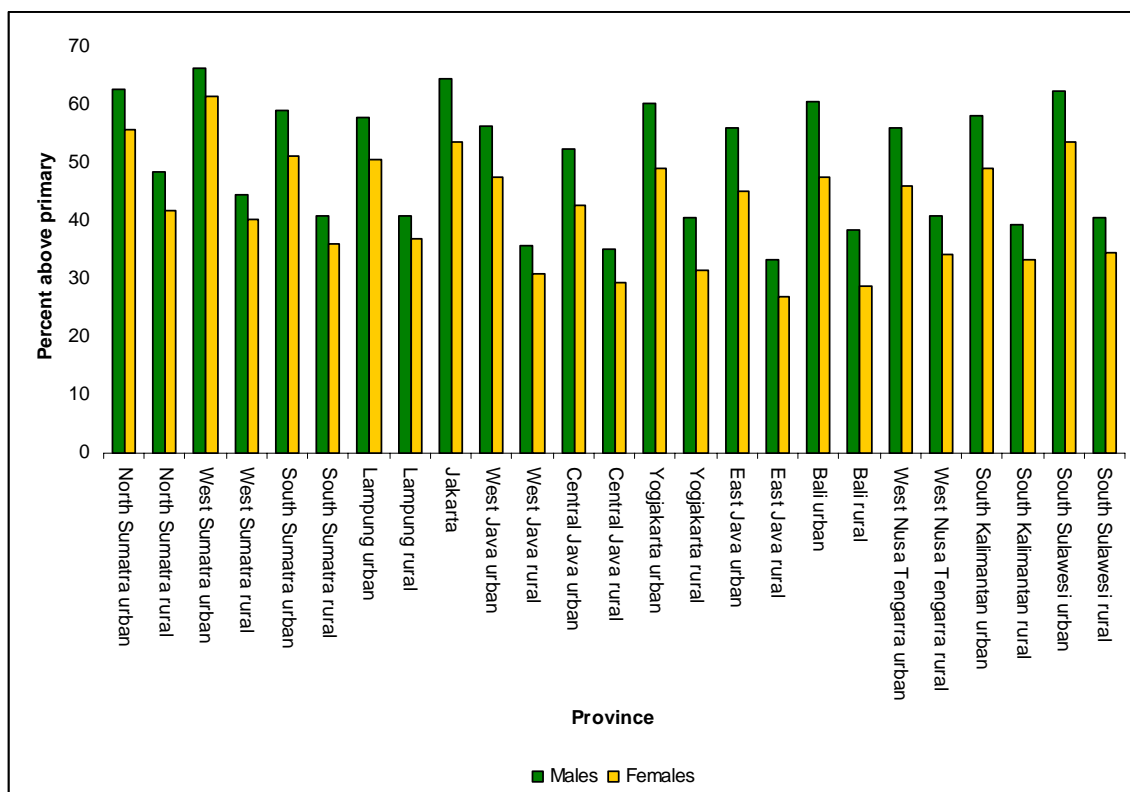
Source: Indonesia census province data, 1991

7.   Labor force participation in each province: Indonesia, 1991
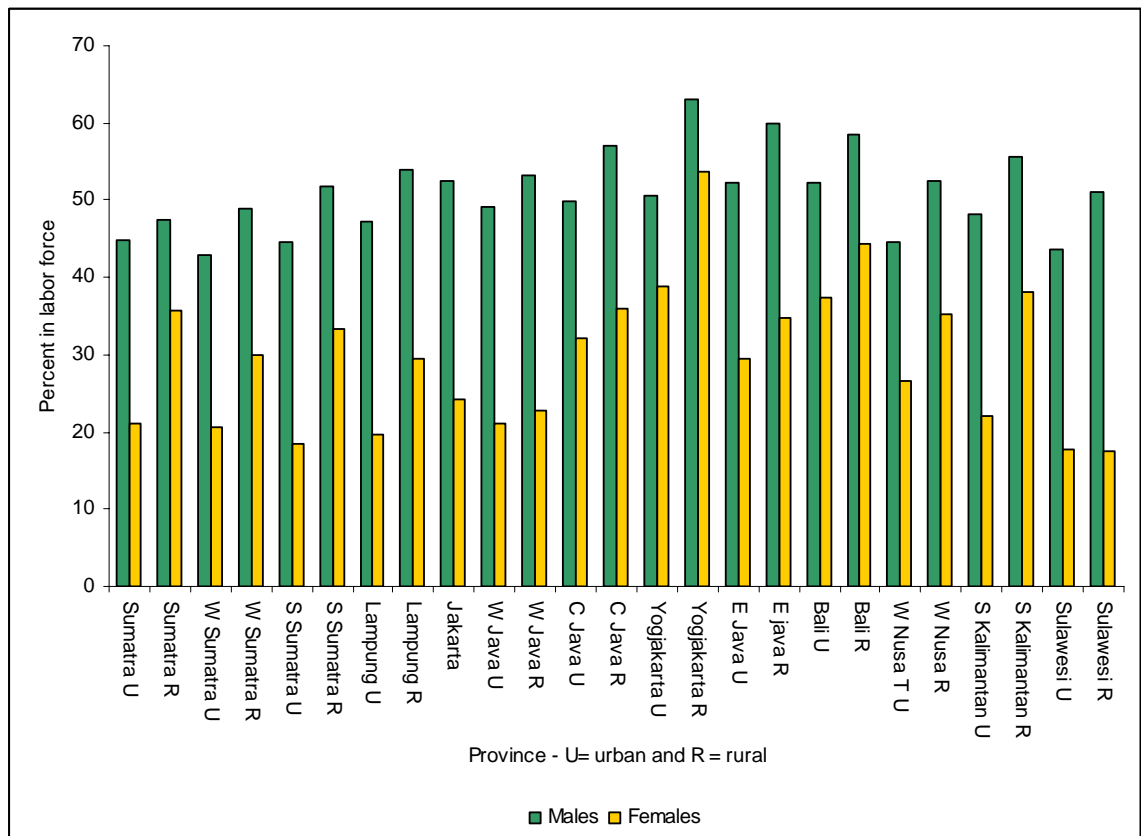
Source: Indonesia census province data, 1991

8.   Singulate mean age at marriage in Indonesia by urban and rural residence, 1991
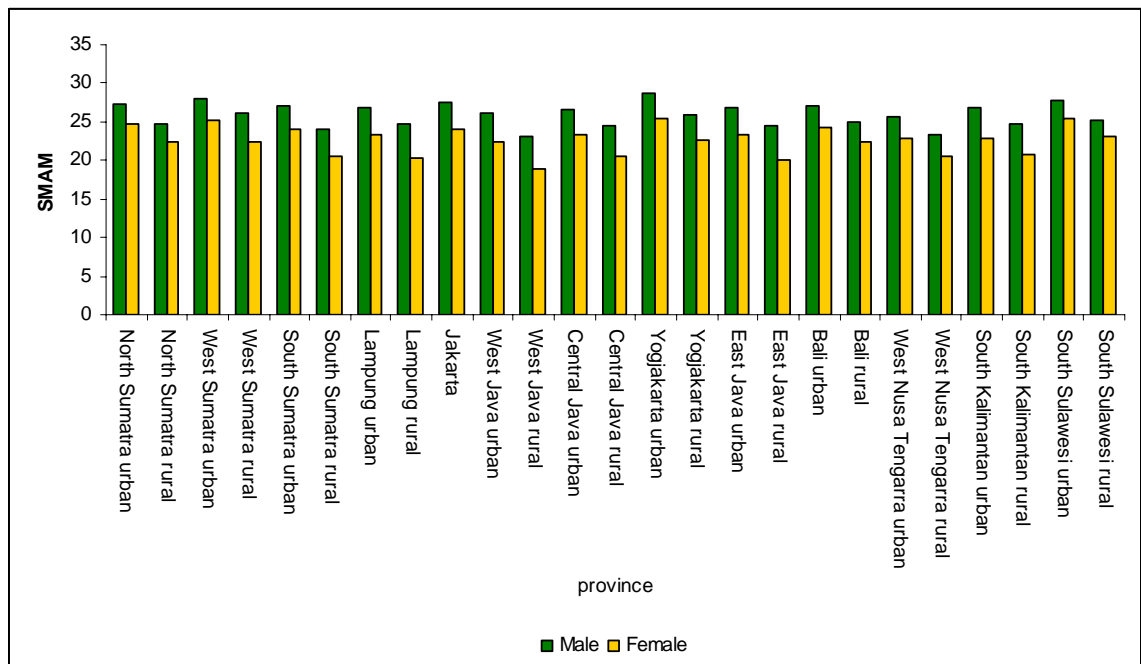
Note: Singulate mean ages at marriage were computed using the method outlined in Shryock and Seigel (1976)

Source: 1991 Indonesia census province data

9. Percent ever married men and women in 1993: Indonesia, 1993
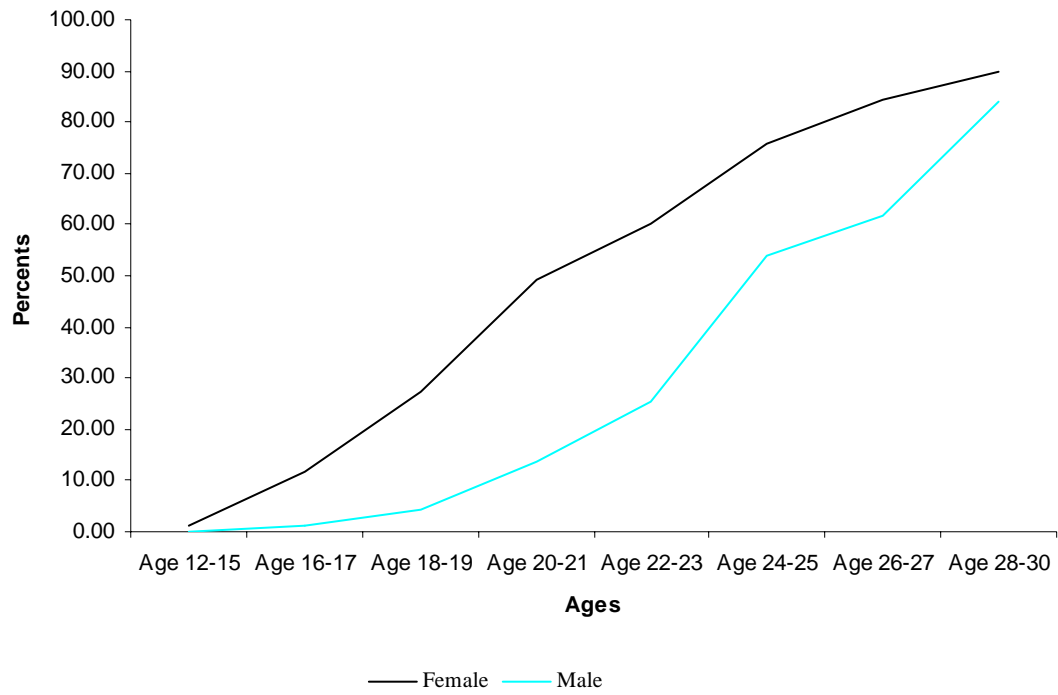
Source: Indonesia Family Life Survey, 1993

