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Fertility Regulation and Economic Shocks

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Abstract

Substantial international aid is spent reducing the cost of contraception in developing countries, as part of a larger effort to reduce total fertility and increase investment per child worldwide. The importance for fertility behaviors of keeping contraceptive prices low, however, remains unclear. Targeting of subsidies and insufficient price variation have hindered prior attempts to estimate the effect of monetary and non-monetary contraceptive costs on fertility behavior. Exploiting the enormous price variation induced by the economic crisis in Indonesia, this paper employs longitudinal data from the Indonesian Family Life Survey to pin down the effect of contraceptive availability and cost on contraceptive use and method choice over the life course. Results indicate that monetary costs are not an important determinant of contraceptive use.

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1 Introduction

Governments and donor organizations devote substantial resources to making family planning services widely available and affordable. A United Nations Population Fund report estimates that governments, multilateral organizations, private foundations, and non-governmental organizations spent a combined total of $2.5 billion on the provision of family planning services in developing countries in 1999 (United Nations Population Fund, 2001). Both the magnitude of this subsidy and the wide range of participating institutions illustrate the attention family planning receives in developing countries. Indeed, these subsidies are part of a larger effort to reduce total fertility, increase investment in children, and increase per capita income worldwide.

From a user's perspective the "price" of family planning encompasses the quality and availability of services as well as whatever user fees are charged at the point of service provision. Many developing countries have already invested heavily in the physical infrastructure necessary for wide-spread availability of family planning services. Consequently, setting price levels for services is the primary policy lever for assuring that couples have access to affordable contraception. At the same time, user fees can help defray family planning program costs that are otherwise absorbed by governments and non-profit organizations. Striking the right balance between family planning program cost recovery versus affordability for clients is important, but difficult, and depends critically on the degree to which individuals respond to changes in the price of contraceptives.

This paper examines the impact of contraceptive price changes on contraceptive demand in Indonesia between 1997 and 2000. Indonesia is a particularly interesting context in which to examine the impact of program characteristics on contraceptive use, as the governmental family planning agency is widely credited with significantly reducing fertility in Indonesia over the past forty years (Hull, 2002). Moreover, the financial crisis of the late nineties resulted in a substantial increase in the price of contraception, as well as a shift in the relative prices of available contraceptive methods. This unprecedented price variation, driven by a collapse in the exchange rate and shortages of particular contraceptive methods, provides considerable purchase in estimating the effect of price changes on contraceptive use and method choice because price changes are relatively unaffected by governmental allocation of family planning resources. A final advantage of using Indonesian data is that characteristics of the family planning distribution network at the village level and the behavior of individuals within these villages are captured by the Indonesian Family Life Survey, an ongoing data collection effort that has tracked a panel of Indonesian households since 1993.

The combination of these factors provides a unique opportunity to pin down the effect of changing contraceptive costs on contraceptive behavior.

2 Literature Review

Given the policy relevance of precisely estimated contraceptive price effects, many analysts have sought to quantify the relationship between contraceptive price changes and demand for contraceptives.

When national-level family planning programs were starting out, a number of them provided contraceptives free of charge. Consequently, early research focused on the question of whether it was feasible to charge small amounts for contraceptives. Most studies suggest either that there is little difference in the demand for free contraceptives relative to those with a low price tag, or that demand is "backward-bending" in the sense that consumers prefer to pay a small amount for contraception, perhaps because of distrust of free commodities, or because higher prices signal higher quality (see Lewis (1986) for a review).

Studies have also tried to assess consumers' sensitivity to changes in non-zero prices. Some work contrasts contraceptive behavior before a price change with behavior after the change. One of the earliest studies of this type, conducted in Taiwan, reports that the number of new pill acceptors was twice as large in a town that introduced pills at \$0.13 per strip as in a town in which the price was set at \$0.26 per strip (Cernada, 1982). More recently, Bratt et al. (2002) report on an experiment with contraceptive pricing in Ecuador, in which 15 clinics raised their prices for IUDs by various amounts. Based on information from clinics in which the nominal IUD price increased by 60% (inflation was 40–45%), they estimate that demand for IUDs drops by less than half of whatever percentage increase in price is observed. In other words, demand for IUDs is relatively inelastic.

In the studies described above, prices were changed specifically for the purpose of studying the effects of the change on demand, but the change took place in only a very limited number of settings. Other work is based on observations of behavior before and after national-level changes in price, most often for contraceptive supplies provided through the social marketing program. In Bangladesh, for example, sales of socially marketed condoms fell by 46% in the year after a 60% increase in prices was imposed (Ciszewski and Harvey, 1994). Although prices of pills distributed through the social marketing program rose as well, the change in pill sales was far more muted.

A significant difficulty with interpreting results from the studies described above is that

changes in demand for commodities are reported from the perspective of the supply point at which the price changed. Although it is clear that demand for particular commodities or services fell at specific supply points, it is not clear what happened to overall or to method-specific contraceptive prevalence. If contraceptive suppliers, or contraceptive methods, are good substitutes for one another, then a change in price may result in a large change in source of supply or method mix, but in little or no change in overall contraceptive prevalence.

Addressing these concerns requires data from individuals on their patterns of contraceptive use, in combination with data on prices for multiple methods and provider types. Such data support estimation of more complicated models based on consumer demand theory. Several studies take this analytical tack.

Schwartz et al. (1989) use a multinomial logit to estimate method specific price-effects for several methods simultaneously, using data from the Philippines, Jamaica, and Thailand. They find that higher prices for a particular method are generally associated with significantly lower probabilities of choosing that method rather than another one, but that for pills, IUDs, and sterilization the price effects are not large. Choice of condoms appears to be considerably more price sensitive. The model estimated for the Philippines includes the choice not to use any method. The results suggest that although price increases may reduce somewhat the number of people using any method, the effect is small.

Another recent paper, Akin and Rous (1997), employs a similar estimation strategy with data from the Philippines but finds that method price is *not* a statistically significant factor in contraceptive choice. The paper concludes that either the measure of price is too contaminated by measurement error to produce meaningful results, or that price does not significantly affect the choice of a contraceptive method.

In both these papers variation in contraceptive prices stems from price differences across geographic areas at a point in time. A potential problem with estimates from cross-sectional data, however, is that contraceptive prices may not be randomly assigned (Rosenzweig and Wolpin, 1986). If family planning programs target subsidies to particular types of communities, estimated program effects will be biased unless the non-random nature of the subsidies is explicitly modeled. Indeed, if governments allocate contraceptive subsidies to areas with low prevalence, then contraceptive prices may be positively correlated with prevalence in the cross-section — potentially explaining the fact that higher prices are sometimes associated with greater use, as described by Lewis (1986).[1]

[1]Molyneaux and Gertler (1999) point out that several cross-sectional studies using Indonesian data report a negative correlation between contraceptive use and family planning program strength (Wirakartakusumah, 1988; Lerman et al., 1989; Molyneaux et al., 1990)

One way to circumvent this problem, if data are available for the same communities over time and the allocation of program funds does not vary over time in response to changing community characteristics, is to use community fixed effects. Such methods have not typically been applied to the question of how prices affect contraceptive use. Two papers, however, use this strategy to estimate the impact of family planning program inputs on fertility in Indonesia (Pitt et al., 1993; Gertler and Molyneaux, 1994). Neither analysis documents a strong link between the family planning program and fertility.

To relax the assumption that program allocations depend only on fixed community characteristics Molyneaux and Gertler (1999) use an instrumental variables approach. They find that fertility declines as levels of funding for family planning programs rise. This strategy yields unbiased estimates so long as wages and demographic characteristics in neighboring regions impact the allocation of program inputs to a region, but do not directly impact fertility. The technique does not allow the effect of resources allocated to contraceptive price subsidies to be distinguished from the effect of resources allocated to other program inputs.

Studies of contraceptive price effects that rely on cross-sectional variation have noted that minimal regional contraceptive price variation may result in imprecisely estimated price effects (Thomas and Maluccio, 1996). Such problems can be exacerbated in community fixed effects models (which discard variation in the level of prices across regions) unless there is substantial temporal price variation across regions (National Academy of Sciences, 1995). Given the absence of data on contraceptive behaviors of individuals over time, combined with information on the contraceptive prices these individuals face from an environment with exogenous regional and temporal price variation, no prior studies have implemented community fixed effects to pin down the sensitivity of contraceptive prevalence to changes in contraceptive price. This paper exploits variation in contraceptive price induced by the economic crisis in Indonesia, and the rich data available from the Indonesian Family Life Survey, to do exactly that.

3 Conceptual Framework and Empirical Strategy

Every couple makes decisions about fertility, with important ramifications for household welfare. Preferences for household composition include both completed family size and birth spacing. Utility may also be derived from child quality, which in turn may partially depend on the total number of children and on their timing. Children may also impact household welfare less directly, both in the short term (by increasing the need for consumption goods

and childcare) and in the longer term (by increasing household labor supply, reducing vulnerability to risk through diversification, altering the distribution of power in the household, increasing security in old age, and economies of scale in home production). Given the enormous lifetime costs and benefits of having a child, our research is predicated on the theory that couples consider the future when making reproductive decisions.

Contraceptive use and the choice of contraceptive method are fundamental mechanisms by which a couple influences total fertility and birth spacing. Therefore, one would expect couples to consider preferences regarding the timing, quantity, and quality of children, current and lifetime economic resources and prices, and the long term consequences of childbearing when making decisions regarding contraceptive use:

$$c_{imt} = f_t(x_{im\{t\}}, p^c_{m\{t\}}, p_{m\{t\}}, m_{im}, \mu_{im}, e_{im\{t\}}, \epsilon_{im\{t\}})$$

where c_{imt} is demand for contraception at time t, $x_{im\{t\}}$ is household resources, $p^c_{m\{t\}}$ is the price of contraception, $p_{m\{t\}}$ is a vector of other prices, m_{im} is an observed couple component, μ_{im} is an unobserved permanent couple component, $e_{im\{t\}}$ is an observed transitory couple component, and $\epsilon_{im\{t\}}$ is an unobserved transitory couple component. Note that i indexes the couple, m indexes the community, and t indexes the time period, while $\{t\}$ indicates that contraceptive decisions may depend on the value of this variable across all time periods. The price of contraceptives may influence contraceptive demand. The total cost of obtaining a contraceptive includes the service charge, the time spent obtaining the contraceptive, and the quality of the service provider. This paper takes a broad view in defining contraceptive prices, allowing for the possibility that changes in the availability of contraceptives, as well as changes in the service charges associated with them may influence contraceptive behavior.

