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Proximate Determinants of Fertility in Peninsular Malaysia

Nai Peng Tey, MSc¹, Sor Tho Ng, PhD¹, and Siew Yong Yew, PhD¹

Abstract
The continuing decline in fertility despite a contraction in contraceptive use in Peninsular Malaysia since the mid-1980s has triggered considerable interest in the reasons behind this phenomenon, such as increase in abortion, sterility, and out-of-wedlock pregnancy. Fertility decline has been attributed to rapid socioeconomic development, which can only influence fertility through the intermediate variables. Application of vital statistics, population census, and survey data of Peninsular Malaysia on Bongaarts’s model vindicates that marriage postponement and contraceptive use are the 2 most important proximate determinants of fertility, but the effects are not uniform across the ethnic groups. For instance, the predicted total fertility rate for Chinese and Malays are 2.9 and 1.6, respectively, compared with the observed level of 3.0 and 1.9. Postpartum infecundability and abortion also play a part in explaining ethnic fertility differentials. The fertility inhibiting effects of these proximate determinants have significant implications on reproductive health and future population growth.

Keywords
abortion, contraceptive use, fertility, proximate determinants, marriage

Introduction
Improved socioeconomic conditions, rising age at marriage, and widespread use of contraception have brought about rapid fertility transition in many developing countries. However, the effects of these variables on the fertility level vary widely across populations. The socioeconomic correlates of fertility have been extensively researched.¹ ³

In most traditional societies, childbearing generally takes place within marriage. Hence, the timing of marriage is closely associated with fertility level. Consequent upon educational improvement and social changes, age at marriage has been rising steadily.⁴ The pros and cons of postponement of marriage and childbearing on health and happiness are still being debated.

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Following the launching of family planning programs in many developing countries in the 1960s and 1970s, contraceptive use has expanded significantly across populations. The impact of the programs on contraceptive use, which in turn result in fertility decline, is well documented.5-7 Davis and Blake8 were the first to provide a systematic classification of 11 intermediate or proximate determinants through which social, economic, and cultural factors must operate to influence fertility. This analytical framework gained popularity after Bongaarts formulated a model that incorporates 4 quantifiable proximate determinants that explain 96% of the variance in fertility across populations. These 4 proximate determinants are (a) proportion married among women in the reproductive age group, (b) contraceptive use, (c) induced abortion, and (d) breastfeeding.9,10 The availability of data from the World Fertility Survey and the Demographic and Health Surveys has facilitated fertility analysis using this framework. By 1995, more than 100 publications have appeared describing the applications of Bongaarts’s model to different populations and settings.11

Fertility Trends in Malaysia and Reasons for This Study

In 2000, about 80% of the population of Malaysia lived in Peninsular Malaysia, 11% in Sabah and 9% in Sarawak. In Peninsular Malaysia, the Malays make up about 60% of the population, Chinese 26.4%, Indians 9.1%, and others 0.8%. The population of Sabah and Sarawak is characterized by a greater diversity of indigenous population. This article focuses on the 3 main ethnic groups in Peninsular Malaysia where the demographic data are of better quality.

Fertility transition in Peninsular Malaysia began even before the launching of the National Family Planning Program in 1966. In 1960, Indians had the highest total fertility rate (TFR; TFR is defined as the average number of children that would be born to a woman over her lifetime if she were to experience the exact current age-specific fertility rates [ASFRs] through her lifetime) of 7.3 children per woman, followed by Chinese (6.3) and Malays (5.8). However, the pace of fertility decline differed widely by ethnic group, such that the fertility of the Malays has always been higher than that of the Chinese and Indians since 1965 (Figure 1).

Between 1966 and 1985, the TFR in Peninsular Malaysia declined from 5.7 in 1965 to 3.6 in 1985 amidst a sharp rise in contraceptive prevalence rate (CPR; CPR is defined as the percentage of currently married women using any contraceptive method) from 8% to 50%. Over the next 2 decades, the contraceptive prevalence rate stagnated and even showed a decline, but the total fertility rate continued to decline appreciably to 3.0 in 2000, 2.5 in 2005 and further to 2.3 in 2008.

