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Measuring the Sexual System and Union Formation among Adolescents in Developing Countries

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A

Abstract. Both sexual relations and union formation occur in diverse forms in developing countries. Adolescent reproductive and related behavior can no longer be understood entirely, or even primarily, within the narrow domain of union formation or "marriage," but rather in a broader framework of casual, commercial, and committed sexual relations, all occurring before as well as after the onset of "marital union."

Global data on age-specific fertility rates and age-specific marital fertility rates, assembled for 84 countries, show that delayed marriage (rising percentages single) is often associated with rising marital fertility rates. This rise may be genuine, but in some instances it reflects problems with the way that surveys record marital versus premarital birth events or measure union status and the age at onset of first union. This paper reviews three approaches to survey-based data collection: (a) the standard DHS approach; (b) the traditional KAP/fertility survey approach; and (c) the youth sexuality survey approach. It goes on to discuss a number of specialized youth sexuality surveys conducted in Asia using the third approach, made necessary because most Asian DHS rounds have not included people who are unmarried.

B

Measuring the Sexual System and Union Formation among Adolescents in Developing Countries

by

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I. Introduction

Both sexual relations and union formation occur in diverse forms in developing countries today. Adolescent reproduction and related behavior no longer can be understood entirely or even primarily within the narrow domain of union formation or "marriage;" but rather, in a broader framework of casual and commercial sexual relations as well as committed sexual relations, all occurring before as well as after the onset of "marital union."[1] In some circumstances sexual relations may be the union-defining event. Sexual relations involving commitment to a partner can occur both within unions and among those not in unions (the so-called *single*), and in many societies it is common for the single to have casual sexual relations (sex with acquaintances for social or sexual purposes) or engage partners for pay (commercial sexual relations). In some societies such relationships may be common among those in unions as well.

This totality of sexual behaviors and surrounding institutions and ideology make up each society's *Sexual System*, a societal subsystem linked to Marriage, Family, Demographic, Technological,

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[1]Issues of concept, terminology and measurement are at the core of this paper. As a necessary starting point, I reserve use of two terms as generic and culturally neutral. I use the term *union* when referring to relationships which are long-term in intent, self-defined, and socially recognized in day-to-day, practical terms. The term *marriage* is reserved for unions with a socially recognized and formal starting point identified by ritual or at least by a public event. Some marriage events are *formal* by virtue of state or religious sanction. Unions which are not marriages are sometimes denoted as *informal*, but I avoid that term as not sufficiently neutral. Other terms such as *consensual union*, *common-law relationship*, and the like are widely used in many societies but almost always carry important meanings that are culture or society-specific. Their use is necessary in context but rarely appropriate in comparative analysis.

State and other societal subsystems. Powerful social and economic forces shape behavior in each of these domains and thus drive changes in sexual behavior and related norms and institutions. For example, family controls over young people's sexual expression are weakening in most societies, being replaced in varying degrees by peer group standards, media images and the like. Technological advances make protected sexual relations a real possibility for most young people, though only a minority of each kind of youth sexual behavior is actually protected (the proportions vary widely across societies and social strata). State interventions into the Sexual System among youth range from the timid to the intimidating and in different settings may reinforce, redirect or undercut family, religious and other influences.

The historical processes acting to modify sexual and union formation systems are widely recognized and will get little attention here. These include the revolution in contraceptive technology, which has provided the means to separate sexual activity and its biological consequence; the educational revolution with its profound structural and behavioral implications (Meyer, Ramirez and Soysal 1992), and a revolution in family systems including a shift in generational power and weakening of the traditional parental leverage over offspring (Goode 1963).

The complete elaboration of a sexual system, fully embedded in culture, union formation and other institutions is a worthy but impractical scientific goal for the short run. A more attainable goal for the near term is to measure specific attitudes and behaviors comprising important dimensions of sexual activity and union formation among the young. We can now document far more about these matters than was possible just a few years ago, thanks to advances along the whole spectrum of social science methodologies, from careful qualitative investigations to large-scale surveys dedicated to studying youth sexuality.[2]

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[2]In this paper I am giving very little attention to qualitative or in-depth investigations of union formation and sexuality among the young, in part because I hold the unpopular view that

The situation across much of Latin America is much better understood now than a few years ago, thanks to numerous DHS's and a set of national and sub-national surveys carried out with the coordination of the Center for Disease Control and Prevention. The CDC surveys are reported at the national level and regionally in a series of papers by Morris (1986,1988,1992,1993,1994). DHS data provide the basis for comparative analyses by Yinger et al (1992) and the Population Reference Bureau (1992a), and another by Singh and Wulf (1990) which combines DHS and CDC data to cover a wide array of Latin American settings.

The societies of Africa have been the subject of considerable interest, in part because African union formation and sexual systems are complex and unlike systems elsewhere, but also because the reproductive health of young women is so directly and adversely affected (Cherlin and Riley 1986; Population Reference Bureau 1992b). Examining all of this are DHS-based comparative studies (e.g.: Meekers 1992,1993, Gage and Meekers 1993, 1994), but also broader works of synthesis and systemic description, notably Bledsoe and Cohen (1993), Bledsoe (1990), Caldwell, Caldwell and Quiggin (1989;1992), Caldwell Orbuloya and Caldwell (1991), Le Blanc (1991) and others. Where the Latin America literature (at least that part of it that I have seen) remains at a descriptive and programmatic level, aimed primarily to inform or motivate policy, the African literature goes beyond that and takes the shape of a major and quite important debate over the nature of sexuality, union formation and closely related aspects of African society. Even the work on core demographic topics such as nuptiality and fertility is really concerned with African societies as systems and how they are organized and cohere (an excellent example is the work of Lesthaeghe (see Lesthaeghe, Kaufman and Meekers [1989] on nuptiality and Lesthaeghe [1989] on fertility regimes).

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large-scale data collection is *under* rather than *over*-valued, but also because the important methodological issues involved in comparing much less combining large-scale quantitative with in-depth qualitative information deserves far more attention than I can give here.

Other studies have assembled data for a broader set of countries in order to provide a global view. An early and outstanding example from the standpoint of data analysis is by Henry and Piotrow (1979). This is an analysis of age at union and fertility based on WFS data, notable for the effort taken to assemble data for a large number of developing countries. The authors examine percents ever married and ASFRs at age 15-19 in relation to total fertility rates, and amply document the significance of later union formation for fertility reduction. Senderowitz and Paxman (1985) are more directly concerned with adolescent fertility, but their very brief section on premarital sexual activity cites only Hofmann (1984), who in turn mentions a number of European countries but only South Korea, Kenya and Ghana among the developing countries. A United Nations study (1983) draws on WFS data from 21 developing countries to consider "births to married and unmarried women," but the analysis is very limited because the WFS data are for married women, who retrospectively report relatively few births when they were unmarried. By the early 1990's adolescent sexuality including sex outside of unions had come to be recognized as a widespread phenomenon, but the authors of another United Nations compilation on adolescent reproductive behavior devote only a few pages to "sexual exposure among unmarried teenagers" and complain of the difficulty encountered in compiling data on intercourse experience by age from various sources for 23 developing countries. Of these only 17 include data separately for the unmarried (United Nations 1989:44-56 and Table 8).

