The Place of Fertility Intentions: Analysis of Subsequent Childbearing Behavior

among Married Thai Women

Background

Instead of asking whether there is a place for fertility intention, this article asks what the place for fertility intentions is. Since the 1950s (Westoff, Mishler and Kelly, 1957) up to recent times (Koenig, et al., 2006; Morgan, 2001; DaVanzo, Peterson, and Jones, 2003), researchers have continued to explore the relationship between fertility intentions and subsequent fertility behaviors. The results of these studies suggest that information on fertility intentions is useful and that they do affect contraceptive use and fertility (Bongaarts, 1992; Knodel and Prachuabmoh, 1973). However, to what extent fertility intentions impact subsequent fertility and how these intentions may interact with subsequent childbearing are questions not widely studied.

Four decades ago, Thailand's total fertility rate (TFR) stood at a level indicating that a woman, on average could expect to bear more than six children during her lifetime, if age specific fertility rate remained unchanged. After 2000, the TFR was reduced and sustained at a below-replacement-level rate of around 1.6 (U.S. Census Bureau, 2006). Thus, Thailand can be considered to have completed the transition from high to low fertility. However, there is no assumption that can be made that fertility will stop at the replacement level or remain in the post transition stage. There is evidence of below-replacement fertility emerging in a number of less developed

countries, namely, China (Hong Kong), Singapore, South Korea, and Thailand, and fertility levels in these places are continuing to fall (Hirschman, 1994; ESCAP population data sheet, 2006). The analysis based on the data from the first and second Social Attitude Toward Children Surveys conducted in 1988 and 1993 found that the mean preferred number of children has continued to fall, even at the late stage of the fertility transition in Thailand (Knodel, et al., 1996). However, this same study concluded that fertility in Thailand can be expected to remain at a level that is not so far below two children per couple, due to the desirability of having both a son and a daughter.

The question of how accurate it is to use desired family size to predict subsequent fertility and family planning behavior has significant policy implications. The reason that fertility surveys are conducted is to understand determinants in order to influence fertility. In the fertility surveys, people's attitudes and expectations with regard to fertility and contraceptive use are collected. Therefore, they can provide helpful information for the design and implementation of family planning policies (Vlassoff, 1990) and also can potentially improve the accuracy of fertility forecasts (Westoff and Ryder, 1977).

This study examines the relationship between fertility intentions and subsequent childbearing by the panel data collected from the Kanchanaburi Demographic Surveillance System (KDSS), Thailand. Therefore, this study tries to seek information

as to how much fertility intentions can predict subsequent childbearing. And if it does affect subsequent behavior, to what extent we can use it. Furthermore, it may enlighten policy makers so that they can adapt appropriate family planning policies

Literature Review

Definitions and theories of fertility intentions

Currently, considerable attention has been paid in the demographic literature to subjective ideals, expectations, preferences, and intentions with regard to fertility. Morgan (2001) notes that "fertility intentions refer to questions that ask how many additional children women intend".

Before the 1960s, fertility intentions were regarded as a fixed target model, which means that individuals or couples "formulate a desired competed family size and pursued this relative constant target throughout their reproductive life" (Lee, 1980). After that, researchers realized that fertility decisions are better represented as a series of sequential decisions. Morgan (2003) states that children are generally born one at a time, thereby imposing a set of birth intervals, and it is these intervals that lead to the reassessment of earlier decisions. In fact, not only the intervals, but also other social context changes, such as women's occupational changes, may make them adjust their fertility intention. A growing body of evidence has revealed that women or couples frequently do revise their intentions and behavior based on changed circumstances (Morgan 2003).

The predictability of fertility intentions

It is argued that individuals' intentions to have a child consistently predict whether they eventually do so （Morgan, 2003）. Theoretical and empirical evidence suggests that during the process of modernization desired or ideal family size falls due to the increasing direct or indirect costs of raising children and that tastes change in favor of goods rather than children (Easterlin, 1975). According to an analysis of data from two rounds of the National Survey of Families and Households, Schoen and his colleagues (1999) found that there was a strong association between respondents' intentions and their actual childbearing. He further argued that these associations decreased over an intentions continuum that went from being very sure of intending to have a child to being very sure of not intending to do so.

