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Evidence from Indonesia during the Economic Crisis**

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## **Contraceptive Use in a Changing Service Environment: Evidence from Indonesia during the Economic Crisis**

### **Abstract**

In the late 1990s most Southeast Asian nations experienced substantial economic downturns that reduced social sector spending and decreased individuals' spending power. Using unusually rich data from Indonesia collected in 1997 (just before the crisis) and in 1998 (during the crisis), we examine changes in the contraceptive supply environment and in women's choices regarding contraceptive use. Despite substantial changes in provider characteristics during the first year of the crisis, we find no statistically significant differences between 1997 and 1998 in overall levels of prevalence, in unmet need, or in method mix. Women's choices regarding source of contraceptive supplies, however, changed considerably over the period. We link changes in the supply environment to changes in women's choice of source of supply and find that a number of provider characteristics are significantly associated with women's choice of contraceptive source of supply.

In the late 1990s most of the nations in Southeast Asia experienced substantial economic downturns. Similar phenomena have occurred in Russia, Mexico, Ecuador, Brazil, and Argentina in recent years. Two consequences of such crises are reductions in social sector spending, which likely affects the price and quality of health and family planning services, and declines in individuals' spending power as currencies decline and prices rise. Because such crises have typically hit countries very suddenly, relatively little is known about the consequences of economic downturn for reproductive health services and for women's choices about contraceptive use.

We examine change in the contraceptive supply environment in Indonesia during the economic crisis, using unusually rich data we collected from service providers in 1997 and 1998. The data are from two rounds of the Indonesia Family Life Survey (IFLS), a longitudinal survey of individuals, households, communities, and facilities. Because the surveys interviewed individuals as well as providers, we also examine women's choices regarding contraceptive use and we relate these choices to characteristics of the providers to which women have access.

The IFLS data are unusual in that the 1997 and 1998 surveys bracket a period of dramatic and unexpected economic downturn. Though the crisis of the late 1990s affected many Asian countries, Indonesia has been hardest hit, with *per capita* gross domestic product shrinking by 12 percent in 1998 and the currency depreciating by about 80 percent (Arndt and Hill 1998; Stalker 2000). In Indonesia large-scale currency depreciation has major implications for services because most health and family planning supplies are imported (UNFPA 1998). Consequently, the service environment in late 1998 differs substantially from the service environment just one year earlier, with potential implications for individuals' contraceptive behaviors.

In this paper we describe changes during the first year of Indonesia's economic crisis in provider characteristics, patterns of contraceptive use, and women's choices regarding source of

contraceptive supplies. We also document choices regarding contraceptive use and source of supply in 1993, because these descriptive statistics facilitate consideration of whether differences in women's behaviors between 1997 and 1998 reflect the impact the crisis versus a continuation of longer-term trends.

Additionally, for 1997 and 1998, during which large changes in the supply environment occurred, we analyze the relationship between women's choices regarding source of contraceptive supplies and characteristics of the service environment. Although understanding this relationship is critical in determining which investments attract clients to which sectors, few analyses, however, have considered the relationship between provider characteristics and provider choice.

One exception is a study of the Philippines, which finds that clients are most attracted to local clinics that focus almost exclusively on family planning (Akin and Rous, 1997). Few of the measures of provider characteristics are significantly related to choice of provider, although increasing distance and the availability of health services at the facility appear to deter use.

A far larger number of papers have considered the relationship between adoption or continuation of contraceptive use and the service environment— in particular availability of family planning services. Studies from the 1970s and early 1980s generally document a positive association between contraceptive use and access to services (Rodriguez, 1978; Tsui et al., 1981; Cornelius and Novak, 1983; Chen et al., 1983). The effects of family planning program inputs on contraceptive use in later studies are more mixed (Pullum, 1981; Cochrane and Guilkey 1993; Tsui and Ochoa, 1992; Entwisle et al., 1996; DeGraff et al., 1997, Mroz et al., 1998).

Relatively few studies have been able to consider service quality. Pullum (1991) examines variations in contraceptive prevalence rates across Guatemalan communities as a function of both access and quality. He finds that quality measures he is able to consider

(staffing, availability of pills, and availability of sterilization) matter little. Mensch et al. (1996) examine the link between the quality of family planning services in the community and use of contraception in Peru. They find that the likelihood of contraceptive use rises as quality improves, although the effect is not large. Koenig et al (1996) show that women's perceptions of family planning fieldworker quality in Bangladesh are positively related both to subsequent adoption of contraception and to continuation.

Two important methodological difficulties arise in the literature on the link between the contraceptive service environment and patterns of contraceptive behavior. One of these is the lack of available data on characteristics of the contraceptive service environment linked to data on contraceptive behavior (Pullum, 1991; Mensch et al., 1996; Entwisle et al., 1996; Koenig et al., 1997; Akin and Rous, 1997). For only a handful of countries do data exist that support linking individual women to detailed community-specific information about service availability and quality at different types of providers and for multiple providers of the same type.

The second methodological difficulty is the potential for reverse causality to bias estimates of the link between the contraceptive service environment and contraceptive behavior. For example, if government programs are targeted to areas where contraceptive use is low, the correlation between access to these programs and contraceptive use will be biased downward. Statistical methods that address this issue include fixed effects, instrumental variables methods, and structural equations. These methods have been successfully applied in analyses that examine the link between access to services and contraceptive use, and between access to services and fertility (Gertler and Molyneaux, 1994; Angeles et al., 1998; Hotchkiss et al., 1999).

These methods have not been applied in analyses of source of contraceptive supply, perhaps in part because it is less clear how government manipulation of access to programs will affect a contraceptive user's choice about which provider to use among the options within her

community. We do not use these methods because of small sample sizes (precluding use of fixed effects), numerous measures of characteristics for multiple provider types (precluding finding an identifying instrument for each measure), and finally, because it is plausible that differences in provider characteristics between 1997 and 1998 resulted largely from an exogenous and unexpected downturn in the economy rather than from intentional manipulation of the service environment by policymakers attempting to target high or low fertility areas with particular types of services.

### **THE INDONESIAN SETTING**

Notwithstanding the economic crisis of the late 1990s, socioeconomic development in Indonesia has improved significantly over the past three decades. From 1967 to 1997 Indonesia's *per capita* gross domestic product (GDP) increased by almost 5 percent per year. At the same time, Indonesia achieved nearly universal enrollment in primary school and reduced the infant mortality rate by about two-thirds. Fertility declined as well, from 5.9 in the late 1960s to 2.8 in 1997—a fall ascribed to several different factors: economic growth, rising levels of education and women's labor force participation, increases in age at marriage, and a strong national family planning program (Hull, 2002).

Indonesia's National Family Planning Coordinating Board (BKKBN) has won numerous accolades and is often cited as a model for family planning programs in the developing world (Warwick, 1986; World Bank, 1990; Hull, 2002). BKKBN coordinates a number of activities designed to reduce fertility and provide a full range of contraceptive services at a high level of quality (Hamidjoyo and Chauls, 1995; Wilopo, 1997; UNFPA, 1998). Central objectives include promoting the small family norm, educating women about family planning, recruiting village-level family planning volunteers, and working with the Ministry of Health (MOH) to distribute contraceptives and to organize outreach efforts (Suyono, 1988; Hugo et al., 1987: p. 142; United



Nations, 1991). The primary program-supported methods are oral contraceptives, injections, implants, intrauterine devices, male and female sterilization, and condoms.