Based on the regression equation derived from a study by Tsui,12 where TFR = 7.27 – 0.07 CPR, the expected TFR of Peninsular Malaysia would be 3.8. The observed value of 2.4 is short of the expected value by 1.4, given a CPR of about 50%. Discrepancies in the relationship between TFR and CPR have been found in other parts of the world.13-15 Nevertheless, the lower than expected TFR has given rise to speculations that abortion and sterility are on the rise, accompanied by a growing interest to ascertain the reasons behind the anomaly.

Past research in Malaysia has dealt mainly with the socioeconomic determinants and ethnic fertility differentials.16-18 Despite the importance of the intermediate variables in explaining fertility differentials, there is a dearth of research on this topic. A report on the direct and indirect determinants based on the 1984 Malaysian Population and Family Survey was prepared by Tey et al.19 Since then, there have been significant changes in the level of fertility and other proximate determinants of fertility, including a decline in contraceptive use. An updated analysis on the proximate determinants is very much needed to explain the reasons behind ethnic fertility differentials and to unravel the puzzles of continuing fertility decline despite the stagnation of contraceptive use.
This article examines the relative contribution of the main proximate determinants of fertility, based on the model proposed by Bongaart. It also attempts to explain the ethnic fertility differentials from the perspective of intermediate variables.

Methods

This article is based on the analysis of data from the 2000 Population Census, the 2004 Vital Statistics from the Department of Statistics, and the 2004 Malaysian Population and Family Survey (MPFS), conducted by the National Population and Family Development Board. Malaysia has an efficient vital registration system dating back to the 1960s. Registration of births is virtually complete. The annual vital statistics reports provide data on TFR and ASFR by ethnicity and state. The 2004 MPFS covered a representative sample for Peninsular Malaysia, Sabah, and Sarawak.

Bongaarts’s model is used to estimate the indices of the 4 main proximate determinants that explain practically all the variance in fertility level across populations. In this model, the TFR is the product of 4 indices measuring their fertility-inhibiting effect and the total fecundity rate (TF), as follows:

\[ TFR = C_m \times C_c \times C_a \times C_i \times TF, \]

where, \( C_m \) is the index of proportion married, \( C_c \) is the index of contraception, \( C_a \) is the index of induced abortion, and \( C_i \) is the index of postpartum infecundability.

Each of the indices ranges from 0 to 1, with smaller values indicating greater effects, and 1 indicating no inhibiting effect. The total fecundity rate, with a mean value of 15.3 children per woman across populations, is the average number of live births born to women who during their reproductive period remain married, do not use any contraception, do not have any induced abortion, and do not breastfeed their children.

\( C_m \) is derived from the 2000 Population Census and 2004 Vital Statistics. The other 3 indices \( C_c, C_a, \) and \( C_i \) are estimated using the 2004 MPFS.

The index of marriage (\( C_m \)) is used to assess the fertility inhibiting effects of marriage pattern. \( C_m \) takes the value of 1 when all women of reproductive age are married, and 0 when none is married. Hence, the smaller the value, the larger is the impact of this variable on fertility. The index of marriage is computed as follows:
where $m(a)$ is the age-specific proportion married, $g(a)$ is the age-specific marital fertility rates, and TM is the total marital fertility rate.

The age-specific marital fertility rates are obtained by dividing the ASFR by proportion married for each age group. The total marital fertility rate is obtained by summing up the age specific marital fertility rates.

The index of contraception is computed as follows:

\[ C_c = 1 - 1.18 \times u \times e, \]

where $u$ is the prevalence of current contraceptive use among currently married women, and $e$ is the average use-effectiveness of contraception.

The 2004 MPFS included a full pregnancy history in which women were asked the outcome and duration of each pregnancy. Pregnancies that ended before 28 weeks of gestation were classified as early pregnancy loss or abortion, which includes spontaneous and induced abortion. Using 1988 Ghana Demographic and Health Survey Data, Blanc and Grey calculated a total pregnancy loss rate for the 5-year period prior to the survey. Their estimated total abortion rate of 0.65 per women for Ghana, was obtained by counting all early pregnancy losses instead of live births in the numerator, and it is analogous to the total fertility rate. As information on the date of termination of pregnancy is not available in the 2004 MPFS, a cohort rate based on the total number of early pregnancy losses (ie, all pregnancies that ended before 28 weeks) is estimated for each married woman aged 35 years and older. The index of abortion ($C_a$) is computed as follows:

\[ C_a = \frac{TFR}{TFR + 0.4 \times (1 + u) \times TA}, \]

where $u$ is the contraceptive prevalence rate and TA is the total abortion rate among married women.