Empirical studies demonstrate (Morgan, 2003; Bongaarts, 1992 and 1998) that declining family size preferences constitute a primary cause of fertility transition and will influence post-transition fertility levels. During fertility transition, the observed fertility always exceeds stated preferences while in the post-transition societies the opposite is true. It is argued that the study of emerging and changing family size preferences and their relation to behavior provides clues to the nature of fertility decision-making and to the causes of fertility trends and differentials.

By using national data from 134 surveys conducted in 1975 to 1980 among 84 different populations, Westoff (1990) found that there was a strong relationship

between the total fertility rate and the percentage of women who wanted no more children. He concluded that the proportion of women reporting that they intended no more children had high predictive validity and therefore that it was a useful tool for short-term fertility predicting. Bongaarts (1992) raised the question of whether reproductive intentions matter and found that the intention to stop childbearing affected contraceptive use and fertility. This confirms the claim that intentions to stop childbearing are more consistent than intentions to have more children.

Numerous studies have shown that fertility intentions predict the subsequent behavior of individuals far better than do demographic and social indicators. However, the extent of the relationship between fertility intention and subsequent behavior is not consistent. For instance, it may predict accurately for some subgroups and in some periods while not so accurately in others. Therefore, there is an interaction of intention with covariates (O'Connell and Rogers, 1983). It is a challenge to explain the fact that the changes of fertility are not always foreshadowed by the changes of fertility intentions. In conclusion, intentions and other preference measures can provide clues to future trends and differences, but they should not be considered reliable indicators of future individual or aggregate behavior.

The literature reviewed suggests that in the past researchers were more interested in stopping childbearing than in having more children. This is probably because family planning policies preferred reductions in the fertility rate and tried to prevent

unwanted pregnancies. Besides studies on people's intentions, there are also studies on how to record people's intentions. Basically, there are two methods, either retrospective or prospective. Although retrospective studies of pregnancy intentions have revealed some characteristics that help to identify which women are more likely than others to give birth, prospective studies may shed greater light on the characteristics associated with subsequent fertility behavior. Several prospective studies have been done to study the relationship between fertility intention and subsequent fertility behavior. For example, Williams, Abma, and Piccinino (1999) studied the correspondence between intention to avoid childbearing and subsequent fertility. Only ten per cent of women intending to postpone pregnancy for more than three years and eight per cent of respondents seeking to forgo future childbearing had a birth in a two-year interval. They found that women's income, age, education, and marital status affected subsequent fertility. They also suggested that social and demographic factors should be taken into account when comparing the stated intention and subsequent fertility behavior. Early studies in the United States (Wilson and Bumpass, 1973, cited by Vlassoff, 1990) found that expectations corresponded with subsequent performance. Westoff and Ryder (1977) discovered that the individual reproductive intentions can accurately predict additional births in comparison with other demographic and social indicators. Vlassoff (1990) compared fertility and family planning intentions of 103 rural Indian women in 1975 with actual outcomes in 1987. He concluded that the respondents have a greater disposition to move positive goals downward than to raise negative ones upward and, therefore, that

acceptance of intention may lead to a substantial overestimate of fertility.

Thus, theories on fertility intentions changed from a fixed model to a moving target model. Fertility intentions are the most important predictors for future childbearing. However, due to the inconsistency of this relationship, the time of both reported fertility intentions and occurrence of subsequent fertility behaviors should be considered. To follow the same respondents and observe their fertility can better identify the predictability of fertility intentions. However, there is a lack of such kind of studies.

Limitations and information gaps in studies of fertility intentions

It is meaningful to estimate what women who are presently of childbearing age might do in the future. However, period data cannot do that any better than cohort births-to-date information. Therefore, demographers ask women about the number of births they expect to have in the future to estimate future cohort fertility. The problem is that fertility behavior is influenced by the timing of births, which may distort the underlying quantum of births (Bongaarts and Feeney 1998). A challenging issue of the predictability of fertility intentions is how to deal with the cases postponed. Predictive validity increases if the time frame for the expected behavior is explicit. For instance, let's say there are two women aged 25 years old who would each like to have one child. One woman wants to have it in the short term, maybe within two years, while the other one wants to postpone at the birth for at least five years. Their fertility

behavior will be different during the following years (Rindfuss, Morgan and Swicogood 1988). That is why most models reviewed discuss completed fertility, which means that we have to observe the women until they complete their reproductive period. However, for women who are just entering their reproductive life, at least 25 years are needed to follow up. In more developed countries, it may be possible to implement such a longitudinal study (Noack & φstby, 2000). However, in less developed countries, such long term study is not feasible.