Methods that require a clinical setting, such as implants and IUDs are available from government health centers (physician-headed clinics that provide subsidized primary health care), private practitioners (doctors, midwives, and nurses), and government and private hospitals. Some of these providers also offer sterilization. Generally these facilities/providers serve a catchment area that includes more than one village or municipality.

Village midwives are another, relatively new, source of contraceptives. To address poor maternal health, the MOH trained and placed some 54,000 midwives in rural and underserved villages during the 1990s (Handayani et al. 1997; MOH, 1994). For at least three years after placement these midwives receive a salary, supplies, and supervision from the Ministry of Health, and in some cases from BKKBN. During this period they establish a quasi-private practice that will be self-sustaining after the period of government subsidization ends. Although village midwives are government employees, they are similar to private providers in that they have a solo practice and some flexibility in setting fees (hence we refer to them as quasi-private providers).

Methods that do not require a clinical setting are available at both the fixed-site clinics and private practices described above and at commercial pharmacies and community-based distribution points. Community-based distribution of family planning has a long history in Indonesia. Early on BKKBN hired family planning fieldworkers from local communities to cultivate new acceptors and distribute the resupply methods that require no medical training. As use grew, fieldworkers could no longer handle resupply. In response BKKBN developed village family planning posts. Local volunteers recruited from the village elite administered these posts,

distributing condoms and pills that they received from the family planning fieldworkers (MOH, 1990; Shiffman, 2002).

In the late 1970s family planning posts were merged with nutrition posts. These in turn became “Integrated Service Posts” (*posyandu* or community health posts) when new functions were added in 1986 (MOH, 1990). The community health posts are monthly activities organized by neighborhood volunteers and attended by reproductive-age women and children under five, primarily for the purpose of nutritional monitoring. Ideally the posts are also attended by health center staff and family planning fieldworkers, or more recently by village midwives. If trained health workers are present the posts provide contraceptive injections. Otherwise oral contraceptives and condoms are available (Kosen and Gunawan, 1996).

Most villages have several health posts, and many still have a family planning post as well. Although these posts benefit from outreach by government health and family planning workers, they function very differently from and far more fluidly than fixed-site government sources of supply such as health centers and hospitals. They are open only one morning per month, they are usually held at the home of one of village volunteers or in the village hall, they focus on serving only those in the immediate neighborhood, and they exist because of the energy of volunteer workers from the neighborhood. For these reasons we refer to community health posts and family planning posts as community rather than government sources of supply.

Changes in contraceptive pricing policy have accompanied the evolution of contraceptive distribution policy. For much of the 1970s and 1980s contraceptives were typically available free of charge. Beginning in the late 1980s the “Blue Circle” social marketing campaign encouraged users to purchase contraceptives from the private sector (which has routinely charged for services), while the “KB Mandiri” (family planning self-motivation and self-sufficiency) movement pushed users to pay small fees for methods still subsidized by the government

(Sihombing, 1994; Kantor Mependuduk/BKKBN 1998; Jensen 1996). Although most government facilities charge for family planning services, prices are considerably lower at government than at private providers.

Demographic and Health Survey data indicate that efforts to encourage “self-sufficiency” in family planning have had an impact. By 1997 more than half of all contraceptors relied on the private sector for supplies, and only 16 percent of users received contraceptives for free. The majority of users paid something for their contraceptives, regardless of whether they obtained them from government, private, or community sources. Payment for contraceptives was almost universal among users of pills and injections. Greater proportions of users of IUDs and NORPLANT reported receiving them free of charge (CBS et al., 1998).

The economic crisis of the late 1990s affected the contraceptive distribution and pricing mechanisms in place in Indonesia as of 1997. The Indonesian *rupiah* came under pressure in the latter part of the year, falling from around Rp2,400 per US\$ in July to about Rp4,800 by December of that year. In January 1998, the *rupiah* collapsed, to Rp15,000 per US\$, and continued to fluctuate wildly in value for the first three quarters of the year (Frankenberg, Thomas, and Beegle, 1999). Sharp increases in prices accompanied the financial chaos. Estimates by the Central Statistical Bureau put annual inflation at about 80 percent in 1998.

In Indonesia changes of this magnitude have the potential for substantial impact on health and family planning services. Many supplies are imported, so a higher exchange rate resulted in higher prices. Lack of confidence in the banking sector prevented domestic pharmaceutical companies from obtaining credit to import raw materials necessary to manufacture products. Cuts in transport budgets limited outreach activities, as well as routine supervision and monitoring (UNFPA, 1998).

In anticipation that supply-side changes would reduce contraceptive prevalence and induce switches to cheaper methods and to subsidized public providers, policy-makers implemented various responses. These included obtaining increased support for contraceptive procurement from a number of donor agencies, suspending efforts to encourage users to pay for a greater share of contraceptive costs, and, as part of a more general social safety net program, issuing poor households cards that provided them access to free health and family planning services (UNFPA, 1998). Most of the early loans for the social safety programs were put in place during the 1998/99 fiscal year. The pace at which the associated programs were implemented is not clear, but our data (described below) indicate that as of late 1998 only about 3 percent of households had health cards entitling them to free health and family planning services.

Another response involving the distribution mechanism for contraceptive methods requiring resupply was confirmed by field observations conducted in 1998 (NFPCB, 1999). Prior to the crisis, government health centers took responsibility for obtaining contraceptive supplies for their catchment areas from BKKBN's district office. From the health center, supplies arrived in villages via two routes. Health center workers brought supplies to the Village Midwives and family planning fieldworker supervisors brought supplies from government health centers to the family planning fieldworkers, who in turn distributed them to community distribution points.

In 1998 nationwide shortages in contraceptive commodities emerged and BKKBN could no longer routinely fill health centers' requests for supplies to meet their projected needs over the next several months (UNFPA, 1998). Instead, distribution was based much more closely on short term needs. Policy changed to allow family planning fieldworker supervisors to obtain contraceptives directly from BKKBN's district office, rather than waiting until they were

distributed to health centers (NFPCB, 1999). Fieldworker supervisors then allocated supplies both to health centers and to family planning fieldworkers.

## **DATA**

The data we use for this paper are from the Indonesia Family Life Survey (IFLS). The IFLS represents 83 percent of the Indonesian population and contains information on over 30,000 individuals living in 321 communities. Within each community interviews are conducted with up to 12 providers of health and family planning services. IFLS1, conducted in 1993, interviewed a total of 7,224 households (Frankenberg and Karoly 1995). IFLS2 was fielded in 1997 with the goal of reinterviewing all households that participated in IFLS1. IFLS2 succeeded at interviewing 94 percent of IFLS1 households and 91 percent of target respondents (Frankenberg and Thomas, 2000).

By January, 1998 it was clear that Indonesia would not be spared from the economic downturn gripping much of Asia. To provide information on the immediate impact of the crisis, we conducted another round of the survey one year after IFLS2. This survey, IFLS2+, interviewed a 25 percent sub-sample of IFLS households in 90 of the 321 original IFLS communities. IFLS2+ successfully interviewed over 98 percent of target households and 95 percent of target respondents.

