

Three Studies of Family Planning Markets in Egypt

**Consumer Profiles Within Market
Segments for Family Planning:
An Analysis of the 1992 EDHS**

**Predicted Impacts of Phasing out
Private Sector IUD Subsidies on the
Contraceptive Market in Egypt**

**Private Providers in Egypt:
Characteristics, Costs, and Niches
in the Family Planning Market**

PREFACE

Options for Population Policy II (OPTIONS) is a five-year project funded by the Office of Population of the U.S. Agency for International Development (USAID). The goal of the project is to help USAID-assisted countries formulate and implement policies that address the need to mobilize and effectively allocate resources for expanding family planning services. The project provides technical assistance to:

- improve the analytical capacity of developing country institutions to design, manage and monitor family planning programs;
- assess legal and regulatory policies affecting the delivery of family planning services;
- promote efficient use of public sector resources in family planning programs; and
- increase private sector participation in service delivery.

The OPTIONS Project was asked by the National Population Council of Egypt and USAID/Cairo to conduct a series of studies examining the structure of the family planning market, including an exploratory investigation of private commercial providers and an in-depth study of the effects of phasing out USAID-donated IUD supplies on the contraceptive market in Egypt. This volume contains the results of the three studies:

- Consumer Profiles within Market Segments for Family Planning: An Analysis of the 1992 Egypt Demographic and Health Survey
- Predicted Impacts of Phasing out Private Sector IUD Subsidies on the Contraceptive Market in Egypt
- Private Providers in Egypt: Characteristics, Costs, and Niches in the Family Planning Market

These papers were also presented at a policy seminar sponsored by the National Population Council in Cairo on May 7-8, 1995.

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Consumer Profiles Within Market Segments for Family Planning: An Analysis of the 1992 EDHS



National Population Council



**CONSUMER PROFILES WITHIN MARKET SEGMENTS
FOR FAMILY PLANNING: AN ANALYSIS OF THE 1992 EGYPT
DEMOGRAPHIC AND HEALTH SURVEY**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
I. INTRODUCTION	1
II. BACKGROUND.....	1
III. DATA, DEFINITIONS, AND METHODS	2
Data.....	2
Definitions	3
Method	5
IV. RESULTS.....	7
Market Segments: Shares of the Contraceptive Market	7
Market Segments by Consumer's Demographic Characteristics.....	7
Market Segments by Consumer's Socioeconomic Characteristics.....	10
Market Segments by Consumer's Family Planning Characteristics.....	12
V. DISCUSSION AND RECOMMENDATIONS.....	16
IUD Market Segments	16
Pill Market Segments	17
The Condom Market Segment	18
Conclusion.....	18

FIGURES

Figure 1.	Modern contraceptive method mix among currently married women aged 15-49.....	2
Figure 2.	Distribution of market segment	8

TABLES

Table 1.	Market segment definitions.....	4
Table 2.	Definitions of characteristics.....	6
Table 3.	Demographic characteristics of currently married, modern contraceptive method users aged 15-49, by market segment.....	9
Table 4.	Socioeconomic characteristics of currently married, modern contraceptive method users aged 15-49, by market segment.....	11
Table 5.	Family planning characteristics of currently married, modern contraceptive method users aged 15-49, by market segment.....	13

EXECUTIVE SUMMARY

Due to strong leadership and a firm commitment from the government, Egypt's family planning program emerged in the 1980s as a model of success. Indeed, between 1980 and 1992, contraceptive prevalence in Egypt rose from 24 to 47 percent and the total fertility rate fell from 5.3 to 3.9. This success is due largely to the efforts of program officials to expand both the number and types of family planning providers in order to increase the accessibility of quality contraceptive products and services. Given the resultant size and complexity of the program, however, it is quite possible that some service providers are serving clients that could best be served through other family planning channels. Reducing this competition is critical to maximizing the use of program resources and to ensuring that clients utilize the service outlet and contraceptive method most appropriate to their needs.

An essential step in streamlining the program is understanding where clients in different demographic, socioeconomic and family planning categories are going for their contraceptive products and services. Thus, OPTIONS was asked by the National Population Council and USAID/Cairo to conduct a market segmentation analysis to determine the fertility desires and contraceptive use patterns of women. The data for the analysis, which examined characteristics of IUD, pill and condom users, came from the 1992 Egypt Demographic and Health Surveys (EDHS). These data include information on contraceptive and fertility behavior, willingness to pay for family planning services, and individual and household characteristics of a nationally-representative sample of 9,978 ever-married women between the ages of 15 and 49. Information on current use of family planning methods is available for 9,153 currently-married women. Of these, nearly 45 percent (4,098) were using a modern method of contraception. Sixty-two percent (2,555) of current users were using an IUD, 29 percent (1,181) were using the pill and 4 percent (180) were using condoms.

For the IUD, this paper distinguishes among three public sector segments (rural hospitals and health units, urban hospitals, and other, mostly urban, public sources), a private voluntary organization (PVO) segment and two private commercial sector segments (low-priced and high-priced). For pill users, the paper considers two public sector segments (low-priced and mid-priced) and three private sector segments (low-priced, mid-priced and high-priced). Because the sample size of condom users was small, only one market segment -- pharmacies -- was considered.

If the market for family planning is segmented efficiently, the most heavily-subsidized providers should be serving consumers with the least ability to pay. Therefore, consumers who utilize public sector channels should rank lowest on most socioeconomic indicators. In addition, methods used by women should correspond with their fertility preferences. Specifically, the majority of IUD users, regardless of source, should be "limiters" (i.e., they desire no more children) and the majority of pill and condom users, regardless of source, should be "spacers" (i.e., they want to delay their next birth for at least two years). Also, pill and condom users should be found to be younger, have fewer children ever born and have been married fewer years on average than IUD users.

The IUD market, the largest and most diversified market, is efficiently segmented according to users' ability to pay. The only suggestion of competition among IUD market segments derives from the fact that the "other" public segment and the PVO segment serve clients with similar median monthly household expenditures, a proxy for ability to pay. Thus, clients in the "other" category may be a source for expansion into the PVO market, particularly since they expressed a willingness to pay more for an IUD than the price currently being paid in the PVO sector. Likewise, women currently obtaining their IUD services from the PVO sector might be encouraged to switch to private sector outlets, given that these consumers expressed a willingness to pay more for their IUD than the amount currently being paid by those in the lower-end private sector segment.

Among pill users, median monthly household expenditures are higher for all three private sector market segments than for the two public sector market segments. The major distinction in ability to pay for pills is found between the public and private segments as a whole, rather than among segments within the public and private sectors. Although the low- and mid-priced public segments serve clients with similar socioeconomic profiles, they tend to serve consumers in different geographic areas. However, private sector pill segments do appear to be competing for clients with similar socioeconomic backgrounds.

It is interesting to note that the private sector serves 90 percent of the pill market, particularly in urban areas, which generally have a larger concentration of pharmacies than rural areas. Pill users as a whole also have lower median household expenditures than IUD or condom users, suggesting that income levels may influence choice of methods.

As expected, the majority of IUD users, regardless of source, are limiters. However, contrary to expectations, the overwhelming majority of pill and condom users were also found to be limiters.

In fact, the low-priced public sector pill segment has a larger percentage of limiters (93%) than any other method or source segment. This suggests that pill users, or their doctors, especially those in the low-priced public segment, view pills as a long-term method. Alternatively, there may be barriers to other methods, such as cost or concern about being seen by a male doctor, especially for an IUD.

CONSUMER PROFILES WITHIN MARKET SEGMENTS FOR FAMILY PLANNING: AN ANALYSIS OF THE 1992 EGYPT DEMOGRAPHIC AND HEALTH SURVEY

I. Introduction

Due to strong leadership and a firm commitment to family planning from the Government of Egypt (GOE), Egypt's family planning program emerged in the 1980s as a model of success. Between 1980 and 1992, contraceptive prevalence rose from 24 to 47 percent and the total fertility rate fell from 5.3 to 3.9. The success of Egypt's family planning program is due in part to efforts during the 1980s to expand both the number and types of family planning providers in order to increase contraceptive availability. As a result of these efforts, however, the family planning program has become organizationally complex, and the extent to which the various types of providers compete with, rather than complement, one another to meet the demand for family planning is unclear. The aims of the present paper are: (1) to delineate family planning market segments, and (2) to analyze these market segments in order to determine whether providers are differentiated according to the types of consumers they serve. Evolution of the service delivery system can be more readily guided toward efficient and effective use of resources with information about the characteristics that define groups of consumers.

II. Background

Since the launching of the national family planning program in 1966, successive governments have maintained strong support for the program. President Hosni Mubarak has emphasized the vital role that family planning plays in achieving national goals. In 1985 he demonstrated this support by establishing the National Population Council (NPC) as the national coordinating body that implements the population program. The NPC performs a key function in supporting family planning activities at the governorate and national levels. Moreover, the appointment of its Secretary General to Minister of State for Population and Family Planning has elevated the importance of population concerns and activities in Egypt.

Service delivery efforts during the 1980s have also been an important factor in Egypt's family planning success. In 1980 the Family of the Future (FOF), a private voluntary organization (PVO), expanded the scope of its contraceptive social marketing project to increase the availability of contraceptives in the commercial sector. In 1988, the Egyptian Family Planning Association (EFPA) embarked on the Clinical Services Improvement (CSI) Project, which has expanded high quality family planning and reproductive health services in the private voluntary component of the private sector. Since 1988, the Ministry of Health (MOH), under its Systems Development Project (SDP), developed and implemented a comprehensive family planning system, with attention to commodity/supply logistics and service quality. Other sources of contraceptive supplies in Egypt include teaching hospitals, Curative Care Organizations (CCO), and Health Insurance Organizations (HIO).

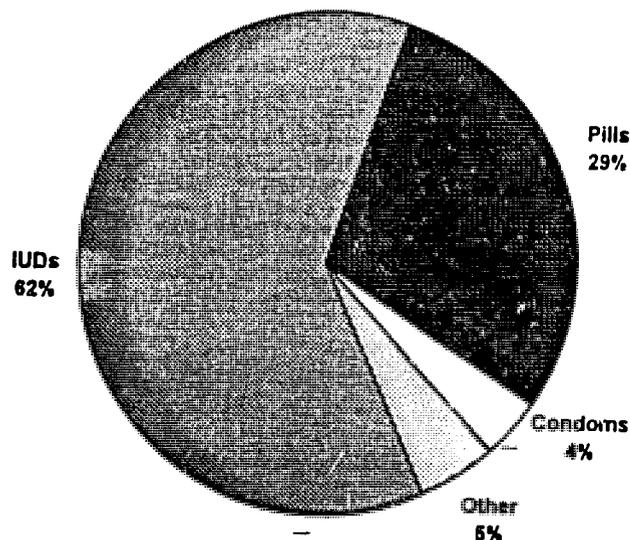
Because of this expansion, the service delivery system has become organizationally complex and the extent to which the different service delivery systems overlap in their activities and in the types of clients that they serve is unclear. The objective of the present study is to identify the ways that current service delivery systems complement and compete with one another in terms of the types of consumers they serve.

III. Data, Definitions and Methods

Data

The data for this analysis come from the 1992 Egypt Demographic and Health Survey (EDHS). These data include information on contraceptive and fertility behavior, willingness to pay for family planning services, and individual and household characteristics for a nationally representative sample of 9,978 ever-married women between the ages of 15 and 49. Information on current use of family planning methods is available for 9,153 currently married women. Of these, nearly 45 percent (4,098) were using a modern method at the time of the interview. Sixty-two percent of these current users (2,555) were using an IUD, 29 percent (1,181) were using the pill, and 4 percent (180) were using condoms. Figure 1 presents this distribution.

Figure 1
Modern Contraceptive Method Mix
Among Currently Married Women Aged 15-49



Definitions

Market Segmentation

As Figure 1 shows, users of IUDs, pills and condoms make up 95 percent of the entire modern method family planning market. For the purposes of this paper, the “contraceptive market” is defined as the market for these three methods. (Therefore, IUD users comprise 67% of the market, pill users 29%, and condom users 4%.) Although many definitions of “market segmentation” exist, an underlying concept in most definitions is that market segments consist of homogeneous groups of consumers in terms of their needs, preferences, and purchasing ability. In most business applications, the concept of market segmentation is used prospectively to identify groups of potential consumers and then to design marketing strategies accordingly. We use an approach that is more retrospective. Namely, we focus on existing market segments (defined by method use and source) and evaluate whether groups of family planning consumers within these segments are in fact distinguishable from one another according to their family planning needs, preferences, ability to pay, and a number of other social, demographic, and family planning characteristics.

In this analysis, we investigate consumer characteristics for IUD, pill, and condom users. Table 1 provides detailed definitions of each of these market segments. For IUD users, we distinguish among three public sector segments (rural hospitals and health units, urban hospitals, and other public sources--mostly located in urban areas), a PVO market segment, and two private commercial sector segments (low-priced and high-priced)¹. For pill users, we consider two public sector segments (low-priced and mid-priced) and three private commercial sector market segments (low-priced, mid-priced, and high-priced).² The sample size of condom users was small and only one market segment, pharmacies, was considered.³

Consumer Profiles

This paper focuses on the demographic, socioeconomic, and family planning characteristics of consumers within each of the method/source market segments defined above. The demographic characteristics that we consider are:

- age,
- age at marriage,
- years married,
- the number of children ever born, and

¹ For IUD users, the private commercial sector will hereafter be referred to as the low-priced and high-priced private sector.

² In the 1992 DHS data, there were very few “high-priced” pill users in the public sector. The sample size for the PVO sector for pills is not large enough to produce reliable results. In this paper, the three private commercial sector market segments will be referred to as private sector segments.

³ Other segments for this market could not be analyzed reliably because of the small number of condom users in the DHS data. In this paper, pharmacies are referred to as the private sector segment.

Table 1
Market Segment Definitions

MARKET SEGMENT	DEFINITION
IUD, Rural public	Rural hospitals and rural health units
IUD, Urban public hospital	Public hospitals in urban locations
IUD, Other public	Urban health units, other MOH, teaching hospitals, HIO, CCO, and other government.
IUD, PVO	EFPA, CSI, and mosque or church health units
IUD, Low-priced private	Private providers to whom women paid less than LE 35 for an IUD (including insertion)
IUD, High-priced private	Private providers to whom women paid more than LE 35 for an IUD (including insertion)
Pill, Low-priced public	Public providers from whom women purchased either the Anovlar or Microvlar brands
Pill, Mid-priced public	Public providers from whom women purchased all brands except Anovlar, Microvlar, or Triovlar
Pill, Low-priced private	Private providers from whom women purchased either the Anovlar or Microvlar brands
Pill, Mid-priced private	Private providers from whom women purchased all brands except Anovlar, Microvlar, or Triovlar
Pill, High-priced private	Private providers from whom women purchased the Triovlar brand
Condom, Private	Pharmacy

Note: HIO = Health Insurance Organization
CCO = Curative Care Organization

- the number of excess births.

The socioeconomic characteristics that we analyze are:

- household expenditures (a proxy for income and poverty status),
- wife's educational attainment,
- husband's educational attainment, and
- residence.

Lastly, the family planning characteristics that we consider are:

- price paid for method used,
- price that the respondent is willing to pay for this method,
- travel time to source of method, and
- the respondent's fertility preferences (i.e., whether the respondent wants no more children --"limiters"-- or wants to delay the next birth for two or more years --"spacers").

Table 2 summarizes the definitions for these characteristics.

Method

This analysis relies on descriptive statistics (means, medians, and percentages) to compare the values for each of the demographic, socioeconomic, and family planning characteristics described above within method and source segments. If the market for family planning is segmented efficiently, we expect the most heavily subsidized providers to serve consumers with the least ability to pay. Therefore, we expect consumers who use the public sector to rank lowest on most of the socioeconomic indicators considered here.⁴ Using this same logic, we expect consumers using the PVO sector to rank somewhat higher in socioeconomic status, and consumers using the high-priced private sector to rank highest. Consumers using the low-priced private sector may be similar to PVO sector users or to public sector users, but should rank lower than high-priced private sector users in their socioeconomic characteristics.

If the market is segmented efficiently, we also expect the methods that women use to correspond to their fertility preferences. Specifically, we expect the majority of IUD users, regardless of source, to be "limiters" (i.e., want no more children), and the majority of pill and condom users, regardless of source, to be "spacers" (i.e., those who want to delay the next birth for two years). We also expect pill and condom users to be younger, to have fewer children ever born, and to have been married fewer years on average than IUD users. This is because young women, women with few children, and women who have recently married are more likely to be spacers

⁴ The degree of subsidization is in part reflected by the prices charged to consumers for commodities *and* services. Generally, public sector sources are the most heavily subsidized (prices charged are lowest), PVO sources are the second most heavily subsidized, and private sources are the least subsidized.

Table 2
Definitions of Characteristics

CHARACTERISTIC	DEFINITION
Age	Respondent's age in years at time of interview
Age at first marriage	Respondent's age at marriage in years
Years married	Number of years respondent has been married
Children ever born	The total number of children ever born to respondent (includes children who have since died)
Number of excess births	Total number of children ever born to respondent minus total number of ideal children (according to respondent)
Total household expenditures	Total expenditures that husband reported that a household in his situation would incur in one month
Years of schooling-wife	Years of schooling that wife completed
Years of schooling-husband	Years of schooling that husband completed
Lives in a large city	Respondent lives in a city defined as large by DHS
Lives in a rural area	Respondent lives in rural Upper Egypt or rural Lower Egypt
Lives in rural Upper Egypt	Respondent lives in rural Upper Egypt
Price paid	The price the respondent paid for her current method (and service, in the case of IUDs)
Price willing to pay	The price that the respondent says she is willing to pay for her current method
Travel time to source	The amount of time it takes the respondent (in minutes) to reach her method source
Limiter	A respondent who wants no more children
Spacer	A respondent who wants to delay the next birth for two or more years

than are older women, women with many children and women who have been married many years.

IV. Results

Market Segments: Shares of the Contraceptive Market

Figure 2 shows the distribution of market shares captured by each of the three predominant modern contraceptive methods. The market for IUDs is clearly larger and more diversified than the market for either pills or condoms. The public sector IUD market segment is categorized according to the type of facility where consumers receive services: rural health units and hospitals, urban hospitals, and other public facilities. Together, the three public sector IUD market segments serve 30 percent of the contraceptive market (6% in rural health facilities, 7% in urban hospitals, and 17% in all other public facilities). The PVO market segment for IUDs serves 10 percent of the market. The private commercial IUD sector is categorized according to the price charged by physician providers to consumers for an IUD and its insertion: low-priced and high-priced. These two segments serve 27 percent of the contraceptive market (20% in the low-priced segment and 7% in the high-priced segment).

The five pill market segments defined here serve 29 percent of the contraceptive market. The public sector pill segment is small (serving only 3% of the market) and is comprised of two segments categorized by the price (brand) of pills sold: lower-priced (2%) and mid-priced (1%). The private sector pill market is larger (serving 26% of the market); it is also divided into segments according to price (brand) of pills sold. In addition to lower-priced (6%) and mid-priced (17%) segments, a small market exists for high-priced pill large cities, brands (3% of total market). The PVO market segment for pills is too small to analyze.

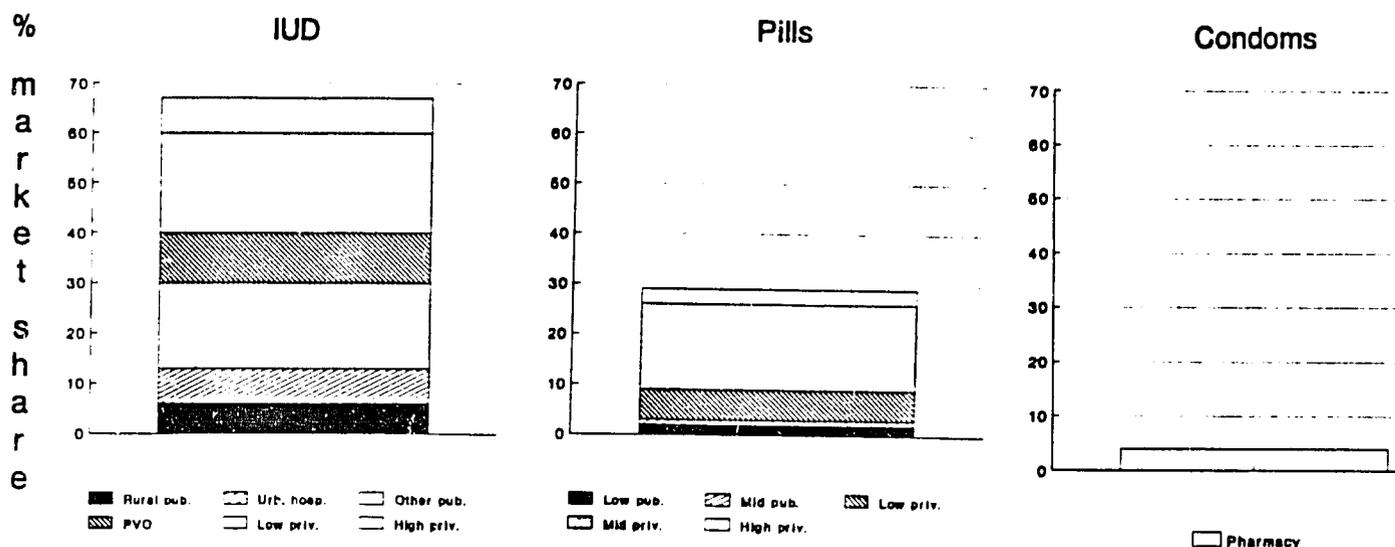
The condom market is small, serving only 4 percent of the contraceptive market. Nearly all reported condom purchases were made from pharmacies, so this is the only market segment defined for condoms.

Market Segments by Consumer's Demographic Characteristics

Table 3 shows the demographic characteristics of family planning users by market segment. The data reveal a fair amount of variation across market segments in the demographic characteristics of family planning users. The mean age of consumers ranges from 31 to 38, the mean age at first marriage ranges from 17 to 20, and the mean number of years married ranges from 13 to 18 for the various segments. The mean number of children ever born ranges from 3 to 5. The range for the average number of excess births is 0.4 to 2.1.

Among IUD users, two distinct segments emerge based on demographic characteristics. Users of the rural public sector on average are younger, marry at earlier ages, have more children ever

Figure 2
Distribution of Market Segments



born, and have more excess births than users of nearly every other source, while users of the high-priced private sector on average are older, marry at older ages, have fewer children ever born, and have fewer excess births than users of any other source. Users of the urban public hospitals, other public sources, PVOs and low-priced private sources have similar demographic characteristics for the most part.

Among pill users, consumers of lower-priced pills in both the public and private sectors tend to be older and to have been married longer than consumers of mid-priced or high-priced pills received from either the public or private sectors. Users of mid-priced pills in the public and private sectors and users of high-priced pills in the private sector share similar demographic characteristics, suggesting that private sector market segments are competing with each other. Pill users, regardless of source, tend to have a higher average number of excess births than IUD users. Contrary to our expectations, there is no indication that pill users (a short-term method) tend to be younger, or to have shorter durations of marriage or fewer children on average than IUD users (a long-term method).

Condom users tend to be older, marry at older ages, and have been married longer than either IUD users or pill users in most market segments. Like pill users, condom users tend to have a higher average number of excess births than IUD users. As in the case of pill users, the findings are contrary to our expectation that users of short-term methods, such as condoms, would be younger on average and married for shorter durations than users of long-term methods, such as the IUD.

