

**Contraceptive Use in a  
Changing Service Environment:  
Evidence from the First Year of  
Indonesia's Economic Crisis**

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**Contraceptive Use in a Changing Service Environment:  
Evidence from the First Year of Indonesia's Economic Crisis**

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## INTRODUCTION

Since the 1970s many developing countries have launched large-scale efforts to provide couples with family planning services. The nature of these programs and the rhetoric that accompanies them has changed over time, reflecting available resources, perceptions of the most relevant population and program issues, levels and emphasis of overseas assistance, innovations in contraceptive technology, and research findings on program effectiveness. In some countries the private sector has emerged to complement or substitute for the government as an important source of contraceptive services.

Two important research topics on the links between family planning use and supply-side factors are how contraceptive use patterns respond to the price of contraceptive services and to the quality and availability of services (see for example Jain, 1989; Mensch et al., 1996; Koenig et al., 1997; Mroz et al., 1999). Analysis of these topics is limited by the lack of available data on characteristics of the contraceptive service environment linked to women's choices regarding use (Mensch et al., 1996). We address these topics, using unusual longitudinal data from providers and individuals collected in Indonesia (as part of the Indonesia Family Life Survey) before and during the economic crisis of the late 1990s. Though the crisis affected many Asian countries, Indonesia has been the country most hard hit (Stalker, 2000).

Because the data straddle a period of economic downturn, the service environment at the second observation (1998) differs drastically from the service environment at the first observation (1997). In Indonesia most health and family planning supplies are imported, so a large-scale currency depreciation has major implications for services (UNFPA 1998). These changes give us purchase on identifying the relationship between the service environment and patterns on contraceptive use.



We first consider the question from the user's perspective by documenting for each year levels of use, reasons for non-use, and method mix. We then consider patterns of use by various background characteristics of a user and her household. We also examine choice of providers and satisfaction with source of supply in 1998.

Next we turn to the supply side. Because we have data from public, private, and community providers of contraceptive services in both years, we are able to consider, from the perspective of providers, how the quality and price of services changed during the first year of the crisis.

To bring these two perspectives together, we construct community-level measures of the family planning service environment before and during the economic crisis from the information from the provider. We then use multinomial logistic regression methods to relate these measures to individual women's choice of provider, controlling for individual and household characteristics.

## **DATA**

This study uses household and individual data from two rounds of the Indonesia Family Life Survey (IFLS). The IFLS is representative of about 83% of the Indonesian population and contains information on over 30,000 individuals in 13 provinces of Indonesia. The first wave of the survey, IFLS1 (conducted in 1993) interviewed a total of 7,224 households (Frankenberg and Karoly, 1995). The second round, IFLS2, was fielded in 1997 with goal of reinterviewing all the households that participated in IFLS1. IFLS2 succeeded at interviewing 94.5% of IFLS1 households and 91% of target respondents (Frankenberg and Thomas, 2000). In addition, new respondents were added because they had moved in to IFLS1 households (or IFLS1 respondents

had been tracked to new households) and because IFLS2 interviewed all household members rather than a sub-sample.

The economic crisis that began in Thailand in July reached Indonesia at the end of 1997. In order to collect information on the immediate impact of the crisis, another round, IFLS2+ was conducted one year after IFLS1. IFLS2+ was a 25% sub-sample of the IFLS sample. Data were collected from 7 of the 13 IFLS provinces (South Kalimantan, West Nusa Tenggara, Central Java, West Java, Jakarta, South Sumatra and North Sumatra). The IFLS2+ sub-sample covers the full spectrum of socioeconomic status and economic activity represented in the larger IFLS sample. IFLS2+ successfully interviewed over 98% of its target households and 95% of its target respondents. As in IFLS2, in IFLS2+ new households and household members were added as a result of changes in household composition and residential location that occurred between waves.

In this study we draw particularly on interviews with currently married women age 15 to 49, which were conducted in 1997 and in 1998. In both years currently married women were asked whether they were contracepting, what method they used, and (for non-users) reason for non-use. In addition, a contraceptive calendar collected retrospective data on contraceptive use, which provides information on source of supply.

In addition to analyzing the individual and household data, we also examine the characteristics of facilities that provide family planning services. In each community we interview as many as 12 health providers, including:

**health centers:** government-sponsored sources of outpatient care and family planning; full centers (*puskesmas*) are headed by a doctor and staffed by one or more midwives,

nurses, and paramedics, while staffing at auxiliary health centers (*puskesmas pembantu*) typically relies on midwives, nurses, and paramedics.

**private providers:** private clinics and the single-provider practices of doctors, midwives, nurses, and paramedics, including quasi-private Village Midwives (midwives practicing in communities but paid a salary by the Ministry of Health).

**community health posts:** monthly community-based activities (*posyandu*) that provide preventive health care to young children and family planning services to women of reproductive age.

The facility questionnaires address the availability, price, and quality of health and family planning services at each interviewed facility. While free family planning services are available to some women at some facilities, the national family planning program of Indonesia encourages families that can afford to pay something for contraceptives to use private sector services rather than free or highly subsidized government services (Kantor Mependuduk/BKKBN 1998).