Economic theory provides some insight into expected signs of the effects of available and service charges (which together we refer to as "price" effects). If the fundamental axioms of consumer choice hold, the Law of Demand predicts that, holding utility constant, a price increase will result in either a decrease or no change in the quantity demanded. But utility does not remain constant in the face of a price change. Observed price increases will make those who buy contraceptives effectively poorer, because maintaining the same level of contraceptive use has become more expensive. The effect on demand of this income change is theoretically ambiguous. If the reduction in income induced by the price increase results in increased contraceptive demand, and if the magnitude of this effect more than offsets the compensated price effect, then a price increase could result in increased demand. This seems unlikely, however, given that spending on contraceptives accounts for a tiny fraction of

total expenditures and that contraceptive use generally increases with income. Accordingly, one would expect contraceptive use to decrease as the (monetary or non-monetary) cost of obtaining contraceptives increases.

Although contraceptive decisions depend on the costs and benefits of regulating fertility, and contraceptive prices are certainly one of these costs, contraceptive demand may not be highly sensitive to changes in price. Contraceptives are typically quite inexpensive, amounting to about 1% of monthly per capita household expenditure (PCE) for a typical Indonesian. Given the substantial costs and benefits of having a child, it seems unlikely that even a sizeable increase in the monetary price of contraceptives could shift the calculation to the extent that the lifelong benefits of having an additional child would outweigh the lifelong costs.

If large changes in contraceptive demand are observed in response to changes in contraceptive price, it may be that some couples would like to buy contraceptives at prevailing prices to prevent future costs associated with an additional child, but they lack sufficient funds and are unable to borrow money. In this case, one would expect observed price effects to be largest amongst those with minimal household resources and with limited access to credit markets.

The prevalent empirical strategy in the literature has been to estimate a linearization of the demand for contraception using ordinary least squares (OLS) on cross-sectional data:

$$c_{imt} = \alpha_0 + \alpha_1 x_{imt} + \alpha_2 p^c_{mt} + \alpha_3 p_{mt} + \alpha_4 m_{im} + \alpha_5 e_{imt} + \mu_{im} + \epsilon_{imt}$$

where contraceptive use is assumed to be a function of household and community characteristics.

To the extent that unobserved community characteristics are not correlated with contraceptive prices, and to the extent that variation in household characteristics and prices is randomly assigned, a regression that omits μ_{im} will yield unbiased estimates of the price effect, α_2. The non-random allocation of government resources, however, means that the regional contraceptive price faced by a household is likely to depend on the degree to which contraceptives are subsidized in that region, where contraceptive subsidies depend on unobserved community characteristics:

$$p^c_{mt} = p^{c*}_{mt} - s_m(\overline{\mu_m})$$

where p^{c*}_{mt} is the price of contraception in the absence of contraceptive subsidies at time t in

community m, and s_m is the subsidy in community m, while $\overline{\mu_m}$ represents time invariant characteristics of all the individuals in community m. Consequently, OLS estimates of α_2 from regressions using post-subsidy prices and omitting μ_{im} will produce biased estimates of the price effect:

$$\mathtt{E}(\hat{\alpha_2}) = \alpha_2 + \frac{\partial c_{imt}}{\partial \overline{\mu_m}} \frac{\partial \overline{\mu_m}}{\partial p^c_{mt}}$$

Suppose that $\overline{\mu_m}$ represents income in the community that is unobserved to the statistician. If contraceptive subsidies are allocated to particularly poor communities ($\frac{\partial \overline{\mu_{im}}}{\partial p^c_{mt}} > 0$), and this population is less likely to contracept ($\frac{\partial c_{imt}}{\partial \mu_{mt}} < 0$), then the prevailing estimation strategy will produce a negatively biased estimate of the price effect (Rosenzweig and Wolpin, 1986). The negative bias represents one possible scenario, but in general the direction of bias will depend on the characteristics of the population targeted by the program and the relative prevalence of contraceptive use within this population.

When data are available for the same communities over time, one way of addressing this bias is to use community-level fixed effects to eliminate regional variation in prices, which is equivalent to estimating the equation in terms of differences from the community means:

$$(c_{imt} - \overline{c}_{im}) = \alpha_1(x_{imt} - \overline{x}_{im}) + \alpha_2(p^c_{mt} - \overline{p^c}_m) + \alpha_3(p_{mt} - \overline{p}_m) + \alpha_5(e_{imt} - \overline{e}_{im}) + (\epsilon_{imt} - \overline{\epsilon}_{im})$$

The unobserved time-invariant community characteristic is differenced out (as is the price variation due to time invariant subsidies), so OLS estimates of α_2 will yield unbiased estimates of the price effect.

Implicit in the above discussion, however, is the assumption that the unobservables on which the allocation process depends do not vary over the relevant time interval. Suppose, instead, that contraceptive subsidies depend on unobserved time varying community characteristics:

$$p^c_{mt} = p^{c*}_{mt} - s_{mt}(\overline{\mu_m}, \overline{\epsilon_{mt}})$$

In this case, program placement bias will remain, despite community-level fixed effects, since the observed price change is partially attributable to adjustments in the allocation of contraceptive subsidies, which may be correlated with the time varying unobservable component of the error term:

$$p^c_{mt} - \overline{p^c}_m = p^{c*}_{mt} - \overline{p^{c*}}_m - (s_{mt}(\overline{\mu_m}, \overline{\epsilon_{mt}}) - \overline{s}_m(\overline{\mu_m}, \overline{\epsilon_{mt}}))$$

As before, OLS estimates of α_2 will capture the change in contraceptive use with respect to

a change in the price, which can be decomposed into the actual price effect and a bias due to the non-random allocation of public subsidies, where the direction of the bias will depend entirely on the nature of the contraceptive subsidy allocation process.

An interesting special case arises when the impact of the contraceptive subsidy on use varies. Suppose, for example, that couples in households with few resources are particularly sensitive to the price of contraceptives. When price sensitivity depends on observables, such a relationship can be explicitly incorporated into the econometric specification. Bias may result, however, if the magnitude of the price effect depends on unobservables:

$$c_{imt} = \alpha_0 + \alpha_1 x_{imt} + \alpha_2 p^c_{mt} + \alpha_3 p_{mt} + \alpha_4 m_{im} + \alpha_5 e_{imt} + \alpha_6 p^c_{mt}\mu_{im} + \mu_{im} + \epsilon_{imt}$$

Rewriting the model in terms of differences from community means:

$$(c_{imt}-\overline{c}_{im}) = \alpha_1(x_{imt}-\overline{x}_{im})+(\alpha_2+\alpha_6\mu_{im})(p^c_{mt}-\overline{p^c}_m)+\alpha_3(p_{mt}-\overline{p}_m)+\alpha_5(e_{imt}-\overline{e}_{im})+(\epsilon_{imt}-\overline{\epsilon}_{im})$$

Suppose that the government opts to allocate contraceptive subsidies disproportionately to areas where couples are thought to be particularly price sensitive. Such a placement rule seems very likely in cases where the objective of family planning subsidies is to lower fertility, since targeting price sensitive areas will maximize the effect of the subsidy on contraceptive use. If price subsidies are targeted to particularly price sensitive areas, the omission of an interaction between price and the unobservable characteristic will result in a price effect that is more negative than the population average price effect.[2]

Discussion of the empirical strategy has highlighted the role of community fixed effects in eliminating bias due to program placement. The paper will actually implement individual fixed effects, which have identical properties in terms of eliminating program placement bias, and will additionally ensure that omitted time invariant household characteristics (such as permanent household resources) do not bias estimated price effects.

Discussion thus far has focused on contraceptive use, ignoring the fact that many contraceptive methods exist. The availability, and the monetary cost of obtaining the contraceptive

[2]Given that there was a push to increase user fees and to increase reliance on private sources of contraceptives in the nineties, this special case is particularly relevant to Indonesia. The effect of such program reductions on the estimated price effects will depend entirely on the characteristics of the areas that were targeted for price increases relative to the population as a whole. If government subsidies existed only in areas that were highly price sensitive, then removal of some subsidies will result in negatively biased price effects (i.e., the estimated price effect will be more negative than the population average price effect). If, on the other hand, government subsidies were universal, then an optimal policy would remove price subsidies from the least price sensitive neighborhoods. Resulting price effects will be positively biased (i.e., the estimated price effect will be less negative than the population average price effect).

may be radically different across contraceptive methods. Additionally, methods vary in the requirements for effective use and each method has unique general and reproductive health consequences. Such factors are likely to influence method choice. If contraceptive methods are not complementary, then an increase in the price of one contraceptive method, while holding constant the prices of other contraceptive methods, should not negatively impact demand for other contraceptive methods. In other words, an increase in the price for pills should not diminish demand for injections, holding constant the price of injections. In fact, an increase in the price of pills may result in an increase in the demand for injections, if individuals are willing to change contraceptive methods.

This paper estimates overall demand for contraceptive use, as well as method-specific demand. The selection of contraceptive methods is viewed in a competing risks framework, with demand for particular contraceptive methods estimated using a seemingly unrelated regressions model (SUR) with individual fixed effects. This approach also implies estimates of the demand for any contraceptive.[3] A prerequisite of our empirical strategy is significant exogenous variation in contraceptive prices. In the next section we describe the sources of this variation in Indonesia.