Regressions with children ever born (CEB) as the dependent variable were widely used for world fertility survey (WFS) data. However, there are several difficulties with this popular method. For example, CEB regression cannot deal with censoring data that may lead to lose or distorted information and cannot separate period and cohort effects. This research tries to fill in this gap by using event-history analysis (EHA) among ever-married women who have been followed from 2000 up to 2004. The fertility intentions were first collected in 2001. The dependent variable for EHA is whether the birth occurred and is measured by months.

Data and Definitions

The data for the study presented here draw upon parts of the Kanchanaburi Demographic Surveillance System（KDSS), which was conducted from 2000 to 2004 in Kanchanaburi province, Thailand. The KDSS collected childbearing histories among all ever-married women aged 15 and over from 2000 to 2004. The baseline

survey on fertility intentions was collected in July and August 2001 and was followed by surveys taken in 2002 and 2003. Women who had experienced menstruation, had operated sterilization or whose husband has operated vasectomy, had their uterus removed, or had gotten pregnant were excluded from the baseline survey. There were 1,912 women can be followed up to 2004 which was approximately 60 per cent of the initial population (3,215). The table below compares the main characteristics of women who enrolled in this study and who lost-to-follow up.

Table 1: Comparison between the characteristics of women who can be followed and who lost-to-follow up

Characteristics	Women selected	Women lost-to-follow up
Age in 2001	33.3±6.6	31.3±7.7
CEB in 2001	2.1±1.3	2.0±1.5
Education in 2001 (%)		
No schooling	15.8	35.2
Primary	39.3	25.1
Secondary	30.6	25.4
Higher than secondary	14.3	14.3
Total	**100.0**	**100.0**
Working status in 2001 (%)		
Working	81.2	76.3
Jobless/housewife	18.8	23.7
Total	**100.0**	**100.0**
Ethnicity (%)		
Non-Thai	10.7	18.3
Thai	89.3	81.7
Total	**100.0**	**100.0**
Strata in 2001 (%)		
Urban/semi-urban	12.6	16.1
Rice field	19.4	15.4
Plantation	18.1	15.3
Upland	29.2	34.5
Mix-economy	20.8	18.6
Total	**100.0**	**100.0**
Intentions in 2001 (%)		
Wanted no more children	77.4	72.4
Wanted more children	22.6	27.6

	Total	100.0	100.0
N		1,912	1,303

The table above presents the characteristics of the sample we select are different from the sample we loss. For instance, women enrolled in this study were on average two years' older than the women who lost-to-follow up. Correspondingly, they have more children ever born (2.1 vs. 2.0). The socioeconomic characteristics of women can be followed were comparatively higher education level and higher percentage of employment rates either in agriculture or non-agriculture fields (81.2% vs. 76.3%). The proportion of non-Thai women, and the proportion of women stayed at uplands or urban/semi-urban areas were higher among women who could not be followed. Women who lost-to-follow up had higher rate of desire more children (27.6% vs. 22.6%). This may be related to the lost sample of non-Thai women who probably claimed more children wanted.

The comparison presents the differences among sample selected and lost. However, this study is not interested in this comparison, and does not want to represent the initial population. If this study selects some of the women from who can be followed, it should pay more attention to the selection bias. It is not the case of this study which selects all the women who can be followed. Even though, people should be careful to interpret the results of this study and keep in mind the characteristics of the women who are selected in this research.

In our research, the question "*Do you want to have more children*" was asked of

both women who were childless and those who had had at least one child. Following that question, they were asked how many children they wanted and their sex composition (how many boys and how many girls). Therefore, for this study, fertility intentions are defined as the intention to have one or more children irrespective of the current number of children women had, but also considered was sex composition both for children ever born and children intended. This information was derived directly from the questionnaires. Because the study period covered only three years (2001 to 2004), normally just one birth is observed. Therefore, to speak more accurately, the intention in this research is to study women's intentions to have a/another child.

The study area was divided into five strata, which were categorized according to the main occupation of the population and land use pattern. These strata are upland, mixed economy, rice field, plantation, and urban/semi-urban areas. The upland stratum contains villages located in the highland districts. The rice stratum refers to the villages located in lowland areas where the occupation is mainly rice cultivation. The areas where the major occupation for the local people is cultivation cassava or sugar cane are defined as the plantation stratum. The urban/semi-urban stratum covers the population living in the municipal areas. The mixed economy stratum contains villages that could not be classified into the other categories as mentioned above.