In the 2004 MPFS, women who had at least one child aged less than 6 years old were asked on their duration of breastfeeding the youngest child. Data show that the percentage that had breastfed their youngest child was highest among Malays (93%), and lowest among Chinese (52.5%), with Indians in between (83.1%). At the time of the survey, about one third of Malay respondents who breastfed their youngest child were continuing, whereas only about 4% of Chinese and 8% of Indian respondents were still breastfeeding. Hence, the problem of censoring and truncation in estimating the mean breastfeeding duration is much more serious among Malays as compared with the other 2 ethnic groups.

The index of postpartum infecundability is computed as follows:

\[ C_i = \frac{20}{18.5 + i}, \]

where $i = 1.753 \exp(0.1396 \times B - 0.001872 \times B^2)$; and $B$ is the mean duration of breastfeeding.

### Results

**The Fertility Inhibiting Effects of Delayed and Nonmarriage**

Age at marriage among Malaysian men and women has been rising steadily over the years. The singulate mean age at marriage for Malaysian women increased from 22 years in 1970 to 25.1 years in 2000, whereas that of the men increased from 25.5 to 28.6 years during...
the same period. Wide variations in age at marriage can be observed across the ethnic groups. In 2000, the singulate mean age of marriage of Malay women was 24.8 years as compared with 27.0 years for Chinese and 25.4 years for Indians. More and more women are also remaining single. The proportion never married among those aged 30 to 34 years increased from 6% in 1970 to 13% in 2000. Later marriage is a result of rising educational level and increased participation of women in the labor force. The educational level has a greater effect on marriage postponement among Chinese as compared with Malays and Indians. In 2000, the singulate mean age at marriage for tertiary educated Chinese women was more than 5 years later than those with primary schooling (29.1 vs 23.8 years). The tertiary educated Malay and Indian women married only about 2.4 years and 1.3 years later than their counterparts with primary schooling (25.5 vs 23.1 years for Malays and 24.1 vs 22.8 years for Indians). At age 30 to 34 years, almost 30% of tertiary educated Chinese women were still unmarried.

Increased labor force participation among women has given them more options than marriage. With economic independence, women may choose not to marry to pursue their career and enjoy greater freedom.

Table 1 shows that for most age groups, a higher proportion of Malay women were married as compared with Chinese and Indians. Given that childbearing outside of wedlock is still relatively rare in Malaysia, variation in the timing of marriage among different ethnic groups has resulted in fertility differentials.

The estimated $C_m$ values is lowest among Chinese and highest among Malays, indicating that the fertility-inhibiting effect of marriage postponement is most pronounced among Chinese and smallest among Malays (Table 1).

### The Fertility-Inhibiting Effects of Contraceptive Use

Studies have found a strong relationship between CPR and TFR across populations. Regression estimates show that a 15% rise in CPR will result in a reduction of one child per woman. Although the continuing fertility decline in Peninsular Malaysia despite a reduction in CPR seems incongruent, the fertility inhibiting effect of contraceptive use across subgroups of the population in Malaysia is clearly demonstrated. The Chinese have the highest CPR and the lowest TFR. On the other hand, Malays have the lowest CPR and the highest TFR. The CPR