At this point the DHSs begin to provide data for both sexual experience and childbearing on single women from systematically comparable surveys. Westoff, Blanc and Nyblade (1994) present such data for 18 African and 10 Latin American countries. These estimates demonstrate a wide variation in levels for both experience of intercourse and birth among single women. Very recently we have seen a steady supply of analytic reports on adolescent fertility or adolescent health (e.g.: Senderowitz 1995; McCauley and Salter 1995; Alan Guttmacher Institute 1995). These are primarily programmatic documents, with extensive and useful commentary on both

causes and consequences of early sex or childbearing, especially among the unmarried. Though not focussed on estimation, these studies are able to present a considerable body of direct evidence about unmarried sex and childbearing, drawing almost exclusively on the Demographic and Health Surveys. The latest of these global reviews (McDevitt 1996) is notable for the effort taken there to assemble data for a large number of developing countries--all those involved in the WFS surveys, the DHS surveys, or the Center for Disease Control and Prevention surveys in Latin America--and to combine these data with data from the International Data Base (IDB) maintained by the International Population Center of the U.S. Census Bureau.[3]

As valuable as these studies are, there are certain shortcomings reflecting data limitations. Despite all the progress, many large-scale survey investigations of sexual behavior and processes of union formation continue to define and explore these topics rather narrowly. The cultural and institutional contexts of union formation and sexual behavior are given only very limited coverage. In the studies just reviewed males receive scant attention relative to females, a problem imposed in large measure by the focus of WFS and DHS data collection on females. This is usually justified by the greater and more direct negative consequences of early sex and childbearing for women. Nevertheless, to understand patterns and design programs data on males are essential. Moreover, union formation and other features of a sexual system can only be characterized fully by drawing on information from each of the sexes. Another problem is that generally only DHS/WFS/CDC countries are discussed, though some studies do incorporate a few additional countries drawing on other sources. Finally, and very notably, the Asian societies are barely represented. There exist no Asian-regional analyses of findings, and the existing studies of global scope have given Asia far less attention than they might have done.

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[3]The data can be extracted by country/topic, or the entire database downloaded, at *URL:http//:www.census.gov/ipc/www/idbnew.html.*

There are some good and interesting reasons for this relative omission of Asia. Much of the region is considered developed and so is not covered by WFSs and DHSs. Less obvious but equally important is the persistent view that in Asia, more perhaps than elsewhere, sex occurs within unions, unions are usually institutionalized marriages, and the marriage-entry event is well-defined. A curious feature runs through all of the very many conventional household demographic surveys carried out in Asia over the years: questions about sex and reproduction are asked only of those who have ever been in unions.[4]

There is a positive side to this picture of data problems relating to the study of youth sexuality. As a consequence of the situation just described, a number of important national data collection efforts have been completed across Asia that provide sexual, union formation and reproductive health information on whole youth cohorts regardless of union status. Some of these surveys achieve much greater depth on union formation and sexuality than is typical of DHS's and other fertility or health surveys, though of course they provide only very limited comparability among countries.

Later in this paper we extract some lessons from this highly varied body of Asian survey experience. The next section draws on existing compilations of cross-national data to establish that adolescent sexuality and sexual experience outside of unions is not uncommon across a very broad spectrum of societies.

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[4]This statement is supported by the compilations in Baum et. al (1974) and United Nations (1980). Of the DHS's for Asia thus far--seven covering five countries are listed at the DHS website (URL:http://www.macroint.com/dhs)-- in only the 1993 Philippines round have sex, pregnancy and childbearing questions been asked without regard to marital status. In Sub-Saharan Africa and Latin America all of the surveys listed (a total of 69) ask about pregnancy and sexual experience without regard to marital status. Four of the nine Near East/North Africa surveys interview all women.

II. Union Formation and Fertility Among the Young: Cross-National Observations

A. Data for Global Comparisons

The inventory of relevant evidence includes limited over-time information on certain demographic rates and comparative socio-economic features, most importantly on the two main components of overall fertility. There are marital status distributions, available from national censuses and surveys; and, more limited and less reliable estimates of age-specific fertility, usually from national-scale demographic surveys of ever-married women and sometimes from censuses subjected to techniques of indirect estimation.

It is possible to draw upon this combination of data sources for relevant information extending backward in time, though there are serious problems of coverage and definitional inconsistency. The following sections utilize global data assembled in this way following procedures which are summarized in an Appendix and discussed fully in a separate report (Xenos and Kabamalan 1997). Briefly, national data on marital status (percents never and ever-married) were assembled from several major compilations. National estimates of age-specific fertility rates were also assembled, though with considerably more difficulty (cf Appendix). For the present purpose discussion is limited to union formation and fertility data for the age groups 15-19 and 20-24. I focus on all the countries covered by one or more rounds of the World Fertility Survey or the Demographic and Health Survey by about the beginning of 1996, a total of 56 countries. In addition, I have compiled the same data on all the Asian countries not already included, bringing the total of countries to 74. The DHS/WFS country data are examined shortly in relation to other estimates from the countries with surveys, while the complete Asia data-set is employed as background to my discussion of the Asian survey materials.