10. Percent men and women marrying between 1993 and 1997: Indonesia, 1993-1997
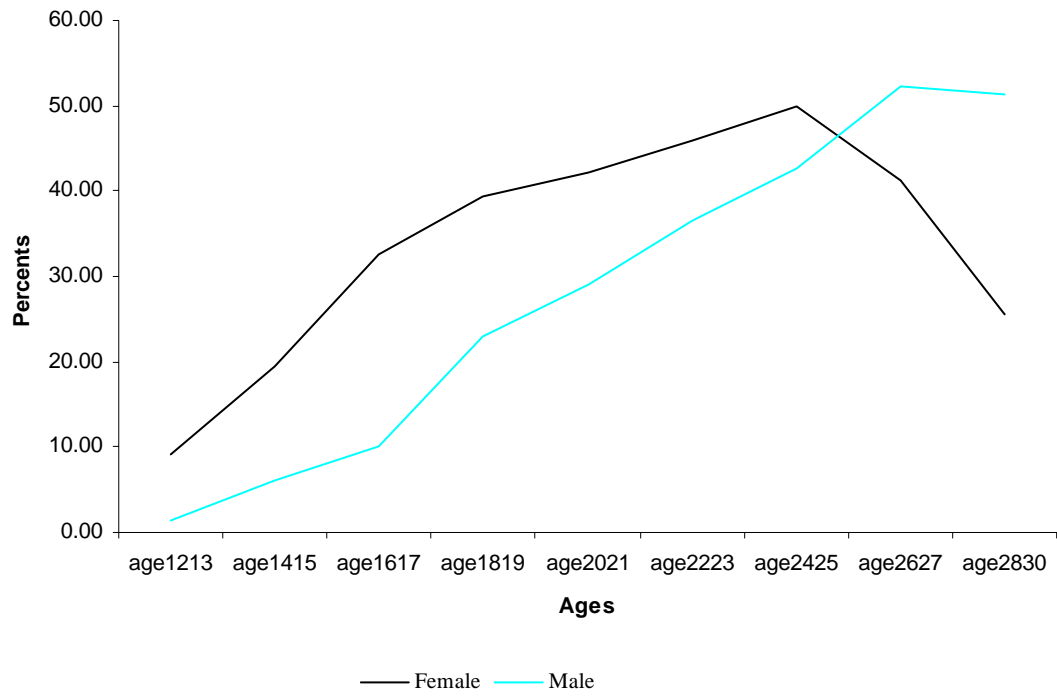
Source: Indonesia Family Life Survey, 1993 and 1997

11. Estimates of percent women married in 1993 by level of education: Indonesia, 1993
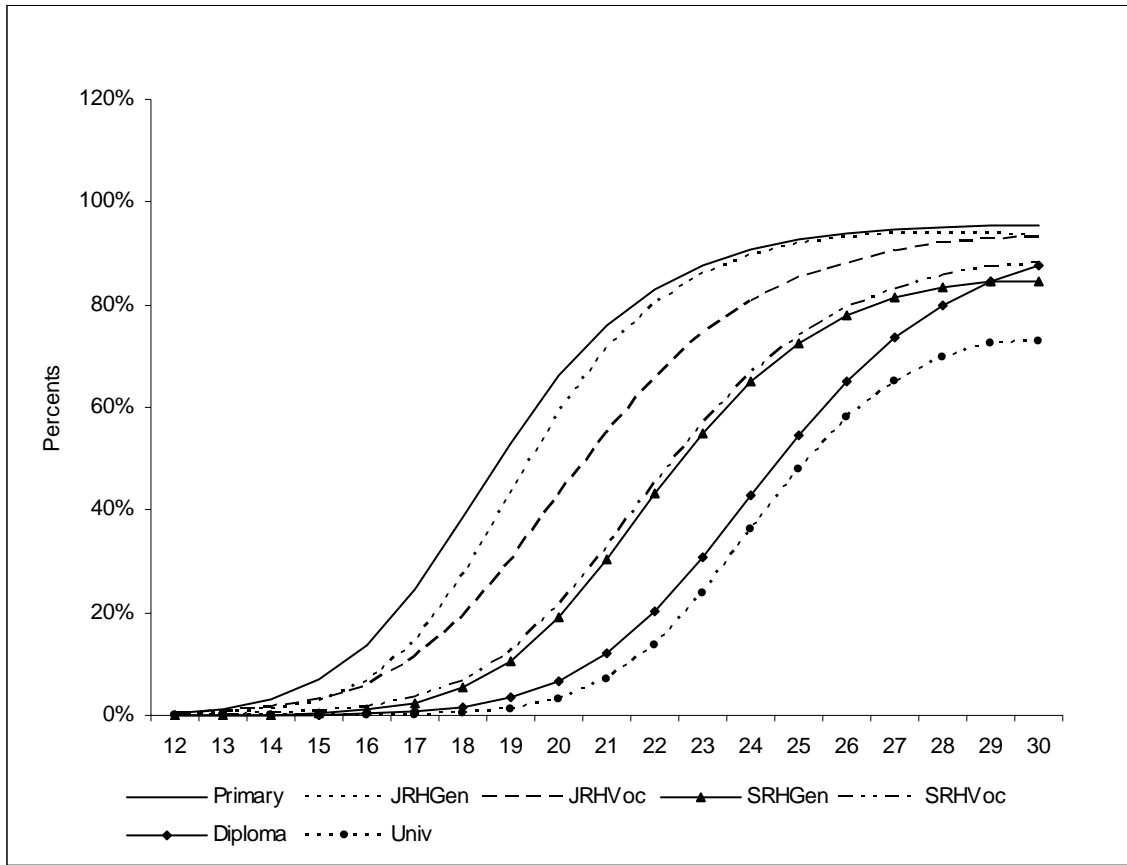
Note: Calculated from logistic model presented in table 7 which holds constant province, religion, and urban residence.

Source: Indonesia Family Life Survey, 1993

12. Estimates of percent men married in 1993 by level of education: Indonesia, 1993
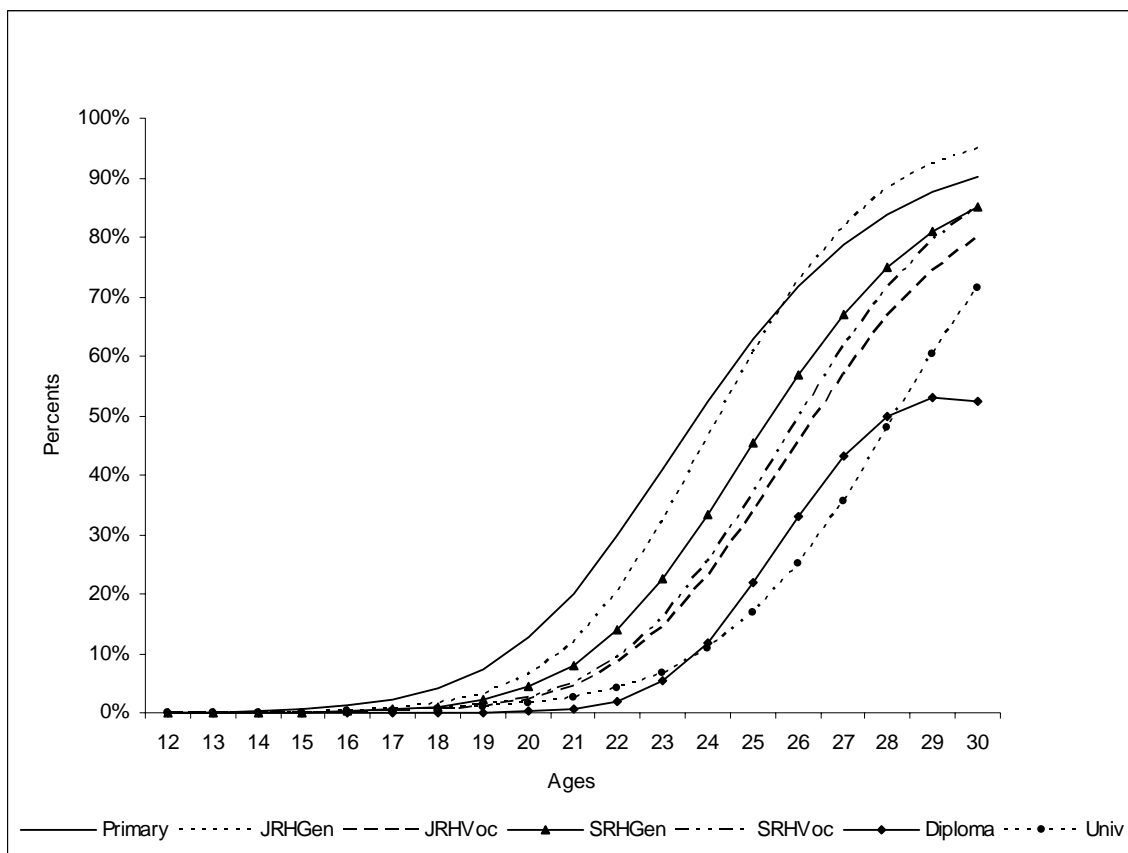
Note: Calculated from logistic model presented in table 7 which holds constant province, religion, and urban residence.