The sample of facilities interviewed in 1997 was drawn on the basis of responses in the household survey to questions about knowledge of health facilities (Frankenberg and Thomas, 2000). In each community the most frequently mentioned facility was interviewed and additional facilities were selected at random. In 1998 community interviewers were instructed to reinterview the 1997 facilities. If a facility interviewed in 1997 could not be recontacted in 1998, interviewers added a facility of the same type based on a recommendation from the head of the community. In 1997 a total of 260 public health centers, 526 private practitioners, and 178 health posts were interviewed. Of these, 217 health centers, 392 private practitioners, and 150 health posts were reinterviewed in 1998. An additional 20 health centers, 87 private practitioners, and 9 health posts were interviewed for the first time in 1998.

In Indonesia the reproductive health program emphasizes, among other things, the client-centered provision of high-quality family planning information and services through a number of distribution mechanisms (Suyono, 1997; Wilopo, 1997). We should note that the facility survey covers most but not all potential sources of family planning services. In addition to services at public health centers, private practitioners, and health posts, in some communities services are available at the outpatient clinic of hospitals and at pharmacies. Moreover, family planning fieldworkers and their supervisors (PLKB and PPLKB) play a key role in provision of methods through outreach efforts, including health posts but extending to other community-based volunteers (Hamidjoyo and Charles, 1995). Mobile teams also visit communities to offer services. Not all of the facilities we interviewed provide the full range of family planning services endorsed by Indonesia's National Family Planning Program. Most health centers provide most of the methods. Private providers are quite heterogeneous with respect to family planning services, and in fact some providers do not offer any methods. Health posts concentrate primarily on oral contraceptives, although some offer contraceptive injections, at least on an occasional basis. Finally, facility data were not collected in new geographic areas to which IFLS households moved between rounds, since such an undertaking would be prohibitively expensive (for this reason movers were dropped from the analysis).

## **DESCRIPTIVE STATISTICS**

In this section we present descriptive statistics from the 1997 and 1998 IFLS individual-level data on contraceptive use, source of supply, and satisfaction with supply, and from the facility-level data on provider characteristics.

*The Demand Side: Choices about Contraception*

Information on contraceptive prevalence levels, overall and by background features of respondents are displayed for 1997 and for 1998 for two groups of women: (1) those interviewed either in 1997, 1998, or both years (referred to as respondents from the “Same Communities”), and (2) “panel” eligible women who were age 14 to 49, currently married, and interviewed in both 1997 and 1998. Tables 1 and 2 will demonstrate that these two groups are very similar with respect to patterns of contraceptive use. Consequently, we subsequently focus on the larger group of women (respondents from the same communities) to maximize sample size.

Table 1 presents information on contraceptive use by currently married women age 15-49. In 1997 prevalence was 55.3% for respondents in the same communities; in 1998 it was 56.1%. For panel respondents prevalence was 57.3% in 1987, and 58.6% in 1998. Thus, for both groups of respondents the difference in overall prevalence between years is trivial.

The second panel of Table 1 displays reasons for non-use of contraceptives, by women who were not currently using. Among respondents from the same communities, the desire to become pregnant and cost considerations are somewhat more common reasons for non-use in 1998 than in 1997. Cost considerations also explain non-use for a higher proportion of panel women in 1998 than in 1997. For both groups of women the fraction reporting cost as the reason they are not contracepting more than doubles between 1997 and 1998, although it is small in both years.

With respect to method mix (third panel), pills and injections are the most common contraceptives in use. Few changes occur in method mix between 1997 and 1998. In 1998 the

prevalence of injection use declined by a little less than 3 percent. Other methods such as condoms, IUDs, Norplant, sterilization, and traditional methods increased in prevalence slightly.

Another study conducted by the National Family Planning Coordinating Board (NFPCB, or BKKBN in the Indonesian language) in 13 provinces in 1998 and 1999 found similar results. Based on family planning field workers' observations, contraceptive prevalence changed little with the onset of the economic crisis. This study did report changes in contraceptive method mix as a result of switching between methods. According to the study, injection users tended to shift to methods that were cheaper (pills) or free (implant and tubectomy), while pill users tended to shift to the free methods (BKKBN, 2000; NFPCB, 1999).<sup>1</sup>

The last panel of Table 1 presents contraceptive use by respondent characteristics in 1997. We use 1997 characteristics in order to hold constant the composition of the sub-groups and thereby isolate changes in contraceptive behavior.<sup>2</sup> We consider age, educational level, sector of residence, and (the log of) per capita expenditure, which is a measure of economic well-being. For the most part use by sub-groups is similar in 1997 and 1998. Moreover, the levels of and small changes in use are similar for the two groups of respondents.

The biggest difference between 1997 and 1998, and between respondent groups, emerges for age. This happens in part because the “same respondents” group is closed to new entrants and is therefore an “older” group in 1998 than is the “same communities” group (for example, the “same respondents” group has no 15-year-olds in 1998 since they were ineligible for interview in 1997). Among the youngest group (women 15-24), contraceptive prevalence rates are higher in 1998 than in 1997. Presumably this high fertility group was more interested in

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<sup>1</sup> As a result of the economic crisis, women from poor households had access to contraceptive implants provided free of charge by donations from international organizations (UNFPA 1998).

delaying or preventing pregnancy in 1998 than in 1997. Among the oldest group of panel respondents (women 38 to 49), contraceptive use is somewhat lower in 1998 than in 1997. Because this is not observed for the “same communities” group, it likely reflects the greater degree of aging of the panel respondents, which lessens the need for contraception among the oldest group.