4 Context

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 (Gertler and Molyneaux, 1994; 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; Hull, 2002; World Bank, 1990). BKKBN coordinates a number of activities designed to provide a full range of contraceptive services at a high level of quality and to reduce fertility (Hamidjoyo and Chauls, 1995; Wilopo, 1997; United Nations Population

[3]Point estimates obtained using SUR are identical to those obtained using equation-by-equation OLS, but estimating the model as a SUR allows for joint tests involving cross-equation restrictions.

Fund, 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; United Nations, 1991).

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; Mependuduk/BKKBN, 1998; Jensen, 1996).

Demographic and Health Survey (DHS) data indicate that efforts to encourage "self-sufficiency" in family planning have had an impact. In 1997 more than half of all contraceptors relied on the private sector for supplies, and only 16 percent of users received contraceptives for free (Central Bureau of Statistics et al., 1998). By 2003 more than 60% of users relied on private providers and only 11% of users received their contraceptives for free (Badan Pusat Statistik and ORC Macro, 2003).

The primary methods supported by BKKBN 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.

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 long been a hallmark of the Indonesian program. 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. Local volunteers were recruited to administer village posts that distributed condoms and pills supplied by family planning fieldworkers (Ministry of Health, 1990; Shiffman, 2002). These "Integrated Service Posts" (posyandu or community health posts) take place once per month. They are organized by neighborhood volunteers and attended by reproductive-age women and children under five. Ideally the posts are also attended by health center staff and family planning fieldworkers. If trained health workers are present the posts provide contraceptive

injections. Otherwise oral contraceptives and condoms are available (Kosen and Gunawan, 1996).

Indonesia's well-organized system for making family planning available was dealt a harsh blow by the economic crisis of the late 1990s. 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$, and continued to fluctuate wildly in value for the first three quarters of the year (Frankenberg et al., 1999). Sharp increases in prices accompanied the financial chaos. Estimates by the Central Statistical Bureau put annual inflation at about 80 percent in 1998. The subsequent two years were less chaotic, and by 2000 the per capita growth rate in GDP had rebounded to 4.5%, although the exchange rate remained at about Rp9,000 per US$ (Strauss et al., 2004).

In Indonesia, changes of the magnitude that characterized the early period of the crisis have the potential for substantial impact on family planning services. A higher exchange rate resulted in higher prices for imported supplies. Lack of confidence in the banking sector prevented domestic pharmaceutical companies from obtaining credit to import raw materials necessary to manufacture products. Contraceptive manufacturers discussed rising prices with the government, early projections forecast a shortfall in funds necessary to meet the country's needs for contraceptive commodities, and BKKBN could no longer routinely fill health centers' requests for supplies to meet anticipated supply needs (United Nations Population Fund, 1998).

In 1998 the Indonesian government took several steps to deal with supply-side factors that might impinge on access to contraceptives. One strategy involved prioritizing the use of subsidized foreign exchange for the procurement of raw materials so that Indonesia's domestic pharmaceutical industry could maintain production (Lieberman et al., 2001). Another strategy involved obtaining funding for (and in-kind donations of) contraceptive commodities from bilateral and multilateral development organizations (United Nations Population Fund, 1998).

As these efforts were getting underway, policy makers turned their attention to concerns that supply-side changes would reduce contraceptive prevalence, induce switches to cheaper methods, and increase reliance on subsidized public providers rather than private providers. A second round of policy responses focused on maintaining levels of demand. Efforts to encourage users to pay for an ever-greater share of contraceptive costs were suspended (United Nations Population Fund, 1998). As part of a more general social safety net program, poor

households were issued cards that provided them access to free health and family planning services. These social safety net measures were funded by loans put in place during the 1998/99 fiscal year but were slow to get off the ground (Sumarto et al., 2001).[4] Our data (described below) indicate that as of late 1998 only about 3 percent of households were in possession of cards entitling them to free health and family planning services.

With the onset of the crisis, the price of contraceptives rose because contraceptives are typically imported or produced domestically using imported inputs. Although BKKBN has a proven track record of successfully allocating family planning resources toward those areas with greatest need, this process is implemented via a series of meetings taking place at several geographic levels over the course of the year (Molyneaux and Gertler, 1999). Consequently, delays in providing additional resources to needy regions can be considerable. For these reasons, we argue that the individual fixed effect strategy we use to assess the impact of crisis-induced price variation on contraceptive use and method choice is likely to be particularly effective when analyzing contraceptive behavior immediately following the crisis. In the year after the onset of the crisis, most of the variation in contraceptive price is due to changes in the exchange rate rather than changes in the allocation of government resources that could bias estimated price effects.

We cannot be as confident of the period several years after the onset of the crisis, when policymakers have had a longer period during which to respond. By 2000, family planning resources may have been redirected toward the areas that were particularly hard hit by the economic downturn, or toward particularly price-sensitive areas.[5] We examine longer term impacts despite this potential bias, because they yield insight into the timing and duration of the behavioral response to the crisis.

[4]The health card program began in 1994. At that point health cards were given out in the poorest 20% of Indonesia's villages, and (in these and other villages) to poor households (as defined by the village leader) (Gibbons, 1995). In 1998 plans were laid to strengthen the program and to adopt BKKBN's "pre-prosperous" classification system as the criteria for giving out health cards. According to this system, a household is "pre-prosperous" if any of the following are not true: all household members are able to practice their religious principles, all household members are able to eat twice a day, all household members have different sets of clothing for home, work, school, and visits, the largest floor area of the house is not made of dirt, and the household is able to seek modern medical assistance for those who are sick and family planning (Sumarto et al., 2001)

[5]The health card program represents an effort to target particular households thought to be price-sensitive. It is unclear whether the households who meet the criteria for receiving a health card actually are price-sensitive. Suryahadi et al. (1999) show that 75% of 'pre-prosperous' households are 'non-poor' by an indicator of poverty based on expenditure level. In the next section we discuss results from a test of differential price-responsiveness on the part of individuals in households with a health card

5 Data and Descriptive Statistics

The Indonesian Family Life Survey (IFLS) is a longitudinal survey that has elicited health and socioeconomic information from a random sample of Indonesian households over the past decade. The first Indonesian Family Life Survey (IFLS1) was conducted in 1993 and interviewed 7,224 households across 13 Indonesian provinces. The second Indonesian Family Life Survey (IFLS2) was conducted in 1997 and relocated and reinterviewed at least one household member from 94% of households interviewed in IFLS1. In 1998, a special wave of the Indonesian Family Life Survey (IFLS2+) was fielded in order to capture the immediate impacts of the economic crisis. IFLS2+ relocated and reinterviewed at least one household member from 99% of the households interviewed in IFLS2. The IFLS2+ sample consisted of 90 of the original 321 IFLS enumeration areas.[6] The third Indonesian Family Life Survey (IFLS3) was conducted in 2000. IFLS3 covered all 321 enumeration areas and relocated and reinterviewed at least one household member from 96% of households interviewed in IFLS2.

For the purposes of this paper a key strength of IFLS is that information is collected on infrastructure, resources, and services at the community level. Data on the monetary and non-monetary costs of contraceptives are obtained from a sample of government, private, and community facilities that provide services in the area. In 1997 the health facilities were selected for interview from lists compiled from household survey respondents' answers to questions about knowledge of facilities. In each community the most frequently mentioned government, private, and community facility was interviewed, and additional facilities listed by the household respondents were selected at random.[7] In 1998 interviewers were instructed to reinterview the facilities interviewed in 1997. If a facility could not be recontacted, interviewers added a new facility based on a recommendation from the community leader. In 2000 the sampling procedure used in 1997 was repeated. Approximately 12 facilities are interviewed per IFLS enumeration area.

Drawing on data from the facility surveys Table 1 presents descriptive statistics for the

[6]The sample of enumeration areas for IFLS2+ was drawn in two stages. First, to reduce costs, 7 of the original 13 IFLS provinces were selected (West Nusa Tengarra, 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.

[7]By sampling from a list of providers compiled from household respondents, we avoid imposing an arbitrary boundary — in each community the geographic area from which the facilities are drawn is the area that is relevant for a random sample of individuals (those who respond to our household survey) who live there. The facility need not be located within the administrative boundary that defines the village, although in many cases it is.

availability and price of contraceptives, aggregated up to the community level, at each of the three main provider types. Median community prices are computed for each provider type rather than across all providers in the community to allow for the fact that price differences across facility types may be attributable to differences in the service provided. Similarly, median prices of oral and injectable contraceptives are presented separately, so as to allow for the effect of a price increase on use and method choice to differ depending on the method for which the price changes. Service charges reflect the charge to the user for three strips of pills or one injection, which typically represents three months of contraception. In the rare event that no facility of a certain type was interviewed in a given community, or that contraceptive price information was not obtained from a facility type, values are imputed at the same level as the fixed effect.

Charges are denominated in thousands of Rupiah, converted to December 1996 Rupiah using a monthly, regional consumer price index published by *Badan Pusat Statistik* (BPS). While this price index is based exclusively on price data from urban centers (44 cities across the 27 provinces of Indonesia), it is the best publicly available price index. Given that inflation in rural areas was somewhat higher than inflation in urban areas, observed price increases in rural areas may be somewhat overstated (Thomas et al., 1999).

In 1997, contraceptives were available to the typical Indonesian at reasonable costs, thanks to the comprehensive family planning network in Indonesia (Table 1). Oral and injectable contraceptives were widely available at private practices and government health centers (in 99% of IFLS communities facilities were interviewed at which these methods were available). A far smaller fraction of communities offer injections at community health posts, but oral contraceptives are widely available at these posts.