The sample of communities for IFLS2+ was drawn in two stages. First, to reduce costs, 7 of the original 13 IFLS provinces were selected (West Nusa Tenggara, Central Java, Jakarta, West Java, South Kalimantan, South Sumatra, and North Sumatra). Second, within these provinces, enumeration areas were purposively selected to match the IFLS sample as closely as possible. The households selected for IFLS2+ cover the full spectrum of socioeconomic status and economic activity represented in the larger sample.

We have also compared the family planning service environment (in 1997) in the communities selected for IFLS2+ to the environment measured for the full set of IFLS communities. The comparisons were made for 33 indicators that reflect the availability, price, and quality of services related to family planning (results not shown). On 27 dimensions, including a composite index of service quality, sample communities were indistinguishable from the full set of communities. The indicators for which there was a statistically significant difference included the availability of NORPLANT and IUDs (slightly more and less available, respectively, at both government and private providers in sample communities), the price of injections at government health centers (slightly higher in sample communities), and the availability of injections at community health posts (slightly more available in sample communities).

We examine the family planning service environment in 1997 and 1998, using data from the IFLS facility survey, which covered four main types of providers: government health centers, private practitioners, quasi-private village midwives, and community health posts.

In 1997 the facilities we interviewed were selected from household survey responses to questions about knowledge of government health centers, private practitioners, and community health posts. In each community the most frequently mentioned facility of each type was interviewed and additional facilities were selected at random. In 1998 interviewers were instructed to reinterview the 1997 facilities. If a facility could not be recontacted interviewers added a facility of the same type based on a recommendation from the community leader. For the 90 IFLS communities analyzed in this paper, the 1997 interviews took place at 260 government health centers, 526 private practitioners, and 178 health posts. In 1998 interviews took place at 237 health centers, 479 private practitioners, and 159 health posts.

The facility questionnaires collect information about the availability, price, and quality of health and family planning services. Questionnaires administered at government health centers, private practices, and village midwives' practices are very similar. The government health center instrument is the most comprehensive because these facilities are the most complex. The director of the health center is asked to designate an appropriate respondent for each module. Both the health center and the private practice questionnaires collect data on the availability and prices of services, lab tests, and drugs, and on the availability of equipment and supplies. Both questionnaires include sections where interviewers record direct observations of the facility's cleanliness and other features that might influence its attractiveness to patients. Five hypothetical patient scenarios probe the respondents' knowledge of correct procedure with respect to provision of IUDs and oral contraceptives, prenatal care, treatment of a child with vomiting and diarrhea, and treatment of an adult with a respiratory illness.

The questionnaires were designed to provide data that could be used to measure the facility's functional capacity (adequacy of the laboratory, pharmacy, equipment, staff, and physical environment) and the adequacy of specific services for general outpatient care, care for pregnant women, well-baby care, and family planning.

The questionnaire for community health posts reflects the far narrower role that health posts play in service provision. The health post questionnaire asks about the characteristics of the volunteer staff (including general education and health training), frequency of contact with outreach workers from the government health center and with family planning field workers, services offered at the post, and the availability of supplies and equipment.

Apart from the direct observations of facility cleanliness and attractiveness, much of the data collected at the facilities is based on provider recall and is not independently verified by the interviewer. Such verification is not feasible given the length of the questionnaire, the necessity

of establishing a constructive interviewing climate in order to gain the cooperation of the respondent for the duration of the interview, and the fact that interviewers are university graduates rather than trained medical personnel. Interviewers introduce themselves as part of a university research team rather than a government project, which means that providers face no obvious incentives for misrepresentation. We have no evidence to suggest that providers systematically misrepresent their situation either positively or negatively, and for the most part the questionnaires do not cover particularly sensitive topics.<sup>1</sup> Unfortunately, because no other data at this level of detail is collected from facilities in Indonesia, we cannot compare the IFLS data to another source of information.

The four types of providers interviewed in the IFLS facility survey account for about 80 percent of the provider types from which IFLS respondents report receiving family planning services. The most commonly mentioned sources not interviewed as part of the facility survey are hospitals, pharmacies, village family planning posts, and family planning fieldworkers.

### **PROVIDER CHARACTERISTICS DURING THE FIRST YEAR OF THE CRISIS**

By comparing results from the 1997 facility survey to those from the 1998 survey we can assess the extent of change facilities experienced during the first year of the crisis. With respect to understanding shifts in the supply environment during the period of economic downturn, we focus particularly on characteristics policymakers projected would change rapidly, namely commodity availability and prices for various methods of contraception.

As an overall measure of the supply environment, we create a composite measure of ability to offer quality family planning services. The index combines two elements of Bruce's quality of care framework: method choice and appropriate constellation of services (Bruce,

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<sup>1</sup> A potential exception is that some unlicensed nurses and paramedics may hesitate to admit they dispense prescription drugs, but such an omission should not affect our ability to characterize the family planning service environment.



1990). It is formed by summing a set of dichotomous measures of the availability of five types of oral contraceptives, two types of contraceptive injections, implants, two types of IUDs, hemoglobin and pregnancy tests, iron tablets, aspirin, an antibiotic, and possession of a vaginal speculum. For government health centers, private providers, and village midwives, this composite measure can assume values from 0 to 16. For community health posts, which offer a narrower range of services, the measure is constructed by summing dichotomous measures of whether pills, injections, iron tablets, prenatal care, and treatment are available.

Descriptive statistics summarizing characteristics of government health centers, private practitioners, village midwives, and health posts are presented in Table 1. With respect to the composite quality of family planning services (panel A), government health centers receive the highest scores, averaging almost twelve. Quasi-private village midwives provide the next highest quality of services, with scores averaging above ten. The average score for private practitioners is between six and seven. The average score for community health posts is about three, reflecting the fact that their services are far more limited. The quality of services at government health centers, quasi-private village midwives, and health posts does not change significantly across years, suggesting that these sources of family planning services neither expanded nor restricted services between 1997 and 1998. A significant improvement in the overall quality of family planning services at private providers is observed.

Panel B of Table 1 focuses more narrowly on availability and price of reversible methods of contraception. In both years almost 90 percent of government health centers offer pills. Similar fractions offer injections. Among private providers, about half offer pills. In 1997 69 percent of private providers offer injections—a figure that rises (significantly) to 75 percent by 1998. The fraction of village midwives offering pills falls from 95 percent in 1997 to 77 percent in 1998—a statistically significant decline. The fraction of community health posts offering pills

falls as well, but not significantly. At none of the providers has a decline in offering NORPLANT or IUDs taken place.

Changes in the service environment during the first year of the crisis are much larger if we consider stock outages and prices. The fraction of community health posts with pills in stock falls over the period, dropping by almost 20 percentage points between 1997 and 1998. These changes may reflect changes in the contraceptive commodity distribution system described earlier. In 1998 government health centers were less involved in contraceptive procurement, which may have reduced the availability of oral contraceptives at health posts and village midwives. With respect to injections, government health centers, private providers, and village midwives all report a higher frequency of stock outages in 1998 than in 1997, but the change is particularly dramatic for government facilities. In 1997 only about 16 percent of government facilities experienced an injection outage in the six months before the interview, whereas by 1998 the percentage had risen to almost 48 percent.

