PROXIMATE DETERMINANTS AND THEIR INFLUENCES ON FERTILITY REDUCTION IN VIETNAM

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INTRODUCTION

The Socialist Republic of Vietnam is located in Southeast Asia bordering the Peoples Republic of China to the north, the Peoples Democratic Republic of Laos and the Kingdom of Cambodia to the west, and the Pacific Ocean to the east and south. Vietnam has a land area of 330,000 square kilometers and a sea area of one million square kilometers. According to the topography, the country is divided into seven regions, namely Northern Upland, Red River Delta, North Central, Central Coast, Central Highland, Southeast, and Mekong River Delta. These geographical regions differ a lot in terms of natural conditions, i.e.: land, weather, climate as well as natural resources and topography.

In 1986, Vietnam adopted a renovation plan and since then the country has been determined to achieve economic modernization through establishment of competitive industries. Vietnam is one of the best-performing developing economies in the world. From 1991 to 1999, Vietnam's GDP nearly tripled; the average annual GDP growth rate was 8.2 percent. Vietnam is predominantly an agrarian society with 75 percent of the population living in rural areas. The contribution of the agricultural sector to the gross domestic product declined from 38.7 percent in 1989 to 23 percent in 1999. During the same period, the share of the manufacturing sector increased from 22.3 percent to 38.5 percent and the contribution of other sectors was more or less same with a slight decrease of 0.1 percent (GSO, 2000).

The latest census (1999) results revealed that, the population of Vietnam stood at just over 76 million, making it the thirteenth largest country in the world. From 1979 to 1999, nearly 24 million people were added to the country's population. Despite the addition of over one million people per year, the rate of growth of Vietnam's population has been slowing down dramatically. By the end of the 1990s, the growth rate declined to its lowest point since reunification of the north and south Vietnam in 1975. From 1979 to 1989, the country's population increased by 22.7 percent, but during 1989 to 1999 the growth rate declined to 18.5

percent. This reduction may be due to the rapidly growing desire of many couples to limit their family size to two children. Population density has always been a concern in Vietnam. It has increased from 196 persons per square kilometer to 232 persons per square kilometer during 1989 - 1999 census. The population density in Vietnam ranks third in Southeast Asia, behind Singapore and the Philippines.

It is now widely accepted that urbanization is an inevitable outcome of economic growth and that population movements are major features of the process of growth. The percentage of the total population living in urban areas increased from 19.7 percent in 1989 to 23.5 percent in 1999. This proportion is low compared to most other countries in the region, and only slightly higher than that of neighbouring Laos and Cambodia (CCSC, 2000).

According to the 1999 Census, Vietnam has 54 different ethnic groups. The Vietnamese constitute the majority of the population (86 percent). There are also people of various other groups such as the Tho, Hoa and Tai, as well as Chinese descendants. The main religion is Buddhist. The literacy rate is high among the population age 15 and above. It was 90.3 percent for the whole country and 93.9 percent for males and 86.9 percent for females in 2002.

A key indicator of overall health conditions, life expectancy at birth has now risen to a high level in Vietnam. It has increased for both males and females (for males from 63.7 years in 1979 to 70 years in 2000, for females from 67.9 years to 73 years during 1979-2002). During the 1990s, the level of infant mortality showed a consistent decline from 44.5 deaths per 1,000 births in 1989 to 36.7 in 1999.

In Vietnam, the child dependency has declined steadily since 1979, and the probable reason may be the reduction in the birth rate. The number of elderly per 100 people ages 15-59 (the old age dependency ratio) has remained stable since 1979, but it has been projected to increase from 14 in 1999 to almost 17 by 2024.

Realizing the pressure of over population in Vietnam, the Vietnamese government stepped up its activities from the end of the 1980s to reduce the rapid population growth in order to bring an improvement of socioeconomic conditions in the country. This resulted in a sharp decline in fertility in Vietnam from 3.8 in 1989 (census) to 2.3 1999 (census). This achievement leads to Vietnam has received a Golden Medal for the 1999 United Nations Population Award. It also

has surprised many researchers, as this decline was possible of one of the poorest countries of the world and in spite of the cutbacks in the health expenditure by the government (World Bank, 1992; Haughton, 1997).

An important factor behind this decline may be related to the great efforts undertaken by the Vietnam government to address the issue of high fertility and its related causes and consequences. In January 1993, the Communist Party Central Committee for the first time approved a resolution on population and family planning. In a strong statement, they identified excessive population growth as contributing to a wide range of social, economic, and ecological problems. The resolution proposed the objective of "applying small-sized family," and recommended, "Each family should have one or two children" in order to lower fertility and stabilize population.

Although Vietnam total fertility rates are low, it still appears to be too high relative to the remarkably elevated rates of contraceptive use and pregnancy termination. Allman *et al.* (1991) assert that "the fairly high TFR – around four children per woman in the lates 1980s- seem out of line with the contraceptive prevalence rate of over 50 percent". Goodkind (1994) notes, "Vietnam is also unusual for having such high abortion rates at levels of fertility that are still high" (in the early 1990s). In order to determine the truth, it is first necessary to ascertain the contribution to fertility of other factors, including the pattern of marriage; contraceptive use; induced abortion and the length of postpartum infecundability. The Bongaarts model is well suited to this task using Vietnam Demographic and Health Survey (VNDHS) 1997 and 2002.

REVIEW OF LITERATURE

Every country has a desire to balance its population growth according to its socio-economic condition. Three major components affect population growth are fertility, mortality and migration and among these components, fertility plays the most important role. A number of factors such as social, cultural, economic, health and other environmental factors directly determine fertility.