Source: Indonesia Family Life Survey, 1993

13. Estimates of percent women marrying between 1993 and 1997 by education level: Indonesia, 1993-1997
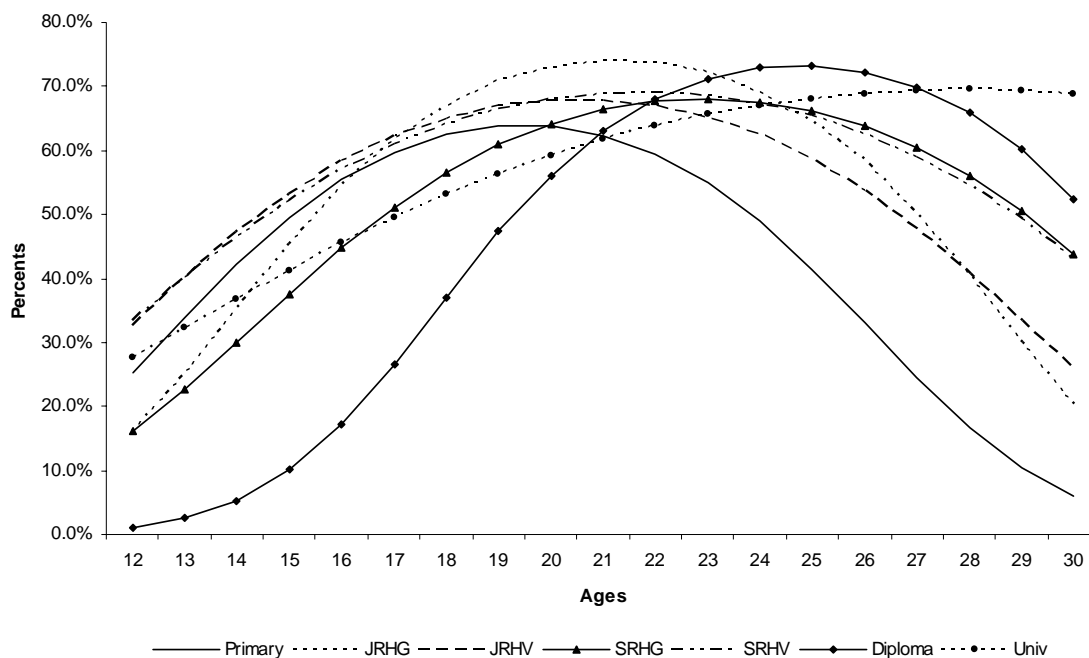
Note: Calculated from the logistic model presented in table 9 that holds constant work in the previous year, current school enrollment, family socioeconomic status, urban residence, family composition, religion, and province.

Source: Indonesia Family Life Survey, 1993 and 1997

14. Estimates of percent men marrying between 1993 and 1997 by education level: Indonesia, 1993-1997
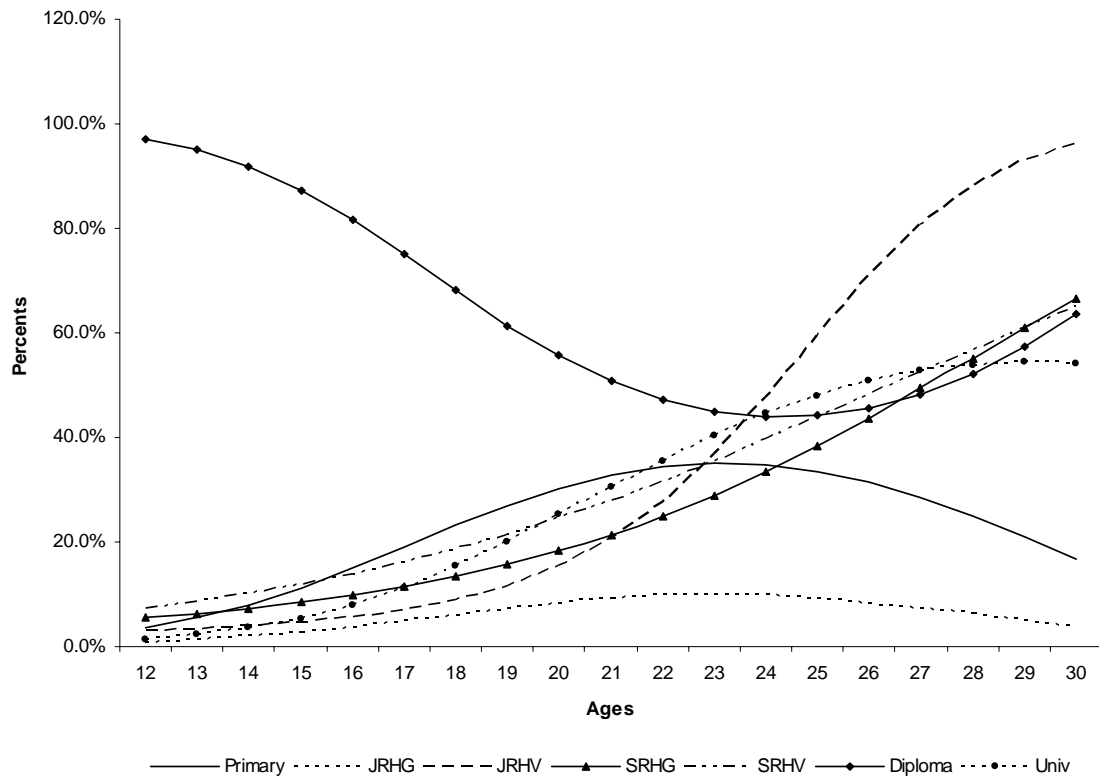
Note: Calculated from the logistic model presented in table 9 that holds constant work in the previous year, current school enrollment, family socioeconomic status, urban residence, family composition, religion, and province.

Source: Indonesia Family Life Survey, 1993 and 1997

15. Estimates of percent of 21 year old women marrying between 1993 and 1997 by education level and current school enrollment: Indonesia, 1993-1997
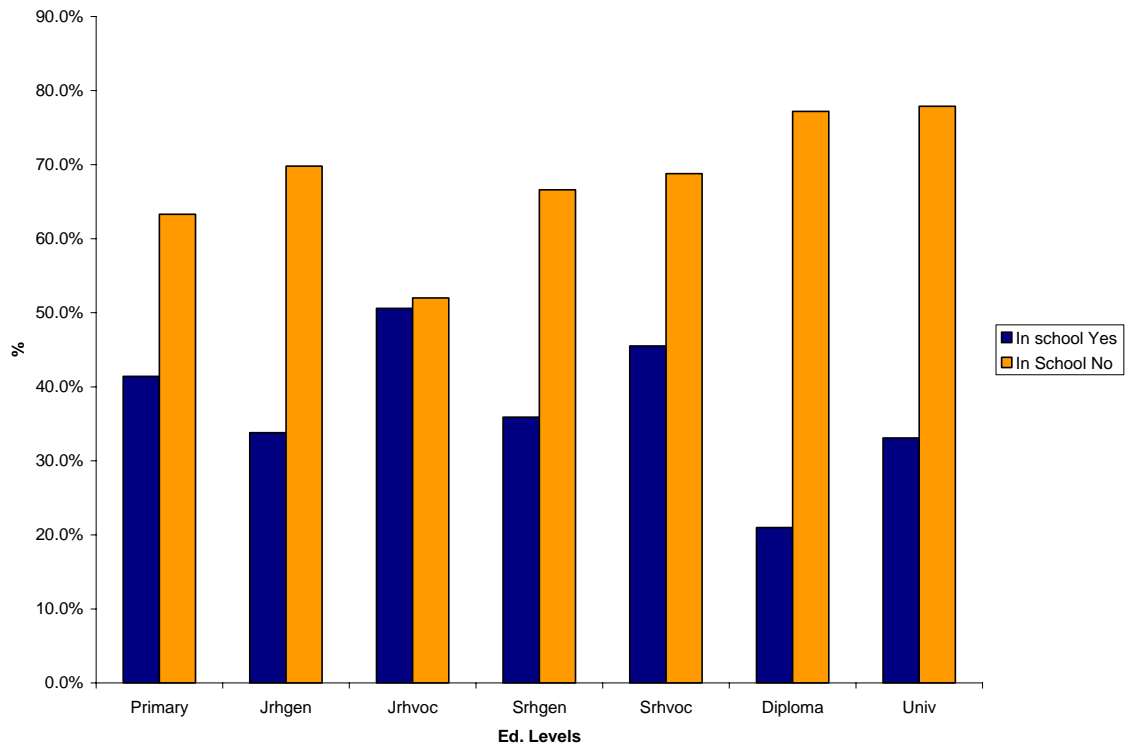
Note: Calculated from logistic model presented in table 10 that holds constant work in the previous year, age, family socioeconomic status, urban residence, family composition, religion, and province

Source: Indonesia Family Life Survey, 1993 and 1997

16. Estimates of percent of 29 year old men marrying between 1993 and 1997 by education level and current school enrollment: Indonesia, 1993-1997
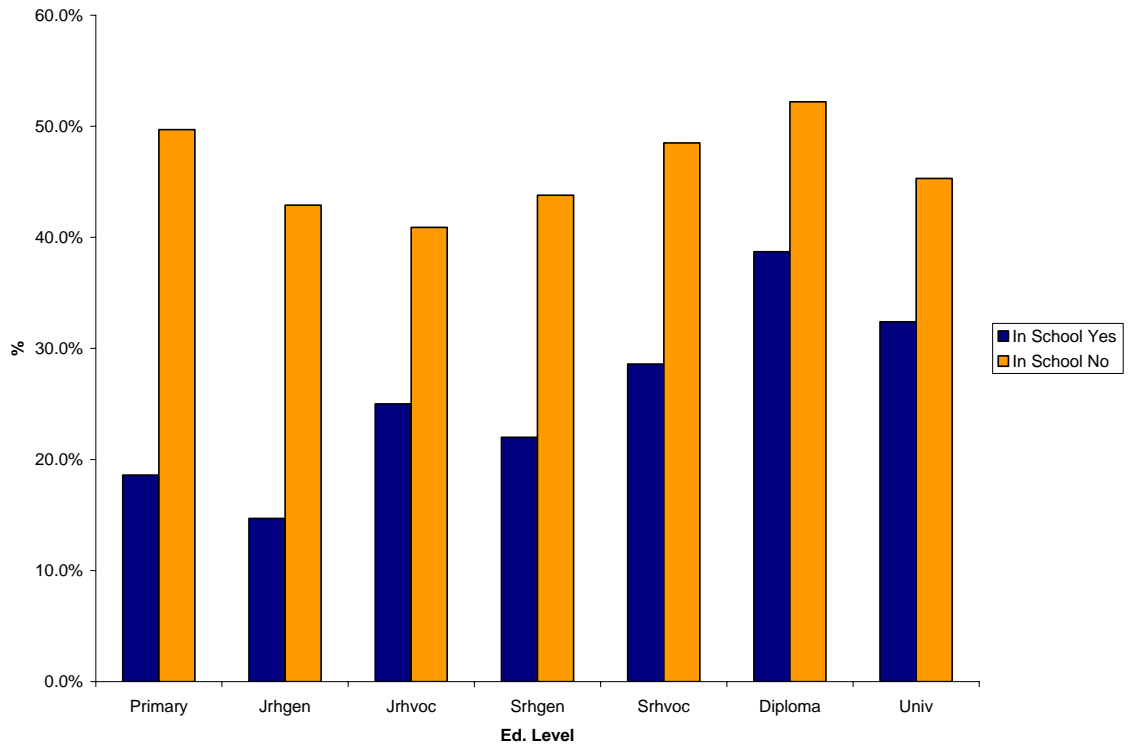
Note: Calculated from logistic model presented in table 10 that holds constant work in the previous year, age, family socioeconomic status, urban residence, family composition, religion, and province