Price changes also occur between 1997 and 1998. We present both nominal and real prices.<sup>2</sup> At both government and private providers increases in pill prices between 1997 and 1998 were negligible in nominal terms but declined significantly in real terms. Little real change occurred in pill prices at the practices of village midwives, although the nominal increase was significant. Between 1997 and 1998 sizable price increases, in both nominal and real terms, did occur at community health posts. Moreover, the percentage of community health posts offering pills for free fell drastically, from 23 percent in 1997 to only 2 percent in 1998. Availability of free pills declined at the practices of village midwives as well (this change is significant with probability .08), but not at government clinics. It appears that with respect to pills, government

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<sup>2</sup> Prices are deflated using province- and month-specific inflation rates from Indonesia's Central Bureau of Statistics (Frankenberg et al., 1999).

health centers responded to BKKBN's temporary suspension of efforts to encourage clients to absorb greater responsibility for the costs of contraception, and that private providers followed suit.

Trends in prices for injections, which are largely imported, differ from those for pills. Nominal prices rose significantly at all types of providers, but real prices rose significantly only at government health centers and at community health posts. The proportion of health posts offering injections for free fell over the period, reaching zero in 1998.

Finally, at all provider types that offer NORPLANT and IUDs, nominal prices rose significantly, but real prices did not. Nor were there significant changes in the fraction of providers offering NORPLANT or IUDs for free.

#### **PATTERNS OF CONTRACEPTIVE USE DURING THE 1990s**

Changes in the supply environment documented in the preceding section have the potential to affect women's contraceptive use behaviors. In this section we explore patterns of contraceptive use at the individual level. In each round of the household survey currently married women age 15 to 49 were asked whether they were contracepting, what method they used, and the provider from whom they obtained that method. In addition to presenting the results from women in 1997 and 1998, we also include descriptive statistics for 1993, which helps establish the extent to which changes between 1997 and 1998 represent new patterns versus a continuation of trends in place prior to the crisis.

Information on contraceptive prevalence levels, method mix, and reasons for non-use are presented in Table 2, for currently married women age 15-49. Prevalence was 52 percent in 1993, 55 percent in 1997, and 53 percent in 1998. These changes in prevalence are not statistically significant. Results from Indonesia's National Socioeconomic Survey yield similar levels of prevalence: 55 percent in 1997, 1998, and 1999 (Molyneaux 2000).

The table also shows the reasons women give for choosing not to contracept. The distributions are generally very similar across the three years. Between 1997 and 1998 the percentage of women who report that they do not use contraception because of cost doubles, rising from 2 to 4 percent—an increase that is statistically significant but substantively small. These results in combination with the lack of change in contraceptive prevalence suggest that changes in price and stock outages of contraceptives during the first year of the crisis did not put contraceptives out of reach for a substantial proportion of women.

Another way to characterize contraceptive use is to consider, for women who say they want no more children and are not currently pregnant or post-partum amenorrheic, the percentage using contraception. In each of the three years contraceptive prevalence is around 70 percent for these women. The data provide no evidence that an increase in unmet need for contraception accompanied Indonesia's economic downturn.

The final rows of Table 2 display contraceptive method mix. In each year pills and injections are by far the most popular contraceptives, followed by IUDs, implants, and sterilization. In 1993 women chose IUDs more frequently and injections less frequently than in latter years. These differences are statistically significant, as is the decline in use of sterilization between 1993 and 1997. Differences in method mix between 1997 and 1998 are small and not statistically significant.

The results presented in Table 2 suggest that, despite the economic crisis, aggregate patterns of contraceptive use in 1998 are very similar to patterns in 1997. Relative to the trend between 1993 and 1997, however, the rates of decline in use of IUDs and increase in use of injections appears to have ceased between 1997 and 1998.

Possibly similar levels of overall use and in method chosen for the latter two years mask shifts in prevalence or method choice for various population subgroups. For example, real per

capita expenditures declined by 24% between 1997 and 1998, which may have resulted in declines in use among the least well-off (Frankenberg et al., 1999). For example, real *per capita* expenditures declined by 24 percent between 1997 and 1998, which may have resulted in declines in use among the least well-off (Frankenberg et al., 1999). We present results from a multinomial logistic regression (coefficients expressed as relative risks) of method choice (pills, injections, other modern methods, or traditional methods, relative to no use) in relation to age, educational attainment, household economic resources, and residence (Table 3, estimates are presented as relative risks).

The age categories contrast women between 15 and 29 years of age with women between 30 and 49 years of age. Younger women are more likely to choose injectable contraceptives over non-use than are older women, but they are less likely to choose other modern methods over non-use than are older women. Age is unrelated to use of pills or traditional methods relative to non-use. These patterns characterize both 1997 and 1998.

Education and household *per capita* expenditure levels measure socioeconomic status and household resources. We include two dichotomous measures of educational attainment: whether women have between 6 and 9 years of education and whether women have 10 or more years of education (the excluded category is 0-5 years of education). To capture level of economic resources we include a dichotomous indicator of whether a woman resides in a household in which *per capita* expenditures are below the 25<sup>th</sup> percentile of the distribution.

Education is associated with women's choices regarding contraception. In both years women with 6 to 9 years of education are more likely to use injections (relative to not contracepting) than are their less educated counterparts. In 1998 women with 6 to 9 years of education are also more likely to use other modern methods (relative to not contracepting) than are their less educated counterparts. In both years women with at least 10 years of education are

more likely to use other modern methods (relative to not contracepting) than are women with 0-5 years of education. Finally, in 1997 women with at least 10 years of education are also more likely to use traditional methods (relative to not contracepting) than are women with 0-5 years of education.

Economic resources display little relationship with contraceptive use patterns. The only exception is that in 1997 women from the poorest 25 percent of households are less likely to use the pill (relative to not contracepting) than are women from better-off households.

Patterns of contraceptive use for subgroups are largely the same across the two years. Similar aggregate levels of contraceptive prevalence in 1997 and 1998 do not appear to mask changes in use for particular socioeconomic and demographic subgroups of women.

Women's choices of provider are another dimension of contraceptive behavior. Because pills and injections account for almost three-quarters of all contraceptive use and because they require regular resupply, we examine the distributions of supply source for pill and injection users in detail in Table 4. Respondents specified their source of supply from a list of 16 possible choices. We aggregate women's responses regarding their choice of source of supply into the following seven groups: government providers (including public hospitals, health centers, and mobile efforts by government health workers), private providers (including private hospitals, clinics, and single practice providers), quasi-private village midwives, pharmacies, community health posts, village family planning posts and field workers, and friends or family. In 1997 and 1998 we are able to distinguish the quasi-private village midwives from other private sector providers. The 1993 question about source of supply did not distinguish village midwives from other private providers, in part because village midwives were still relatively uncommon in 1993 (only 10 percent of IFLS villages had a village midwife in 1993, whereas by 1997, 45 percent of communities did).

The first three columns of the table display the results for injections. In 1993, 43 percent receive injections from government providers and 53 percent of users obtain their injections from private sources. The remaining four percent rely on community health posts. Between 1993 and 1997 reliance on government providers falls, while reliance on private providers increases and village midwives emerge as a source of injections. The changes in source of supply between 1993 and 1997 are not statistically significant. The pattern of change is similar but strikingly larger between 1997 and 1998. In this one year period use of government providers falls by 13 percentage points, use of private providers rises by 7 percentage points, and use of village midwives rises by 6 percentage points. All of these changes are statistically significant.