B. Changing Marital Structure and its Causes

Marital status distributions offer the longest available series of nuptiality data for most societies. The international protocol for classification by "marital status" is much debated but probably the best we can have considering the diversity of union forms around the world. The elementary distinction between single (never married) and ever-married is generally presumed to possess a high degree of validity and consistency across societies. It captures broad patterns fairly well, though van de Walle is essentially on the mark in complaining of ". . . ready-made methods tailored to Western traditions" (Van de Walle 1968:183). In what follows I use conventional marital status information for certain comparative purposes, but one of my main conclusions is that the conventional marital status classification has begun to break down for many countries (and perhaps worldwide) as a schema identifying those who are sexually active. As we now recognize, the process of union formation can be lengthy, involving several key events occurring in a variety of sequences, and giving rise to a range of current union statuses reflecting diversity in the forms of union.[5]

Nevertheless, there is no other way to achieve temporal depth and broad national coverage. Some important global studies have used this kind of information, from Dixon's (1971) influential analysis of the determinants of union timing, Durch's Population Bulletin (1980), the United Nations' two-volume compilation and analysis (United Nations 1988, 1989), and the International Center for Research on Women's comparative study (ICRW 1979), to the very recent analysis by Singh and Samara (1996). These data also have supported the testing of specific hypotheses

[5] I place a very task-focussed meaning on "forms of union," referring to institutions, processes or behaviors that render ambiguous whether a person is or is not in a union. In Latin America and Africa a diversity of forms has long been recognized. In some Asian societies diversity in forms of union is just emerging, or perhaps is just being discovered and documented.

regarding causation (e.g.: Preston and Strong [1986] on the effects of mortality decline). At the regional level marital status data have been employed comparatively in a number of studies. The problematic African data have been examined and utilized critically, earlier by Van de Walle 1968, updated in 1993, and more recently by Lesthaeghe and various colleagues (Lesthaeghe, Kaufman and Meekers 1989) and Chojnacka (1995). Latin American marital status data were examined by Arretx (1971) and Rosero-Bixby (forthcoming), Middle Eastern data by Chamie and Weller (1982), Asian data by the author (Smith 1980), updated in Xenos and Gultiano (1992), and of course European data by Hajnal (1965) and the European Fertility Project (Coale and Watkins 1986).

It is beyond my topic to comment on the methods and findings of these various studies, except for a few points of immediate relevance. One point, documented by all of them, is that there has been a worldwide delay in age at union formation. This long term transformation can be seen in survey data where those cover a span of time, but the large number of census series covering relatively long periods of time bring the pattern into focus especially well. Moreover, the census series provide the same information for males as for females, allowing a more complete description of the union formation system. In general, both sexes have experienced delay, though these have typically been greater for females than males leading to some convergence of female and male ages at union and reduction in the average age difference at union (see, for example, United Nations [1989]).

As a consequence of this historic timing change for both sexes, and contrary to general impressions, young people in developing areas are initiating sexual relations progressively later on average, not earlier. At the same time, though, and this is the critical point, increasing proportions of young people are initiating sexual activity before forming unions as traditionally defined and in highly various circumstances. One important implication of this is that conventional data on

marriage trends or the married population very often fail to describe a significant part of the pattern of adolescent reproductive behavior. For adequate analysis therefore we must rely increasingly on specialized surveys which encompass single as well as married youth (ie, the whole of the age cohort), and on intensive and smaller-scale investigations.

C. Changing Fertility

Overall age-specific fertility rates under age 25 have moved downward virtually everywhere in the last two decades. Data on marital composition clearly indicate that delayed marriage has been an important contributor to that trend. The few exceptions are primarily several Latin American countries (Singh and Wulf 1990). The remaining component of overall fertility, age specific rates of marital fertility, have behaved much less consistently. Comparing marital rates at ages 15-19 in 1970 and 1990 (Figure 1), it is apparent that marital rates moved upward as often as downward. Across the 54 countries with information adequate for estimation, 29 had ASMFR declines of 10 percent or greater, while 18 had increases of at least 10 percent. The remainder had very small changes. The countries with apparent increases are found mainly in Asia and Latin America. These patterns in marital rates at ages 15 through 19 highlight some measurement issues and at the same time suggest that significant levels of sexual intercourse and conception outside of unions may not be limited to the well-known cases in Africa and Latin America.

D. Changing Interrelationship between Union Formation and "Marital" Fertility

The observations that follow are based on the scattergram information in Figure 2, which locates countries circa 1970 with regard to percents married and age-specific marital fertility rates, both for females aged 15 through 19. The data are for a subset of countries involved in the DHS and WFS surveys, plus all other countries of Asia. The latter group includes the developed countries

of East Asia (Japan, Taiwan, Hong Kong, South Korea), the developing countries of Southeast and South Asia not covered by the surveys, and a set of the countries of Western Asia in the UN's regional designation.

From a long-term historical standpoint we might expect the general pattern to trend from upper right (relatively early union and high marital fertility) to lower left (relatively late union and low marital fertility). But it is only among the highly developed countries represented (e.g.: Japan, South Korea) that this is the case, joined by countries such as the PRC with a high degree of demographic discipline. Among the remaining countries there is a clear negative association between the percent ever married and the level of marital fertility in the under-twenty age range described. Very high percents ever married (early unions) are associated with relatively low marital fertility rates (viz: Nigeria, Bangladesh, Yemen, India, Nepal, Cameroon). Very low percents ever married (late unions) are associated with relatively high marital rates.[6] Consistent with this cross-section pattern is the fact that for many of the countries represented, the marital fertility rate among women aged 15-19 rises over time. Evidence for this is not shown here, but of the 54 countries with the necessary data for the 1970-1990 period 18 or one third have rising rates.

The literature offers some ideas about why there should be a negative association such as in Figure 2 and also rising adolescent marital rates. One line of argument sees both later union and higher marital fertility as consequences of "development," union timing responding to factors like

[6]Other compilations of similar data have focussed on the percents ever married and their relationship with ASFRs or some other measure of overall fertility (e.g.: Henry and Piotrow 1979; McDevitt 1996:pp 27ff). Henry and Piotrow provide, for a large number of countries, the two measures I am using, but do not calculate ASMFRs from them. My scatterplot of their recalculated data replicates the pattern reported here.

greater educational attainment, and marital fertility responding to the improved nutrition associated with the early stages of the development process. An example of this argument is provided in Mosk's (1983) analysis of Japanese demographic transition. Another general notion has to do with "catching up" behavior; when union formation is relatively late (later than in the recent past, for example, or later than in the preceding generation), there may be an effort in the early years of a union to accelerate childbearing in order to compensate and get on a temporal track in line with personal expectations or social-cultural ideals. This would *ceteris paribus* boost the marital fertility rate when unions are late. This theme is prominent in efforts to model the relationship between nuptiality and fertility (Ruzika 1979). European fertility transition is sometimes described in these terms, where couple-level considerations are extended to the societal level in terms of "homeostatic compensation"--when union is late the reproductive loss is made up for by higher marital rates.

Another explanation begins with the observation of shortened first birth intervals in several Asian countries and the well documented shift toward romantic over parentally arranged unions in many societies (Goode 1963). The argument is that coital frequencies are higher in such unions, especially in the early months and years (Rindfuss and Morgan 1983), and sometimes relatively low in some traditional settings reported ethnographically. The biometric literature is introduced to demonstrate that plausible shifts in coital frequencies could account for the measured acceleration in first births.