The onset of the crisis did not immediately reduce contraceptive availability, as indicated by the fact that levels of contraceptive availability in 1997 and 1998 are similar. Looking at longer run changes between 1997 and 2000, it appears that injectable contraceptive availability became even more prevalent at private practices (indeed, injectable contraceptives were available at a private practice in every one of the IFLS communities in 2000), although the availability of oral contraceptives dropped 17% at health posts by 2000 (from a 1997 level of 85%) and by a much smaller, statistically insignificant amount in health centers.

The economic crisis in Indonesia induced substantial changes in the real costs of contraceptives to users, as well in the relative cost of available contraceptive methods. In real terms the cost of oral contraceptives declined by about 1,151 Rp (from a 1997 level of about 5,218 Rp) at private practices and by about 545 Rp (from a 1997 level of about 1,621 Rp) in health

centers. By 2000 the real price of oral contraceptives did rise, however, with statistically significant price increases of 520 Rp at private practices, 350 Rp at health centers, and 814 Rp at health posts, relative to pre-crisis levels.

The real price of injectable contraceptives rose at all facility types between 1997 and 1998, but only rose a statistically significant amount at health centers, where the price increased from about 2,450 Rp to 3,550 Rp. Higher prices persisted through 2000, with statistically significant increases in the price of injectable contraceptives over their 1997 levels at all facility types. Overall, the crisis produced a dramatic and immediate shift in the relative cost of available contraceptive methods, with injectable contraceptives becoming much more expensive relative to oral contraceptives. Over the longer run, the price of oral contraception rose as well, resulting in an overall increase in the real price of using contraception. Interestingly, although prices are lower at government than at private facilities, the government does not appear to have been able to shelter public facilities from price increases.

An obvious question is whether these price changes were accompanied by changes in contraceptive prevalence or method mix. Table 2 provides some evidence on this question, based on each of the survey years. Our analytical sample consists of currently married women between the ages of 15 and 49 who were in an IFLS household in an IFLS enumeration area in either 1993 or 1997. The first column presents statistics for all IFLS enumeration areas in 1997, the second column presents the 1997 statistics for the subset of 90 communities selected for IFLS2+, the third column presents statistics for the 1998 sample, and the fourth column presents statistics for all enumeration areas in 2000. The final two columns show changes in characteristics between 1997 and 1998 for IFLS2 respondents who were relocated in IFLS2+ and the changes in characteristics between 1997 and 2000 for IFLS2 respondents who were relocated in IFLS3.

Despite the substantial changes in the monetary price of contraceptives, the proportion of women using contraception was relatively stable between 1997 and 2000, varying between 55% and 57%. No significant changes in method choice occurred between 1997 and 1998, apart from a 0.7% increase in the use of implants. Changes in method use by 2000 were more significant, as oral and injectable contraceptives became less prevalent and implants and female sterilization became more prevalent. Precision is higher for the 1997 to 2000 changes because of the larger sample between 1997 and 2000. The point estimates of the changes in method uniformly indicate more switching between 1997 and 2000 — perhaps because of greater length of time between waves. The increased prevalence of female sterilization is most likely due to the fact that the panel has aged four years.

At first blush, then, it appears that contraceptive use patterns in Indonesia changed little, despite the major changes in the contraceptive supply environment as the economic crisis unfolded. To put contraceptive fees in perspective, however, note that average real household PCE was 133,903 Rp per month in 1997, while sample average community-median contraceptive price ranged anywhere from 488 to 1739 Rp per month of services, depending on the type of facility and contraceptive used. In other words, the typical contraceptive service charge in 1997 ranged from between 0.4% and 1.3% of household PCE.

Table 2 also presents information on characteristics of the women, the husbands, and their households.[8] On average, women have about six years of education (equivalent to primary school) and are around 33 years of age. Their spouses have about seven years of education and are around 39 years of age. The economic crisis did have a severe impact on household spending, which was about Rp. 20,000 less per person per month in 1998 and in 2000 than in 1997.

Stability in patterns of contraceptive use at the aggregate level does not necessarily translate into stability of contraceptive use over time for individual women. We explore individual-level variation in contraceptive behavior in Tables 3 and 4.

Table 3 presents results on contraceptive use by basic demographic and socioeconomic characteristics. We can see from the 1997 cross-section that contraceptive use increases with education and with per capita expenditures and is most prevalent in the middle of the reproductive years. Although no statistically significant change in contraceptive prevalence occurred for the population as a whole, there were changes in contraceptive prevalence for some sub-groups. Those with limited education in 1997 (0–5 years) were less likely to contracept by 2000, while those with 6–11 years of education in 1997 were more likely to contracept by 1998. Life cycle effects emerge as well. Those aged 15–25 in 1997 were more likely to contracept after the crisis, while those aged 36+ were less likely to contracept. These results demonstrate that while the level of contraceptive use was relative stable in entire population, there were interesting changes in contraceptive use for subgroups.

Although changes in aggregate contraceptive use and method choice are largely nonexistent, substantial variation in contraceptive use at the individual level does emerge. This variation is essential given the individual fixed effect estimation strategy. From Table 4, we see that 20% of the 1997/1998 panel either stopped or started using contraceptives between 1997 and 1998, while 28% of the 1997/2000 panel stopped or started using contraceptives

[8]We analyze female household members aged 15-49 who were present in an IFLS household in either 1993 or 1997 and were married at the time of the interview (making them eligible for questions on contraceptive use).

between 1997 and 2000.

In analyzing contraceptive method choice, it is vital to have individual variation in methods used. In the 1997/1998 panel, 25% of the sample switches methods, while in the 1997/2000 panel 39% of the sample switches method category. Interestingly, 80% of the method use variation in the 1997/1998 panel is due to those who are starting or stopping a contraceptive method, as it is relatively rare for an individual to switch from using one contraceptive in 1997 to using a different contraceptive in 1998. Similarly in the 1997/2000 panel, 74% of the method use variation is due to those who are starting or stopping a contraceptive method.

6 Results

In this section we describe the results from models designed to assess the relationship between contraceptive prices and the choices of couples regarding use of contraception and method choice. Because community and facility information is not available for individuals who moved away from an IFLS enumeration area, individuals are assigned the community characteristics of their location as of 1997 (or as of 1993 if the individual had already exited their initial enumeration area by 1997).[9]

Estimates are presented both from models that treat each year of data as a cross-section, and from models that pool two years of data (either 1997 and 1998 or 1997 and 2000) from panel respondents and include an individual-specific fixed effect.

Before turning to the regression estimates, we briefly review the predictions laid out in Section 4, which guide our interpretation of results. First, to the extent that consumers are sensitive to contraceptive prices, changes in prices should result in changes in use of contraception. We consider two aspects of price: whether specific methods are available in a community, and the service charge associated with method use for the methods that are available. Greater availability of methods should result in either higher use or no change is use. Higher service charges for methods should result in either lower use or no change in use.

The predictions are more complicated for method-specific use. They are predicated on the assumption that methods are not complements and the fact that we are simultaneously controlling for the prices of multiple methods. Generally, a change in the price of a particular

[9]By 1997, 7% of female ever married household members aged 15–49 lived outside of an IFLS enumeration area. Among those interviewed in both 1997 and 1998, 3% moved away from IFLS enumeration areas between waves. Among those interviewed in both 1997 and 2000, 6% moved away from IFLS enumeration areas between waves.

method should result in a change in use of that method either in the opposite direction or not at all. For other methods, however, there should either be no change or a change in the same direction as the price change. For example, a rise in the charge for pills should result in a decrease in use of pills, but in either no decrease or a rise in use of injections (although we have controlled for the price of injections, they have become cheaper relative to pills, so individuals may decide to use them instead of pills).

Table 5 contains estimates of the effect of contraceptive prices on contraceptive use and method choice for each of the three years of survey data. Contraceptive use columns contain estimates of the overall demand for contraception. The contraceptive method columns contain seemingly unrelated regressions model estimates of the effect of contraceptive prices on the demand for oral, injectable, and other contraceptive methods, where no contraceptive method is the omitted group.[10] The estimates for contraceptive use are formed by summing the oral, injectable, and other contraceptive demand coefficients that are found in the contraceptive method columns. These estimates are identical to what would be obtained from an OLS regression with a contraceptive use indicator as the dependent variable, but by summing the method-specific coefficients, we allow the disturbance term to be correlated across method equations. All models include community, household, and individual controls, as well as province fixed effects.

In the cross-sectional analyses of overall method use, most of the price effects are unrelated to use. About a quarter of the price effects are statistically significant, and all of these but one are consistent with our predictions. For example, in 1997, a rise in the service charge for pills is associated with a decline in overall use. In 1998, greater availability of pills at health posts is associated with higher use, while a higher price of pills at health posts is associated with lower use. In 2000 greater availability of pills at health centers is associated with higher use, while a higher price of pills at private practices is associated with lower use.

We also implement a series of more formal tests regarding the joint effects of the price variables, which take into account the number of estimated coefficients. In the first of these, the null hypothesis is that price effects jointly equal zero, and the alternative is that at least one price effect is not zero. P-values for the test are presented in Panel A. For the availability and service charge coefficients in combination, we reject strongly reject the null hypothesis that all price effects are zero for 1997 and 2000, but for 1998 the p-value of the test is .053.

The second test is more powerful. The null hypothesis for this test remains the same (price effects jointly equal zero), but the alternative is that at least one price effect is not

[10]Other contraceptive methods include IUD, diaphragm, condom, sterilization, and traditional methods.

equal to zero *and* is consistent with the sign predictions discussed above.[11]. P-values are presented in Panel B. For this test the null hypothesis is soundly rejected: in each year, at least one of the price effects is different from zero in a direction consistent with economic theory.