Methodology

Traditionally demographers study the occurrence of a single event in a population that remains homogeneous until the phenomenon occurs and from which the effects of the interfering phenomena are eliminated. The prerequisite for these conditions is that an event be of interest and that there are no losses from observation. The event-history analysis (EHA) is now being widely accepted in the social sciences, including in demography (Keilman and Keyfitz, 1988).

In less developed countries, short-term follow-up studies are easier to conduct than long-term ones. Nevertheless, fertility may be underestimated due to ignorance of deferred births. This study took place over a three-year period. It tries to shed some light on long-term longitudinal study with available information on the first couple of years after fertility intentions were reported. This study can be the first stage of a future long-term follow-up study and can provide recommendations for family planning policies in the short term. Furthermore, because this study involves all married women in their reproductive period, it makes a comparison among different birth cohorts possible. More importantly, this study takes the view that fertility intentions are moving targets, so the short term effects of fertility intentions are more predictable than the long term effects. The study considers the most current social, demographic, and economic situations that comprise context of women's fertility intentions. Therefore, it should be noted that this short-term follow-up study has advantages for examining the relationship between fertility intentions and subsequent behavior.

Event-history analysis, also known as survival/failure analysis, is a family of techniques dealing with the time it takes for something to happen (Tabachnick and Fidell, 2007). Due to the difficulty in determining the duration before an event occurs, event-history analysis (EHA) is not widely used. The KDSS has women's childbearing history by month from 2001 to 2004, so EHA is ideally suitable for this study. EHA can yield several results that would have been hard to obtain using other models. These include good estimation of the time at which women give birth, to what extent it is due to fertility intention, and the covariation between demographic and social factors. Consequently, life table technique is used here to estimate the duration to give birth since women reported their fertility intentions, and Cox-regression technique is used to estimate the extent to which intentions can predict subsequent childbearing. In this study, the time variable for event-history analysis is the duration between women's reported fertility intentions and the subsequent birth measured in months. The total period is 37 months, from August 2001 to August 2004. Women who do not give birth during this period are right censored.

Results

Characteristics of respondents and fertility intentions

The average age of the 1,912 married women involved in this study was 33.3. The average age for the first marriage was around 20.3, and after about one year, on average, women had their first child. This indicates that, generally speaking, the first

birth is very close to the time they got married. It demonstrates that most Thai couples

would like to have child soon after their marriage.

Table 2: Fertility intentions in 2001 by general characteristics

Characteristics	Fertility Intention			
	no child	>=1 child	Total	
	%	%	N	%
Parity in 2001*				
Childless	44.6	55.4	74	100.0
One son only	49.0	51.0	294	100.0
One daughter only	51.7	48.3	238	100.0
Two sons only	82.3	17.7	186	100.0
Two daughters only	81.1	18.9	185	100.0
One son and one daughter	92.6	7.4	377	100.0
Three or more sons only	91.7	8.3	48	100.0
Three or more daughters only	91.3	8.7	150	100.0
Three and more mixed-sex children	96.4	3.6	360	100.0
Age group*(KDSS 2000)**				
15-19	52.9	47.1	51	100.0
20-24	44.9	55.1	207	100.0
25-29	65.9	34.1	408	100.0
30-34	80.5	19.5	503	100.0
35-39	90.2	9.8	428	100.0
40-45	95.2	4.8	315	100.0
Ethnicity**				
Thai	78.3	21.7	1,708	100.0
Non-Thai	70.1	29.9	204	100.0
Working status**				
Non-Agriculture	80.3	19.7	1122	100.0
Agriculture	75.6	24.4	430	100.0
Housewife/No job	70.6	29.4	360	100.0
Education**				
No schooling	78.1	21.9	302	100.0
Primary	88.3	11.7	752	100.0
Secondary	68.2	31.8	585	100.0
Higher	66.3	33.7	273	100.0
Strata				
Mixed economy	79.1	20.9	397	100.0
Rice field	79.5	20.5	371	100.0
Plantation	78.3	21.7	346	100.0
Upland	76.2	23.8	558	100.0
Urban/semi-urban	72.9	27.1	240	100.0

Household wealth index				
	Poor	79.0	21.0	961	100.0
	Not poor	75.8	24.2	951	100.0
Total		77.4	22.6	1,912	100.0

[*] $P<0.05$, [**] $P<0.01$, [***] $P<0.001$.