Table 3
Demographic Characteristics of Currently Married Modern Contraceptive Users Aged 15-49, by Market Segment

User Type	IUD USERS						PILL USERS					CONDOM USERS
Source	Public Sector			PVOs	Private Sector		Public Sector		Private Sector			Private Sector
Characteristic	Rural Facilities	Urban Hospital	Other Facilities		Low-priced	High-priced	Low-priced	Mid-priced	Low-priced	Mid-priced	High-priced	Pharmacy
Mean Age	31	33	33	32	33	33	36	32	34	33	31	38
Mean Age at Marriage	17	18	19	19	19	20	18	19	19	18	19	20
Mean No. of Years Married	14	15	14	13	14	13	18	14	16	14	12	18
Mean No. of Children Ever Born	5	4	4	4	4	3	5	4	5	4	4	4
Mean No. of Excess Births	1.5	1.6	1.0	0.8	1.1	0.4	2.1	1.4	1.6	1.4	1.4	1.4
Number of Cases	203	248	614	355	701	235	55	39	193	589	94	140

Market Segments by Consumer's Socioeconomic Characteristics

Table 4 shows the socioeconomic characteristics of family planning users by market segment. As was the case with demographic characteristics, the socioeconomic characteristics of family planning users tend to vary across market segments. Median monthly household expenditures range from LE 200 to LE 400. Mean years of wife's schooling range from four to nine, mean years of husband's schooling range from seven to ten. The percent who live in large cities ranges from zero to 51, the percent who live in rural areas ranges from 24 to 95, and the percent who live in rural Upper Egypt ranges from seven to 33.

In the IUD market, median monthly household expenditure (a proxy for median income) clearly differentiates each market segment. Median household expenditures increase consistently as one moves from the rural public category to the high-priced private category. Note that although the data suggest some variation in ability to pay among IUD users in the public sector, public sector segments show lower median household expenditures than the private commercial sector IUD segments. The median household expenditure of users of the PVO segment falls between the public and private commercial sector users. These results suggest that the IUD market is efficiently segmented based on ability to pay. The greater the user's ability to pay, the more likely she is to use a less subsidized family planning source. One reason that may explain why median expenditures differentiate the public sector segments for the IUD is suggested by additional information in Table 4 on residence: the urban hospital and other public provider segments are more likely to serve clients who live in urban areas, especially where incomes tend to be higher.

The only suggestion of competition among segments in the IUD market comes from the fact that the urban hospitals, other public, and the PVO segments serve clients with similar indicators of ability to pay. These segments are similar with respect to both wife's and husband's educational attainment, and the median household expenditures for these segments are similar, too. Additional information in Table 4 about residence suggests that these segments may serve clients in different geographic areas and, therefore, may not be in direct competition with one another. Specifically, providers in the other public category are more likely to serve clients who live in large cities than are PVO providers, and less likely to serve clients who live in rural Upper Egypt.

Among pill users, median household expenditures are higher for all three private sector market segments than for the two public sector market segments. Comparing the two public sector pill market segments, median household expenditures are not different. There is a slight rise in median household expenditures from the low-priced to the high-priced private sector pill market segments, but this difference is not substantial. Because price differences in pill brands distributed either through the public or private sector are small, price does not appear to be the main factor differentiating the pill market segments. Wife's and husband's educational attainment also show very little variation across pill market segments.

Table 4
Socioeconomic Characteristics of Currently Married Modern Contraceptive Users Aged 15-49, by Market Segment

User Type	IUD USERS						PILL USERS						CONDOM USERS
Source	Public Sector			PVOs	Private Sector		Public Sector		Private Sector			Private Sector	
Characteristic	Rural Facilities	Urban Hospital	Other Facilities		Low-priced	High-priced	Low-priced	Mid-priced	Low-priced	Mid-priced	High-priced	Pharmacy	
Median Household Expenditures *	200	250	260	250	300	400	213	209	231	237	239	350	
Mean Years of Schooling: Wife	4	7	7	7	7	9	5	6	5	6	7	7	
Mean Years of Schooling: Husband	7	8	9	9	8	10	6	7	8	8	7	10	
Percent who Live in Large City	1	40	47	30	31	49	0	24	23	30	23	51	
Percent who Live in Rural Area	95	42	32	36	44	24	84	60	41	45	38	23	
Percent who Live in Rural Upper Egypt	23	8	7	14	9	9	35	23	18	15	17	9	
Number of Cases	203	248	614	355	701	235	55	39	193	589	94	140	

* Household expenditures were calculated for only a one-third sample of the 1992 EDHS. In the pill user sub-sample, this reduced the number of observations to the point where the medians were unreliable. To increase the number of observations on household expenditures, we estimated household expenditures based on a regression analysis of the entire EDHS sample (more than 3000 observations with expenditure data). These estimates were used only for pill users; the median household expenditures for IUD and condom users are based on their actual reported expenditures.

It is interesting to note, however, that pill users as a whole have lower median household expenditures than IUD users, suggesting that income levels may influence choice of methods. As will be seen in Table 5, IUD's have a higher "up-front cost" than do pills.

The main socioeconomic characteristic that differentiates low-priced and high-priced public sector pill users is residence. Within the public sector, low-priced public sector pill users are heavily concentrated in rural areas (84% vs. 60% for mid-priced public sector pill users) and are more likely to live in rural Upper Egypt (33% vs. 23%). A higher proportion of mid-priced public sector pill users live in large cities (24% vs. 0% for low-priced public sector pill users). Within the private sector, no socioeconomic characteristic measured here distinguishes low-, mid-, and high-priced pill users, except that mid-priced private sector users tend to be more concentrated in large cities.

In sum, with respect to the pill market, the major distinctions in ability to pay (proxied by household expenditures) are between the public and private segments as a whole rather than among segments within the public and private sectors. Within the public sector, low- and mid-priced segments appear to serve clients in different geographic areas and are therefore likely to be complementary rather than competitive. However, private sector segments for the pill appear to be competing for clients with similar socioeconomic profiles.

With respect to the condom market, the data in Table 4 show that users are more likely to live in large cities than users in any of the pill and IUD segments. The husbands of women who report condom use also tend to be highly educated relative to the husbands of pill and IUD users (with the exception of high-priced private sector IUD users). Women's education was not substantially different in the condom market segment compared to women's education in the pill and IUD market segments. As measured by median household expenditures, condom users are a relatively higher income group, falling between the low- and high-priced private commercial sector IUD market segments. For the most part, condom users resemble private commercial sector IUD users more than any other group in terms of their socioeconomic characteristics.

Market Segments by Consumer's Family Planning Characteristics

Table 5 shows the median price paid for current method, the median price that the respondent is willing to pay for this method, median travel time to the source of current method, the percentage of users who use their current method to limit their fertility and the percentage who use their current method to space their births. The data show that the "up-front cost" (i.e., the cost to obtain contraceptive commodities and service) is highest for IUD users, lowest for pill users (with the exception of high-priced private sector users), and intermediate for condom users. Users in all market segments are generally willing to pay more for their method than they actually paid, except for users of high-priced private sector IUDs.

Table 5
Family Planning Characteristics of Currently Married Modern Contraceptive Users Aged 15-49, by Market Segment

User Type	IUD USERS						PILL USERS					CONDOM USERS
Source	Public Sector			PVOs	Private Sector		Public Sector		Private Sector			Private Sector
Characteristic	Rural Facility	Urban Hospital	Other Facility		Low-priced	High-priced	Low-priced	Mid-priced	Low-priced	Mid-priced	High-priced	Pharmacy
Median Price Paid (LE)	3	3	3	9	16	50	0.10	0.35	0.10	0.40	1.20	0.75
Median Price Willing to Pay (LE)	10	10	10	25	25	50	2.50	1.00	2.00	2.00	3.00	n.a.
Median Travel Time to Source (minutes)	15	30	20	20	20	20	15	20	10	10	10	10
Percent Limiters	83	86	81	79	80	79	93	83	87	84	85	90
Percent Spacers	12	12	14	18	15	13	3	15	9	12	13	6
Number of Cases	203	248	614	355	701	235	55	39	193	589	94	140

In 1992, 1 LE (Egyptian pound) was equivalent to approximately US\$0.30.

Price paid for IUD includes service and commodity prices.

Price paid for pills and condoms refers to commodity prices only.

"n.a." signifies information was "not available."

Median travel time to the facility where contraceptive commodities and/or services were obtained ranges from 10 to 30 minutes. The percentage of users who want no more children (limiters) ranges from 79 to 93 percent, and the percentage who want to delay the next birth by at least two years (spacers) ranges from 3 to 18 percent.

Within the IUD market, the average price that consumers pay to obtain an IUD (commodity and service) is 3 Egyptian pounds (LE)⁵ in all three public sector segments. In the PVO segment, the median price paid is somewhat higher at LE 9. The median price paid is higher yet in the low-priced private sector market at LE 16, and highest in the high-priced private sector market at LE 50. Thus, the IUD market is clearly segmented by the price paid by the consumer.

Although Table 4 provides evidence that suggests the three public sector IUD market segments are distinguishable in terms of consumers' ability to pay for IUDs (see median household expenditures), there are no differences among public sector segments in consumers' willingness to pay. Half of all consumers in all three segments are willing to pay at least LE 10 to obtain an IUD (commodity and service), which is a little more than three times the amount that they actually paid.⁶

Like public sector users, half of all PVO users are willing to pay a little more than three times the amount they actually paid. Specifically, IUD users who obtain their method (and service) from PVOs are currently paying on average about LE 8, but they are willing to pay up to LE 25.

Although IUD users who obtain their method from the low-priced private sector have higher median monthly expenditures and pay more for an IUD (including the service charge) than women who obtain IUDs from a PVO, the median amount they are willing to pay is the same (LE 25). The median willingness-to-pay price for women in the high-priced private sector IUD market segment is not higher than the price they paid for their current IUD (LE 50).

IUD users who rely on rural public providers have the shortest travel time (15 minutes), and those who rely on urban hospitals have the longest travel time (30 minutes). The median travel time for IUD users in all other segments is 20 minutes. This probably reflects the fact that health facilities are well distributed in rural Egypt and that rural health facilities are likely to draw customers from a small catchment area close to the facility. Urban hospitals, on the other hand, are likely to draw customers from a wider catchment area. This is consistent with a finding reported recently by The Population Council.⁷ They estimated that while 85 percent of rural health facility users in their sample were

⁵ In 1992, 1 LE (Egyptian pound) was equivalent to approximately US\$0.30.

⁶ It is interesting to note that median willingness to pay for an IUD in all public sector IUD market segments (LE 10) is higher than the LE 7.5 being considered as a new price for the CuT-380A IUD for distribution to private sector IUD providers. The impact of such a price change on the distribution of IUD consumers is considered in "Predicted Impact of Phasing Out Private Sector IUD Subsidies on the Contraceptive Market in Egypt."

⁷ The Population Council. 1994. *Profiles of Clients of Different Providers of Family Planning Services in Egypt*. Page 15.

from the same village in which the facility was located, a relatively high proportion (about 56%) of urban hospital clients came from rural areas. This is likely to explain the longer average travel time of clients in this segment of the IUD market.

As expected, the majority of IUD users, regardless of source, are limiters. The data do show, however, that IUD clients in the PVO market segment are somewhat more likely to be spacers than IUD clients in the other segments (18% vs. 12-14%). The Population Council^{*} found that clients in the PVO segment are relatively more likely to rely on their provider's opinion with regard to method choice. PVO providers may want to pay more attention to all-method counseling to ensure method selection is informed and appropriate to fertility intentions.

Table 5 shows that in the pill market, consumers who buy low- and mid-priced brands pay about the same price whether they purchase their pills from the public or the private sector. This is expected since prices are controlled by government regulations. Information on residence suggests that the reason public sector users do not use the private sector, given that the price between the two sectors is about the same, is that they have limited access to the private sector. The majority of public sector users (especially those in the low-priced segment) reside in rural areas (see Table 4) where pharmacies are less common than in urban areas. The majority of private sector users, on the other hand, reside in urban areas.

Among pill users, there is not substantial variation across the public and private segments in terms of willingness to pay, although clients in all five pill market segments (public and private) are willing to pay more than they actually paid. The median travel time to source for pill users in the public sector is about 5 to 10 minutes longer than it is for pill users in the private sector. Contrary to expectations, the majority of pill users are limiters rather than spacers. In fact, the low-priced public sector pill segment has a larger percentage of limiters (93%) than any other method/source segment. This suggests that pill users, especially those in the low-priced public segment, view pills as a long-term method. This may explain the relatively high average number of excess births among pill users, given that the pill is generally more effective for spacing births than for preventing births over the long term.

With respect to the condom market, users spend the same amount of time on average as pill users to travel to their source (the majority of private sector pill providers are also pharmacies). Also, like IUD and pill users, condom users overwhelmingly rely on their method to limit childbearing rather than to space their children.

^{*} The Population Council. 1994. *Profiles of Clients of Different Providers of Family Planning Services in Egypt*. Page 25.

V. Discussion and Recommendations

By 1992, the IUD dominated the family planning market in Egypt's complex family planning service delivery system, but the pill also comprised a substantial share. The demographic, socioeconomic, and family planning characteristics of consumers in each market segment vary across segments, suggesting an efficiently segmented contraceptive market in Egypt. Some of the findings summarized below, however, are suggestive of opportunities to further improve market segmentation.

IUD Market Segments

The IUD dominated the family planning market in 1992. For a number of characteristics, there appears to be a well-ordered continuum of segments. At one end, IUD consumers who use rural public sector health facilities are younger, marry earlier, have more children, and have a greater number of excess births than any other IUD market segment. At the other end, IUD consumers in the high-priced private commercial market segment are older, marry at older ages, have fewer children, and have fewer excess births than consumers in other IUD market segments. However, there is not much variation in the demographic characteristics of consumers in the other IUD market segments.

However, two socioeconomic characteristics--education and ability to pay (as measured by median household expenditures) do differentiate segments of the IUD market. Educational attainment of both husband and wife is highest in the high-priced private sector market and lowest in the public sector rural health facilities market. The three public sector IUD market segments also have the lowest median household expenditure levels. Consumers in the public sector rural health facility segment have the least ability to pay as expected (rural incomes are typically lower, users of rural health facilities also typically live in the same area as the facility itself). Consumers in the PVO market segment fall between the public rural and private commercial sector market segments. Consumers in the high-priced private sector IUD market segment have the greatest ability to pay.

These findings are consistent with the prices actually paid for IUDs (and insertion) and with consumers' willingness to pay for an IUD. Prices were lowest in the public sector. There was no variation in prices paid in the three public sector IUD market segments, reflecting the fact that public sector facilities provide only the donated, price controlled CuT-380A IUD. PVO consumers reported paying a higher price for an IUD than public sector consumers. Prices paid in the private commercial sector segments were highest. Similarly, women in the public sector IUD market segments reported they are willing to pay the lowest amount for an IUD (LE 10). Women in the PVO market segment on the other hand, report that they are willing to pay LE 25, equal to the amount women in the low-priced private sector market segment are willing to pay.

Together, these findings suggest that the public sector market segment for IUDs is serving an appropriate group of consumers: those who are least able to pay and having the lowest willingness to pay for an IUD, and who are probably least likely to have access to private sector alternatives by virtue of their largely rural residence (particularly for the public sector rural health facilities segment of the IUD market). In addition, women in the public sector market segments reported they would be willing to pay a slightly higher price for an IUD than women in the PVO sector actually paid. These women may be a source for expansion of the PVO market segment in areas where PVO service outlets exist, particularly if PVO prices are held to their current levels and as rural incomes and living standards rise in Egypt.

Consumers in the current PVO market segment likewise make an appropriate group for future efforts to expand the reach of the private commercial sector market for IUDs. These women report that they are willing to pay higher IUD prices than the prices currently prevailing in the low-priced private sector IUD market segment. (and equal to the median amount women who are already using this market segment reported they would be willing to pay).

Pill Market Segments

The market share for pills in Egypt is considerably smaller than the market share for IUDs. The private sector (mostly pharmacies) serves 90 percent of the pill market. The DHS data indicate that pill market segments do not differ much by demographic or socioeconomic characteristics of users. However, median monthly expenditures were lower for pill users than for IUD or condom users as a whole.

Pill market segments do, however, appear to serve different geographic groups. Use of the public sector among pill users appears to stem more from a lack of access to private sector providers (users are overwhelmingly rural residents, especially public sector low-priced pill users) than from any difference in ability or willingness to pay for pills. Travel times were also greater for public sector pill users than for private sector pill users, probably because the private sector pill market is served primarily by pharmacies, mostly in urban areas where pharmacies are more densely located. Thus, pill market segmentation appears to be more an issue of access and convenience. Pill users in rural areas might use the private sector more if they had greater access to it. This has implications for distributors, to try to get more pharmacies into rural areas.

Neither the pill nor the condom market segments appear to be drawing consumers based on their fertility preferences. The proportions of pill and condom users who are self-defined limiters (i.e., they reported wanting no more children) are as high or higher than for consumers in the IUD market segments. This finding could be an artifact of poor reporting of fertility preferences. However, if (as one might expect) pill users were more likely to be spacers (i.e., wanting more children but wishing to wait at least two years), then they would be more likely to be younger and have fewer children ever born. This is

not the case; in fact, at the low end of the public sector pill market, pill users are four years older on average than the low-end IUD users.

Fertility preferences do not seem to affect method choice in Egypt. It may be that, as a Population Council study showed, doctors recommend IUDs for spacing because of aversion to hormonal methods.⁹ However, if pill and condom users continue to use their methods for limiting, a number of policy options might be considered in order to prevent excess births. It will be especially important to ensure proper usage of pills and condoms through improved counseling by providers and through IEC campaigns aimed at both consumers and providers. Counseling could also help consumers to clarify their intent to space or limit births and to select a contraceptive method appropriate to that intent. In addition to knowledge of the availability of alternative methods for limiting fertility, economic factors may be important determinants of method choice. If the up-front cost of the various methods is a factor affecting method choice, being able to pay for long-term contraceptive methods, such as IUDs, in small installments may be a factor for the family planning program to consider.

Condom Market Segment

Condom users have different demographic and economic profiles than consumers in the other market segments examined here. Condom users are older, tend to marry later, and have more children on average than consumers in other market segments. Their median household expenditures are relatively high, falling between those of users in the low-priced and high-priced private sector IUD market segments. The husbands of women reporting condom use have higher educational attainment than husbands of contraceptors in all other market segments. Condom users are also more likely than consumers in any other group to live in urban areas, suggesting condom use is associated with ease of purchase through pharmacies.

Conclusion

The modern method contraceptive market appears to be efficiently segmented. A set of consumer characteristics exists that clearly differentiates market segments for the three predominant contraceptive methods, especially for the IUD market. The public sector has done well to target users with low ability to pay, especially in rural areas. Likewise, the PVO and private commercial sectors have found appropriate niches and offer services and supplies at a variety of prices to meet the needs of the existing pool of users.

Because this all suggests an efficient use of resources, we do not recommend any policy intervention to alter the segmentation of the IUD market. In fact, policy reforms designed to sustain the segmented market seem to be warranted. To assure unlimited availability of the inexpensive CuT-380A, for example, modest price increases may be necessary. There

⁹ Egyptian women appear to be dissatisfied with hormonal methods. According to a Population Council Report, 66 percent of pill users wanted to discontinue use compared to only 15 percent of IUD users. See *Study of the Use of the IUD in Egypt: Final Report*. The Egyptian Fertility Care Society. May 1994.

is some competition in the private sector pill market, but that is not necessarily bad because consumers have a choice of different products at each outlet.¹⁰

The findings on willingness to pay also suggest that there is considerable room for increased cost-recovery initiatives in both the IUD and pill market segments. In all segments, with the exception of the high-priced private sector, women said they would be willing to pay more for their method than they were currently paying. The difference in the actual price paid and the price the respondent would be willing to pay is especially large in the pill market. In the IUD market, half of all users in all segments are willing to pay more than the price of between 6 to 8 Egyptian pounds, a price that allows unsubsidized IUDs to be self-sustaining in the market. This suggests that the relaxation of price controls would not be highly disruptive to the IUD and pill markets in Egypt.¹¹

The contraceptive market in Egypt is facing a set of challenges in the near term. New methods (such as injectables) are likely to be introduced and structural changes in prices are being considered. These two factors alone have great potential to affect the composition of the market segments described in this report. In addition, as Egypt continues to advance economically, the dynamics in the market for family planning are likely to change. Understanding consumers' choices in this market will provide policymakers with important planning information to ensure that the evolution of the family planning system keeps pace with other social and economic changes.

¹⁰ See "Private Providers in Egypt: Characteristics, Costs, and Niches in the Family Planning Market." *OPTIONS II*, March 1995.

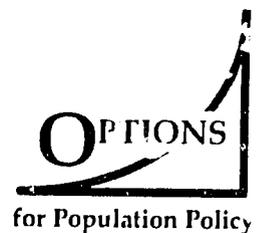
¹¹ The implications of user's willingness to pay for IUDs is addressed in "Predicted Impacts of Phasing Out Private Sector IUD Subsidies on the Contraceptive Market in Egypt." *OPTIONS II*, March 1995.



Predicted Impacts of Phasing out Private Sector IUD Subsidies on the Contraceptive Market in Egypt



National Population Council



**PREDICTED IMPACTS OF PHASING OUT PRIVATE SECTOR IUD
SUBSIDIES ON THE CONTRACEPTIVE MARKET IN EGYPT**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
I. INTRODUCTION	1
II. THE POLICY CONTEXT OF IUD SUPPLIES IN EGYPT	2
Market Segments	2
The Policy Context	5
The Policy Issue	5
III. DATA AND ANALYTIC METHODS	7
Data	7
Analytic Methods: Multivariate Analysis	7
Analytic Methods: Willingness-to-Pay Analysis	12
IV. RESULTS	12
Consumer Responsiveness to Price	12
Effects of Price Changes on Market Segmentation	15
Results from Willingness to-Pay-Analysis	17
V. DISCUSSION AND RECOMMENDATIONS	18
Impact on Contraceptive Prevalence	19
Impact on Market Segmentation	19
Willingness to Pay	20
Costs of Increased Public Sector Burden	20
Policy Strategies	21
APPENDIX 1: Coefficients for Estimated Logistic Regression Equations for the Contraceptive Decision-making Process	23

TABLES

Table 1. Median Consumer Prices (1992) Paid for IUDs in Four Egyptian IUD Market Segments	4
Table 2. Consumer Profiles for the Four Egyptian IUD Market Segments	5
Table 3. Distribution of Supply Sources for Selected Contraceptive Methods in Egypt	8
Table 4. Projected IUD Price Increases Under Different Provider Cost Change Scenarios	12
Table 5. Factors that Influence Contraceptive Decisions	13
Table 6. Willingness to Pay for IUDs in Egyptian IUD Market Segments	18
Table A.1. Estimated Coefficients for the Decision to Contracept or not to Contracept	26
Table A.2. Estimated Coefficients for the Provider Choice Decision, Part 1	27
Table A.3. Estimated Coefficients for the Provider Choice Decision, Part 2	28
Table A.4. Estimated Coefficients for the Method Choice Decision	29
Table A.5. Estimated Coefficients for the Choice of IUD Type	30

FIGURES

Figure 1. Market Segments for Pill and IUD Supply Sources in Egypt in 1992.....	3
Figure 2. Decision Tree for Contraception Source and Method Choices	9
Figure 3. Current and Predicted Market Segment Shares for Pills and IUDs Under Different Price Scenarios for the CuT-380A IUD	16
Figure 4. Percent Change in Market Segment Shares from Base (1992) Case for CopperT-380A IUD Price Change Scenarios	17

EXECUTIVE SUMMARY

In May 1995, subsidized supplies to the private sector for the CopperT-380A (CuT-380A) IUD are expected to be exhausted. Current government regulations restrict the price of this IUD to three Egyptian pounds (LE) in the private sector, a price that is not commercially viable. The CuT-380A fills an important niche in the demand for IUDs. Should this IUD be withdrawn from the private commercial market, Egypt's contraceptive market will be disrupted. In the short term, the Government of Egypt (GOE) has two policy options to mitigate this impending disruption. It may choose not to remove the price control in the private commercial sector and allow the market to adjust without further intervention, or it can relax its price control and allow the private sector price to rise to a sustainable level.