We turn now to the results for method mix, which are somewhat different. Even fewer of the price effects are statistically significant, and a non-trivial proportion of those that are significant operate in ways that are inconsistent with demand theory. In 1998, for example, only two price effects matter. Higher prices for pills at health centers are associated, as theory would predict, with higher use of other methods of contraception. Higher prices of injections at health centers, however, are associated with lower use of pills — a result that is inconsistent with theory. Based on the results from the formal tests, for 1998 we cannot reject the hypothesis that the price effects are zero when compared to the alternative that at least one price effect is non-zero (panel A), although we can reject the hypothesis that the price effects are zero when compared to the alternative that at least one price effect is non-zero *and* has a sign consistent with theory. For 1997 and 2000 there are relatively more statistically significant effects with consistent signs than with inconsistent signs, and for both years both tests of the null hypothesis that all price effects are zero are rejected.

The statistically significant but sign-inconsistent price effects in the method choice regressions suggest the possibility that the estimated price effects may be biased by policy decisions to target subsidies toward particular areas. The possibility of bias in the cross-sectional price effect estimates can be formally evaluated by testing the null hypothesis that the price effects have signs consistent with *a priori* expectations against the alternative that at least one does not. P-values from this joint inequality test are presented in Panel C.[12] The results of these tests do not permit one to conclude (with 95% confidence) that any of the cross-sections are biased.

Another approach to assessing the degree of bias in the cross-sectional estimates is to pool the data across years and include individual-level fixed effects in the specification. Price coefficients based on these fixed effects specifications will be free of bias under the assumption that policy makers allocate subsidies in response to time-invariant characteristics. Recall from Section 3 that our confidence in this assumption is greatest for 1997–1998 — the height of the economic downturn, during which contraceptive price variation likely results from a deteriorating exchange rate.

[11]The joint inequality tests in Panel B of Table 6 are implemented using likelihood ratio tests developed by (Gouriéroux, 1982), and refined by (Wolak, 1987)

[12]The joint inequality tests in panel C are implemented using a test developed by (Wolak, 1987).

Table 6 presents results from regressions of this type. For the 1997/98 panel, none of the price variables are significantly associated with contraceptive use, and only one price variable (the cost of pills at health centers) is associated with method choice (higher costs of pills result in an increase in use of "other" methods). For both overall use and method mix we fail to reject either of the tests that the price effects are jointly zero. In short, the regressions for the 1997/98 panel suggest that contraceptive behaviors simply are not sensitive to price.

Recall from Table 5 that although many of the price effects in the cross-sectional results for 1997 and 1998 are not statistically significant, the number that are is substantially greater than in the regressions for the 1997/98 panel presented in Table 6. Given that estimated price effects from the cross-sections and from the 1997/1998 panel are substantively quite different, and that the panel estimates include individual-level fixed effects, there is good reason to prefer them over those from the cross-sections. Hereafter we interpret the 1997/1998 panel estimates as the best estimate of contraceptive price effects.

The small number of statistically significant price effects in the 1997/1998 panel is consistent with the notion that cross-sectional results are biased due to the non-random placement of public subsidies. It is also possible, however, that the 1997/1998 model simply produces less precise estimates than those obtained from the cross-sectional models, because the panel contains fewer observations. In addition, the inclusion of individual fixed effects effectively discards regional price variation in identifying price effects, instead relying on contraceptive price changes between 1997 and 1998. It is important to ensure that the presence of fewer statistically significant price effects in the 1997/1998 analysis is not simply an artifact of reduced precision.

This concern can be addressed by looking at the results from the 1998 cross-section which, like the panel, is constructed using the smaller IFLS2+ sample. The analysis of this cross-section yields five statistically significant price effects, in contrast to the one significant effect that emerges in the panel. Moreover the coefficient estimates from the 1997/1998 panel are typically estimated with more precision than those from the 1998 cross-section — despite the inclusion of individual fixed effects in the panel analysis.[13] Given the prevalence of statistically significant price effects in the 1998 analysis and the relative precision of the 1997/1998 panel, the absence of statistically significant price effects does not appear to be driven by low precision in the 1997/1998 analysis.

Discussion has thus far focused on the results from the 1997/1998 panel. Turning to the

[13]The greater precision of the fixed effects estimates results from the enormous temporal contraceptive price variation induced by the crisis.

1997/2000 panel, we observe a number of statistically significant price effects. Tests that the 1997/2000 panel is unbiased based on the signs of the price effects are inconclusive (see Panel C of Table 6), but the number of statistically significant price effects is clearly larger than in the 1997/1998 panel.

A possible explanation is that individuals who were hardest hit by the crisis were too busy responding to other aspects of the crisis in 1998 to make a priority of changing contraceptive behavior. To test for evidence of this possibility, we reestimated the 1997/98 results with interactions for whether individuals reported (in 1998) that over the past 12 months their life had changed in ways that made them better or worse off (relative to experiencing little change). Even among those relatively unaffected by the crisis, price sensitivity appears to be low (results not shown).

A second explanation for the apparently greater price sensitivity in the 1997/2000 panel is that in 1998 individuals may have expected that the contraceptive price changes were temporary and therefore the costs of switching methods (or risking pregnancy) were not worth it. To test for evidence this possibility, we estimated a model with interactions for whether individuals who reported (in 1998) that they were worse off than a year ago but that they expected the current bad times to improve significantly within the next 12 months. It does not appear that those who expect the crisis to last longer are particularly more price sensitive than others (results not shown).

A third possibility is that the period between 1997 and 1998 was too short to reallocate public contraceptive subsidies, but reallocation took place between 1997 and 2000 — resulting in biased estimates of the price effect in the 1997/2000 panel. Given the concern that reallocation of subsidies between 1997 and 2000 may have lead to bias in the price effects, we continue to place the greatest confidence in the results from the 1997/98 panel.

In the results from the 1997/98 fixed effects specification, the price effects are not statistically significant. Possibly health facilities are highly substitutable, so that when prices at one source increase, contraceptors simply obtain their method from another source. If so, then including contraceptive prices at several facility types may dilute the measured price effects. To examine whether contraceptive service providers are highly substitutable, we test whether price effects are equal across facility types. In Panel D of Table 6, observe that this null hypothesis cannot be rejected with 95% confidence for the 1997/1998 panel.

As a further test Table 7 contains the results of a seemingly unrelated regressions model where availability and price of contraceptives have been aggregated across all facility types. Price effects are largely absent — demonstrating that the lack of statistically significant price

effects in the 1997/1998 panel does not arise merely from facility substitutability.

A final possible explanation for the lack of significant price effects is that they are dampened by the fact that individuals from the "pre-welfare" households were eligible for health cards entitling them to free or subsidized family planning services. This explanation cannot address the lack of significant price effects for the 1997/98 panel, because only 3% of the 1998 households were in possession of a health card. A higher fraction of households had a health card in 2000. For both panels we interacted an indicator of having a health card with contraceptive prices to examine whether price sensitivity was greater among individuals in households without a card. We found no systematic evidence that it was (results not shown).

The general lack of statistically significant price effects suggests that couples' contraceptive decisions are not strongly affected by price. When the coefficients are statistically significant, the effects appear to be relatively small. We can use the coefficients, combined with the variation in the price of contraceptives induced by the crisis, to compute precise estimates of the impact of a price change on contraceptive behavior.

Point estimates of the price effects at public facilities in the 1997/1998 panel suggest that a 50% increase in contraceptive price over 1997 levels (Table 1) results in anywhere from a 1% increase to a 1% decrease in contraceptive use, depending on the contraceptive and facility type where the price change occurs. According to one tailed 95% confidence intervals, none of these price increases reduce contraceptive use by more than 2%. Results using the 1997/2000 panel are similar.

A major concern among those interested in price effects is whether particular subgroups are more price sensitive than others. To examine this question, we reestimate the models for the two panels, but include interaction terms between the costs of contraception and age, education, and household per capita expenditures. Tables 8, 9, and 10 present the results.

For the 1997/1998 panel there are no instances in which the price sensitivity of those under 30 differs from the price sensitivity of those 30 or older. Among those 30 and older, a higher cost of pills at health centers results in a greater likelihood of using a method other than pills or injections. The 1997/2000 panel indicates that those over 30 are more likely to stop using contraceptives altogether when the cost of injectable contraceptives rise at private practices and to stop using pills when the cost of pills rises at health posts. For those less than 30 rises in the cost of pills at health centers result in increased use of injections for those under 30. This same group is also more likely to decrease their use of injectable contraceptives when the cost of pills at health posts rises. The direction of this last effect is inconsistent with the substitutability of contraceptive methods, as is the effect that women

30 and older are less likely to use "other" methods when the cost of pills at health centers rises).

The 1997/1998 education interactions indicate that those with at least six years of education are more likely to use pills when the cost of pills at health posts rises. This effect is not consistent with the ways in which use is hypothesized to respond to price changes. For the 1997/2000 panel, among those with less than six years of education, higher prices of injections at private services result both in lower use of injections and in lower use of contraception.

Finally, no differences in price sensitivity by household expenditure level.

7 Conclusion

Previous attempts to estimate the sensitivity of contraceptive prevalence and method mix to changes in the price of contraception have not produced conclusive estimates, largely because of insufficient price variation and the targeting of contraceptive subsidies in ways that bias results.

Indonesia provides an excellent context in which to pin down the contraceptive price effect. The economic crisis induced large changes in both the real and relative prices of contraception. Specifically, the crisis resulted in an immediate rise in the cost of injectable contraceptives relative to oral contraceptives, followed by a substantial increase in the real price of both contraceptive methods. Particularly in the year after the crisis, reallocation of public resources in response to the crisis was limited, suggesting that models that include individual fixed effects yield estimates of the price effect that are free from bias due to the non-random allocation of family planning resources.

Estimation of such models generates very little evidence of sensitivity to contraceptive prices with respect either to overall use or to method choice, particularly in period immediately following the onset of the economic crisis. Contraceptive behaviors are slightly more responsive to prices between 1997 and 2000. For this period, greater availability of oral contraceptives at health posts resulted in greater use of contraception. Higher service charges for injections at private practices and for pills at health posts result in diminished use. These results should be interpreted cautiously, however, as they may reflect bias from reallocations of resources after the economic crisis began. Despite this caveat, it is worth mentioning that the price effects that we do observe are largely consistent with the predictions of economic theory. To the extent that lower availability or higher charges for contraceptives influence

use, they do so in a negative way. To the extent that lower availability or higher charges for contraceptives influence method choice, they reduce use of the method for which "prices" changed, and increase use of alternative methods.