Davis and Blake (1956) first introduced the term intermediate variables of fertility to describe the biological and behavioral mechanisms through which social, economic and cultural conditions can affect fertility. Bongaarts (1978) later developed a model that provides estimates of the relative effects of the intermediate variables on fertility. Bongaarts and Potter (1983)

identified four key variables or proximate determinants that account for most cross-country variation in fertility levels: they are marriage, contraceptive use, induced abortion, and postpartum infecundability.

Bulatao and Ronald D. Lee (1984) studied the determinants of fertility and attempts to extract conclusions that are relevant for fertility reduction policies in developing countries. They suggests that socioeconomic development has a decisive effect in lowering fertility in the long run but in the short run, and for specific households, the effect is not as conclusive. The study suggests that education, especially for women, fairly reliably reduces fertility, though its effect may take years to appear. Improved health and lower mortality also contribute to lower fertility, through both biological and behavioral channels. The effect of female employment, in contrast, is uncertain and undependable. Other determinants, i.e., fertility behaviors such as later marriage, longer breastfeeding, and more frequent fertility regulation through contraception or abortion, are explored.

A study in 1985 exploring the utility of studying the proximate determinants of fertility for sub national variations favors some modifications in proximate determinant framework and recommended its application in different background characteristics (Singh, 1985). The analysis has been carried out with three main background variables; education, place of residence in 29 countries comprising 5 from Africa, 12 from Asia and 12 from Latin America. The study depicted that despite the variety of forms of marriage and stages of demographic transition, the effect of urbanity on non-marriage index was found uniform but this was not so in the case of index of contraception. The influence of residence on the index of contraception was minor in the African countries, moderate in Asia and pronounced in American countries.

A study done in Thailand in a broader context of rapid fertility decline in a third- world setting reveals the use of four proximate determinants borrowed from the proximate determinant framework. Among other determinants, primary sterility and coital frequency have not been observed to influence the ongoing fertility decline (Knodel *et.al*, 1979, 1982). The conclusion arrived at by this study clearly mentions that, "Thailand's reproductive revolution is largely the product of increasing deliberate marital-fertility control. In brief, Thailand has already entered into the most advanced stage of fertility transition" (Knodel *et al*, 1987).

Hollerbach (*et al*, 1983) found that the effect of contraception is most significant, followed by the effect of marriage pattern on fertility regulation in one of studies in Cuba. He again

concluded that fertility regulation contribution of these two factors is greater than the effect of either abortion or post-partum infecundability. Another study of proximate determinants of fertility in India by Chander Sekhar (2004) revealed that fertility reduction is primarily a phenomenon of an increase in contraceptive use and longer duration of insusceptible period prevailing in the society.

Bongaarts framework was carried out in Vietnam to study unexpected rapid fertility decline (Haughton, 1997). During 1989 to 1993 total fertility rate in Vietnam appears to have fallen from 3.8 to 3.2. But there remains a demographic puzzle which has noted by several authors. (Phai *et.al*., 1995). He concluded an application of the Bongaarts model shows that high rates of contraceptive use and of induced abortion are more than enough to explains rapid fall in total fertility.

OBJECTIVES

Keeping the above background in view, this paper tries to study the factors that have been responsible for considering the steep declines recorded over the previous five-year period and the already low level of fertility in Vietnam. To be specific, the objectives of the present study are:

- To understand levels and trends of fertility and its proximate determinants in Vietnam during 1997 and 2002.
- To know the family planning inhibiting influence of principal proximate determinants.

DATA

The study is based on the analysis of data obtained from the 1997 and 2002 VNDHS. The 1997 and 2002 Vietnam Demographic and Health Survey (VNDHS 1997 and VNDHS 2002) was the second and third DHS survey to be conducted in Vietnam. The 1997 VNDHS-II is a nationally representative survey of 5,664 ever-married women age 15-49 selected from 205 sampling clusters throughout Vietnam. The 2002 VNDHS-III is a nationally representative sample survey of 5,665 ever-married women age 15-49 selected from 205 sample points (clusters) throughout Vietnam.

METHODOLOGY

The Bongaarts model is used here to determine the contribution to fertility of proportion married, contraceptive use, induced abortion and postpartum infecundability (Bongaarts 1978; Bongaarts and Potter 1983). It is also found that these four factors explain about 96 percent of

fertility changes in some populations. The fertility-inhibiting effects of the most important determinants are quantified in Bongaarts model by four indices, each of which assuming a value between 0 and 1. When the index is close to 1, the proximate determinant will have a negligible inhibiting effect on fertility, whereas when it takes a value of 0, it will have a large inhibiting effect.

Bongaarts (1982) symbolized these 4 indices as under:

Cm is the index of proportion married
Cc is the index of contraception
Ca is the index of induced abortion
Ci is the index of postpartum infecundability

The main equation of the model is:

$$TFR = Cm * Cc * Ca * Ci * TF$$

TFR: Total Fertility Rate

TF: Total Fecundity

Regarding the estimation of the 4 indices, Bongaarts proposed the following treatments:

1. Index of Marriage:

$Cm = \sum\{m(a)*g(a)\} / \sum g(a)$

m(a): Age specific proportions currently married

g(a): Age specific marital fertility rate

2. Index of Contraceptive Use:

$Cc = 1 - 1.08 * u * e$

u: Proportion currently using contraception among married women of reproductive age

e: Average use effectiveness of contraception

1.08: Sterility correction factor

In this study, the value for e is taken as 1.00 for sterilization; 0.95 for IUD and injection; 0.7 for condom and 0.5 for other methods.