With respect to education, women who completed more than half of primary school (4-6 years of education) are somewhat more likely to contracept in 1998 than in 1997. Differentials in contraceptive prevalence by socioeconomic status change little between the two years. Changes in contraceptive prevalence by sector of residence and by expenditure level are small, although for panel respondents in the lowest third of the expenditure distribution, contraception is somewhat more likely in 1998 than in 1997 (particularly for panel women).

To explore these patterns further, we estimate a logistic regression model in which the outcome is contraceptive use and the variables described above are included as predictors. These results are presented in Table 2. Age, educational attainment, and residence are included as categorical variables, while per capita expenditure is specified as a spline, with knots at the 33<sup>rd</sup> and 66<sup>th</sup> percentile.

The results for age confirm the fact that contraceptive use rose between 1997 and 1998 for the youngest women. In 1997 women in the middle age group (25-37 years) were more likely to use contraception than women age 15-24. By 1998 that difference is no longer significant. In both years the oldest women (38-49) are significantly less likely to use contraception than the youngest women, but the coefficients are somewhat larger in 1998 than in 1997 (particularly for panel women, for the reasons described above).

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<sup>2</sup> For respondents new to the IFLS in 1998, we calculated their age in 1997 and assumed that the education level reported in 1997 would be the same as that reported in 1998. Residence and expenditure level in 1997 were set to

In both years women who completed at least half of primary school (as well as women with more than a primary school education) are more likely to contracept than women with 0-3 years of education. The coefficients on 4-6 years of education are somewhat larger in magnitude in 1998 than in 1997. As was suggested in Table 1, neither residence nor per capita expenditure levels are significantly associated with use of contraception in either year of the survey.

In addition to choosing whether to contracept and which method to use, women must also choose a provider from whom to obtain the method. For methods that require resupply, such as pills and injections, repeated visits (either to or from a provider) are necessary. Because pills and injections require regular resupply and because these methods account for almost three-quarters of all contraceptive use, we explore the choices of users of these methods in more detail. Data are available from the contraceptive calendar, in which women were asked to provide information on the dates, provider types, and reasons for family-planning related visits in the year before the interview. We use information from all women interviewed in either year, rather than restricting the sample to only the panel respondents.

The results are presented in Table 3. Although the questionnaire provides women with a large number of categories of providers, we collapse the categories into those most relevant for each method. For pill users we consider the choice to acquire supplies from a health center or private practice (one category), from a health post, or from another community source. This last group includes community birth control associations, family planning field workers, mobile family planning teams, and friends. Injections require somewhat more medical technology than pills. For injections we consider the choice to obtain contraceptives either from a public health center or from a private practitioner of some form (we exclude the very small fraction of women who reported obtaining injections from community sources).

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the values of those variables for the household that generated the new respondents.



In both 1997 and 1998, health centers and private practitioners represent the most common sources for pills. In 1997 61.5% of visits by pill users were to health centers or private practitioners. In 1998, the figure was 60%-- a change that is not significant. In 1997 the remainder of visits were allocated about equally to health posts and to other community sources (e.g. family planning field workers). But by 1998 use of the health post declined by more than 50% (from 18.6% of visits to 8.4% of visits), while visits to other community sources rose from 19.9% of all visits to 31.8% of all visits. Both of these changes are statistically significant.

These results are consistent with findings from studies conducted by the NFPCB in 1998 and 1999, which also found changes in sources of family planning services (BKKBN, 2000; NFPCB, 1999). The increase in the fraction of pill users obtaining supplies from the other community sources (e.g. family planning field workers) is explained by field observation conducted by the NFPCB. During the crisis family planning field worker supervisors were able to take commodities directly from the NFPCB office at the regency level, then distribute the pills to the fieldworkers, who then gave them directly to the users (NFPCB, 1999). This distribution mechanism meant that pills for outreach services did not go only through the health centers. This change may explain declines in use of health posts (which are often stocked by outreach workers from the health center) in favor of use of other community sources (which might have been supplied by family planning field workers).

Among injection users private practitioners are the most popular source of supply, accounting for 68.2% of visits in 1997, as opposed to public health centers, which received 31.8% of visits in 1997. By 1998 private practitioners had captured an even greater share of the

market, and accounted for 78.9% of visits (in contrast to 21.1% for health centers).<sup>3</sup> These changes are statistically significant.

The results presented above document two sizeable changes in where women go for family planning services. Pill users curtailed their use of community health posts and instead received supplies from other community sources. Injection users switched even more heavily into relying on the private sector for injections rather than on government health centers.

In anticipation of possible changes in the service environment, the IFLS2+ survey included two questions to respondents on satisfaction with respect to contraceptive services. One question asked about the level of satisfaction with family planning services in 1998 relative to one year ago. The second question asked reasons for reported changes in satisfaction. Results from these questions, for users of pills and injections, are presented in Table 4.

For both methods the majority of women (about 75%) report no change in level of satisfaction with contraceptive services. Pill users who experienced a change in satisfaction are about equally divided between experiencing an increase in satisfaction and a decrease in satisfaction. Injection users are much more likely to experience an increase in satisfaction than a decrease in satisfaction. The second panel of the table provides, for women experiencing a change in satisfaction, a description of the reasons given for the change.