Note that these and similar explanations are premised on the patterns being real ones, not the product of measurement or conceptual problems with either "marriage" or "marital childbearing." Another kind of explanation brings us to issues of concept and especially measurement. The martial fertility rates in Figure 2 were obtained indirectly from percents ever married and estimates of overall age-specific fertility rates, the latter taken from survey sources (Xenos and Kabamalan

1997). The numerator of the typical ASFR is based on all births reported by women of a specified age as occuring during a defined period of time (prior to the survey). This should not, but typically does, include births when a woman was unmarried, though those are likely to be under reported. Most of the surveys exclude births to women who were still unmarried at the time of the data collection. Also likely to be included are births conceived before union as well as conceptions resulting from sexual intercourse prior to union. Another kind of critique can be made of the numerator of the percent ever married, since who are married and who not is not nearly so clear as the conventional classification scheme implies.

What then do we make of rising marital fertility rates at ages 15-19? A "catching up" psychology may be involved, possibly even among early marriers, and fecundity improvements among the youngest cohorts of women may also explain some of the pattern. However, the fact that the same negative relationship is found at ages 20-24 tends to weaken the fecundity argument (in this scattergram, not shown here, r at 20-24 is -0.30; r at 15-19 is -0.29). Conceptual and measurement factors seems to me to be the strongest influences operating here, in particular, underestimation of the percentage exposed regularly to conception because a growing proportion of women are in relationships (unions?) not deemed by the surveys, or perhaps by the women themselves, to be marriages or reproductively relevant. Another factor is loading onto the numerators of marital rates, birth events or at least conception events which occurred outside of (prior to) unions. A final issue involves the interplay of non- or premarital sex and the union formation process. There may be--and survey analyses readily demonstrate--a tendency for sexually experienced young women and men to marry earlier than they might have otherwise when they actually conceive or when they believe that conception is likely. That is, sex before union can lead to pregnancy, or concern about pregnancy, and either of these can accelerate the process of forming unions.

A brief consideration of several specific cases will bring out my conclusions about measurement more clearly. Japan experienced declining total fertility almost throughout the 20th century. Tsuya (1986:95-111) documents the marital fertility decline from 1920 through 1980, steady throughout except for relative stability between 1960 and 1975. Marital fertility declined in all age groups between 1950 and 1980. Tsuya does not comment on an important exception to this overall pattern: marital fertility rates at ages 20-24 and especially at 15-19 rise toward the end of her study's time frame. By this point the ever-married make up only one percent of the age group. Since the share of illigitimate births among total births had declined (from eight to under one percent between 1920 and 1980; see Tsuya, Table 12), the increase in marital fertility probably reflects in part marital births but also sexual experience and conceptions prior to marriage. More recently Tsuya has examined sexual experience and contraception among the unmarried in Japan (Tsuya 1993) and shows that premarital sex has been on the rise (also see the reports of the Japanese Association for Sex Education 1975, 1983, 1988). For Thailand the evidence of percents ever-married, age-specific marital fertility rates, and proportions of first births occuring before union or within fewer than seven months of union do not form clear trends across survey and census sources. A National Academy of Sciences panel report (Knodel et al 1982) refers to "the lack of a sharp diststinction . . . between de facto cohabitation and marriage" (p. 48) and examines the evidence of premarital sex in the context of such severe measurement difficulties. Since that time a wealth of evidence has become available. For South Korea we can consider the evidence for the period 1925-1960 (Cho, Arnold and Kwon 1982:Table 12 ande 49ff). Between 1925-30 and 1955-60, when age-specific fertility rates at ages 15-19 were declining from 189 to 38, the corresponding marital rates went from 276 to 357, all while the percentage ever-married at that age was declining very sharply from under one-third to under five percent (Cho et. al., Table 15). In that analysis the rising teen marital fertility rates are considered explicitly. Citing Rindfuss et. al. (1983), the authors agree that the cause is not rising fecundity but rather "...that a rapidly increasing proportion of first births within marriage were conceived before marriage" (p.

49). More recent analysis identifies the same pattern at ages 20-24 (Hong et al 1994).

These three illustrations, though summarized very briefly, suggest that sexual relations and even conception or (more rarely) birth occurs to persons in a variety of union statuses. Yet, these settings also illustrate contrasting implications for the measurement issues I am raising. In Japan concepts and measurement seem to be clear, and there is evidence of sexual behavior and pregnancy outcomes that can meaningfully be labelled "premarital." The South Korean case is similar. In Thailand there are various forms of union (Knodel et al 1982; also Yoddumnern 1981), and the "premarital" notion is problematic. The Thailand case further highlights additional forms of sexual access and the institutions surrounding these. I believe that similar points can be made about the Philippines (Xenos, Raymundo and Lusterio 1997). The overall methodological point is that in no instance can we demonstrate one of the explanations mentioned for the patterns observed to the exclusion of the others. In many settings all the methodological explanations apply to some degree. Our data on conception and birth in and outside of unions, and on union formation as a process, fall well short of the subtlety and accuracy that is required to sort things out.

All of this brings us to measurement at the individual level in national surveys. I have added to the Figure 2 scattergram, for those few DHS countries for which this is possible, the survey measurement of the percentage of single women 15-19 who reported having had sexual experience (from McCauley and Salter 1995, Table 3). We know from the comparative regional analyses that are available that these reported percentages are particularly high for the countries of Central Africa, that they are moderately high for many Latin American countries, and generally very low for other DHS countries. It appears from Figure 2 that while these DHS measurements of the level of premarital sex among single women aged 15-19 are available mainly for African and Latin American countries, they do describe a wide range of populations with respect to either

the age-specific marital fertility rate at that age, or that age group's percentage ever married. Union occurs much later in Botswana than in Nigeria, for example, and the age group in Botswana has a much higher age-specific marital fertility rate. Most of the Latin American cases are countries that seem to have relatively low percentages of the age group ever married. It is immediately clear that much of this pattern may reflect measurement problems--e.g.: the classification of union statuses, and of marital versus premarital sexual relations. Finally, we note that there are no Asian societies among the cases reporting high or even moderate levels of premarital sexual experience. In fact, the Philippines is the only Asian country with available estimates of sexual experience before union, and evidence collected more recently and with a different approach to measurement (Xenos, Raymundo and Lusterio, 1997) indicate that the negligible level indicated is empirically wide of the mark. Thus, the available comparative data provide a very limited and perhaps misleading global view several important respects.

III. Youth and Sexuality: Approaches to Data Collection in Surveys

In this section I strive to outline an agenda for youth sexuality data collection through surveys. Three issues are considered: the major kinds of survey data presently available including DHS data; the approaches that have been taken to exploring sensitive sexuality issues in structured interview situations; and, the range of topics that must be covered in a survey to gain an understanding of the Sexual System and its links with other societal subsystems. I approach these topics by drawing on the considerable body of survey investigation that exists for the Asian region. Because the Asian region has not had the benefit of systematic, comparative survey data collection on youth cohorts, a variety of approaches have been employed and different surveys have examined different aspects of the Sexual System in considerable depth.