3. Index of induced abortion

$$Ca = \frac{TFR}{TFR + 0.4*(1+u)*TA}$$

TA is total abortion rate, describing the number of induced abortions per woman at the end of the reproductive period.

4. Index of Postpartum Infecundability

$Ci = 20 / (18.5 + i)$

i: Average duration (in months) of postpartum infecundability caused by breastfeeding or postpartum abstinence

Having obtained the indices, it is possible to calculate the various levels of fertility by means of multiplication with the corresponding indices. The model relating fertility to the intermediate variables takes the following form:

Total Fecundity (TF) = 15.3 **(TF is rather stable at between 13 and 17 births per woman, with the standard value being 15.3. For the present analysis TF is 15.3).**

Total Natural Marital Fertility (TN) = TF*Ci

Total Marital Fertility (TM) = TN* Cc*Ca

Total Fertility Rate (TFR) = TM* Cm

- **Decomposition of a change in fertility between two points in time:**

Any change in a population's fertility level can be the result of a change in one or more of the proximate determinants. Thus, it is possible to say that the decomposition of a trend in the TFR is based on the following equation, which links the TFR to the fertility-inhibiting effects of the four principal proximate variables:

TFR= Cm*Cc*Ca*Ci*TF

Let 2002 and 1997 be the first and last years of the time period for which decomposition is done. Then, with a change in the TFR from TFR_{1997} in the year 1997 to TFR_{2002} in the year 2002 and with simultaneous changes in the indexes from Cm_{1997} to $Cm_{2002,}$ from Cc_{1997} to $Cc_{2002,}$ from Ca_{1997} to $Ca_{2002,}$ from Ci_{1997} to Ci_{2002} and from TF_{1997} to TF_{2002} between the years 1997 and 2002, the ratio TFR_{2002}/TFR_{1997} can be expressed as,

$$\mathbf{TFR_{2002}/TFR_{1997} = Cm_{2002}/Cm_{1997} * Cc_{2002}/Cc_{1997} * Ca_{2002}/Ca_{1997} * Ci_{2002}/Ci_{1997} * TF_{2002}/TF_{1997}}$$

Proportional change in TFR between the years 1997 and 2002

$P_f = (TFR_{2002}/TFR_{1997}) - 1$

Proportional change in TFR due to a change in the index of marriage between the years 1997 and 2002

$P_m = (Cm_{2002}/Cm_{1997}) - 1$

Proportional change in TFR due to a change in the index of contraception between the years 1997 and 2002

$P_c = (Cc_{2002}/Cc_{1997}) - 1$

Proportional change in TFR due to a change in the index of induced abortion between the years 1997 and 2002

$P_a = (Ca_{2002}/Ca_{1997}) - 1$

Proportional change in TFR due to a change in the index of postpartum infecundability between the years 1997 and 2002

$$P_i = (Ci_{2002}/Ci_{1997}) - 1$$

Proportional change in TFR due to a change in the remaining proximate variables- natural infecundability, spontaneous intrauterine mortality, and permanent sterility- between the years 1997 and 2002. *(It is not included in the current study).*

$$P_r = (TF_{2002}/TF_{1997}) - 1$$

Hence,

$$P_f = P_m + P_c + P_a + P_i + P_r + I$$

Where, I is the interaction factor

Therefore, the proportional change in TFR between 1997 and 2002 equal to the sum of the proportional fertility changes due to the different proximate determinants plus an interaction term.

FINDINGS AND DISCUSSION

1. Level and trends of fertility and its proximate determinants in Vietnam.

Total fertility rates for Vietnam 1997 and 2002 are shown in Table 1. At the national level, the TFR has gone down from 2.7 to 1.9 children per woman, which indicates that on average, a Vietnamese woman will give birth to fewer than two children during her lifetime. In rural areas also the TFR declined around one child per women during the study period. Similarly, in urban areas also a slight decline (0.4) has observed during the same period.

Overall, fertility is lower in urban areas (1.84 in 1997 and 1.40 in 2002) than in rural areas (2.90 in 1997 and 1.99 in 2002). The highest fertility was observed in the Central Highlands. The lowest fertility levels were observed in the Southeast region which declined from 1.87 in 1997 to 1.51 in 2002. Fertility differentials by education are substantial and are inversely related to educational attainment. Women who completed higher secondary school have the lowest fertility while those with no education have the highest fertility, representing 1.97 children per woman in 1997 and 1.39 children per woman in 2002. Especially, during 1997-2002, reduction in fertility is highest among women with no education (1.21 births per women).

Between the 1997 and 2002 surveys, the TFR declined by 0.8 children or 30 percent in a period of five and a half years[1]. This is a remarkable decline, especially considering the steep decline recorded for the 1992-96 periods and the already low level of fertility in Vietnam

Table 1. Trends in Total Fertility Rates in VNDHS 1997 and 2002 by background characteristics.