For both methods, users who experienced a decrease in satisfaction largely voice concern over price increases. In fact, higher prices are the source of dissatisfaction for about 80% of those whose satisfaction decreased.

Reasons for increases in level of satisfaction are more diverse. Pill users who are more satisfied report that choice of methods has gone up, as has method availability, and that more

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<sup>3</sup> Declines in popularity of the public sector have been documented in other work on Indonesia as well (Stalker, 2000).

information on pills is available. Possibly these answers reflect more interaction with knowledgeable distributors, such as family planning field workers, and less interaction with the community health volunteers who typically staff health posts.

Among injection users who are more satisfied with services, a greater range of methods to choose from, better follow-up care, and more information are frequently cited. That users report greater satisfaction with the levels of information available suggests that the economic crisis did not entirely disrupt the goal of the Indonesian family planning program to provide users with high quality information so that they can make an informed choice of method (Wilopo, 1997). Some users actually attribute their greater satisfaction to higher prices. It is hard to know what to make of this answer. Possibly users who switched to more expensive (but higher quality) providers think that the higher prices they pay summarize the over-arching reason for higher quality on a number of dimensions and thus explain their greater satisfaction.

The results presented thus far suggest that during the first year of Indonesia's economic crisis, changes in use of contraception were minimal, but that users did switch sources of supply and experience changes in satisfaction with their suppliers. Changes in facility characteristics may account for switches in providers and altered levels of satisfaction with contraceptive services. In the next subsection and section we explore the characteristics of facilities, and link measures of facility quality to choice of service provider.

### *The Supply Side: Characteristics of Facilities*

The IFLS data contain a rich array of measures of facility characteristics. We focus primarily on characteristics that are particularly likely to have changed within a one year time span, such as prices and the availability of family planning supplies. In Indonesia in early 1998

manufacturers indicated that prices of contraceptives would have to rise, and the government projected low stocks of various types of contraceptives (UNFPA, 1998).

Questions in the IFLS cover the availability of multiple brands of both pills and injections, and about the availability of certain medicines and equipment that are linked to a facility's capacity to offer reproductive health services.

To take account of the various components of a facility that affect its quality, we created a composite measure of family planning service availability. The index is formed by constructing dichotomous measures of the availability of methods, medicines, supplies, and equipment, and summing those 0/1 variables. The dichotomous measures include the availability of five types of oral contraceptives, four types of contraceptive injections, Norplant, two types of IUDs, hemoglobin and pregnancy tests, iron tablets, aspirin, any antibiotic, and possession of a vaginal speculum. This composite measure can range in value from 0 to 18.

In addition to the composite measure of availability, we examine the number of different oral contraceptives offered, the number of different injections offered, the average prices of pills and injections (across the brands offered), and stock outages of injections.

Descriptive statistics for the characteristics of health centers and private practitioners in 1997 and 1998 are reported in Table 5. With respect to the composite availability of family planning services and the numbers of pills and injections offered, health centers experienced little change between 1997 and 1998. Private practitioners, however, achieved significantly higher scores on the composite index in 1998 than in 1997, and they also offered more types of injections in 1998 than in 1997. With respect to prices, pill prices rose at health centers (the change is marginally significant) but not at private practitioners. The prices charged for injections increased dramatically in both sectors. Finally, with respect to stock outages of

injections, far higher proportions of both public and private sector facilities experienced injection stock outages in 1998 than in 1997. The magnitude of the change was larger for public facilities than for private.<sup>4</sup>

What may be more important to an individual user is the characteristics of services in the community overall, rather than the characteristics of any one facility, since communities typically offer some choice in source of supply. Table 6 presents measures of facility quality at the community level. Within each of the 90 IFLS2/2+ communities, the characteristics of facilities were aggregated to provide indicators of the average quality of services available to residents of that area.

The results are very similar to those presented at the facility level. The index of composite availability of family planning services in health centers did not change significantly, while the index of composite availability of family planning services in private practice increased significantly. In this table we also include statistics for availability of supplies at health posts, which primarily provide oral contraceptives. The average fraction of health posts in a community that offer oral contraceptives declined significantly, from 76.4% in 1997 to 57.4% in 1998. This change may reflect the change in the method of distribution documented by BKKBN, whereby outreach supplies bypassed health centers and went directly to family planning field worker supervisors. At health centers and private practices the prices charged for both pills and injections increased substantially. Many health posts do not charge for contraceptives, but prices also rose (by similar magnitudes) at the health posts that do charge. Finally, stock outages of injections increased at both health centers and private practices.

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<sup>4</sup> In 1997 health centers were asked about stock outages for four types of injections, reflecting the greater number of injection types generally available at health centers. Private practitioners were asked one question, on stock outages. In 1998 both types of providers were asked explicitly about stock outages for the four types of injections.

## METHODOLOGICAL APPROACH

As presented in the descriptive statistics, the first year of Indonesia's economic crisis saw no statistically significant changes in contraceptive prevalence or method mix. There were, however, significant changes in women's choices of supply sources and in facility characteristics. Accordingly, we investigate the links between facility characteristics and choices regarding source of supply, using multivariate analysis. Because pills and injections are the two most popular contraceptive methods and because supply source varies by contraceptive method, we analyze (separately) facility choices by users of pills and users of injectables.