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>Proportion Married Among Women</th>
<th>Age-Specific Fertility Rate</th>
<th>Age-Specific Marital Fertility Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Malays</td>
<td>Chinese</td>
<td>Indians</td>
</tr>
<tr>
<td>15–19</td>
<td>0.02</td>
<td>0.02</td>
<td>0.034</td>
</tr>
<tr>
<td>20–24</td>
<td>0.29</td>
<td>0.18</td>
<td>0.29</td>
</tr>
<tr>
<td>25–29</td>
<td>0.75</td>
<td>0.56</td>
<td>0.67</td>
</tr>
<tr>
<td>30–34</td>
<td>0.86</td>
<td>0.81</td>
<td>0.83</td>
</tr>
<tr>
<td>35–39</td>
<td>0.89</td>
<td>0.88</td>
<td>0.86</td>
</tr>
<tr>
<td>40–44</td>
<td>0.88</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>45–49</td>
<td>0.88</td>
<td>0.88</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Abbreviations: TMFR, total marital fertility rate; TFR, total fertility rate; $C_m$, index of proportion married.
increased rather appreciably between 1974 and 1984. However, since the mid-1980s when the government announced the new population policy to have a population of 70 million by 2100, the CPR had increased marginally during the next decade, and decreased in the more recent period (see Table 2). With modernization, couples are expected to avail themselves of family planning services and supplies that are widely available. Hence, the dip in CPR is rather puzzling, especially when the TFR has continued to decline. Applying the 2004 MPFS data to Bongaarts’s model, the estimated \( C_c \) is 0.53 for Peninsular Malaysia. This ranges from 0.38 for Chinese, to 0.50 for Indians, to 0.62 for Malays.

In 2004, the contraceptive prevalence was estimated at 39% for Malays, 64% for Chinese, and 51% for Indians. A rather sizable proportion of them use traditional methods, especially the rhythm method. Table 3 presents the method mix and use effectiveness by ethnic groups.

### The Fertility-Inhibiting Effects of Abortion

Under Malaysian law, abortion may be carried out to save the life of the woman and to preserve her physical and mental health. The preservation of mental health covers rape, incest, or fetal impairment. The public, including some doctors are unaware of these conditions for abortion. In 2007, the Reproductive Rights Advocacy Alliance of Malaysia was formed with the objective to inform, educate, and advocate on reproductive health issues, including abortion.

Of late, the increased incidence of youth sexuality, out-of-wedlock pregnancies, and abandoned babies has been highlighted in the media. There are no official data on induced abortion. However, some commentators have speculated that abortion is on the rise. To quantify the fertility-inhibiting effects of abortion, it would be necessary to estimate indirectly the total abortion rate. Table 4 summarizes the ethnic differentials in the total abortion rate, the proportion of pregnancies ending in abortion and the index of abortion.

A study by Gilda et al concluded that in Southeast Asia about 27% of pregnancies ended in abortion (11% safe and 16% unsafe). A regression analysis by Westoff put the total abortion rate for Southeast Asia at 1.1, and this corresponds quite closely with the estimate of 1.2 by the World Health Organization. It appears that the early pregnancy loss (14% of total pregnancy) and the total abortion rate of 0.41 based on the 2004 MPFS probably represent an underestimate.

### The Fertility-Inhibiting Effects of Postpartum Infecundability

The estimated duration of breastfeeding among those who had stopped is 12.5 months for Malays, 1.7 months for Chinese, and 4.6 months for Indians. Taking into account the age of child among those who were still breastfeeding, the mean breastfeeding duration was adjusted to 14 months.

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**Table 2. Contraceptive Prevalence Rate, Use Effectiveness, and Index for Contraception, by Year and Ethnic Group**

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>1974</th>
<th>1984</th>
<th>1994</th>
<th>2004</th>
<th>Use Effectiveness</th>
<th>Estimated ( C_c )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malays</td>
<td>26</td>
<td>41</td>
<td>46</td>
<td>39</td>
<td>0.83</td>
<td>0.62</td>
</tr>
<tr>
<td>Chinese</td>
<td>55</td>
<td>64</td>
<td>73</td>
<td>64</td>
<td>0.83</td>
<td>0.38</td>
</tr>
<tr>
<td>Indians</td>
<td>49</td>
<td>66</td>
<td>64</td>
<td>51</td>
<td>0.83</td>
<td>0.50</td>
</tr>
<tr>
<td>All</td>
<td>36</td>
<td>52</td>
<td>55</td>
<td>48</td>
<td>0.83</td>
<td>0.53</td>
</tr>
</tbody>
</table>
among Malays, 2 months among Chinese, and 6 months among Indians. The index of postpartum infecundability ($C_i$) estimated using Bongaarts’s formula is 0.74 for Malays, 0.96 for Chinese, and 0.89 for Indians.