The second three columns of the table display the results for pills. In 1993 most pill users rely on government providers (32 percent), private providers (25 percent), health posts (21 percent each), or family planning posts or fieldworkers (18 percent). By 1997 a substantial and statistically significant decline has occurred in the fraction of pill users obtaining supplies from government providers. In turn, use of pharmacies increases significantly and village midwives emerge as a source of supplies.

The changes between 1997 and 1998 are substantially different. Reliance on health posts declines by eight percentage points, and use of family planning posts or fieldworkers rises by 13 percentage points. Both these changes are statistically significant. Use of government and private providers appear to fall somewhat, and reliance of village midwives and friends or family rise, but none of these changes are statistically significant.

## **LINKING PROVIDER CHARACTERISTICS TO WOMEN'S CHOICES OF SUPPLY SOURCE**

Although contraceptive prevalence and method mix are nearly identical in 1997 and 1998, for those using resupply methods, choice of source of contraceptive supplies differs considerably across these two years. These changes may reflect the changes in provider

characteristics documented earlier. For injection users, prices increase and the relatively greater increase in stock outages at government health centers may encourage women to shift toward private providers and quasi-private village midwives. For pill users, supply bottlenecks at health posts and village midwives may encourage shifts to family planning posts and fieldworkers.

With respect to injections, between 1997 and 1998 users of public providers switched out of use of public services and increased their reliance on village midwives and private providers. Unfortunately specifying a model of provider choice for injection users that is both estimable and that adequately captures the service environment is not possible because of the combination of complex and extensive changes in provider characteristics, small sample sizes, the dominance of private providers as a source of injections, and the fact that village midwives are not available in all communities.

It is possible to examine the role of the service environment in women's choices of pill provider, because pill users are more evenly distributed across types of providers that are available in all communities. For 1997 and 1998 we estimate multinomial logistic regressions in which the unit of analysis is a woman who uses oral contraceptives and the outcome of interest is her choice for source of pills among community health posts, family planning posts or fieldworkers, government providers, private providers, and a residual category that groups together women who obtained pills from village midwives, pharmacies, or friends and family (results for this last group are not shown but it is included in the specification to account for the full set of provider choices). We highlight the first four categories of providers mentioned above because the descriptive statistics of provider characteristics suggest that government health centers, private providers, and community health posts differ from one another in important ways, and because they are the groups of far greatest importance in the distribution of choices regarding a pill provider.



To examine the role that provider characteristics play in determining which provider type a woman actually chooses, we must characterize, for each woman, the service options to which she has access. We construct community-specific measures for each provider type. Although the theoretical literature posits the importance of service quality, relatively few analyses document the role quality plays in women's contraceptive choices. To test the role of quality, we include the community mean of the quality index for government health centers and for private facilities. Family planning fieldworkers have historically played an important role in contraceptive commodity distribution—a responsibility that appears to have grown during the economic crisis (NFPCB, 1999). To capture the role of family planning fieldworkers we include a variable measuring the number of visits to the community the family planning fieldworker makes in a year. Visits are modeled as a linear spline with a knot at 12 visits—a specification that allows the impact of fieldworker visits to differ by their frequency. Finally, because of declines in the purchasing power of individuals and changes over time in the relative prices of pills across providers, we also include measures of the average price of pills at government health centers, private facilities, and community health posts.

In 1997, education and level of economic resources are unrelated to choice of service provider. Relative to women in rural areas, however, women in urban areas are far less likely to obtain their pills from family planning posts or fieldworkers, and are far more likely to obtain their pills from private sources than from community health posts.

In addition to the characteristics of the supply environment, the characteristics of a user may also affect her choice of source of supply. We include dichotomous indicators of whether a woman has 6 or more years of education, whether *per capita* expenditures in her household place her in the lowest quartile of the expenditure distribution, and whether she lives in an urban area.

The results for family planning posts and fieldworkers, government providers, and private providers, presented as relative risks, appear in Table 5. Community health posts serve as the reference group. Standard errors are estimated using a Huber correction to adjust for clustering at the community level. The first three columns refer to the results from 1997. The first column displays the results for the choice to obtain pills from family planning posts or fieldworkers rather than from health posts. In 1997, as the quality of government providers rises, women are more likely to obtain pills from a family planning post or fieldworker than from a community health post. No other factors affect the choice of a family planning post or fieldworker rather than a health post.

Columns Two and Three present the results for use of government and private sources of pills, respectively, rather than health posts. In communities where fieldworker visits occur more than once per month, an increasing frequency of these visits decreases the likelihood of receiving pills from government or from private providers rather than from health posts. In 1997 it appears that frequency of outreach activities on the part of family planning fieldworkers plays a significant role in encouraging use of community-based rather than government or private services.

Columns four through six present the results for 1998. In contrast to 1997, economic resources (but not education) are related source of supply. Women in poorer households are considerably less likely to obtain their pills from government or private sources (relative to community health posts) than are women from better-off households. It is plausible that a woman's economic resources are more closely associated with her choice of provider in 1998 than in 1997 given that real per capita expenditures fell significantly between 1997 and 1998. As in 1997, women in urban areas are less likely to obtain pills from family planning posts or

fieldworkers than from community health posts, but urban residence is no longer related to the choice of private providers rather than community health posts.

Several characteristics of the supply environment are related to the choice of whether to obtain pills from family planning posts or fieldworkers rather than from community health posts. A rising frequency of family planning fieldworker visits is associated with a decreasing likelihood that women obtain their pills from family planning posts or family planning fieldworkers rather than from community health posts. This finding did not emerge in 1997. Possibly this result reflects the shift between 1997 and 1998 in the role family planning fieldworkers play in the distribution of commodities. More frequent visits in 1998 may indicate a greater effort to keep community health posts well-stocked (which could impact women's propensity to use health posts rather than other sources). The choice between family planning posts or fieldworkers and health posts is also associated with the price of pills. On the other hand, higher prices of pills at health centers discourage use of family planning posts or fieldworkers relative to community health posts. Higher prices of pills at community health posts encourage use of family planning posts or fieldworkers relative to health posts.

Three aspects of the service environment are significantly associated with whether women choose government sources of supply rather than community health posts. First, as the quality of public providers rises, women are more likely to use government providers than community health posts. Second, as the frequency of family planning fieldworker visits rises, women are less likely to choose government sources of supply rather than community health posts. As suggested above, more frequent family planning visits may be associated with greater success at keeping community health posts stocked with pills. Third, as the price of pills at community health posts rises, women are more likely to choose government sources of supply rather than health posts.

The results are similar for the choice between private sources of supply and community health posts. A higher quality of services at private providers is associated with a greater likelihood of choosing private providers rather than community health posts.<sup>3</sup> More frequent outreach visits from family planning fieldworkers are associated with a reduced likelihood of choosing a private provider rather than a community health post. Also, as the price of pills at community health posts rises, women are more likely to choose private sources of supply rather than health posts.

## **DISCUSSION**

The results in table 5 provide considerable evidence that the service environment is a significant factor in women's choices regarding sources of pills. The relevance of provider characteristics emerges in 1997, when supply systems were operating fairly regularly, but is more apparent one year later, when providers were dealing with rapid inflation, currency depreciation, and cutbacks in government spending.