For pill users, we consider the choice among three options: health posts, other community sources, and public and private fixed site supply sources (health centers, private clinics, and private practices). We combine public and private fixed site services into one category because they are more similar to one another than to community sources, and for neither do we observe significant differences between 1997 and 1998 in fractions of users relying on them. In the multinomial logit regression model, the health center/private practice category serves as the reference group.

We estimate models for each year and present results from two specifications. In both specifications we include (the log of) household per capita expenditure (specified as a spline with a knot at the 33rd percentile) and place of residence (urban contrasted with rural). These variables are potentially relevant to decisions about source of supply, since they are related both to what women can afford and to aspects of service availability (urban areas tend to offer a greater array of choice with respect to providers). Both are measured in 1997.

The specifications differ with respect to the community-level characteristics of facilities that are included. In the first specification we focus on overall availability of contraceptive

services and include the measures of composite availability of services at the public and private facilities, and the fraction of health posts offering oral contraceptives. In the second specification we focus on method prices and include the price of oral contraceptives at health centers and at private providers, and the fraction of health posts offering oral contraceptives (this model drops the composite measures of service availability). In the second model we include a community price index for 1997 and 1998, so that the contraceptive price effects are net of overall inflation in the community. Models for 1997 include facility characteristics in 1997, while models for 1998 include facility characteristics for both 1997 and 1998. The coefficients on the 1998 characteristics are interpreted as the impact of the change in characteristics between 1997 and 1998, since the effects are “net” of 1997 levels of characteristics.

Our approach is similar for the models of provider choice among injection users. For injection users we consider the choice between only two sources of supply: public health centers and private practitioners. To examine this choice we use logistic regression. The facility characteristics that we include measure the average price charged (within each community) for injections at each type of facility, and the fractions of facilities of each type that experienced stock outages of injections in the six months before the survey.

## RESULTS

Table 7 presents the results for choice of supply source among pill users. We begin by describing the results for the household characteristics, which are similar across the two models, then turn to the results for the facility characteristics.

In 1997 the *per capita* expenditure level of the household in which a woman lives is not related to her choice of source of supply for oral contraceptives. Neither does per capita expenditure level show a strong relationship with choice or source of supply in 1998, although

women in the bottom third of the distribution are marginally less likely to choose health posts over more formal sources as the expenditure levels of their household rises (column 7). On the other hand urban residence strongly and consistently reduces the likelihood that a woman obtains pills from “other community” sources rather than from more formal sources. This finding suggests that only in rural areas did community networks emerge as an alternative source of pills.

Turning to the results for the facility characteristics that measure service and supply availability, strong relationships emerge between these characteristics and women’s choices regarding source of supply. In 1997, the greater the average score on the service availability index at health centers, the less likely women were to obtain oral contraceptives from health posts rather than from health centers or private practitioners (column 1). At the same time, the greater the fraction of health posts offering oral contraceptives, the more likely women were to obtain their supplies from health posts rather than from health centers or private providers. In 1997 none of the facility characteristics affect choice of other community sources rather than health centers or private practices.

The results in 1998 are very similar (column 3). Higher scores on the service availability index at either public or private facilities reduces the chance that a woman will obtain her pills from health posts rather than from a more formal alternative, while availability of pills at health posts increases the chance that a woman will visit a health post for resupply. This characteristic also has a small positive (and marginally significant) effect on use of other community sources in 1998 (possibly communities in which the health post was able to maintain stocks of pills developed strong alternative community sources for pills as well).

The role of the facility characteristics in Model 2, which includes prices of oral contraceptives at public and private facilities and availability of oral contraceptives at health



posts, is less easy to interpret. In 1997, the higher the price of pills in health centers, the less likely that women obtained pills from an “other community” source. Possibly this result is a reflection of a negative correlation between the availability of other community sources and the socioeconomic status of the community more generally, as proxied for by the price of pills at health centers. Note that the price index for 1997 is negative and significant as well (as is urban residence). Thus, we suggest that in urban areas and in other areas where prices tend to be high, women do not use other community sources because such networks are not available.

No other aspects of prices make a difference in 1997. In 1998, the only facility characteristics that matters is the degree to which pills were available in health posts in 1997. Higher fractions of health posts with pills in 1997 are associated with a greater likelihood of obtaining pills from other community sources in 1998. This result may arise because communities in which pills were widely available in health posts in 1997 were the ones where alternative community distribution networks emerged in 1998 (rather than going to health posts, the pills went to these new sources).

Table 8 presents the results of logistic regressions of the choice to rely on public providers relative to private providers for contraceptive injections. Unlike what the results for pills, household economic status is marginally associated with choice of provider in 1997. Among women in the bottom one-third of the expenditure distribution, increases in expenditure level are positively associated with receipt of injections from public providers, while among women in the top two-thirds, increases in expenditure level are negatively associated with receipt of injections from public providers. These coefficients are no longer even marginally significant in 1998, although the result for women in the top two-thirds of the distribution is similar in magnitude. In both years urban residence decreases the chance that an injection user visits

public rather than private facilities, but the coefficient is considerably larger in 1997 than in 1998.

Turning to the facility characteristics, we see that in both years it is largely the 1997 characteristics that are associated with provider choice. In 1997 women were more likely to use public providers when prices at private facilities were high, and when private providers had experienced stock outages. Higher 1997 prices at private facilities also encouraged use of public facilities in 1998, but no other dimensions of facility characteristics, in either year, affect choice of public providers rather than private in 1998.