Background characteristics	VNDHS 1997	VNDHS 2002	Declines
Residence			
Urban	1.84	1.40	0.44
Rural	2.90	1.99	0.91
Region			
Northern Uplands	3.14	2.01	1.13
Red River Delta	2.28	1.65	0.63
North Central	3.26	1.92	1.34
Central Coast	3.39	2.37	1.02
Central Highlands	4.28	2.90	1.38
Southeast	1.87	1.51	0.36
Mekong River Delta	2.31	1.69	0.62
Education			
No education	4.03	2.82	1.21
Some primary	3.13	1.98	1.15
Completed primary	2.79	2.13	0.66
Completed lower secondary	2.53	1.71	0.82
Completed higher secondary+	1.91	1.39	0.52
Total	2.67	1.87	0.80

The curve of age specific fertility rates (ASFRs) was shaped as a triangle with peak at age group 20-24 (see Figure 1 and 2). After the age of 25, the curve in VNDHS 2002 skewed to the right more sharply than that of the curve in VNDHS 1997. This fertility pattern is categorized as the early-childbearing model. It is likely that the high age at marriage has made fertility levels lower at young ages and, family planning has contributed substantially to rapid declines in fertility at old ages. It should be emphasized that fertility reduction mainly occurred among women aged 25 and over who have contributed significantly to fertility reduction in Viet Nam. This pattern is common and plausible for populations experiencing a fertility decline. It occurs during the fertility transition when older women, who are more likely to have reached their desired family size, make a greater effort to limit their births than do younger women, who are likely to have not yet achieved their desired family size.

[1] The TFR for the VNDHS 1997 was calculated for the calendar period 1992-96, with a mid-point of mid-1994. For the VNDHS 2002, fertility rates refer to the 5-year period prior to the survey that corresponds roughly to mid-1998 to mid-2002, with a mid-point of early 2000.

There is a difference in fertility pattern by urban and rural. ASFRs are lower in urban areas than in rural areas. Urban is characterized by late fertility. For this area, the highest fertility level belongs to age group 25-29. At two adjacent age groups, fertility level is similar. On the contrary, rural area still is characterized by early fertility with the highest fertility level that belongs to age group 20-24.

Figure 1. Age-specific fertility rates, VNDHS 1997

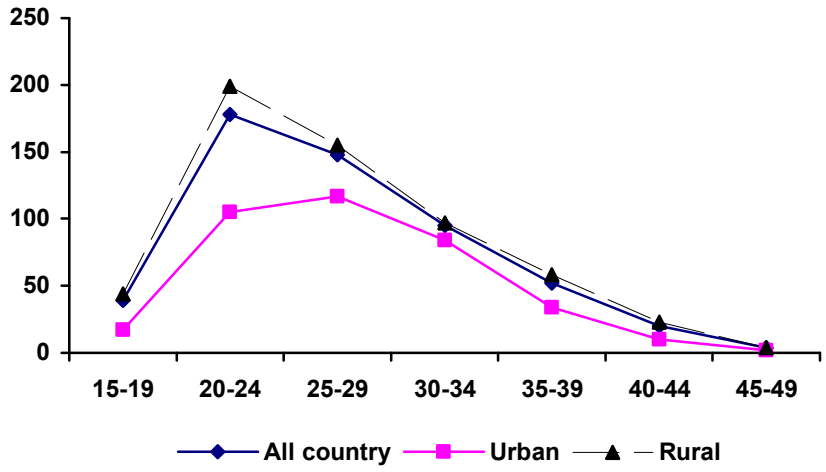
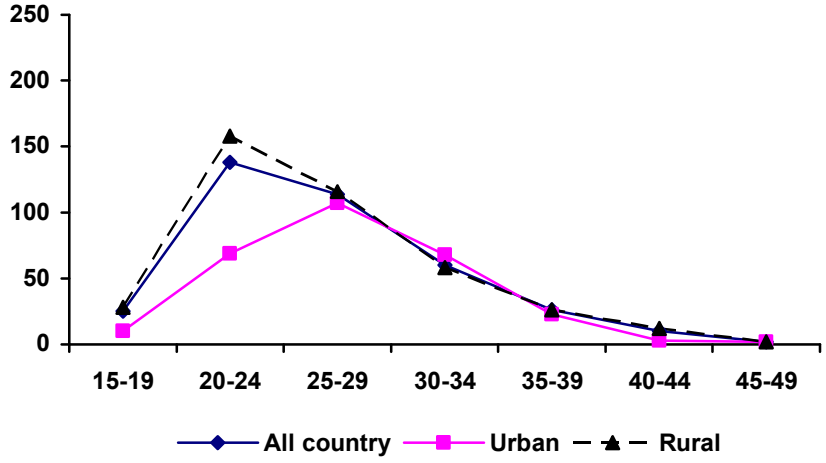


Figure 2. Age-specific fertility rates, VNDHS 2002



Age at marriage

There has been a transition from traditional to modern patterns of marriage in Vietnam. A major characteristic of this process is the trend towards later marriage and higher rates of celibacy. In the traditional Vietnamese family prior to the twentieth century, marriage was an

especially important matter, not only because of its relationship to the lifetime happiness of the couple, but also because of its effect on the extended family and the kin network (Tran, 1991). Expansion of work opportunities outside of agriculture, especially for women, has substantially increased the individual's economic independence from parents, thereby helping young couples to determine their own marriage mate. The difficulties associated with job opportunities and living conditions in recent years have also contributed to delays in marriage for many people living in urban areas and may widen the discrepancy of age at first marriage between people living in urban areas and rural areas. Today, the youth enjoy greater self-determination with regard to marriage. Although parents in rural areas still have some influence in many instances on the marriage decisions of their children, the strength of tradition has greatly diminished.

In Vietnam, marriage generally indicates the point at which a woman begins her childbearing. Early age at marriage often results in early age at childbearing and high fertility since women who marry early will have, on average, longer exposure to the risk of pregnancy. Very few children are born outside marriage in Vietnam. Unlike the pattern observed in many countries, the median age at first marriage in Vietnam has not increased over the last 25 years. Instead, the median age has been stable at about 21 years during 1997 – 2002 (NCPFP, 2003).