Source: Indonesia Family Life Survey, 1993 and 1997

17. Plot of the singulate mean age at marriage for women and percent of women who have completed above primary education, provinces in Indonesia 1991
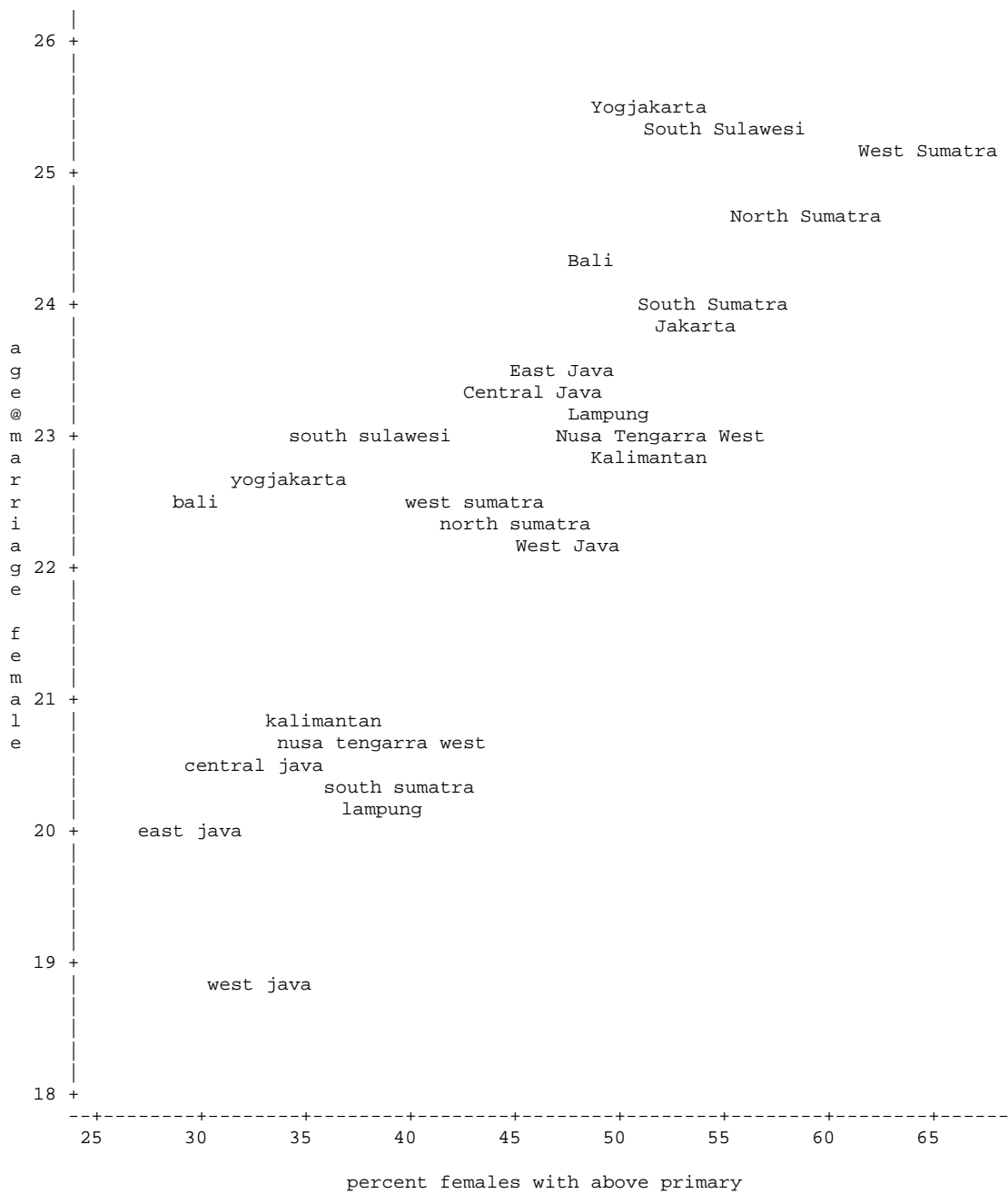
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        |                                            Jakarta
a       |
g       |                               East Java
e       |                             Central Java
@       |                                 Lampung
m  23 + |            south sulawesi      Nusa Tengarra West
a       |                                      Kalimantan
r       |          yogjakarta
r       |       bali              west sumatra
i       |                           north sumatra
a       |                             West Java
g  22 + |
e       |
        |
f       |
e       |
m       |
a  21 + |
l       |               kalimantan
e       |                 nusa tengarra west
        |           central java
        |                 south sumatra
        |                  lampung
   20 + |     east java
        |
        |
        |
        |
        |
   19 + |
        |         west java
        |
        |
        |
   18 + |
        --+--------+--------+--------+--------+--------+--------+--------+--------+------
          25       30       35       40       45       50       55       60       65
```

percent females with above primary

Note: province names beginning in a capital letter represent the urban portion of that province. Province names beginning in a lower case letter represent the rural portion of that province.

Source: 1991 Indonesian Census (Indonesia, 1991)

18. Plot of the singulate mean age at marriage for men and percent of men who have completed above primary education, provinces in Indonesia 1991
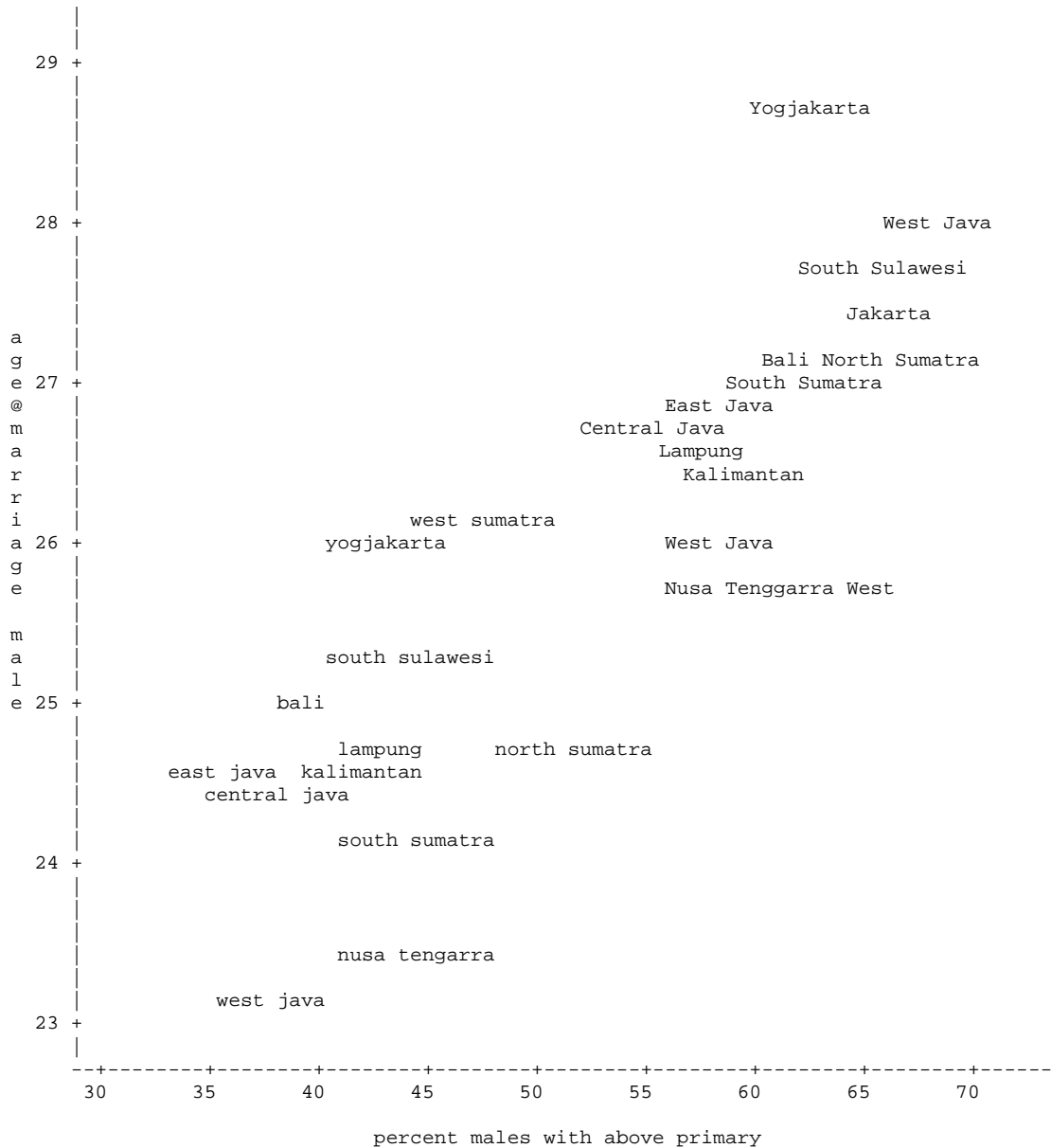
```
        |
        |
     29 +
        |
        |                                                  Yogjakarta
        |
        |
        |
        |
        |
     28 +                                                      West Java
        |
        |                                                 South Sulawesi
        |
a       |                                                     Jakarta
g       |
e  27  +                                              Bali North Sumatra
@       |                                           South Sumatra
m       |                                       East Java
a       |                                 Central Java
r       |                                       Lampung
r       |                                         Kalimantan
i       |
a  26  +                      west sumatra
g       |                yogjakarta            West Java
e       |
        |                                       Nusa Tenggarra West
m       |
a       |                south sulawesi
l       |
e  25  +              bali
        |
        |                        lampung        north sumatra
        |            east java  kalimantan
        |               central java
        |
        |                        south sumatra
     24 +
        |
        |
        |                        nusa tengarra
        |
        |              west java
     23 +
        |
        |
        --+--------+--------+--------+--------+--------+--------+--------+--------+------
          30       35       40       45       50       55       60       65       70
```

                        percent males with above primary

Note: province names beginning in a capital letter represent the urban portion of that province. Province names beginning in a lower case letter represent the rural portion of that province.

Source: 1991 Indonesian Census (Indonesia, 1991)

19. Plot of the singulate mean age at marriage for women in Indonesia and their labor force participation rates, provinces in Indonesia 1991.
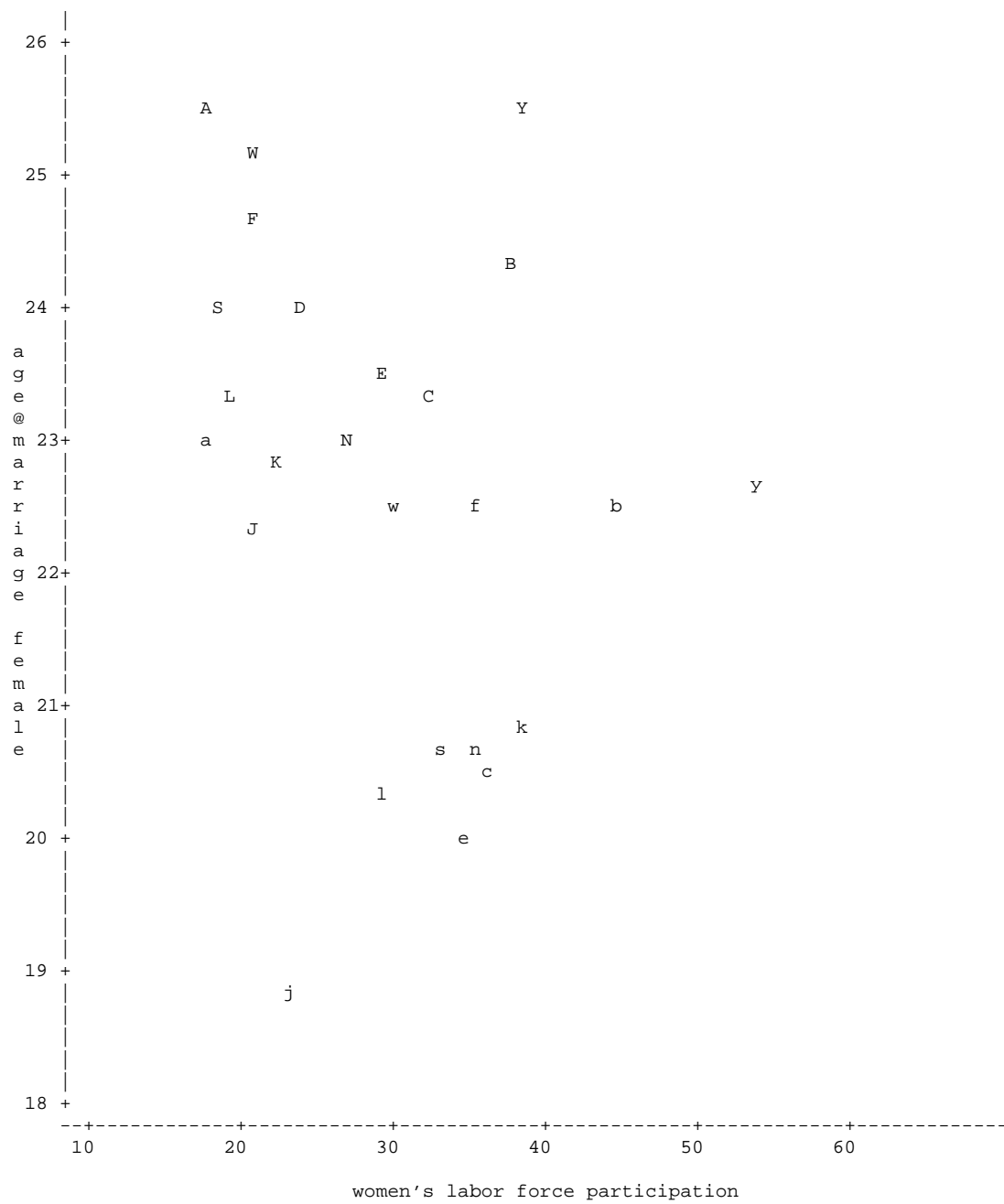
```
            |
         26 +
            |
            |
            |         A                         Y
            |              W
         25 +
            |
            |              F
            |
            |                                B
            |
         24 +         S        D
 a          |
 g          |
 e          |                      E
 @          |              L            C
 m       23+         a         N
 a          |              K
 r          |                                              y
 r          |                   w        f        b
 i          |              J
 a          |
 g       22+
 e          |
            |
 f          |
 e          |
 m          |
 a       21+
 l          |                         k
 e          |                   s   n
            |                         c
            |                   l
            |
         20 +                         e
            |
            |
            |
            |
         19 +
            |         j
            |
            |
            |
            |
         18 +
            --+-----------+-----------+-----------+-----------+-----------+-----------+------------
             10          20          30          40          50          60