A. The Demographic and Health Surveys

The primary worldwide source of recent estimates is the Demographic and Health Survey, which to the present has been conducted in essentially the same format in 88 rounds covering 56 countries. These surveys focus on reproductive information and health information and most include a core of questions relating to union formation and sexuality. Most importantly, in many of them these questions are directed to all women in a specified age range and not only to "married" women. The age range usually encompasses young women in the 15-24 range that I am labeling "youth."

It is important to review briefly how the DHS interviews approach the problem of measuring sexual experience among young people without regard to their union status. The time-honored, conventional approach to fertility and family planning surveys long has been to ask such questions only of the ever-married or perhaps the currently married. These were the target groups for most national population programs. In any case, it was felt, questions about childbearing, much less about sexual experience, could not or should not be asked of the unmarried. This approach was seriously deficient wherever union status was ambiguous, or where sexual activity, pregnancy or even childbearing were not limited to persons in unions.

In a DHS interview current marital status appears late in the sequence of questions, preceded by detailed questioning on live births and all pregnancies. Long before union status is determined, respondents have been asked if they have ever given birth, if they have ever had a pregnancy, if they have ever tried to control conception, and the ages at which all these events occurred. The section on "nuptiality" asks if the respondent has "ever been married or lived with a man," or "ever had sexual intercourse," and whether "now married or living with a man, or now widowed, divorced, or no longer living together." The timing of first union formation is determined by asking about having been married ".....more than once," and for the first union obtaining "month

and year started with 1st husband/partner" and the woman's age at that time. There are instructions to calculate for the consistency of year of birth, age at union, and implied year of union information, and to probe for consistent information when necessary.

With data of this kind it is possible to define "premarital" sex, conceptions and births, based on whatever the respondent may have understood by "married or lived with a man." The rationale is that respondents are more likely to report "premarital" sexual or conception events when they are given simply as events, outside the context of union status -- and the implication that one's status may have been inappropriate at the time.

The core of this effort is to obtain full reporting of sexual, conception, birth and union formation events, accurate as to timing, particularly relative to one another. Typically these data are analyzed in terms of a standard if limited set of background characteristics such as residence and education. An intervening layer of contextual information is given far less attention in the DHS's, namely information about the institutions and norms and other considerations immediately surrounding the behavioral outcomes. Across the various DHS surveys certain elements of institutional setting are elicited at least in a tentative way.[7] For example, does the partner have other "wives?" How many, and are you the first, second, etc.? These questions were asked across much of Sub-Saharan and North Africa. Did you live with your parents after the union? For how long? These were asked commonly but irregularly in all world regions. Beyond that, certain countries included additional questions in various domains of inquiry. Regarding union formation,

[7]In this section I draw heavily on the compendium of survey questions provided by Landers and McNiff (1994) which covers the first 27 DHS's. For analysis of the quality of DHS data on ages at sexual intercourse, union and first birth, see Blanc and Rutenberg (1990). Some important discrepancies among age responses are noted and the author's recommend changes in the survey instrument to permit easy consistency checking during the interviews. Also see, on the WFS's, Singh (1980).

the following information is especially relevant for the present discussion: current living situation (whether now living with someone); how spouse was chosen; blood relationship with spouse; type of ceremony; living arrangements after union, and for how long; whether there is presently a common-law partner; whether ever had a visiting partner; the total number of partners; whether the union was registered; whether there was a ceremony; and, type of first sexual partner. Any one country included from none to a few of these items.

On balance, the DHS represents an enormous advance over previous data sources relating to adolescent sexuality. It's lack of depth in some domains of inquiry reflects its focus on reproductive health and proximate determinants of fertility rather than broader issues of social organization. The DHS cannot be expected to produce full information for every domain it touches upon. Nevertheless, the DHS information does fall well short of a full or even an adequate picture of the immediate institutional context of sexual behavior outside of unions. I believe that the most significant deficiency of the DHSs in this domain--unfortunately a major one--is the traditional demographic focus on females. It is impossible to understand a sexual system, or even the main contours of sexual and union formation behavior, without information on each of the sexes.

Among the absent topics are heterosexual social behavior (courtship, dating, and their functional equivalents if they exist), participation in commercial sex as either supplier or purchaser, aspects of sexual orientation, and the process of union formation. For example, what institution--or commonly accepted set of expectations and behaviors--is the respondent indicating when she refers to "living together" with a partner? What are her alternative ways of being in a union? A review of household surveys dedicated to looking at adolescent sexuality brings out a variety of approaches to these and many other possible areas of inquiry.

B. A Survey of Asian Surveys

The central conceptual and methodological issue can be highlighted through a contrast. While the DHS surveys obtain sexual experience and pregnancy data from all young women essentially by ignoring temporarily the union formation institutions surrounding sex and pregnancy, some of the specialized surveys in Asia seek to measure the sexual experiences of all youth and the pregnancies of all women by first establishing their union formation experiences and, often, other kinds of sexual exposure as well. There are disadvantages as well as advantages of each of these general approaches, but the evidence is that different levels of sexual experience outside of "marital" unions are recorded using each procedure.

The United Nations compilation published in 1989 reports data on the unmarried in only four Asian countries: Hong Kong, the Philippines, South Korea and Thailand. My review at the end of the 1980's (Xenos 1990; see also Xenos 1992) discusses two Thailand studies of national scope, one in Taiwan, one in South Korea, two in Hong Kong, one in Malaysia, and one in Singapore. That review examined the policy and political contexts as well as methodologies of these studies and outlined the planning underway for several additional surveys. Since that time a number of large-scale studies have been completed, and still others are being planned. This can be attributed to several developments including the increased visibility of youth sexuality and youth reproductive health problems, and of course to the advent of HIV/AIDS in the region.

Xenos and Kabamalan (1997) identified 40 surveys which provide full or at least broad coverage of a national population, which include respondents below age 25, and which include at least limited exploration of sexuality and related issues. Among these only a few meet further criteria of adequate sample size, scientific methodology for achieving representativeness, and coverage of the entire cohort of specified age. This last criterion is of critical importance. Studies which

represent either only one sex or which are selective on marital status, for example, are of diminished value for understanding a sexual and union formation system. While it is the habit of demographers to approach females on issues relating to sexuality and reproduction, sexuality data from males are much more likely to be accurate, and in any case males must eventually be the targets of policy and programmatic efforts. The methodological problems with surveys covering only the single or only the married are easily demonstrated. Simply put, there are likely to be causal connections between sexual experience and current union status. The responses of neither the single or the married can easily indicate the correct behavioral distributions for the cohort as a whole.