## CONCLUSIONS

This paper has explored contraceptive use behaviors in Indonesia over a two-year period in which characteristics of the economic environment, and of facilities offering family planning services, were changing rapidly.

We find no statistically significant changes in overall level of prevalence or in method mix. Some evidence suggests that in 1998, relative to 1997, use by relatively young women increased, while use by older women may have decreased. Given the large increases in method prices between years, the fact that contraceptive prevalence did not change suggests that at least in this period in Indonesia, women were highly motivated to avoid pregnancy and were not deterred by higher costs of doing so. It seems that relative to the cost of having a child, contraceptive use remained a bargain in the minds of users, despite higher prices.

One aspect of contraceptive behavior that did change is women's choices regarding family planning provider. The nature of these changes is method-specific. Among pill users relying on sources within the community, the fraction using the health post declined by half, while the fraction relying on "other community" sources roughly doubled. It appears that this

change was more common in rural than in urban areas, and may reflect the change in the ways that outreach supplies of pills were distributed. Among users of injections, fewer women relied on public facilities in 1998 than in 1997, while more relied on private providers.

The changes in source of supply reflect in part the large changes in availability and price of contraceptive services at public, private, and community sources. At all outlets prices of both pills and injections appear to have risen substantially. At the same time, the frequency of stock outages of pills increased at health posts, while the frequency of stock outages of injections rose at both public and private providers (but to a greater degree at public providers).

Multivariate analysis suggests that for pills, changes in the availability of supplies at public facilities and at health posts were a more important reason for the change than increases in prices charged. The explanations for changes in source of supplies for injections are less clear. Although stock outages increased in public facilities more than in private facilities between 1997 and 1998, it does not appear that these increases are closely related to shifts toward the private sector. Higher prices in private facilities do seem to encourage use of public providers, although the change in private sector prices between 1997 and 1998 is not associated with greater use of public facilities in 1998.

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**Table 1. Use Of Contraceptive by Currently Married Women 15-49, (Percent Reporting )**

	Same Communities			Same Respondents		
	1997	1998	Change	1997	1998	Change
<b>Currently Use Any Method</b>	55.3	56.1	0.8	57.31	58.59	1.28
<b>Reason for Not Contracepting Among Non Users</b>						
Want a child	22.95	27.23	4.28	23.97	23.72	-0.25
High cost	1.67	4.32	2.65	1.88	4.61	2.73
Difficult in obtain	1.22	1.30	0.08	1.20	1.54	0.34
Others	74.16	67.15	-7.01	72.95	70.14	-2.81
<b>Method Mix</b>						
Pill	36.33	36.08	-0.25	36.13	36.67	0.54
Injection	37.28	34.5	-2.78	37.48	34.62	-2.86
Intravag	0.24	0.11	-0.13	0.25	0.12	-0.13
Condom	1.07	1.24	0.17	0.99	1.21	0.22
IUD	6.98	7.55	0.57	7.03	7.24	0.21
Norplan	9.59	10.48	0.89	9.86	10.74	0.88
M/F Sterilization	6.39	7.22	0.83	6.29	6.88	0.59
Traditional	2.13	2.82	0.69	1.97	2.53	0.56
<b>Currently Use Any Method by</b>						
<i>Age Group</i>						
15-24	56.63	60.68	4.05	56.96	69.62	12.66
25-37	62.39	61.19	-1.20	63.17	63.57	0.40
38-49	44.19	44.65	0.46	47.87	44.49	-3.38
<i>Years of Education</i>						
0-3 years	45.22	44.08	-1.14	47.54	44.73	-2.81
4-6 years	57.43	60.60	3.17	59.63	64.04	4.41
7+ years	62.80	61.42	-1.38	63.88	65.24	1.36
<i>Residence</i>						
Rural	53.04	54.59	1.55	55.36	56.47	1.11
Urban	58.32	58.14	-0.18	59.93	61.42	1.49
<i>Ln Per Capita Expenditure</i>						
Bottom 1/3	50.96	52.58	1.62	52.85	56.01	3.16
Middle 1/3	55.23	56.13	0.90	57.41	57.93	0.52
Top 1/3	59.96	59.51	-0.45	61.77	61.76	-0.01
<b>Number of observation</b>	1528	1581		1415	1415	

Same communities includes respondents interviewed in 1997, 1998, or both years. Same respondents includes only individuals interviewed in both 1997 and 1998 and eligible for questions on contraceptive use in both years (currently married and between the ages of 15 and 49). Background characteristics (age, residence, expenditure level, education level) are based on status in 1997.