                              women's labor force participation
```

Note: province names beginning in a capital letter represent the urban portion of that province. Province names beginning in a lower case letter represent the rural portion of that province.

Source: 1991 Indonesian Census (Indonesia, 1991)

20. Plot of the singulate mean age at marriage for men and their labor force participation rates, provinces in Indonesia 1991
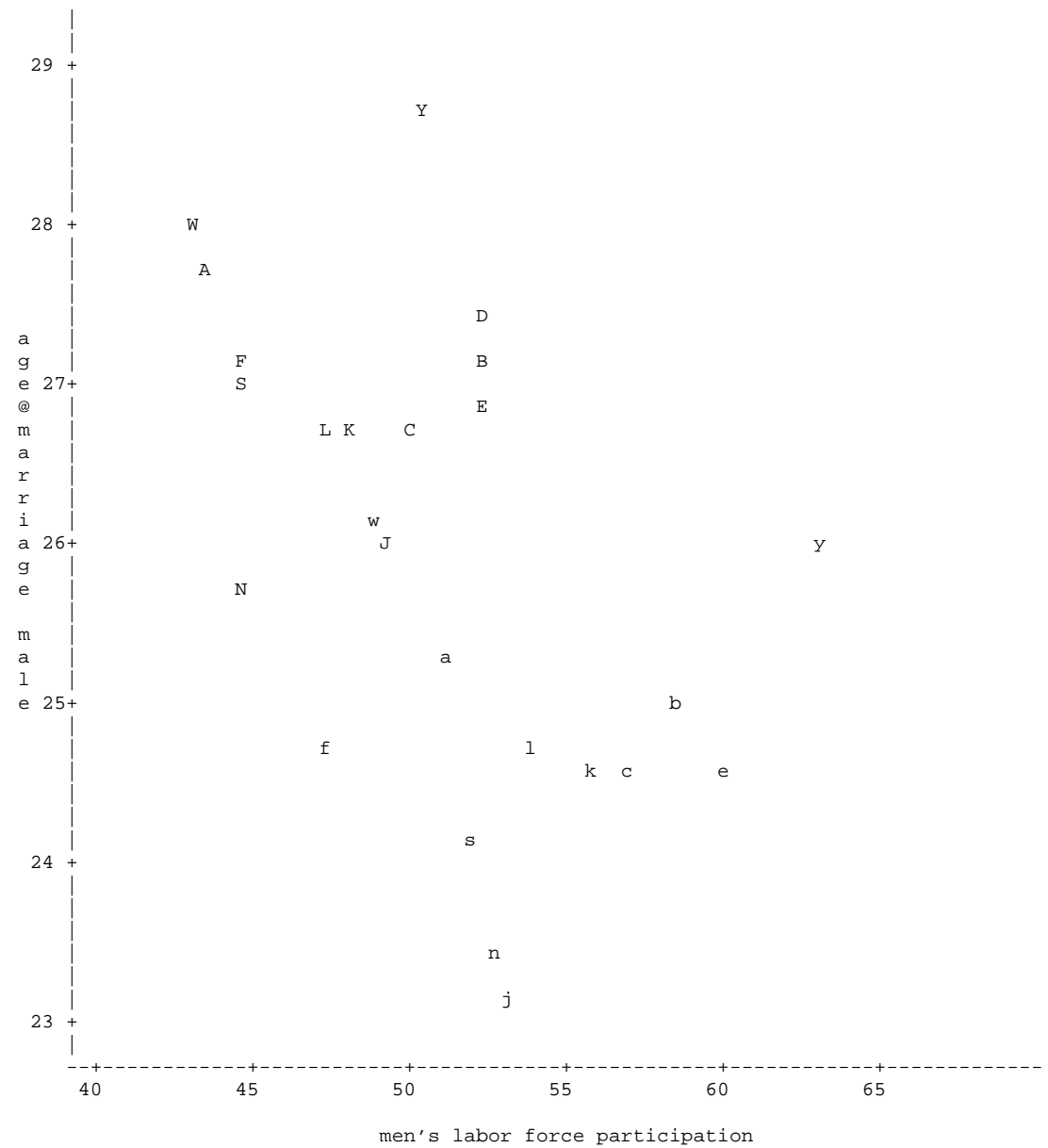
```
            |
            |
      29  + |
            |
            |                              Y
            |
            |
            |
      28  + |        W
            |
            |            A
            |
   a        |                          D
   g        |            F             B
   e  27+ |              S
   @        |                          E
   m        |          L K     C
   a        |
   r        |
   r        |
   i        |                  w
   a  26+ |                  J                           Y
   g        |
   e        |            N
            |
   m        |
   a        |                      a
   l        |
   e  25+ |                                      b
            |
            |            f                 l
            |                              k   c       e
            |
            |
            |                  s
      24  + |
            |
            |
            |              n
            |
            |              j
      23  + |
            |
          --+------------+------------+------------+------------+------------+------------+-------------
            40           45           50           55           60           65