Table 2 presents fertility intentions in 2001 according to women's general characteristics. *Parities in 2001*: The percentage of women who reported wanting more children is much higher among childless women and women with only one child. It is expected that the majority of childless women would like to have children. However, around 44.6 per cent declared that they wanted no children. Nearly all were of Thai ethnicity (97%). Women were evenly distributed among ages from 16 to 46. Half of them (53%) had education higher than primary schooling, which is the average level of all respondents. The supposed reasons to explain why half the childless women did not desire children are: some may really not want to have any children even though they are fertile; some may have difficulties conceiving; and some may have misunderstood the question as to whether they wanted to have more children soon. Due to the limited number of women (33) in this group, further study on the reasons why nearly half the childless women did not want to have children is needed.

Age: With increased age, women are less likely to want more children. Approximately half the women who were less than 24 years old in 2000 wanted to have more children while only about five per cent of women older than 40 years old

intended to do so. These women may have already achieved the desired number of children or they may think it is impossible for them to give birth. *Ethnicity*: Even though there are fewer ethnic minority (non-Thai) women involved in this study, the results clearly show that non-Thai women desire more children than Thai women. By comparing the average parities for Thai and non-Thai women, it is found that non-Thai women have one birth more than Thai women (3.2 vs. 2.1). Therefore, ethnicity does influence both the current parities and fertility intentions. *Working status:* Women who were housewives or jobless were slightly more likely to have more children than women who worked outside the home (29.4% vs. 19.7% and 24.4%, respectively). *Education*: Women with only a primary education had the lowest desire to have more children (11.7%) while women with a education level which was higher than secondary had the highest desire to do so (33.7%). *Strata*: Women stayed at urban and semi-urban areas had the highest desire to have more children. However, the difference is not statistically significant. *Household wealth index*: A wealth index is created by using Principal Component Analysis. Women's fertility intentions are not significantly different among the ones who were from poor and not poor households.

Fertility intentions and subsequent childbearing

By using life table technique of event-history analysis, the proportion of women who did not give birth (surviving), or the proportion of women who gave birth (1-surviving) is clearly displayed. Furthermore, this technique can also give a graph to

show the pattern of these proportions by duration.

Table 3: Cumulative proportion surviving at end of interval by fertility intentions

Fertility intentions	Interval Start Time (Month)	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Cumulative Proportion at End of Interval	
					Surviving	1-Surviving
No more children wanted	0	1,480	1,480	0	1.00	0.00
	6	1,480	1,480	10	0.99	0.01
	12	1,470	1,470	26	0.98	0.02
	18	1,444	1,444	31	0.95	0.05
	24	1,413	1,413	8	0.95	0.05
	30	1,405	1,405	27	0.93	0.07
	36	1,378	689.5	1	0.93	0.07
More children wanted	0	432	432	0	1.00	0.00
	6	432	432	15	0.97	0.03
	12	417	417	29	0.90	0.10
	18	388	388	30	0.83	0.17
	24	358	358	18	0.79	0.21
	30	340	340	22	0.74	0.26
	36	318	161	4	0.72	0.28

Table 3 presents the cumulative proportion of women who did not give birth, which in survival analysis termed as the cumulative proportion of surviving at end of the interval. The interval is grouped in six-month segments. If we use one minus the cumulative rate of not giving birth，we then can get the cumulative proportion for women who gave birth. After one year, there were two per cent of women who stated "no more children wanted" but who gave birth while this rate for women who stated "more children wanted" was ten per cent. After two years, these two rates increased to five per cent and 21 per cent. At the end of the three-year observation period, these rates reached seven per cent and 28 per cent, respectively. Figure 1 clearly shows an increasing distance in terms of cumulative survival rates between women who reported that they wanted no more children and those who wanted more children.

Because the pregnant women were excluded at the first time fertility intentions were collected in July and August 2001, there were no births occurred during the following nine months. This is why the parallel appeared at the first ten months (see figure 1).