Table 2. Correlates of Contraceptive Use

	Same Communities		Same Respondents	
	1997	1998	1997	1998
Age in Years				
25-37	0.33** (0.16)	0.14 (0.13)	0.36* (0.17)	-0.14 (0.15)
38-49	-0.37* (0.19)	-0.51** (0.17)	-0.23 (0.20)	-0.90** (0.19)
Years of Education				
4-6 years	0.42** (0.16)	0.61** (0.13)	0.46** (0.17)	0.68** (0.15)
7+ years	0.53** (0.19)	0.54** (0.17)	0.54** (0.20)	0.60** (0.19)
Residence				
Urban	0.11 (0.15)	0.07 (0.15)	0.08 (0.15)	0.19 (0.16)
Expenditure Per Capita (spline)				
Bottom 1/3	0.04 (0.22)	-0.08 (0.23)	0.01 (0.21)	-0.20 (0.23)
Middle 1/3	0.33 (0.24)	0.27 (0.25)	0.40 (0.26)	0.26 (0.26)
Top 1/3	-0.12 (0.15)	0.03 (0.13)	-0.17 (0.15)	-0.02 (0.14)
Intercept	-0.44 (0.89)	0.13 (0.92)	-0.32 (0.85)	0.91 (0.95)
N	1528	1581	1415	1415

Estimated with logistic regression, where the dependent variable is one if a respondent currently uses contraception. Background characteristics are based on status in 1997. \* =  $p \leq .10$ , \*\* =  $p \leq .05$ . Standard errors (in brackets) are adjusted for clustering at community level. Same communities includes respondents interviewed in 1997, 1998 on both years. Same respondents includes only individuals interviewed in both 1997 and 1998 and eligible for questions on contraceptive use in both years (currently married and between the ages of 15 and 49).

**Table 3. Sources of Contraceptive Supply**

	1997	1998	Change
<b>Among Pill Users</b>			
Health Center/ Private Practice	61.51	59.80	-1.72 (0.04)
Health Post	18.56	8.4	-10.16 (0.03)**
Other Community	19.93	31.81	11.88 (0.04)**
N	291	393	684
<b>Among Injection Users</b>			
Health Center	31.76	21.08	-10.68 (0.03) **
Private Practice	68.24	78.92	10.68 (0.03) **
N	296	370	

Most recent source of supply for females who used contraceptives in the past year. Health Center: Puskesmas, Puskesmas Pembantu, birth control safari. Private Practice: private/public hospital, private clinic, private physician, nurse/paramedic, midwife, traditional midwife, village midwife/birth post, pharmacist/drugstore, others. Health Post : Posyandu. Other Community: birth control post/association, family planning field worker, TKBK/TMK, friends/family. Standard errors/100 in brackets.



**Table 4. Satisfaction with Source of Supply in 1998  
(Percent Reporting )**

	Pill users		Injectable users	
<b>Satisfaction</b>				
No Change	74.66		75.87	
Increase	13.08		18.6	
Decrease	12.26		5.52	
N	367		344	
	Satisfaction		Satisfaction	
	Increased	Decreased	Increased	Decreased
<b>Reason</b>				
Increase in price of desired method	4.17	75.56	15.62	84.21
Provider expects client to pay more	2.08	4.44	10.94	0.00
More methods to choose from	14.58	0.00	20.31	0.00
Improvement in cleanliness of facility	4.17	0.00	3.12	0.00
Improvement in privacy at facility	8.33	0.00	4.69	0.00
Improvement in quality follow-up care	2.08	0.00	14.06	0.00
Desires method more available	25.00	0.00	4.69	0.00
Improvement in information provided	14.58	0.00	10.94	0.00
Other reasons	25.00	20.00	15.62	15.79
N	48	45	64	19

Based on two questions to women who were using contraception in IFLS2+. The first question asks about changes in satisfaction with source of supply currently over the past 12 months. Women who reported a change in level of satisfaction were asked to specify the factors accounting for this change (multiple answers were allowed).

Table 5. Characteristics of Health Center and Private Practice: 1997 and 1998

	Health Center			Private Practice		
	1997	1998	Change	1997	1998	Change
Index						
Composite avail of FP services	11.87	11.57	-0.30 (0.3	6.70	7.28	0.58 (0.2 *
Number of brands of oral contraceptives	3.27	3.12	-0.15 (0.1	1.70	1.67	-0.03 (0.1
Number of types of Injections	1.86	1.78	-0.08 (0.1	1.38	1.81	0.42 (0.0 **
Average Price						
Oral contraceptives (1 month)	708	836	128 (70) *	2419	2573	154 (228)
Injection (3 months)	3148	6214	3066 (234) **	5624	9441	3817 (236) **
Percent with stock outages, past six months						
Any type of injection	15.05	41.78	26.74 (0.0 **	6.37	22.11	15.74 (2.0 **
Depo Provera	15.20	47.47	32.28 (4.9 **		21.25	
Depo progestin	11.76	33.33	21.57 (4.2 **		14.60	
Noresterat	22.58	31.25	8.67 (13.7		28.57	
Cyclofem	12.73	28.00	15.27 (7.8 *		6.18	
All types of injections	1.46	1.88	0.42 (0.0		0.79	
N	260	265		526	535	

Based on responses of provider interviewed as part of the facility survey. \* =  $p \leq .10$ , \*\* =  $p \leq .05$ . Standard errors/100 in brackets.

**Table 6. Measures of Facility Quality at the Community Level**

	1997	1998	Change	
Index composite avail srv Fp :				
Health Center	12.14	11.94	-0.21	(-0.81)
Private Practice	6.53	7.17	0.64	(2.54)**
% Posyandu have oral contraceptive	76.40	57.41	-19.48	(-4.74)**
Cost of oral contraceptive :				
Health Center	816	1093	288	(1.94)**
Private Practice	1862	2360	500	(2.61)**
Posyandu	680	1098	473	(2.86)**
Cost of contraceptive injections:				
Health Center	3243	6833	3621	(10.56)**
Private Practice	5328	9133	3806	(18.16)**
Posyandu	3399	6582	3240	(5.50)**
% out of Injectables past 6 months				
Health Center	12.59	41.42	29.35	(6.28)**
Private Practice	6.52	21.32	15.09	(5.82)**
N	90	90		

Descriptive statistics at the community level, calculated by averaging facility characteristics within each community, then presenting means based on the distribution across communities. t statistic/100 in brackets.