                              men's labor force participation
```

Note: province names beginning in a capital letter represent the urban portion of that province. Province names beginning in a lower case letter represent the rural portion of that province.

Source: 1991 Indonesian Census (Indonesia, 1991)

Tables

1. Percent of ever married people in different age groups: Indonesia, 1993

	Women		Men	
Age	N	Percent married	N	Percent married
Age 12-15	1540	1.17	1551	0.13
Age 16-17	707	11.74	683	1.02
Age 18-19	609	27.42	577	4.16
Age 20-21	597	49.41	541	13.68
Age 22-23	520	60.19	455	25.49
Age 24-25	570	75.79	496	54.03
Age 26-27	455	84.18	411	61.80
Age 28-30	819	89.87	698	83.81

Source: Indonesia Family Life Survey, 1993

2.   Percent of ever married people in different age groups:
      Indonesia, 1997

	Women		Men	
Age	N	Percent married	N	Percent married
Age 12-15	1909	2.20	1852	0.37
Age 16-17	1024	12.70	965	1.14
Age 18-19	997	25.48	903	6.53
Age 20-21	937	43.44	848	14.86
Age 22-23	805	59.75	741	28.74
Age 24-25	789	70.22	742	47.30
Age 26-27	674	80.56	612	55.39
Age 28-30	1083	89.10	998	78.06

Source: Indonesia Family Life Survey, 1997

3.   Demographic profile of Indonesia, 2001

Population growth rate	1.45%
TFR	2.44 children per woman
IMR	35.6/ 1000 live births
Life expectancy at birth (female)	72.13 years
Life expectancy at birth (male)	67.13 years
Sex ratio (working age population)	1:1
Literacy (total population)	87.9%

Source: CIA World Fact Book, 2005

4.   Maximum likelihood logit estimates of the odds of women and men being married in 1993, on age: Indonesia, 1993

Parameter	Estimate for women		Estimate for men	
Intercept	-0.0235		-1.8423	***
Age 12-15	-4.4139	***	-4.8099	***
Age 16-17	-1.9939	***	-2.728	***
Age 18-19	-0.9499	***	-1.295	***
Age 22-23	0.4369	***	0.7699	***
Age 24-25	1.1646	***	2.0039	***
Age 26-27	1.6948	***	2.3234	***
Age 28-30	2.2058	***	3.4865	***
Chi-sq.	3388.6624	***	2929.7872	***
N	5817		5412	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: Indonesia Family Life Survey, 1993

5. Percent people who married between 1993 and 1997 by
age group: Indonesia 1993, 1997

Age	Women		Men	
	N	Percent marrying	N	Percent marrying
age1213	70	9.14	11	1.37
age1415	144	19.49	45	6.06
age1617	202	32.63	68	10.19
age1819	173	39.32	126	22.87
age2021	127	42.19	136	29.12
age2223	94	45.85	123	36.50
age2425	69	50.00	97	42.73
age2627	34	41.22	82	52.23
age2830	21	25.61	58	51.33

Source: Indonesia Family Life Survey, 1993 and
1997

6. Maximum Likelihood Logit Estimates of the Odds of Women's and Men's Marriage between 1993 and 1997 on Age: Indonesia, 1993 and 1997

Parameter	Estimate for women		Estimate for men	
Intercept	-0.315	***	-0.8895	***
Age 12-13	-1.982	***	-3.3844	***
Age 14-15	-1.104	***	-1.8521	***
Age 16-17	-0.410	**	-1.2863	***
Age 18-19	-0.119		-0.3263	**
Age 22-23	0.149		0.3357	**
Age 24-25	0.315		0.5966	***
Age 26-27	0.204		0.9787	***
Age 28-30	-0.752	***	0.9426	***
Chi-sq.	327.2427	***	697.5137	***
N	3362		4063	

***$p<0.001$ **$p<0.01$ *$p<0.05$ †$p<0.1$
Source: Indonesia Family Life Survey, 1993

7. Maximum likelihood logit estimates of the odds of women and men being married in 1993 on selected independent variables: Indonesia, 1993

Parameter	Estimate for Women		Estimate for Men	
Intercept	0.8755	***	-1.699	***
Junior high general	-0.3551	***	-0.2913	*
Junior high vocational	-0.8836	***	-0.272	
Senior high general	-1.8028	***	-0.8449	***
Senior high vocational	-1.6525	***	-1.1126	***
Diploma	-2.2532	***	-2.0428	***
University	-2.8132	***	-1.9704	***
Age 12-15	-5.1405	***	-5.1281	***
Age 16-17	-2.3198	***	-2.8082	***
Age 18-19	-1.0367	***	-1.3083	***
Age 22-23	0.7598	***	0.901	***
Age 24-25	1.4275	***	2.2233	***
Age 26-27	2.2287	***	2.7574	***
Age 28-30	2.4884	***	3.8969	***
Urban residence	-0.7919	***	-0.5183	***
Hindu	-0.1511		0.6577	
Buddhist	0.0254		-1.2573	
Christian	-0.5187	**	-0.8608	***
N. Sumatra	-0.3413	†	0.4603	*
W.Sumatra	-0.2932		-0.5535	**
S. Sumatra	0.0846		0.5702	**
Lampung	0.519	*	0.3633	
W. Java	0.679	***	0.8688	***
C. Java	0.5156	***	0.2516	
Yogjakarta	-0.1022		-0.0837	
E. Java	0.7158	***	0.6304	***
Bali	0.1415		0.4755	
West Nusa Tengarra	0.0695		0.7384	***
S. Kalimantan	0.8134	***	0.8835	***
Sulawesi	-0.3322		0.8369	***
Chi-sq.	4281.6254	***	3307.1309	***
N	5817		5412	

***p<0.001 **p<0.01 *p<0.05 †p<0.1

Source: Indonesia Family Life Survey, 1993

8. Maximum likelihood logit estimates of age and education level interactions
   on the odds of Indonesian men and women being married in 1993:
   Indonesia, 1993

Parameter	Estimate for Women		Estimate for Men	
Intercept	-20.726	***	-19.617	***
JRH General	-5.811	*	-2.028	
JRH Vocational	0.780		-5.765	
SRH General	-7.139		-4.867	
SRH Vocational	-3.872		-3.898	
Diploma	-3.268		-44.799	
University	-19.709		4.273	
Age	1.626	***	1.196	***
Age sq.	-0.028	***	-0.016	***
Age * JRH General	0.465		0.007	
Age sq. * JRH General	-0.009		0.003	
Age * JRH Vocational	-0.183		0.351	
Age sq. * JRH Vocational	0.005		-0.005	
Age * SRH General	0.365		0.264	
Age sq. * SRH General	-0.006		-0.004	
Age * SRH Vocational	0.096		0.109	
Age sq.* SRH Vocational	0.000		0.000	
Age * Diploma	-0.151		3.205	
Age sq. * Diploma	0.008		-0.059	
Age * University	1.156		-0.609	
Age sq. * University	-0.019		0.014	
Hindu	-0.171		0.750	
Buddhist	-0.002		-1.180	
Christian	-0.537	***	-0.928	***
Urban Residence	-0.786	***	-0.536	***
N. Sumatra	-0.338	†	0.520	*
W. Sumatra	-0.309		-0.535	*
S. Sumatra	0.070		0.570	*
Lampung	0.521	*	0.385	
W. Java	0.689	***	0.881	***
C. Java	0.518	***	0.261	
Yogjakarta	-0.081		-0.100	
E. Java	0.722	***	0.657	***
Bali	0.168		0.437	
West Nusa Tenggarra	0.091		0.800	***
S. Kalimantan	0.888	***	0.885	***
Sulawesi	-0.326		0.896	***
Chi-sq.	4348.054	***	3361.893	***
N	5817		5412	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: Indonesia Family Life Survey, 1993

9. Maximum likelihood logit estimates of the odds of women's and men's marriage between 1993 and 1997 on selected independent variables: Indonesia, 1993-1997

Parameter	Estimate for women		Estimate for men	
Intercept	0.313		-0.9662	***
Worked last year	0.3624	***	0.5712	***
Currently enrolled Y/N	-1.2526	***	-1.1395	***
Junior High General	0.1748		-0.3391	**
Junior High Vocational	0.3777		-0.2876	
Senior High General	0.1663		-0.2552	
Senior High Vocational	0.3941	*	0.0348	
Diploma	0.4434		0.6439	
University	0.6124	*	0.3061	
Age 12-13	-1.1961	***	-2.2543	***
Age 14-15	-0.5231	**	-1.2646	***
Age 16-17	0.0846		-0.8005	***
Age 18-19	0.1166		-0.046	
Age 22-23	0.131		0.3007	†
Age 24-25	0.1108		0.4282	*
Age 26-27	-0.1152		0.7299	***
Age 28-30	-0.9023	***	0.7807	***
Socioeconomic Status	-0.0205		-0.00358	
Urban	-0.465	***	-0.1007	
Number Younger Sisters	0.0473		0.00825	
Number Older Brothers	-0.1797	*	-0.179	
Number Younger Brothers	-0.0171		0.0692	*
Number Old Sisters	-0.1926	*	-0.5393	***
Co-residence with Parents	0.0392		-0.2634	*
Hindu	0.4731		0.0581	
Buddhist	0.0353		-1.456	*
Christians	-0.5766	***	-0.462	*
N. Sumatra	-0.5414	**	0.3105	
W. Sumatra	-0.439	*	0.1329	
S. Sumatra	-0.0542		0.7136	***
Lampung	0.054		0.503	*
W. Java	-0.109		0.6693	***
C. Java	-0.6683	***	0.0251	
Yogjakarta	-0.5508	**	-0.1389	
E. Java	-0.3048		0.2908	
Bali	-1.0708	*	0.5426	
West Nusa Tengarra	-0.3919	†	0.6065	**
S. Kalimantan	-0.0035		0.3787	
Sulawesi	-0.76	***	0.0299	
Chi-sq.	569.8412	***	841.3893	***
N	2873		3442	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: Indonesia Family Life Survey, 1993 and 1997

10. Maximum likelihood logit estimates of age and education level interactions on the odds of Indonesian men and women getting married between 1993 and 1997: Indonesia, 1993-1997

Parameter	Estimate for women		Estimate for men	
Intercept	-10.6975	***	-12.2065	***
Worked last year	0.329	***	0.5226	***
Currently Enrolled in School	-0.9312	***	-0.9463	***
JRH General	-2.4652		-1.407	
JRH Vocational	2.9332		9.6184	
SRH General	0.8724		8.0117	†
SRH Vocational	4.039		7.5386	
Diploma	-8.8782		26.7116	
University	6.0878		-0.6346	
Age	1.1592	***	0.9985	***
Age Sq.	-0.0298	***	-0.0215	***
Age * JRH General	0.1779		-0.0111	
Age sq. * JRH General	-0.00166		0.00305	
Age * JRH Vocational	-0.3302		-1.2547	
Age sq. * JRH Vocational	0.00962		0.0365	
Age * SRH General	-0.2366		-0.9197	*
Age sq. * SRH General	0.00969		0.0243	
Age * SRH Vocational	-0.4726		-0.8192	†
Age sq. * SRH Vocational	0.014		0.0214	*
Age * Diploma	0.5029		-2.2105	
Age sq. * Diploma	-0.00375		0.0464	
Age * University	-0.772		-0.1029	