Figure 1
Cumulative rates of not giving birth by duration (months) and by fertility intentions
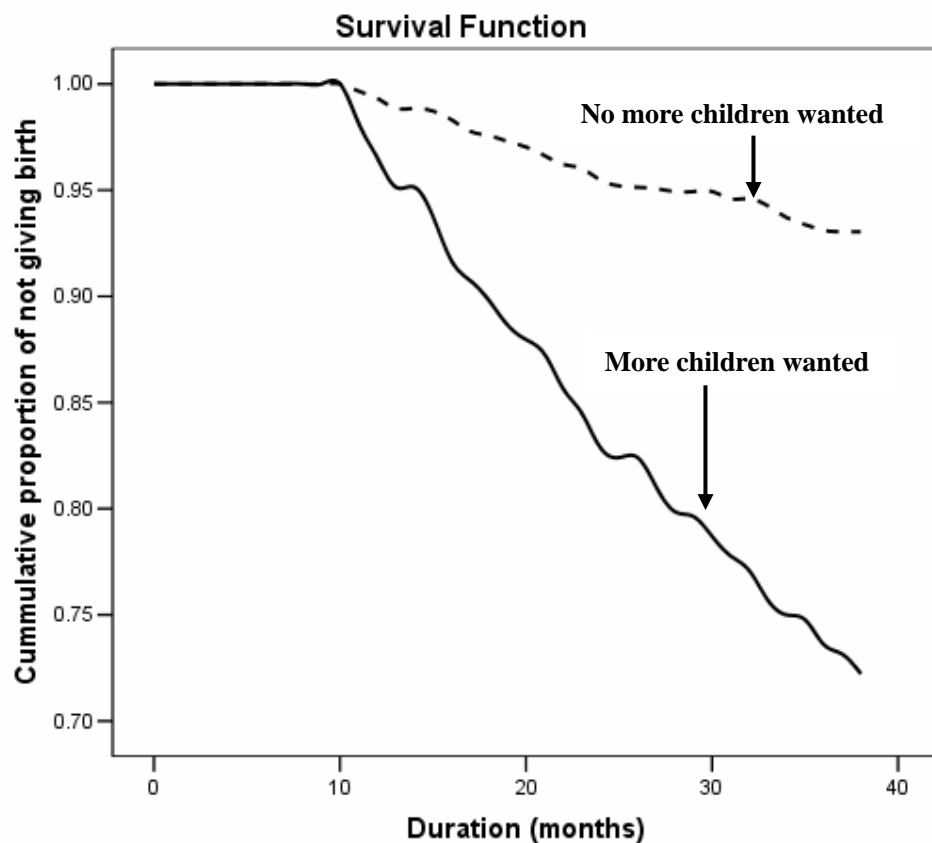
From the figure above, we can draw the following conclusions: A three-year period is not long enough to observe the median time to give birth for both groups. If the survival rates follow the trend of this figure, we can use linear regression to estimate for the women who reported that they wanted more children. The median time it took for them to give birth was around 62.75 months or 5.2 years

$(0.5=1.002-0.008*X_{months})$. However, more information is needed to support the assumption that the trend will be consistent for the following two and a half years.

It is certain that fertility intentions affect future childbearing. But the question of whether there are any other predictors that have closer relationships with subsequent childbearing is also a focus of this study. To address this question, a Cox-regression is conducted. The duration variable is measured by month. The status variable is a value "0" which indicates that no new birth occurs and another value "1" which indicates that a new birth occurs. The predictors include women's social, economic and demographic factors, such as occupation, geographical strata, household asset index, ethnicity, women's age in 2000, age at first marriage, number and sex of living children, and fertility intentions in 2001. Notably, it is argued that the age at first marriage does not necessarily have a strong effect on fertility because there can be "make up" childbearing following delayed marriage (Smith, 1983). Therefore, the women who get married later may have children soon after marriage and may have short birth intervals. This study finds that the age at first marriage is closely related with age at first birth (Pearson correlation coefficients is 0.831 and is significant at the 0.01 level). And also because childless women were enrolled in this study, age at first marriage was more appropriate to be used here. The base model includes only the fertility intentions in 2001. The Model 2 is the completed model which includes all of the assumed predictors.