Table 2. Proportion of currently married women and age specific marital fertility rates (ASMFR) by residence in Vietnam, 1997 and 2002.

Age group	VNDHS 1997						VNDHS 2002					
	Proportion married			ASMFR			Proportion married			ASMFR		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
15-19	0.028	0.088	0.077	101.95	134.79	131.27	0.021	0.046	0.041	115.25	124.38	123.53
20-24	0.329	0.572	0.520	198.08	264.72	253.40	0.267	0.519	0.464	140.54	213.3	201.60
25-29	0.635	0.805	0.767	152.29	167.8	165.01	0.654	0.841	0.800	136.4	127.05	128.94
30-34	0.773	0.874	0.858	87.9	101.68	99.10	0.763	0.920	0.888	77.22	60.42	63.69
35-39	0.822	0.869	0.859	36.37	57.46	52.76	0.879	0.898	0.897	25.63	28.04	27.54
40-44	0.776	0.836	0.822	9.55	22.59	19.54	0.841	0.863	0.857	2.89	12.32	10.45
45-49	0.730	0.793	0.778	0	3.73	2.96	0.783	0.832	0.820	2.31	2.14	1.64

The data in table 2 indicate that proportion of currently married females highest in age group 35-39. During 1997-2002, there has been a very slight increase in the overall proportion of women who are currently married, from 63 to 64 percent. Nevertheless, although the overall proportion of women who are currently married has increased very slightly between the two surveys, the proportion of women age 15-24 who is currently married has declined. For example, 52 percent of women age 20-24 were married in 1997, compared with 46 percent in

2002. Since the age-specific fertility rates are highest at ages 20-24 (see Figure 1 and 2), reductions in the proportions of women married in that age group would be expected to have a larger effect on the overall level of fertility. The level of age specific marital fertility rates is at peak level in the age group 20-24 and afterwards it is declining at older ages. In all age groups ASMFR are quite high for the year 1997 than 2002.

Contraceptive use

The level of current use of contraception is one of the prominent indicators used to assess the success of family planning programs. It is also a widely used measure in the analysis of fertility determinants. Data on current use of contraception is presented in Table 3 for currently married women age 15-49 by residence. There is an increase in percent of currently married women are using family planning from VNDHS 1997 (75 percent) to VNDHS 2002 (79 percent). Use of modern methods (57 percent) is much higher than use of traditional methods (22 percent).

The most commonly used method in Vietnam is IUD, which is being used by 39 and 38 percent of currently married women in 1997 and 2002 respectively; followed by withdrawal (11.9 percent in 1997 and 14 percent in 2002). Despite its predominance as the leading method in Vietnam, use of the IUD has actually declined slightly (around one percent) during 1997-2002. Use of the pill has increased slightly (from 4 to 6 percent). Unlike other countries, it is found that use of traditional and pill has increased while female sterilizations and condom users have gone down in Vietnam.

The urban-rural differential in the use of contraception among currently married women is not significant in whole country (VNDHS 1997 is five percent and VNDHS 2002 is one percent). There is negligible difference in contraceptive use among currently married woman between 1997-2002 according to residence (0.2 percent in urban and one percent in rural areas).

Table 3. Percent distribution of currently married women by contraceptive method by residence .

Contraceptive method	VNDHS 1997			VNDHS 2002		
	Urban	Rural	Total	Urban	Rural	Total
Any method	**79.3**	**74.4**	**75.3**	**79.1**	**78.4**	**78.5**
Any modern method	**54.0**	**56.2**	**55.8**	**54.9**	**57.1**	**56.7**
Pill	4.1	4.4	4.3	6.9	6.2	6.3
IUD	32.5	39.9	38.5	30.3	39.5	37.7
Injection	0.0	0.2	5.9	0.2	0.5	0.4

Condom	11.8	4.5	0.2	12.6	4.2	5.8
Female sterilization	5.3	6.6	6.3	4.8	6.2	5.9
Male sterilization	0.3	0.6	0.5	0.2	0.6	0.5
Any traditional method	**24.9**	**17.9**	**19.2**	**24.1**	**21.2**	**21.8**
Periodic abstinence	14.2	5.7	7.3	11.8	6.5	7.5
Withdrawal	10.7	12.2	11.9	12.3	14.8	14.3
Other methods	0.4	0.3	0.3	0.1	0.0	0.1
Not currently using	20.7	25.6	24.7	20.9	21.6	21.5

Postpartum Insusceptibility

Postpartum amenorrhea is the interval between the birth of a child and the resumption of menstruation. It is the period following childbirth during which a woman becomes temporarily and involuntarily infecund. Postpartum protection from conception can be prolonged by the intensity and length of breastfeeding. Postpartum abstinence refers to the period of voluntary sexual inactivity after childbirth. A woman is considered insusceptible if she is not exposed to the risk of pregnancy, either because she is amenorric or because she is abstaining from sexual intercourse following a birth. Information was obtained about the duration of amenorrhea and the duration of sexual abstinence following childbirth for births in the three years preceding the survey. (NCPFP, 2003).

According to VNDHS 1997 and 2002, the rural-urban differentials in the median duration of breastfeeding is very narrow (around one month). Mosely *et.al* (1977) stated that in some developing countries, traditional methods of birth spacing are more effective than clinical contraceptives and was of the view that planners could regard these methods as substitutes for contraception in the target population.