Age sq. * University	0.0229		0.00609	
SES	-0.0186		-0.0028	
Urban Residence	-0.443	***	-0.1388	
Number Younger Sisters	0.0385		0.011	
Number Older Brothers	-0.1903	**	-0.1809	
Number Younger Brothers	-0.0225		0.0668	†
Number Older Sisters	-0.1931	*	-0.475	***
Live with parents	0.0485		-0.2599	*
Hindu	0.3654		0.2392	
Buddhist	0.0235		-1.443	*
Christian	-0.5983	***	-0.473	*
N. Sumatra	-0.5402	*	0.4274	†
W. Sumatra	-0.4696	*	0.1878	
S. Sumatra	-0.0488		0.711	***
Lampung	-0.036		0.5525	*
W. Java	-0.1047		0.7341	***
C. Java	-0.6558	***	0.0569	
Yogjakarta	-0.5324	*	-0.0128	
E. Java	-0.2987		0.3375	
Bali	-0.9564	†	0.4913	
West Nusa Tenggarra	-0.4156	†	0.6996	***

S. Kalimantan	0.0454		0.4131	
Sulawesi	-0.7138	***	0.108	
Chi-sq.	589.1784	***	868.7872	***
N	2873		3442	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: Indonesia Family Life Survey, 1993 and 1997

11. Maximum likelihood logit estimates of school enrolment and education level interactions on the odds of Indonesian men and women getting married between 1993 and 1997: Indonesia, 1993-1997

Parameter	Estimate for women		Estimate for men	
Intercept	-8.24	***	-8.3419	***
Worked last year	0.3727	***	0.5675	***
Currently Enrolled in School	-0.9956	***	-1.417	***
JRH General	0.3264	*	-0.2661	†
JRH Vocational	-0.4021		-0.3784	
SRH General	0.1016		-0.2694	
SRH Vocational	0.28		-0.00939	
Diploma	0.6121		0.5019	
University	1.1262	***	0.0421	
Age	0.8389	***	0.5613	***
Age Sq.	-0.0201	***	-0.00975	***
Enrollment * JRH General	-0.513	*	-0.2895	
Enrollment * JRH Vocational	1.0241		0.7577	
Enrollment * SRH General	-0.1154		0.2985	
Enrollment * SRH Vocational	0.0713		0.5301	
Enrollment * Diploma	-1.1731		0.7243	
Enrollment * University	-1.1374	*	0.7613	
SES	-0.0205		0.000423	
Urban Residence	-0.4436	***	-0.1134	
Number Younger Sisters	0.0486		0.00655	
Number Older Brothers	-0.1892	*	-0.1801	
Number Younger Brothers	-0.0109		0.0706	*
Number Older Sisters	-0.1771	*	-0.5368	***
Live with Parents	0.0397		-0.266	*
Hindu	0.4377		0.0847	
Buddhist	0.0338		-1.4525	*
Christian	-0.6007	***	-0.4287	*
N. Sumatra	-0.5013	**	0.3562	
W. Sumatra	-0.4402	*	0.1484	
S. Sumatra	-0.0204		0.7299	***
Lampung	0.035		0.5629	*
W. Java	-0.0594		0.6929	***
C. Java	-0.6201	***	0.0546	
Yogjakarta	-0.5516	**	-0.1065	
E. Java	-0.2724		0.3095	
Bali	-1.0127	*	0.5521	
West Nusa Tenggarra	-0.3784		0.653	***
S. Kalimantan	0.0713		0.3693	
Sulawesi	-0.7319	***	0.0653	
Chi-sq.	574.8070	***	841.8994	***
N	2873		3442	

***p<0.001 **p<0.01 *p<0.05 †p<0.1

Source: Indonesia Family Life Survey, 1993 and 1997

12. Summary statistics for selected variables are the province level: Indonesia, 1991

Variable	N	Mean	Std Dev	Minimum	Maximum
Age at marriage female (SMAM)	25	22.6	1.8	18.8	25.5
Age at marriage male (SMAM)	25	25.9	1.5	23.1	28.7
Percent currently married female	25	46.3	6.2	36.1	58.8
Percent currently married male	25	36.5	4.4	28.6	45.1
Percent never married female	25	50.8	6.9	36.4	61.7
Percent never married male	25	62.6	4.7	53.2	71.0
Percent divorced females	25	2.0	0.9	0.9	4.0
Percent divorced males	25	0.7	0.3	0.3	1.6
Percent women's labor force participation	25	29.6	9.3	17.5	53.8
Percent men's labor force participation	25	51.0	5.2	42.9	63.1
Percent females with above primary	25	42.3	9.7	27.0	61.6
Percent males with above primary	25	50.1	10.7	33.4	66.3
Assets index	25	324.7	280.6	25.4	721.0

Source: 1991 Indonesian Census

13.   Correlation Coefficients for Selected Variables at the Province Level: Indonesia 1991

Women	Age at marriage female	Currently married Female	Women's LFP	% females above primary	Girls in school
Age at marriage female	1.00	-0.96	-0.27	0.83	0.88
Currently married female	-0.96	1.00	0.38	-0.86	-0.89
Women's labor force participation	-0.27	0.38	1.00	-0.59	-0.51
Percent females with above primary	0.83	-0.86	-0.59	1.00	0.96
Girls in school	0.88	-0.89	-0.51	0.96	1.00

Men	Age at marriage Male	Currently married Male	Male LFP	% men above primary	Boys in school
Age at marriage male	1.00	-0.89	-0.50	0.88	0.90
Currently married male	-0.89	1.00	0.69	-0.86	-0.93
Men's labor force participation	-0.50	0.69	1.00	-0.74	-0.75
Percent males with above primary	0.88	-0.86	-0.74	1.00	0.94
Boys in school	0.90	-0.93	-0.75	0.94	1.00

Source: 1991 Indonesian Census

14. Logistic regression results for multi-level models predicting the effect of education and region of residence on the odds of men's marriage: Indonesia, 1991 and 1993

Fixed Effect	Model 1		Model 2	
Macro level effects on men's odds of marriage				
Intercept	-1.889	***	-1.499	***
	(0.132)		(-0.157)	
Percent men with primary plus education	-0.043	*	-0.046	*
	(0.022)		(0.02)	
Rural dummy	-0.021		-0.368	
	(0.466)		(0.423)	
Micro level effects on men's odds of marriage				
Junior high general			-0.285	†
			(0.16)	
Junior high vocational			-0.281	
			(0.437)	
Senior high general			-0.818	***
			(0.153)	
Senior high vocational			-1.095	***
			(0.137)	
Diploma			-1.991	***
			(0.33)	
University			-1.946	***
			(0.171)	
Christian	-1.156	***	-0.804	**
	(0.37)		(0.314)	
Hindu	0.414		0.591	†
	(0.263)		(-0.347)	
Buddhist	-1.019	***	-1.192	**
	(0.276)		(0.504)	
Age 12-15	-4.888	***	-5.109	***
	(0.527)		(0.542)	

Age 16-17	-2.765	***	-2.799	***
	(0.319)		(0.325)	
Age 18-19	-1.311	***	-1.307	***
	(0.211)		(0.226)	
Age 22-23	0.852	***	0.896	***
	(0.179)		(0.181)	
Age 24-25	2.078	***	2.176	***
	(0.136)		(0.161)	
Age 26-27	2.51	***	2.697	***
	(0.142)		(0.156)	
Age 28-30	3.638	***	3.8	***
	(0.15)		(0.157)	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 Indonesian Family Life Survey and 1991 Indonesian Census

15. Logistic regression results for multi-level models predicting the effect of
     education and region of residence on the odds of women's marriage:
     Indonesia, 1991 and 1993

Fixed Effect	Model 1		Model 2	
Macro level effects on women's odds of marriage				
Intercept	-0.746	***	-0.176	
	(0.086)		(0.109)	
Percent women with primary plus education	-0.048	***	-0.046	***
	(0.011)		(0.009)	
Rural dummy	0.16		-0.217	
	(0.228)		(0.198)	
Micro level effects on women's odds of marriage				
JRH general			-0.419	***
			(0.109)	
JRH Vocational			-0.738	**
			(0.317)	
SRH General			-1.414	***
			(0.128)	
SRH vocational			-1.449	***
			(0.132)	
Diploma			-2.034	***
			(0.237)	
University			-2.413	***
			(0.188)	
Christian	-0.981	***	-0.581	**
	(0.294)		(0.225)	
Hindu	-0.126	†	0.072	
	(0.073)		(0.082)	
Buddhist	-0.855	***	-0.714	***
	(0.202)		(0.089)	
Age 12-15	-4.456	***	-4.756	***
	(0.17)		(0.179)	

Age 16-17	-2.007	***	-2.08	***
	(0.11)		(0.126)	
Age 18-19	-0.915	***	-0.937	***
	(0.081)		(0.095)	
Age 22-23	0.575	***	0.667	***
	(0.086)		(0.102)	
Age 24-25	1.43	***	1.573	***
	(0.094)		(0.117)	
Age 26-27	1.918	***	2.158	***
	(0.085)		(0.105)	
Age 28-30	2.785	***	2.913	***
	(0.095)		(0.114)	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 Indonesian Family Life Survey and 1991 Indonesian Census

16. Logistic regression results for multi-level models predicting the effects of education and region of residence on men's odds of marriage between 1993 and 1997: Indonesia, 1993-1997

Fixed Effect	Model 1		Model 2		Model 3		Model 4	
Macro level effects on the odds of men's marriage								
Intercept	-0.78	***	-0.774	***	-0.892	***	-0.887	***
	(0.126)		(0.13)		(0.215)		(0.218)	
Percent men with primary plus education	-0.018	**			-0.008			
	(0.007)				(0.007)			
Rural dummy			0.362	**			0.135	
			(0.149)				(0.141)	
Micro level effects on the odds of men's marriage								
Working					0.574	***	0.574	***
					(0.146)		(0.146)	
Currently enrolled in school					-1.078	***	-1.08	***
					(0.115)		(0.116)	
JRH General					-0.338	**	-0.339	***
					(0.13)		(0.13)	
JRH Vocational					-0.246		-0.248	
					(0.371)		(0.374)	
SRH General					-0.241	***	-0.244	***
					(0.083)		(0.082)	
SRH Vocational					-0.066		-0.069	
					(0.109)		(0.111)	
Diploma					0.251		0.253	
					(0.244)		(0.245)	
University					0.052		0.051	
					(0.177)		(0.172)	
Christian	-0.623	***	-0.648	***	-0.536	***	-0.548	***
	(0.167)		(0.156)		(0.161)		(0.157)	
Hindu	-0.082		-0.085		0.117		0.117	
	(0.32)		(0.311)		(0.332)		(0.325)	
Buddhist	-1.394	***	-1.402	***	-1.345	***	-1.351	***
	(0.248)		(0.238)		(0.368)		(0.361)	

Age 12-13	-3.464	***	-3.463	***	-2.507	***	-2.507	***
	(0.305)		(0.306)		(0.296)		(0.297)	
Age 14-15	-2.053	***	-2.051	***	-1.424	***	-1.423	***
	(0.174)		(0.177)		(0.176)		(0.178)	
Age 16-17	-1.353	***	-1.351	***	-0.903	***	-0.901	***
	(0.156)		(0.155)		(0.172)		(0.171)	