Two shortcomings of our statistical approach merit discussion. First, we analyze source of contraceptive supplies for women who have made the choice to use the pill. Our results are potentially biased because we do not account for selection into pill use. To correct for selection bias, we would need to use simultaneous estimation techniques to jointly estimate the equations for method choice and for provider choice given use of pills, allowing the error terms to be correlated across the two equations. To avoid relying solely on functional form for identification, we would also need to identify independent variables for each equation that theory suggests do not belong in the other equation. We do not have suitable candidates for such variables. Moreover, in the context of multinomial rather than dichotomous outcomes, these

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<sup>3</sup> It also appears that a high level of quality at government health centers is positively related to the choice of private providers rather than community health posts ( $p=.08$ ). This result is plausible given the fact that many private

methods are beyond the scope of our analysis because they require estimation algorithms not available in standard statistical packages.

Second, our results for provider characteristics are potentially biased because we do not try to correct for the possibility of endogenous program placement, whereby provider characteristics are determined by unobserved characteristics of the community or of women themselves that predispose users towards a particular source of supply. As noted in the introduction, we do not correct for this source of bias because of small sample sizes and multiple measures of provider characteristics. We do suggest the likely direction of such bias.

With respect to the quality of government providers, our knowledge of the policy environment gives us no reason to think that BKKBN or the Ministry of Health intentionally tries to improve the quality of health centers' family planning services in places where women are predisposed toward one type of provider rather than another. However, it is possible that more sophisticated facilities are located in more sophisticated environments where women view community sources as beneath them. In this case our results will overestimate the positive relationship between the quality of government services and women's choice of government rather than community providers for pills.

It seems more plausible that private providers concentrate their efforts in areas where women are favorably predisposed toward use of private sources of family planning services. If so, then our estimates of the relationship between private provider quality and choice of private rather than community sources of care are biased upwards.

We suggest a similar argument for the role of prices. Misestimation of price effects because providers tailor their prices to perceptions of clients' willingness to pay for services

practitioners work in public facilities in the morning. If the quality of public services in an area is high, the quality of private services is likely to be high as well.

seems most likely for private providers, who have more flexibility in what they charge and more incentive to set prices so as to keep demand for services high. In our results prices charged by private providers are unrelated to women's choice of service provider, possibly because of endogenous pricing responses on the part of private providers.

Finally, with respect to family planning fieldworker visits, fieldworkers may adjust the frequency of visits to target areas where the demand for community sources of family planning is high. If so, our results overstate the role that family planning fieldworkers play in attracting users to community health posts.

One argument against the idea that correcting for the potential endogeneity of program placement would eliminate the relationships we observe between provider characteristics and users' choices of supply source is that the magnitude and statistical significance of the relationships differ between 1997 and 1998, although there is little evidence to suggest that policymakers were able to fine tune their responses to the crisis to account for women's predispositions regarding sources of supply. For example, although on average levels of family planning quality at government providers did not change between 1997 and 1998, higher levels of quality at government health centers play a more significant role in pulling women away from community-based sources of pills in 1998 than in 1997. This suggests that individuals responded somewhat differently to quality in 1998 than they did in 1997, rather than that policymakers altered quality between 1997 and 1998 in order to retarget services.<sup>4</sup>

Two other differences between the 1998 and 1997 results emerge. The number of visits to the community by family planning fieldworkers appears to influence women's supply choices to a greater degree and at a lower frequency of visits in 1998 than in 1997. We believe that this

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<sup>4</sup> We do not make the same argument for the shift over time in the role of quality of private providers. On average, the quality of private services rose between 1997 and 1998, and quality is more strongly associated with the choice

occurs because fieldworkers were more central to commodity distribution in 1998 than in 1997. Additionally, prices play a greater role in women's choices regarding source of supply in 1998 than in 1997. Specifically, higher prices at community health posts in 1998, but not in 1997, are positively and significantly associated with the choice of each of the alternative sources of supply— family planning posts and fieldworkers, government providers, and private providers.

## **CONCLUSIONS**

Our results suggest that women's choices of a provider for contraceptive services are related to characteristics of the supply environment, although small sample sizes and other factors preclude use of methods that would give us more confidence in the precise magnitude of the effects. Nevertheless, the results demonstrate the value of detailed data on characteristics of providers linked to individual-level information on contraceptive choices.

Our analysis focuses on a particularly dramatic period of Indonesia's recent history—one in which prices rose more rapidly than incomes and currency depreciation constrained access to imported commodities. Policymakers correctly anticipated that these factors would lead to commodity shortages. Relative prices across provider types changed as well.

Despite these changes in the service environment, we find no statistically significant differences between 1997 and 1998 in overall levels of contraceptive prevalence, in unmet need, or in method mix. In the first year of the economic crisis, contraceptive prevalence did not decline and unmet need did not rise. In short, no evidence indicates couples were deterred from using contraception during the first year of the crisis. But neither was the first year of the economic crisis accompanied by rising contraceptive prevalence and declining levels of unmet need, as one might expect if a worsening economic environment increased couples' motivation

to use private providers in 1998. Thus private providers may have intentionally altered quality in order to attract users.

to avoid pregnancy. The stability of contraceptive prevalence and unmet need in the face of dramatic changes in both the economic and service environments suggests that in Indonesia couples' fertility plans and their preferences for small families are well-established and will continue to fuel a strong demand for family planning services.



## References

- Akin, John S. and Jeffrey R. Rous. 1997. "Effect of Provider Characteristics on Choice of Contraceptive Provider: A Two-Equation Full-Information Maximum-Likelihood Estimation." *Demography* 34(4):513-523
- Angeles, Gustavo, David K. Guilkey, and Thomas A. Mroz. 1998. "Purposive Program Placement and Estimation of Family Family Planning Program Effects in Tanzania." *Journal of the American Statistical Association* 93(443): 884-899
- Arndt, H.W. and Hal Hill. 1998. Southeast Asia's Economic Crisis : Origins, Lessons, and the Way forward. Singapore: Institute Southeast ASEAN Studies.
- Badan Koodinasi Keluarga Berencana Nasional, Bekerjasama (BKKBN) dengan RAND dan The Policy Project-USAID. 2000. Pengamatan Lapangan Tentang Biaya Kontrasepsi dan Perlindungan Terhadap Masyarakat Miskin di Indonesia ( Field Observation Gelombang I dan II).
- Bruce, Judith. 1990. "Fundamental Elements of the Quality of Care: A Simple Framework." *Studies in Family Planning*, 21(2):61- 91
- Central Bureau of Statistics (CBS) [Indonesia] and State Ministry of Population/National Family Planning Coordinating Board (NFPCB) and Ministry of Health (MOH) and Macro International Inc. (MI). 1998. Indonesia Demographic and Health Survey 1997. Calverton, Maryland: CBS and MI.
- Chen, Charles H., Roberto Santiso, and Leo. Morris, 1983 "Impact of Accessibility of Contraceptives on Contraceptive Prevalence in Guatemala. *Studies in Family Planning*. 14(11): 275- 283
- Cornelius, R. and J. Novak. 1983. "Contraceptive Availability and Use in Five Developing Countries." *Studies in Family Planning* 14 (12): 302-317
- Degraff, Deborah, Richard Bilsborrow, and David Guilkey. 1997 "Community-Level Determinants of Contraceptive Use in the Philippines: A Structural Analysis (in Fertility and Contraception) " *Demography* 34 (3): 385-398.
- Entwisle, Barbara, Ronald R. Rindfuss, David K. Guilkey, Aphichat Chamratrithirong, Sara R. Curran, and Yothin Sawangdee. 1996. " Community and Contraceptive Choice in Rural Thailand : A Case Study of Nang Rong." *Demography* 33(1):1-11.
- Frankenberg, Elizabeth and Lynn Karoly. 1995. "The 1993 Indonesian Family Life Survey: Overview and Field Report." Santa Monica: RAND.
- Frankenberg, Elizabeth, Duncan Thomas, and Kathleen Beegle. 1999. The Real Costs of Indonesia's Economic Crisis: Preliminary Findings from The Indonesian Family Life Survey. Santa Monica: RAND.