It is important to assess the consequences of each choice because of the potential implications on demand for public and PVO sector services, on the appropriateness of the contraceptive method mix, and on the pace of progress toward national population objectives. The key policy question addressed in this report is: which strategy (maintaining versus lifting current price controls for the CuT-380A) will cause the least disruption in the contraceptive market and lead to an outcome most consistent with national population policies and objectives. It is important to note at the outset that the price paid by the client includes both the cost of the device and the service charge. At present, the total amount paid by the client is LE 16 in the "low-end" private commercial sector and LE 50 from a "high-end" provider.

Using data from the 1992 EDHS, logistic regression was used to estimate a model of consumers' contraceptive decision-making process. Based on these estimated models, a simulation technique was used to compare the current (1992) distribution of public, PVO, and private commercial sector contraceptive market shares with those predicted for three different consumer cost increases: a LE 6 price increase, a LE 10 price increase, and a LE 19 price increase. An alternative method of estimating the effect of price changes in the private IUD market utilizes a willingness-to-pay measure from the EDHS.

Estimated equations for the contraceptive decision-making model show that lower prices for IUDs in the public sector and from PVOs, and lower prices for pills in the private sector increased the likelihood of deciding to contracept. Among women who decided to contracept, source and method decisions were influenced by relative prices: higher private sector prices for the CuT-380A lead more women to seek public sector and PVO services and to choose the pill over the IUD.

Simulation results show little change in contraceptive prevalence at higher private sector prices, regardless of the extent of price changes. These results also show that price increases in the low-priced private sector IUD market are related to the extent of shifting among sectors. Under the two moderate CuT-380A price increase scenarios (from LE 16 to LE 22 and to LE 26), market share changes are smaller (a 6 to 11 percent shift to the public sector as a supply source), compared to the relatively large market share changes predicted for the large price change scenario (a shift to the public sector of 19 percent). A small shift (less than one percentage point) to the PVO sector is predicted, even under the most disruptive scenario (largest price change).

Results from the willingness-to-pay analysis support results from the multivariate analysis. Most women (71%) who were served in the low-priced private IUD market report that they would be willing to pay prices in the range of price increases expected under the price decontrol scenarios. A much larger proportion (66%) of women state that they would be unwilling to pay the price expected under the price control maintenance scenario (which eliminates the affordable CuT-380A product), leaving only the higher-priced IUDs on the market. We conclude that lifting price controls will lead to less market disruption, will be more advantageous to the public sector, and is more consistent with the GOE's population policies and objectives.

Increased public sector costs are likely to be felt in several ways. Public sector monetary costs of serving consumers who would otherwise have been served by the private sector increase as more demand shifts to the public sector. There would also be opportunity costs: the public sector's capacity to target non-users is reduced by the predicted demand shifts, and opportunities to use public sector resources to increase contraceptive prevalence are thereby reduced. These opportunity costs are less substantial under the price decontrol scenarios. The increased public sector burden also results in increased inefficiencies in market segmentation because source switchers who have a demonstrated willingness to pay for private sector services would be using public sector services.

In conclusion, this study indicates that the interests of Egypt and the GOE will be best served by lifting price controls on the CuT-380A IUD. This would ensure that the product remains available in the private sector and minimizes price increases to consumers. The price increase of the IUD is likely to be in the range of LE 4 to LE 5. Analytic results indicate that many women are willing and able to pay increased prices of this magnitude.

A second component of this strategy is intended to minimize market effects of increased consumer prices. Policymakers can intervene in a number of ways: (1) implement a special IEC/marketing initiative to change women's perceptions of the value of IUDs and increase their willingness to pay for them; (2) develop strategies to encourage providers to minimize cost increases passed on to consumers; (3) promote competition in the market for low-priced IUDs; and (4) implement private sector provider training initiatives to influence physician practice patterns. The GOE has the expertise and the resources to intervene effectively so that the impressive progress made to date toward national population objectives continues.

PREDICTED IMPACTS OF PHASING OUT PRIVATE SECTOR IUD SUBSIDIES ON THE CONTRACEPTIVE MARKET IN EGYPT

I. Introduction

In recent years, Egypt has made impressive progress toward achieving its population policy goals. Strong support at the highest levels of government leadership has been instrumental in this success. According to results of periodic demographic and fertility surveys, Egypt's total fertility rate declined from 5.3 to 3.9 between 1980 and 1992. Over the same period, contraceptive prevalence increased from 24 to 47 percent, with modern methods accounting for nearly all of this prevalence. The 1992 Egyptian Demographic and Health Survey (EDHS) showed that knowledge of at least one family planning method is now nearly universal and that two-thirds of all ever-married women have used a family planning method at some point in their lives. Egypt has also been successful in nurturing a strong private sector market for family planning services, which has undoubtedly contributed to overall program success. However, several important challenges face Egypt's family planning program that will influence the momentum of future progress. Two of those challenges addressed in this report are:

- Donor assistance for contraceptive commodities for the private commercial sector is being phased out, requiring that domestic resources be mobilized to ensure adequate supplies.
- Existing legal barriers impede the ability of Egypt to respond effectively to the impending phase-out of donor commodity support.

Specifically, in April 1995, subsidized supplies to the private sector for the CopperT-380A (CuT-380A) IUD are expected to be exhausted. Current government regulations restrict the price of this IUD to three Egyptian pounds (LE) in the private sector, and the manufacturer has stated that it will not import this product into Egypt at this price. The CuT-380A fills an important niche in the demand for IUDs. Nearly all IUDs used in the public sector and three-fourths of all IUDs used in the private commercial sector are CuT-380A devices. Should this IUD be withdrawn from the private commercial market, Egypt's contraceptive market will be disrupted. In the short term, the Government of Egypt (GOE) has two policy options to mitigate this impending disruption. It may choose not to remove the price control in the private commercial sector and allow the market to adjust without further GOE intervention, or it can relax its price control and allow the private sector price to rise to a sustainable level. It is important to assess the consequences of each choice because of the potential implications on demand for public sector services, on the appropriateness of the contraceptive method mix, and on the pace of progress toward national population objectives.

The key policy question addressed in this report is which strategy (maintaining versus lifting current price controls for the CuT-380A) will cause the least disruption in the contraceptive market and lead to an outcome most consistent with national population policies and objectives. In Section II, IUD market segments are defined, and the policy context for this issue is described in more detail. Research questions, a description of the EDHS data used, and analytic methods

are described in Section III. Results from the analysis are presented in Section IV, and the paper concludes with a discussion of the implications for pricing policies.

II. The Policy Context of IUD Supplies In Egypt

Market Segments

According to the 1992 EDHS, oral contraceptives (the pill) and IUDs comprise almost 90 percent of all modern contraceptive use in Egypt. For this analysis, "the market" for contraceptives is defined as the market for pills and IUDs, including both public, private, and PVO sources of supply. This market is segmented into a public and private market for pills and four IUD market segments. The IUD market segments are: a public sector segment, a PVO segment, and two private commercial sector segments. The two private commercial sector IUD market segments are: a low-priced and a high-priced segment (based on prices paid by consumers for the sum of the IUD commodity and insertion service).¹

Between 1984 and 1992, the IUD replaced pills as the predominant method among currently contracepting married women, rising from 28 percent to 62 percent during this period. Figure 1 shows market shares for pill and IUD market segments in 1992. Pill use (public and private sectors together) accounted for about one-third of the market. IUD users accounted for two-thirds of the market, with almost half of IUD users being served by the public sector.² Supply of IUDs by the PVO sector (the Egyptian Family Planning Association (EFPA), the Clinical Services Improvement (CSI) Project, and mosque and church health units) served 7 percent of the market. The high-priced private market segment (which provides IUD devices other than the CuT-380A) served an additional 7 percent. The low-priced private commercial sector market segment, which provides the subsidized, socially-marketed CuT-380A, served 20 percent of the market. The importance of the private commercial sector market (the low-priced and high-priced private sector segments and the PVO segment) in the success of the IUD is clear; it captured over half of the total market for IUDs in 1992.

Women who choose the public sector as their source for an IUD typically pay little or no charge to have it inserted. In general, the total price (device plus insertion charge) to women is therefore set at about the cost (to the provider) of the device itself; that is, there is no service charge for insertion.^{3,4} The IUD device used in the public sector is nearly always the CuT-380A.

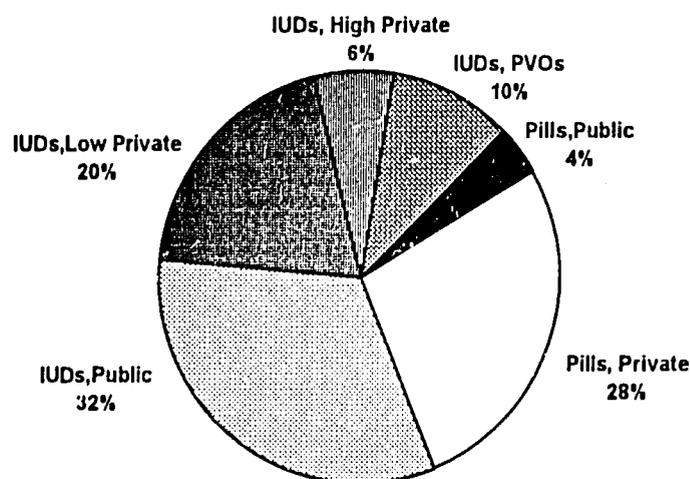
¹ The low-priced private sector market segment is comprised of women who reported the private sector as their IUD source and who paid less than LE 35. The high-priced private market segment is comprised of women who reported the private sector as their IUD source and who paid LE 35 or more. The PVO market segment includes women who reported the EFPA, CSI, a mosque or church health clinic, or another PVO as their IUD source, regardless of price paid.

² The public sector includes hospitals, rural health units, and other Ministry of Health (MOH) facilities.

³ In 1992, the CuT-380A IUD was distributed by the USAID-funded SOMARC project at a subsidized price of LE 2. In September 1994, the price was increased to LE 3.

⁴ It is important to note that while there is officially no service charge for inserting an IUD at public sector facilities, in the DHS women reported paying an average price of LE 3 even though the official price was supposed to have been LE 2 in 1992. It is possible that women were paying a "registration" fee at public clinics and were including this cost when reporting the price paid for their IUD. Although the registration fee is supposed to be waived at public clinics for family planning clients, some women might have paid this fee if they initially sought services for a non-family planning reason.

Figure 1
Market Segments for Pill and IUD Supply Sources in Egypt in 1992



Among women who choose the private sector as their IUD source, there is greater variation in total price paid. A variety of devices is available in the private sector, and this is one source of price variation. The subsidized CuT-380A is the cheapest and is provided in the low-priced private sector market segment. Three other brands, provided by commercial importers/distributors, are available for prices ranging from approximately LE 25 to LE 40. (These prices do not include provider insertion charges.) Another source of price variation in the private sector is the service charge. Total price (device charge plus the provider's insertion fee) differentials therefore serve as the important basis for defining the market segments. Table 1 summarizes the median total prices women reported paying in 1992 in each of the four IUD market segments.

Often, market segments can also be differentiated based on consumer profiles. Profiles of consumers in different contraceptive market segments were described in an OPTIONS II report on a market segmentation analysis using 1992 EDHS data.⁵ Table 2 summarizes some of these characteristics for each of the four IUD market segments. Urban residents represent a significantly greater proportion of IUD consumers in the high-priced market segment (76%) than in the other three segments. PVO consumers are more likely to be urban residents (64%) than either public sector or low-priced private sector consumers (54% and 56%, respectively).

Education also discriminated between the high-priced IUD market segment and the other three segments. Only 14 percent of consumers in the high-priced segment had no formal education, compared to between 33 and 41 percent for the other three segments. PVO consumers were more similar to low-priced private sector consumers on the education measure.

⁵ "Consumer Profiles within Market Segments for Family Planning: An Analysis of the 1992 Egypt Demographic and Health Survey." OPTIONS II, March 1995.

Table 1
Median Consumer Prices (1992) Paid for IUDs^(a)
in Four Egyptian IUD Market Segments

Cost Component	Public Sector	PVO Sector	Low-priced Private Sector	High-priced Private Sector
IUD	LE 2	LE 2	LE 2	LE 25-40
Insertion Fee ^(b)	LE 1	LE 7	LE 14	^(c)
TOTAL PRICE TO CONSUMER	LE 3	LE 9	LE 16	LE 50

^(a) Source: Self-reported prices paid for IUDs among women in the 1992 EDHS; recorded in table as "Total Price to Consumer."

^(b) The insertion fee is derived as the difference between women's reported total price paid and the known prevailing prices for the relevant IUD. Technically, there is no insertion service fee in the public sector. The difference between the average price consumers reported paying (the last row, Total Price to Consumer) and the official IUD price may reflect a registration fee paid by consumers, even though this fee is supposed to be waived for family planning consumers.

^(c) The insertion service fee for the high-priced IUD market segment cannot be deduced from this data because high-priced IUDs vary in price, and we cannot distinguish between these devices in the EDHS data.

Income is also a useful distinguishing characteristic of the IUD market segments. Nearly half of all public sector IUD consumers, who on average pay the least for an IUD (LE 3⁶), were women defined as "low-income" (less than LE 200 per month). IUD prices in the PVO market segment are generally the next in affordability (on average LE 7), and the proportion of low-income women in this market segment is somewhat lower (40%). The proportion of women in the low-priced private sector market segment defined as low-income was about the same (39%) as the proportion of women in the PVO segment. Only 20 percent of women in the high-priced private market segment were defined as low-income.

There were also some differences in women's average parity among the IUD market segments. Lower proportions of public sector IUD users and low-priced private sector users had three or fewer children (46% and 49% respectively) compared to PVO and high-priced private sector users (57% and 63%, respectively). There were no significant differences between market segments in age and fertility intentions (percent limiters and percent spacers).

In conclusion, the profiles of public sector and low-price private sector consumers are similar on measures of residence and parity. PVO consumers are similar to low-priced private sector consumers on measures of education and income. They are more similar to consumers in the high-priced private market segment on measures of residence and parity. IUD users in the high-priced private market segment stand out as a distinct group. Based on these findings, in the event that the private sector market for low-priced IUDs is disrupted (either through a price increase or through a loss of the CuT-380A), we expect there to be changes in market shares for the public,

⁶ Consumer prices reported here were derived from women's self-reports of actual prices paid in the 1992 EDHS.

Table 2
Consumer Profiles for the Four Egyptian IUD Market Segments

Consumer Characteristic	Public Sector	PVO Sector	Low-priced Private Sector	High-priced Private Sector
Mean Age	32	32	33	33
% Urban Residence	54%	64%	56%	76%
% No Education	41%	33%	35%	14%
% Low Income	48%	40%	39%	20%
% Parity 3 or Less	46%	57%	49%	63%
% Limiters	83%	79%	80%	79%
% Spacers	13%	18%	15%	13%

PVO, and low-priced private sector market segments. Where women who would have obtained a low-priced IUD in the private commercial sector market segment would go depends in part on the relative importance of prices and these other determinants of contraceptive behavior. The remainder of this paper is devoted to these issues.

The Policy Context

Public sector CuT-380A supplies are provided by USAID. The SOMARC Project supplies the CuT-380A to private sector providers. In fact, over three-fourths of all IUDs distributed in the private sector are the subsidized CuT-380A. When the CuT-380A was introduced, the GOE established a fixed price of LE 2, which was below USAID's procurement cost (US\$1.08, or LE 3.5). In September 1994, the GOE approved a price increase to LE 3, which is still below USAID's cost.

As noted above, most public sector consumers pay only the controlled price for the CuT-380A; they do not typically pay a service charge for insertion. Private sector providers are also bound to the controlled price (LE 2 prior to September 1994) for the CuT-380A, but they generally charge an insertion fee. The total (device plus insertion) charge to consumers is on average LE 16. Prices for other IUD devices (those provided in the high-priced private market segment) are not regulated by the GOE, and consumer charges are generally considerably higher.

The Policy Issue

By May 1995, distributors' supplies of the subsidized CuT-380A are expected to be exhausted, and soon after, these subsidized IUDs will no longer be available to the private commercial sector. However, subsidized supplies will continue to be available to the public and PVO sectors. The manufacturer, Finishing Enterprises, has stated that the GOE-controlled price (LE 3 as of September 1994) is not commercially viable. A price of LE 7-8 to private sector providers would be more viable. If the controlled price is not relaxed, the potential exists for a major disruption in the IUD market. The CuT-380A filled three-fourths of the private sector demand for IUDs in 1992. Were this IUD no longer available in the private sector, women seeking an IUD in the private sector would be faced with several alternatives:

- switch to a higher priced IUD in the private sector;
- switch to the public sector as a source of supply;
- switch to a PVO as a source of supply;
- switch to another method of contraception;
- drop out of the modern method market (i.e., current users may switch to traditional methods or stop contracepting altogether, and non-users may decide not to enter the market at all).

It is also possible that the price of one or more of the currently high-priced IUDs in the private sector market will decrease once the subsidized “competition” is eliminated. This would provide potential private sector IUD users with another alternative.

Since the decision to contracept is generally not greatly influenced by contraceptive prices, we would not expect the loss of the CuT-380A from the private sector to result in a substantial increase in non-contraception. It is also unlikely that many women would find the high-priced IUDs in the private sector affordable (unless perhaps prices were to decrease). Switching to the public or PVO sector for an IUD or to the pill would seem to be more likely choices. For women that use the IUD as a long-term contraceptive method to limit fertility, switching to the pill would represent a switch to a less effective method. Finally, a significant shift in demand for IUDs to the public sector may have implications for government-provided health and family planning services that would be important to assess.

Two principal policy options are available to the GOE. The first option is to leave the price restrictions in place. In the absence of a new low-priced product emerging in the market (perhaps in the form of a price decrease for one of the currently high-priced IUDs), the consequences of this choice would likely be as described above. That is, there might be an increase in demand for the pill, an increase in demand for the IUD in the public and/or PVO sectors, and a consequent decrease in the private sector IUD market share. Such a situation would constitute a reversal in progress toward family planning program sustainability for Egypt.

The second option is to relax the price restrictions so that the CuT-380A can be imported by the private commercial sector at a sustainable price. It is unclear how much of the increased cost to providers would be passed on to consumers. There is also concern that this option would have adverse market effects. The extent of these effects would depend on the level of cost increase to providers, the extent to which providers pass these costs on to consumers, and the degree to which consumer demand for the CuT-380A is responsive to price. If price responsiveness in this market segment is low, then no major market readjustment would be expected. On the other hand, the greater the responsiveness, the greater the market disruption expected.

The key policy questions therefore are:

- How responsive to IUD price changes are Egyptian consumers?
- What are the comparable expected effects on market structure of the two pricing policy alternatives facing the GOE?
- Which alternative will have a less disruptive effect on the contraceptive market?

III. Data and Analytic Methods

Data

Data from the 1992 EDHS were used in this analysis. This data set includes information on contraceptive behavior, fertility preferences, willingness to pay for family planning services, and individual and household characteristics for a nationally representative sample of 9,978 ever-married women between the ages of 15 and 49. Information on current use of family planning methods is available for 9,153 currently married women. Of these, nearly 45 percent (4,098) were using a modern method at the time of interview. Sixty-two percent of these current users (2,555) were using an IUD, 29 percent (1,181) were using the pill, and 4 percent (180) were using condoms. Table 3 shows the distribution of sources for pill and IUD users. The 1992 EDHS data set includes a weight variable based on the proportion of the population sampled in different geographic regions. All statistics presented in this report were calculated using this weighting variable so that the statistics would be representative of the national population.

Analytic Methods: Multivariate Analysis⁷

Differentiating between Provider Costs and Consumer Price: It is important to clearly establish the difference between costs to providers for the IUD and the price paid by consumers for that device. As noted earlier, the CuT-380A manufacturer has stated that Egyptian distributors must be able to charge providers between LE 7 and 8 in order for the product to be commercially viable in Egypt. The price paid by consumers is generally determined by the provider's device costs, costs associated with inserting the IUD, and some profit margin. This price will be referred to as the "consumer price." The EDHS data show that the median consumer price in 1992 was LE 16. (Median consumer prices in each of the four IUD market segments were shown in Table 1 above.)

The Contraception Decision Process: Consumers' contraceptive decisions can be modeled as a sequential process with the following steps:

- whether to contracept,
- where to obtain contraceptive services or supplies, and
- which method to use.

⁷ For the multivariate analysis, the sample was further limited to include only potential contraceptors (i.e., pregnant and infertile women were excluded).

That decision process is shown schematically in Figure 2. Clearly, the first decision in this process is whether or not to contracept. Once this decision has been made affirmatively, it is less clear whether women consider the source or the method question next. If the method decision is made

Table 3
Distribution of Supply Sources for IUDs and Pills in Egypt

Modern Method Used	Source of Supply				Total
	Public Sector	Private Sector		PVO ^(a)	
		Low-priced	High-priced		
IUD	48%	30%	11%	11%	100%
Pill	11%	88%		1%	100%

^(a) Includes EPFA, CSI, Other PVOs, and mosque and church health units.

first, then one would expect that in the public sector, where price differentials between oral contraceptives and the IUD are low relative to differentials in the private sector,⁸ fertility intentions should discriminate between methods chosen. Examination of EDHS data did not reveal such a discrimination, and our analysis proceeded under the assumption that women determine whether they will seek services in the public or private sector before making the method decision. It is likely, however, that both decision paths occur in the population of contraceptive users.

Logistic regression was used to model each of these decisions and to measure consumer responsiveness to price. The following variables were used as independent variables in the logistic regressions:

AGE - entered as young (15-24), middle-aged (25-34), or old (35-49).

WOMAN'S EDUCATION - entered as no formal education, some primary school, some secondary school, or university and above.

HUSBAND'S EDUCATION - entered using same categories as woman's education.

HOUSEHOLD EXPENDITURES - entered as high (greater than LE 200) or low (less than or equal to LE 200) per capita monthly expenditures.