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Table 1
Community Characteristics
Availability and Prices of Oral and Injectable Contraceptives, by Provider Type

	1997	1997 (90 EAs)	1998	2000	1997/1998 Change	1997/200 Change
Injectable contraceptives available						
at a private practice	0.987	1.000	1.000	0.997	0.000	0.010
	(0.006)	(0.000)	(0.000)	(0.003)	(0.000)	(0.007)
at a health center	0.981	0.978	0.989	0.994	0.011	0.013
	(0.008)	(0.016)	(0.011)	(0.005)	(0.019)	(0.009)
at a health post	0.429	0.483	0.522	0.437	0.034	0.003
	(0.028)	(0.053)	(0.053)	(0.028)	(0.065)	(0.034)
Oral contraceptives available						
at a private practice	0.981	1.000	0.978	0.990	-0.022	0.010
	(0.008)	(0.000)	(0.016)	(0.006)	(0.016)	(0.010)
at a health center	0.987	1.000	0.989	0.981	-0.011	(0.006
	(0.006)	(0.000)	(0.011)	(0.008)	(0.011)	(0.010)
at a health post	0.851	0.876	0.878	0.685	0.000	(0.169)
	(0.020)	(0.035)	(0.035)	(0.026)	(0.042)	(0.030)
Median price for injectable contraceptives						
at a private practice	4.734	4.710	4.916	4.936	0.206	0.203
	(0.067)	(0.129)	(0.109)	(0.053)	(0.129)	(0.060)
at a health center	2.450	2.837	3.580	2.866	0.725	0.434
	(0.090)	(0.152)	(0.144)	(0.097)	(0.185)	(0.102)
at a health post	2.423	2.573	3.197	3.579	0.539	0.776
	(0.146)	(0.238)	(0.258)	(0.138)	(0.293)	(0.229)
Median price for oral contraceptives						
at a private practice	5.218	4.518	3.424	5.767	-1.151	0.520
	(0.221)	(0.407)	(0.294)	(0.164)	(0.381)	(0.206)
at a health center	1.621	1.728	1.203	1.974	-0.545	0.356
	0.065	(0.139)	(0.095)	(0.082)	(0.136)	(0.090)
at a health post	1.467	1.312	1.419	2.329	0.044	0.814
	(0.079)	(0.145)	(0.140)	(0.121)	(0.184)	(0.130)
Number of Observations	313	90	90	313	90	313

Standard Errors in Parentheses
Price are in thousands of (December 1996) Rupiah per injection or three pill strips

Table 2
Characteristics of Women and their Husbands

	1997 Level	1997 (IFS2+sub)	1998 Level	2000 Level	1997/1998 Change	1997/2000 Change
% Using contraception	0.567	0.554	0.561	0.571	0.016	-0.001
	(0.007)	(0.013)	(0.013)	(0.007)	(0.012)	(0.008)
Oral	0.154	0.204	0.199	0.141	0.005	-0.017
	(0.005)	(0.010)	(0.010)	(0.005)	(0.009)	(0.006)
Injectable	0.218	0.201	0.196	0.225	-0.009	-0.015
	(0.006)	(0.010)	(0.010)	(0.006)	(0.009)	(0.007)
Implant	0.039	0.053	0.058	0.050	0.007	0.013
	(0.003)	(0.006)	(0.006)	(0.003)	(0.004)	(0.003)
IUD	0.089	0.040	0.044	0.082	0.002	-0.005
	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)
Diaphragm or condom	0.007	0.008	0.008	0.008	0.000	0.002
	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)
Female sterilization	0.044	0.033	0.036	0.043	0.003	0.011
	(0.003)	(0.005)	(0.005)	(0.003)	(0.002)	(0.002)
Male sterilization	0.002	0.005	0.007	0.003	0.003	0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)
Other method	0.015	0.011	0.014	0.020	0.004	0.008
	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)
Years of education	6.179	5.845	6.140	6.804	0.006	0.067
	(0.056)	(0.102)	(0.102)	(0.057)	(0.038)	(0.023)
Age	33.62	33.56	33.14	33.90	0.76	0.022
	(0.11)	(0.22)	(0.21)	(0.11)	(0.05)	(0.003)
Spouse in household	0.945	0.936	0.947	0.958	0.020	0.018
	(0.003)	(0.006)	(0.006)	(0.003)	(0.004)	(0.028)
Spouse's years of education	7.034	6.866	7.160	6.760	0.043	3.24
	(0.063)	(0.115)	(0.113)	(0.056)	(0.044)	(0.03)
Spouse's age	39.43	39.57	39.04	39.41	0.75	-0.014
	(0.14)	(0.28)	(0.27)	(0.13)	(0.07)	(0.002)
Monthly household per capita expenditure	133.9	115.6	99.0	117.1	-19.8	-20.4
	(8.5)	(6.2)	(3.0)	(2.4)	(5.7)	(9.8)
Number of Observations	5482	1536	1558	5742	1427	4616

Based on women age 15-49 (in 1997) who lived in an IFLS household in an IFLS EA in 1993 or 1997.
Standard errors in parentheses.
Household PCE reported in thousands of December 1996 Rupiah.
Spousal age and years of education conditional spouse present in household.

Table 3
Percent Using Contraceptives by Socioeconomic and Demographic Characteristics

	1997	1997 (90 EAs)	1998	2000	1997/1998 Change	1997/2000 Change
Entire sample	0.567	0.567	0.561	0.571	0.016	-0.001
	(0.007)	(0.007)	(0.013)	(0.007)	(0.012)	(0.008)
Education						
0-5 years in 1997	0.505	0.505	0.493	0.509	-0.009	-0.029
	(0.011)	(0.011)	(0.021)	(0.012)	(0.017)	(0.012)
6-11 years in 1997	0.599	0.599	0.602	0.610	0.052	0.013
	(0.010)	(0.010)	(0.018)	(0.010)	(0.019)	(0.012)
12+ years in 1997	0.615	0.615	0.602	0.584	-0.019	0.019
	(0.016)	(0.016)	(0.031)	(0.014)	(0.032)	(0.020)
Age						
15-25 years in 1997	0.566	0.566	0.580	0.544	0.121	0.119
	(0.016)	(0.016)	(0.028)	(0.015)	(0.032)	(0.022)
26-35 yeas in 1997	0.631	0.631	0.619	0.617	0.000	-0.007
	(0.011)	(0.011)	(0.020)	(0.011)	(0.019)	(0.013)
36+ years in 1997	0.506	0.506	0.493	0.544	-0.023	-0.056
	(0.011)	(0.011)	(0.020)	(0.010)	(0.016)	(0.011)
Per capita expenditure						
less than 1997 median	0.589	0.589	0.568	0.570	0.002	-0.015
	(0.010)	(0.010)	(0.019)	(0.009)	(0.017)	(0.011)
greater than 1997 median	0.545	0.545	0.555	0.573	0.030	0.011
	(0.010)	(0.010)	(0.017)	(0.010)	(0.017)	(0.011)
Number of Observations	5321	1489	1539	5646	1378	4462

Standard Errors in Parentheses

Table 4
Transitions in Contraceptive Behavior
(based on status in 1997)

	1998	2000
Overall		
Using neither year	32%	26%
Using both years	48%	46%
Into use	11%	14%
Out of use	9%	14%
Among contraceptors in 1997		
Oral contraception both years	73%	47%
Into injection or "other"	8%	23%
Out of use	18%	30%
Injection in both years	70%	52%
Into oral contraception or "other"	13%	21%
Out of use	16%	27%
"Other" in both years	83%	74%
Into injection or oral contraception	5%	9%
Out of use	13%	17%
Among non-contraceptors in 1997		
No use either year	75%	64%
Into oral contraception	9%	8%
Into injection	9%	15%
Into "other"	8%	13%