- Frankenberg, Elizabeth and Duncan Thomas. 2000. "The Indonesia Family Life Survey (IFLS): Study Design and Results From Waves 1 and 2." Santa Monica: RAND.
- Frankenberg, Elizabeth and Duncan Thomas. 2001. "Women's Health and Pregnancy Outcomes: do Services Make a Difference" *Demography*, Volume 38-Number 2 : 253-265.
- Gertler, Paul and John W. Molyneaux. 1994. "How Economic Development and Family Planning Programs Combined to Reduce Indonesian Fertility." *Demography* 31:33-63.
- Guilkey, David and Susan Cochrane. 1993. "Zimbabwe : Determinants of Contraceptive Use at the Leading Edge of Fertility Transition in Sub-Saharan Africa." *World Bank Working Paper* : Unpublished.
- Hamidjoyo, Santoso S. and Donald Chauls. 1995. *The Concept of Coordination and Integration in The Indonesian Family Planning Program*. Jakarta: Ministry for Population/National Family Planning Coordination Board.
- Handayani, L., L. Wilujeng, S. Sukirno, S. Pranata, and Daryadi. 1997. "Menuju pelayanan persalinan terpadu." Report, Population Studies Center, Gajah Mada University and the Ford Foundation.
- Hugo, et al. 1987. *The Demographic Dimension of Indonesian Economic Development*. Oxford University Press
- Hull, Terry. 2002. *Caught in Transit : Questions About the Future of Indonesian Fertility*. Expert Group Meeting on Completing the Fertility Transition, Population Division Department of Economic and Social Affairs, United Nations Secretariat. New York, 11-14 March 2002.
- Hotchkiss, D.R., R.J. Magnani, A. Lakssir, L.F. Brown and C.S. Florence. 1999. "Family planning program effects on contraceptive use in Morocco, 1992-1995." *Population Research and Policy Review*. 18: 545-561.
- Jensen, Eric. R. 1996. "The fertility impact of alternative family planning distribution channels in Indonesia." *Demography*. 33(2): 153-166.
- Kantor Mependuduk/BKKBN, BPS, DHS, dan Departemen Kesehatan R.I. 1998. "Survei Demografi dan Kesehatan Indonesia. 1997." Jakarta. Kantor Mependuduk/BKKBN. Unpublished document.
- Koenig, Michael A., Mian Bazle Hossain, and Maxine Whittaker. 1997. "The influence of quality of care upon contraceptive use in rural Bangladesh." *Studies in Family Planning* 28(4): 278-289.
- Kosen, Suwarta and Suriadi Gunawan. 1996. "Health Services in Indonesia." *Medical Journal of Australia* 165:641-44.

- Mensch, Barbara., Mary Arends-Kuenning, and Anrudh Jain. 1996. "The impact of Quality of family planning services on Contraceptive Use in Peru." *Studies in Family Planning*, 27( 2): 59-75
- Ministry of Health (MOH). 1990. *Primary Health Care in Indonesia*. Jakarta: MOH.
- . 1994. "Pedoman pembinaan teknis bidan di desa." Report, Directorate General of Community Health, Republic of Indonesia, Jakarta.
- Molyneaux, John W. 2000. *The Evolution of Contraceptive Pricing in Indonesia, A Final Report to the Policy Project*. RAND.
- National Family Planning Coordinating Board, Center for Population (NFPCB) and Family Planning Studies, RAND corporation and The Future Group Policy Project. 1999. summary Report: Field Observation on Contraceptive Pricing and Protection to the Poor in Indonesia.
- Pullum, Thomas W. 1991. *The Relationship of Service Availability to Contraceptive Use in Rural Guatemala*. Columbia: IRD/Macro International.
- Rodriguez, German. 1978. "Family Planning Availability and Contraceptive Practice". *International Planning Perspectives and Digest* 4, no. 4: 100-115
- Shiffman, Jeremy. 2002. "The construction of community participation: village family planning groups and the Indonesian state." *Social Science and Medicine*. 54(2002): 1199-1214.
- Sihombing, Binsar. 1994. "Overview of the Indonesian family planning movement: the blue circle and gold circle social marketing policies." National Family Planning Coordinating Board. Jakarta, Indonesia.
- Stalker, Peter. 2000. "Beyond Krismon: The Social Legacy of Indonesia's Financial Crisis." Report for UNICEF.
- Suyono. Haryono. 1988. "The Strategies, Experiences and Future Challenges of the Information Component in The Indonesian Family Planning Programme" *Asia-Pacific Population Journal* 3(4): 33-44.
- Tsui, Amy O., Dennis P. Hogan, Jay D. Teachman, and Carlos Welti-Chanes. 1981. Community Availability of Contraceptives and Family Limitation ." *Demography* , 18(4) 615 - 625
- Tsui, Amy and Luis Ochoa, 1992. "Service Proximity as a Determinant of Contraceptive Behaviour : Evidence from Cross-National Studies of Survey Data." In *Family Planning Programmes and Fertility*. Eds. James F. Phillips and John A. Ross. Oxford : Oxford University Press: 222-256.
- United Nations. 1991. *Indonesia: Accessibility of Contraceptives*. New York: United Nation.
- United Nations Population Fund (UNFPA) and the Australian National University (ANU). *Southeast Asian Populations in Crisis*. 1998.

Warwick, Donald P. 1986. "The Indonesian Family Planning Program: Government Influence and Client Choice." *Population and Development Review* 12(3): 453-490

Wilopo, Siswanto Agus. 1997. "Arah dan Implementasi Kebijakan Program Keluarga Berencana di Indonesia." *Populasi* 8(1): 17-32.

World Bank. 1990. *Indonesia: Family Planning Perspectives in the 1990s*. Washington, DC: World Bank.