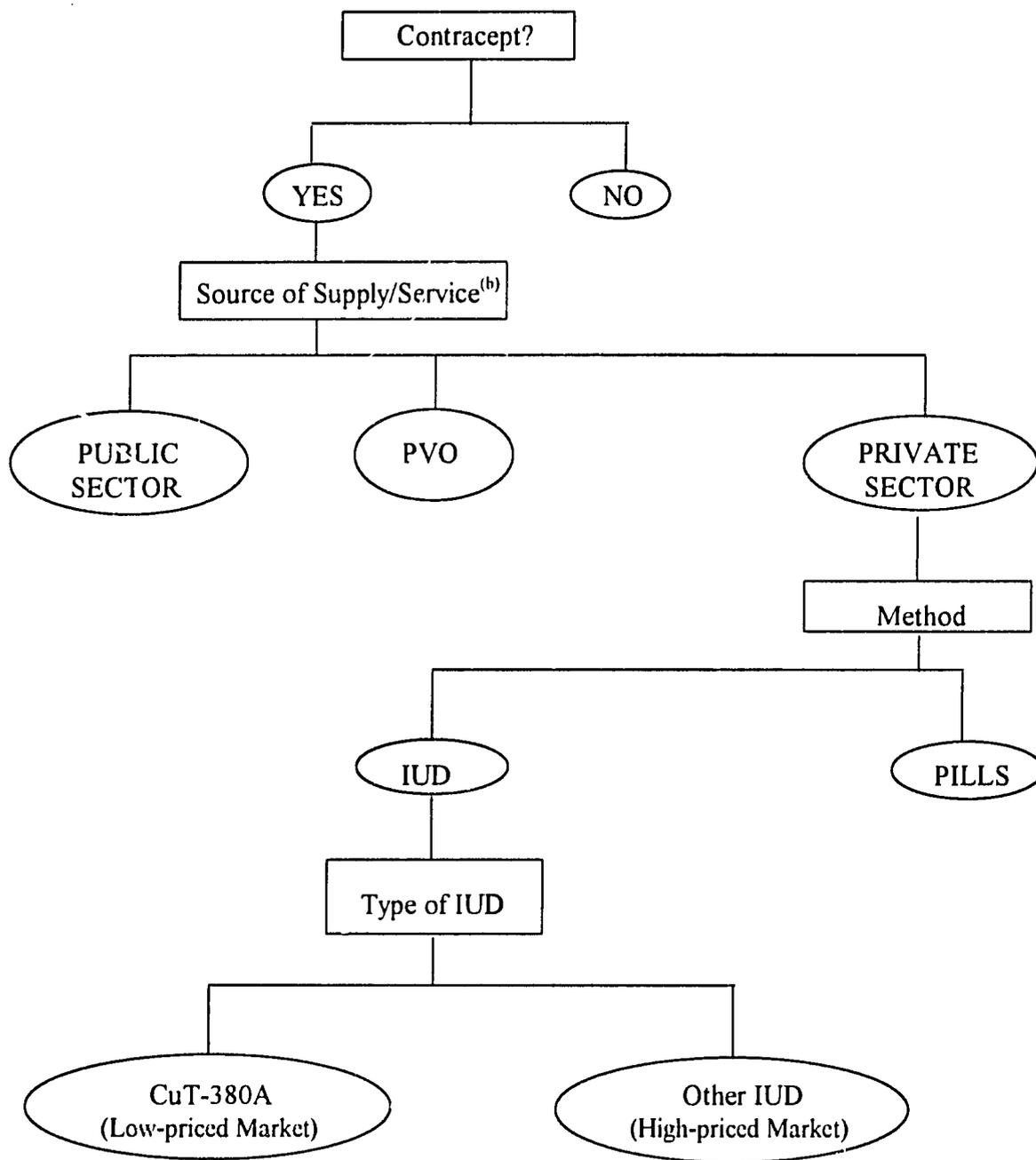
RESIDENCE - entered as urban governorate, Lower urban, Lower rural, Upper urban, or Upper rural.

FERTILITY INTENTIONS - whether or not the woman wants more children (i.e., whether or not the woman is a limiter).

NUMBER OF CHILDREN BORN - total number of children ever born.

⁸ Average public sector prices for a cycle of pills and for an IUD are LE 0.25 and LE 3, respectively. Average private sector prices are LE 0.50 (pills) and LE 16 (CuT-380A).

Figure 2
Decision Tree for Contraception Source and Method Choices^(a)



^(a) Rectangles represent decisions to be made; circles represent choices.

^(b) The central concern of this analysis is movement from the low-priced private sector IUD market to other sectors in the event of price changes in that sector. Therefore, method choice decisions are shown only for those who choose the private commercial sector as a supply/service source.

PRICES - five variables were used to estimate the model for the decision of whether or not to contracept.⁹ Two pill price variables were included in the model: a public sector price and a private sector price. Three IUD prices were included: a public sector price, a PVO price, and a low-priced private sector price. IUD prices in the high-priced private sector were used in the model for the decision between the low- and the high-priced IUDs.¹⁰

PRICE RATIOS - five price ratio variables were defined, using the information from the price variables described above. These were used in the models for the source and method decisions. They were: the ratio of the price of a low-end (CuT-380A) IUD from a private sector provider to:

- the price of an IUD from a public sector provider;
- the price of an IUD from a PVO;
- the price of a high-end IUD from a private sector provider;
- the price of a cycle of pills from a private sector provider.

The fifth price ratio defined was the ratio of the price of a cycle of pills from a private sector provider to the price of a cycle of pills from a public sector provider.

TRAVEL TIME¹¹ - five travel time variables were defined; one each for travel time to public and private sources for pill supplies, and one each for travel time to a public, PVO, or private sector IUD source.

TRAVEL TIME RATIOS - four travel time ratio variables were defined. They were the ratio of travel time to:

- a private sector IUD provider to a public sector IUD provider;
- a private sector IUD provider to a PVO IUD provider;
- a private sector IUD provider to a private sector pill provider;
- a private sector pill provider to a public sector pill provider.

Market Effects of Price Increases: To estimate market effects of IUD price increases, we first must anticipate the likely range of IUD price increases that consumers might face after the subsidized CuT-380A is no longer available in the private sector. The level of increase will depend on the actual new cost of the IUD to providers, their ability and incentives to pass these increased costs on to consumers, and the response of consumers to these provider pricing behaviors. For this analysis, we assume that the cost to providers will increase from LE 3 (current socially-marketed, subsidized price to private sector providers) to LE 7-8 (the minimally viable price).¹²

⁹ A woman was defined as having decided to contracept if she reported current use of a modern contraceptive method (IUD, pills, condoms, etc.). She was defined as having decided *not* to contracept if she reported no current use of a modern contraceptive method or if she reported current use of a traditional (non-modern) method.

¹⁰ These variables were entered as either actual price paid (if the woman is a user of the method in a given market sector) or the average price paid by other women in the region (if the woman is not a user of the method/sector).

¹¹ Analogous to the price variables, actual travel times were used if the woman used a given method/source combination. For women who did not use a given method/source combination, the average travel time reported by other women in that region for that method/source was used.

¹² Note that while any price changes will occur from the current CuT-380A price of LE 3, at the time of the EDHS in 1992, the price to providers for the CuT-380A was LE 2. Since we are using the EDHS data (where 1992 prices determine demand observed in those data) to estimate our models, the price changes investigated here will be modeled as occurring from LE 2 to LE 8 and LE 12.

Next, we assume that providers will attempt to pass their entire cost increase on to consumers. Economic theory predicts a higher price would cause consumer demand for private sector IUDs to decline. In response to decreased demand, providers may reduce the price somewhat --but not to the original price-- in order to protect their market share. The final new price in the market would fall somewhere between the original price and that price plus the increased cost. However, these expectations rest on the assumptions that the IUD market is competitive, that consumers have information about prices, and that consumers can go to different providers to obtain a cheaper product. If these assumptions are not correct, then providers may be able to fully pass their cost increase on to consumers. We assess consumer price responsiveness under three scenarios:

1. LE 6 cost increase scenario - the cost to providers for the CuT-380A rises from LE 2 (1992 price) to LE 8 and the price to consumers in the low-priced private sector IUD market increases from an average of LE 16 to LE 22.¹³
2. LE 10 cost increase scenario - the cost to providers increases to LE 12 and the price to consumers increases to an average of LE 26.¹⁴
3. LE 19 cost increase scenario - under this scenario, the lowest-priced IUD available in the private sector market becomes a product that is currently defined as the cheapest IUD in the high-priced private sector market (a price to consumers of LE 35).¹⁵

A simulation model was used to compare the current (1992) distribution of contraceptive market shares with those predicted for these three scenarios. Table 4 summarizes these four scenarios (the three listed above, plus the 1992 base case). Simulation predictions were based on results from models estimated for the four components of the contraceptive decision-making process (see Figure 2).

The first decision, the decision to contracept or not to contracept, was estimated using logistic regression. Among those who choose to contracept using a modern method, the second decision, whether to seek contraceptive supplies and/or services from a public sector, a PVO, or a private sector provider, was estimated using a multinomial logistic regression model.¹⁶ For those who choose to seek supplies/services in the private sector, consumers generally choose between an IUD or pills for their contraceptive method. This decision is estimated using a logistic regression

¹³ This scenario corresponds to a price increase of LE 6, from the 1992 CuT-380A price (LE 2) to LE 8.

¹⁴ This scenario allows us to consider the impact of a larger price increase, in the event that the CuT-380A becomes unavailable in the private sector and the price for one of the currently high-priced IUDs (such as Organon's Multi-load) is decreased to capture part of the market for a low-priced IUD.

¹⁵ To estimate the market effects of eliminating the CuT-380A from the private sector (i.e., if price controls remain in place and the manufacturer does not sell to the Egyptian market), it is assumed that the next best private sector alternative facing women who would have purchased the CuT-380A would be the lowest priced IUD in the present high-priced IUD market. We conservatively estimate the consumer price for this IUD to be LE 35 (LE 25 for the IUD plus LE 10 for the insertion charge). This price is analogous to a price increase of about LE 18 above the current average price facing women in the current private market for the subsidized CuT-380A.

¹⁶ Multinomial logistic regression allows us to estimate models where the outcome variable is a choice variable and where the choice has more than two levels (making binomial logistic regression an inappropriate model). In this case, the model estimates the equation for consumers' choice between the public sector, PVOs, and the private sector as a source for contraceptive supplies and/or services.

Table 4
Projected IUD Price Increases Under Different Provider Cost Change Scenarios

Amount of Consumer Price Increase	Old Total Price	New Total Price	Percent Increase
No Increase	16	16	0%
LE 6	16	22	38%
LE 10	16	26	62%
LE 19 (lowest priced non-CuT-380A IUD)	16	35	119%

model. For consumers who choose to obtain an IUD from a private sector provider, the final decision is whether to use a low-priced or a high-priced IUD. This was also estimated with a logistic regression model.

Analytic Methods: Willingness-to-Pay Analysis

An alternative method of estimating the effect of price changes in the private IUD market utilizes a willingness-to-pay measure from the EDHS. IUD users were asked whether they would be willing to pay LE 5, 10, 25, 50 (and higher) for an IUD until they answered “no.” Comparing this stated willingness to pay with actual reported prices paid provides some indication of whether women will seek alternatives or pay a higher price for an IUD.

IV. Results

Consumer Responsiveness to Price

Results of the series of logistic regressions used to model the decision process for contraception are summarized in Table 5. Demographic and fertility preference factors were included in the models to control for the effect of these variables and to isolate price effects. The two types of price variables included in these models were prices (or price ratios) and travel time (or travel time ratios). Travel time is a reflection of travel costs and opportunity costs¹⁷ of seeking contraceptive goods and services. Decreased travel time (and thus presumably travel and opportunity costs) to a public sector family planning provider increased the likelihood of deciding to contracept. Travel times to private sector providers did not influence this decision. Lower prices for IUDs in the public sector and from PVOs, and lower prices for pills in the private sector increased the likelihood of deciding to contracept. Other private sector IUD prices did not influence this decision (column 1, Table 5).

¹⁷ The concept of opportunity costs is meant to reflect the fact that contraceptors could have used the time it took to seek contraceptive goods and services for other productive purposes. The monetarized value of these foregone opportunities should be considered as a component of the full cost of contraceptive behavior; however, this value was not measured in the 1992 EDHS.

376

Table 5
Factors that Influence Contraceptive Decisions

Factors that Increase the Likelihood of:				
Deciding to Contracept	Choosing the Public Sector, Over Choosing the Private Sector	Choosing a PVO, Over Choosing the Private Sector	Choosing an IUD, Over Choosing the Pill	Choosing a High-priced IUD, Over Choosing a Low-priced IUD
<u>Prices:</u> <ul style="list-style-type: none"> • Lower prices for IUDs in the public sector. • Lower prices for IUDs in PVOs. • Lower prices for pills in the private sector. 	<u>Price Ratios:</u> <ul style="list-style-type: none"> • Increased price for a low-priced, private sector IUD, relative to the price of a public sector IUD. 	<u>Price Ratios:</u> <ul style="list-style-type: none"> • Increased price for a low-priced, private sector IUD, relative to the price of an IUD from a PVO. 	<u>Price Ratios:</u> <ul style="list-style-type: none"> • Increased price for a low-priced, private sector IUD, relative to the price of pills in the private sector. 	<u>Price Ratios:</u> <ul style="list-style-type: none"> • No significant price effects.
<u>Travel Time:</u> <ul style="list-style-type: none"> • Decreased travel time to a public sector IUD provider. 	<u>Travel Time Ratios:</u> <ul style="list-style-type: none"> • Increased travel time to a private sector IUD provider, relative to travel time to a public sector IUD provider. 	<u>Travel Time Ratios:</u> <ul style="list-style-type: none"> • Increased travel time to a low-priced private sector IUD provider, relative to travel time to a PVO IUD provider. 	<u>Travel Time Ratios:</u> <ul style="list-style-type: none"> • Decreased travel time to a low-priced private sector IUD provider, relative to travel time to a private sector pill provider. 	<u>Travel Time Ratios:</u> <ul style="list-style-type: none"> • No significant travel time effects.
<u>Age:</u> <ul style="list-style-type: none"> • Being 25 to 34, relative to being 15 to 24. • Being 15 to 24, relative to being 35 to 49. 	<u>Age:</u> <ul style="list-style-type: none"> • No significant age effects. 	<u>Age:</u> <ul style="list-style-type: none"> • Being 35 to 49, relative to being 15 to 24. 	<u>Age:</u> <ul style="list-style-type: none"> • Being 15 to 24, relative to being 25 to 34 (a weak effect). 	<u>Age:</u> <ul style="list-style-type: none"> • No significant age effects.
<u>Women's Education:</u> <ul style="list-style-type: none"> • Having any education, relative to having no education (gradually increasing effect through secondary school). 	<u>Women's Education:</u> <ul style="list-style-type: none"> • Having post-secondary school education, relative to having less than a post-secondary school education. 	<u>Women's Education:</u> <ul style="list-style-type: none"> • Having some secondary school education, relative to having less than a secondary school education. 	<u>Women's Education:</u> <ul style="list-style-type: none"> • Having any education, relative to having no education (a weak effect). 	<u>Women's Education:</u> <ul style="list-style-type: none"> • Having a post-secondary school education, relative to having less than a post-secondary school education (a weak effect).

Table 5 (continued)

Factors that Increase the Likelihood of:				
Deciding to Contracept	Choosing the Public Sector, Over Choosing the Private Sector	Choosing a PVO, Over Choosing the Private Sector	Choosing an IUD, Over Choosing the Pill	Choosing a High-priced IUD, Over Choosing a Low-priced IUD
<u>Husband's Education:</u> <ul style="list-style-type: none"> • Having any education, relative to having no education (gradually increasing effect through secondary school). 	<u>Husband's Education:</u> <ul style="list-style-type: none"> • No significant effects. 	<u>Husband's Education:</u> <ul style="list-style-type: none"> • No significant effects. 	<u>Husband's Education:</u> <ul style="list-style-type: none"> • Having some post-secondary school education, relative to having less than a post-secondary school education. 	<u>Husband's Education:</u> <ul style="list-style-type: none"> • Having some post-secondary school education, relative to having less than a post-secondary school education.
<u>Residence:</u> <ul style="list-style-type: none"> • Living in urban regions, relative to living in rural Upper Egypt. 	<u>Residence:</u> <ul style="list-style-type: none"> • Living in rural Upper Egypt, relative to living anywhere else. 	<u>Residence:</u> <ul style="list-style-type: none"> • No significant effects. 	<u>Residence:</u> <ul style="list-style-type: none"> • Living in Lower Egypt (urban or rural) relative to living in Upper Egypt. 	<u>Residence:</u> <ul style="list-style-type: none"> • Not living in rural Lower Egypt.
<u>Other Factors:</u> <ul style="list-style-type: none"> • Having higher household income. • Having more children. • Desiring to limit fertility. 	<u>Other Factors:</u> <ul style="list-style-type: none"> • Having lower household income. • Not desiring to limit fertility. 	<u>Other Factors:</u> <ul style="list-style-type: none"> • Having higher household income. 	<u>Other Factors:</u> <ul style="list-style-type: none"> • Having higher household income (a weak effect). 	<u>Other Factors:</u> <ul style="list-style-type: none"> • Having higher household income (a weak effect). • Desiring to limit fertility.

Among women who decided to contracept, subsequent source and method decisions were influenced by relative prices. Women were more likely to seek family planning services from public sector providers than from private sector providers when the private-to-public sector IUD price ratio was higher. Similarly, women were more likely to seek services from PVOs when the private-to-PVO sector IUD price ratio was higher. Public-to-private sector pill price ratios do not influence the source decision (columns 2 and 3, Table 5).

Among those who chose to seek family planning services in the private sector (column 4, Table 5), women were less likely to choose an IUD as the price of having a CuT-380A inserted rose relative to the price of a cycle of pills. Finally, among those who chose an IUD and chose to obtain it through a private sector provider, the ratio of high-to-low-end IUD prices did not influence the choice of IUDs (column 5, Table 5).¹⁸

¹⁸ There may be responsiveness to low-end versus high-end price ratios outside the range of low-end prices observed in the 1992 EDHS data.

These results indicate that relative prices have the expected effects; that is, higher private sector prices for the CuT-380A lead more women to seek public sector and PVO services, and to choose the pill over the IUD.

Effect of Price Changes on Market Segmentation

We predicted little change in modern method contraceptive prevalence¹⁹ at higher CuT-380A prices and the analysis supports this prediction. Prevalence declines one percentage point (from 50% to 49%) from its base in 1992 to the LE 6 price increase scenario (i.e., when the consumer price rises from LE 16 to LE 22). It declines one more percentage point (to 48%) when the consumer price rises LE 10 (to LE 26). In the worst case scenario (a consumer price increase to LE 35, where the CuT-380A is replaced by the next-cheapest IUD as the lowest-priced product in the private sector market), prevalence declines only another one percentage point (to 47%).

Figure 3 compares the actual market segmentation for IUD and pill users in 1992 with the three price scenarios (CuT-380A IUD price increases of LE 6, LE 10, and LE 18). In 1992 (the first bar), 35.6 percent of pill and IUD users in the total market chose public sector providers as their source (almost 90% of this public sector market segment was comprised of IUD users). PVOs (providing mainly IUDs) served 9.5 percent of the market for pills and IUDs. The private sector served the remaining 54.9 percent of this market. The private sector market was further segmented as follows:

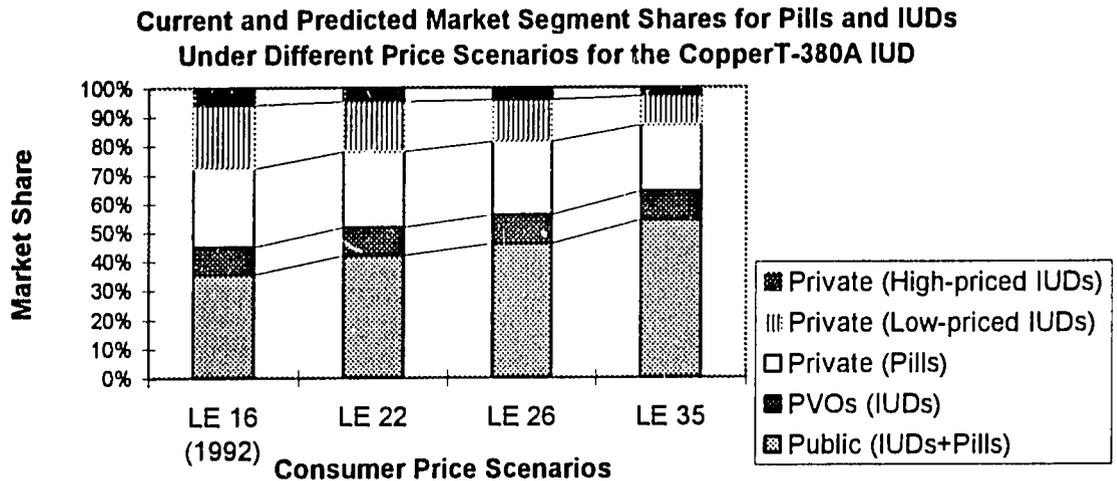
- the private sector pill market - 49.2 percent (27.0% of the total market);
- the low-priced private sector IUD market - 40.1 percent (22.0% of the total public and private market; consisting of the subsidized, socially-marketed CuT-380A);
- the high-priced private sector IUD market - 10.7 percent (5.9% of the total market, consisting of other, unsubsidized IUDs).

Results presented earlier (see Table 5) show that Egyptian contraceptive consumers are responsive to changes in IUD prices. Price increases in the low-priced private sector IUD market drive contraceptors toward contraceptive services in the public sector and PVOs and toward the pill in the private sector. Scenarios 2 and 3 (the second and third bars in Figure 3) show how, in the absence of any interventions other than a price change (such as IEC campaigns, for example), this market is expected to segment if the total consumer price for the CuT-380A were to rise from LE 16 to LE 22 and LE 26, respectively. Scenario 4 (the fourth bar) shows how this market is expected to segment if price controls for the CuT-380A are not lifted and if the CuT-380A is subsequently eliminated from the Egyptian private sector market.²⁰

¹⁹ In this report, modern method contraceptive prevalence refers to currently married women. Our definition excludes women who are sterilized, pregnant and infertile (i.e., say they cannot get pregnant). This definition is somewhat different from the definition that appears in the 1992 EDHS report. The difference between the modern method contraceptive prevalence reported here (50%) and that reported in the 1992 EDHS report (45%) is due to this difference in definition.

²⁰ Earlier in this report, we discussed the possibility that Organon might drop its price for the Multi-load IUD to capture part of the current low-priced IUD market if the CuT-380A were no longer to be available in the private sector market. We have no firm evidence that this indeed would occur, so we have modeled the no-CuT-380A scenario to reflect the non-CuT-380A prices prevailing in the market in 1992. If such a price decrease were to occur, on the other hand, then the results would be roughly similar to the third scenario (LE 26) shown in Figure 3.

Figure 3^(a)



^(a) The “current,” or base-case scenario is depicted in column 1. It reflects actual market shares of the different market segments in 1992 when the average consumer price was LE 16, according to the 1992 EDHS.

The LE 22 scenario (second column) shows predicted market shares under the assumption of a LE 6 price increase (from LE 16 to LE 22) for the CuT-380A IUD.

The LE 26 scenario (third column) shows predicted market shares under the assumption of a LE 10 price increase (from LE 16 to LE 26) for the CuT-380A IUD.

The LE 35 scenario (fourth column) shows predicted market shares under the assumption that the CuT-380A is replaced in the private sector by the next lowest-priced IUD (i.e., a LE 18 price increase from LE 16 to LE 35).