**Summary of the Fertility-Inhibiting Effects of the Main Proximate Determinants**

Table 5 summarizes the fertility-inhibiting effects of the proximate determinants for the 3 main ethnic groups in Peninsular Malaysia. The expected TFR is obtained by multiplying the total fecundity rate of 15.3 by the indices. For instance, the expected TFR for the Malays is $15.3 \times 0.45 \times 0.62 \times 0.93 \times 0.74$. The value of 15.3 is the average TF value for a large number of populations in Bongaarts’s studies\textsuperscript{9,10} and hence is used in this analysis.

**Discussion**

In previous studies, Bongaarts found that in population with a TFR of less than 3, $C_m$ was in the range of 0.4 to 0.65, $C_c$ in the range of 0.22 to 0.45, $C_a$ in the range of 0.5 to 1.0, and $C_i$ in the range of 0.9 to 1.0.\textsuperscript{9} With some exceptions, our estimates are within these ranges. The low $C_m$ value among the Chinese can be explained by the prevalence of nonmarriage and delayed marriage. The high $C_c$ values for the Malays, and to a lesser extent the Indians, is reflective of their low level of CPR. The relatively low $C_i$ value among the Malays can be explained by the prevalence of breastfeeding among them.
Overall, delayed marriage is by far the most important factor in reducing the fertility level. However, the widespread use of contraception among Chinese is just as important as delayed marriage in explaining their low level of fertility. These 2 factors account for a large part of the difference between the fecundity rate and TFR. Whereas the abortion index is lower among Chinese and Indians as compared with Malays, the reverse is true for the index of postpartum infecundability.

The expected TFRs, obtained by multiplying the assumed TF value of 15.3 as proposed by Bongaarts, correspond quite closely with that of the observed TFR for Malays and Indians. The higher than expected TFR among the Chinese could be attributed to out-of-wedlock births, as cohabitation has become more common. On the other hand, the lower than expected TFR among Indians could be due to some underreporting of CPR as the 2004 survey showed a significant drop in the level of contraceptive use since 1994.

The accuracy and reliability of the estimated fertility-inhibiting effects of the proximate determinants of fertility depend to a large extent on the quality of the data used in the computation. The assumed TF value of 15.3 is a hypothetical figure, and the value of TF is found to vary between 13 and 17. The fertility-inhibiting effects shown in this article should be taken as indicative of the relative contribution of each of these factors in explaining the fertility levels and differentials. Moreover, part of the inconsistency between the CPR and TFR may be explained by the temporal distortion of TFR. Being a period measure, the TFR is temporarily depressed, and hence underestimated, by a rise in the mean age of childbearing. There is a distinct possibility for the TFR to reverse its downward trend as the temporal effect is about to run its course.

Delayed marriage results in smaller families and hence lower dependency and allows women more freedom to pursue their career and enhance their individual and family well-being. However, postponing the age at marriage to late 20s or even early 30s may result in greater risk of childlessness and adverse effects on maternal and child health.

The index of abortion was not estimated in a previous study by Tey et al. However, the index of postpartum infecundability remains largely unchanged for Chinese and Indians but that for Malays was estimated to decrease slightly to 0.74 from 0.80 previously. Given the health benefits of breastfeeding to infants, campaigns for breastfeeding should be stepped up, and facilities enhanced to encourage more women to breastfeed their babies.

The estimated abortion rate in this study, which includes both spontaneous and induced abortion, is much lower than most other estimates for developing countries. This could be due to underreporting as it is a taboo subject. According to the World Health Organization, about 1

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Malays</th>
<th>Chinese</th>
<th>Indians</th>
</tr>
</thead>
<tbody>
<tr>
<td>( C_m )</td>
<td>0.45</td>
<td>0.32</td>
<td>0.40</td>
</tr>
<tr>
<td>( C_a )</td>
<td>0.62</td>
<td>0.38</td>
<td>0.5</td>
</tr>
<tr>
<td>( C_c )</td>
<td>0.93</td>
<td>0.87</td>
<td>0.87</td>
</tr>
<tr>
<td>( C_i )</td>
<td>0.74</td>
<td>0.96</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Expected total fertility rate (TFR) based on total fecundity rate (TF) of 15.3:

- Malay: 2.9
- Chinese: 1.6
- Indians: 2.3

Actual TFR:

- Malay: 3.0
- Chinese: 1.9
- Indians: 2.1

Difference between expected and actual TFR:

- Malay: -0.1
- Chinese: -0.3
- Indians: +0.2

Percentage difference:

- Malay: -3.3%
- Chinese: -15%
- Indians: +9%

* Data from Tables 1 to 3.
in 5 pregnancies worldwide end in abortion, and for every 1000 women of childbearing age (15 to 44 years), 29 were estimated to have had an induced abortion in 2003.