Table 5

		Contraceptive Use			Contraceptive Method								
		1997	1998	2000	1997			1998			2000		
					Pill	Injection	Other	Pill	Injection	Other	Pill	Injection	Other
Contraceptives Available													
	Private												
Injection	Practice	0.076			-0.055	0.218	-0.087						
		(0.119)			(0.088)	(0.100)*	(0.094)						
	Health Center	-0.072	0.398	-0.084	0.097	-0.044	-0.125	0.239	0.130	0.029	-0.074	-0.003	-0.007
		(0.063)	(0.177)*	(0.088)	(0.047)*	(0.053)	(0.050)*	(0.143)	(0.142)	(0.135)	(0.063)	(0.075)	(0.071)
	Health Post	0.039	-0.145	-0.052	0.015	0.007	0.017	-0.015	-0.053	-0.077	-0.037	-0.015	-0.000
		(0.031)	(0.076)	(0.039)	(0.023)	(0.026)	(0.025)	(0.061)	(0.061)	(0.058)	(0.028)	(0.033)	(0.031)
	Private												
Pill	Practice	-0.125	0.030	0.011	-0.032	-0.031	-0.062	0.052	-0.103	0.081	-0.113	-0.127	0.251
		(0.074)	(0.120)	(0.094)	(0.055)	(0.062)	(0.059)	(0.097)	(0.097)	(0.092)	(0.067)	(0.079)	(0.076)**
	Health Center	-0.002	-0.035	0.108	0.036	-0.099	0.061	0.029	-0.148	0.084	0.053	0.013	0.042
		(0.072)	(0.158)	(0.051)*	(0.054)	(0.061)	(0.057)	(0.127)	(0.127)	(0.120)	(0.036)	(0.043)	(0.041)
	Health Post	-0.002	0.154	-0.025	0.028	0.011	-0.041	0.061	0.037	0.056	0.048	-0.017	-0.057
		(0.028)	(0.075)*	(0.025)	(0.021)	(0.023)	(0.022)	(0.060)	(0.060)	(0.057)	(0.018)**	(0.021)	(0.020)**
Sqrt Median Price													
	Private												
Injection	Practice	-0.042	-0.039	-0.022	0.048	-0.084	-0.007	-0.038	0.035	-0.036	0.019	0.019	-0.060
		(0.039)	(0.090)	(0.046)	(0.029)	(0.033)*	(0.031)	(0.072)	(0.072)	(0.068)	(0.033)	(0.039)	(0.037)
	Health Center	-0.000	-0.039	-0.046	-0.002	0.008	-0.007	-0.067	-0.007	0.035	0.013	-0.021	-0.037
		(0.016)	(0.038)	(0.014)**	(0.012)	(0.014)	(0.013)	(0.030)*	(0.030)	(0.029)	(0.010)	(0.012)	(0.011)**
	Health Post	0.001	0.022	-0.003	0.010	0.005	-0.014	-0.026	0.037	0.010	0.008	-0.005	-0.006
		(0.018)	(0.035)	(0.020)	(0.013)	(0.015)	(0.014)	(0.029)	(0.029)	(0.027)	(0.014)	(0.017)	(0.016)
	Private												
Pill	Practice	0.015	-0.045	-0.032	-0.012	0.008	0.018	-0.019	-0.009	-0.018	-0.030	0.001	-0.003
		(0.010)	(0.027)	(0.016)*	(0.008)	(0.009)	(0.008)*	(0.022)	(0.022)	(0.020)	(0.011)**	(0.014)	(0.013)
	Health Center	-0.054	0.037	-0.002	-0.004	-0.022	-0.028	0.027	-0.048	0.058	-0.001	0.019	-0.020
		(0.017)**	(0.039)	(0.013)	(0.013)	(0.014)	(0.013)*	(0.031)	(0.031)	(0.029)*	(0.009)	(0.011)	(0.010)
	Health Post	-0.005	-0.098	0.039	-0.002	-0.011	0.008	-0.020	-0.050	-0.028	-0.001	0.012	0.029
		(0.015)	(0.039)*	(0.014)**	(0.011)	(0.013)	(0.012)	(0.031)	(0.031)	(0.030)	(0.010)	(0.012)	(0.012)*
Panel A	All	0.0094	0.0531	0.0000		0.0003			0.1107			0.0000	
	Offer	0.2695	0.0202	0.1033		0.0325			0.2421			0.0022	
	Price	0.0378	0.0890	0.0007		0.0467			0.1332			0.0001	
Restricted	All	0.0019	0.0143	0.0000		0.0000			0.0310			0.0000	
	Offer	0.1679	0.0070	0.0542		0.0038			0.0748			0.0000	
	Price	0.0076	0.0181	0.0000		0.0125			0.0699			0.0000	
Unrestricted	All	0.6869	0.7267	0.3348		0.8109			0.7482			0.1771	
	Offer	0.4680	0.5243	0.4590		0.8801			0.8031			0.3721	
	Price	0.7832	0.8480	0.3365		0.6631			0.5368			0.1958	
Panel D	All	0.0042	0.0825	0.0041		0.0067			0.2954			0.0004	
	Offer	0.1347	0.0119	0.1213		0.0406			0.1658			0.0024	
	Price	0.0184	0.1247	0.0029		0.0279			0.2543			0.0084	
Observations		5321	1539	5646									

Table 6

		1997/1998				1997/2000			
		Use	Pill	Injection	Other	Use	Pill	Injection	Other
Contraceptives Available									
Injection	Private Practice					0.036	-0.068	0.046	0.058
						(0.137)	(0.102)	(0.116)	(0.093)
	Health Center	0.026	-0.012	0.062	-0.024	-0.045	0.008	-0.008	-0.046
		(0.097)	(0.075)	(0.075)	(0.059)	(0.060)	(0.045)	(0.051)	(0.041)
	Health Post	-0.076	0.019	-0.071	-0.024	-0.017	-0.002	0.011	-0.027
		(0.071)	(0.054)	(0.054)	(0.043)	(0.029)	(0.022)	(0.025)	(0.020)
Pill	Private Practice	0.148	0.164	0.015	-0.030	-0.076	-0.020	-0.052	-0.005
		(0.124)	(0.095)	(0.095)	(0.075)	(0.075)	(0.056)	(0.063)	(0.051)
	Health Center	0.036	0.067	-0.061	0.031	0.004	0.023	-0.004	-0.014
		(0.143)	(0.109)	(0.110)	(0.086)	(0.049)	(0.036)	(0.041)	(0.033)
	Health Post	-0.033	-0.029	0.025	-0.029	0.070	0.034	0.035	0.000
		(0.050)	(0.038)	(0.038)	(0.030)	(0.025)**	(0.019)	(0.021)	(0.017)
Sqrt Median Price									
Injection	Private Practice	-0.056	-0.012	-0.006	-0.038	-0.076	-0.017	-0.045	-0.014
		(0.068)	(0.052)	(0.052)	(0.041)	(0.039)*	(0.029)	(0.033)	(0.026)
	Health Center	-0.017	0.010	-0.017	-0.010	0.007	0.007	-0.005	0.005
		(0.026)	(0.020)	(0.020)	(0.016)	(0.013)	(0.010)	(0.011)	(0.009)
	Health Post	0.030	-0.017	0.032	0.015	0.018	-0.002	0.005	0.015
		(0.033)	(0.025)	(0.025)	(0.020)	(0.015)	(0.011)	(0.013)	(0.010)
Pill	Private Practice	-0.014	-0.007	-0.008	0.002	0.017	-0.002	-0.007	0.026
		(0.018)	(0.014)	(0.014)	(0.011)	(0.011)	(0.008)	(0.010)	(0.008)**
	Health Center	0.039	0.022	-0.017	0.033	0.011	-0.005	0.033	-0.016
		(0.024)	(0.019)	(0.019)	(0.015)*	(0.013)	(0.010)	(0.011)**	(0.009)
	Health Post	0.045	0.025	0.009	0.012	-0.046	-0.011	-0.030	-0.004
		(0.024)	(0.018)	(0.018)	(0.015)	(0.014)**	(0.010)	(0.011)**	(0.009)
Panel A	All	0.5572	0.8072			0.0402	0.0356		
	Offer	0.6355	0.7751			0.1264	0.5369		
	Price	0.1948	0.5039			0.0096	0.0017		
Restricted	All	0.4809	0.2812			0.0084	0.0031		
	Offer	0.4126	0.2727			0.0302	0.1289		
	Price	0.1918	0.1947			0.0029	0.0000		
Unrestricted	All	0.5035	0.9936			0.7517	0.9212		
	Offer	0.6360	0.9822			0.7666	0.9736		
	Price	0.3023	0.8795			0.5352	0.6185		
Panel D	All	0.4159	0.5961			0.0106	0.0054		
	Offer	0.4537	0.5157			0.2650	0.8270		
	Price	0.1550	0.3163			0.0024	0.0002		
Observations		2756				8924			

Table 7

	1997/1998				1997/2000			
	Contraceptive Use	Contraceptive Method			Contraceptive Use	Contraceptive Method		
		Oral	Injectable	Other		Oral	Injectable	Other
Availability								
Injections					0.234	0.131	-0.056	0.159
					(0.259)	(0.193)	(0.220)	(0.176)
Oral contraceptives					-0.048	-0.089	-0.047	0.088
					(0.126)	(0.094)	(0.106)	(0.085)
Price								0.033
Injections	0.020	0.067	-0.035	-0.013	-0.002	-0.007	-0.029	(0.014)*
	(0.038)	(0.029)*	(0.029)	(0.023)	(0.021)	(0.015)	(0.017)	0.009
Oral contraceptives	0.039	0.018	-0.008	0.029	-0.009	-0.015	-0.003	(0.010)
	(0.026)	(0.020)	(0.020)	(0.016)	(0.015)	(0.011)	(0.012)	0.159
Observations	2754	2756	2756	2756	8924	8924	8924	8924

Contraceptive method columns contain estimates from SEM with province (1997, 1998, 2000) or individual (1997/1998, 1997/2000) fixed effects.
Contraceptive use column contains the sum of the contraceptive method column coefficients.
Absolute value of t statistics in parenthesis; * significant at 5%; ** significant at 1%. Controls omitted from this table include: contraceptive availability, minimum distance to provider, education, age, spouse in household, spousal education and age, exited IFLS enumeration area, price of rice, community average PCE, and percent of village with electricity, as well as urban, imputation and market, phone, bank, public transit, and road village dummies.