Table 1. Availability and Price of Contraceptives in 1997 and 1998

A. Index of overall quality of family planning services									
	1997		1998						
Government health centers	11.9		11.6						
Private providers	6.3		6.9*						
Quasi-private village midwives	10.3		10.5						
Community health posts	2.9		2.9						
B. Availability and Price of Specific Methods									
	% Offering		% experiencing stock outages <sup>a</sup>		Average price			% offering free of charge	
	1997	1998	1997	1998	1997	1998	1998	1997	1998
						nominal	real		
Oral contraceptives									
Government health centers	88	88			708	836	490*	18	15
Private providers	51	49			2,761	2,797	1661*	4	7
Quasi-private village midwives	95	78*			812	1,356*	808	16	5
Community health posts	79	72	76	57*	444	1039*	618*	23	2*
Injectable contraceptives									
Government health centers	86	89	16	48*	3,148	8,054*	3,627*	2	2
Private providers	69	75*	5	22*	5,385	9,665*	5,668	0	1
Quasi-private village midwives	95	100	12	25	4,318	7,958*	4,700	0	0
Community health posts	39	37			3,080	6,775*	3,975*	5	0*
NORPLANT									
Government health centers	61	58			3,938	6,214*	4,665	11	14
Private providers	15	14			18,342	33,098*	19,260	0	5
Quasi-private village midwives	38	41			7,548	12,636*	7,139	5	14
Intrauterine devices									
Government health centers	75	78			2,193	3,530*	2,026	15	14
Private providers	24	27			18,583	27,382*	16,065	2	2
Quasi-private village midwives	38	46			10,088	13,109	7,692	21	12

<sup>a</sup> Respondents at community health posts were asked whether oral contraceptives were currently in stock. Respondents at government health centers, Private providers, and village midwives' practices were asked if they had experienced a stock outage in the past six months. In 1997 interviews were conducted with 260 government health centers, 467 private providers, 55 village midwives, and 178 community health posts. In 1998 interviews were conducted with 237 government health centers, 480 private providers, 54 village midwives, and 159 community health posts. \* indicates a statistically significant difference between 1997 and 1998 (p=.05).

Table 2. Contraceptive use by currently married women 15-49

	Levels		
	1993	1997	1998
Currently use any method	52%	55%	53%
Percent providing the following reasons for non-use <sup>a</sup>			
Cost	1	2	4*
Difficulty in obtaining family planning	1	1	1
Currently or recently pregnant or want to become pregnant	54*	40	47*
Health reasons or side effects	32	36	34
Other reasons	19	23	19*
Percent contracepting among women who want no more children <sup>b</sup>	72	69	71
Method Mix			
Pill	38	38	35
Injection	25*	36	36
IUD	12*	7	8
Norplant	7	9	10
Male or Female Sterilization	10*	6	7
Condom/Intravag	2	1	1
Traditional methods	7*	2	2
Number of women	1373	1335	1587

\* indicates a statistically significant difference between 1993 and 1997 or between 1997 and 1998, p  $\leq$  .05

<sup>a</sup> Women could mention more than one reason for non-use (although few did), and so the distributions sum to more than 100%.

<sup>b</sup> excludes women who are currently pregnant or post-partum ammenorheic

Table 3. Correlates of Contraceptive Use Decisions

	1997	1998
<b>Use Oral Contraceptive</b>		
15-29 years of age (reference: 30-49)	1.44	0.96
Education (reference: 0-5 years):		
6-9 years	0.80	1.15
10+ years	0.74	0.86
Lowest 25%, per capita expenditure distribution	0.60*	1.03
Urban Residence	1.33	1.24
<b>Use Injectable Contraceptive</b>		
15-29 years of age (reference: 30-49)	1.67*	1.49*
Education (reference: 0-5 years):		
6-9 years	2.60*	2.33*
10+ years	1.78	1.39
Lowest 25%, per capita expenditure distribution	0.80	0.99
Urban Residence	1.00	1.25
<b>Use other modern method</b>		
15-29 years of age (reference: 30-49)	0.58*	0.54*
Education (reference: 0-5 years):		
6-9 years	1.16	1.54*
10+ years	2.40*	1.89*
Lowest 25%, per capita expenditure distribution	0.86	1.10
Urban Residence	0.98	1.04
<b>Use traditional method</b>		
15-29 years of age (reference: 30-49)	0.42	0.76
Education (reference: 0-5 years):		
6-9 years	2.51	1.66
10+ years	7.81*	1.56
Lowest 25%, per capita expenditure distribution	1.38	0.37
Urban Residence	4.37*	3.73*
N	1335	1583

Multinomial logistic regression, where the reference category is non-use of contraception. Coefficient estimates are presented as relative risks. Errors are adjusted for clustering at the community level.

\*= p ? .05.

Table 4: Source of supply for pill and injection users

	Injections			Pills		
	1993	1997	1998	1993	1997	1998
Government providers	43.3	34.6	21.7*	31.9*	22.7	20.8
Private providers	53.2	57.5	64.1	24.7	24.9	19.6
Quasi-private village midwives	--	4.6	10.9*	--	4.3	6.4
Community health posts	3.5	2.1	1.4	20.9	18.8	10.2*
Family planning post or fieldworkers	--	1.2	2.0	18.1	17.5	27.9*
Pharmacies	--	--	--	1.6*	7.9	7.9
Friends or family	--	--	--	2.8	3.9	7.2
N	142	243	295	183	231	265

\* indicates a statistically significant difference between 1993 and 1997 or between 1997 and 1998, p < .05



Table 5. Source of Oral Contraceptives

	1997			1998		
	Family Planning Post or FW	Government Providers	Private Providers	Family Planning Post or FW	Government Providers	Private Providers
Characteristics of individuals and households						
6 or more years of education (reference: 0-5 years)	0.88 (0.82)	1.23 (0.70)	1.22 (0.68)	0.52 (0.18)	0.71 (0.53)	1.00 (0.99)
Lowest 25%, per capita expenditure distribution	0.55 (0.29)	0.64 (0.58)	0.84 (0.82)	0.51 (0.16)	0.25 (0.00)	0.35 (0.06)
Urban Residence	0.16 (0.07)	0.55 (0.40)	4.08 (0.07)	0.23 (0.03)	0.62 (0.37)	0.81 (0.76)
Characteristics of the service environment						
Index of composite quality, government health centers	1.56 (0.00)	1.29 (0.16)	1.28 (0.16)	1.16 (0.36)	1.25 (0.08)	1.33 (0.08)
Index of composite quality, private providers	1.03 (0.85)	0.92 (0.62)	1.09 (0.57)	0.97 (0.86)	1.11 (0.47)	1.36 (0.05)
0-12 Family Planning Fieldworkers visits per year	0.92 (0.31)	0.95 (0.57)	0.85 (0.09)	0.82 (0.05)	0.77 (0.01)	0.74 (0.01)
13 or more Family Planning Fieldworkers visits per year	1.00 (0.92)	0.96 (0.06)	0.95 (0.05)	0.96 (0.06)	0.97 (0.11)	0.99 (0.70)
Average price of pills at government health centers	0.93 (0.58)	0.95 (0.63)	0.97 (0.78)	0.85 (0.00)	0.94 (0.26)	0.90 (0.05)
Average price of pills at private providers	1.03 (0.31)	1.05 (0.13)	1.02 (0.40)	1.00 (0.94)	0.99 (0.90)	1.04 (0.47)
Average price of pills at community health posts	1.02 (0.90)	1.11 (0.33)	1.06 (0.62)	1.43 (0.02)	1.44 (0.01)	1.48 (0.01)
N	229			265		
Chi-square, individual and household characteristics	23.5 (0.02)			39.9 (0.00)		
Chi-square, service environment characteristics	70.3 (0.00)			85.5 (0.00)		

Models are estimated with multinomial logistic regression. Coefficients are expressed as relative risks. Community health posts serve as the reference category. Results for an additional category that combines village midwives, pharmacies, family, and friends are not shown. Errors are adjusted for clustering at community level. P-values of the z-statistics are reported in parentheses.