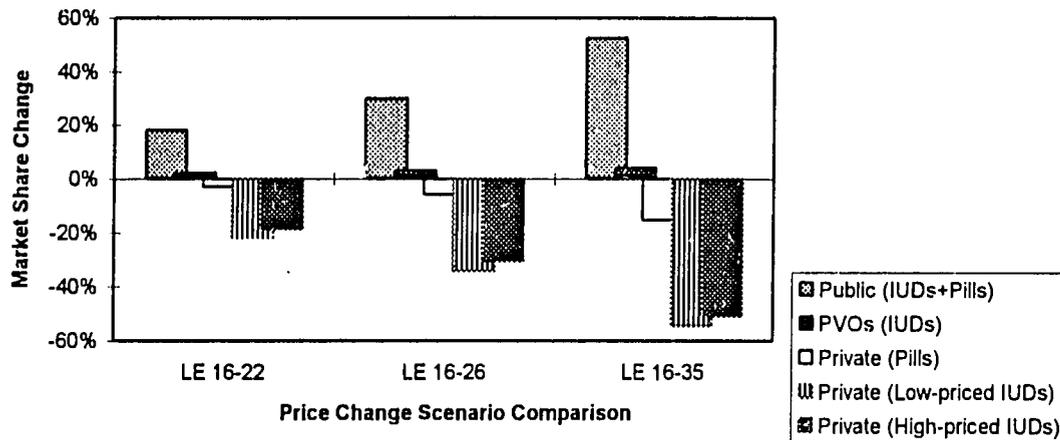
Under the two moderate CuT-380A price increase (to LE 22 and LE 26) scenarios, the public sector market share for pills and IUDs is predicted to increase from 35.6 percent to 42.1 and 46.3 percent, respectively. The PVO market share is predicted to remain virtually unchanged, rising from 9.5 percent of the total market to only 9.7 and 9.8 percent, respectively. The total private sector market share (both IUD market segments and the pill market segment) is predicted to fall from 54.9 percent to 48.2 and 44.0 percent, respectively. Within the private sector, the predicted change in demand for low-priced IUDs (the CuT-380A) is greatest (compared to demand for pills and for high-priced IUDs), declining from 22 percent to 17.2 and 14.5 percent, respectively.

More substantial changes are predicted in the fourth scenario (the price for the low-priced private sector IUD rises to LE 35). Under this scenario, demand in the public sector increases from 35.6 percent to 54.3 percent of the total market for pills and IUDs. The PVO market share again rises only slightly to 9.9 percent, while the private sector market share declines from 54.9 percent to 35.8 percent. Within the private sector, the low-priced IUD market share drops to less than half its base-case (Scenario 1, 1992) level, from 22.0 percent to only 10.0 percent of the total market. Figure 4 shows relative changes in market shares for each market segment, comparing each price increase scenario (LE 22, 26, and 35) to the base case. This figure shows that in percentage change terms, the private sector market segments are predicted to lose market share (with the

percentage losses being greatest for the low-priced IUD market segment), while the public sector and PVO segments are predicted to gain market share (with the PVO change being small).

Figure 4

Percent Change in Market Segment Shares from Base (1992) Case for CopperT-380A IUD Price Change Scenarios



Results from Willingness-to-Pay Analysis

Table 6 shows the results of comparing the median price paid for consumers' current IUDs (among current users) with the median price women stated they would be willing to pay for an IUD. Consumers in the public, PVO, and low-priced private sector IUD market segments are generally willing to pay more for an IUD than they actually paid for the IUD they are currently using. Consumers in the high-priced IUD market segment are generally not willing to pay more than they actually paid for their current IUD.²¹

In the public sector, half of all IUD users reported that they would be willing to pay LE 10 or more for an IUD, more than three times the median price actually paid (LE 3, see Table 1) for the CuT-380A. Only 8 percent of these women reported that they would not be willing to pay more than LE 3.

In the low-priced private sector IUD market, half of all women reported that they would be willing to pay at least LE 25, which is more than the median price expected if CuT-380A price restrictions were removed (between LE 22 and LE 26). Only 29 percent would be unwilling to pay at least LE 22. However, 66 percent would not be willing to pay LE 35, the price expected for the lowest cost IUD in the private sector if the price controls are maintained. Of particular interest is the fact that half of all women reported that they would be willing to pay at least LE 25, which is equal to the median price women in the low-priced private sector IUD market said they would be willing to pay. Evidently, a significant proportion of women in all but the highest-

²¹ Analysis of means shows a greater difference between reported price paid and reported willingness to pay. Analysis of medians provides a more conservative estimate of willingness of Egyptian IUD consumers to pay higher prices.

Table 6
Willingness to Pay for IUDs in Egyptian IUD Market Segments

IUD Market Segment	Current ^(a) Median Price	Median Reported Willingness to Pay (WTP)	Median WTP and Current Median Price
Public	3	10	+ 7
PVO	9	25	+17
Low-priced Private	16	25	+ 8
High-priced Private	50	50	0

^(a) As of 1992 (Source: 1992 EDHS)

priced IUD market would be willing to pay prices substantially higher than the prices that currently prevail in their current market of choice.

V. Discussion and Recommendations

The central policy issue addressed in this report is the impact of the impending termination of private sector subsidies for the CuT-380A IUD. Under current GOE regulations, the price for this commodity is controlled, and the manufacturer has stated that the current distribution price within Egypt (LE 3) is not commercially viable. The CuT-380A fills an important niche in the private sector market for contraceptives, and this paper quantifies potential contraceptive market effects if it were to be eliminated from the market.

The GOE has another choice: it can elect to lift the price control and allow the price to rise to a commercially viable level for import by the private sector. However, this choice is likely to result in an increase in the price paid by the consumer, which in turn may result in decreased demand for this IUD. By quantifying the expected market effects of various price increases and comparing these with the effects predicted for the situation where the CuT-380A is eliminated from the private sector market, we show that **the latter policy choice (lifting price controls) is expected to lead to less market disruption, will be more advantageous to the public sector, and is more consistent with the GOE's population policies and objectives.**

Regardless of the policy choice made, the effect of termination of subsidies for private sector distribution of the CuT-380A will be a price increase to consumers. The CuT-380A currently occupies the lowest-price niche in the private sector IUD market. If price controls are lifted and costs to providers rise, consumers are likely to face increased prices. If price controls are not lifted and the CuT-380A is eliminated from the private sector market, then the next lowest-priced IUD in the market will assume the position of the lowest-price IUD. This price is considerably higher than the current CuT-380A price, and consumers will perceive this market change as a

price increase in the private sector as well. Even if the price for this next lowest-priced IUD were to drop to capture part of the market void created by loss of the CuT-380A in the private sector (i.e., in the scenario where current price controls are not lifted), the new, lower price for this IUD would almost certainly be higher than the current, subsidized CuT-380A price. Here too, consumers would experience a price increase.

Impact on Contraceptive Prevalence

Some decrease in contraceptive prevalence is expected, regardless of which scenario actually occurs, as some women displaced from their preferred source of contraceptive services opt out of the market rather than seek services elsewhere. However, our analysis shows that **regardless of the extent of price changes in the private sector market for the lowest-priced IUD, the impact will be minimal.** Under assumptions of the most severe market disruption (i.e., the CuT-380A is eliminated from the private sector, and consumers face an LE 18 increase in the price for the next lowest-priced IUD), only a three percentage point decrease in contraceptive prevalence is predicted. If policymakers opt to decontrol the CuT-380A price in order to maintain this product in the market, the predicted effect is held to a one-to-two percentage point drop in the prevalence rate (depending on the new price). It may be possible to counteract this expected decline in contraceptive prevalence through other policy interventions, such as targeted IEC campaigns and introduction of new contraceptive commodities (such as injectables), which typically bring non-contraceptors into the market.

Impact on Market Segmentation

The more striking and potentially more important effects of price changes are likely to be observed in how the market segments among users (those who decide to contracept even in the face of higher private sector IUD costs). There is a large difference between predicted outcomes under the price decontrol (i.e., the new low-priced IUD costs consumers either LE 22 or LE 26) and the private sector CuT-380A elimination (i.e., the new low-priced IUD costs LE 35) scenarios. Under the two scenarios of price decontrol, we predict a 6 to 11 percent shift to the public sector as a source of contraceptive supply.²² This compares to a much greater predicted shift to the public sector of 19 percent in the case where the CuT-380A is eliminated in the private sector. A small shift (less than one-half of a percentage point) to the PVO sector is predicted, even under the most disruptive (i.e., largest price change) scenario.

Private sector demand for pills is expected to decline less than two percentage points under the two price decontrol scenarios. Under the most disruptive scenario, private sector demand for pills is expected to decline by four percentage points. The model predicts these declines because the assumption was made that women make the provider choice first and then decide which method to use. Higher private-to-public price ratios for IUDs influence the source choice in favor of non-private sector providers, even for those consumers who may have chosen pills had the private sector source choice been more attractive. These would-be private sector pill users would most likely become public sector pill users instead. The pattern of change in demand for higher-priced (non-CuT-380A) IUDs is similar. Some would-be high-priced private sector IUD users are

²² Note that the model did not distinguish between pill and IUD use in the public sector. While most women who are displaced from the low-priced IUD private sector are probably most likely to demand IUDs from the public sector provider, some number of them may switch methods and demand pills.

predicted to shift away from the private sector because of the less attractive private-to-public sector price ratios.

We have not explicitly determined which methods would be chosen by those women who would shift to the public sector for contraceptive supplies. However, it is reasonable to expect that most of this shift would occur among those who intend to be IUD users rather than pill users. We speculate that would-be private sector IUD users who choose to switch methods are likely to remain private sector consumers, since there is little price incentive to seek pill supplies in the public sector.

Willingness to Pay

Analysis of willingness-to-pay data supports the conclusions drawn from regression analysis. **Most women (71 percent) who were served in the low-priced private market segment report that they would be willing to pay prices in the range of consumer price increases expected under the price decontrol scenarios.** Some women do state that they would not be willing to pay these modest price increases; these are the women who may switch methods or redirect their contraceptive demand away from the private sector. A much larger proportion (66 percent) of women state that they would be unwilling to pay the price expected under the price control maintenance scenario (which eliminates the affordable CuT-380A product). This larger group coincides with the shift away from the private sector predicted by the regression analysis.

The willingness-to-pay analysis also reveals that women in the public sector IUD market are willing to pay substantially more than the current prevailing prices. This suggests that there is room to consider price changes even in the public sector.

Costs of Increased Public Sector Burden

These predictions have implications far more important than the predicted market segmentation changes alone. Increased public sector costs are likely to be felt in several ways. Total monetary costs of serving consumers who would otherwise have been served by the private sector increase as the magnitude of the shift to the public sector increases.²³ There would also be opportunity costs associated with an increased public sector burden. For every service slot filled by a contraceptive who would have been in the low-priced private sector, there is one less slot available to serve a non-user, and initiatives to target non-users may have to be reconsidered. Clearly, the interests of the poor are protected by having an extensive public sector provider network as a safety net for women displaced from the private sector due to higher prices (as private sector IUD subsidies end). However, increased public sector utilization by such displaced contraceptors does not contribute to the national goal of increasing contraceptive prevalence. To the extent that the public sector's capacity to target non-users is reduced by a shift of users to the public sector, opportunities to move forward on this national goal are reduced.

A point worth reemphasizing is that these opportunity costs are not expected to be substantial under the price decontrol scenarios. They are potentially very high under the price control

²³ Monetary costs of predicted shifts to the public sector include commodity procurement costs and costs for expendable supplies. To the extent that there is underutilized service capacity in the public sector, service delivery costs (e.g., staff salaries) may not be much affected. These costs have not been estimated in this study.

maintenance scenario (where the CuT-380A is eliminated as a choice in the private sector). The increased public sector burden also results in increased inefficiencies in market segmentation because source switchers (consumers who otherwise would have sought private sector services) have a demonstrated willingness to pay for private sector services. That is, the poor should be served by the public sector, while those with an ability and a willingness to pay should be served by the private sector.

Policy Strategies

GOE policy should be designed to minimize this shift from individual expenditure for family planning services to public sector budgets. Several strategic options to accomplish this objective can be considered. Strategies may be considered that attempt to distinguish between different types of consumers and, on the basis of these distinguishing characteristics, steer women to the most appropriate service delivery source. One mechanism might be to strategically locate public sector clinics in areas with large concentrations of the poor or of non-contraceptors. Similarly, family planning services can be selectively provided in public sector clinics that have catchment areas with concentrations of the poor or of non-contraceptors. Since distance matters in contraceptive decisions, some demand can be directed by such strategic program decisions.

An alternative strategy exists. The first component of this strategy would be to lift price controls on the CuT-380A. This would ensure that the product remains available to private sector providers while also minimizing price increases to consumers. SOMARC discussions with the manufacturer and distributors indicate that the likely cost increase of the IUD to providers will be in the range of LE 4 to 5; most of this cost increase is likely to be passed on to consumers. Analytic results indicate that many women are willing and able to pay increased prices of this magnitude.

The second component of this alternate strategy is intended to minimize market effects of increased consumer prices. Policymakers can intervene in a number of ways:

- Implement a special IEC/marketing initiative to change women's perceptions of the value of IUDs and increase their willingness to pay for them (e.g., by disseminating information about the duration of IUD effectiveness and about location of reliable services close to home, and to counteract erroneous beliefs, such as the belief that IUDs cause prolonged infertility even after removal).
- Develop strategies to encourage providers to minimize cost increases passed on to consumers (e.g., investigate and disseminate information about the relationship between provider costs and consumer price; offer providers incentives, such as public sector assistance with marketing activities to promote private sector providers; widely publicize "acceptable" price increases so that consumers are better informed).
- Promote competition in the market for low-priced IUDs by encouraging entry into the market of another low-priced IUD or by encouraging other IUD producers to drop their prices.

- Implement private sector provider training initiatives to influence practice patterns (e.g., increase the average duration between IUD insertion and removal from two years to three or more years; improve quality of service delivery).

Changes in the contraceptive market should be monitored and policies adjusted as needed. Considerable data exist in Egypt that can be used to monitor the effects of price decontrol. A new EDHS is planned for 1995, and there is a continuing flow of sales and service data.

In conclusion, this study indicates that the interests of Egypt and the GOE will be best served by lifting price controls on the CuT-380A IUD. Failure to do so is likely to result in greater contraceptive market disruption, a greater burden on public sector services, and more adverse effects on national population goals and objectives. Even if price controls are lifted, the market will undergo a period of readjustment as prices and consumer behavior adjust. However, these adjustments are relatively small compared to the alternative scenario. Furthermore, policy levers do exist that may alleviate some of these consequences, and these levers are more likely to be effective in an environment where market disruptions are less severe. The GOE has the expertise and the resources to intervene effectively so that the impressive progress made to date toward national population objectives continues.

APPENDIX 1

Coefficients for Estimated Logistic Regression Equations for the Contraceptive Decision-Making Process

Tables A.1 - A.5 present the results of the regressions used to simulate the effects of a price increase for the CuT-380A. A short description of each table is given below; full tables follow these descriptions. The schematic below helps match the tables with the decision tree presented earlier in the paper.

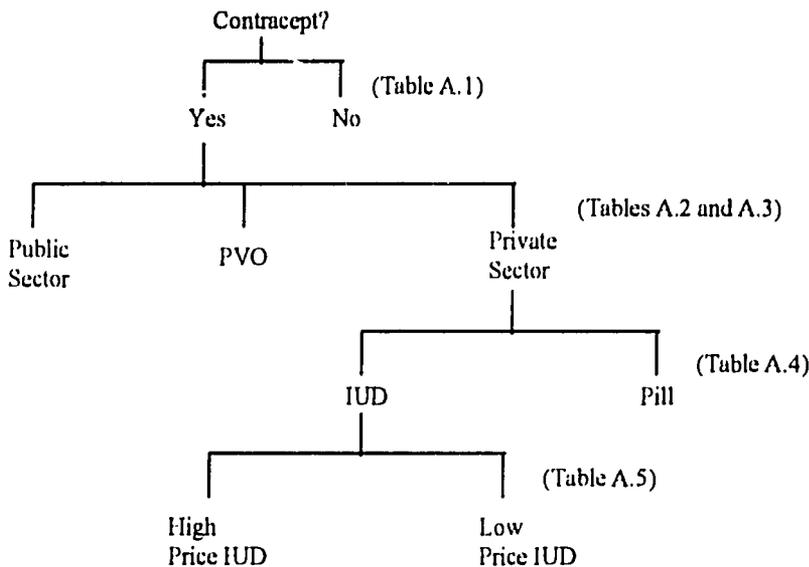


Table A.1: Estimated Coefficients for the Decision to Contracept or not to Contracept

The logistic regression calculates estimates of the influence each independent variable has on the log-odds of non contraception versus contraception. This is translated in column 4 to indicate the influence that a one unit change in the independent variable will have on the relative odds of non-contraception versus contraception. In other words column 4 of the row named CSTPLV indicates that if the private pill price increases by one piastre then contraception will be 0.6% less likely relative to non-contraception. The seventh column indicates that we are 99.6% certain (1-.0038) that the coefficient on CSTPLV is different from zero.

Table A.2: Estimated Coefficients for the Provider Choice Decision, Part 1 (The decision to choose the public sector or the private sector)

The choice of provider is among the private sector, the public sector and PVOs. Therefore there are two sets of regression coefficients that are estimated simultaneously using a multinomial logistic regression model. The first set of coefficients, immediately below, addresses the decision

to the choose the public sector versus the private sector. The second set of coefficients, in Table A.3, addresses the decision to choose the PVO sector versus the private sector. There is not a third set of coefficients for the decision to choose the PVO sector versus the public sector. As soon as the first two probabilities are determined in a trinomial decision, the third is determined as well because the probabilities must sum to one.

The multinomial logistic regression calculates estimates of the influence each independent variable has on the log-odds of choosing the public sector versus choosing the private sector. This is translated in column 4 to indicate the influence that a one unit change in the independent variable will have on the relative odds of choosing the public sector versus the private sector. In other words, column 4 of the row named IVLIBPR indicates that if the ratio of the private IUD price to public IUD price increases by one, the relative odds of choosing the public sector over the private sector will be 26% greater. The seventh column indicates that we are 99.9% certain that the coefficient on IVLIBPR is different from zero (1 - 0.00001).

Table A.3: Estimated Coefficients for the Provider Choice Decision, Part 2 (The decision to choose the PVO sector or the private sector)

The choice of provider is among the private sector, the public sector and PVOs. Therefore there are two sets of regression coefficients that are estimated simultaneously. The first set of coefficients, in Table A.2, addresses the decision to the choose the public sector versus the private sector. The second set of coefficients, immediately below, addresses the decision to choose the PVO sector versus the private sector.

The multinomial logistic regression calculates estimates of the influence each independent variable has on the log-odds of choosing the PVO versus choosing the private sector. This is translated in column 4 to indicate the influence that a one unit change in the independent variable will have on the relative odds of choosing the PVO sector versus the private sector. In other words, column 4 of the row named IVLIBPR indicates that if the ratio of the private IUD price to public IUD price increases by one that the relative odds of choosing the PVO sector over the private sector will be 5% greater. The seventh column indicates that we are 84.2% certain that the coefficient on IVLIBPR is different from zero (1 - 0.158).

Table A.4: Estimated Coefficients for the Method Choice Decision (The decision to choose pills or IUDs in the private sector)

The logistic regression calculates estimates of the influence each independent variable has on the log-odds of contracepting with the pill versus contracepting with the IUD. This is translated in column 4 to indicate the influence that a one unit change in the independent variable will have on the relative odds of choosing pills versus the IUD. In other words column 4 of the row named IVLPVPR indicates that if the ratio of the private IUD price to private pill price increases by one that the relative odds of choosing the pill over the IUD will be 551% more likely (note that IUD prices are in Egyptian pounds and pill prices are in piastres, so a one unit change in the price ratio is actually a very large increase in the IUD price). The seventh column indicates that we are 99.9% certain (1 - 0.00001) that the coefficient on IVLPVPR is different from zero.

Table A.5: Estimated Coefficients for the Choice of IUD Type (The decision to choose a low-priced IUD versus a high-priced IUD in the private sector)

The logistic regression calculates estimates of the influence each independent variable has on the log-odds of choosing the low-priced IUD versus choosing the high-priced IUD. This is translated in column 4 to indicate the influence that a one unit change in the independent variable will have on the relative odds of choosing the low-priced IUD versus the high-priced IUD. In other words, column 4 of the row named IVLIVHPR indicates that if the ratio of the low-priced IUD price to the high-priced IUD increases by one, the relative odds of choosing the low-priced IUD over the high-priced IUD will be 19% less likely. The seventh column indicates that we are 29.1% certain (1 - 0.709) that the coefficient on IVLIVHPR is different from zero.