With rising age at marriage, the period of exposure to sex outside marriage among the young people has become longer. Abortion is probably on the rise among the unmarried youths who are not provided with family planning services. The increased incidence of baby dumping and out-of-wedlock pregnancies reported in the media, and hence the possibility of an increase in abortion, has prompted the government to adopt the Social and Reproductive Health Education Policy and to consider seriously the introduction of sex education in schools. These programs and strategies are designed to educate an increasing number of unmarried persons on the need to stay away from sex and to behave responsibly for their own reproductive health.

The model used in this study incorporates only 4 proximate determinants. Primary sterility or infertility is probably on the rise in Malaysia, as in other parts of the world. Serajeldin et al\textsuperscript{32} found that about one fourth of Iranian couples experience primary infertility at some points in their lives and that 3.4% suffer from this problem at any time. According to Bill Ledger, an in vitro fertilization specialist, 1 in 3 couples in Europe could suffer from infertility problems in 10 years’ time, up from the current level of 1 in 7.\textsuperscript{33} The \textit{New Sunday Times} reported that as many as half of those who visit gynecological specialists were asking for treatment to help them conceive.\textsuperscript{34} In view of the likely increase in primary sterility, the index of primary sterility ($C_p$) will have to be incorporated into the model. But the data on infertility must first be collected through survey and laboratory tests.

The fertility-inhibiting effects of marriage have increased rather substantially since the mid-1980s owing to the rising age at marriage. In 1985, the $C_m$ was 0.68 for Malays, 0.58 for Chinese, and 0.61 for Indians\textsuperscript{19}; however, these decreased to 0.45, 0.32, and 0.40, respectively, for each of the ethnic groups in 2004. Reflecting the stagnation in the CPR over the 2 decades, the index of contraception $C_c$ has remained largely unchanged (ie, from 0.67 to 0.62 for Malays, remained at 0.38 for Chinese, and 0.40 to 0.50 for Indians). Hence, the fertility decline that has taken place in the past 2 decades or so was largely brought about by the changing marriage pattern, and this is true for all ethnic groups. The much smaller fertility-inhibiting effects of these 2 proximate determinants for Malays as compared with the other 2 ethnic groups result in the rather wide ethnic fertility differentials. This gap is likely to remain as Malays are expected to enter marriage earlier and to be less likely to use a contraceptive method in the foreseeable future.

The CPR is relatively low in Peninsular Malaysia for its level of development. Concerns on the high level of unmet need for contraception have been raised in several forums. There is a need to revitalize family planning to enhance the reproductive rights and health of women, especially those who are underserved. In view of the stagnation of CPR, there is a need to adopt new strategies to reduce unmet need for contraception to prevent unwanted pregnancies, which will result in a reduction in induced abortion.\textsuperscript{35}

\section*{Conclusion}

Bongaarts’s model predicted rather accurately the total fertility rate for Malays and Indians, and to a lesser extent for the Chinese in Peninsular Malaysia. The difference between the expected and actual TFR ranges from 3.3\% among the Malays, 9\% among the Indians, and 15\% among the Chinese. As alluded to above, the higher than expected TFR among the Chinese could be brought about by the increase in out-of-wedlock births as cohabitation has become more prevalent. More up-to-date and accurate data on abortion and sterility needs to be collected for further refinement of the model.
For all 3 ethnic groups, the index of marriage is lower than that of contraception. Hence, marriage postponement explains a large part of the inconsistency of the fertility level given the contraceptive prevalence rate. Reflecting the stagnation of contraceptive prevalence rate, the index of contraception has not changed much since 1985. Younger age at marriage and lower contraceptive use among the Malays as compared with the non-Malays account for much of the ethnic fertility differentials in Peninsular Malaysia. Whereas the fertility of the Chinese and Indians has dipped below the replacement level, Malay fertility is still in the midst of transition. This will result in significant shift in the ethnic composition of the population.

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