Table 8

	1997/1998				1997/2000			
	Contraceptive Use	Contraceptive Method			Contraceptive Use	Contraceptive Method		
		Oral	Injectable	Other		Oral	Injectable	Other
[Years Education in 1997 < 6] x								
Sqrt Median Injectable Price								
at a private practice	-0.072	0.086	-0.089	-0.069	-0.129	-0.032	-0.093	-0.004
	(0.103)	(0.079)	(0.080)	(0.063)	(0.053)*	(0.040)	(0.045)*	(0.036)
at a health center	0.045	-0.031	0.038	0.020	0.030	0.006	0.005	0.019
	(0.035)	(0.025)	(0.027)	(0.021)	(0.019)	(0.014)	(0.016)	(0.013)
at a health post	-0.047	-0.013	-0.008	-0.008	0.013	0.017	-0.006	0.002
	(0.033)	(0.027)	(0.025)	(0.020)	(0.021)	(0.015)	(0.017)	(0.014)
Sqrt Median Oral Price								
at a private practice	-0.041	-0.035	-0.001	-0.005	-0.008	-0.014	-0.015	0.020
	(0.026)	(0.019)	(0.020)	(0.016)	(0.017)	(0.013)	(0.015)	(0.012)
at a health center	0.036	0.003	-0.003	0.036	0.006	-0.008	0.024	-0.010
	(0.034)	(0.026)	(0.026)	(0.020)	(0.021)	(0.016)	(0.018)	(0.014)
at a health post	0.008	-0.001	0.006	0.003	-0.061	-0.026	-0.031	-0.005
	(0.034)	(0.026)	(0.026)	(0.021)	(0.019)**	(0.014)	(0.016)	(0.013)
[Years Education in 1997 $\geq$ 6] x								
Sqrt Median Injectable Price								
at a private practice	-0.045	-0.056	0.037	-0.026	-0.044	-0.006	-0.020	-0.018
	(0.078)	(0.060)	(0.060)	(0.048)	(0.043)	(0.032)	(0.037)	(0.029)
at a health center	0.030	-0.010	0.026	0.014	0.012	-0.004	0.003	0.012
	(0.035)	(0.027)	(0.027)	(0.021)	(0.016)	(0.012)	(0.014)	(0.011)
at a health post	0.017	0.041	-0.015	-0.009	0.006	0.002	-0.003	0.007
	(0.031)	(0.024)	(0.024)	(0.019)	(0.016)	(0.012)	(0.013)	(0.011)
Sqrt Median Oral Price								
at a private practice	0.005	0.010	-0.011	0.006	0.032	0.005	-0.002	0.029
	(0.022)	(0.017)	(0.017)	(0.013)	(0.013)*	(0.010)	(0.011)	(0.009)**
at a health center	0.034	0.033	-0.027	0.028	0.008	-0.006	0.035	-0.021
	(0.030)	(0.023)	(0.023)	(0.019)	(0.016)	(0.012)	(0.014)*	(0.011)
at a health post	0.073	0.046	0.010	0.017	-0.037	-0.004	-0.030	-0.003
	(0.028)**	(0.021)*	(0.022)	(0.017)	(0.015)*	(0.011)	(0.013)*	(0.010)
Observations	2752	2752	2752	2752	8916	8916	8916	8916

Contraceptive method columns contain estimates from SEM with province (1997, 1998, 2000) or individual (1997/1998, 1997/2000) fixed effects.
Contraceptive use column contains the sum of the contraceptive method column coefficients.
Absolute value of t statistics in parenthesis; * significant at 5%; ** significant at 1%. Controls omitted from this table include: contraceptive availability, minimum distance to provider, education, age, spouse in household, spousal education and age, exited IFLS enumeration area, price of rice, community average PCE, and percent of village with electricity, as well as urban, imputation and market, phone, bank, public transit, and road village dummies.

Table 9

	1997/1998				1997/2000			
	Contraceptive Use	Contraceptive Method			Contraceptive Use	Contraceptive Method		
		Oral	Injectable	Other		Oral	Injectable	Other
[Age in 1997 < 30] x								
Sqrt Median Injectable Price								
at a private practice	-0.088	0.005	-0.023	-0.071	0.008	-0.037	-0.006	0.051
	(0.104)	(0.080)	(0.080)	(0.063)	(0.054)	(0.040)	(0.046)	(0.037)
at a health center	0.027	-0.006	0.023	0.009	0.019	-0.010	0.019	0.010
	(0.035)	(0.027)	(0.027)	(0.021)	(0.019)	(0.014)	(0.016)	(0.013)
at a health post	-0.025	0.008	-0.041	0.008	0.001	0.021	-0.016	-0.004
	(0.035)	(0.027)	(0.027)	(0.021)	(0.021)	(0.016)	(0.018)	(0.014)
Sqrt Median Oral Price								
at a private practice	-0.019	-0.009	-0.024	0.015	0.032	0.015	-0.006	0.023
	(0.026)	(0.020)	(0.020)	(0.016)	(0.017)	(0.013)	(0.015)	(0.012)*
at a health center	0.021	0.040	-0.038	0.019	0.050	0.002	0.053	-0.005
	(0.035)	(0.026)	(0.026)	(0.021)	(0.021)*	(0.016)	(0.018)**	(0.014)
at a health post	0.056	0.034	0.010	0.013	-0.042	0.017	-0.058	-0.002
	(0.035)	(0.027)	(0.027)	(0.021)	(0.019)*	(0.014)	(0.016)**	(0.013)
[Age in 1997 $\geq$ 30] x								
Sqrt Median Injectable Price								
at a private practice	-0.047	-0.014	-0.005	-0.028	-0.115	-0.007	-0.062	-0.046
	(0.078)	(0.060)	(0.060)	(0.047)	(0.043)**	(0.032)	(0.036)	(0.029)
at a health center	0.033	-0.023	0.038	0.017	0.017	0.003	-0.002	0.016
	(0.035)	(0.026)	(0.026)	(0.021)	(0.016)	(0.012)	(0.014)	(0.011)
at a health post	-0.016	0.010	-0.004	-0.021	0.012	0.000	0.002	0.010
	(0.029)	(0.022)	(0.022)	(0.017)	(0.015)	(0.011)	(0.013)	(0.010)
Sqrt Median Oral Price								
at a private practice	-0.012	-0.007	0.000	-0.005	0.009	-0.011	-0.007	0.027
	(0.021)	(0.016)	(0.016)	(0.013)	(0.013)	(0.010)	(0.011)	(0.009)**
at a health center	0.049	0.012	-0.005	0.042	-0.010	-0.010	0.022	-0.022
	(0.029)	(0.022)	(0.022)	(0.018)*	(0.016)	(0.012)	(0.013)	(0.011)*
at a health post	0.041	0.022	0.011	0.008	-0.047	-0.024	-0.018	-0.005
	(0.028)	(0.021)	(0.021)	(0.017)	(0.015)**	(0.011)*	(0.013)	(0.010)
Observations	2756	2756	2756	2756	8924	8924	8924	8924

Contraceptive method columns contain estimates from SEM with province (1997, 1998, 2000) or individual (1997/1998, 1997/2000) fixed effects.
Contraceptive use column contains the sum of the contraceptive method column coefficients.
Absolute value of t statistics in parenthesis; * significant at 5%; ** significant at 1%. Controls omitted from this table include: contraceptive availability, minimum distance to provider, education, age, spouse in household, spousal education and age, exited IFLS enumeration area, price of rice, community average PCE, and percent of village with electricity, as well as urban, imputation and market, phone, bank, public transit, and road village dummies.

Table 10

	1997/1998				1997/2000			
	Contraceptive Use	Contraceptive Method			Contraceptive Use	Contraceptive Method		
		Oral	Injectable	Other		Oral	Injectable	Other
[sqrt(1997 PCE) < median 1997 PCE] x Sqrt Median Injectable Price								
at a private practice	-0.167	-0.003	-0.075	-0.090	-0.085	-0.012	-0.067	-0.006
	(0.093)	(0.071)	(0.071)	(0.056)	(0.049)	(0.037)	(0.042)	(0.033)
at a health center	0.026	-0.030	0.038	0.018	0.015	-0.007	0.010	0.013
	(0.034)	(0.026)	(0.026)	(0.021)	(0.017)	(0.013)	(0.014)	(0.012)
at a health post	-0.041	-0.013	-0.020	-0.007	0.021	0.015	-0.011	0.017
	(0.031)	(0.024)	(0.024)	(0.019)	(0.018)	(0.013)	(0.015)	(0.012)
Sqrt Median Oral Price								
at a private practice	-0.040	-0.025	-0.020	0.006	0.002	0.003	-0.029	0.028
	(0.024)	(0.018)	(0.018)	(0.014)	(0.015)	(0.011)	(0.013)*	(0.010)**
at a health center	0.040	0.016	-0.022	0.046	0.036	0.000	0.039	-0.003
	(0.032)	(0.024)	(0.024)	(0.019)*	(0.018)*	(0.013)	(0.015)**	(0.012)
at a health post	0.056	0.052	0.001	0.002	-0.047	-0.002	-0.037	-0.008
	(0.030)	(0.023)*	(0.023)	(0.018)	(0.017)**	(0.013)	(0.014)**	(0.011)
[sqrt(1997 PCE) > median 1997 PCE] x Sqrt Median Injectable Price								
at a private practice	0.033	0.000	0.036	-0.003	-0.071	-0.026	-0.019	-0.027
	(0.084)	(0.064)	(0.065)	(0.051)	(0.049)	(0.037)	(0.042)	(0.033)
at a health center	0.041	0.004	0.024	0.014	0.022	0.003	-0.000	0.019
	(0.036)	(0.028)	(0.028)	(0.022)	(0.018)	(0.013)	(0.015)	(0.012)
at a health post	0.002	0.016	-0.006	-0.009	-0.009	-0.001	-0.001	-0.007
	(0.033)	(0.025)	(0.026)	(0.020)	(0.017)	(0.013)	(0.015)	(0.012)
Sqrt Median Oral Price								
at a private practice	0.013	0.005	0.008	-0.001	0.035	-0.005	0.014	0.026
	(0.024)	(0.018)	(0.018)	(0.015)	(0.015)*	(0.011)	(0.012)	(0.010)**
at a health center	0.031	0.021	-0.015	0.025	-0.020	-0.009	0.020	-0.031
	(0.032)	(0.024)	(0.025)	(0.019)	(0.018)	(0.014)	(0.015)	(0.012)*
at a health post	0.042	0.000	0.022	0.020	-0.045	-0.020	-0.024	-0.001
	(0.032)	(0.025)	(0.025)	(0.020)	(0.016)**	(0.012)	(0.014)	(0.011)
Observations	2756	2756	2756	2756	8924	8924	8924	8924

Contraceptive method columns contain estimates from SEM with province (1997, 1998, 2000) or individual (1997/1998, 1997/2000) fixed effects.
Contraceptive use column contains the sum of the contraceptive method column coefficients.
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