Table A.1
Estimated Coefficients for the Decision to Contracept or not to Contracept

	Units of the Independent variable	Coefficient	Increase in relative odds due to a one unit increase in the dependent variable	Standard Error on the estimated coefficient	Chi-square Test Statistic	Level of Confidence
INTERCEPT		0.8612	1.366	0.2081	17.12	0.00001
CSTPLV--cost of private pills	piastres	0.006	0.00602	0.00207	8.38	0.0038
CSTPLB--cost of public pills	piastres	0.000746	0.00075	0.00179	0.17	0.6764
CSTIUVL--cost of cheap priv iud	pounds	-0.00777	-0.00774	0.00776	1	0.3165
CSTIUB--cost of public iud	pounds	0.057	0.05866	0.0138	17.16	0.00001
CSTIUB--cost of pvo iud	pounds	0.0107	0.01076	0.00491	4.72	0.0298
TTPLV--trav time to priv pill	minutes	0.0039	0.00391	0.00238	2.69	0.101
TTPLB--trav time to pub pill	minutes	0.00234	0.00234	0.00237	0.97	0.3239
TTIUDV--trav time to priv iud	minutes	0.000562	0.00056	0.00145	0.15	0.6986
TTIUSB--trav time to pub iud	minutes	0.00748	0.00751	0.00148	25.53	0.00001
TTIUDO--trave time to pvo iud	minutes	-0.00509	-0.005077	0.00202	6.35	0.0118
PRIMPREP--wom. prim or prep educ	discrete relative to no education	-0.403	-0.331688	0.0647	38.85	0.00001
SECINT--wom sec. or intern educ	discrete relative to no education	-0.7502	-0.527728	0.1048	51.21	0.00001
UNIV--wom univ educ	discrete relative to no education	-0.8361	-0.566603	0.1702	24.13	0.00001
MIDAGE--24-34 years	discrete relative to young	-0.1657	-0.1527	0.0866	3.66	0.0558
OLD--35-49 years	discrete relative to young	0.4778	0.61252	0.1023	21.81	0.00001
HSPREP--husb. prim or prep educ	discrete relative to no education	-0.2656	-0.233254	0.0674	15.52	0.00001
HSSECINT--husb sec or intern educ	discrete relative to no education	-0.4421	-0.357315	0.0965	21.01	0.00001
HSUNIV--husb univ educ	discrete relative to no education	-0.2992	-0.258589	0.138	4.7	0.0302
LOWURB--lower urban	discrete relative to no education	-0.1953	-0.177412	0.1049	3.46	0.0628
LOWRUR--lower rural	discrete relative to urban governorates	-0.1862	-0.169892	0.0933	3.98	0.0461
UPURB--upper urban	discrete relative to urban governorates	0.0374	0.03811	0.1124	0.11	0.7395
UPRUR--upper rural	discrete relative to urban governorates	0.8357	1.30643	0.1033	65.49	0.00001
NOMORE--wants no more children	discrete relative to all others	-1.5862	-0.795298	0.0723	480.79	0.00001
NUMCHILD-- child. ever born	children	-0.0316	-0.031106	0.0139	5.19	0.0228
HIEXPEND--expend > 200 LE/mon	discrete relative to low expenditure group	-0.2475	-0.21925	0.0761	10.58	0.0011

Table A.2
 Estimated Coefficients for the Provider Choice Decision, Part 1
 (The decision to choose the public sector or the private sector)

	Units of the Independent variable	Coefficient	Increase in relative odds due to a one unit increase in the dependent variable	Standard Error on the estimated coefficient	chi-square Test Statistic	Level of Confidence
INTERCEPT		-0.8523	-0.573567	0.2305	13.67	0.0002
IVLIBPR--cheap prv iud vs pub iud	ratio of prices (pounds/pounds)	0.2324	0.26162	0.0199	136.64	0.00001
IVLIOPR--cheap prv vs pvo iud	ratio of prices (pounds/pounds)	0.00746	0.00749	0.026	0.08	0.774
PVPBPR--prv pill vs pub pill	ratio of prices (pounds/pounds)	0.0564	0.05802	0.0344	2.69	0.1012
IVIBTT--prv iud vs pub iud	ratio of travel times (minutes/minutes)	0.8355	1.30597	0.0526	252.17	0.00001
IVIOTT--prv iud vs pvo iud	ratio of travel times (minutes/minutes)	-0.6606	-0.483459	0.0713	85.81	0.00001
PVPBTT--prv pill vs pub pill	ratio of travel times (minutes/minutes)	-0.1664	-0.153293	0.0567	8.62	0.0033
PRIMPREP--wom. prim or prep educ	discrete relative to no schooling	-0.1401	-0.130729	0.0992	1.99	0.1579
SECINT--wom sec. or interm educ	discrete relative to no schooling	-0.0947	-0.090354	0.1538	0.38	0.5383
UNIV--wom univ educ	discrete relative to no schooling	-0.9206	-0.60172	0.2689	11.72	0.0006
MIDAGE--24-34 years	discrete relative to the young age group	-0.02	-0.019801	0.148	0.02	0.8925
OLD--35-49 years	discrete relative to the young age group	0.0283	0.0287	0.1697	0.03	0.8673
HSPREP--husb. prim or prep educ	discrete relative to no schooling	-0.0813	-0.078083	0.1064	0.58	0.4446
HSSECINT--husb sec or interm educ	discrete relative to no schooling	-0.2456	-0.217765	0.1461	2.83	0.0928
HSUNIV--husb univ educ	discrete relative to no schooling	-0.3397	-0.288016	0.2062	2.72	0.0994
LOWURB--lower urban	discrete relative to urban governorates	-0.5956	-0.448768	0.1275	21.83	0.00001
LOWRUR--lower rural	discrete relative to urban governorates	-0.0246	-0.0243	0.1272	0.04	0.8465
UPURB--upper urban	discrete relative to urban governorates	-0.473	-0.37687	0.1721	7.55	0.006
UPRUR--upper rural	discrete relative to urban governorates	-0.3542	-0.298265	0.1571	5.08	0.0242
NOMORE--wants no more children	discrete relative those who are not limiters	-0.4013	-0.330551	0.1107	13.13	0.0003
NUMCHILD-- child. ever born	number of children	0.0184	0.01857	0.0238	0.6	0.4396
HIEXPEND--expend > 200 LE/mon	discrete relative to the low income group	-0.398	-0.328338	0.1187	11.24	0.0008

Table A.3
 Estimated Coefficients for the Provider Choice Decision, Part 2
 (The decision to choose the PVO sector or the private sector)

	Units of the Independent variable	Coefficient	Increase in relative odds due to a one unit increase in the dependent variable	Standard Error on the estimated coefficient	chi-square Test Statistic	Level of Confidence
INTERCEPT		-2.2301	-0.892482	0.3593	38.52	0.00001
IVLIBPR--cheap prv iud vs pub iud	ratio of prices (pounds/pounds)	-0.0526	-0.051241	0.0372	2	0.1577
IVLIOPR--cheap prv vs pvo iud	ratio of prices (pounds/pounds)	0.1966	0.21726	0.0304	41.7	0.00001
PVPBPR--prv pill vs pub pill	ratio of prices (pounds/pounds)	-0.0382	-0.03748	0.0527	0.53	0.4681
IVIBTT--prv iud vs pub iud	ratio of travel times (minutes/minutes)	-0.3488	-0.294466	0.0979	12.7	0.0004
IVIO TT--prv iud vs pvo iud	ratio of travel times (minutes/minutes)	0.5171	0.67716	0.0661	61.18	0.00001
PVPBTT--prv pill vs pub pill	ratio of travel times (minutes/minutes)	0.0424	0.04331	0.0719	0.35	0.5552
PRIMPREP--wom. prim or prep educ	discrete relative to no schooling	-0.1495	-0.138862	0.1633	0.84	0.3599
SECINT--wom sec. or interm educ	discrete relative to no schooling	0.4276	0.53357	0.2203	3.77	0.0523
UNIV--wom univ educ	discrete relative to no schooling	0.00663	0.00665	0.3587	0	0.9853
MIDAGE--24-34 years	discrete relative to young age group	-0.2869	-0.249413	0.2083	1.9	0.1684
OLD--35-49 years	discrete relative to young age group	-0.9381	-0.608629	0.2506	14.02	0.0002
HSPREP--husb. prim or prep educ	discrete relative to no schooling	0.1407	0.15108	0.1818	0.6	0.4391
HSSECINT--husb sec or interm educ	discrete relative to no schooling	-0.1723	-0.158273	0.2326	0.55	0.4589
HSUNIV--husb univ educ	discrete relative to no schooling	-0.5731	-0.436225	0.3122	3.37	0.0664
LOWURB--lower urban	discrete relative to the urban governorates	-0.1292	-0.121202	0.1929	0.45	0.5031
LOWRUR--lower rural	discrete relative to the urban governorates	-0.0982	-0.093532	0.2021	0.24	0.627
UPURB--upper urban	discrete relative to the urban governorates	0.1823	0.19997	0.2099	0.75	0.3851
UPRUR--upper rural	discrete relative to the urban governorates	0.2253	0.2527	0.227	0.99	0.3209
NOMORE--wants no more children	discrete relative to non-limiters	0.1108	0.11717	0.1719	0.42	0.519
NUMCHILD-- child. ever born	number of children	-0.0373	-0.036613	0.0401	0.87	0.3515
HIEXPEND--expend > 200 LE/mon	discrete relative to low expenditure group	0.5925	0.8085	0.1925	9.47	0.0021

Table A.4
 Estimated Coefficients for the Method Choice Decision
 (The decision to choose pills or IUDs in the private sector)

	Units of the Independent variable	Coefficient	Increase in relative odds due to a one unit increase in the dependent variable	Standard Error on the estimated coefficient	chi-square Test Statistic	Level of Confidence
INTERCEPT		-1.1665	-0.688545	0.2787	17.52	0.00001
IVLPVPR--prv cheap iud vs prv pill	ratio of prices (pounds/piastres)	1.8742	5.5156	0.1993	88.46	0.00001
IVPVT--prv cheap iud vs prv pill	ratio of travel times (minutes/minutes)	0.2036	0.22581	0.022	85.35	0.00001
PRIMPREP--wom. prim or prep educ	discrete relative to no schooling	-0.2248	-0.201324	0.1305	2.97	0.085
SECINT--wom sec. or interm educ	discrete relative to no schooling	-0.787	-0.544792	0.1938	16.49	0.00001
UNIV--wom univ educ	discrete relative to no schooling	-1.5394	-0.78549	0.3158	23.75	0.00001
MIDAGE--24-34 years	discrete relative to young age group	0.3516	0.42134	0.1972	3.18	0.0745
OLD--35-49 years	discrete relative to young age group	0.1576	0.1707	0.2297	0.47	0.4926
HSPREP--husb. prim or prep educ	discrete relative to no schooling	0.0432	0.04415	0.1416	0.09	0.7601
HSSECINT--husb sec or interm educ	discrete relative to no schooling	-0.0552	-0.053704	0.1834	0.09	0.7635
HSUNIV--husb univ educ	discrete relative to no schooling	-0.5236	-0.407616	0.2581	4.12	0.0425
LOWURB--lower urban	discrete relative to the urban governorates	0.1157	0.12266	0.1592	0.53	0.4672
LOWRUR--lower rural	discrete relative to the urban governorates	-0.1323	-0.123922	0.1643	0.65	0.4208
UPURB--upper urban	discrete relative to the urban governorates	0.3728	0.45179	0.1833	4.14	0.0419
UPRUR--upper rural	discrete relative to the urban governorates	0.4461	0.56221	0.1969	5.13	0.0235
NOMORE--wants no more children	discrete relative to non-limiters	0.0261	0.02644	0.159	0.03	0.8697
NUMCHILD-- child. ever born	number of children	-0.0111	-0.011039	0.0307	0.13	0.7188
HIEXPEND--expend > 200 LE/non	discrete relative to low expenditure group	-0.2483	-0.219874	0.155	2.57	0.1091

Table A.5
 Estimated Coefficients for the Choice of IUD Type
 (The decision to choose a low-priced IUD versus a high-priced IUD in the private sector)

	Units of the Independent variable	Coefficient	Increase in relative odds due to a one unit increase in the dependent variable	Standard Error on the estimated coefficient	chi-square Test Statistic	Level of Confidence
INTERCEPT		2.2222	8.22761	0.519	18.34	0.00001
IVLIVHPR—cheap prv iud vs expensive prv iud	ratio of prices (pounds/pounds)	-0.2073	-0.187224	0.5548	0.14	0.7087
IVPVTT—cheap prv iud vs expensive prv iud	ratio of travel times (minutes/minutes)	-0.0417	-0.040843	0.0273	2.33	0.1269
PRIMPREP—wom. prim or prep educ	discrete relative to no schooling	-0.2753	-0.240656	0.264	1.09	0.2971
SECINT—wom sec. or interm educ	discrete relative to no schooling	-0.3384	-0.28709	0.339	1	0.3181
UNIV—wom univ educ	discrete relative to no schooling	-1.0589	-0.653163	0.4097	6.68	0.0098
MIDAGE—24-34 years	discrete relative to young age group	0.4497	0.56784	0.3137	2.05	0.1518
OLD—35-49 years	discrete relative to young age group	0.2802	0.32339	0.3588	0.61	0.4348
HSPREP—husb. prim or prep educ	discrete relative to no schooling	-0.2962	-0.256361	0.3066	0.93	0.334
HSSECINT—husb sec or interm educ	discrete relative to no schooling	-0.4936	-0.389575	0.3503	1.99	0.1588
HSUNIV—husb univ educ	discrete relative to no schooling	-0.8185	-0.558907	0.4044	4.1	0.043
LOWURB—lower urban	discrete relative to the urban governorates	0.2646	0.30291	0.2334	1.29	0.2569
LOWRUR—lower rural	discrete relative to the urban governorates	0.5905	0.80489	0.2678	4.86	0.0274
UPURB—upper urban	discrete relative to the urban governorates	0.459	0.58249	0.268	2.93	0.0867
UPRUR—upper rural	discrete relative to the urban governorates	-0.1923	-0.174941	0.3302	0.34	0.5603
NOMORE—wants no more children	discrete relative to non-limiters	-0.4152	-0.339792	0.2384	3.03	0.0816
NUMCHILD—child. ever born	number of children	0.051	0.05232	0.0588	0.75	0.3864
HIEXPEND—expend > 200 LE/mon	discrete relative to low expenditure group	-0.5794	-0.439766	0.324	3.2	0.0738

56



Private Providers in Egypt: Characteristics, Costs, and Niches in the Family Planning Market



National Population Council



**PRIVATE PROVIDERS IN EGYPT:
CHARACTERISTICS, COSTS, AND NICHE
IN THE FAMILY PLANNING MARKET**

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
I. INTRODUCTION	1
II. RESEARCH DESIGN	3
Questionnaire Development	4
Sampling Method	5
III. RESEARCH QUESTIONS	5
IV. RESULTS FROM PHYSICIAN SURVEY.....	6
Geographic Segmentation of Provider Markets	6
Segmentation of Provider Markets According to Prices Charged for IUDs	6
Provider Markets by Geographic Region	11
V. RESULTS FROM THE PHARMACISTS SURVEY.....	12
Characteristics of the Pharmacies in the Sample	12
Segmentation of the Pharmacy Market According to Pill Brands Sold.....	14
VI. DISCUSSION	17
APPENDIX I: Physician Interview Schedule (English Translation)	22
APPENDIX II: Pharmacist Interview Schedule (English Translation)	30

TABLES

Table 1.	Comparison of Selected Characteristics by Markets Segmented by Geographic Location of Provider	7
Table 2:	Comparison of Selected Characteristics by Markets Segmented by IUD Prices Charged by Providers	10
Table 3.	Pricing Differences by Geographic Region and High- vs. Low-end Physician Market Segments	12
Table 4.	Selected Characteristics of Pharmacies Interviewed in the Sample.....	13

Table 5.	Reported Monthly Contraceptive Sales and Stock on Hand.....	15
Table 6.	Official and Reported Contraceptive Prices.....	16
Table 7.	Mean Monthly Pill and IUD Sales of Market Segment.....	17

EXECUTIVE SUMMARY

There is a growing body of information on the costs of delivering family planning services through donor- and/or Government of Egypt-financed providers. However, parallel information on private physicians and pharmacists -- the characteristics of their practices, their costs and prices charged for services -- has not been examined, even though they are the primary providers of family planning in Egypt, providing almost two-thirds of all contraceptive services. Consequently, the National Population Council and USAID/Cairo asked OPTIONS II to conduct the Private Sector Family Planning Cost Study in order to shed light on these issues. The ultimate goal of the study is to design strategies to promote the participation of the private commercial sector in family planning, thus enhancing overall contraceptive prevalence and efficiency of resource allocation.

A local contractor, Social Planning, Analysis & Administration Consultants (SPAAC) collected and entered the data from November 1993 to March 1994. The survey was implemented in three governorates: urban Cairo, Gharbia and Menya in Lower and Upper Egypt, respectively. The sample was drawn randomly from lists of providers operating in three governorates. One hundred sixteen physicians and 36 pharmacists were interviewed using separate questionnaires. For the purposes of this survey, private sector practitioners were defined as those who provided services in privately-held (owned or rented) facilities.

The findings of the physician component of the study paint a picture of a system of private family planning service delivery in which providers orient their services to consumers of different types. Quantitative analysis of survey data covering provider characteristics, practice patterns, clinic costs and characteristics, and service prices suggests that one group of physicians serves the low-end of the market and another the high-end of the market. The existence of low-end providers is of great policy relevance, as they serve the social marketing clientele who can pay for affordable, quality family planning services. If these consumers could not be served in the private market, they would be likely to turn to public sector services. Compared to low-end doctors, high-end providers are more likely to be male and tend to be educated beyond the MD level, to have larger clinic facilities, to own equipment (such as an ultrasound device), and to charge higher prices for family planning exams and services.

Both types of physicians were found in all three geographic areas, but the areas outside Cairo had greater concentrations of low-end providers. The small sample size of this survey, however, makes its findings suggestive of patterns that should ultimately be confirmed by larger survey efforts. The implications of these findings are that there are physicians ready, willing and able to serve the social marketing consumer throughout Egypt.

The findings of the pharmacy component of the study suggest that pharmacies could be segmented by the pill brands they carried and the proportion of total pill sales that were accounted for by low-priced brands. Pharmacies appeared to offer a wider range of prices/products than physicians. Unlike physicians, many of whom offered only low-priced IUDs, none of the pharmacies surveyed carried exclusively low-priced pill brands, and whereas low-end providers made up the majority of the physician market, they accounted for a minority of the pharmacy market. This may be due to the smaller spread between high- and low-end pill prices than

between high- and low-end IUD prices and the lower prices of a cycle of pills relative to the prices charged for inserting an IUD.

The data collected failed to reveal any consistent differences or trends between pharmacy market segments in terms of ownership, size, or number and types of employees. One unexpected finding did emerge: high-end pharmacies reported lower pill sales and higher IUD sales than medium to low-end pharmacies. Pharmacies in our sample tended to specialize in one method or the other; our sample did not include pharmacies with high volume sales for both IUDs and pills.

Private sector initiatives may be developed to better involve the low-end physician in expanding service access and quality to the Egyptian social marketing consumer. These physicians, many of whom are women, are a ready resource to provide family planning services, particularly in Upper Egypt, where the importance of female providers has long been recognized. The data suggest that within the low-end physician group there are doctors who provide virtually no family planning and others who are quite active. The reasons why low-end providers are active in family planning (or not active) need to be ascertained in order to plan new initiatives. Inactive providers may not realize there is demand, may not know how to elicit demand, or may not have the requisite training. Private sector initiatives could respond to these needs.

Competitive market conditions are the major force in determining what physicians charge, although some high-end physicians report that they set their prices according to their own qualifications and practice costs. This has important policy implications: with the impending end of donor-subsidized contraceptive commodities in the private sector, there will be pressure on low-end providers to increase prices charged for IUD insertion, commensurate with increased costs to the physician to obtain IUD devices. However, the competitive market may keep these increases to reasonable levels to minimize disruption of the market.

The findings of this survey have great relevance to the continued evolution of the family planning service delivery system in Egypt. The system has long been based on an effective partnership between the public and private sectors. The Egypt national family planning program faces a number of challenges, such as how to increase service utilization in Upper Egypt and how to maintain the public-private partnership given the evolution of such factors as the availability of donor-subsidized contraceptives. These findings suggest ways physicians serving social marketing consumers could be encouraged to become more active. They also shed light on the private sector response to the end of donor-subsidized contraceptives.

PRIVATE PROVIDERS IN EGYPT: CHARACTERISTICS, COSTS, AND NICHES IN THE FAMILY PLANNING MARKET

I. Introduction

There is a growing body of information on the costs of delivering family planning services through donor- and/or Government of Egypt-financed providers. However, parallel information on private physicians and pharmacists -- the characteristics of their practices, their costs and prices charged for services -- has not been examined, even though they are the primary providers of family planning in Egypt, providing almost two-thirds of all contraceptive services. Consequently, the National Population Council through USAID/Cairo requested OPTIONS II to conduct the Private Sector Family Planning Cost Study in order to shed light on these issues. This information can then be used to design strategies to promote the participation of the private commercial sector in family planning, thus enhancing overall contraceptive prevalence and efficiency of resource allocation.

According to data from the 1992 Egypt Demographic and Health Survey (EDHS), the private sector serves over half of all IUD users and provides supplies to 90 percent of pill users. Clearly, the continued viability of this sector is crucial to the success of the country's national population policies and goals. Public policies that promote private sector provision of family planning goods and services not only increase options available to women, they also help free up public resources, which can then be used more effectively to reach underserved groups and expand the total market.

Generally speaking, providers face costs for delivering services. Based in part on these costs, providers charge consumers a price for those services. However, there is variability across providers in costs and in prices for delivering a service. Information about this variability, and the parameters that define it, would enhance policymakers' ability to develop policies that are conducive to private sector participation in the market and, at the same time, that improve the public sector's effectiveness.

More immediately, private sector costs are a concern in Egypt because of the impending phase-out of subsidies to the private commercial sector for contraceptive commodities. Specifically, the stock of donated IUDs currently available to private commercial sector providers is expected to be depleted by May 1995. (The supply of CSM condoms will be depleted by June 1996, and CSM pills will be depleted early in 1996.) Thereafter, providers will have to procure IUDs on the open, unsubsidized market. The relationship between costs and prices charged to consumers will soon assume greater significance. Are private sector family planning services priced close to costs? Are providers likely to raise their charges as their costs for contraceptive commodities increase? How much of an increase are consumers willing or able to pay? Each of these questions will have to be addressed in order to effectively plan policies to support private sector services. The answer to each of these questions is related to the issue of costs.

Costs of providing family planning services in Egypt have been studied,¹ but past studies have focused on public and PVO sector services. Less is known about private commercial sector costs, which are often more difficult to determine. Access to public sector accounting records is generally better than access to private sector records. The degree to which private sector providers keep such records varies widely, and when they are kept, providers are often reluctant to share what is considered to be proprietary information.

The Private Sector Family Planning Cost Study was conceived as a first step toward understanding costs in the private sector segment of Egypt's contraceptive market. Physicians and pharmacists were interviewed for this study. Section II of this report describes the research design, including questionnaire development, sampling methods and sample description. Section III identifies the key research questions addressed. Analytic results are presented in Sections IV and V for physicians and pharmacists, respectively. The report concludes with a discussion of the implications of the results for family planning policy in Egypt.

The principal findings from the physician component of the study are summarized below.

- IUDs comprise the bulk of family planning services provided by private sector physicians and the private physician market can be segmented into two categories based on the prices they charge their clients
- Two-thirds of the physicians surveyed could be classified as low-end providers and one-third could be classified as high-end providers
- The low-end provider market is probably more competitive and more constrained by their operating costs.
- The high-end market is more concentrated in higher-income areas, and providers in this market probably set their prices more by what the market will bear rather than by their operating costs.

The principal findings from the pharmacy component of the study are summarized below.

- Pills are the major contraceptive method sold by pharmacies, and three quarters of the pharmacies surveyed offered both pills and condoms.
- Nearly half sold IUDs, virtually none sold spermicides, and none administered injections.
- The typical pharmacy carried three pill brands, and half offered both low- and medium/high-price brands.
- Pharmacies that catered to a predominantly higher-end clientele sold fewer pills and more IUDs than those that sold higher proportions of low-price pills; however, no other consistent differences between market segments were found.

¹ See Elizabeth Heilman et al. 1992. Report on the Costs of the Family Planning Program in Egypt which Received Funding from the Public Sector: July 1, 1990 - June 30, 1991. San Luis Obispo, CA: E. Petrich and Associates, Inc.

- Pharmacies may be able to sell high-price pill brands because prices are low enough to be affordable to most urban dwellers and because the absolute price differences among brands are so small (in Egypt, the CSM brand can be classified as medium rather than low price).

Low-end physicians would probably be more affected by an increase in the commodity costs of IUDs and are more likely to pass at least part, if not all, of any cost increase on to their clients. High-end providers are less likely to be substantially affected by moderate commodity cost increases. It is difficult to anticipate the impact of price increases in the low-end market for IUDs on pharmacy sales. If lower-income women are forced out of the IUD market, they may turn in greater numbers to the pill, in which case they would probably purchase medium to low-price brands. Since the pharmacy segment already has low IUD sales, its pill sales may increase but its IUD sales would be largely unaffected. To the extent that former/potential IUD users are unlikely to purchase high-end pills, neither the pill nor the IUD sales of the high-end pharmacy segment would be affected.

II. Research Design

A survey research methodology was chosen to collect information on private sector costs and charges. Questionnaires were developed and fielded by Social Planning, Analysis, and Administration Consultants (SPAAC), an Egypt-based health and family planning survey firm. Face-to-face interviews with physicians and pharmacists were conducted in November and December 1993.