Table 4: Cox-regression on subsequent childbearing during 2001 to 2004

	Odds and 95 % confidence intervals	
	Model 1	Model 2
Intention in 2001		
Want girl/girls only	3.999***	2.279***
	(2.825-5.662)	(1.508-3.444)
Want boy/boys only	5.305***	2.747***
	(3.600-7.818)	(1.744-4.327)
Want both sex	6.683***	2.377**
	(4.179-10.088)	(1.349-4.191)
Want children without specified sex	2.933***	1.825*
	(1.757-4.900)	(1.052-3.166)
No more children wanted (RC)	1.000	1.000
Age in 2000		0.910***
		(0.881-0.940)
Age at first marriage		1.052*
		(1.009-1.098)
Occupation		
Agricultural Job		1.096
		(0.770-1.559)
Non-Agricultural Job		1.289
		(0.854-1.946)
No job/Housewife (RC)		1.000
Ethnic group		
Thai		0.483**
		(0.303-0.770)
Non-Thai (RC)		1.000
Strata		
Mixed economy		1.074
		(0.653-1.764)
Rice field		0.759
		(0.442-1.303)
Plantation		0.897
		(0.533-1.511)
Uplands		0.881
		(0.541-1.436)
Urban and Semi-urban(RC)		1.000
CEB in 2001		
Childless		2.698**
		(1.287-5.656)
One son only		2.136*
		(1.172-3.893)

One daughter only	2.060[*] (1.130-3.754)
Two sons only	1.492 (0.724-3.072)
Two daughters only	1.944[*] (1.003-3.766)
Three and more sons	2.198 (0.731-6.612)
Three and more daughters	3.357[**] (1.659-6.790)
Three and more mixed-sex children	2.170[*] (1.148-4.102)
One son and one daughter(RC)	1.000
Household asset index	
Not poor	1.106 (0.823-1.487)
Poor (RC)	1.000
-2Log likelihood=3192.214, N=1,912	-2Log likelihood=3107.980; N=1,912

[*] $P<0.05$, [**] $P<0.01$, [***] $P<0.001$.
RC=Reference Category.

At shown in Table 4, the fertility intentions are the strongest indicators even keep other predictors consistent. In the basic model, the odds to give a subsequent birth is around three to more than 6.5 times higher among women who desired more children than the women who wanted to stop childbearing. In the completed model, the occupation, strata and household asset index which indicate the social and economic status of women fail to emerge as statistically significant predictors of the subsequent childbearing. However, there are other covariates that are of particular interest. First of all, the intentions in 2001 emerge as the strongest predicators for later childbearing. Compared with women who did not want to have additional children, the women who wanted girls, boys, both boys and girls, or either boys and/or girls were significantly more likely to give birth. The odds to give birth range from 1.8 to 2.7.

Meanwhile the number and sex of living children emerges as a strong determinant with a significance value less than 0.05. To better catch the differences among different CEB categories, three reference groups used to be chosen which were childless women, women with one son and one daughter and women with three or more mixed-sex children. The results suggested only women with one son and one daughter was statistically different from the reference group which was either childless women or women with three or more mixed-sex children. However, if women with one son and one daughter were chosen as the reference group, there were more CEB categories found to be statistically different. Furthermore, because the ideal sex composition for Thai women, and probably for women elsewhere, is one son and one daughter, this category is therefore regarded as the reference group in this research. The categories which have a strong relationship with subsequent childbearing are childless women (Odds=2.70), women with one son only (Odds=2.14), one daughter only (Odds=2.06), two daughters only (Odds=1.94), three or more than three daughters (Odds=3.36) and three or more than three mixed sex children (Odds=2.17). This indicates that the odds of giving birth among childless women, women with one child, with two or more daughters and with three or more mixed sex children were about two to three times more likely than for women with one son and one daughter. Besides the number and sex of children that women had and wanted to have, there are other three statistically significant predictors for subsequent childbearing. With regard to ethnicity, the odds of giving birth for Thai

women were 51.7 per cent less likely than for women who were non-Thai. With age, women were less likely to give birth. For every year of age increase, the odds to give birth decreased around nine per cent. However, this relationship is reversed in terms of women's age at first marriage. Women who married at older ages were more likely to give birth than the women who married younger. The result indicates that the odds that of giving additional births increases 1.05 times for each one-year increase of age at first marriage. This is significant at the 0.05 level.

Interactions between fertility intentions and subsequent childbearing

It is expected that women will change their fertility intentions after they give the desired number of births. However, it is also interesting that women may change their fertility intentions after a period of not giving birth. The first time that fertility intentions were collected in this study was in July/August 2001 and the last time was in July/August 2003. There were 24 months between these two dates and all new births were recorded during this period. Therefore, it makes comparisons between different fertility intentions and the exploration of the interaction between fertility intentions and childbearing possible.