No South Asian country seems as yet to have had a survey meeting these criteria, but several of the Southeast and East Asian countries have been covered at least once. The discussion following is based on a careful examination of a large number of surveys, but Table 1 contains detail describing a small, illustrative sub-group of them.

One issue is the strategy employed for structuring the questionnaire in order to ask questions about sexual issues of young people of either sex and any union status. Among the surveys we have reviewed we can distinguish four approaches to sampling and drawing survey-based information from youth. One is the *Traditional KAP/Fertility Survey Approach* employed by the WFS and numerous other demographic surveys until very recently. With this approach it is basically assumed that everything of interest occurs within "marriage" which is well defined. Current marital status is unambiguous. Age at entry is defined by an event which is well recognized. The core sequence of questions starts with current marital status and for the ever married or currently married proceeds to a pregnancy history. Age at entry to union may be obtained before or after the pregnancy history.

Another type of survey takes the *Standard DHS Approach*, which assumes at the outset and throughout much of the interview that there are no institutions or social expectations surrounding the formation of unions or the appropriateness of sexual activity while in various union statuses. One's pregnancies are purely a matter of factual record. Once those facts have been recorded, current marital status is recorded, followed by information on the timing of entry to "marriage." In this approach the core questions begin with a pregnancy history, then turn to marital status and age at first union.

Analytically, in both these approaches the timing of pregnancies and births and of union entrance are compared and inconsistencies are defined as premarital conceptions or premarital births. In both approaches questioning can and generally is extended beyond this core, primarily to the point of obtaining a complete "marriage" history, and perhaps to questions on the forms and circumstances surrounding "marriage" events.

The *Youth Sexuality Survey Approach* involves dedication of a much greater share of the questionnaire to obtaining information on union formation as a process, and on sexual experience. Typically questions on both union formation and sexual experience prior to entrance to a union are phrased in such a way that the information is embedded in the youth institutions governing heterosexual contact--dating, schooling, the organization of village work routines, and the like. There is the assumption that there exist union statuses, though also that an individual's experience of these may be fluid (change over time) and even be ambiguous to her or him at a particular moment. A basic assumption is that, to a considerable degree, respondents are aware of union status as a social and personal issue, and have a rehearsed, thought-through "presentation of self" in this regard. The sequence of core questions begins with current marital status (self labeled). Subsequent questions, perhaps scattered throughout a fairly lengthy questionnaire and interview, attempt to work through this initial self presentation to the more complex realities that may exist.

The approach has this unraveling and exploration in common with qualitative or in-depth interviewing, though of course the questionnaire interview does so in a structured fashion and does not generate the same textured description that a qualitative investigation does. The more complex realities explored minimally include previous union experiences as well as social and sexual life prior to the first union and perhaps thereafter.

A fourth kind of survey we have reviewed involves the *In-School Self-Completion Approach*, wherein the sample is stratified according to the design of the educational system and the age range which has been targeted. Respondents complete a questionnaire in private (though usually in a classroom setting). In Asian settings, virtually all enrolled students through the high school years, and even well beyond, are not currently in unions; most have never been in a union. Many of the in-school questionnaires we have seen essentially presume that respondents are single. This simplifies questionnaire design but is clearly inappropriate for some respondents.

It goes without saying that there are advantages and disadvantages of these various approaches. The traditional or fertility survey approach produces virtually no usable information from single youth. The in-school approach should be viewed as a cost-saving, short-cut means of representing a cohort, where the savings in time and money may not match the costs in selectivity biases. The most intractable problem is that leaving school can reflect one's marital and sexual history, other factors taken into account. We are left to consider the advantages and disadvantages in various cultural settings of variations of the DHS and the Youth Sexuality Survey approaches. I have reservations about the DHS approach but acknowledge that it provides useful information on premarital sexual experience, pregnancy and childbirth. It is also clear that the DHS approach lends itself to standard application in the context of a fertility survey. We also acknowledge that the youth sexuality survey approach requires a major commitment of research funds. Nevertheless, I suggest, in many settings even modestly adequate information cannot be

obtained without that kind of dedicated effort. To understand the costs and advantages more clearly we need to compare youth sexuality survey and DHS results where ever that can be done. In Asia there has been only one opportunity thus far, the Philippines, where the 1993 DHS and the 1994 Young Adult Fertility and Sexuality Survey can be compared, and in this instance the youth sexuality approach yields higher levels of female premarital sexual experience and also provides data from males which indicate levels so much higher that the female levels are called into question (Xenos, Raymundo and Lusterio 1997).

C. Describing the Sexual System of Youth

It is useful to organize discussion around a simple classification of sexual relations among adolescents distinguishing three categories of "sex before union," or sexual relations among adolescents not in unions: one is *casual* sexual relations not directly related to union formation as a precursor; another is *commercial* sexual relations, also, as is generally the case, not directly related to union formation; the third is *committed* sexual relations before but leading to a union. This might be labeled as "sex toward union." This is a schema focussed more on the immediate circumstances and motivations of individuals and couples than on the broader structures and historical forces that can shape prevalances and differentials. The schema has grown out of on-going analysis of youth sexuality survey data from the Philippines (Xenos, Raymundo and Lusterio, 1997). For each of a set of topics related to this schema, Table 1 provides a brief summary of the kinds of information obtained in some of the Asian surveys.

Part A of Table 1 lists topics related to behavioral, attitudinal and knowledge aspects of sexuality and a set of contexts, institutions, and background factors presumed to influence indicators of sexuality. Part B lists a variety of topics under the general rubric of reproductive health (those aspects relating to sexuality), and certain risk behaviors prominent among youth and sometimes

linked with either sexual behavior or HIV transmission. For each topic, the percentage of the complete set of 40 surveys which included the topic is indicated. Finally, the topical coverage of the DHS (round 3) model questionnaire is noted.

Seven recent surveys in five countries have been selected in order to bring out certain comparisons. The Cambodia survey is of a population for which sexuality data are virtually absent, field problems are great, and survey capabilities are very limited. The questionnaire is limited to topics thought to be crucial for immediate planning use. The Philippines YAFS-II survey is focussed on the sexuality and reproductive health of youth and complements a DHS conducted in the previous year. The Thailand Family and Youth Survey (FAYS) focussed on family issues by interviewing youth and covers sexuality, reproductive health and even basic demographic issues relatively lightly. The Thailand Partner Relations Survey, modeled on the WHO questionnaire, stresses sexuality and risk factors for HIV. It is less thorough on institutional contexts (family, dating, etc.) and demographic measurement. The two Hong Kong surveys were designed together and conducted simultaneously, one in schools and one covering youth in households. The in-school instrument is much shorter than that for households, largely because the generally younger student sample was presumed to be far less sexually experienced, and also because many questions were judged in advance to be inappropriate. The Taiwan survey is also of an in-school population, but there the questionnaire covers sexuality in detail but reproductive health less thoroughly.