A small survey was conducted because of limited resources; a total of 116 physicians and 36 pharmacists were interviewed. In the analysis of physicians, regional cost variations in the provision of services were investigated. In the case of pharmacists, however, analysis of cost characteristics was not broken down by governorate, due to the small sample size.

The principal family planning service delivered by private physicians is IUD insertions. Pharmacies serve about 90 percent of the market for oral contraceptives in Egypt. As a consequence, conclusions drawn from analyses of the physician sample pertain primarily to the private sector market for IUDs, and the results of the pharmacy sample pertain to the private sector pill market.

We investigated two possible conceptualizations of physician market segments:

- according to geographic location of providers (Cairo, Gharbia governorate in Lower Egypt, and Menya in Upper Egypt); and
- according to prices charged by physicians for the CuT-380A IUD.

Analysis by these market segments allows us to draw conclusions about variability in costs across providers. The analysis by product market segment addresses the highly salient issue of phasing out private sector subsidies for contraceptive commodities and permits some conclusions to be

drawn about expected impacts on provider pricing behavior. Provider pricing reactions to this important policy change will have a direct impact on consumer's contraceptive decisions.²

We provide an overview of the urban pharmacy market as a whole in terms of ownership, number and types of employees, and choice of contraceptive methods and brands offered. We explore the possibility of segmenting pharmacies by the pill brands they carry and by the proportion of total pill sales derived from low-price brands, and examine other factors potentially associated with this market segment.

Questionnaire Development

SPAAC staff developed two questionnaires: one for interviews with physicians and one for pharmacists (see Appendix I for the physician questionnaire and Appendix II for the pharmacist questionnaire). The questionnaires were translated into Arabic and pre-tested on a small sample of private providers.

The physician questionnaire was composed of six sections:

- **Physician Information.** This section identified information about the type of practice, the physician's training, years in service, clinic operating hours, and patients seen.
- **Clinic Information.** This section was designed to collect information about the physical size and condition of the facility where the physician practiced, and operating costs (physical operations and personnel costs) of the facility.
- **Equipment and Supplies Used for Family Planning.** This section asked physicians to indicate which equipment they used for family planning services, the cost and purchase year, and annual operating costs. It also asked them to provide information about the quantity and cost of other supplies used to provide family planning services.
- **Family Planning Services Provided.** This section asked physicians how much time they and their staff spent providing different services related to family planning.
- **Information about Other Expenses.** Information was collected on training, marketing, and costs.
- **Service Prices.** This section asked physicians to indicate prices charged for family planning and other services provided to clients at their clinic. It also asked about use of sliding fee scales, price increases, the basis for setting fees, and income.

The pharmacists questionnaire was composed of four sections:

- **Pharmacist Information.** Pharmacists were asked for information about ownership and their own personal characteristics, such as sex, specialization, age, experience and professional affiliation.
- **Pharmacy Information.** Questions were asked about the size and physical condition of the pharmacy. Information on purchase price/rental, monthly operating expenses and labor costs was also gathered.
- **Information about Contraceptive Methods Sold.** This section collected data on the quantity of contraceptives sold and stocked, and on retail and wholesale prices of those

² See "Predicted Impacts of Phasing out Private Sector IUD Subsidies on the Contraceptive Market in Egypt." OPTIONS II, March 1995.

contraceptives. Additionally, questions were asked about how prices were set and whether services were offered at reduced prices.

- **Information about Family Planning Services Offered.** Pharmacists were asked whether they offered such services as family planning counseling and injections. They also answered questions about sales, marketing costs and personal income.

Sampling Method

The survey design called for a total of 150 private sector providers to be interviewed. The sample was drawn to reflect national geographic diversity. One governorate was selected from each of the three main regions: urban governorates, Lower Egypt, and Upper Egypt. The three governorates selected were Cairo for the urban governorates, Gharbia for Lower Egypt, and Menya for Upper Egypt.

In Cairo, three districts were selected for the survey. After stratifying by high, medium, or low literacy rate in the district, the district within each literacy level group with the largest number of private providers was selected.³ Three districts were also selected in each of the other two governorates. The largest city in each governorate was included in the sample frame. The two other districts in each governorate with the largest population were also selected.⁴

Within each district, the sampling frame of private providers was constructed in consultation with the Medical Syndicate, the Pharmacists' Syndicate, and the Egyptian Pharmaceutical Trading Company. The USAID-funded Private Practitioners' Family Planning Providers Project (PPFPP) was also consulted to ensure that providers were not inadvertently excluded. A street-by-street enumeration of providers in the sampling area was done to ensure that no providers were missed.

In the final sampling step, a 75 percent sample of physicians and a 25 percent sample of pharmacists were randomly selected for interview. A sample of alternates was selected to serve as substitutes for cases that refused to participate. There were 116⁵ physicians and 36 pharmacists interviewed.

III. Research Questions

This data set is suitable to provide insight into a number of policy relevant issues. The issues addressed in this report are:

- **Are there identifiable segments in the provider market for IUDs?** Two potential parameters for segmentation were explored: geographic (with the three governorates serving as the basis for comparison) and IUD price (with the prices charged for the CuT-380A IUD serving as the basis for differentiation).
- **Are there identifiable segments in the pharmacy market?** Pill brands sold and the proportion of total pill sales from low-price brands were explored as segmentation criteria.

³ The three districts selected in Cairo were: Abdin, Shubra, and Matariya.

⁴ The three districts selected in Gharbia were: Tanta, Mehalla El-Kubra, and Kufr El-Zayat. The three districts selected in Menya were: El-Menya, Buni Mazar, and Abu Qirqus.

⁵ Analyses were performed on 115 physicians; one respondent was discarded because his interview was not complete.

- **For different market segments identified, what factors differentiate one market from the other?** The factors examined are: costs, prices charged for services (both family planning and other services), practice patterns, and provider characteristics.

Testing for statistical significance was conducted for all comparisons reported in the next section; differences reported are significant at the $p \leq 0.05$ level.

IV. Results from Physicians Survey

Markets can be said to be segmented along a certain dimension if the segments vary consistently across the parameters that define the segmenting dimension. We examined the dimensions of geographic region and price.

Geographic Segmentation of Provider Markets

There were differences among the three sample regions on some of the parameters examined (Table 1). However, the pattern of differences was not consistent. For some parameters, two regions were similar; for others, two different regions were similar.

The proportion of physicians interviewed who were female varied significantly across sample regions. Physicians in Menya were more likely to be female (49%) than in either Cairo (35%) or Gharbia (16%). All physicians in Egypt hold medical degrees; those in Menya were less likely to hold a Ph.D. degree (3%) than Cairo (28%) or Gharbia (13%). There was no difference in the average number of years physicians had been in private practice.

Physician practice patterns were generally not different across the three regions. Differences in percent of practices with low IUD client volume and mean consultation time were not significant. Physicians in Menya and Gharbia reported higher overall family planning client loads than physicians in Cairo. There were some facility-related differences, but they were not consistent. Facilities in Cairo and Gharbia were on average significantly larger than facilities in Menya. The pattern of differences in total facility operations costs (rent, maintenance, and utilities) was the same as the pattern for facility size. However, physicians in Cairo were significantly more likely to own non-essential equipment,⁶ such as an ultrasound, than physicians in Menya and Gharbia. There was no difference among regions with respect to ownership of essential medical equipment and supplies. Neither were there were significant differences in the reported costs paid for essential equipment and supplies.

Segmentation of Provider Markets According to Prices Charged for IUDs

At the outset of the contraceptive social marketing (CSM) project, physicians were charged the subsidized price of LE 2 for the CuT-380A IUD. The cost was raised to LE 3 in September 1994. The total charge to consumers (both device and insertion) is on average LE 17. For this survey, physicians were asked what price they charged for a variety of goods and services. Because a priority concern is what might happen when IUD subsidies to the private sector are terminated, we looked first at prices charged for the CuT-380A IUD.

⁶ Essential items are defined here as equipment which is necessary for provision of clinical family planning services. Non-essential items are defined here as those items which are intended to improve client amenities and perceptions of quality, and are not considered to be necessary for provision of family planning services.

Table 1
Comparison of Selected Characteristics by Market Segmented
by Geographic Location of Provider

PROVIDER CHARACTERISTICS	GEOGRAPHIC REGION		
	CAIRO	GHARBIA	MENYA
% female *	35%	16%	49%
% holding a PhD ¹ *	28%	13%	3%
Years in private practice	10 yrs	11 yrs	8 yrs
PRACTICE PATTERNS			
% with low IUD volume	32%	24%	30%
Mean family planning client load per month *	14	33	37
Mean consultation time	16 min	14 min	16 min
CLINIC COSTS AND CHARACTERISTICS			
Mean clinic size *	84 m ²	90 m ²	68 m ²
Own an ultrasound device	30%	15%	14%
Own essential equipment (no. of vaginal specula)	2	5	2
Fixed facility costs/month	LE 159	LE 168	LE 119
PROVIDER CHARGES²			
Family planning exam *	LE 12	LE 7	LE 5
<u>IUD insertion (including the IUD device cost):</u>			
- CuT-380A *	LE 33	LE 25	LE 20
- Nova-T	(NA)	LE 83	LE 72
- Multi-load	LE 90	LE 66	LE 55
IUD follow-up visit *	LE 12	LE 7	LE 5
Antenatal care *	LE 38	LE 11	LE 8

* Significant at least at the $p \leq 0.05$ level.

¹ All physicians in Egypt hold an MD degree, this refers to those also holding a Ph.D.

² Provider charges were reported as averages, though many also reported that different prices may be charged to different clients.

Eighty-four percent of the physicians responding to this survey reported paying LE 2-3 for CuT-380A IUDs. Prices charged to consumers for inserting the CuT-380A IUD (including the device) ranged from LE 8 to LE 100; the median price reported was LE 20. We defined two categories of physician charges for inserting these IUDs: CSM/low-end (up to LE 25) and high-end (over LE 25). Two-thirds (67%) of the respondents reported charging CSM prices for inserting the CuT-380A IUD; the remaining one-third (33%) reported charging higher prices. These market segments parallel the market segments that emerged from an analysis of consumer survey data based on the 1992 EDHS.⁷

Consistent and significant differences were found between physicians who offered the CuT-380A IUD at the socially-marketed price (referred to as "low-end" providers) and those who charged higher prices for it (referred to as "high-end" providers). Table 2 shows characteristics that differentiated these two market segments.

Characteristics of market segments: Only two socio-demographic correlates of provider market segments were detected: sex and educational level. While female physicians comprised one third (34%) of the sample, they made up 45 percent of the low-end market segment and only 10 percent of the high-end segment. High-end providers tended to have higher educational attainment than low-end providers: 28 percent of high-end providers reported a Ph.D. compared to 7 percent of low-end providers, and only 3 percent of high-end providers had no post-graduate degree compared to 12 percent of low-end providers. High- and low-end providers did not differ significantly on year of graduation, year of beginning private practice, or year that they started at their current site. T-test comparisons of mean client load (total patients seen, reproductive-age women seen, family planning clients, IUD clients) did not reveal any significant differences between the two market segments. However, low-end practitioners were more likely to have very low IUD volume (four or fewer clients per month) than high-end practitioners (35% vs. 7%).

Costs: At a minimum, private physicians need to recoup their costs for providing services to remain economically viable. Where costs differ, charges to consumers can also be expected to differ. Some cost categories have greater potential for variation than others. For example, facility and personnel costs are expected to differ by geographic region. In Table 1, we showed that, indeed, facility operations costs were higher in Cairo, the capital city, and in Gharbia, a Lower Egypt governorate than in Menya in Upper Egypt. On the other hand, where markets are more highly competitive, as in the case of consumable supplies, costs are not expected to vary as widely.

Another reason consumable costs show less variation across market segments is that procedures, such as an IUD insertion, require the same amounts of consumable supplies, regardless of the setting, whereas physicians may spend more or less for such patient amenities as comfortable waiting rooms and extra staff.

In addition to initial investment in educational training, discussed above, the sample showed differences in cost categories between high-end and low-end market segments for non-essential items. As shown in Table 2, mean clinic size was larger among the high-end providers (96 m² vs.

⁷"Consumer Profiles within Market Segments for Family Planning: An Analysis of the 1992 Egypt Demographic and Health Survey." OPTIONS II, March 1995.

77 m²). High-end providers also had slightly more examining tables (1.2 vs. 1.0). Fixed monthly facility costs (rent, utilities, maintenance) were higher for high-end providers (LE 206 vs. LE 121). High-end providers were more likely to own an ultrasound device (34% vs. 15%) and had more employees (1.7 vs. 1.4).

In terms of essential equipment, there were no reliable differences between high- and low-end providers. Thus, we found no differences in ownership of electric cautery equipment, autoclaves, instrument sterilizers, scales, blood pressure cuffs, stethoscopes, specula, uterine probes, forceps, instrument drums, instrument basins, or kidney-shaped basins.

Time spent in patient encounters is another cost category; it is also a measure of quality. This parameter did not differentiate between high- and low-end physicians. Both groups spent the same time on the initial check-up and determination of method (mean=15 minutes), inserting an IUD (mean=8 minutes), and for follow-up IUD visits (mean=8 minutes). High-end physicians did report spending more time with their clients in family planning counseling (16 minutes vs. 15 minutes).

Pricing differences observed for family planning services between the high- and low-end market segments were also observed for a wide range of other services. As shown in Table 2, physicians tended to charge consistently high or low prices for consultations to select a contraceptive method, follow-up consultations for IUD users, prenatal care, and delivery. Consultation fees averaged LE 5 higher for high-end providers (family planning exam: LE 11 vs. LE 6; IUD follow-up consultation: LE 11 vs. LE 6). Antenatal fees averaged LE 27 higher (LE 39 vs. LE 12); delivery charges for births attended at the physician's own clinic averaged LE 69 higher (LE 193 vs. LE 124); and hospital delivery fees averaged LE 88 higher (LE 254 vs. LE 166).

Charges for other IUDs: In addition to the subsidized, CuT-380A IUD, there are two fully-commercial IUDs on the market: the Nova-T and the Multi-load. Because of the small numbers reporting, information on prices paid for these devices is more variable. Physicians' costs for obtaining the Nova-T ranged from LE 35-75, and prices for the Multi-load ranged from LE 30-75 (not shown in table). Physician charges to consumers for these devices are unregulated; we shall see next that prices charged tend to vary according to the prices charged for other goods and services, including the subsidized IUDs.

Mark-ups charged for inserting IUDs also showed consistent differences between high- and low-end providers. If we subtract the physician's reported cost of the device from the price charged to the client, we find low-end mean mark-ups of LE 15, LE 14, and LE 10 for the CuT-380A, Nova-T, and Multi-load, respectively, compared to high-end mark-ups of LE 38, LE 52, and LE 51 (all comparisons significant at the $p < .001$ level).



Table 2
Comparison of Selected Characteristics by Markets Segmented
by IUD Prices Charged by Providers

PROVIDER CHARACTERISTICS	LOW-END PROVIDERS	HIGH-END PROVIDERS
% female *	45%	10%
% holding a PhD ¹ *	7%	28%
Years in private practice	8 yrs.	9 yrs.
PRACTICE PATTERNS		
% with low IUD volume *	35%	7%
Mean family planning client load per month	31	30
Mean consultation time	15 min.	16 min.
CLINIC COSTS AND CHARACTERISTICS		
Mean clinic size *	77m ²	96m ²
Own an ultrasound device *	15%	34%
Own essential equipment (no. of vaginal specula)	3	3
Fixed facility costs/month *	LE 121	LE 206
PROVIDER CHARGES ²		
Family planning exam *	LE 6	LE 11
<u>IUD insertion (excluding the IUD device cost):</u>		
- CuT-380A *		
- Nova-T *	LE 15	LE 38
- Multi-load *	LE 14	LE 52
	LE 10	LE 51
IUD follow-up visit *	LE 6	LE 11
Antenatal care *	LE 12	LE 39

* Significant at least at the $p \leq 0.05$.

¹ All physicians in Egypt hold an MD degree; this refers to those also holding a Ph.D.

² Provider charges were reported as averages, though many also reported that different prices may be charged to different clients.

Physicians were also asked what factors they considered in setting their fees. Their practice costs were cited as a factor by only 14 percent of physician respondents. Other more common responses were:

- economic conditions (cited by 54% of the IUD practitioners);
- prices charged by their colleagues (38%);
- their own qualifications and/or experience (26%).

There were differences between the two physician market segments with respect to the factors most commonly mentioned. Low-end providers were more likely to mention economic conditions than high-end providers (60% vs. 41%). High-end providers were more likely to mention their own experience and/or qualifications (45% vs. 17%) and more likely to mention costs (24% vs. 8%). Prices charged by their competition were equally mentioned by high- and low-end providers.

Provider Markets by Geographic Region

As indicated in the previous two sections, it appears that the private sector physician market for family planning can be segmented according to pricing strategies. There are some significant differences according to geographic regions. To test the hypothesis that the observed geographic differences were in fact related to differences in the composition of the local physician markets, we cross-tabulated the geographic and pricing segment dimensions for some of the pricing parameters. These results are shown in Table 3.

Clearly, the physician market is segmented on these pricing and cost parameters within each geographic region as well. The proportions of high- and low-end physicians varied by region; in Cairo, half of all physicians surveyed were high-end physicians, compared to only about one-quarter in Gharbia and Menya. The predominance of low-end physicians in Menya is consistent with the fact that Menya is a less developed, lower-income area in Upper Egypt. Thus, examining means by region without controlling for regional differences in physician market composition would be insufficient. The relative dimension that segments the market, therefore, is pricing.

Table 3
Pricing Differences by Geographic Region and High- vs. Low-end
Physician Market Segments

Charge/Cost Category	CHARGES/COSTS (LE)					
	Cairo		Gharbia		Menya	
	Low-end	High-end	Low-end	High-end	Low-end	High-end
CuT-380 A IUD Insertion	15.2	46.4	14.9	34.3	14.1	26.1
Antenatal Care	25.2	62.1	20.1	88.0	7.2	12.4
Facility Costs	118	238	135	194	113	160
Percent of Physicians in Segment	50%	50%	77%	23%	76%	24%

V. Results from the Pharmacists Survey

In the pharmacists component of the study, interviews were conducted with 36 pharmacists. Due to limitations of sample size, we do not look at variations by governorate. Instead, we look at the urban pharmacy market as a whole.

Characteristics of the Pharmacies in the Sample

In 29 of the 36 pharmacies, the interview was conducted with an/the owner; these interviews were considered of higher reliability. Slightly fewer than half of the pharmacies interviewed (48%) employed one or more other pharmacists in addition to the owner. The typical pharmacy also employed one or more sales people in addition to the pharmacist(s) on duty, and 17 percent employed three or more sales staff. Twenty-one percent of the owners/partners were women; the questionnaire did not ask the sex of employed staff. Although the questionnaire did not ask who typically waited on customers, we can probably assume that when sales personnel were present (in addition to pharmacists), the majority of sales contacts were handled by the sales staff. Table 4 presents some of the characteristics of the pharmacies in the sample.

Pharmacies tended to be rather small in size; the median total area was 32 square meters. Virtually all (97%) had at least one contraceptive method in stock at the time of the interview, and 76 percent had both pills and condoms. Most of the pharmacies that stocked pills had a choice of brands on hand (median=3 brands). None of the pharmacies in the survey carried only low-price pills (Anovlar and/or Primovlar), and 34 percent carried only moderate and/or high-price brands.⁸ Moreover, the majority (59%) carried both high/medium and low-price brands.

⁸ The terms low-priced, mid-priced and high-priced are used to differentiate the pill brands according to price, although all of the pills are low in price, ranging from only .10 to .35 LE per cycle.

Table 4
Selected Characteristics of Pharmacies in the Sample

PHARMACY CHARACTERISTICS	MEDIAN	RANGE
OWNERSHIP		
% female	21%	na
Years since graduation	15	6-44
INFRASTRUCTURE		
Pharmacy size	32 m ²	25-81 m ²
Fixed facility costs/month	LE 235	LE 125-706
% with extra pharmacist*	48%	n/a
% with sales staff**	83%	n/a
CONTRACEPTIVE STOCK ON HAND		PERCENTAGE
Any method		97%
Any pills		93%
Low + Moderate/High-end pills		59%
Moderate/High end pills only		34%
Any condoms		79%
CSM brand only		55%
Other brand(s) only		24%
Pills + condoms		76%
Foam (Neosampon)		10%
IUD		45%
Low-end IUDs only		14%
Low + High-end IUDs		14%
High-end IUDs only		17%

* In addition to the owner(s)

**Non-pharmacist

Choice of condom brands was much more restricted; 55 percent of the pharmacies carried only the CSM brand (Tops) and 24 percent carried only non-CSM brand(s). Nearly half (45%) of the pharmacies in the survey carried IUDs, and were divided nearly equally among those that carried only the CSM brand (CuT), those that carried only high-price brands, and those that carried both the CSM and a high-price brand.

Given the variety of pill and IUD brands on the market, it was not surprising to find wide variability in stocks on hand, both by individual brands and across methods. Pill stocks ranged from 20 to 1,000 cycles on hand; condom stocks from five to 1,000 packages; and IUD stocks from one to 70 devices. Table 5 presents the median estimated monthly sales and the median amount of stock on hand by method and brand.

Respondents were asked the wholesale prices paid and the retail prices charged for each contraceptive brand they carried. Since both wholesale and retail prices are controlled in Egypt, we would expect reported prices to closely parallel official prices, either because of real compliance with the price controls or because pharmacists knew what prices were supposed to be. Table 6 compares official and reported prices. There is good agreement for commercial pill brands and reasonable agreement for Norminest; likewise, there is good agreement for the CuT-380A IUDs and reasonable agreement for Tops condoms and Multi-load IUDs.

Segmentation of the Pharmacy Market According to Pill Brands Sold

In the physician analysis, we were able to segment the provider market into high-end and low-end segments based on price charged for providing CSM IUDs. Pharmacists are constrained in the prices they charge for commodities by government price controls and do not have the option of charging for services. If we attempt to segment pharmacies based on the pill brands they carry, we found no exclusively low-end providers, and in fact, more pharmacies carried high-end pills (Triovlar) than carried low-end pills (79% vs. 59%, data not shown in tables).

Another way to segment the pharmacy market is to calculate the proportion of all pill sales accounted for by low-end pills. Roughly one third (36%) of the pharmacies surveyed sold no low-end pills at all, and only 25 percent reported that half or more of their pill sales came from low-end brands. We derived three market segments based on these proportions: high (no low-end brand sales; 36% of the sample), medium (less than 50% low-end brand sales; 39% of the sample), and low (50% or higher low-end sales; 25% of the sample). We then compared these segments with other variables collected in the survey.

There were no trends among the segments in terms of other contraceptive methods carried; low-, medium-, and high-end pharmacies were equally likely to carry IUDs and/or condoms. Similarly, there were no differences or trends among the segments in terms of average condom sales. However, clear differences emerged for total pill and IUD sales: high-end pharmacies reported lower total monthly pill sales and higher total monthly IUD sales than did medium/low-end pharmacies ($p < .002$ and $p < .058$, respectively). These results are presented in Table 7. Across pharmacies, there was a significant negative correlation between total monthly pill sales and total monthly IUD sales ($r = -.35$, $p < .001$). Pharmacies tended to specialize in one method or the other; our sample did not include pharmacies with high volume sales for both IUDs and pills.