Table 5: Fertility Intentions in 2001, New Births during 2001 to 2003 and Fertility Intentions in 2003

Intentions in 2001	New birth during July 2001 to June 2003	Intentions in 2003				Total	
		No more	More	Not sure	n.a.	N	%
No more	No	87.1	8.2	4.0	0.6	1,413	100. 0
	Yes	86.6	6.0	7.5	0.0	67	100. 0

	Total	**87.1**	8.1	4.2	0.6	1,480	100. 0
More	No	**37.7**	52.0	9.2	1.1	358	100. 0
	Yes	73.0	18.9	8.1	0.0	74	100. 0
	Total	43.8	46.3	9.0	0.9	432	100. 0

Note: n.a.means no answer

New births which occurred after women reported their fertility intentions in 2001 and before they reported intentions in 2003 are calculated and categorized by fertility intentions in 2001 and 2003. Due to the limited observation period, only one birth is considered. And correspondingly, the intentions are only categorized as whether or not women want to have children, which ignores the number of children wanted. The majority of women who did not want to have any more children (87.1%) in 2001 restated that they wanted to stop childbearing. However, there were 43.8 per cent of women who wanted more children in 2001 changed to no more children wanted in 2003. And 9.0 per cent of women changed to be uncertain about their fertility intentions. Approximately half of women still wanted to have more children. Among 189 women who changed from "desire more children" to "no more children wanted", only 54 women (28.6%) gave birth during 2001 to 2003. Up to 2003, roughly half the women who did not achieve their fertility intentions in 2001 still desired more children while 37.7 per cent changed to "no more children wanted". However, the reasons women changed their intentions before they achieved their desired family size are more interesting and more meaningful for family planning and health policies. From intention to action, there is a distance that is affected by social, economic, and demographic contexts. To change women's intentions to have more children or to help women who desire more children to have children is the choice faced by the

government. Probably, it is much easier to facilitate women's achieving their fertility intentions rather than to try to change their intentions. Women's fertility intentions may change, but they may change only temporarily and then change back again. However, if we convince the women's intentions and facilitate women to achieve their intentions, it will be much more feasible. Research is needed on the reasons women give up their intentions. This would allow for better facilitation of these intentions. And it is worth notice also that even though there was no intervention program to change women's intention to have children, 120 women gave up their intention to stop childbearing. This figure is less than the figure for women who changed from having a desire for more children to a desire to stop childbearing. This also confirms that facilitating women's intentions to have more children is more important and urgent than simply trying to change women's intentions.

Conclusions

This study tries to shed some light on the fertility intentions and subsequent childbearing by using the panel data collected from the KDSS, Thailand. The results suggest that fertility intentions are the strongest factors that predict future childbearing when compared to other factors. Intention to have more children shortens the time until a subsequent birth and women with an intention to have boys and/or girls are statistically more likely to give birth than the women who did not want to have any children. Besides fertility intentions, some other interesting covariates are found in this study. The odds of giving subsequent births have significantly positive

correlation with the age of women but are significantly negative with the age at first marriage. The number and sex of living children have a strong relationship to subsequent childbearing, especially among the women with one child, either a boy or a girl, and women with two or more daughters. This demonstrates that Thai people prefer at least one son and one daughter and that if they only have children of the same sex, they are more likely to desire children of the opposite sex and are more likely to have another child. This tendency is probably much stronger among the women with only daughters. Socio-economic factors, such as household assess index, women's occupation, and geographic strata, failed to emerge as statistically significant predictors. The study areas in Kanchanaburi province in Thailand are comparatively poorer than other provinces. And there is not so much difference among different geographic strata in terms of household assets and income. In other words, socio-economic status is homogeneous among the women interviewed. Another possible reason for the insignificant relationship between socio-economic status and childbearing is probably due to the validity of these indicators. How to better measure socio-economic status and so to explore its effects on fertility intentions and subsequent childbearing is an issue left for the future research. Our analysis indicates that the challenge of increasing fertility is the challenge of facilitating fertility intentions rather than simply increasing intentions to have more children. The key question is to what extent fertility intentions are determined by economic influences and to what extent by social, cultural, and demographic characteristics. How and when government policy instruments can influence these

underlying fertility determinants becomes a practical issue. Whether to improve the quality of maternal and child care, extend such services, and increase incentives so as to facilitate women's achieving their desired fertility are critical questions not addressed in this study. Due to the limitations of this study, it is recommended that long-term studies on this topic focus more on the changing contexts that may determine the changes of fertility intentions and then affect the subsequent childbearing.

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