The entries in Table 1 will be considered only selectively in order to make a few observations. The presence or absence of sexual experience, and of premarital sexual experience, is a core topic covered in nearly all the surveys. The exceptions are usually in-school surveys, such as Hong Kong's Adolescent Sexuality Survey, in-school phase. Direct questions on experience were thought to be impractical for the in-school sample. These direct behavioral questions were asked

of Hong Kong's household sample (ASS-HH). Attitudes about premarital sex are examined in most of the surveys.

Participation in commercial sex is an important issue in many Asian societies. The purchase of commercial sex is recorded in about one of three surveys, and a few of them also ask about the provision of sexual services, or record attitudes about commercial sex. Other aspects of sexual experience get far less attention. Some surveys consider homosexuality (behavior or attitudes towards), or extra-marital sexual experience. The prevalence of masturbation or attitudes toward masturbation are measured in many of the surveys.

The personal and institutional contexts for sexuality take up a large share of many of the questionnaires. Most regularly covered are family characteristics and relationships, and attitudes toward marriage. Dating and courtship behavior are also considered in most of the surveys. In a few countries home-leaving is considered important, in particular, the experience of living in dormitory situations.

Questions directed to HIV/AIDS knowledge were almost universally included after the first explicit mention in a 1988 Thailand survey. Questions on HIV attitudes and treatment/prevention are still confined to surveys with HIV/AIDS control as a primary motivating issue. While knowledge of condoms is commonly assessed, questions on attitudes and actual use are far less common. Risk behaviors are more likely to be measured when HIV is a major survey theme, though questions on smoking and drinking are not uncommon.

From each of the surveys under review can be extracted a rich battery of policy "indicators" of immediate practical value---the prevalence of premarital sex or of condom use with commercial sex workers, for example. But the greater analytic challenge with such data is to carry the analysis

through and beyond the production of indicators, to classifications and other arrangements of the data to yield a comprehensive model of how sexual access is patterned for each of the sexes and of the forces determining the Sexual System. Any Sexual System involves measurable facts, but also less accessible layers of reality. As a simple example, within the domain of pre-martial sex it is not a straightforward task to classify sexual relationships that are "casual" in nature from relationships that are recognized by the participants to be imbedded in a marriage process and thus anything but casual. The distinction may have become clear only in retrospect, may still be unclear even in retrospect, or may have been understood differently at the time by the male and the female partners. Ultimately the craft of survey research must include an appreciation of the methodology's limitations.

IV. Appendix: The Global Database

The strategy employed was to combine marital status data and data on age-specific fertility from a variety of available sources, and to combine those estimates with the United Nations Population Division's population estimates for 1950-1990 and projections for 1995 (United Nations 1994). An effort was made to develop national series back to 1950. Initially, estimation was limited to the subset of 56 countries covered by any of the World Fertility Surveys or Demographic and Health Surveys prior to about the end of 1995, plus those covered with national-scope youth sexuality surveys by the U.S. Center for Disease Control. To this were added the remaining countries of Asia. Thus, Asia is fully covered while the remainder of the developing world regions are covered selectively. In fact, the WFSs and DHSs were carried out in the largest of the developing countries, and the numerically most important exceptions are all in Asia and therefore were included.

Marital status data are widely available in national censuses, sometimes in lengthy series.

Whatever the validity of the single versus ever-married classification expressed in the international classification of marital statuses, there is at least a useful degree of cross-national comparability. I obtained percents ever-married (PEM) at ages 15-19, 20-24 and 45-49 for each sex from the U.S. Census Bureau International Population Center's International Data Base (IDB), and then supplemented those estimates from a variety of sources, notably the estimates compiled in United Nations (1990), and the much earlier compilation of the International Center for Research on Women (1979). For some countries other sources were consulted as well, and for the Asian countries I already had a virtually complete compilation of available estimates (Smith 1980), updated recently (Xenos and Gultiano [1992] and since then [author's unpublished worksheets]).

Age-specific fertility rates (ASFRs) are also available in the IDB and initially I extracted all that were posted for ages 15-19 and 20-24 along with corresponding Total Fertility Rates (TFRs). These were supplemented by ASFRs for 1960, 1965 and 1970 from USBC (1979), for the 1960s and 1970s from Henry and Piotrow (1979), and also an early compilation by the United Nations (UN 1977). The typical ASFR series is much less reliable than the series of percents ever-married. Graphic displays of the resulting PEM and ASFR series indicated this. Such estimates come from a wider array of sources, though most often from a national sample survey of ever-married women (The IDB unfortunately does not provide sources for its table of ASFRs). Gross outliers from apparent trends were omitted until a smooth (or at least a smoother) pattern of ASFRs resulted. The remaining PEMs and ASFRs were interpolated to quinquennial dates ending in 0 or 5 so that estimates could be produced for a consistent set of years. The goal was to cover the years from 1950 through 1990, but no extrapolation outside the range of available estimates was allowed unless a period of only one or two years was involved. The result in terms of coverage by region varies but for most of the countries it was possible to produce a usable series spanning 1970-1990. Coverage falls off sharply before that. PEMs frequently extend further back in time but ASFRs rarely do.

The marriage and fertility estimates were combined with the United Nations' national estimates of population by age and sex (United Nations 1994) to provide national profiles of changing population composition and especially changing numbers of youth in versus out of unions, youth sex ratios among the single versus overall, and the like. For some purposes these national data also have been combined with national indicators of adolescent marriage, reproductive health and sexuality taken from the global and regional surveys reviewed briefly in this paper. Those surveys draw heavily on the DHS, WFS and CDC survey rounds, supplemented by a few other data sources as available.

These basic estimates were then combined for specific years to yield estimates of the age-specific marital fertility rates (ASMFR) at ages 15-19 and 20-24. That is: ASMFRi = ASFRi / PEMi where PEM is a proportion. These are really "apparent" ASMFR's for several reasons. The overall fertility rate or ASFR at age 15-19, for example, in principal includes a marital and a non-marital component. My ASMFR calculation allocates to the numerator of the ASMFR all the births reflected in the ASFR, whether marital or not. This issue is taken up in the main body of this paper.