Data in Table 4 show that postpartum insusceptibility declined from 9.1 in 1997 to 8.5 in 2002 or 0.6 months at the national level. For rural areas, postpartum insusceptibility reduction is slightly higher (0.7 months). On the contrary, there is an increase in susceptibility for urban areas from 5.6 to 7.5 months for the study period. Overall, the median duration of postpartum insusceptibility in rural areas is higher than in urban areas.

Table 4. Median number of months of postpartum amenorrhea, postpartum abstinence, and postpartum insusceptibility by residence in VNDHS 1997 and 2002.

Residence	VNDHS 1997 Postpartum	VNDHS 2002 Postpartum

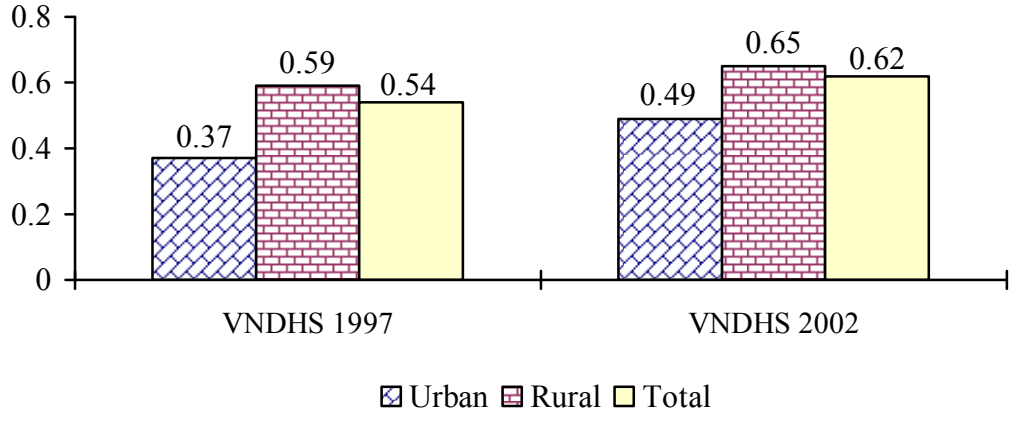
	Amenorrheic	Abstaining	Insusceptible	Amenorrheic	Abstaining	Insusceptible
Urban	4.6	2.9	5.6	6.6	4.4	7.5
Rural	9.3	3.3	9.5	7.6	3.8	8.8
Total	8.8	3.3	9.1	7.5	3.9	8.5

Induced Abortion

Abortion is legal and widely practiced in Vietnam. According to the 1989 Law of People's Health Protection stressed the fact that "*A woman has the rights to undertake induced abortion as her request, to access health care services for checking and treating gynecologist diseases, to take prenatal and delivery care, to be assistant at delivery care in health services".* Abortion services, including menstrual regulation, are readily available in public and private facilities. It is evident from survey data that women in Vietnam often resort to abortion because of a lack of contraception and contraceptive failure.

Figure 3 presents abortion rates for the five-year period preceding the surveys. These are total abortion rates (TAR) and are based on reporting of both menstrual regulation and abortion. There is an increase in total induced abortion rates from 0.54 in VNDHS 1997 to 0.62 in VNDHS 2002 in whole country and this is revealed by residence. In contrary to the trend in the world, it is surprising that women in rural areas have a higher rate of induced abortion than those in the urban areas at both times. Generally, it is difficult to collect reliable information on induced abortion in the developing countries.

Figure 3. Total induced abortion rate for the five-year period preceding the survey by residence, VNDHS 1997 and 2002



2. The role of the four proximate determinants on the fertility decline in Vietnam

The indices of marriage, contraceptive use, induced abortion, and postpartum infecundability and the TFR and TF as obtained from using Bongaarts model for the years 1997 and 2002 by residence are presented in Table 5. In analyzing these findings, it should be kept in mind that the lower the value of an index, the higher the percentage reduction in the TFR due to that index.

As it can be seen from table 5, estimated TFR has declined by 0.36 births from 1.91 to 1.55 between 1997 and 2002 at the national level and the same declined is for urban areas, but in rural areas it is littler higher (0.39 births). TFR estimated by the models is below the observed total fertility, except in 2002 for urban areas (1.4 births). By 2002, the difference between actual and estimated TFR have narrowed down. Especially for urban areas, the differences are very small and nil in 1997 and 2002, respectively. Finally, the most important index in explaining this fertility drop is the index of contraception, followed by the indices of marriage and postpartum infecundability. Contraceptive has a large effect in reducing fertility at both times.

Table 5. Estimates of selected fertility measures, indexes of proximate determinants and actual total fertility rate for Vietnam 1997 and 2002.

	1997			2002		
	Urban	Rural	Total	Urban	Rural	Total
Index of						
Marriage (Cm)	0.461	0.610	0.576	0.429	0.557	0.526
Contraception (Cc)	0.340	0.336	0.338	0.340	0.309	0.317
Induced abortion (Ca)	0.885	0.884	0.885	0.816	0.824	0.822
Postpartum infecundability (Ci)	0.830	0.714	0.725	0.769	0.733	0.741
Total fecundity rate (TF)	15.3	15.3	15.3	15.3	15.3	15.3
Estimated total fertility rate (TFR)	1.76	1.98	1.91	1.40	1.59	1.55
Actual total fertility rate	1.84	2.90	2.67	1.40	1.99	1.87
Differences (Actual TFR - estimated TFR)	**0.08**	**0.92**	**0.76**	**0.00**	**0.40**	**0.32**

The four principal proximate determinants are considered inhibitors of fertility is lower than its maximum value as a result of delayed marriage and marital disruption, the use of contraception

and induced abortion, and postpartum infecundability induces by breastfeeding or abstinence (Bongaarts, 1982).