Age 18-19	-0.33	**	-0.33	**	-0.056		-0.055	
	(0.134)		(0.134)		(0.15)		(0.149)	
Age 22-23	0.387	**	0.386	**	0.369	*	0.369	*
	(0.181)		(0.18)		(0.196)		(0.196)	
Age 24-25	0.642	***	0.641	***	0.482	***	0.482	***
	(0.14)		(0.14)		(0.13)		(0.13)	
Age 26-27	1.111	***	1.108	***	0.868	***	0.866	***
	(0.183)		(0.182)		(0.172)		(0.172)	
Age 28-30	1.137	***	1.134	***	0.807	***	0.805	***
	(0.189)		(0.19)		(0.172)		(0.172)	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 and 1997 Indonesian Family Life Survey and 1991 Indonesian Census

17. Logistic regression results for multi-level models predicting the effect of education and region of residence on women's odds of marriage between 1993 and 1997, Indonesia, 1993-1997

Fixed Effect	Model 1		Model 2		Model 3		Model 4	
Macro level effects on the odds of women's marriage								
Intercept	-0.166		-0.171		-0.283	*	-0.291	*
	(0.118)		(0.102)		(0.138)		(0.129)	
Percent women with primary plus education	-0.033	***			-0.025	***		
	(0.008)				(0.007)			
Rural dummy			0.642	***			0.492	***
			(0.148)				(0.124)	
Micro level effects on the odds of women's marriage								
Working					0.221	**	0.225	**
					(0.1)		(0.101)	
Currently enrolled in school					-1.278	***	-1.282	***
					(0.137)		(0.139)	
JRH General					0.139		0.139	
					(0.123)		(0.123)	
JRH Vocational					0.224		0.223	
					(0.354)		(0.345)	
SRH general					0.147		0.156	
					(0.106)		(0.106)	
SRH Vocational					0.36		0.365	+
					(0.22)		(0.219)	
Diploma					0.479	*	0.502	*
					(0.239)		(0.241)	
University					0.299		0.323	
					(0.236)		(0.231)	
Christian	-0.606	***	-0.635	***	-0.534	***	-0.572	***
	(0.124)		(0.134)		(0.14)		(0.156)	
Hindu	-0.232		-0.156		-0.186		-0.129	
	(0.277)		(0.25)		(0.246)		(0.226)	
Buddhist	-0.158		-0.189		0.029		-0.003	
	(0.35)		(0.344)		(0.285)		(0.285)	

Age 12-13	-2.228	***	-2.227	***	-1.168	***	-1.157	***
	(0.201)		(0.204)		(0.222)		(0.224)	
Age 14-15	-1.245	***	-1.242	***	-0.553	***	-0.543	***
	(0.147)		(0.15)		(0.17)		(0.171)	
Age 16-17	-0.507	***	-0.505	***	0.035		0.043	
	(0.169)		(0.17)		(0.158)		(0.158)	
Age 18-19	-0.166		-0.165		0.131		0.134	
	(0.122)		(0.12)		(0.126)		(0.125)	
Age 22-23	0.215		0.218		0.128		0.129	
	(0.173)		(0.173)		(0.174)		(0.174)	
Ahe 24-25	0.25		0.265	†	0.102		0.116	
	(0.156)		(0.157)		(0.152)		(0.153)	
Age 26-27	0.257		0.261		-0.005		-0.006	
	(0.277)		(0.275)		(0.248)		(0.247)	
Age 28-30	-0.681	**	-0.67	**	-0.922	***	-0.912	***
	(0.281)		(0.28)		(0.265)		(0.262)	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 and 1997 Indonesian Family Life Survey and 1991 Indonesian Census

18. Maximum likelihood logit estimates of selected independent variables on the odds of marriage for earning people between 1993 and 1997: Indonesia, 1993-1997

Parameter	Estimate for women		Estimate for men		Estimate for women		Estimate for men	
Intercept	-0.6783		-1.0919		-0.7737		-0.9893	
log of wage	0.0989		0.07		0.0918		0.0743	
Junior high general	0.0117		-0.0185		-0.0329		0.0152	
Junior high vocational	0.6531		-0.1046		0.5984		-0.0632	
Senior high general	0.4701		-0.2254		0.4096		-0.1949	
Senior high vocational	0.3987		0.2623		0.3359		0.3192	
Diploma	0.3736		-0.8992		0.2504		-0.8032	
University	0.8577		-0.6198		0.6451		-0.6172	
Age 12-13	-0.9543		-1.5279	*	-0.9775		-1.5422	*
Age 14-15	-0.4106		-0.784	*	-0.4071		-0.8634	*
Age 16-17	0.246		-1.2542	***	0.2464		-1.255	***
Age 18-19	-0.0624		-0.2643		-0.0808		-0.2444	
Age 22-23	0.2344		0.0405		0.2698		0.0408	
Age 24-25	-0.1382		-0.0804		-0.1718		-0.1063	
Age 26-27	-0.00268		0.589	*	0.0254		0.5766	†
Age 28-30	-1.0012	*	0.9257	**	-0.9769	*	0.9064	
Socioeconomic status					0.0344		-0.0308	
Urban	-0.5883	**	0.00171		-0.6137	**	0.00179	
Number younger sisters	0.2032	**	-0.0198		0.2018	**	-0.0234	
Number older brothers	-0.2121		-0.0358		-0.211		-0.019	
Number younger brothers	-0.0236		0.0595		-0.0278		0.0581	
Number older sisters	-0.1827		-0.5246	*	-0.1854		-0.5027	*
Co-residence with parents	-0.1343		-0.3795	*	-0.1152		-0.4148	*
Buddhist	0.7489		-0.2046		0.7334		-0.0744	
Christian	-0.8443	**	-0.4866		-0.8419	**	-0.413	
N. Sumatra	-0.0249		0.3289		0.0261		0.3418	
W. Sumatra	-0.2298		-0.1854		-0.1766		-0.1761	
S. Sumatra	1.1782		0.4423		1.2184		0.4422	
Lampung	-2.0574	†	0.5585		-1.9924	†	0.5214	
W. Java	-0.3774		0.7328	**	-0.2955		0.7264	**
C. Java	-0.4073		0.5004		-0.3475		0.4975	
Yogjakarta	-0.5951		-0.7968		-0.5547		-0.779	
E. Java	-0.3524		0.1084		-0.2865		0.1215	
Bali	-1.1335	**	0.852	*	-1.1481	*	0.8821	*
West Nusa Tengarra	-0.8894		0.7431	†	-0.8152		0.639	
S. Kalimantan	1.2789		0.4575		1.3458		0.4047	
S. Sulawesi	-0.8588	†	-0.4832		-0.8243	†	-0.4956	
Chi-sq	60.1953	***	73.4907	***	59.2307	***	72.6882	***
N	505		675		505		675	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 and 1997 Indonesian Family Life Survey

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19. Maximum likelihood logit estimates of selected independent variables on the odds of marriage between 1993 and 1997: Indonesia 1993-1997

Parameter	Model 1 SES Only				Model 2 SES + Family Structure			
	Women		Men		Women		Men	
Intercept	0.857	***	-0.554	***	0.906	***	-0.347	
Worked last year								
Enrolled in school								
Junior high general								
Junior high vocational								
Senior high general								
Senior high vocational								
Diploma								
University								
Age 12-13	-2.272	***	-3.517	***	-2.21	***	-3.372	***
Age 14-15	-1.29	***	-2.06	***	-1.239	***	-1.951	***
Age 16-17	-0.534	***	-1.36	***	-0.493	***	-1.293	***
Age 18-19	-0.176		-0.325	**	-0.15		-0.3	*
Age 22-23	0.247		0.419	***	0.25		0.391	**
Age 24-25	0.301		0.696	***	0.239		0.662	***
Age 26-27	0.318		1.179	***	0.264		1.122	***
Age 28-30	-0.673		1.218	***	-0.761	**	1.185	***
Socioeconomic status	-0.067	***	-0.077	***	-0.061	***	-0.068	***
Urban residence	-0.54	***	-0.248	**	-0.517	***	-0.212	*
Number younger sisters					0.059	†	0.005	
Number older brothers					-0.266	***	-0.155	
Number younger brothers					0.002		0.049	
Number older sisters					-0.18	**	-0.553	***
Co-residence with parents					-0.081		-0.33	***
Hindu	0.236		-0.349		0.191		-0.331	
Buddhist	-0.019		-1.403	*	-0.007		-1.415	*
Christian	-0.624	***	-0.562	**	-0.623	***	-0.596	***
N. Sumatra	-0.568	***	0.164		-0.59	***	0.221	
W. Sumatra	-0.715	***	-0.028		-0.713	***	-0.062	
S. Sumatra	-0.365	†	0.613	**	-0.358	†	0.619	**
Lampung	-0.25		0.453	*	-0.203		0.405	
W. Java	0.008		0.681	***	-0.027		0.65	***
C. Java	-0.603	***	0.002		-0.65	***	0.006	
Yogjakarta	-0.583	***	-0.413	†	-0.619	***	-0.391	
E. Java	-0.214		0.134		-0.26		0.14	
Bali	-0.878	*	0.655		-0.874	*	0.616	
West Nusa Tengarra	-0.399	*	0.567	**	-0.445	**	0.572	**
S. Kalimantan	-0.045		0.405		-0.065		0.37	
S. Sulawesi	-0.7	***	0		-0.72	***	-0.014	
chi-sq	440.39	***	803.11	***	467	***	833.59	***
N	3303		3987		3300		3985	

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 and 1997 Indonesian Family Life Survey

19. Maximum likelihood logit estimates of selected independent
    variables on the odds of marriage between
    1993 and 1997: Indonesia, 1993-1997 – Continued

| | Model 3 | | |
| | All | | |
Parameter	Women		Men
Intercept	0.313		-0.966 ***
Worked last year	0.362 ***		0.571 ***
Enrolled in school	-1.253 ***		-1.14 ***
Junior high general	0.175		-0.339 *
Junior high vocational	0.378		-0.288
Senior high general	0.166		-0.255
Senior high vocational	0.394 **		0.035
Diploma	0.443		0.644
University	0.612 *		0.306
Age 12-13	-1.196 ***		-2.254 ***
Age 14-15	-0.523 ***		-1.265 ***
Age 16-17	0.085		-0.801 ***
Age 18-19	0.117		-0.046
Age 22-23	0.131		0.301 †
Age 24-25	0.111		0.428 *
Age 26-27	-0.115		0.73 ***
Age 28-30	-0.902 ***		0.781 ***
Socioeconomic status	-0.021		-0.004
Urban residence	-0.465 ***		-0.101
Number younger sisters	0.047		0.008
Number older brothers	-0.18 *		-0.179
Number younger brothers	-0.017		0.069 †
Number older sisters	-0.193 *		-0.539 ***
Co-residence with parents	0.039		-0.263 *
Hindu	0.473		0.058
Buddhist	0.035		-1.456 *
Christian	-0.577 **		-0.462 *
N. Sumatra	-0.541 **		0.311
W. Sumatra	-0.439 *		0.133
S. Sumatra	-0.054		0.714 **
Lampung	0.054		0.503 †
W. Java	-0.109		0.669 ***
C. Java	-0.668 ***		0.025
Yogjakarta	-0.551 **		-0.139
E. Java	-0.305		0.291
Bali	-1.071 *		0.543
West Nusa Tengarra	-0.392 †		0.607 *
S. Kalimantan	-0.004		0.379
S. Sulawesi	-0.76 ***		0.03
chi-sq	569.84 ***		841.39 ***
N	2873		3442

***p<0.001 **p<0.01 *p<0.05 †p<0.1
Source: 1993 and 1997 Indonesian Family Life Survey

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