**Table 7. Sources of Contraceptive Supply , Among Oral Contraceptive Users**

	Model 1				Model 2			
	1997		1998		1997		1998	
	Health Post (1)	Other communities (2)	Health Post (3)	Other communities (4)	Health Post (5)	Other communities (6)	Health Post (7)	Other communities (8)
<b>Household Characteristics</b>								
Household per capita expenditure < 33% (spline)	-0.50 (0.70)	0.27 (0.79)	-0.26 (0.56)	0.44 (0.40)	-0.31 (1.19)	0.21 (0.84)	-1.23 * (0.61)	0.10 (0.55)
> =33%	-0.15 (0.43)	-0.24 (0.33)	-0.04 (0.39)	-0.15 (0.34)	0.20 (0.51)	-0.15 (0.33)	0.18 (0.45)	-0.07 (0.36)
Urban residence	-0.33 (0.59)	-1.55 * (0.57)	0.43 (0.66)	-1.05 ** (0.44)	-0.39 (0.66)	-1.27 ** (0.64)	0.26 (0.90)	-1.32 ** (0.52)
<b>Price Index 1997</b>								
					0.33 (0.28)	-0.35 ** (0.17)	0.80 (0.53)	0.28 (0.32)
<b>Price Index 1998</b>								
							-0.40 (0.28)	-0.18 (0.16)
<b>Availability</b>								
1997: Index composite avail srv Fp in Health Center	-0.19 ** (0.10)	0.09 (0.08)	-0.06 (0.13)	0.05 (0.11)				
Index composite avail srv Fp in Private	-0.12 (0.12)	0.01 (0.08)	0.09 (0.13)	0.09 (0.11)				
Have pill in Health Post	2.58 ** (0.96)	0.90 (0.99)	1.54 (1.06)	1.12 (0.62)				
1998: Index composite avail srv Fp in Health Center			-0.30 ** (0.11)	-0.10 (0.10)				
Index composite avail srv Fp in Private			-0.24 * (0.13)	-0.14 (0.10)				
Have pill in Health Post			1.83 * (0.93)	0.10 * (0.57)				
<b>Price</b>								
1997: Cost of pill in Health Center					-0.02 (0.74)	-1.71 ** (0.87)	0.26 (0.47)	-0.83 (0.65)
Cost of pill in Private					0.09 (0.20)	-0.02 (0.23)	0.19 (0.28)	0.05 (0.21)
Have pill in Health Post					0.93 (0.83)	1.69 (1.32)	1.38 (1.20)	1.67 ** (0.60)
1998: Cost of pill in Health Center							0.32 (0.21)	-0.35 (0.23)
Cost of pill in Private							-0.06 (0.23)	0.14 (0.17)
Have pill in Health Post							0.03 (0.75)	0.44 (0.67)
Intercept	1.88 (3.12)	-3.40 (3.02)	1.88 (2.71)	-1.62 (1.69)	-8.36 (8.27)	5.45 (4.55)	0.38 (4.42)	0.15 (3.62)
N	257		280		220		236	

Unit of observation is visit to source of supply for a woman who used pills in the last year. Models are estimated with multinomial logit (excluded category is health center/private practice). Standard errors (in brackets) are adjusted for clustering at community level. \* =  $p \leq .10$ , \*\* =  $p \leq .05$ .

**Table 8. Logistic Model Use of Public Health Center by Year,  
Among Injection Contraceptive Users**

	1997	1998
<b>Household Characteristics</b>		
Household per capita expenditure < 33% (spline)	1.25 * (0.75)	1.03 (0.71)
> =33%	-0.54 * (0.30)	-0.56 (0.36)
Urban residence	-1.82 ** (0.52)	-1.27 * (0.63)
<b>Price Index 97</b>	0.54 ** (0.16)	0.72 * (0.36)
<b>Price Index 98</b>		-0.20 (0.14)
<b>Facility characteristics</b>		
1997: Cost of injection in Health Center	-0.03 (0.20)	0.03 (0.17)
Cost of injection in Private	0.46 ** (0.14)	0.46 ** (0.11)
Out of injection in past 6 months in Health Center	-0.88 (0.95)	0.33 (0.78)
Out of injection in past 6 months in Private	6.14 ** (1.49)	0.52 (1.45)
1998: Cost of injection in Health Center		-0.01 (0.08)
Cost of injection in Private		-0.07 (0.11)
Out of injection in past 6 months in Health Center		0.82 (0.69)
Out of injection in past 6 months in Private		0.28 (0.88)
Intercept	-18.33 ** (4.56)	-13.38 ** (4.51)
N	219	229

Unit of observation is a visit to a source of supply for females who used contraceptives in the last year. Models are estimated with logistic regression. Standard errors (in brackets) are adjusted for clustering at community level. \* =  $p \leq .10$ , \*\* =  $p \leq .05$ .