Decomposition of the role of the four major determinants on fertility decline between 1997 and 2002 by residence in Vietnam

The decomposition of the change in Vietnam's TFR by residence between 1997 and 2002 is given in table 6. In the first column, percentage change in TFR is presented for each of the determinants responsible for that change. In the next column, the decomposition results are standardized to add to 100 percent, in the third column, the absolute change in the TFR is presented taking into account the contributions made by various proximate variables.

Table 6. Decomposition of the change in the Vietnam total fertility rate between 1997 and 2002 by residence.

Factors responsible for fertility changes	Urban			Rural			Total		
	Percentage of change in TFR	Distribution of percentage of change in TFR	Absolute change in TFR	Percentage of change in TFR	Distribution of percentage of change in TFR	Absolute change in TFR	Percentage of change in TFR	Distribution of percentage of change in TFR	Absolute change in TFR
Proportion of married women	-6.78	-33.17	-0.12	-8.56	-43.81	-0.17	-8.66	-46.39	-0.17
Contraceptive practice	-0.10	-0.47	0.00	-7.93	-40.58	-0.16	-6.27	-33.56	-0.12
Practice of induced abortion	-7.83	-38.33	-0.14	-6.82	-34.90	-0.13	-7.07	-37.87	-0.13
Duration of postpartum infecundability	-7.31	-35.76	-0.13	2.56	13.12	0.05	2.22	11.90	0.04
Interaction	1.58	7.73	0.03	1.20	6.16	0.02	1.11	5.92	0.02
Total	-20.43	100.00	-0.36	-19.54	100.00	-0.39	-18.67	100.00	-0.36

Results in table 6 indicate that the TFR in Vietnam declined by 20.4 percent or 0.36 points between 1997 and 2002 in urban areas. This decline is 0.39 points or 19.5 percent in rural areas. At the national level, TFR declined 18.7 percent or 0.36 points. The decomposition analysis for urban suggests that 7.8 percent decline in fertility is due to increase in induced abortion and 7.3 percent is due to an increase in postpartum infecundability and 6.8 percent decline in fertility is due to increase in the proportion of married women. The contribution of contraceptive use is quite small (0.1 percent). That is why there is a negligible impact of contraceptive use on fertility decline. Thus, it is clear that change in induced abortion,

postpartum infecundability and proportion of married women are generally the main factor responsible for fertility change in urban areas.

Similar analysis for rural areas and whole country, it was found that change in proportion of married women, contraceptive use and induced abortion are generally the main factor responsible for fertility change. In whole country, the decomposition analysis suggests that 8.6 percent decline in fertility is due to increase in the proportion of married women and 7.1 percent is due to an increase in induced abortion and 6.3 percent decline in fertility is due to increase in contraceptive use.. The contribution of postpartum infecundability is smaller (2.2 percent). The change in TFR due to change in interaction is not significant.

To summarize the contributions made by the principal proximate determinants to the change in the TFR in urban, rural areas and whole country are presented in Figure 4, 5 and 6, respectively. They plot the trends in the total fertility rate (TFR), the total natural marital fertility rate (TN), the total marital fertility rate (TM), and the total fecundity rate (TF). There is an increase in natural marital fertility owing to a shortening of the duration of postpartum insusceptibility in whole country and rural areas. For urban areas, it shows an adverse trend. However, TM and TFR decline owing to increase in the practice induced abortion and contraception as well as a decline in the proportion married in whole country and by residence.

Figure 4. Changes in measures of fertility and fertility-inhibiting effects of proximate variables in urban Vietnam (1997-2002)

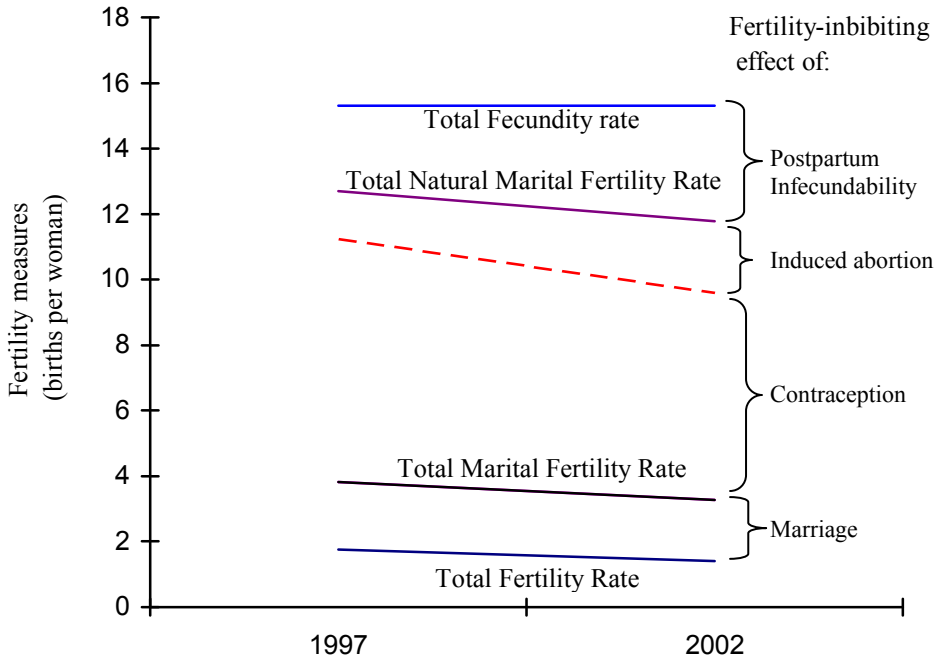


Figure 5. Changes in measures of fertility and fertility-inhibiting effects of proximate variables in rural Vietnam (1997-2002)