Table 5
Reported Monthly Contraceptive Sales and Stock on Hand

Method/Brand		% Reporting Sales	Median Sales	% with Stock	Median Stock
PILLS					
	Anovlar	59	50 cycles	52	60 cycles
	Primovlar	52	50 cycles	52	50 cycles
	Norminest	48	30 cycles	41	50 cycles
	Microvlar/Nordette	86	100 cycles	79	120 cycles
	Triovlar	83	50 cycles	70	40 cycles
	Cycloprogynova	3	n/a	3	n/a
	All pills	97	250 cycles	93	300 cycles
CONDOMS					
	Tops	59	50 pkg.	55	60 pkg.
	All condoms	83	48 pkg.	79	50 pkg.
FOAM					
	Neosampoon	7	n/a	10	n/a
IUDS					
	Nova-T	17	2 pieces	20	2 pieces
	Multi-load	17	6 pieces	17	5 pieces
	CuT-380A/200	38	8 pieces	28	5 pieces
	Cu7	10	n/a	7	n/a
	All IUDs	48	16 pieces	45	11 pieces

Note: From January 1-December 11, 1993, TOPS condoms, CuT-380A IUDs and Norminest pills were not distributed by CSMP.

Table 6
 Official and Reported Contraceptive Prices
 (November - December 1993)

Method/Brand		Official Wholesale Price	Official Retail Price	Reported Wholesale Price (range)	Reported Retail Price (range)	Mode Retail Price
PILLS	Anovlar	.07	.10	.07-.09	.10	.10
	Primovlar	.07	.10	.07-.09	.10	.10
	Norminest	.32	.35	.30-.40	.35-.45	.35
	Microvlar	.32	.35	.30-.45*	.35-.55*	.40
	Nordette	.41	.45			
	Triovlar	.96	1.2	.86-1.20	.75-1.00	1.00
CONDOMS	Tops (6)	.53	.75	.60-.90	.75-1.00	1.00
IUDS	Nova-T	33	37.5	40-50	50-60	50/60
	Multi-load (250)	24	30	24-37*	30-46*	45
	Multi-load (375)	28	35			
	CuT-380A	1.6	2.0	1.6-2.55*	2-3*	2
	CuT-200	1.6	2.0			
	Cu7	13.5	15.0	4.2-12*	4.75-15*	n/a

* Survey does not allow us to disaggregate prices by product type.

Table 7
Mean Monthly Pill and IUD Sales by Market Segment

METHOD	MEDIUM/LOW -END PHARMACIES	HIGH-END PHARMACIES
PILLS	358	112
IUDS	9	30

We also compared pharmacy characteristics among the three market segments. There were no trends in terms of sex of owner, pharmacy size, number of salaried pharmacists, number of salaried sales staff, or total number of employees. Monthly facility costs tended to be higher among the high-end and medium-end pharmacies, but due to small sample size and wide variability, the differences were not statistically reliable.

VI. Discussion

Understanding private sector markets for family planning in Egypt is important for several reasons. The private sector is an important source of family planning service delivery, serving 90 percent of pills users (mostly through pharmacies) and almost half of all IUD users (mostly through private physicians). A continued strong partnership between the public and the private sectors will increase the likelihood and the pace of achieving national population policy goals and will strengthen the development of a sustainable national program. Sustainability has been defined as “the capacity of a national family planning program and the institutions within it to provide its current and potential clients with the information and services necessary to obtain the benefits of family planning on a continuing basis and without external aid.”⁹ Given that Egypt faces challenges related to increasing levels of usage and reducing reliance on donors, the ability of the private sector to play a full, participative role is critical.

In addition, knowledge about how the private sector works may help to ensure that public policy initiatives do not affect the private sector in unintended ways. Changes in the private sector have the potential to negatively impact the public sector as well. For example, policies that constrict the private sector’s ability to provide family planning services may result in a greater demand on public sector services, limiting the public sector’s ability to attract underserved groups. Understanding the private sector will provide a more solid basis for developing proactive public policies to support and safeguard private sector family planning services.

The Private Sector Family Planning Cost Study was intended as an initial step toward an understanding of how the private sector provider market for family planning services is structured. The data were used to investigate two dimensions along which the physician market might be segmented. Analysis of the geographic dimension was carried out to coincide with the way the

⁹ Levine, Ruth and Joanne Bennett. 1995. *Sustainability of Family Planning Programs and Organizations: Meeting Tomorrow's Challenges*. Policy Paper Series No. 6, p. 4. Washington, D.C: The Futures Group International.

sample was selected, according to three governorates. The analysis of the physician pricing dimension parallels an analysis of the 1992 EDHS,¹⁰ where the private sector market for IUDs among consumers was found to be segmented according to prices paid for IUDs. We looked at provider characteristics, practice patterns, clinic and cost characteristics, and provider charges to determine a set of characteristics that defines the market segments.

Given the very small sample size, the results of the pharmacy analyses should be taken as exploratory, rather than as definitive findings in and of themselves. Because of the sample size, no attempt was made to analyze geographic differences. However, the results do suggest that, like physicians, pharmacies can be segmented along pricing dimensions in terms of the contraceptive brands they stock and sell.

Pricing strategies more definitively define physician market segments than do geographic regions. The more important segmenting dimension was found to be physician pricing strategies. Some geographic differences in the parameters were also found, but on closer examination, geographic differences were found to be attributable to differences in composition of the provider segments within each region.

Differences on the pricing dimension, on the other hand, were consistent. Physicians in the high-end segment were more likely to be male and were more highly educated. Some of their costs also tended to be higher, as measured by facility size, operating costs, and presence of non-essential, high-technology equipment. Prices for a wide range of services (not just family planning services) were also consistently higher in this segment compared to the low-end segment.

Despite the apparent association between higher costs and higher prices charged for services, it is premature to conclude that costs were driving charges in this sample of physicians. Low-end physicians most often cited economic conditions as driving factors behind their pricing policies; costs were cited infrequently. High-end physicians, however, were much more likely to cite their qualifications and costs as driving forces behind pricing. Still, only 24 percent of high-end providers cited costs. It seems more reasonable to conclude that competitive market conditions are the main force determining prices, especially among low-end providers. In a competitive market, prices are set more according to what the market will bear; costs act more as a floor below which prices cannot fall, rather than as a price setting factor.

It is also worth noting that physicians who fall into the low-end market for family planning services also appear to fall into a low-end market for other health services. A similar pattern is true for physicians in the high-end family planning market. We conclude that physicians probably decide which consumer market (low-end or high-end) to target as they establish a private practice. Once this decision is made, subsequent decisions about pricing are based more on what the market will bear than on the costs of providing services. In fact, to some extent it may be true that market prices for services influence costs.

For instance, a low-end provider knows what essential equipment and supplies are necessary to provide a given service. S/he establishes a practice set up to meet consumers' needs, recognizing the constraint on costs that can be incurred given the price s/he knows his/her clients are willing

¹⁰ Ibid., cit 7.

to pay. High-end providers, on the other hand, understand that their clients are willing to pay more for the same service, but they also expect more amenities. In this case, the provider may invest in advanced training, higher technology equipment, and other non-essential items. Again, under this conception, market prices in a given segment set the ceiling for costs the provider is able to incur.

This is consistent with findings of other researchers. Griffin addresses the practice of price discrimination in the private sector, noting that “planners [cannot] assume that physicians do not serve poorer patients and charge them less. For example, a physician survey in the rural Philippines showed that many physicians could not respond to questions on prices without knowledge of the patient’s income.”¹¹

Pharmacies appear to segment themselves by whether or not they carry low-price pills in addition to medium- to high-price brands. The most striking finding was the degree to which the sampled pharmacies carried the most expensive pill brand. Unlike physicians, who segmented themselves by whether or not they offered high-end IUDs in addition to the low-end device, pharmacies segmented themselves by the extent to which they sold low-end pills in addition to high-end and medium-priced brands. While the low-end market segment represented two-thirds of the physician sample, it represented only 25 percent of the pharmacy sample. Furthermore, while physicians appeared to adjust their cost outlays to attract their market niche, there was little evidence of cost correlations with pharmacy market niche (with the possible exception of fixed facility costs).

An unexpected finding was the negative relationship between pharmacy pill sales and pharmacy IUD sales, which may be mediated by market segment. High-end pharmacies (those that sold only Triovlar brand pills) had lower total pill sales than the other two market segments but higher total IUD sales. This relationship warrants further investigation, and any explanation of the finding at this stage is speculative at best.

Given the extremely high density of pharmacies in Egypt, especially in urban areas, the effective catchment area of any establishment may be limited to those who live and work in the immediate neighborhood. We speculate that high-end pharmacies may be located primarily in the wealthiest neighborhoods. Analysis of the EDHS indicated that income was positively associated with IUD use and negatively associated with pill use. Therefore, if high-end pharmacies cater to wealthier women, their clientele is more likely to use IUDs (explaining higher IUD sales) and less likely to use pills (explaining lower pill sales).

Ending public subsidies may provoke a response in the low-end market for IUDs. By April 1995, current supplies of the subsidized, socially-marketed IUD are projected to run out. This change should not affect the high-end private sector market for family planning services. In the low-end market, however, physicians’ commodity acquisition costs are likely to increase somewhat. It was noted in this analysis that the difference between the physician’s acquisition cost and the price charged to the consumer is significantly less for low-end physicians than for high-end physicians.

¹¹ Griffin, Charles C. 1989. *Strengthening Health Services in Developing Countries through the Private Sector*. IFC Discussion Paper No.4, p. 16. Washington, DC: International Finance Corp.

Only part of this difference represents the profit margin, since some portion is attributable to other service-related costs.

As costs increase, physicians will face three options: they may hold the line on charges to consumers and accept a lower profit margin; they may increase charges to reflect the increased costs; or they may stop providing the service if the cost increase requires them to charge more than their clients are willing to pay. Assuming that current price control policies for the low-end CuT-380A IUD will be relaxed to allow product availability to continue in this market segment,¹² the last option is least likely to occur. However, given the relatively smaller difference between low-end physicians' IUD acquisition costs and their charges to consumers, we expect that these physicians will raise their charges to reflect the increased costs.

It is difficult to anticipate the impact of price increases in the low-end market for IUDs on pharmacy sales of pills and IUDs. If lower-income women are forced out of the IUD market, they may turn in greater numbers to the pill, in which case they would probably purchase medium to low-price brands. Since this pharmacy segment already has low IUD sales, its pill sales may increase but its IUD sales would be largely unaffected. To the extent that former/potential IUD users are unlikely to purchase high-end pills, neither the pill nor the IUD sales of the high-end pharmacy segment would be affected.

The 1992 EDHS analysis cited above indicates that some market disruption is likely to occur due to price increases. However, there are forces that should have a minimizing effect on consumer and provider market segments. First, consumers in this low-end market are willing to pay higher prices. Second, the apparent influence of competitive market conditions described in the last section should act as a brake on the amount of increased costs providers are able to pass on to consumers. In a competitive market, although there will be incentives for providers to try to pass cost increases on to consumers, other providers may be willing to accept lower profit margins in order to increase their market share. In such a case, most providers will offer similar prices or face potential loss of their own market share. Finally, public policies can be devised to help this low-end physician market segment to better market the IUD product to counteract the tendency toward lowered demand as price increases. Some of these policies are also described in the OPTIONS II paper on consumer market segments.¹³

In summary, the results of these analyses demonstrate that the IUD provider market can be segmented into two categories based on the prices it charges to clients. Two-thirds of the physicians surveyed could be classified as low-end providers. Their prices are probably more competitive and more constrained by their operating costs. They would probably be more affected by an increase in the commodity costs of CuT-380A IUDs and would be more likely to try to pass at least part, if not all, of any cost increase on to their clients. However, other analyses suggest that the estimated magnitude of this physician cost increase (LE 5-6) could be absorbed by the majority of their clientele.

¹² See OPTIONS II report (Ibid. 2) for a more complete discussion of the public policy options with regard to price controls for the CuT-380A IUD.

¹³ Ibid, cit. 7.

One-third of the physicians surveyed could be classified as high-end providers. They are more concentrated in higher-income areas and probably set their prices more by what the market will bear rather than by their operating costs. (In fact, their higher costs may reflect marketing strategies more than the essential costs of service delivery.) They are less likely to be substantially affected by moderate commodity cost increases.

The analysis results also suggest that pharmacies are segmented into two categories: those that carry high-end pills and those that carry low-end and medium-priced pills in addition to the more expensive brands. Pill sales in high-end pharmacies tend to be lower than those in other pharmacies, perhaps because wealthier clientele are more likely to use the IUD than pills. It is possible that an increase in the price of the low-end IUD, which will likely result when supplies of donated products are depleted, will cause potential low-end IUD users to use medium- or low-price pills instead. However, high-end pharmacies may have less need to pass increased IUD costs onto their customers, which may result in minimal disruption of the high-end IUD market. In the event high-end pharmacies do raise their IUD prices, their customers, who tend to be in higher income groups, will likely be able to afford the higher prices.

The findings of this survey have great relevance to the continued evolution of the family planning service delivery system in Egypt. The system has long been based on an effective partnership between the public and private sectors. The Egypt national family planning program faces a number of challenges, such as how to increase service utilization in Upper Egypt and how to maintain the public-private partnership given the evolution of such factors as the availability of donor-subsidized contraceptives. These findings point to ways physicians serving social marketing consumers could be encouraged to become more active. They also shed light on the private sector response to the end of donor contraceptives. The findings of this study, along with information on consumers, can be used by policymakers and program planners to assure the continuation of the strong public-private partnership and expansion of the program to achieve national goals.

Appendix I
Physician Interview Schedule
(English Translation)

PHYSICIAN'S INTERVIEW SCHEDULE

(Translation)

Serial No.:

Governorate:

District:

Month of Inter

Rural/Urban:

Sex:

I - PHYSICIAN INFORMATION

Name: _____

Address of Clinic: _____

Q1 - Specialization:

1. Ob/Gyn () 2. GP () 3. Other (Specify) _____ ()

Q2 - Last Post Graduate Degree:

1. Ph.D. () 2. Masters () 3. Diploma () 4. None ()

Q3 - Year of Birth: 19__

Q4 - Year of Graduation: 19__

Q5 - Membership in Scientific/Professional Organizations:

No. Int'l

No. Local

Q6 - Participation in the PPFPP: 1. Yes () 2. No ()

Q7 - Starting Year of Clinic: 19__

Q8 - Starting Year of Private Practice: 19__

Q9 - Availability of Service Records:

1. Available () 2. Not Available ()

Q10 - Clinic Working Hours: Daily ___ hrs
Days/Week: ___ days

Q11 - Months when no. of patients peak:

1	2	3	4	5	6	
7	8	9	10	11	12	<input type="checkbox"/>

Q12 - Months when no. of patients bottom out:

1	2	3	4	5	6	
7	8	9	10	11	12	1. Peak 2. Bottom

3. No Mention

Q13 - Number of patients/week or patients/month: _____

per month

Q14 - Number of patients who are MWRRA per week or month: ____ per month

Q15 - Medical services offered to women of reproductive age in clinic or in hospital:

- | | | |
|------------------------------------|---------------------------------|--------------|
| 1. Antenatal Care & Obstetrics () | 2. Gynecological Treatment () | |
| 3. Gynecological Surgery () | 4. Other Medical Services () | |
| 5. Family Planning () | 6. Other Services (Specify) () | 0. No 1. Yes |

Q16 - If the Doctor does not provide family planning services, he/she is asked for the reasons why and the interview is terminated (after answering Q63 & Q64).

Reason: _____

Q17 - Number of women who receive family planning services per week or month: ____ per month

Q18 - Broken down by method:

- OC () IUD () Injections ()
Foam () Other method (Specify) _____

Q19 - Broken down by new/follow-up patients:

- A - Number new patients ()
B - Number of paying follow-up patients ()
C - Number of non-paying follow-up patients ()

II - INFORMATION ON CLINIC

Q20 - Total Size: ____ m²

Q21 - Size of examination room(s): ____ m²

Q22 - Number of rooms counting reception: ____

Q23 - Clinic Premises Conditions:

1. Very Good () 2. Good () 3. Average () 4. Requires Renovation ()

Q24 - Condition of Building:

1. Very Good () 2. Good () 3. Average () 4. Requires Renovation ()

Q25 - A. Key money/purchase cost of clinic: ____ L.E.

B. Year rented/purchased: 19__

Q26 - Monthly rent: ____ L.E.

Q27 - Other monthly costs (maintenance, water, porter, etc.): ____ L.E.

Q28 - Monthly cost of utilities (telephone, electricity, water, gas, etc.): ____ L.E.

Q29 - Number of assistants and monthly costs:

Number	Monthly Cost (L.E.)				
1. () Physician	_____				
2. () Nurse	_____				
3. () Accountant	_____				
4. () Auxiliary	_____				
5. () Janitor	_____				
6. () Other (Specify) _____	_____				
() Total	_____				

III - INFORMATION ON EQUIPMENT/ITEMS USED FOR FP

Q30 - Equipment and Implements Used

ITEM	N	Purchase Cost	Purchase Year	Annual Cost (Op. & Main.)	FP Use Only*
Equipment					
1. Ultra Sound					
2. Gyn. Exam. Table					
3. Electric Cautery App.					
4. Autoclave					
5. Instrument Sterilizer					
6. Scales					
7. Other					
Implements					
1. Stethoscope					
2. Blood Pressure App.					
3. Vaginal Specula					
4. Uterine Probe					
5. Voisellum Forceps					
6. Sterilization Drums					
7. Instrument Tray					
8. Kidney Shaped Trays					
9. Other					

(* FP Only - 1. Yes 2. No)

Q31 - Consumerable Items

ITEM	Amount Used/Month	Unit	Price	Source	Inventory Supply
1. Cotton		_____			
2. Gauze		_____			
3. Disinfectant		_____			
4. Surgical Gloves		_____			
5. Plastic Syringes		_____			
6. Slides		_____			
7. Other		_____			

Q32 - Contraceptive Methods Available in Clinic:

Type of Method	Purchase Price	Source	Amount Sold/Month	Inventory Supply
IUD				

OC Pills				

Injection				

Foam				

Q33 - Are you given any reductions, free samples, etc. for any contraceptive methods?

1. Yes () 2. No ()

If yes, contraceptive method and type of reduction: _____

IV - INFORMATION ABOUT FP SERVICES PROVIDED

Q34 - A. Average physician time in check-up & determination of method: _____ min

B. Average amount of time spent by nurse/auxiliary: _____ min

- Q35 - A. Average amount of time spent by physician in FP counselling: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q36 - A. Average amount of time spent by physician in IUD insertion: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q37 - A. Average physician time in follow-up of IUD: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q38 - A. Average amount of time spent by physician to explain OC pill use: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q39 - A. Average amount of time spent by physician in giving injections: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q41 - A. Average physician time in explaining use of foam tablets: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q42 - A. Average amount of time spent by physician to explain condom use: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q43 - A. Average physician time in explaining diaphragm/creams use: ___ min
 B. Average amount of time spent by nurse/auxiliary: ___ min
- Q44 - Percentage physician time in FP services relative to the total clinic time: ___ %

V - INFORMATION ABOUT OTHER EXPENSES

Q45 - Cost of training for FP services to physician:

Course	Duration	Sponsoring Agency	Cost to Physician
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Q46 - Annual cost of marketing activities: ___ LE

Q47 - Transfers of FP clients:

A. From: _____

Average No. of Cases/Month: ()

B. To: _____

Average No. of Cases/Month: ()

VI - SERVICE PRICES

Q48 - Cost of check-up to determine contraceptive method: _____ LE

Q49 - Cost of treatment (if required) before IUD insertion: _____ LE

Q50 - Cost of IUD insertion: 1. Excluding cost of IUD _____ LE

2. Including cost of IUD

Brand _____ LE

Brand _____ LE

Brand _____ LE

Q51 - Cost of follow-up check-up for IUD: _____ LE

Q52 - Cost of IUD removal: _____ LE

Q53 - Duration of IUD use: Brand _____ LE

Brand _____ LE

Q54 - Cost of check-up for follow-up of pill use: _____ LE

Q55 - Cost of contraceptive injections: _____ LE

Q56 - Cost of antenatal care: _____ LE

Q57 - Cost of delivery: 1. at home _____ LE

2. at clinic _____ LE

3. at hospital _____ LE

Q58 - A. Average number of cases without payment per month: _____ CASES

B. Percentage for which physician receives gifts: _____ %

Q59 - Reasons for not receiving payment: _____



Q60 - A. Monthly average number of cases which pay reduced fees: _____ ^{CASES}



B. Percentage reduction: _____ %

C. Reasons for reduction: _____



Q61 - Basis for setting fees:



Q62 - Reasons for increasing fees and percentage increase:



Q63 - Average total income from clinic: per day: _____ LE
or per month: _____ LE



Q64 - Average monthly income of physician (from all sources):



- 1. Less than LE 500 ()
- 2. LE 500 - ()
- 3. LE 1,000 - ()
- 4. LE 2,000 - ()
- 5. LE 3,000 - ()
- 6. LE 4,000 - ()
- 7. LE 5,000 - ()
- 8. LE 7,000 - ()
- 9. LE 10,000 or more ()

Appendix II
Pharmacist Interview Schedule
(English Translation)

PHARMACIST INTERVIEW SCHEDULE (Translation)

Serial No.:

Governorate:

District:

Month of Interview:

I - PHARMACIST INFORMATION

Name of Pharmacy: _____

Rural/Urban:

Address: _____

Q1 - Name of Person Responsible: _____
 1. Owner () 2. Partner () 3. Salaried Employee ()

Q2 - Sex: 1. Male () 2. Female ()

Q3 - Specialization: 1. Pharmacy () 2. Other (specify) _____ ()

Q4 - Year of Birth: 19__

Q5 - Year of Graduation: 19__

Q6 - Membership in Scientific/Professional Organizations:

No. Int'l

No. Local

II - PHARMACY INFORMATION

Q7 - Year pharmacy started operations: 19__

Q8 - A. Number of working hours/day: (____)
 B. Number of working days/week: (____)

Q9 - Size of Pharmacy: ____ m²

Q10 - Number of rooms: (____)

Q11 - Pharmacy Premises Conditions:
 1. Very Good () 2. Good () 3. Average () 4. Requires Renovation ()

Q12 - Condition of Building:
 1. Very Good () 2. Good () 3. Average () 4. Requires Renovation ()

Q13 - A. Key money/purchase cost of clinic: ____ L.E.
 B. Year rented/purchased: 19__

(‘000)

Q14 - Monthly rent: ____ L.E.

411

Q28 - What is the proportion of time spent by workers in the pharmacy on FP services relative to the total time (includes ordering supplies, arranging on shelves, sales, counselling, etc.)? _____ %

Q29 - Marketing and promotional costs for pharmacy annually: _____ LE

Q30 - Proportion of marketing and promotional costs for FP services relative to the total costs in this category: _____ %

Q31 - Annual cost of accountant: _____ LE

Q32 - How often do you make contraceptive orders? every _____ days

Q33 - Did you receive any training or attend any seminars on FP?

1. Yes () 2. No ()

Q34 - Average monthly income of pharmacist (from all sources):

1. Less than LE 500 ()
2. LE 500 - ()
3. LE 1,000 - ()
4. LE 2,000 - ()
5. LE 3,000 - ()
6. LE 4,000 - ()
7. LE 5,000 - ()
8. LE 7,000 - ()
9. LE 10,000 or more ()

97