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Figure 1 Age-Specific Marital Fertility Rates

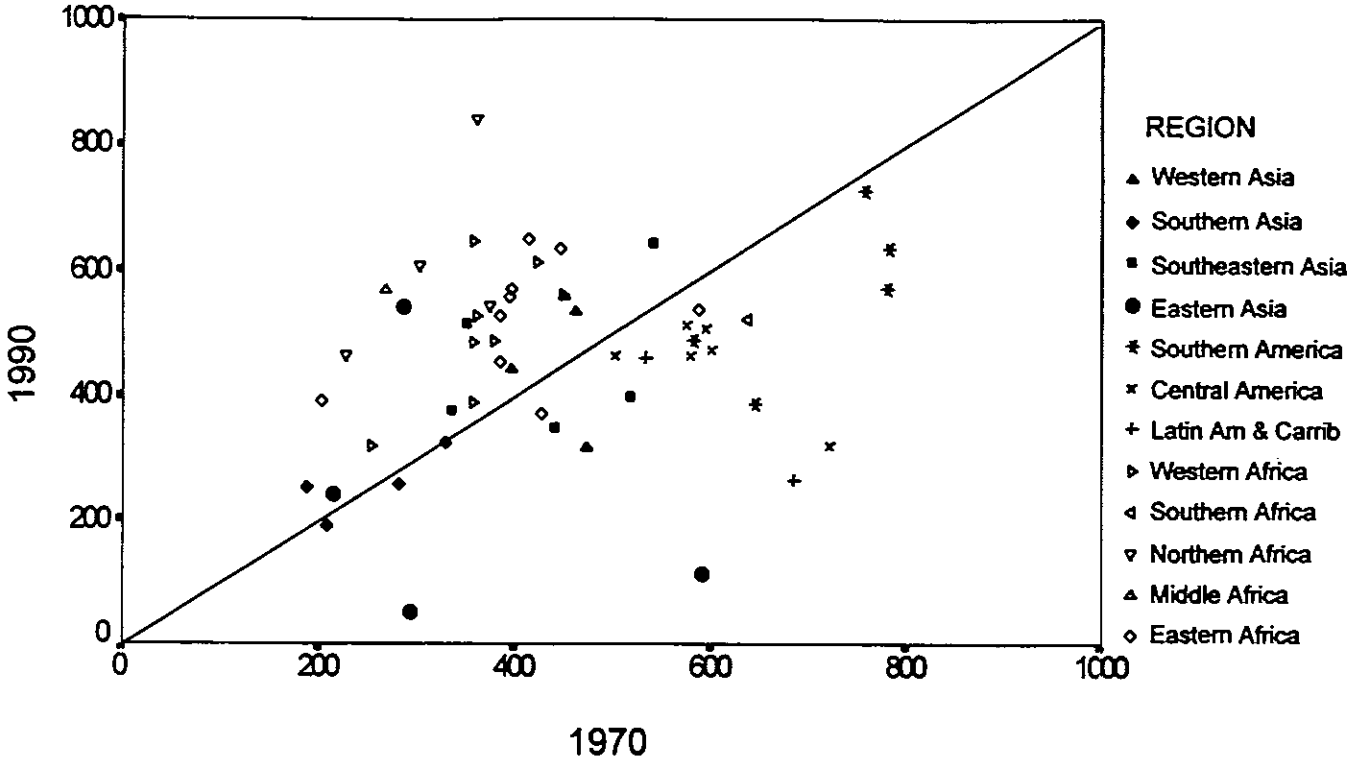
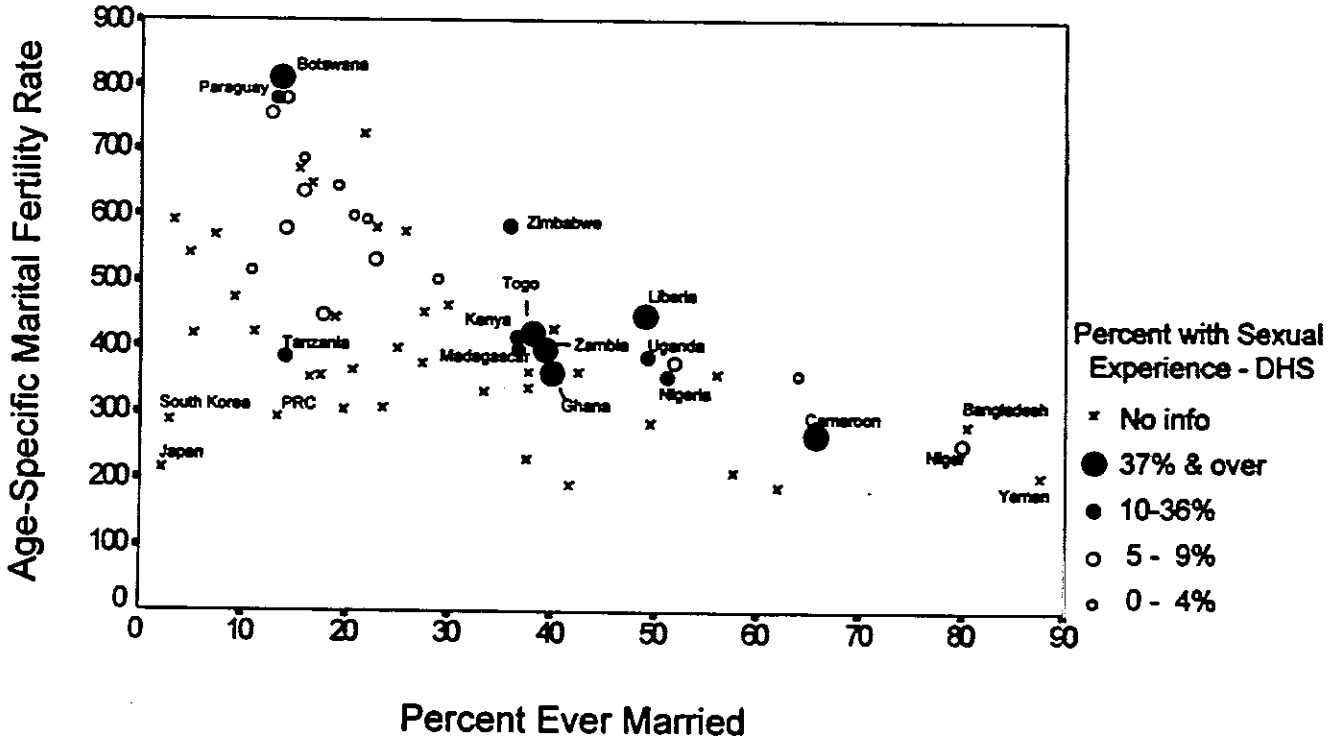
Figure 2 Marital & Marriage Components of Overall Fertility at Ages 15-19, Selected Countries Around 1970