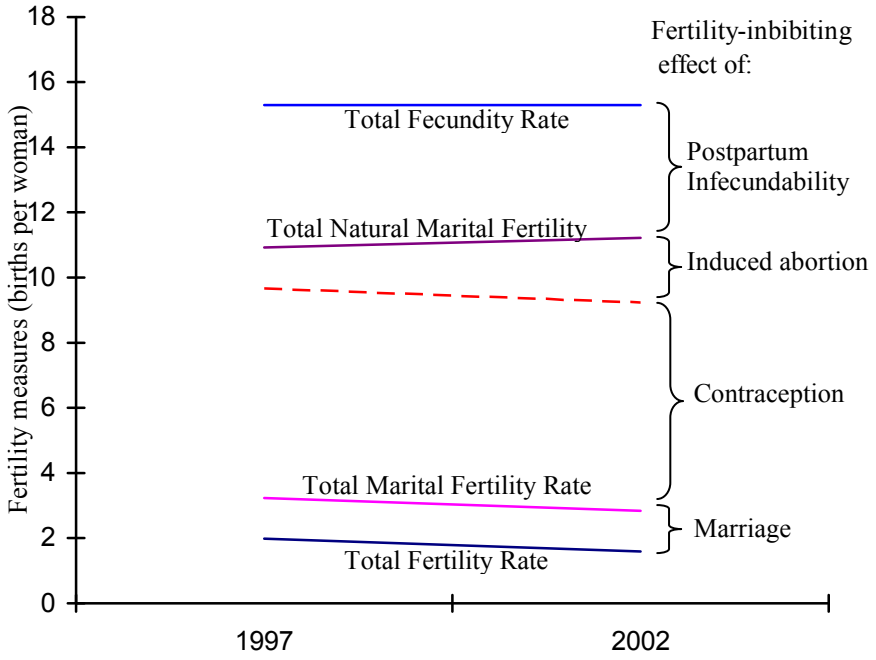
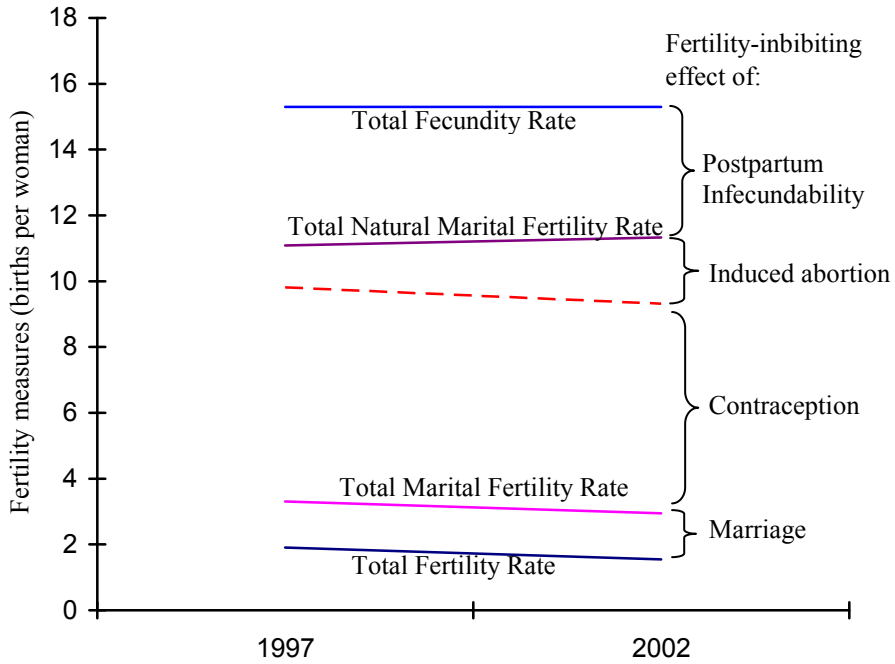


Figure 6. Changes in measures of fertility and fertility-inhibiting effects of proximate variables in Vietnam (1997-2002)



CONCLUSION AND POLICY IMPLICATIONS

In this study an attempt has been made to estimate the fertility-inhibiting effect of the four most important proximate determinants i.e. marriage, contraception, induced abortion and postpartum infecundability. The analysis shows that change in proportion of married women, contraceptive use and induced abortion are generally the main factor responsible for fertility change at the national level and rural areas during 1997-2002. For urban areas, the change in induced abortion, postpartum infecundability and proportion of married women are generally the main factor responsible for fertility change during the same period whereas contraceptive use has marginal effect. The study gives a clear indication that estimated TFR is probably smaller than the actual one. The difference between actual and estimated TFR have narrowed down.

In view of the present analysis, it may be suggested that area specific information-education-communication (IEC) and intervention programs should be encouraged to retain the speed of fertility decline in Vietnam. Besides this, as induced abortion has emerged as an important factor of fertility decline, government and NGOs should try to provide safe abortion facilities for the betterment of women's health. Again, as contraceptive use is found to have least influence on fertility decline, policy makers should try to ensure accessibility as well as affordability of good quality contraceptive methods to decrease number of induced abortion, for the better reproductive health of the women in the long run.

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